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Prepared By:	Alex Stephenson (July 2021)
Checked By:	Rob Hardyman (July 2021)
Approved By:	Paul Basham (July 2021)

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1. INTRODUCTION

- 1.1 This Transport Note (TN) has been prepared by Paul Basham Associates on behalf of Fortitudo Ltd to support a planning application for a mixed-use development comprising 175 apartments, a McDonald's drive-thru and a Costa Coffee drive-thru, at the site of the former Scottish and Southern Energy (SSE) offices on Bartons Road, Havant.
- 1.2 A planning application for the proposed development was validated on the 1st October 2020 (APP/20/00658) and was accompanied by a Transport Assessment (TA).
- 1.3 A formal response from HCC highways was submitted on the 19th October 2020 and raised a number of concerns regarding the development proposals. This formal response is included at **Appendix A**.
- 1.4 A meeting was held with HCC highways on the 3rd November 2020 to discuss their concerns. A summary of this meeting is included at **Appendix B**.
- 1.5 The TA which accompanied the planning application was subsequently updated (Revision 4) in order to address the concerns raised by HCC highways. This update included a revised access drawing and modelling of the Petersfield Road/ Bartons Road signalled junction as well as the site access junction.

- 1.6 A second meeting was held with HCC highways on the 10th February 2021 to discuss their response to the updated TA including particularly the revised access arrangements and modelling results. A number of small revisions to the site access arrangements were agreed upon to address HCC's concerns. It was also stated by HCC however that comments from the Intelligent Transport Systems (ITS) team were pending and were required to give a full picture of HCC's position on these matters. A summary of this meeting is included at **Appendix C**.
- 1.7 An informal response from HCC was provided on the 24th March 2021 including comments from the ITS team. This response identified a number of additional issues and the full HCC response is included at **Appendix D**.
- 1.8 A TA Addendum was prepared to provide a comprehensive response to the concerns raised and was submitted to HCC on the 19th April 2021. A meeting was then held on the 22nd April 2021 and follow up meetings were also held on the 19th May 2021 and the 26th May 2021. These meetings were used to converge on the proposed access design which now broadly represents the best arrangements possible to both parties.
- 1.9 An informal response was received from HCC on Tuesday 13th July 2021 and set out HCC's comments on the information submitted up to and following the meetings in May 2021. This response is included at **Appendix E**.
- 1.10 This Transport Note seeks to address the outstanding concerns and seeks to demonstrate that the outstanding points identified by HCC would not be prejudicial to the safe and efficient operation of the local highway network.

2. TRAFFIC COUNTS

- 2.1 The TA Addendum provided modelling of the Petersfield Road/ Bartons Road signalled junction ('the signalled junction'), including signalised cycle and pedestrian crossing points. Further junction modelling was provided to HCC following this meeting including a left turn filter for the Petersfield Road northern approach. This modelling demonstrated that the signalled junction could accommodate the traffic associated with the proposed development even with the introduction of the signalised crossing points.
- 2.2 HCC were concerned that the modelling for the signalled junction did not make provision for the nearby Bartons Road/ Knightwood Avenue priority junction, and the site access priority junction ('the priority junctions'). Meanwhile Paul Basham Associates maintained that the priority junctions would not have an impact on the signalled junction due to their arrangements, the volume of traffic on Knightwood Avenue, and based on the modelling already conducted on the site access junction. Nevertheless, in order to resolve this impasse, traffic surveys were carried out at the Knightwood Avenue junction during the following periods:
- Saturday 22nd May 2021 11:30-14:30
 - Thursday 27th May 2021 07:00-10:00
 - Thursday 27th May 2021 16:00-19:00
- 2.3 These survey periods are based on the network peak hours, as derived from the signalled junction traffic flows, and including an hour either side of the network peak hours.
- 2.4 During the network Saturday peak hour of 12:30-13:30, a total of 68 vehicle movements were recorded into or out of Knightwood Avenue of which the majority were left-in or right-out movements. The right-in movement, which is the only movement which could impact the Petersfield Road/ Bartons Road signalled junction, recorded only six vehicle movements which equates to one every ten minutes.
- 2.5 During the AM and PM peak hours, of 08:00-09:00 and 17:00-18:00 respectively, a similarly small number of movements were recorded into or out of Knightwood Avenue. This includes the right-in movement which experienced only four vehicle movements in the AM peak hour and only six vehicle movements in the PM peak hour.
- 2.6 The May 2021 traffic count results are included at **Appendix F**.

3. JUNCTION MODELLING

- 3.1 Following the Bartons Road/ Knightswood Avenue traffic counts, the standalone signalled junction model has been updated to also include the Bartons Road/ Knightswood Avenue priority junction and the site access priority junction.
- 3.2 This network model has been developed in consultation with JCT, the developers and providers of the LinSig modelling software. The priority junctions have been modelled in accordance with the coefficients identified by JCT for non-signalised junctions.
- 3.3 The traffic flows at the Petersfield Road/ Bartons Road junction have been checked against the modelling results included within the TA Addendum to ensure that they match. In other words, the nearby priority junctions have been added to the model but the traffic flows at the signalled junction have remained unchanged from the previous model.
- 3.4 The addition of the two priority junctions does not impact the performance of the signalled junction. The results for the network model are therefore as previously submitted to HCC for the standalone signalled junction model following the 19th April meeting. The results of the network model for the signalised movements are shown by **Table 1**.

Scenario	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)			Sat Peak (12:30-13:30)		
	Queue ¹	Delay ²	Sat % ³	Queue ¹	Delay ²	Sat % ³	Queue ¹	Delay ²	Sat % ³
Forecast 2025 Assessment Year + Committed Development + Proposed Development									
Petersfield Rd North	18.1	45.1	88.9	13.6	58.8	89.0	14.6	52.0	87.8
Bartons Road	15.0	41.7	87.3	17.5	36.3	90.3	21.6	38.6	90.4
Petersfield Rd South	16.3	40.1	91.2	17.4	35.5	91.4	19.2	29.6	89.8

Table 1: B2149 Petersfield Road/ Bartons Road Network Modelling

- Notes:
1. The mean maximum queue predicted by the model across all cycles for the whole time period.
 2. The mean delay per PCU (Passenger Car Unit) predicted by the model for the whole time period.
 3. The Degree of Saturation predicted by the model for the time period.

- 3.5 The network model suggests that the unsignalised movements, associated with the priority junctions, would operate with significant capacity and with minimal queuing or delays.
- 3.6 The modelling results also demonstrate that the signalled junction can accommodate the traffic associated with the proposed development and that there is no interaction with the nearby priority junctions in terms of capacity.
- 3.7 No adjustment has been made in this modelling exercise to account for the anticipated modal shift to walking and cycling as a result of the proposed improvements to the local walking and cycling environment. These improvements are substantial and would inevitably lead to fewer car journeys, and more walking and cycling journeys.

- 3.8 The above modelling results have also included the pedestrian/ cycle phase in every 90s cycle which is unlikely to happen in reality. This point has been acknowledged by HCC in their July 2021 response. In reality it is considered that the pedestrian/ cycle phase would be called an approximate average of once every two cycles. To account for this, 'bonus green' has been added to the phase immediately following the pedestrian/ cycle phase.
- 3.9 The pedestrian/ cycle phase (Phase F) is included within Stage 4 which is followed by Stage 1 during which the left turn from Petersfield Road north commences (Phase G). The stage minimum of Stage 4 is 2s and the intergreen time for Phase F giving way to Phase G is 8s. This means that a total of 10s delay is incurred to the start of Phase G each time the pedestrian/ cycle crossing is called. Consequently, to account for the fact that the pedestrian/ cycle phase is anticipated to be called approximately once every two cycles, a 5s bonus green has been added to the start of Phase G.
- 3.10 The results of the network model for the signalised movements, including a 5s bonus green added to the start of Phase G, are shown by **Table 2**

Scenario	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)			Sat Peak (12:30-13:30)		
	Queue ¹	Delay ²	Sat % ³	Queue ¹	Delay ²	Sat % ³	Queue ¹	Delay ²	Sat % ³
Forecast 2025 Assessment Year + Committed Development + Proposed Development									
Petersfield Rd North	16.7	39.1	84.6	13.2	56.6	87.2	13.7	47.1	84.2
Bartons Road	13.6	37.0	85.1	14.5	28.7	86.6	18.5	29.5	84.3
Petersfield Rd South	14.0	30.4	84.7	14.9	27.9	85.3	17.7	25.6	86.9

Table 2: B2149 Petersfield Road/ Bartons Road Network Modelling (With Bonus Green)

- Notes:
1. The mean maximum queue predicted by the model across all cycles for the whole time period.
 2. The mean delay per PCU (Passenger Car Unit) predicted by the model for the whole time period.
 3. The Degree of Saturation predicted by the model for the time period.

- 3.11 The modelling results show that the junction operates within capacity during all assessment periods. It is therefore evident that based on the anticipated frequency of the pedestrian/ cycle phase being called, the junction would operate with reserve capacity.
- 3.12 It is reiterated that no adjustment has been made in this modelling exercise to account for the anticipated modal shift to walking and cycling as a result of the proposed improvements to the local walking and cycling environment. These improvements are substantial and would inevitably lead to fewer car journeys, and more walking and cycling journeys.
- 3.13 The full modelling results are included at **Appendix G**.

4. ACCESS ARRANGEMENTS

4.1 Following the meeting with HCC on Wednesday 19th May, a number of tweaks were made to the proposed arrangements as follows:

- The site access road now widens to 7.3m on approach to Bartons Road and consequently provides more road space for turning movements
- The centreline of the site access has been moved slightly westwards to allow LGV turning movements to be made without crossing the centreline
- Road widths between kerbs are now not within the 3.1-3.9m range in order to discourage unsafe overtaking movements involving cyclists
- The direct tapers on approach to Petersfield Road have been lengthened to 5.0m for consistency with other direct tapers
- A slip for cyclists from the Bartons Road carriageway to the shared surface route is now provided to the east of the site access
- The signalised pedestrian crossing point is now proposed as a Toucan crossing point instead of a Puffin crossing point to allow cycle use
- There is now no tactile paving on the island of the signalised pedestrian crossing point so as to encourage pedestrians to cross the road in one movement without stopping
- The proposed shared surface signs are now shown on the drawing with a full signage strategy to be developed at the detailed design stage
- Dimensions have been added to clarify particular road widths and the lengths of the right turn lanes

4.2 Further tweaks were made following the Wednesday 26th May meeting as follows:

- The crossing point over Knightwood Avenue has been moved south and 2.5 x 25m visibility splays are shown
- The Toucan crossing point has been widened slightly to 3.0m
- A 2.0m footway is now shown on the east side of the access road with associated crossing point
- The centreline of the access road is now perpendicular to Bartons Road
- The access road now includes hatching to narrow the northbound lane and discourage simultaneous left and right turn movements
- The access tracking drawing now shows an HGV manoeuvring past a panel van instead of a car

4.3 Final tweaks were made following the Tuesday 13th July response as follows:

- Visibility splays added to the Knightwood Avenue crossing
- Kerb buildout provided at Petersfield Road/ Bartons Road junction

4.4 The design changes respond proactively the concerns raised by HCC and discussed at length during the aforementioned meetings.

4.5 The detailed nature of the design tweaks is indicative of the broad convergence and broad agreement of both parties on the best arrangements possible. Which is not to say that both parties agree on the overall acceptability of the arrangements, only that an exhaustive process has been carried out to ensure that the arrangements are as acceptable as possible.

- 4.6 The latest and final drawings showing the proposed access arrangements and improvements to the local transport network, are included at **Appendix H**.

Design Matters

- 4.7 A number of specific design matters were included in HCC's July 2021 response. These design matters are discussed in detail below.

Junction Form

- 4.8 Within HCC's July 2021 response it was identified that further justification regarding the form of junction is required, taking into consideration the traffic flows and vehicle speeds on Bartons Road. It has previously been agreed that the site will generate approximately 5,000 vehicles movements per day and as a result HCC have identified that this could trigger the need for single-lane dualling in accordance with Figure 2.3.1 included in CD 123 of the Design Manual for Roads and Bridges. It is also noted however, that within July 2021 response, that as a result of the traffic speeds, Manual for Streets is considered the relevant guidance and therefore 'engineering judgement' can be applied to determine the relevant form of junction to serve the proposed development.
- 4.9 As set out later in this report, the junction arrangements have been subject to a Stage 1 Road Safety Audit. The auditor was supplied with all the relevant traffic information including traffic flows, traffic speeds and junction modelling results. In response to the access proposals, no safety concerns were raised in response to the form of junction proposed.
- 4.10 Furthermore, a detailed junction modelling exercise has been undertaken which has modelled the proposed site access junction in isolation and alongside the nearby junctions of Bartons Road/Knightwood Avenue and the B2149 Petersfield Road/Bartons Road. The results of each of these models demonstrate that the site access would operate within capacity, with queues accommodated within the proposed right-turn lane for vehicles entering the site.
- 4.11 It is also noted in HCC's response that the turning lane is below the standard 35m identified in CD 123, and it is acknowledged that this would not be achievable within the constraints in the vicinity of the junction. The proposed right-turn lane measures approximately 18m, which is sufficient for three vehicles to queue. As identified by the junction modelling, this queue is not exceeded and therefore would not impact upon the free-flow or safety of eastbound traffic on Bartons Road.
- 4.12 On the basis of the above, it is concluded that the proposed access arrangement would be suitable to serve the proposed development.

Yellow Box Markings

- 4.13 It is identified in the response from HCC that concern remains over compliance of the yellow box markings. This is a common arrangement at junctions which may be blocked by queuing traffic in order to maintain the free flow of traffic at the junction. It is also a legal requirement that vehicles must not enter the yellow box hatching unless their exit is clear.
- 4.14 The presence of the markings will ensure that vehicles departing the site, particularly those turning right, would not be blocked by traffic queuing back from the signals at the B2149 Petersfield Road/Bartons Road junction.
- 4.15 If concerns remain, the proposed yellow box markings could be removed from the site access plans and a contribution could be secured to cover the cost of a Traffic Regulation Order (TRO) and monitoring of the operation of junction. This would then enable the junction to be delivered and should queuing from the traffic signals impede vehicles exiting the site, HCC could deliver the TRO and the yellow box markings. The contribution would be time limited and if not spent within an agreed period, this would be returned to the developer.

Tapers

- 4.16 The taper of white lining to the east of the site access is approximately 1:13 and the proposed hatching ends to the west of the Bartons Road/ Moorgate Road junction. This taper could be changed to 1:20 without impacting the width of Bartons Road however the hatching would then extend across the Bartons Road/ Moorgate Road junction. On balance it is considered that the proposed 1:13 taper is the most appropriate using engineering judgement.

Crossing Distance at Site Access

- 4.17 The crossing distance for pedestrians and cyclists is approximately 13.7m from the centre of the tactile paving. This width has been informed by the tracking movements of larger vehicles and this width has been incrementally increased through the design process following concerns raised by HCC regarding tracking movements.
- 4.18 Notwithstanding that the crossing width has been increased slightly from previous design iterations, it is not considered that the crossing distance presents a safety concern for pedestrians or cyclists due to the adequate visibility provided in all directions from the crossing points. No concerns have been raised on this matter by the latest Road Safety Audit, discussed later in this report.

Visibility at Knightwood Avenue

- 4.19 The Walking, Cycling & Horse-Riding Assessment and Review (WCHAR) identified a potential improvement to an existing crossing point across Knightwood Avenue, consisting of a kerb buildout, dropped kerbs and tactile paving. This improvement will be delivered by the proposed development in spite of this crossing point not being on a key pedestrian desire line to the proposed development.
- 4.20 The visibility at this crossing point could potentially be obscured by parked cars on the west side of Knightwood Avenue however this visibility is unchanged from the existing situation and there have been no collisions resulting in personal injury recorded at this location.
- 4.21 Traffic flows on Knightwood Avenue are also very low, with a maximum of 36 southbound vehicles recorded in any peak hour. Furthermore, southbound vehicles on Knightwood Avenue travel in the offside lane therefore even if a pedestrian were to enter the carriageway while a southbound vehicle was approaching, intervisibility would be achieved between the pedestrian and the vehicle prior to the pedestrian reaching any collision point. In this situation either the pedestrian or the vehicle would give way to the other.
- 4.22 The proposed kerb buildout, the proposed dropped kerbs and the proposed tactile paving can only be considered to represent an improvement to this crossing point. It is not considered proportional to remove parking bays on the west side of Knightwood Avenue.

Cycle Connection on Martin Road

- 4.23 The emergency access to Martin Road also provides cycle access to Martin Road which itself provides access to National Cycle Network (NCN) Route 22 to the west. The proposed connection from the site to NCN Route 22 is via the carriageway of Martin Road.
- 4.24 To the west of the emergency/ cycle access Martin Road is a cul-de-sac providing access to a handful of residential properties and a car dealership. The use of lightly trafficked streets for cycle routes is endorsed by LTN 1/20 and this provision is considered preferable to a short section of shared surface as it is considered preferable to segregate cyclists from pedestrians.

Kerb Buildout at Petersfield Road/ Bartons Road Junction

- 4.25 There is a proposal from Sustrans to improve NCN Route 22 which includes signalised crossing points over Bartons Road. This is the same arrangement as proposed by the proposed development. A preliminary drawing of the Sustrans improvements has been reviewed and the crossing points over Bartons Road are in approximately the same position as proposed by the proposed development, with the cycle crossing proposed by the proposed development located slightly further west.
- 4.26 The location of the cycle crossing proposed by the proposed development is considered the preferable one as it retains the existing kerbed island which provides shelter for any pedestrians who may be required to complete their crossing in two stages. It is noted that the arrangements proposed by the proposed development have been carefully considered while the Sustrans proposals are currently in a much more preliminary form. Nonetheless it is evident that the arrangements proposed by the proposed development are consistent with the Sustrans proposals albeit the cycle crossing is slightly (preferably) further west.
- 4.27 The Sustrans improvements also include a kerb buildout into Petersfield Road from Bartons Road heading south for at least until the Petersfield Road/ Stockheath Road junction approximately 200m to the south. This improvement is not considered necessary to enable the proposed development however and the delivery of this kerb buildout will not be the responsibility of the applicant. Accordingly, this kerb buildout is not shown on the access drawings. Alternatively, a smaller kerb buildout is provided on the southern side of Bartons Road which narrow the cycle crossing point and ensures that a more significant kerb buildout could be delivered in future by third parties without requiring the relocation of the crossing point or associated signal equipment.
- 4.28 With regard to cycle movements approaching the crossing points from Bartons Road it is reiterated that the crossing point to the east is proposed to be a Toucan crossing point which facilitates these cycle movements.

5. VEHICLE TRACKING

5.1 The site is expected to be accessed as follows:

- Three to four times per week by an HGV (for McDonald's) with expected delivery times between 19:00-23:00
- Three to four times per week by a vehicle of similar size to a large refuse vehicle (for Costa)
- One refuse vehicle per week for the proposed apartments

5.2 This number of HGV movements has been confirmed by Martin Brower who are McDonald's logistics and delivery partner, with this confirmation letter included at **Appendix I**.

5.3 All relevant turning movements at the site access have been tracked, at a speed of 15kmph. All tracking drawings are included at **Appendix J**.

5.4 The Road Safety Auditors have confirmed that the vehicle tracking drawings were specifically considered as part of the RSA and that the arrangements are in their view considered to be safe. The Road Safety Auditors reached this view with reference to CD123 paragraph 5.2 which states:

Allowance shall be made for the swept turning paths of the worst-case design vehicle which is expected to use the priority junction, unless:

- 1) the design vehicle is expected to form only a very small percentage of the total number of vehicles that will use the junction; and*
- 2) any swept path conflicts as a result of the design vehicle encroaching into other lanes will not occur on bends.*

5.5 Based on HCC's estimation of 24hr turning movements at the site access, the anticipated three to four HGV movements would equate to approximately 0.1-0.2% of the total turning movements at the junction. It's in this context, and with reference to the tracking drawings, that the Road Safety Auditors have determined that these turning movements do not represent a safety concern.

5.6 It is accepted that a condition to submit an Operational Management Plan (OMP) will be appended to any planning permission and this will cover the following:

- Details of frequency, vehicle types and timings of deliveries
- Arrangements to manage the car parks and the McDonald's and Costa whilst deliveries are undertaken
- Details of vehicle turning movements on-site
- Summary of routes within the site for the movement of goods to the restaurants
- Information relating to refuse and recycling collections
- Identification of member of staff responsible for the implementation of the OMP

6. ROAD SAFETY AUDIT

Summary

- 6.1 A Stage 1 Road Safety Audit (RSA) has been conducted by M&S Traffic Ltd on the proposed access arrangements and transport improvements. The RSA Brief provided to M&S Traffic Ltd contained all the relevant information to allow the RSA to be carried out. This RSA Brief also included comments received by HCC on the proposed scheme for full disclosure. The RSA Brief is included at **Appendix K**.
- 6.2 The RSA has identified a number of perceived issues with the proposed improvement scheme. The results of the RSA, including the Designer's Response, are included at **Appendix L**.
- 6.3 A summary of the issues raised by the RSA are shown by **Table 3**.

Number	Problem	Recommendation	Response
3.1.1	Lack of detail regarding carriageway surfacing	High friction surfacing should be provided	High friction surfacing will be provided with full details provided at the detailed design stage
3.1.2	Lack of detail regarding drainage	Drainage details should be provided	Drainage details will be provided at the detailed design stage
3.1.3	Lack of detail regarding surfacing of cycle routes	High friction surfacing should be provided	High friction surfacing will be provided with full details provided at the detailed design stage
3.3.1	The stagger distance between junctions is too short and presents potential visibility concerns	The stagger distance should be 50m	DMRB does not apply to Bartons Road and the junctions in question are existing, as confirmed by HCC
3.3.2	Excessive waiting for pedestrians could lead to crossing during red lights	The junction should be assessed at Stage 3 Road Safety Audit	The cycle times are 90s which is standard for signalled junctions and is not an excessively long wait time
3.4.1	Potential lack of visibility at pedestrian crossing due to hedgerow growth	The hedgerow should be regularly cut back	The hedgerow should be regularly cut back as required as part of HCC's maintenance programme
3.4.2	An existing parking bay could obscure visibility to the north	The parking bay should be removed	This is an existing crossing point which is being improved and removal of parking bays would not be a proportional response
3.5.1	Lack of detail regarding lighting	Lighting details should be provided	Lighting details will be provided at the detailed design stage

Table 3: Summary of RSA Issues and Designer's Response

- 6.4 The items coloured green are all accepted and will be addressed at the detailed design stage. The items coloured red are discussed in detail below.

Problem 3.3.1

- 6.5 The description of Problem 3.3.1 is as below:

Location: Proposed access junction with Bartons Road.

Summary: Left / right stagger could lead to side swipe collisions or rear end shunt collisions.

A staggered junction is proposed between the access road and Knightwood Avenue. This is a 'left / right' stagger, with side road centre lines scaled at approximately 37m apart on a posted 30mph road. Vehicles waiting to right turn into one side road could obstruct the visibility to the left out of the opposite side road such that an exiting vehicle could pull out into the path of an unseen main road vehicle, which could lead to side impact collisions or rear end shunts.

RECOMMENDATION

It is recommended that in accordance with CD 123 para 2.24 a minimum stagger distance of 50m, to ensure safe operation should be the preferred arrangement; however, this may be unachievable in this instance.

- 6.6 It is noted in the response from HCC dated 13th July 2021 that no formal decision regarding this issue has been reached. Our response on this point is set out below.

Traffic Flows

- 6.7 It is identified within the Road Safety Audit that vehicles waiting to turn right either into the proposed site access or Knightwood Avenue could limit the visibility for vehicles from the opposing junction wishing to turn right. This issue is therefore present when a vehicle is waiting to turn right into Knightwood Avenue as this would potentially block the visibility for drivers waiting to turn right out of the site access. This issue is also present for vehicles waiting to right out of Knightwood Avenue, with vehicles waiting to turn right into the site potentially obscuring visibility. The total surveyed traffic flows for each of these movements is shown by **Table 4**.

Survey Day/Time	Total Vehicles Turning Right into Knightwood Avenue	Total Vehicles Turning Right out of Knightwood Avenue
Thursday 08:00-09:00	4	22
Thursday 17:00-18:00	6	14
Saturday 12:30-13:30	6	27

Table 4: Traffic Movements

- 6.8 These traffic flows demonstrate that during the peak hours a maximum of one vehicle every 10-minutes will turn right into Knightwood Avenue and therefore potentially impact upon the visibility for vehicles turning right out of the site. This therefore is an infrequent occurrence throughout the peak hours and if a driver emerging from the site access were to be concerned about right-turning traffic at Knightwood Avenue blocking their visibility they could wait for that vehicle to complete their turn into the junction and therefore clear the visibility splay.

- 6.9 Based on the modelling undertaken for this junction, vehicles turning right into Knightwood Avenue would be subject to a 1.7 second delay. It is therefore considered that drivers turning right out of the proposed site access would wait this very short period until their visibility was cleared.
- 6.10 With regards to vehicles turning right out of Knightwood Avenue this equates to a maximum of one vehicle every two-minutes whose visibility could be obscured by right-turners into the site access. Similar to the above situation, based on the junction modelling, vehicles turning right out of Knightwood Avenue would only have to wait 1.5 seconds whilst a vehicle turns right into the proposed site access. Again, it is not reasonable to assume that a driver would wait this short amount of time before deciding to emerge from the junction should visibility be obscured.
- 6.11 Therefore, based on the low traffic flows and the extremely short period where visibility would be obscured, it is not considered that right-turning vehicles on Bartons Road would cause a safety issue for vehicles turning right out of either the proposed site access or Knightwood Avenue.

Traffic Speeds

- 6.12 Automatic Traffic Counts were undertaken either side of the proposed site access. A summary of the 85th percentile traffic speeds is shown by **Table 5**.

Location	Eastbound 85 th Percentile Speed	Westbound 85 th Percentile Speed
East of Site Access	32.5mph	32.8mph
West of Site Access	29.5mph	29.0mph

Table 5: Automatic Traffic Counts – 85th Percentile Speeds

- 6.13 Based on the 85th percentile speeds and assuming a car length of 6.0m, the length of time a vehicle would be obscured, even just partially, by a vehicle waiting to turn right is set out below:
- Eastbound vehicle passing Knightwood Avenue right-turn lane – 0.45 seconds
 - Westbound vehicle passing site access right-turn lane – 0.41 seconds
- 6.14 The timings identified above are significantly below the two second driver reaction time used in Manual for Streets (paragraph 7.5.4) and below the Highway Code reaction time of 0.67 seconds. It is therefore a very short period where a vehicle will be obscured (even just partially) by a right-turning vehicle and well within the reaction times identified within the nationally recognised guidance. The time for which the vehicle would be fully obscured will be significantly less than the times identified above, therefore drivers emerging from the site access will either see a vehicle as it starts to pass a right-turning vehicle or as it emerges from the other side.

- 6.15 Instances where visibility is blocked momentarily occurs at any priority junction, as traffic travelling in the primary direction past the junction would block clear visibility to those vehicles travelling in the secondary direction to the left of the junction. This is an acceptable occurrence at all junctions and therefore it is not considered that this represents a safety issue in this instance.

Left/ Right Stagger Junctions

- 6.16 The arrangement of the site access in relation to the junction of Knightwood Avenue on Bartons Road, operated with traffic from the former SSE building. This arrangement would also occur for any development which would come forward on this site accessed from Bartons Road, as the proposed access location is the only feasible location along Bartons Road.
- 6.17 This issue would therefore apply to any development on this site, which is allocated in the Havant Local Plan and has been identified as suitable for development. If this were considered to be an issue which would prevent development coming forward, this should have been identified during the development of the Local Plan.
- 6.18 The Road Safety Audit team have confirmed that this 'issue' would apply to any left/ right stagger junction where the spacing between the minor roads is less than the visibility splay required from each. This is regardless of traffic volumes.

Problem 3.3.2

- 6.19 The description of Problem 3.3.2 is as below:

Location: Signalised junction.

Summary: Operation of signalised could lead to rear end shunts or vehicle to pedestrian collisions.

No modelling data was supplied for assessment, however the emails received state that the junction will operate under 90% saturation. However, to achieve this the pedestrian call up will not operate during every cycle, however the cycle time is stated as being 90 seconds. Excessive waiting for pedestrians could lead to crossing without a green signal in their favour which could lead to rear end shunts or vehicle to pedestrian collisions.

RECOMMENDATION

It is recommended that the junction should be assessed at Stage 3 Road Safety Audit.

- 6.20 The same modelling results contained within this report were supplied to the RSA team which assume that the pedestrian/ cycle crossing would be called once in every two cycles. This recognition that the pedestrian/ cycle crossing would not be called every cycle is as suggested by HCC in their July 2021 response.

- 6.21 However, while the anticipation is that the pedestrian/ cycle crossing would be called once every two cycles, the pedestrian/ cycle crossing *could* be called every cycle should there be sufficient pedestrian/ cycle demand. This means that pedestrians and cyclists would never be required to wait more than 90s in order to cross under a green light.
- 6.22 A 90s cycle time is standard for new and existing signalled junctions and 90s is not an excessive time for pedestrians or cyclists to wait for a green light. There is no evidence to suggest that a 90s cycle time results in pedestrians or cyclists losing patience and crossing under a red light.
- 6.23 It is acknowledged that pedestrian and cycle demand could increase in future, if the planned improvements to the pedestrian and cycle environment leads to an increase in the number of pedestrians and cyclists. Indeed, this is the purpose of the improvements. However, should the number of pedestrians and cyclists increase, this would be accompanied by an approximately proportional decrease in the number of car movements at the junction. As such the capacity of the junction would not be negatively impacted by any such increase in pedestrians and cyclists.
- 6.24 Notwithstanding the above, it is agreed that the junction modelling could be re-assessed at the Stage 3 RSA stage.

Problem 3.4.1

- 6.25 The description of Problem 3.4.1 is as below:

Location: Northern kerbline, at the proposed pedestrian refuge crossing point.

Summary: Operation of signalised could lead to rear end shunts or vehicle to pedestrian collisions.

Whilst pedestrian intervisibility appeared adequate there was scope for the visibility splay to the east to be improved and obstructed should the hedge line continue to grow. Restricted visibility could lead to vehicle to pedestrian collisions or rear end shunt collisions.

RECOMMENDATION

It is recommended that the hedge should be cut back and that a regular maintenance programme to retain the visibility splay should be employed.

- 6.26 The hedgerow will be cut back to the edge of the highway boundary when the scheme is implemented and maintained thereafter by HCC as part of their maintenance programme.

Problem 3.4.2

6.27 The description of Problem 3.4.2 is as below:

Location: *Proposed crossing point in Knightwood Avenue.*

Summary: *Lack of visibility could lead vehicle to pedestrian collisions or rear end shunt collisions.*

The crossing point immediately follows a parking bay, where parked vehicles could restrict intervisibility. Restricted restrict visibility could lead to vehicle to pedestrian collisions or rear end shunt collisions.

RECOMMENDATION

It is recommended that parking bays should be removed to provide an adequate visibility splay.

- 6.28 As discussed earlier in this report, this improvement was identified by the Walking, Cycling & Horse-Riding Assessment and Review (WCHAR). This improvement will be delivered by the proposed development in spite of this crossing point not being on a key pedestrian desire line to the proposed development.
- 6.29 The visibility at this crossing point is unchanged from the existing situation and there have been no collisions resulting in personal injury recorded at this location.
- 6.30 Traffic flows on Knightwood Avenue are also very low, with a maximum of 36 southbound vehicles recorded in any peak hour. Furthermore, southbound vehicles on Knightwood Avenue travel in the offside lane therefore even if a pedestrian were to enter the carriageway while a southbound vehicle was approaching, intervisibility would be achieved between the pedestrian and the vehicle prior to the pedestrian reaching any collision point. In this situation either the pedestrian or the vehicle would give way to the other.
- 6.31 The proposed kerb buildout, the proposed dropped kerbs and the proposed tactile paving can only be considered to represent an improvement to this crossing point. It is not considered proportional to remove parking bays on the west side of Knightwood Avenue.

7. INTERNAL SITE LAYOUT

7.1 At the 19th May and 26th May meetings, concerns were raised by HCC regarding the queuing capacity of the McDonald's drive-thru, with these concerns reiterated in subsequent communications. The drive-thru layout discussed at these meetings provided queuing capacity for 17 vehicles.

7.2 The queuing capacity for this previous layout had been informed by a queue length survey carried out at a similar McDonald's site at Swaythling, with full results included in ADL's Trip Generation and Servicing Advice Note which has been appended to previous reports. This Swaythling site is considered to be comparable to the proposed restaurant by ADL for the following reasons:

- Swaythling is similarly located in an edge of town/suburban area
- Swaythling is of a similar scale to the proposal has side by side drive thru facilities
- Swaythling has a similar level of market share

7.3 The Trip Generation and Servicing Advice Note also includes a table which compares the Swaythling with the proposed McDonald's site. A copy of this table is shown by **Figure 1**.

Restaurant and Store No	Swaythling Store No 739	Proposed Barton Road
Restaurant Type	Two storey pub conversion	Single Storey Purpose Built
Floor Area	326sqm	371sqm
No of Seats	73	100
Parking Provision	32	49 (shared with Costa)
Drive Thru Facilities	Side by Side	Side by Side
Population within 5 Km	245,419	106,290
AADT	33,524	17,259
Number of Surrounding McDonald's Restaurants Within 5km (incl. store)	5	3
Population per McDonalds Restaurant	49,084	35,430

Figure 1: Copy of Comparison Table from ADL's Trip Generation and Servicing Advice Note

7.4 It should be noted that the population per McDonald's restaurant for the Swaythling site is approximately 30% higher than that for the proposed site. It is therefore evident that the Swaythling site provides a reasonable and robust comparison.

7.5 The Swaythling survey was carried out in 2016 and recorded queues of between 2 and 12 vehicles during the Friday peak period (16:00-19:00), and queues between 1 and 13 vehicles during the Saturday peak period (11:00-15:00). This queue is counted from the car that is collecting their meal, which is the final part of the queuing process. It is concluded in the note that the previous provision of space for 17 vehicles to queue was sufficient to accommodate any expected fluctuations in queuing demand.

- 7.6 Notwithstanding that the previous drive-thru layout provided queuing capacity for 17 vehicles, the layout has now been revised to increase the queuing capacity to 22 vehicles, to respond positively to HCC's concerns. This is now in excess of the maximum survey recorded at Swaythling by 9 vehicles, or 69%. This is in spite of the proposed McDonald's site having a smaller catchment than the Swaythling site and the previously identified queuing length being considered sufficient to accommodate any fluctuations in queuing demand.
- 7.7 It is therefore evident that the proposed site provides comfortably sufficient queuing capacity, and it is not expected that queues would exceed the available capacity on a day-to-day basis. It is noteworthy that average queues are around half of the maximum queues and as such the drive-thru lane would be operating significantly below the maximum queue throughout the peak periods.
- 7.8 In the unlikely event that queues were to exceed the available capacity, the drive-thru access is located approximately 65m south of Bartons Road, meaning that approximately 13 additional vehicles would be required to queue before the existing adopted highway were affected. This would equate to a total queue of 35 vehicles, in excess of the maximum survey recorded at Swaythling by 22 vehicles, or 169%. This level of queueing would clearly not occur and therefore there is no realistic prospect of the existing adopted highway being affected.
- 7.9 Management of queuing will be the responsibility of the Business Manager, who will actively manage queuing so that it does not impact beyond the available space for drive-thru customers. During COVID restrictions this has been evident as the number of staff able to work within each restaurant is limited and therefore orders have taken slightly longer to prepare in some instances. It is not considered that this is representative of 'normal' conditions and therefore proposed queuing capacity is more than sufficient to accommodate the expected customer demand.
- 7.10 Furthermore, despite the increase in queuing capacity HCC have not identified a level at which they would be satisfied that the maximum queues would be accommodated, despite evidence demonstrating that significant excess queuing capacity is being provided. It is considered a reasonable expectation that the Highway Authority would indicate what provision of queueing capacity would be acceptable, and for this to be supported by evidence. It is not considered reasonable for the Highway Authority to incrementally request increased queuing capacity with no indication of what level of queueing capacity would be considered acceptable.

- 7.11 The queuing capacity for McDonald's has been incrementally increased to respond to HCC's concerns and is now significantly in excess of anticipated demand which is itself informed by robust evidence. There is therefore no reason why the queuing arrangements should not be considered to be acceptable.

Martin Road

- 7.12 In HCC's July 2021 response it was suggested that concerns relating to queuing for McDonald's could potentially be overcome by providing access to the residential part of the development from Martin Road. This is not considered necessary given that queuing capacity will be provided significantly in excess of the anticipated demand, as already discussed.
- 7.13 Furthermore, in the unlikely instance that queues were to extend beyond the McDonald's drive-thru, the inconvenience caused for vehicles wishing to access the residential part of the development would be minimal with these vehicles required to wait a matter of seconds before continuing their journey. There is also no reason to believe that this situation would present a safety concern.
- 7.14 The proposed access arrangements from Bartons Road provide safe and suitable access to the both the drive-thru and residential parts of the proposed development. There is considered to be no benefit to providing an alternative access to the proposed development from Martin Road. Indeed a number of concerns were raised by HCC with regard to this proposal in their October 2020 response.

8. ACCESSIBILITY

- 8.1 The site is already sustainably located, with access to the site possible by walking, cycling and public transport. Nevertheless, the proposed development will deliver the following sustainable transport improvements:
- Signalised cycle and pedestrian crossing points across Bartons Road
 - Pedestrian crossing point with refuge island across Bartons Road
 - Shared surface route for 380m along Bartons Road
 - Cycle slip from Bartons Road carriageway to shared surface route
 - Cycle and pedestrian link from Bartons Road to Martin Road
 - Formal crossing point and kerb buildout on Knightwood Avenue
 - Footway on existing desire line north of Martin Road
- 8.2 The improvements represent a significant upgrade to the overall walking and cycling environment in the vicinity of the site and would be to the benefit not only of site users, but of existing residents and street users in the local area.
- 8.3 It is understood that the improvements to the Bartons Road crossing points, and the Bartons Road shared surface route, are also aspirations of HCC and proposals have also been prepared by Sustrans which are consistent with the proposals associated with the proposed development. The proposed development would deliver these improvements through the Section 278 process which would go a significant way to realising HCC's and Sustrans' aspirations.
- 8.4 These improvements would be delivered by the proposed development at significant cost. The extent to which these improvements would be secured from an alternative scheme on the proposed development site is not known however it is possible that a smaller scheme would not deliver the same package of improvements.

9. SUMMARY AND CONCLUSION

- 9.1 This Transport Note (TN) has been prepared by Paul Basham Associates on behalf of Fortitudo Ltd to support a planning application for a mixed-use development comprising 175 apartments, a McDonald's drive-thru and a Costa Coffee drive-thru, at the site of the former Scottish and Southern Energy offices on Bartons Road, Havant.
- 9.2 A planning application for the proposed development was validated in October 2020 and was accompanied by a Transport Assessment. A series of subsequent discussions have taken place with Hampshire County Council (HCC) on a formal and informal basis. This TN responds to the most recent comments made by HCC on Tuesday 13th July 2021.
- 9.3 The Petersfield Road/ Bartons Road model has been updated to include the nearby Bartons Road/ Knightswood Avenue and site access priority junctions. The modelling results demonstrate that the signalled junction can accommodate the traffic associated with the proposed development and that there is no interaction with the nearby priority junctions in terms of capacity. These results also represent a worst case as no adjustment has been made for the modal shift which would inevitably be associated with the proposed accessibility improvements.
- 9.4 The design of the access and improvement scheme on Bartons Road has been amended following numerous meetings and correspondence with HCC. These amendments demonstrate a proactive and positive approach to addressing HCC's concerns and the latest and final design represents a broad convergence between the parties on the best arrangements possible. The comments raised by the Road Safety Audit have been addressed, or will be addressed at the detailed design stage. The tracking movements can be safely accommodated and do not represent a concern to the Road Safety Auditors.
- 9.5 The proposed development will deliver a significant upgrade to the overall walking and cycling environment in the vicinity of the site, to the benefit of new and existing users. These improvements would be delivered at significant cost.
- 9.6 In summary, the proposed development does not present significant capacity concerns, does not present significant safety concerns, and improves the local walking and cycling environment. As such it is considered that there is no transport reason which would support an objection to the proposed development.

Appendix A

Havant Borough Council
Civic Offices
Civic Centre Road
Havant
PO9 2AX

*Economy, Transport and Environment Department
Elizabeth II Court West, The Castle
Winchester, Hampshire SO23 8UD*

Tel: 0300 555 1375 (General Enquiries)
0300 555 1388 (Roads and Transport)
0300 555 1389 (Recycling Waste & Planning)
Textphone 0300 555 1390
Fax 01962 847055
www.hants.gov.uk

Enquiries To Tom Fisher
Direct Line 0370 779 7381
Date 19 October 2020

My reference 029934
Your reference APP/20/00658
Email havantdc@hants.gov.uk

Dear Mr Eaves,

Proposed Development site (former Electricity Board site), Bartons Road, Havant

Proposals: Mixed-use development comprising 191 apartments and two drive-through restaurants, together with associated access, parking and landscaping | Proposed Development site (former Electricity Board site), Bartons Road, Havant

Thank you for consulting the Highway Authority for the above application which seeks permission for 191 apartments and two drive through fast food restaurants. The site is located to the south of Bartons Road and to the east of Petersfield Road and used to accommodate former office buildings which have been demolished.

Policy

The Transport Assessment, which has been submitted to support this application, states that this site is allocated within Havant Borough Council's emerging draft Local Plan under policy H38 which is correct. The H38 policy is for a for mixed use development of around 45 dwellings and a builders yard and should be for Havant Borough Council to respond how this development may or may not meet this criteria.

In addition to this, the policy sets out that the H38 site should provide separate access points for the commercial and the residential elements, to the satisfaction of the Highway Authority. As presented, this does not meet the policy requirements and should be revisited by the applicant.

*Director of Economy, Transport and Environment
Stuart Jarvis BSc DipTP FCIHT MRTPI*

Personal Injury Accident (PIA) data

The applicant has used data from CrashMap which isn't considered acceptable by the Highway Authority to support a planning application. The latest five year data should be obtained from Hampshire Constabulary and resubmitted for the Highway Authority to review. Additionally, the commentary provided does not correspond with the accident plot shown within the Transport Assessment, in particular the accidents located at the Bartons Road/Petersfield junction and the one outside the proposed access location on Bartons Road and two nearby the proposed Martin Road access. These need to be fully investigated to establish any underlying accident trend which may be exacerbated by this development.

Depending on any amendments to the access strategy and therefore distribution of traffic to the site the study area may need to be revised. The Highway Authority is aware of an identified accident concern at the New Lane/Crossland drive access.

Site Accessibility

To understand the accessibility of the proposed development to sustainable modes of transport, the National Travel Survey (NTS) has been referenced. The NTS identifies that pedestrians are willing to make journeys on foot up to 3.2km away. Similarly, the survey states that the maximum distance people are willing to cycle is 8km.

The Highway Authority does not agree with these assumptions and instead acknowledges the findings within the CIHT's 'Providing for Journeys on Foot' document which identifies that the preferred maximum walking distance is considered to be 2km, whilst the maximum cycling distance is 5km. The NTS data acknowledges that the proportion of journeys above these distances by these modes is significantly less than those within these distances. Therefore, the view remains that sustainability assessments should be based on the CIHT data. These parameters have not been replaced within the NTS document.

It does not appear that the applicant has provided any cycle infrastructure provision to access the wider network and local facilities, in particular the schools and other local facilities to the north and this should be fully investigated. The applicant should note that there is a wider cycle strategy along Bartons Road which the application would be expected to tie into and the Highway Authority is willing to discuss this in more detail.

There does not appear to be suitable pedestrian provision internally in the site to achieve connectivity to existing provision on Bartons Road and Martin Road and should be revisited.

Site Access

Director of Economy, Transport and Environment
Stuart Jarvis BSc DipTP FCIHT MRTPI

The proposals include two access points, one to the north, onto Bartons Road and one to the south of the site, onto Martin Road.

Bartons Road Access

The access onto Bartons Road, as shown on the site plan drawing number 9303/100, is existing and it does not appear that the applicant is proposing to make any alterations to it. Notwithstanding operational capacity concerns which will be highlighted later in this response, the Highway Authority is concerned that the existing access is not suitable for the quantum and nature of the proposed development.

The Highway Authority appreciates that the existing access has accommodated previous use, however the proposed development will increase vehicular movements through the access and the trips will be different in nature and due to the proposed fast food uses, a higher proportion of trips would be anticipated to be unfamiliar with the arrangements.

As part of a nearby development, Land to the West of Havant Crematorium, has secured a financial contribution to the Bartons Road/Petersfield Road junction in the form of extending the left turn lane on Bartons Road to circa 28 meters in length. The location of this access needs to ensure that there is sufficient distance and no safety issues with the relationship between the existing access and proposed improvement.

Additionally, there is a vehicular access to the Havant and Waterlooville Football Club which should be considered when reviewing the current access. The current arrangement shown would not be acceptable in operational terms.

Martin Road

The access as shown on drawing number 106.0019.002, proposes a standard bellmouth access to serve the site and shows visibility splays of 43m which is based on the current speed limit of Martin Road. HCC TG3 states that splays and design of the junction should be based on recorded speeds.

The drawing needs to be shown in more detail and show the existing accesses in the vicinity of the proposed to review in the wider context, this includes the car centre access, St Albans Road and access to the adjacent building. Additionally, there are a number of highway trees which look to be of good value which should be included on the access plan to assess the impact the proposed access may have.

The horizontal alignment of the internal access road is not suitable as proposed and has not been tracked for vehicles accessing and egressing at the same time.

Consideration must also be given to the appropriate level of use of the Martins Road access in relation to the impacts on the residential road network.

Internal Access Road

Director of Economy, Transport and Environment
Stuart Jarvis BSc DipTP FCIHT MRTPI

As highlighted, the emerging H38 policy states that the mixed land uses should provide separate accesses and therefore the internal road layout should reflect this. If the applicant is minded to continue to propose a link through, against Havant Borough Council's emerging policy, the access road should be fully tracked from access to access to ensure connectivity through the site. The access to the most eastern fast food outlet appears to be too close to the access road and turning right then left may not be achievable without over running into the opposite carriageway or having to undertake a dangerous manoeuvre. If the access is to be retained consideration will also need to be given to the potential for through routing traffic which should be discouraged.

Access Strategy

The access strategy, for vehicles and more sustainable travel modes should be reconsidered and designed in accordance with existing design standards and HCC Technical Guidance notes. The accesses should be accompanied by Stage One Road Safety Audits and should also take note of the emerging policy as previously highlighted. The highway boundary should also be imposed on to the plans to ensure there is not third-party land involvement.

Please note that the Highway Authority is unable to fully review the access proposals due to the above and reserve the right to make further comments once the above points have been met. It is advised that the applicant makes contact with the Highway Authority before any resubmission to discuss access options.

Parking

The level of proposed parking provision will be assessed by Havant Borough Council as their role as the parking authority. The Highway Authority request to be contacted if HBC does not approve the proposed parking numbers.

Trip Generation

The applicant is proposing to reduce the potential level in trips associated with the new land uses by netting off trips associated with the existing land use. It is acknowledged that this is a brownfield site, however as the site is clear, and has been clear with no activity, for a number of years it is not agreed that this approach is reasonable in this location. The existing land use is understood to be B1 however, there is no possibility of this site being operational at this time as it's current status could not give rise to any trip generation.

Notwithstanding the above, the parameters used to obtain trip generation rates from the TRICS website for the office appears high for the site location and the Highway Authority does not agree that all sites used are comparable to the previous SSE office use.

Director of Economy, Transport and Environment
Stuart Jarvis BSc DipTP FCIHT MRTPI

The applicant has used Greater London as a site location for one of the sites and will need further explanation as to why this is considered appropriate as car ownership levels are generally much lower in that location compared to Havant and may not be comparable.

The Highway Authority requests further detailed commentary regarding the TRICS parameters used and how they are comparable to this site.

A further reduction in trip generation has also been applied to account for pass-by, transferred and diverted trips. It is acknowledged that there will be a proportion of trips which will already be on the wider road network, in particular Petersfield Road. It is not clear as to how the 80% reduction has been derived from other than commentary regarding a comparison site in Totten. The Transport Assessment should include details and evidence to agree a percentage reduction.

It is not envisaged that there will be a large number of pass-by trips on Bartons Road and therefore the majority of trips will be making a number of manoeuvres through the Bartons Road/Petersfield Road junction. Specifically turning into and out of Bartons Road which will increase the number of right turn movements which traditionally reduce operational capacity at junctions.

There is an existing McDonalds site located on Park Road South which does not have drive-through provision and it is not known if this proposed site will transfer trips from here, or if this is replacing the existing site. The Highway Authority requests review of the retail impact assessment for the drive thru units, or an alternative summary to gain an understanding of the catchment area and forecast demand for the site.

Trip Distribution

The Transport Assessment does not provide any distribution analysis to review and needs to be provided to establish the impact on the local road network. It needs to be considered against the access road strategy and if trips will divert through the residential roads to the south of the site to access the fast-food outlets and residential element.

Junction Analysis

There has not been any junction analysis to assess the impact of this development site on local junctions. Given the concerns raised above it is considered appropriate at the minimum to assess the following junctions;

- Site access/Bartons Road
- Bartons Road/Petersfield Road
- Site access/Martin Road

Director of Economy, Transport and Environment
Stuart Jarvis BSc DipTP FCIHT MRTPI

Other junctions could be requested by the Highway Authority depending on the outcome of revised trip generation and distribution assessments. It is advised that the applicant discusses this with the Highway Authority to agree on a suitable scope and study area and whether traffic surveys will need to be undertaken or if existing survey data can be used.

Travel Plan

The Travel Plan is being assessed by Hampshire County Council's Travel Planning team and a response will be sent separately to the applicant if any changes are required.

Recommendation

Having regard to the above the Highway Authority is not in a position to offer a positive recommendation to the planning application and further detailed work is required by the applicant. The Highway Authority would welcome discussion with the applicant if they wish to agree on fundamental parameters and detail which is missing at this time from the Transport Assessment.

I hope the above is clear and please contact Tom Fisher using the details above.

Yours sincerely,

Tom Fisher

Director of Economy, Transport and Environment
Stuart Jarvis BSc DipTP FCIHT MRTPI

Appendix B

Alex Stephenson

From: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>
Sent: 13 November 2020 14:20
To: Alex Stephenson
Cc: Rob Hardyman
Subject: RE: Former Electricity Board site, Bartons Road, Havant - APP/20/00658
Attachments: Bartons Road Cycleway Works

Hi Alex

I have commented where appropriate below.

I am still reviewing the ADL work and will get back to you with comments but I hope the other information is clear.

Kind Regards

Tom Fisher
Senior Transport Planner
MSc Transportation Planning and Engineering
0370 779 7381

Highways Development Planning
Hampshire County Council
2nd Floor Elizabeth II Court West
The Castle Winchester SO23 8UD



Hampshire County Council operates a pre-application highway advice service for developers.

Hampshire County Council welcomes and encourages discussions before a developer submits a planning application. Please follow this link for further information

<https://www.hants.gov.uk/transport/developers/preapplication>

From: Alex Stephenson <a.stephenson@paulbashamassociates.com>
Sent: 04 November 2020 12:16
To: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>
Cc: Rob Hardyman <r.hardyman@paulbashamassociates.com>
Subject: RE: Former Electricity Board site, Bartons Road, Havant - APP/20/00658

Hi Tom,

Thanks for meeting me yesterday, was very useful. I've summarised our meeting below and I trust you agree that this accurately reflects our discussion.

Personal Injury Accident Data

AS explained that obtaining data from Hampshire Constabulary had not been possible previously due to time constraints. AS agreed that data from Hampshire Constabulary would be provided in an updated TA as well as analysis of this data.

TF requested that the Crossland Drive/ St Albans Road junction is included in the analysis.

Site Accessibility

TF said that S278 works had been secured from other developments on Bartons Road to deliver a 3.0m shared cycle/ footway between Martin Road and Comley Hill. TF said that HCC would look to secure an extension of this cycle route from Martin Road to Petersfield Road via S278 works or financial contribution. TF will send general arrangement plans of the existing proposals.

TF said that the internal pedestrian routes, including particularly the route from Martin Road to Bartons Road, should be improved. TF said that these routes should be segregated from vehicles and not provided by shared surface car parking areas.

Traffic Impact Assessment

AS explained that a Trip Generation and Servicing Advice Note has now been provided by McDonald's transport consultant which contains trip rates and 'pass-by' rates based on surveys carried out at an existing McDonald's site. TF agreed that he would review the Note and confirm its acceptability if appropriate.

It was agreed that pass-by trips from Bartons Road and Petersfield Road would be attributed proportionally according to baseline traffic flows.

TF reiterated that modelling is required of both site accesses, and the Petersfield Road/ Bartons Road signalled junction. TF agreed that junction counts associated with committed development would provide an acceptable baseline in light of the difficulty in obtaining new traffic counts at this time.

No agreement was reached on the issue of netting off trips associated with the existing land use. It was agreed that both scenarios are modelled in the first instance with the results used as a basis for discussion.

TF requested a new TRICS search to identify the trip generation of the existing B1 office use. TF will suggest trip rates used for a nearby committed development.

Access

TF highlighted that policy H38 of the Havant Borough Council's emerging draft Local Plan stipulates separate access points for the commercial and residential elements of the allocation. TF said that HCC would resist a through route for vehicles between Martin Road and Bartons Road and that HCC's preference would be for a single vehicular access point from Bartons Road. **Just to clarify, it will be for you and your client to propose a suitable and safe access strategy. HCC do not prefer one or another at this time as more information needs to be seen. Martin Road and Bartons Road access points both have constraints which will need to be overcome.**

TF said that if the Martin Road access is retained then speed surveys would be required to justify the proposed arrangement given the proximity to other junctions and to existing trees in the highway verge.

TF reiterated that the Bartons Road access should be upgraded to a simple priority junction with a kerbed bellmouth. The acceptability of this arrangement will be subject to modelling.

TF stated that the existing rear access to Havant and Waterloo FC would require consideration.

Actions

TF to review Trip Generation and Servicing Advice Note and confirm acceptability if appropriate **Still reviewing**
TF to provide general arrangement plans of Bartons Road 3.0m cycle/ footway – **Please see attached**
TF to provide appropriate B1 office trip rates – **The below trip rates were used as part of the Langstone Tech application. Please note HCC did not agree to these as similarly they were used to establish existing use, however they are more inline with office rates in the local area. These aren't proposed by HCC and you should undertake a review of your TRICS and present to HCC.**

Table 8B1a, B1b, B1c/B2 and B8 Land Use Classes Vehicle Trip Generation Rates (all vehicles)

	AM Peak			PM Peak			12 Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
B1a	1.69	0.23	1.92	0.16	1.48	1.64	6.39	6.35	12.74
B1b	1.51	0.20	1.71	0.13	1.17	1.30	5.43	5.45	10.88
B1c/B2	0.23	0.06	0.29	0.03	0.20	0.23	1.83	1.49	3.32
B8	0.11	0.06	0.18	0.03	0.08	0.12	1.05	1.06	2.11

Trip rates per 100sqm

Table 9B1a, B1b, B1c/B2 and B8 Land Use Classes Vehicle Trip Generation Rates (OGV)

	AM Peak			PM Peak			12 Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
B1a	0.00	0.00	0.01	0.00	0.00	0.01	0.04	0.04	0.09
B1b	0.01	0.01	0.02	0.00	0.00	0.01	0.11	0.12	0.23
B1c/B2	0.02	0.02	0.04	0.00	0.00	0.00	0.20	0.19	0.39

TF to suggest appropriate baseline traffic flows at the Petersfield Road/ Bartons Road junction – The crematorium site undertook flows in 2018 and will be acceptable, subject to TEMPRO uplift, to use. APP/19/00007 and the TA Appendix B – please note that they have not got Saturday peak which needs to be assessed due to the proposed land uses. I am contacting our ITS to establish if we have counts at the junctions. If not you will have to survey the junction again in AM, PM and Sat peak to establish an uplift factor.

AS to progress trip generation and trip distribution exercise

Is there anything I've missed?

Kind Regards

Alex Stephenson
Senior Transport Planner
BEng (Hons)



Bristol Office

t +44 (0) 117 9175 810
p Regus Castlemead, Office 326, Lower Castle Street, Bristol, BS1 3AG
w www.paulbashamassociates.com

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From: Alex Stephenson
Sent: 22 October 2020 10:04
To: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>
Cc: Rob Hardyman <r.hardyman@paulbashamassociates.com>
Subject: RE: Former Electricity Board site, Bartons Road, Havant - APP/20/00658

Thanks Tom, look forward to meeting on the 3rd.

Kind Regards

Alex Stephenson
Senior Transport Planner
BEng (Hons)



Bristol Office

t +44 (0) 117 9175 810
p Regus Castlemead, Office 326, Lower Castle Street, Bristol, BS1 3AG
w www.paulbashamassociates.com

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info@paulbashamassociates.com
with details of the nature of advice
required.



From: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>
Sent: 22 October 2020 09:58
To: Alex Stephenson <a.stephenson@paulbashamassociates.com>
Cc: Rob Hardyman <r.hardyman@paulbashamassociates.com>
Subject: RE: Former Electricity Board site, Bartons Road, Havant - APP/20/00658

Hi Alex

I have sent a formal invite to you both for the date and time below.

We wouldn't hold traffic counts for the two site access points, however the Land West of Havant Crematorium site would have done traffic counts, certainly for the Bartons Road/Petersfield Road junction which could be used. This may be appropriate to use for flows past the site access to the north of the site as well. I am discussing with our ITS team to see if HCC record traffic flow through this junction which could be used to factor any traffic surveys

undertaken by yourselves to provide a comparison between current flows and pre-COVID flows. I will let you know the outcome of this.

In answer to your last question, yes it would need to be suitable to accommodate the level of traffic once the impact assessment is agreed.

Kind Regards

Tom Fisher
Senior Transport Planner
MSc Transportation Planning and Engineering
0370 779 7381

Highways Development Planning
Hampshire County Council
2nd Floor Elizabeth II Court West
The Castle Winchester SO23 8UD



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From: Alex Stephenson <a.stephenson@paulbashamassociates.com>
Sent: 21 October 2020 12:20
To: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>
Cc: Rob Hardyman <r.hardyman@paulbashamassociates.com>
Subject: RE: Former Electricity Board site, Bartons Road, Havant - APP/20/00658

Hi Tom,

Thanks for getting back to us and for the formal response, that's very useful. Unfortunately due to timescales we weren't able to engage with HCC at the pre-app stage but now look forward to working with you to bring this allocated site forward. We're available on Tuesday 3rd November at 10am so if you could book us in that would be great.

We note your comments regarding traffic impact assessment and we can scope this when we meet. In the meantime can you confirm whether HCC are accepting junction counts conducted at this point in time or not? If not, can you suggest which junction counts we should use for the three junctions mentioned (the two site accesses + the Petersfield Rd/ Bartons Rd signals).

Do you have a view on what an acceptable form of improvement to the Bartons Road access would look like or is this entirely subject to the outcome of the traffic impact assessment?

Look forward to hearing from you.

Kind Regards

Alex Stephenson
Senior Transport Planner



Bristol Office

t +44 (0) 117 9175 810
p Regus Castlemead, Office 326, Lower Castle Street, Bristol, BS1 3AG
w www.paulbashamassociates.com

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From: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>
Sent: 19 October 2020 16:05
To: Alex Stephenson <a.stephenson@paulbashamassociates.com>
Cc: Rob Hardyman <r.hardyman@paulbashamassociates.com>
Subject: RE: Former Electricity Board site, Bartons Road, Havant - APP/20/00658

Hi Alex

Sorry for the delay – rather than a call please see my response which has been sent to the LPA today which sets out the Highway Authority's position.

Does Tuesday 3rd November work for you to discuss in more detail? Shall we say 10am? Please let me know and I will send a formal meeting invite.

Kind Regards

Tom Fisher
Senior Transport Planner
MSc Transportation Planning and Engineering
0370 779 7381

Highways Development Planning
Hampshire County Council
2nd Floor Elizabeth II Court West
The Castle Winchester SO23 8UD



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From: Alex Stephenson <a.stephenson@paulbashamassociates.com>
Sent: 13 October 2020 14:29
To: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>

Cc: Rob Hardyman <r.hardyman@paulbashamassociates.com>

Subject: RE: Former Electricity Board site, Bartons Road, Havant - APP/20/00658

Hi Tom,

I just left a voicemail.

Thanks for your email to my colleague Rob this morning. We'd love to have a quick phone call if possible to get an idea for what additional information you're expecting to see for this application. If for example any traffic surveys are required we'd be keen to get the ball rolling on those as soon as possible, in advance of a meeting between ourselves.

Look forward to hearing from you. My number is 07925883319.

Kind Regards

Alex Stephenson
Senior Transport Planner
BEng (Hons)



Bristol Office

t +44 (0) 117 9175 810
p Regus Castlemead, Office 326, Lower Castle Street, Bristol, BS1 3AG
w www.paulbashamassociates.com

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From: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>

Sent: 13 October 2020 11:40

To: Rob Hardyman <r.hardyman@paulbashamassociates.com>

Subject: Former Electricity Board site, Bartons Road, Havant - APP/20/00658

Hi Rob

I hope you are well.

I am reviewing the above planning application and unfortunately, the Transport Assessment is not suitable to assess the impact of the proposed development site and will need further work to be undertaken. In this regard, I propose that we arrange a meeting in a couple of weeks time to go through my response to the LPA and what is required from yourselves.

Can you please provide availability for the start of November, thanks.

Kind Regards

Tom Fisher
Senior Transport Planner
MSc Transportation Planning and Engineering
0370 779 7381

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Hampshire County Council
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Appendix C

Alex Stephenson

From: Alex Stephenson
Sent: 10 February 2021 12:25
To: Drury, Holly; Fisher, Tom (ETE); Hendy, Jack
Cc: Rob Hardyman
Subject: FW: Bartons Road, Havant

Hi Holly, Tom and Jack.

Thanks again for your time this morning for what was a useful meeting.

I've made some notes below which I trust are an accurate account of our discussions. Please let me know if you have any suggested changes.

Acceptability of the Interaction between the Site Access and the Petersfield Road Signalled Junction

HCC outlined concerns regarding the potential impact of the site access junction on flows approaching and departing from the Petersfield Road junction.

PBA said that provision of the right turn lane for the access junction, as well as yellow box markings across the site access, ensure that the site access will not impact the Petersfield Road junction.

HCC said that comments from the Intelligent Transport Systems (ITS) team are pending which will provide a clearer view of HCC's position on this matter and it was agreed to wait for comments from the RTS team before revisiting this issue.

PBA agreed to widen both right turn lanes to 3.0m in line with previous HCC comments.

Havant and Waterlooville Football Club

PBA explained that the Football Club access to Bartons Road is for players only on matchdays. Consequently the access can be considered to generate an approximate maximum of 20 inbound trips on a Saturday in the late morning or early afternoon, and 20 outbound trips on a Saturday evening. The inbound trips will be left-in vehicle movements and the outbound trips would be outside of the peak hours.

PBA outlined proposals to move the access further south from its current location and said that this represents an improvement over the existing situation, which previously co-existed with the Scottish and Southern Energy offices.

HCC said that training and midweek games should also be considered and that a written narrative surrounding the trip generation of this access should be provided.

Visibility for Pedestrians Crossing Bartons Road in the Vicinity of the Site Access

HCC outlined concerns regarding pedestrian visibility towards Knightwood Avenue for pedestrians crossing Bartons Road from north to south.

PBA explained that the location of the crossing point had been chosen to best serve the pedestrian desire line and because a traffic island was required between the two right turn lanes regardless.

HCC and PBA agreed that it would be undesirable to have no crossing facilities if pedestrians then choose to cross at the same location without facilities. HCC maintain their concern regarding visibility however.

PBA agreed that they will explore changes to the arrangement to improve visibility to Knightwood Avenue. This could involve tightening the radius on the east side of Knightwood Avenue and/or moving the crossing point slightly to the west to improve pedestrian/vehicle intervisibility.

Pedestrian and Cycle Access

HCC requested that the proposed pedestrian and cycle access to Martin Road should also function as an emergency access. PBA agreed to widen this route to 3.7m to allow its use as an emergency access and will prepare a drawing of the arrangement.

HCC questioned whether additional pedestrian access points could be provided either to Petersfield Road or Bartons Road. PBA agreed to explore these opportunities.

Bartons Road Cycle/ Footway

HCC stated that a 3.0m cycle/ footway should be provided on the south side of Bartons Road to tie into the secured improvements currently ending on the west side of Martin Road. PBA accepted that this route will be provided and will prepare a drawing of the arrangement.

PBA explained how the scheme is likely to require widening of the existing footway into land controlled by Havant Borough Council. HCC will consult with Stuart Wood of Havant BC regarding the acceptability of this.

Road Safety Audit (RSA)

HCC requested a RSA be undertaken on the access proposals and that the proposed auditors should be submitted to HCC to ensure that they are approved auditors.

PBA agreed that a RSA should be undertaken and proposes using one of the following auditors:

M&S Traffic Ltd
TMS Consultancy
RKS Associates

HCC and PBA agreed that it would be best to wait until comments have been received from the ITS team before appointing the RSA to avoid abortive work.

Transport Assessment Comments

HCC explained that a factor should be used on traffic counts undertaken on the 13th December 2020 to estimate 'pre-covid' flows. PBA explained that this had been attempted however the factor calculated had proved unrealistic. HCC advised PBA to contact Mike Kester who may be able to help.

HCC questioned the distribution which shows 32% of trips generated by the drive-thru units are expected to approach from the east on Bartons Road. HCC suggested that a retail catchment assessment should be undertaken to inform the distribution.

Next Steps

PBA will prepare drawings of the 3.0m cycle/footway on the south side of Bartons Road and the 3.7m emergency access from Martins Road.

HCC will confirm with Stuart Wood the acceptability of widening into Havant BC land for the 3.0m cycle/footway on the south side of Bartons Road.

PBA will contact Mike Kester and will determine if an appropriate factor can be calculated to apply to the December 2020 traffic flows.

PBA will wait for comments from the ITS team before making any amendments to the access arrangements from Bartons Road.

Another meeting will be arranged once the ITS comments have been received and the access arrangement revised.

Kind Regards

Alex Stephenson
Senior Transport Planner

BEng (Hons)



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HAS NOW CHANGED TO: 0117 2390 766

Bristol Office

t +44 (0) 117 239 0766
p Regus Castlemead, Office 326, Lower Castle Street, Bristol, BS1 3AG
w www.paulbashamassociates.com

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From: Alex Stephenson

Sent: 09 February 2021 14:02

To: Drury, Holly <holly.drury@hants.gov.uk>; Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>

Cc: Rob Hardyman <r.hardyman@paulbashamassociates.com>; Hendy, Jack <Jack.Hendy@hants.gov.uk>

Subject: RE: Bartons Road, Havant

Thanks for confirming Holly. I've just sent a Teams invite please let me know if you haven't received it.

Kind Regards

Alex Stephenson
Senior Transport Planner
BEng (Hons)



Bristol Office

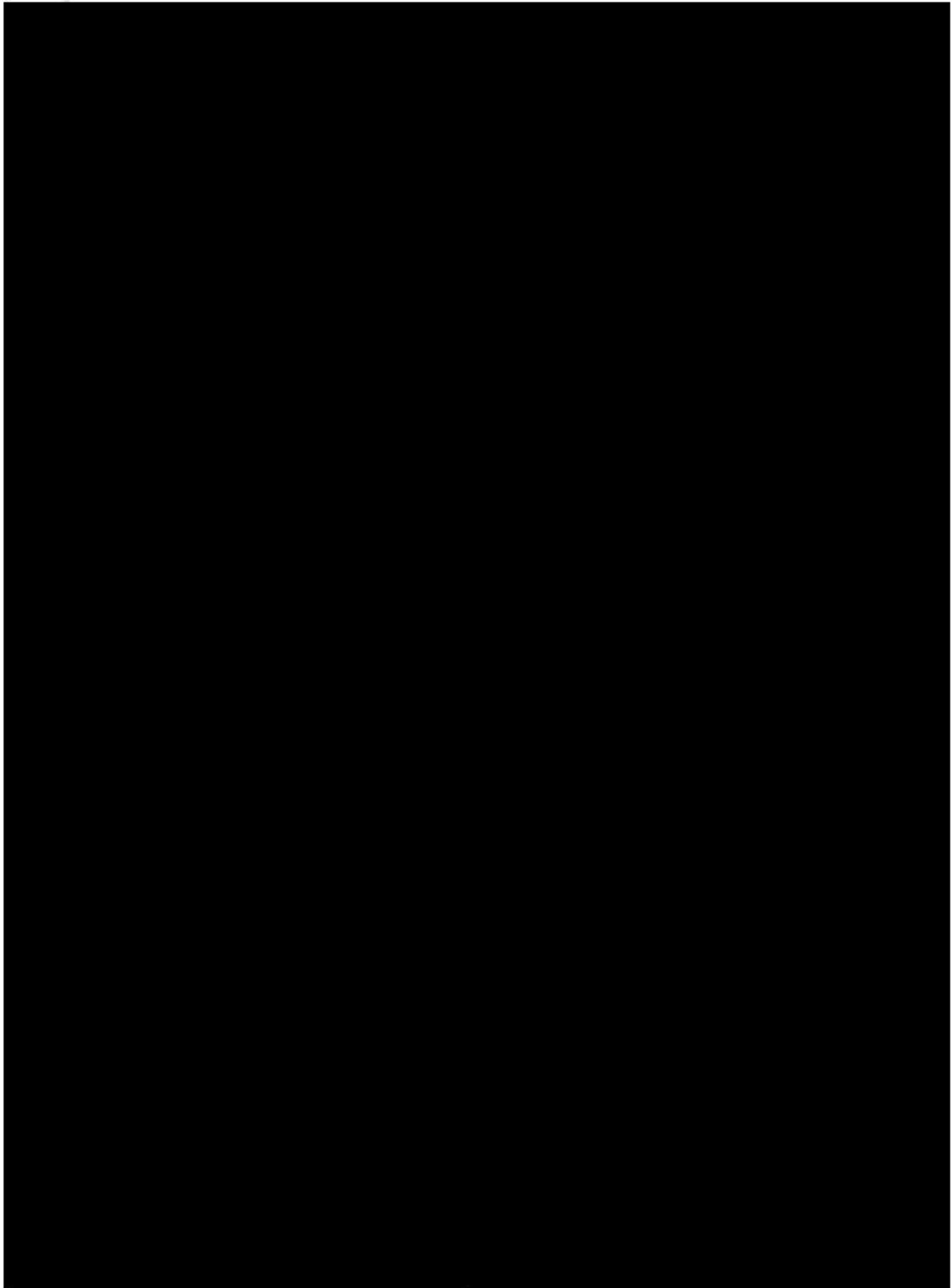
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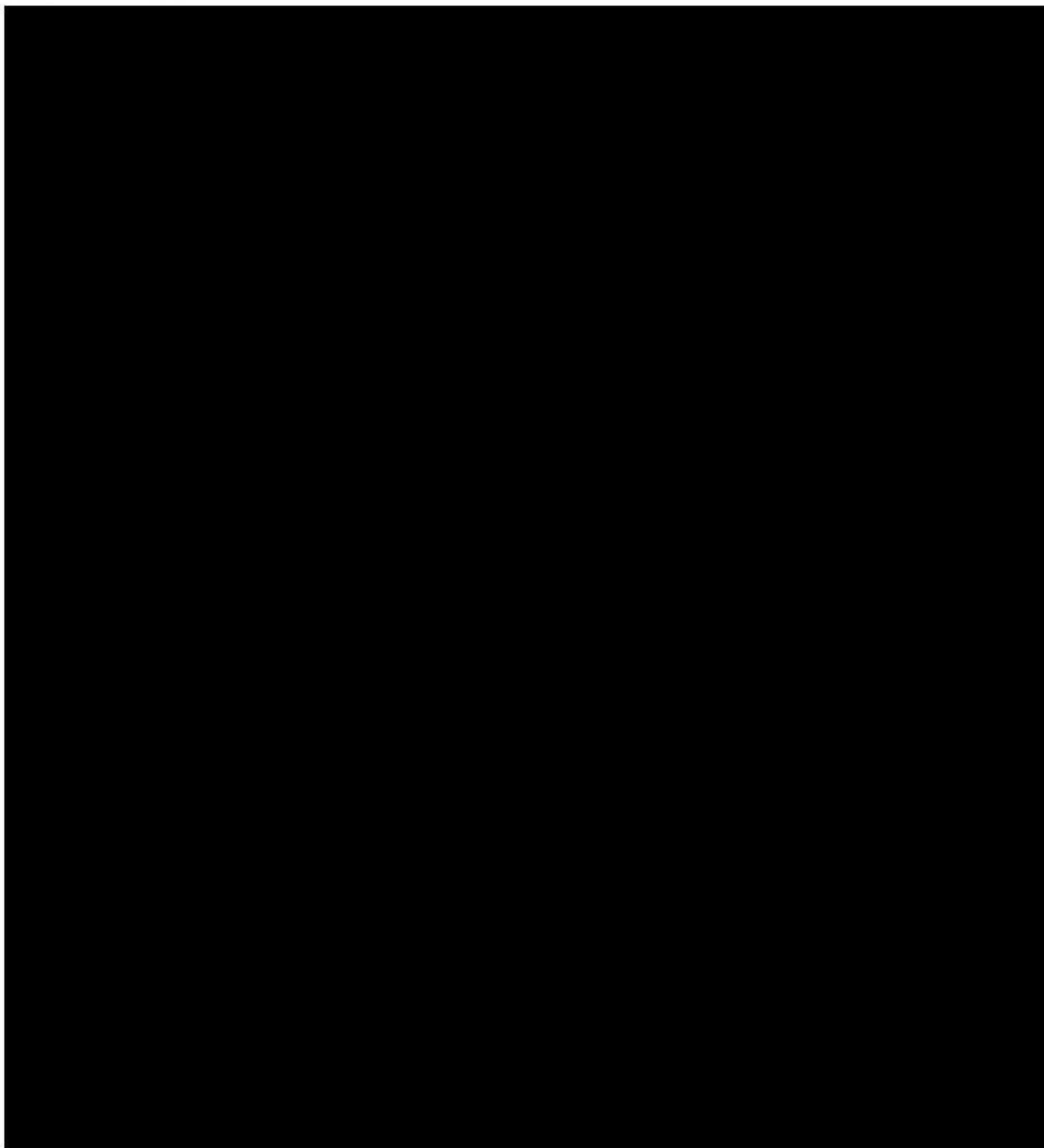
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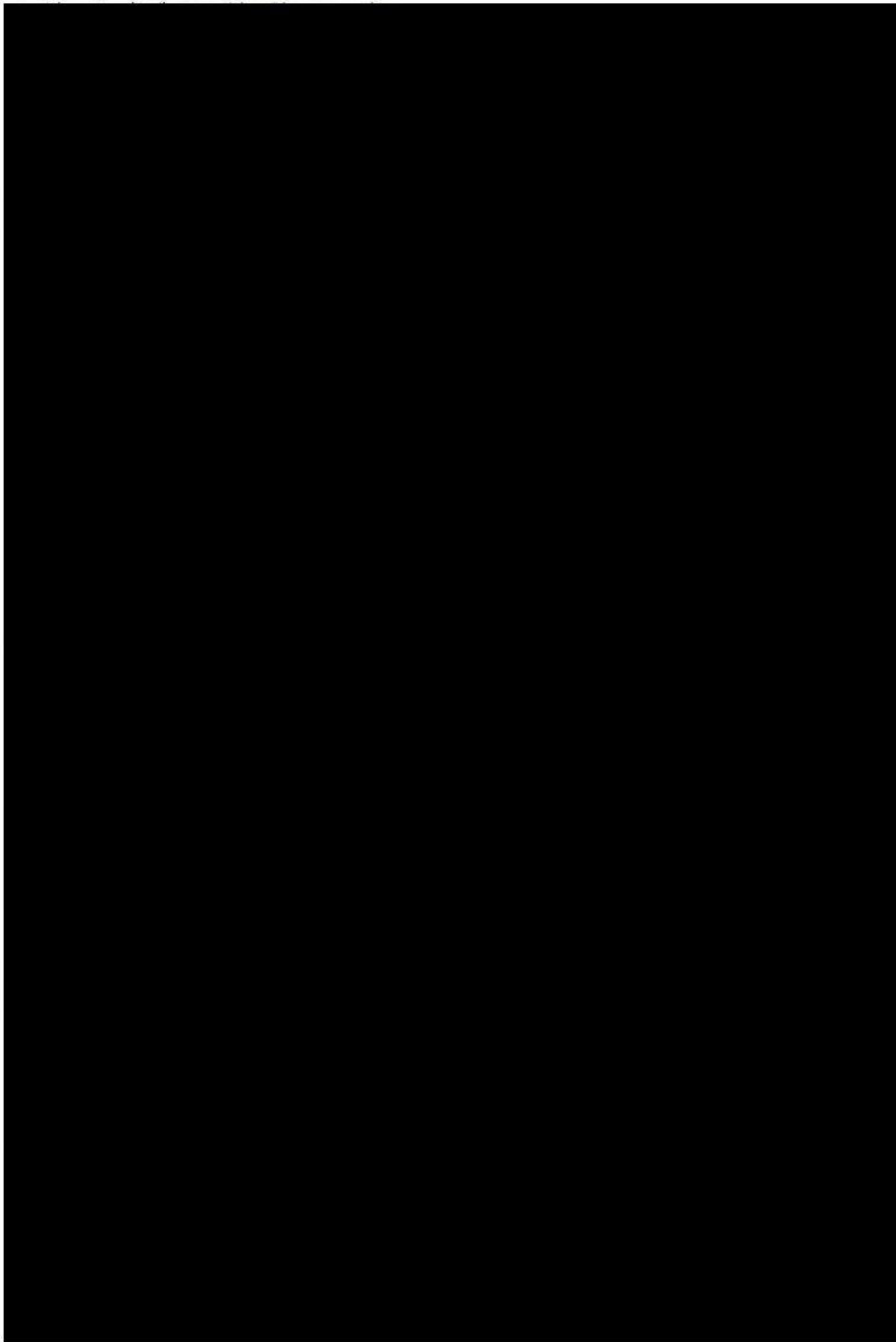


From: Drury, Holly <holly.drury@hants.gov.uk>

[hants.gov.uk](mailto:holly.drury@hants.gov.uk)>







From Highways perspective there is still questions over the access proposals;

- Concern over the relationship with the Bartons Road/Petersfield Road junction. The modelling suggests queuing of circa 16 vehicles, which would queue back through the proposed junction and could block potential right turners into the development site. Additionally, it is not clear if the junction how the junction has been modelled in relationship to the lane usage and proposed pedestrian crossing point. **Would HCC support yellow hatching across the site access to keep it clear of queuing vehicles?** – No this is not likely to be acceptable. We have secured improvements to the junction due to constraints as a result of development. It would not be acceptable to simply undermine these through provision of a yellow box or keep clear markings.
- The pedestrian crossing point, whilst required, may not achieve suitable and safe pedestrian visibility splays on the northern crossing point on Bartons Road. It appears from Google Street View that 3rd party vegetation would need to be cut back, or even land taken. It may require works to the Knightwood Avenue junction to facilitate. **A 1.0m x 43m visibility splay can be achieved to the kerbline to the west and a 1.0m x 43m visibility splay can be achieved to a 1.0m offset to the east – can you confirm that this provision would be acceptable? Why can amendments not be made to achieve the require visibility splays?**
- The access into Havant and Waterlooville stadium still is not acceptable. I understand that this requires further 3rd party involvement but you need to maintain suitable access to this land. Given the constraints of the access proposals, it appears that access from your internal site would be more appropriate. **Do you know the ownership status of the grass verge/ park between the football club site boundary and the back of the footway on Bartons Road which marks the highway boundary? This would help us with an access strategy for the football club. No you would need to do a land registry search for this information.**
- Swept path analysis should be provided for a large car, van, refuse vehicle and HGV negotiating the access, as well as stacking capability in the proposed right turn lane on Bartons Road. **Tracking of an HGV and a large refuse vehicle is provided at Appendix G.**
- The right turn lane for the signal junction should maintain the same width rather than reduce. **The right turn lane starts at 2.5m at the pedestrian refuge before widening to 3.0m at the point where the left turn lane currently starts, and then widens to its existing width of 3.25m at the stop line of the signalled junction. If the right turn lane were widened to a minimum of 3.0m in its entirety would this be acceptable?**
- **A road safety audit stage one should be provided to support these proposals. Noted – once we've broadly converged on an access strategy with HCC we will get a RSA done. We need to see a stage 1 safety audit for consideration with the submission please.**
- It is good to see the introduction of the 3m cycle provision as discussed, however this needs to tie into existing and the Highway Authority need to see a plan showing this. **Do you mean the existing provision to the west or the proposed provision to the east? both**
- Have you taken any cores on Bartons Road? Our engineers understand that this end is laid on concrete slabs which could cause major disruption to the network should this application be refused. It could also add considerable cost to your client and this should be investigated to satisfy your client and work into any viability. In particular, the widening of Bartons Road on the southern side would be difficult to tie in flexible and rigid pavement design. **We have not taken cores from Bartons Road. Do you mean to say it wouldn't be possible to widen Bartons Road without relaying the entire width, if it is indeed constructed with concrete slabs? That is a question for your engineering team but you cant easily tie in a flexible and rigid pavement design.**

Due to the above, it is advised that we work through these items prior to anything being submitted to the LPA. I am happy to facilitate a meeting on the access and wider TA once this has been fully reviewed.

Can you please provide LINSIG files for the Bartons Road/Petersfield Road junction.

Kind Regards

Tom Fisher
Senior Transport Planner
MSc Transportation Planning and Engineering
0370 779 7381

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Hampshire County Council
2nd Floor Elizabeth II Court West
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From: Alex Stephenson <a.stephenson@paulbashamassociates.com>
Sent: 18 January 2021 15:13
To: Fisher, Tom (ETE) <Tom.Fisher@hants.gov.uk>
Cc: Rob Hardyman <r.hardyman@paulbashamassociates.com>
Subject: RE: Bartons Road, Havant

Hi Tom,

Hope you had a good Christmas and New Year in spite of the circumstances.

Thanks again for your comments below and previously regarding assessment methodology for this site. We've sought to address your comments and have compiled our transport impact assessment within a revised Transport Assessment which is attached. This TA includes weekday AM and PM as well as Saturday interpeak assessments of the Petersfield Road/ Bartons Road signals and demonstrate that the junction can accommodate the trip generation associated with the proposed development in its current form. We are however proposing improving the Petersfield Road junction by widening the Bartons Road approach and creating a 'long-lane' for the left turn. This complements an improved access junction from Bartons Road for the site with the creation of a right turn lane as well as improved crossing facilities and a 3.0m wide cycle/ footway to connect the proposed development to Petersfield Road. Within the site itself a 2.0m pedestrian route is provided from Bartons Road to Martin Road while the vehicular access to Martions Road has been removed.

Aside from off-site infrastructure changes the TA now includes a review of Hampshire Constabulary PIA data and further tracking drawings which demonstrate the acceptability of the proposal.

These documents are being sent to the case officer now but we thought it would be a good idea to send to you directly to speed up the process. Once you've had a chance to review we'd be happy to answer any questions you might have by way of a phone call or meeting.

Look forward to hearing from you.

Kind Regards

Alex Stephenson
Senior Transport Planner
BEng (Hons)



Hi Tom,

Following our conversation the other day, I attach a copy of the traffic flows which we intend to use for the assessment of the development impact. Below I set out our methodology:

- Baseline traffic flows – these have been taken from the land west of Havant Crematorium Transport Assessment as previously agreed - **Noted**
- 2025 traffic flows – the 2018 baseline traffic flows have been factored up using TEMPRO Growth rates for both the morning and evening peaks – **Noted, as you are aware TEMPro is a standard tool, please may you provide further commentary within your document. In addition, you will need to provide a narrative as to why you have had to use 2018 data and why you consider the use of it to be robust.**
- Former office trips – as previously discussed, the site was formerly used as an office and therefore could potentially be brought back into that use and as such the traffic generated by that use is considered relevant. We have therefore prepared a distribution for the office trips and calculated the relevant assignment - **I do not agree that the reduction of trips should be applied in this instance as previously set out and your assessment should be based on a greenfield site. You are welcome to do a sensitivity test with the proposed office trips removed.**
- Proposed residential trips – we have calculated the distribution and assignment for the proposed residential trips – **I have assumed that you are now proposing one access from Bartons Road and discounting the one to the south? I can't agree the distribution until access strategy is confirmed and proposed access is considered suitable.**
- Distribution for proposed Drive-Throughs – the distribution for the proposed Drive-Throughs has been calculated using the existing distribution of traffic flows on Bartons Road and Petersfield Road. As you will see, there are two distributions, one for new trips and one for pass-by trips. For new trips, it is assumed that these will return to their origin, for example if they were to arrive from the east on Bartons Road, they would depart right out of the site. For the pass-by trips, it is assumed that they will continue their journey upon leaving the site, for example if a trip is to arrive from Petersfield Road which was travelling southbound, this trip would depart left out of the site access and left at the Petersfield Road/Bartons Road junction. The proportion of new and pass-by trips has been informed by the work undertaken by McDonalds transport consultants ADL – **In principle this is agreed regarding pass by and new trips. There are some elements of the ADL assessment which I could comment on, however the purpose of the document as I understand is to inform the application rather than be submitted in support of the application. Are you assuming the same split for Costa? Is there any evidence in other Costa applications which state differently? The internal tracking for a HGV is ambitious and assumes no cars will be parked in the car park or it would not be able to access and egress in a forward gear and cause operational and potential safety issues if cars had to queue to let it turn around when servicing.**
- Assessment scenarios – as previously agreed we have created two assessment scenarios – 2025 – Office Trips + Development and 2025 + Development. **We will need to see a baseline 2020 year scenario to review the changes and impact on the local road network.**

Further to the above, I note your request now for undertaking an assessment of the Saturday peak. As noted in the report prepared by ADL the traffic flows for the Saturday peak are only 32 trips higher than the weekday evening peak. It also needs to be considered that there are fewer 'new' trips associated with the Saturday peak (38% new and 62% pass-by) compared to the Friday evening peak (42% new and 58% pass-by). Therefore as a result of the additional trips for the Saturday peak, this will result in 100 'new' trips compared to 97 'new' trips during the Friday evening peak, thus an increase of 3 'new' trips. This also needs to be considered in the context that trips generated by the residential development will be much lower for a Saturday peak, when compared with the weekday evening peak. We therefore consider that the assessment of the weekday evening peak hour, which has the highest flows on the network and only slightly lower flows for the McDonalds drive-through will provide a robust assessment of the development traffic impacts. - **To not assess the development's peak hour is not something I am willing to accept. Due to the area, baseline traffic flows could be higher as there is elements of retail close to the site, partly I assume why McDonalds and Costa like the location of the site. I acknowledge that Saturday flows may be difficult to obtain but they could be in the raw 7-day data for the Crematorium site.**

Once you have had a chance to review the above and attached, if you have any questions, please do not hesitate to contact me. As the application is currently running, we are under some pressure to progress this work, therefore

discuss in detail the proposed

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Appendix D

Alex Stephenson

From: Drury, Holly <holly.drury@hants.gov.uk>
Sent: 24 March 2021 14:01
To: Alex Stephenson
Cc: Rob Hardyman; Hirst, Chris; Paul Basham; McCart, Gemma
Subject: FW: Petersfield Road/Bartons Road Junction Review
Attachments: SIG088 Controller Spec.pdf; Design Check Comments.docx

Alex

Please find attached the detailed modelling comments regarding the Linsig model for the Bartons Road/Petersfield Road junction which I received at close of play yesterday. I also understand you were seeking clarity on our position regarding the access so have set this out below. As you will see and we have previously discussed we are not in agreement that the access here is a straightforward matter.

There is concern raised by our ITS regarding the proximity of the proposed junction, the interaction with Knightwood Avenue and the signal junction. Between the stop line and the proposed access there is a distance of just 53m. Our ITS team have identified a need to upgrade the existing uncontrolled crossing of Bartons Road to accommodate safe crossing to a controlled toucan within the signals. This would set the stop line back a further 7m. Reducing the distance between the access and the stop line to 46m. The increased use of the crossing at Bartons Road/Petersfield Road junction was discussed at our meeting and it being a preferred option for crossing in the immediate vicinity of the site. At the time I didn't appreciate this was not a controlled facility. With the likely increased demand from the site I agree with the ITS assessment that this would be needed.

A linsig model should be provided with the model changes as requested in the attached and with the two priority junctions included (that being Knightwood Avenue and the site access). This will give us a better understanding of how the junctions operate and what friction might occur on the network through blocking back from any turning movements.

We have reviewed similar proposals before for accesses of this nature in close proximity to signal junctions and when the queues from the signals block back through the proposed junction it raises concerns about its safe operation. Keep clear or yellow box markings can be effective, but they ultimately reduce the efficiency of the signal junction and the Bartons Road/Petersfield Road junction is well established to be under strain.

At present the modelling provided isn't acceptable so we are not able to draw any firm conclusions on matters in ITS operation or capacity terms.

We have discussed the need for changes to the site access layout already and believe we are still waiting for information on how the football ground access can be safely accommodated, the need for improved crossing provision through a WCHAR and you were going to come back to us on whether a pedestrian/cycle access can be achieved in the north west corner of the site to link to the existing proposed onsite footway provision. I also have not heard on how discussions regarding the shared use path provision on Bartons Road have progressed with Havant.

Regarding the engineering design of the access we also have the following comments on drawing 106.0019.007 and these have already been sent to you back in the beginning of February but I have amended them to provide additional clarity.

1. There is concern over the relationship with the Bartons Road/Petersfield Road junction. The modelling suggests queuing of circa 16 vehicles (which will increase as a result of the modelling changes) which would queue back through the proposed junction and could block potential right turners into the development site. Additionally, it is not clear if the junction how the junction has been modelled in relationship to the lane usage. More detailed comments on the modelling are attached.
2. The pedestrian crossing point, may not achieve suitable and safe pedestrian visibility splays on the northern crossing point on Bartons Road. It appears from Google Street View that 3rd party vegetation would need to be cut back, or even land taken. It may require works to the Knightwood Avenue junction to facilitate. We don't believe that these are feasible and therefore this would prevent a safe crossing from being provided here.
3. The access into Havant and Waterlooville stadium still is not acceptable. I understand that this requires further 3rd party involvement but you need to maintain suitable access to this land. Given the constraints of the access proposals, it appears that access from your internal site would be more appropriate.
4. Swept path analysis should be provided for a large car, van, refuse vehicle and HGV negotiating the access, as well as stacking capability in the proposed right turn lane on Bartons Road. We would need to see these manoeuvres run concurrently with other movements and that these movements do not block other movements. We also need to see the speed that the vehicles are driven. A minimum drive speed of 15mph should be applied. We also need to see a refuse vehicle going between the site and Knightwood Avenue.
5. The right turn lane for the signal junction should maintain the same width rather than reduce
6. A road safety audit stage one should be provided to support these proposals
7. It is good to see the introduction of the 3m cycle provision as discussed, however this needs to tie into existing and the Highway Authority need to see a plan showing this
8. Have you taken any cores on Bartons Road? Our engineers understand that this end is laid on concrete slabs which could cause major disruption to the network should this application be refused. It could also add considerable cost to your client and this should be investigated to satisfy your client and work into any viability. In particular, the widening of Bartons Road on the southern side would be difficult to tie in flexible and rigid pavement design.

Further to these comments

- Priority staggers should be set at least 50m apart based on DMRB guidance. This will require a departure from standard in relation to the stagger between the proposed site access and Knightwood Avenue.
- Whilst we have requested the proposed crossing is removed unless it is deemed necessary through the WCHAR and can be delivered meeting the required visibility, a traffic island would still need to be provided to offer protection to those waiting to turn into Knightwood Avenue and visa versa.
- Justification for the length of the right turn lane provision and that they are appropriate in dimensions for the level of movements/speed limit etc. The minimum length or requirement is 25m with a 5m taper.
- Smoothing of the east/west alignment of Bartons Road to ensure consistent widths. The current southern alignment guides vehicles into the right turn lane and is likely to lead to encroachment and potential accidents.
- There are safety concerns that the proximity of the junctions, conflicting movements, substandard and inconsistent lane widths and level of flow through this area will lead to accidents, both through turning movements and shunts as vehicles stop where not expected.
- There is concern for local movements that people will quickly learn that there are delays at the signal junction and that you get local rat running to utilise the Knightwood Avenue

junction to Bartons Road to access the site rather than staying on the main B2149. Increasing the number of vehicles undertaking that left/right movements and therefore increasing conflict.



Holly Drury BSc (Hons) MSc MCIT
Principal Transport Planner – Highways Development Planning
Hampshire County Council
2nd Floor Ell Court West, Winchester
Hampshire, SO23 8UJ
0370 779 3193

E-mail: holly.drury@hants.gov.uk

Web: www.hants.gov.uk/highways

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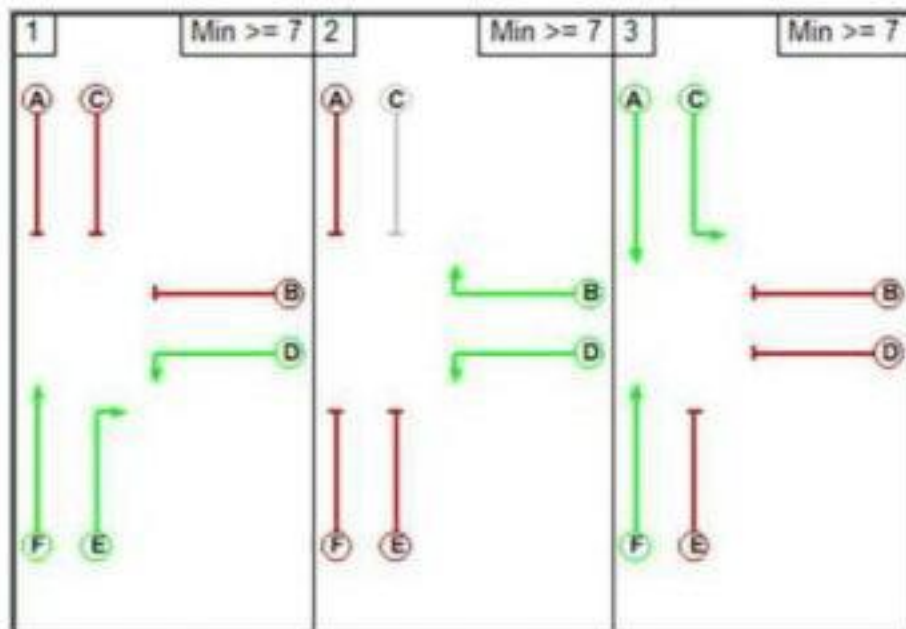
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SIG088 B2149 Petersfield Road / Bartons Road, Havant

Linsig Model – proposed Layout

- Arm 2 Lane 2. Physical length is shown as 53m; the associated drawing (106.0019.007) shows its length to be 40m long between the proposed pedestrian island and the stopline. Some of this length which will be occupied by vehicles waiting to turn right into Knightwood Avenue resulting in an effective length of 26m. This length should be used in the model.
- Arm 2 Lane 2. Turning radius shown as 'Inf'; it should match the existing model – 23m.
- The allocation of Phases to Stages in the models doesn't match that which is on street (the existing traffic signal controller configuration can be made available if required).



- The allocation of Phases should be as follows:
 - A Petersfield Road northbound (modelled as F)
 - B Petersfield Road right turn (modelled as E)
 - C Bartons Road left turn (modelled as D)
 - D Bartons Road right turn (modelled as B)
 - E Petersfield Road southbound (modelled as A and C)
- Petersfield Road north is controlled by a single Phase (E).
- The allocation of Phase to Stages should be as follows:
 - 1. A E (modelled as D E F)
 - 2. A B C (modelled as B D)
 - 3. D (modelled as A C F)
- The allocation of Phases to Stages should be corrected in both models and the models updated.

Drawing (106.0019.007)

- Show visibility splays for Knightwood Avenue.
- The eastmost turn right arrow (Diag. 1038) in the right turn lane of Bartons Road implies that drivers in that lane should (must) turn right into Knightwood Avenue.
- Include a right turn arrow to Diag. 1038 in the right turn lane of Bartons Road going into the site access road.
- Show SSD to primary and second primary signal head on Bartons Road.

SIG088 B2149 Petersfield Road / Bartons Road, Havant

Other

- Please provide a preliminary design Risk Assessment.
- Show vehicle swept paths for the following movements:
 1. Left and right from the site access road.
 2. Left and right into the site access road.
 3. Left and right from Knightwood Avenue.
 4. Left and right into Knightwood Avenue.
 5. Left and right from Bartons Road.
- There is an existing segregated cycle route running north / south on the eastern side of B2149 Petersfield Road which crosses Bartons Road at an uncontrolled crossing point. Given the increased pedestrian, cycle and vehicular traffic that the development is likely to generate this crossing should be upgraded to a Toucan crossing. This should be designed in accordance with LTN1/20.

Roger Derrick
Traffic Signal Engineer
ITS Group
Hampshire County Council
23 March 2021

Appendix E

Alex Stephenson

From: Drury, Holly <holly.drury@hants.gov.uk>
Sent: 13 July 2021 17:05
To: Alex Stephenson; Rob Hardyman
Cc: Lamont, Scott; Derrick, Roger
Subject: FW: Bartons Road/Petersfield Road Scheme Final Informal Response
Attachments: 4773-SK-06 - ADL amends to SBS - 8080-SA-8110-SK08B.pdf; ADL Letter.docx; 12760-OD-GA-HAV-00-02.pdf

Importance: High

Rob/Alex

Thank you for the submission of additional information in the form of the following:

- Revised internal layout drawing 4773-SK-06
- Confirmation of a maximum of 5 HGV deliveries a week
- Linsig model with the priority junctions included
- TA traffic flows
- Knightwood Avenue Sat and Thursday survey data
- Bartons Road ATC's
- A full set of access drawings as sent on 10th June 2021

These elements have been reviewed by myself and our engineering team and our comments are as follows:

Revised Internal Layout

The revised internal layout for the McDonalds and Costa area of the site has been provided on drawing 4773-SK-06. This aims to increase the McDonalds available stacking distance to 22 vehicles with 12 of these at or before the ordering points. This provides additional stacking distance without blocking the access road to the car park or Costa drive through. It does however still mean any additional queue would fall onto the access road to the whole site and impede access to the residential units. Adoption of the access road to the residential site is going to be difficult with this as a primary concern. Discussions with our HDA team suggest that the internal layout would therefore not be designed to an appropriate adoptable standard without separate turning facilities for the drive-thru uses. It is noted that the original submission of the application included an access to Martins Road. It is not clear why this was discounted so quickly, comments were made regarding the proximity of the access to St Albans however this was not discussed further. It would appear that matters relating to internal road adoption for residential access may be overcome if the commercial uses and residential users had separate access points. This is a matter for your further consideration and decision making when looking at how you progress the development. It will be a point that if remains as shown will need to be raised through our response for the attention of the Planning Authority and for them to determine if that is acceptable.

Ultimately due to the scale of the residential development it would be subject to our APC process and should the site not come forward for adoption appropriate bond amounts will need to be secured and the required information provided on the construction design etc to demonstrate any reduction to that bond. More information on APC's can be found here:

<https://www.hants.gov.uk/transport/developers/section-38>

I don't recall at this stage being given any evidence of formal agreement to the proposed changes of the football club access by the landowners. There were also questions I understand about whether the redline accounted for these changes. This ultimately is a matter for the Planning Authority as whilst we have no objection to realignment given the use of the access it is fundamental for access to this site that it is deliverable as shown. Again this will be brought to the attention of the Planning Authority. When looking at the alignment no tracking has been provided for this and for completeness this should be included in your final submission. The design obviously focuses on existing onto Bartons Road but consideration should be given on whether there are likely movements now or in the future to the food retail access.

HGV Movements

It is noted that confirmation has been provided that the site for McDonalds would be served from up to 5 HGV's per a day. It is still unclear on the servicing requirements of the Costa will be. The Highway Authority would require an operational management plan which clearly limits the number of HGV movements into the McDonalds and Costa site and provides additional control on timing etc if needed. This would need to be secured through planning condition if the application was to be granted approval and a framework OMP which sets out the areas to be covered and the parameter assessed at planning should be set out at this stage for including within the condition.

Additional Traffic Flow Data

It is noted that you have provided the traffic flow data for Knightwood Avenue and Bartons Road and these are welcomed to support the assessment.

Bartons Road

The Bartons Road traffic flows daily are shown to be 5836 eastbound as a 5 day average and 6161 westbound totalling 12,017 AADT. This reduces slightly if you use the western dataset to 5734 eastbound and 6105 westbound totalling 11,839. A difference of 178 vehicles. Given that between the two survey sites there are no vehicle access points to warrant the reduction the higher figure should be assumed to be the most robust representation.

The speed data from these surveys show 85th percentile speeds of 32.5 eastbound and 32.8 westbound at the eastern collection point and 29.6 eastbound and 29 westbound at the western site closer to the signal junction. These speeds are noted and considered within our comments made today and further consideration on the suitability of the access arrangements.

Junction Form

Based on the survey data and the previously agreed position that daily trips from the site will be circa 5000 a day based on a 12 hour day from TRICS assessments the junction form as per CD123 triggers consideration of single lane duelling. Now it is acknowledged that this would not be likely necessary along Bartons Road and right turn lane arrangements have been used consistently along the route. However justification will need to be provided within your final submission on the mitigating factors which mean this requirement is not considered necessary and why the proposed access arrangement should be considered appropriate. We have discussed in detail our concerns around the arrangement and mutually acknowledged the departure from standard to the design if DMRB was to be considered. Whilst we are within a MFS situation here based on speeds the justification for the design must still be suitably covered within the response with an appropriate narrative. We would expect the right turn lanes to be a minimum length of 35m where a measures speed is 60kph this includes a length of 25m (including 5m direct taper) and a deceleration length of 10m (turning length). It is clear that this cannot be achieved. MfS puts design of these facilities down to engineering judgement.

Junction Modelling

Our ITS Team have reviewed the Lingsig model in relation to the signals operation. The junction is over capacity in all 3 modelled scenarios with the assumption that the pedestrian/cycle phase will appear in every cycle. We are mindful that this is unlikely to be the case in reality. Kerbside detection can be included to cancel demands where pedestrian/cyclists don't wait for the green signal for example. The cycle time could be raised to a max of 120 seconds which may help. It is noted that the queue does go back across the proposed site access and whilst this reduces speeds on the approach to the signal junction whether this is suitable for safe and appropriate operation of the site access is a matter for engineering consideration.

The modelling works is also subject to independent review by our supporting consultant and I am awaiting comments. Generally I am concerned why the junction 9 modelling contained in the TA Addendum as per my email dated 13th May 2021 and the results for the site access junction within the Lingsig model being considerably different. What I need to be sure on is what is a true reflection of the likely situation and this is what I am seeking consultant support in reviewing.

I can of course revert back as soon as I am able but I am sure that you have your own views on this matter and will cover as you see appropriate within your final submission to the planning authority.

Proposed Access Arrangements

Updated drawings have been provided and these are as follows:

- 106.0019.007G Western Section GA
- 106.0019.008F Western Section Vis
- 106.0019.009B Eastern Section GA
- 106.0019.010 Martins Road GA
- 106.0019.100C Tracking site access
- 106.0019.101C Tracking Knightwood Avenue
- 106.0019.102C Tracking Car
- 106.0019.103B Tracking Panel Van
- 106.0019.104 Tracking Knightwood Avenue Existing

These drawings include the following amendments as you set out in your email of the 10th June.

- *The crossing point over Knightwood Avenue has been moved south slightly and 2.5 x 25m visibility splays are shown*
- *The Toucan crossing point has been widened slightly to 3.0m*
- *A 2.0m footway is now shown on the east side of the access road with associated crossing point*
- *The centreline of the access road is now perpendicular to Bartons Road*
- *The access road now includes hatching to narrow the northbound lane and discourage simultaneous left and right turn movements*
- *The access tracking drawing now shows an HGV manoeuvring past a panel van instead of a car*

These updated drawings have been reviewed and we have the following comments for your action as you feel appropriate ahead of your final planning submission.

Whilst we acknowledge that the design requirements here have been maximised the limitations of the site mean that both the ghost island right turn lane dimensions cannot be met and the stagger distance between the junctions of 50m can also not be achieved. It is noted that swept path analysis does allow tracking of a refuse vehicle between the 2 junctions and this is also acknowledged. The impact of this matter on operation and safety of the access remains a point under consideration by the highway authority and at this stage a conclusion on whether these elements are acceptable is yet to be reached. These may remain the points of dispute between

us but I acknowledge your position on this to date and look forward to reviewing your final statements on this within your final response.

We note you have provided sufficient evidence from the 3m right turn lanes to be maintained throughout and we are satisfied that this matter is now resolved.

Tapers should be 1:20 and developed in accordance with 6.1.2 CD123, DMRB.

It is noted that the access design has altered to accommodate tracking of the junction. However this has led to a wide access junction which now cuts through the shared use facility. It has been demonstrated that the junction width is required in order to accommodate appropriate tracking of the junction and hatching is required to prevent the approach being used as two lanes at the give-way line which in itself will create a safety concern. The presence of the hatching due to the width of the crossing results in an area where pedestrians/cyclists may wait to undertake the crossing in 2, especially given the crossing width and frequency of movements, especially at peak times. This is undesirable with regards sustainable access and could cause a safety issue for vulnerable road users. At this time I am unable to set out our final position as this is being looked at more closely, however I trust you will address as you see appropriate within your final submission. Again this may remain a point of dispute between us.

Visibility splays should be provided for the crossing landing in accordance with measured speeds as set out in TG3. The proposed crossing point on Knightswood Avenue may have limited visibility to the north due to the parking layby. This was discussed at our last meeting. There is currently a shared use facility and therefore visibility for both pedestrians and cyclists at the stated x distance in TG3 should be shown and be achievable.

The emergency access should provide cycle connectivity in accordance with LTN 1/20. Consideration should also be given to how cyclists are connected to the NCN22 route here and whether the proposed footway connection can also be designed to cater for cyclists, so they do not need to drop on road for the short section. It would appear that there is sufficient highway boundary to accommodate such a requirement. Again visibility for cyclists at the junction with Martin Road should also be shown to ensure appropriate distances can be achieved for cyclists to re-join the carriageway.

There remains concern over compliance of the yellow box markings and the impacts of lack of compliance on safe operation of the junction. In addition there remains a concern regarding the level of use of the junction and how movements interact with each other under day to day operational conditions. The Highway Authority are still considering these concerns on operational safety and again these may remain a point of dispute between us. I believe however that we have been clear and transparent throughout on these concerns and shall make our final call on matters once in receipt of your final submission. It is imperative within your final submission that the Safety Audit trail is clearly set out and that original points of concern raised within the first safety audit are referred to and addressed accordingly within any subsequent safety audit reports.

Regarding the tracking whilst we acknowledge that available space has been maximised and access by HGV's and particularly articulated vehicles are to be limited there remain concerns regarding the tracking of a 16.5m articulated vehicles. We aren't able to find confirmed the minimum tracking speed but are concerned that these would be worse than shown if driven at 10mph. The impact of a vehicle of this type turning at the junction is significant. In particular the left turn out of the site access cannot be made if anyone is waiting in the right turn lane. During busy periods a driver may be forced to encroach onto the footway in order to turn left. Furthermore the right turn out of the access tracks closely to the proposed pedestrian crossing island and a slightly faster track could result in a vehicle striking this feature. Turning into the junction for the same vehicle type require much of the proposed access to turn. Finally it is

also noted that the refuse vehicle tracking coming from Knightwood Avenue encroaches the back of the right turn filter lane for the signals. I shall leave it with you on whether any of these matters can be addressed further and wait the formal submission to make final comments and firm up our position.

Proposed Signal Arrangement – Additional Crossing Facilities

It has come to our attention that Sustrans have drawn up a signal crossing scheme for the NCN22 Road across Bartons Road. This broadly replicates your own proposals which are supported. They do however propose amendments to the kerblines on the southern radius of the junction. This addresses the issues we have previously discussed on how cyclists utilise the crossing if they are travelling east west on Bartons Road shared use path. I have attached a drawing shown the Sustrans proposal and trust that this will be reflected appropriately within your final submission and any modelling adjustments made for the changes to the exist width of the signals.

If this application is granted approval the works will be expected to come forward as S278 works as part of the site access works as the changes to the layout here are all integral to each other. Therefore it is key that we move forward with a design that is compatible with the wider Sustrans scheme which is currently undergoing detailed design and is subject to a number of funding bids. This element of the works is considered necessary to facilitate safe access to the development proposed and therefore would be required to be delivered at the expense of the developer and would not be subject to other external funding as part of these bids if this application is approved.

Summary

I hope the above is useful in you being able to put your final package together for formal submission to the Planning Authority. Whilst I have highlighted areas which remain under consideration and potential areas that remain in dispute between us, at this stage this is to highlight to you areas which are still under wider consideration by the Highway Authority. You will appreciate they are complex matters that need considering carefully as to the combined implications to highway safety. This therefore means I am not able to agree them in a piecemeal fashion. However on receipt of the formal submission we will consider the application in its entirety and reach our final verdict on matters.

Kind Regards

Holly

Holly Drury BSc (Hons) MSc MCIHT

Principal Transport Planner – Highways Development Planning

Hampshire County Council

2nd Floor Ell Court West, Winchester

Hampshire, SO23 8UJ

0370 779 3193

E-mail: holly.drury@hants.gov.uk

Web: www.hants.gov.uk/highways

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Economy, Transport and Environment

Moving and shaping a prospering and sustainable Hampshire

Making a difference

Working together

Ambitious to improve

Commitment to quality

Appendix F

DATE : 27th MAY 2021.

DAY : THURSDAY.

LOCATION : KNIGHTWOOD AVENUE, HAVANT.

	MOVEMENT 1						MOVEMENT 2						MOVEMENT 3						MOVEMENT 4						MOVEMENT 5						MOVEMENT 6					
	FROM BARTONS ROAD (EAST) STRAIGHT AHEAD TO BARTONS ROAD (WEST)						FROM BARTONS ROAD (EAST) RIGHT TURN INTO KNIGHTWOOD AVENUE						FROM KNIGHTWOOD AVENUE LEFT TURN OUT TO BARTONS ROAD (EAST)						FROM KNIGHTWOOD AVENUE RIGHT TURN OUT TO BARTONS ROAD (WEST)						FROM BARTONS ROAD (WEST) LEFT TURN INTO KNIGHTWOOD AVENUE						FROM BARTONS ROAD (WEST) STRAIGHT AHEAD TO BARTONS ROAD (EAST)					
	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT
0700-0715	45	2	0	0	0	47	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	7	0	0	0	0	0	0	67	3	0	0	0	70
0715-0730	66	2	0	0	0	68	0	0	0	0	0	0	1	0	0	0	0	1	4	0	0	0	0	4	5	0	0	0	0	5	80	5	0	0	0	85
0730-0745	69	3	0	1	0	73	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	1	0	0	0	0	1	102	6	0	4	0	112
0745-0800	84	4	0	0	0	88	0	0	0	0	0	0	3	0	0	0	0	3	9	0	0	0	0	9	1	0	0	0	0	1	109	4	0	2	0	115
0800-0815	122	5	0	2	0	129	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7	1	0	0	0	0	1	91	6	0	1	0	98
0815-0830	108	6	0	1	0	115	2	0	0	0	0	2	2	0	0	0	0	2	8	0	0	0	0	8	2	0	0	0	0	2	85	4	0	1	0	90
0830-0845	95	4	1	0	0	100	1	0	0	0	0	1	3	0	0	0	0	3	3	0	0	0	0	3	3	0	0	0	0	3	120	8	1	0	1	130
0845-0900	112	5	1	1	0	119	1	0	0	0	0	1	0	0	0	0	0	0	4	0	1	0	0	5	4	0	0	0	0	4	105	5	2	0	0	112
0900-0915	75	7	0	0	0	82	1	0	0	0	0	1	3	0	0	0	0	3	2	0	0	0	1	3	3	0	0	0	0	3	95	3	0	0	0	98
0915-0930	96	2	0	0	0	98	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	9	0	0	0	0	9	97	1	2	2	0	102
0930-0945	69	3	0	2	0	74	2	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0	0	0	4	0	0	0	0	4	99	2	1	0	0	102
0945-1000	76	3	1	1	1	82	0	0	0	0	0	0	1	0	0	0	0	1	7	1	0	0	0	8	4	0	0	0	0	4	99	3	0	4	0	106
0700-1000	1017	46	3	8	1	1075	7	0	0	0	0	7	14	0	0	0	0	14	59	1	1	0	2	63	37	0	0	0	0	37	1149	50	6	14	1	1220
0700-0800	264	11	0	1	0	276	0	0	0	0	0	0	4	0	0	0	0	4	23	0	0	0	1	24	7	0	0	0	0	7	358	18	0	6	0	382
0715-0815	341	14	0	3	0	358	0	0	0	0	0	0	4	0	0	0	0	4	24	0	0	0	0	24	8	0	0	0	0	8	382	21	0	7	0	410
0730-0830	383	18	0	4	0	405	2	0	0	0	0	2	5	0	0	0	0	5	28	0	0	0	0	28	5	0	0	0	0	5	387	20	0	8	0	415
0745-0845	409	19	1	3	0	432	3	0	0	0	0	3	8	0	0	0	0	8	27	0	0	0	0	27	7	0	0	0	0	7	405	22	1	4	1	433
0800-0900	437	20	2	4	0	463	4	0	0	0	0	4	5	0	0	0	0	5	22	0	1	0	0	23	10	0	0	0	0	10	401	23	3	2	1	430
0815-0915	390	22	2	2	0	416	5	0	0	0	0	5	8	0	0	0	0	8	17	0	1	0	1	19	12	0	0	0	0	12	405	20	3	1	1	430
0830-0930	378	18	2	1	0	399	3	0	0	0	0	3	6	0	0	0	0	6	14	0	1	0	1	16	19	0	0	0	0	19	417	17	5	2	1	442
0845-0945	352	17	1	3	0	373	4	0	0	0	0	4	4	0	0	0	0	4	11	0	1	0	1	13	20	0	0	0	0	20	396	11	5	2	0	414
0900-1000	316	15	1	3	1	336	3	0	0	0	0	3	5	0	0	0	0	5	14	1	0	0	1	16	20	0	0	0	0	20	390	9	3	6	0	408
HOURLY TOTALS							HOURLY TOTALS						HOURLY TOTALS						HOURLY TOTALS						HOURLY TOTALS						HOURLY TOTALS					

DATE : 27th MAY 2021.

DAY : THURSDAY.

LOCATION : KNIGHTWOOD AVENUE, HAVANT.

	MOVEMENT 1						MOVEMENT 2						MOVEMENT 3						MOVEMENT 4						MOVEMENT 5						MOVEMENT 6					
	FROM BARTONS ROAD (EAST) STRAIGHT AHEAD TO BARTONS ROAD (WEST)						FROM BARTONS ROAD (EAST) RIGHT TURN INTO KNIGHTWOOD AVENUE						FROM KNIGHTWOOD AVENUE LEFT TURN OUT TO BARTONS ROAD (EAST)						FROM KNIGHTWOOD AVENUE RIGHT TURN OUT TO BARTONS ROAD (WEST)						FROM BARTONS ROAD (WEST) LEFT TURN INTO KNIGHTWOOD AVENUE						FROM BARTONS ROAD (WEST) STRAIGHT AHEAD TO BARTONS ROAD (EAST)					
	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT	CAR	HGV	BUS	MCY	PCY	TOT
1600-1615	152	2	1	4	0	159	4	0	0	0	0	4	2	0	0	0	0	2	6	0	0	0	0	6	7	0	0	0	0	7	89	2	1	1	0	93
1615-1630	114	2	0	0	0	116	1	0	0	0	1	2	1	0	0	0	0	1	9	0	0	0	0	9	2	0	0	0	0	2	119	4	1	1	0	125
1630-1645	136	3	0	2	0	141	3	0	0	0	0	3	1	0	0	0	0	1	8	0	0	0	0	8	7	2	0	0	0	9	111	2	0	4	0	117
1645-1700	119	2	1	4	1	127	2	0	0	0	0	2	0	0	0	0	0	0	7	0	0	0	0	7	2	0	0	0	0	2	113	2	1	2	0	118
1700-1715	163	6	0	4	0	173	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	12	0	0	0	0	12	116	4	0	4	0	124
1715-1730	126	2	0	1	0	129	3	0	0	0	0	3	2	0	0	0	0	2	3	0	0	0	0	3	10	0	0	0	0	10	121	3	1	2	0	127
1730-1745	138	5	0	3	0	146	2	0	0	0	0	2	4	0	0	0	0	4	5	0	0	0	0	5	7	0	0	0	0	7	123	1	0	0	0	124
1745-1800	133	3	0	1	0	137	1	0	0	0	0	1	1	0	0	0	0	1	3	0	0	0	0	3	7	0	0	0	0	7	124	2	0	3	0	129
1800-1815	129	4	0	5	0	138	5	0	0	1	0	6	0	0	0	0	0	0	3	0	0	1	0	4	8	0	1	0	0	9	88	0	1	1	0	90
1815-1830	85	0	0	2	0	87	2	0	0	0	0	2	1	0	0	0	0	1	7	0	0	0	0	7	6	0	0	0	0	6	84	1	0	0	1	86
1830-1845	75	1	0	10	0	86	1	0	0	0	0	1	1	0	0	0	0	1	5	0	0	0	0	5	6	0	0	0	0	6	75	2	0	2	0	79
1845-1900	75	0	0	0	0	75	0	0	0	0	0	0	2	0	0	0	0	2	5	0	0	0	0	5	5	0	0	0	0	5	77	2	0	2	0	81
1600-1900	1445	30	2	36	1	1514	24	0	0	1	1	26	15	0	0	0	0	15	64	0	0	1	0	65	79	2	1	0	0	82	1240	25	5	22	1	1293
1600-1700	521	9	2	10	1	543	10	0	0	0	1	11	4	0	0	0	0	4	30	0	0	0	0	30	18	2	0	0	0	20	432	10	3	8	0	453
1615-1715	532	13	1	10	1	557	6	0	0	0	1	7	2	0	0	0	0	2	27	0	0	0	0	27	23	2	0	0	0	25	459	12	2	11	0	484
1630-1730	544	13	1	11	1	570	8	0	0	0	0	8	3	0	0	0	0	3	21	0	0	0	0	21	31	2	0	0	0	33	461	11	2	12	0	486
1645-1745	546	15	1	12	1	575	7	0	0	0	0	7	6	0	0	0	0	6	18	0	0	0	0	18	31	0	0	0	0	31	473	10	2	8	0	493
1700-1800	560	16	0	9	0	585	6	0	0	0	0	6	7	0	0	0	0	7	14	0	0	0	0	14	36	0	0	0	0	36	484	10	1	9	0	504
1715-1815	526	14	0	10	0	550	11	0	0	1	0	12	7	0	0	0	0	7	14	0	0	1	0	15	32	0	1	0	0	33	456	6	2	6	0	470
1730-1830	485	12	0	11	0	508	10	0	0	1	0	11	6	0	0	0	0	6	18	0	0	1	0	19	28	0	1	0	0	29	419	4	1	4	1	429
1745-1845	422	8	0	18	0	448	9	0	0	1	0	10	3	0	0	0	0	3	18	0	0	1	0	19	27	0	1	0	0	28	371	5	1	6	1	384
1800-1900	364	5	0	17	0	386	8	0	0	1	0	9	4	0	0	0	0	4	20	0	0	1	0	21	25	0	1	0	0	26	324	5	1	5	1	336
	HOURLY TOTALS						HOURLY TOTALS						HOURLY TOTALS						HOURLY TOTALS						HOURLY TOTALS						HOURLY TOTALS					

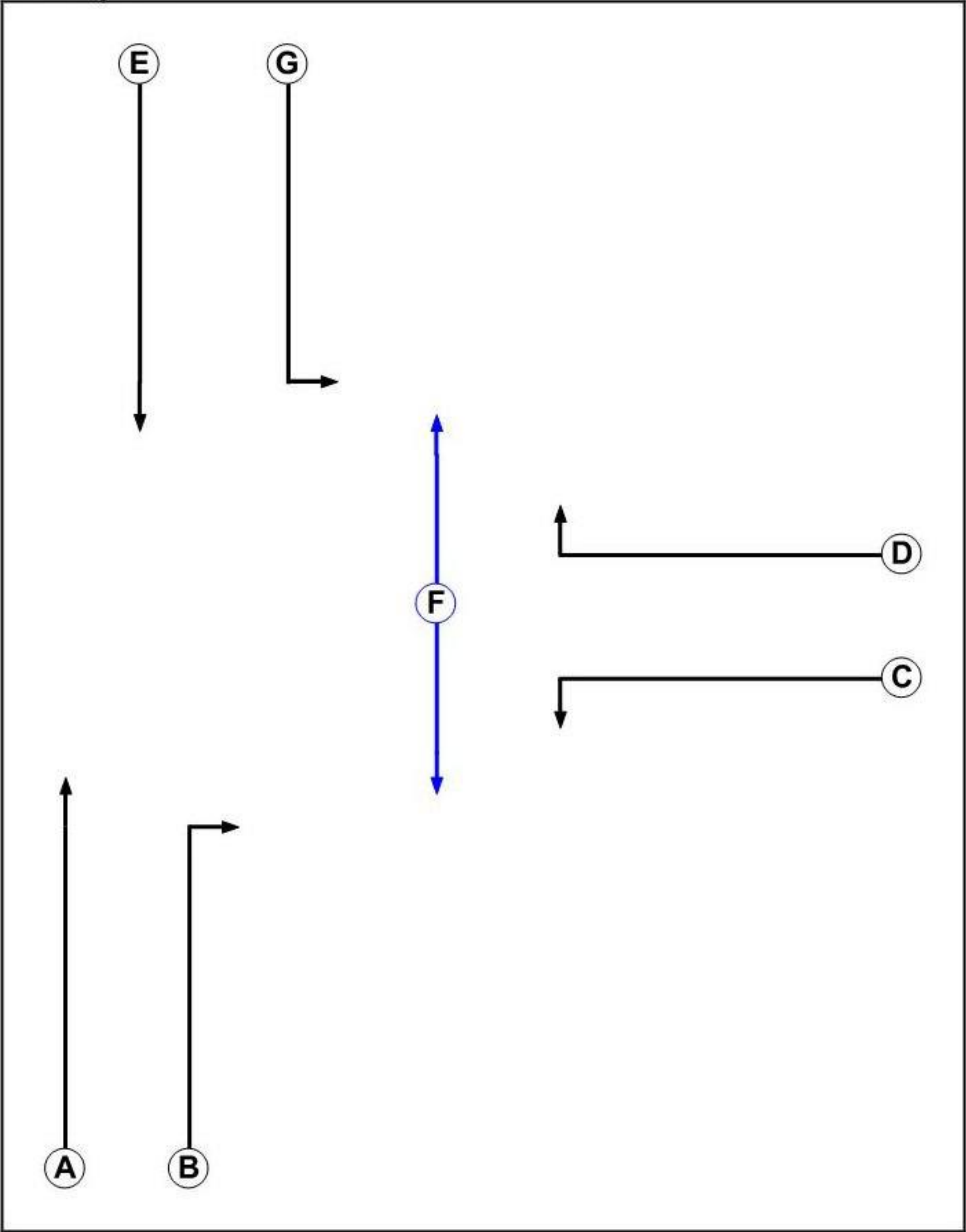
Appendix G

Results Summary
Results Summary

User and Project Details

Project:	Bartons Road, Havant
Title:	B2149 Petersfield Road/ Bartons Road
Location:	
Additional detail:	
File name:	B2149 Petersfield Road_ Bartons Road Linsig Model - WITH PRIORITY JUNCTIONS.lsg3x
Author:	
Company:	
Address:	

Phase Diagram



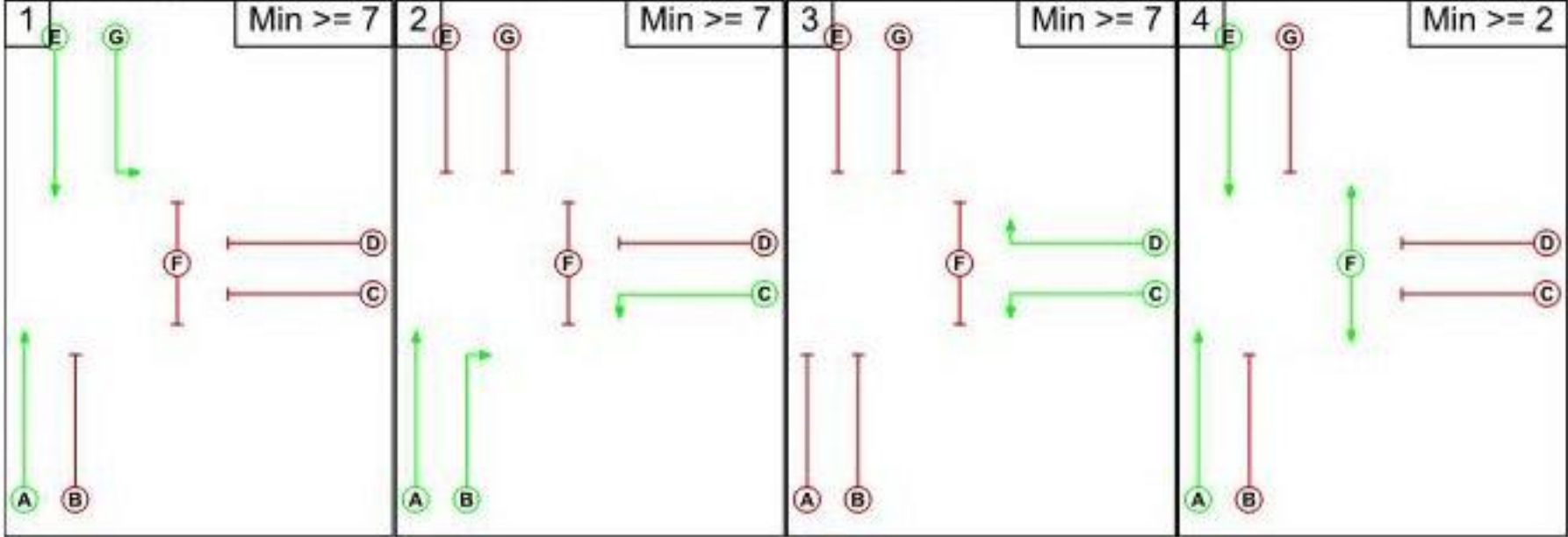
Phase Intergreens Matrix

Terminating Phase	Starting Phase							
		A	B	C	D	E	F	G
	A		-	-	7	-	-	-
	B	-		-	7	7	8	7
	C	-	-		-	7	5	-
	D	7	7	-		7	5	7
	E	-	7	7	7		-	-
	F	-	8	8	8	-		8
	G	-	7	-	7	-	7	

Phases in Stage

Stage No.	Phases in Stage
1	A E G
2	A B C
3	C D
4	A E F

Stage Diagram



Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2025 Sat'	12:30	13:30	01:00	
2: 'CD1 Sat (Linden Homes)'	12:30	13:30	01:00	
3: 'CD2 Sat (Land South of Bartons Road)'	12:30	13:30	01:00	
4: 'CD3 Sat (Land West of Havant Crematorium)'	12:30	13:30	01:00	
5: '2025 + CD Sat'	12:30	13:30	01:00	F1+F2+F3+F4
6: 'PD1 Sat Residential'	12:30	13:30	01:00	
7: 'PD2 Sat Drive-Thrus NEW'	12:30	13:30	01:00	
8: 'PD3 Sat Drive-Thrus PASS-BY'	12:30	13:30	01:00	
9: '2025 + CD + PD Sat'	12:30	13:30	01:00	F5+F6+F7+F8
10: '2025 AM'	08:00	09:00	01:00	
11: 'CD1 AM (Linden Homes)'	08:00	09:00	01:00	
12: 'CD2 AM (Land South of Bartons Road)'	08:00	09:00	01:00	
13: 'CD3 AM (Land West of Havant Crematorium)'	08:00	09:00	01:00	
14: '2025 + CD AM'	08:00	09:00	01:00	F10 + F11 + F12 + F13
15: 'PD1 AM Residential'	08:00	09:00	01:00	
16: 'PD2 AM Drive-Thrus NEW'	08:00	09:00	01:00	
17: 'PD3 AM Drive-Thrus PASS-BY'	08:00	09:00	01:00	
18: '2025 + CD + PD AM'	08:00	09:00	01:00	F14 + F15 + F16 + F17
19: '2025 PM'	17:00	18:00	01:00	
20: 'CD1 PM (Linden Homes)'	17:00	18:00	01:00	
21: 'CD2 PM (Land South of Bartons Road)'	17:00	18:00	01:00	
22: 'CD3 PM (Land West of Havant Crematorium)'	17:00	18:00	01:00	
23: '2025 + CD PM'	17:00	18:00	01:00	F19 + F20 + F21 + F22
24: 'PD1 PM Residential'	17:00	18:00	01:00	
25: 'PD2 PM Drive-Thrus NEW'	17:00	18:00	01:00	
26: 'PD3 PM Drive-Thrus PASS-BY'	17:00	18:00	01:00	
27: '2025 + CD + PD PM'	17:00	18:00	01:00	F23 + F24 + F25 + F26

Traffic Flows, Desired**FG1: '2025 Sat'****Desired Flow :**

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	493	28	520	0	1041
	B	384	0	0	110	0	494
	C	31	0	0	7	0	38
	D	594	101	6	0	0	701
	E	0	0	0	0	0	0
	Tot.	1009	594	34	637	0	2274

FG2: 'CD1 Sat (Linden Homes)'**Desired Flow :**

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	0	0
	B	0	0	0	1	0	1
	C	0	0	0	0	0	0
	D	1	0	0	0	0	1
	E	0	0	0	0	0	0
	Tot.	1	0	0	1	0	2

Results Summary

FG3: 'CD2 Sat (Land South of Bartons Road)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	17	0	17
	B	0	0	0	6	0	6
	C	0	0	0	0	0	0
	D	18	7	0	0	0	25
	E	0	0	0	0	0	0
	Tot.	18	7	0	23	0	48

FG4: 'CD3 Sat (Land West of Havant Crematorium)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	6	0	6
	B	0	0	0	2	0	2
	C	0	0	0	0	0	0
	D	7	3	0	0	0	10
	E	0	0	0	0	0	0
	Tot.	7	3	0	8	0	18

FG5: '2025 + CD Sat'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	493	28	543	0	1064
	B	384	0	0	119	0	503
	C	31	0	0	7	0	38
	D	620	111	6	0	0	737
	E	0	0	0	0	0	0
	Tot.	1035	604	34	669	0	2342

FG6: 'PD1 Sat Residential'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	14	14
	B	0	0	0	0	3	3
	C	0	0	0	0	0	0
	D	0	0	0	0	4	4
	E	17	4	0	5	0	26
	Tot.	17	4	0	5	21	47

Results Summary

Results Summary

FG7: 'PD2 Sat Drive-Thrus NEW'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	32	32
	B	0	0	0	0	15	15
	C	0	0	0	0	0	0
	D	0	0	0	0	22	22
	E	32	15	0	22	0	69
	Tot.	32	15	0	22	69	138

FG8: 'PD3 Sat Drive-Thrus PASS-BY'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	-27	0	-18	45	0
	B	-21	0	0	-17	38	0
	C	0	0	0	0	0	0
	D	-20	-19	0	0	39	0
	E	41	46	0	35	0	122
	Tot.	0	0	0	0	122	122

FG9: '2025 + CD + PD Sat'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	466	28	525	91	1110
	B	363	0	0	102	56	521
	C	31	0	0	7	0	38
	D	600	92	6	0	65	763
	E	90	65	0	62	0	217
	Tot.	1084	623	34	696	212	2649

FG10: '2025 AM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	336	11	431	0	778
	B	464	0	0	183	0	647
	C	25	0	0	5	0	30
	D	387	124	4	0	0	515
	E	0	0	0	0	0	0
	Tot.	876	460	15	619	0	1970

Results Summary

Results Summary

FG11: 'CD1 AM (Linden Homes)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	0	0
	B	0	0	0	1	0	1
	C	0	0	0	0	0	0
	D	1	0	0	0	0	1
	E	0	0	0	0	0	0
	Tot.	1	0	0	1	0	2

FG12: 'CD2 AM (Land South of Bartons Road)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	9	0	9
	B	0	0	0	3	0	3
	C	0	0	0	0	0	0
	D	24	9	0	0	0	33
	E	0	0	0	0	0	0
	Tot.	24	9	0	12	0	45

FG13: 'CD3 AM (Land West of Havant Crematorium)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	4	0	4
	B	0	0	0	1	0	1
	C	0	0	0	0	0	0
	D	10	4	0	0	0	14
	E	0	0	0	0	0	0
	Tot.	10	4	0	5	0	19

FG14: '2025 + CD AM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	336	11	444	0	791
	B	464	0	0	188	0	652
	C	25	0	0	5	0	30
	D	422	137	4	0	0	563
	E	0	0	0	0	0	0
	Tot.	911	473	15	637	0	2036

Results Summary

Results Summary

FG15: 'PD1 AM Residential'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	8	8
	B	0	0	0	0	2	2
	C	0	0	0	0	0	0
	D	0	0	0	0	2	2
	E	24	6	0	7	0	37
	Tot.	24	6	0	7	12	49

FG16: 'PD2 AM Drive-Thrus NEW'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	15	15
	B	0	0	0	0	13	13
	C	0	0	0	0	0	0
	D	0	0	0	0	11	11
	E	15	13	0	11	0	39
	Tot.	15	13	0	11	39	78

FG17: 'PD3 AM Drive-Thrus PASS-BY'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	-9	0	-9	18	0
	B	-13	0	0	-8	21	0
	C	0	0	0	0	0	0
	D	-8	-7	0	0	15	0
	E	21	16	0	17	0	54
	Tot.	0	0	0	0	54	54

FG18: '2025 + CD + PD AM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	327	11	435	41	814
	B	451	0	0	180	36	667
	C	25	0	0	5	0	30
	D	414	130	4	0	28	576
	E	60	35	0	35	0	130
	Tot.	950	492	15	655	105	2217

Results Summary

Results Summary

FG19: '2025 PM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	525	38	386	0	949
	B	331	0	0	103	0	434
	C	15	0	0	7	0	22
	D	536	172	6	0	0	714
	E	0	0	0	0	0	0
	Tot.	882	697	44	496	0	2119

FG20: 'CD1 PM (Linden Homes)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	1	0	1
	B	0	0	0	0	0	0
	C	0	0	0	0	0	0
	D	1	0	0	0	0	1
	E	0	0	0	0	0	0
	Tot.	1	0	0	1	0	2

FG21: 'CD2 PM (Land South of Bartons Road)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	27	0	27
	B	0	0	0	10	0	10
	C	0	0	0	0	0	0
	D	15	5	0	0	0	20
	E	0	0	0	0	0	0
	Tot.	15	5	0	37	0	57

FG22: 'CD3 PM (Land West of Havant Crematorium)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	9	0	9
	B	0	0	0	3	0	3
	C	0	0	0	0	0	0
	D	5	2	0	0	0	7
	E	0	0	0	0	0	0
	Tot.	5	2	0	12	0	19

Results Summary

Results Summary

FG23: '2025 + CD PM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	525	38	423	0	986
	B	331	0	0	116	0	447
	C	15	0	0	7	0	22
	D	557	179	6	0	0	742
	E	0	0	0	0	0	0
	Tot.	903	704	44	546	0	2197

FG24: 'PD1 PM Residential'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	21	21
	B	0	0	0	0	5	5
	C	0	0	0	0	0	0
	D	0	0	0	0	6	6
	E	12	3	0	4	0	19
	Tot.	12	3	0	4	32	51

FG25: 'PD2 PM Drive-Thrus NEW'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	25	25
	B	0	0	0	0	11	11
	C	0	0	0	0	0	0
	D	0	0	0	0	19	19
	E	25	11	0	19	0	55
	Tot.	25	11	0	19	55	110

FG26: 'PD3 PM Drive-Thrus PASS-BY'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	-19	0	-10	29	0
	B	-12	0	0	-9	21	0
	C	0	0	0	0	0	0
	D	-13	-13	0	0	26	0
	E	25	32	0	19	0	76
	Tot.	0	0	0	0	76	76

Results Summary

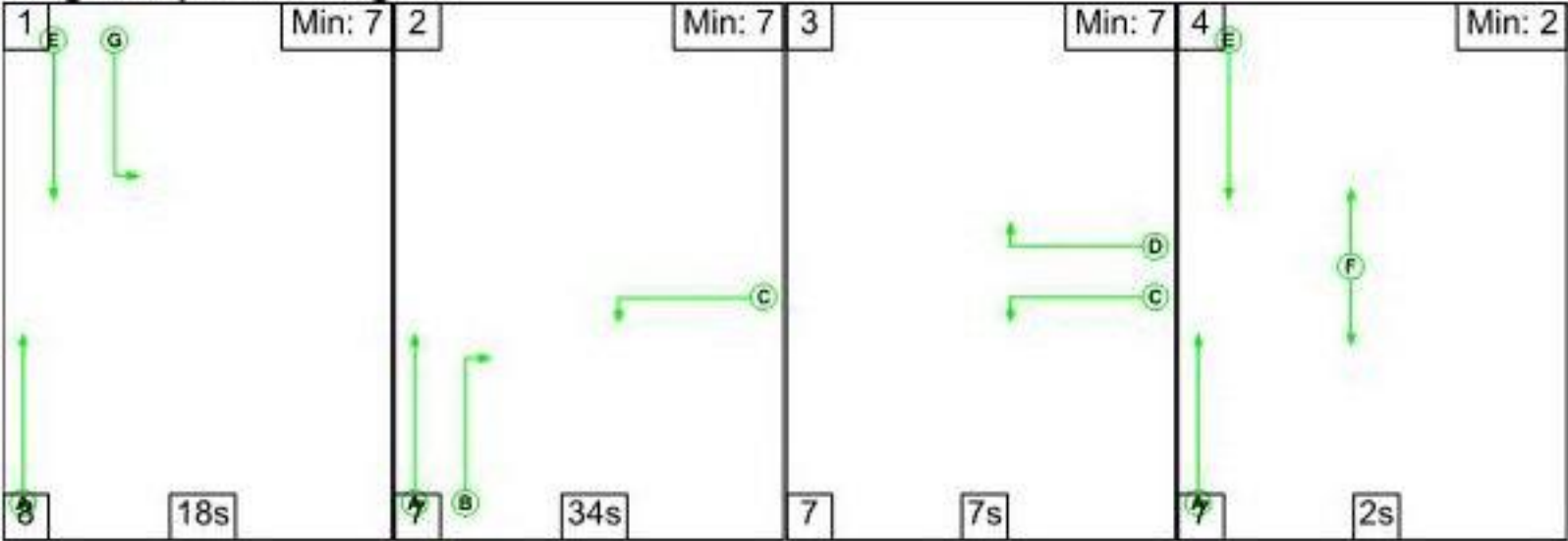
Results Summary

FG27: '2025 + CD + PD PM'

Desired Flow :

Origin	Destination						
		A	B	C	D	E	Tot.
	A	0	506	38	413	75	1032
	B	319	0	0	107	37	463
	C	15	0	0	7	0	22
	D	544	166	6	0	51	767
	E	62	46	0	42	0	150
	Tot.	940	718	44	569	163	2434

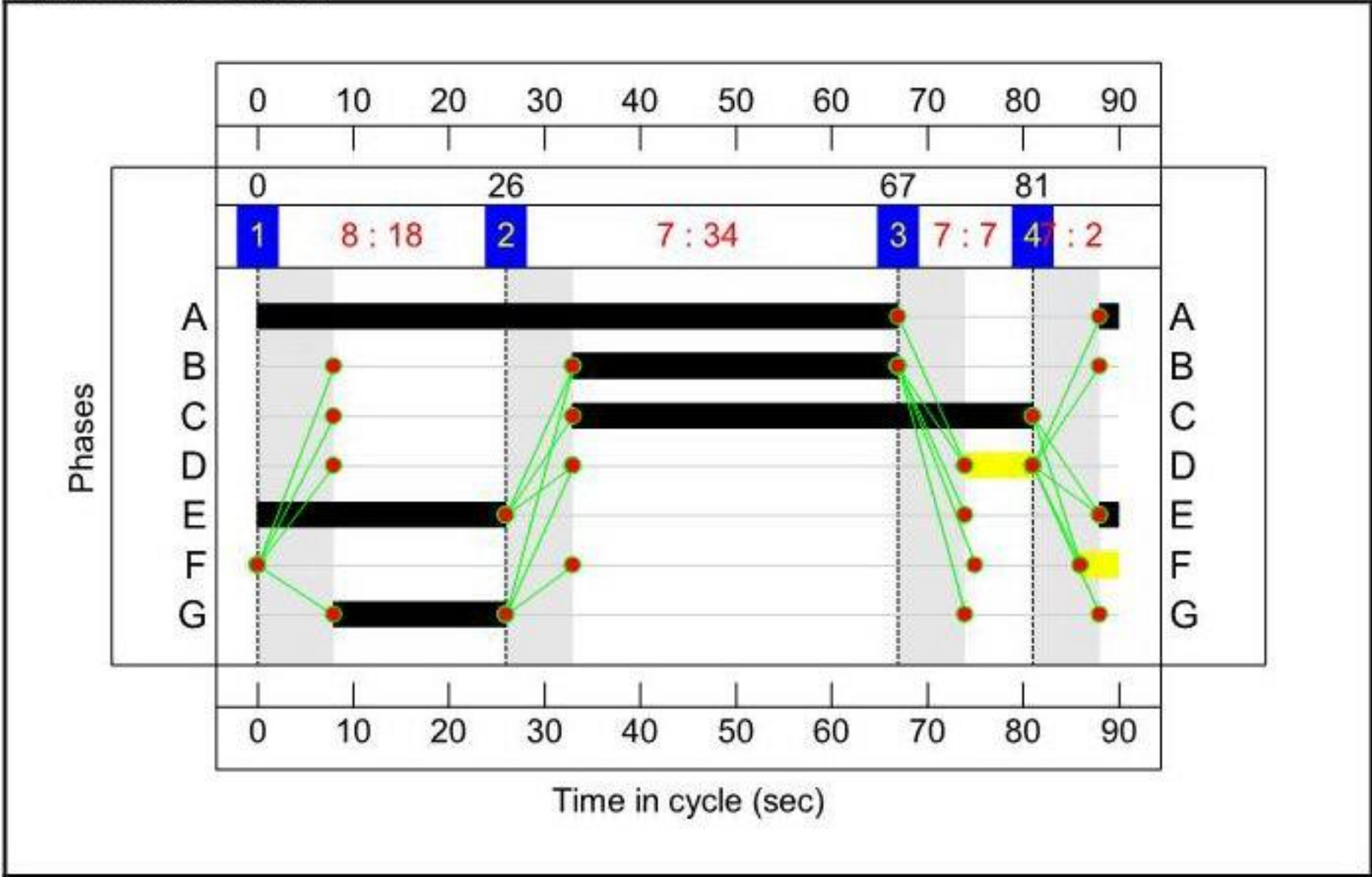
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	18	34	7	2
Change Point	0	26	67	81

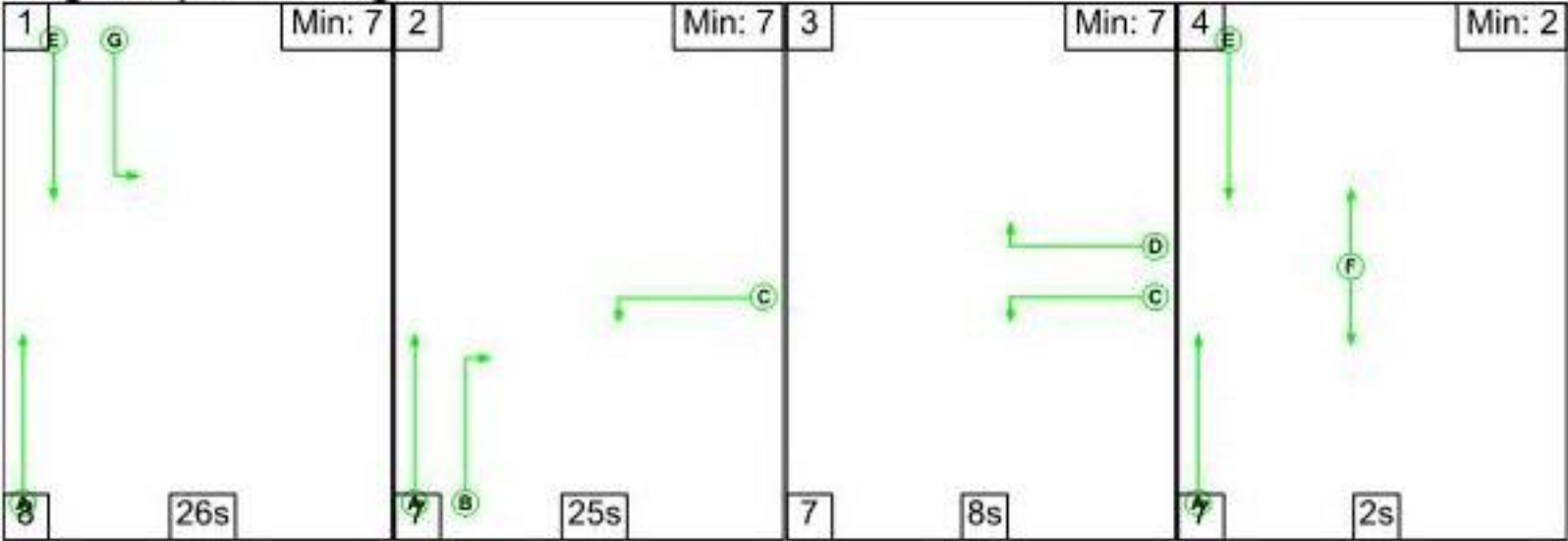
Signal Timings Diagram



Results Summary
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	90.4%	408	0	0	27.5	-	-
J1: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	90.4%	0	0	0	26.1	-	-
1/2+1/1	Petersfield Road (N) Left Ahead	U	E G		1	28:18	-	521	2095:1749	413+180	87.8 : 87.8%	-	-	-	7.5	52.0	14.6
2/1+2/2	Bartons Road Right Left	U	C D		1	48:7	-	878	1743:1953	798+174	90.4 : 90.4%	-	-	-	9.4	38.6	21.6
3/1+3/2	Petersfield Road (S) Ahead Right	U	A B		1	69:34	-	1110	1940:1849	519+717	89.8 : 89.8%	-	-	-	9.1	29.6	19.2
J2: Bartons Road/ Knightwood Avenue	-	-	-		-	-	-	-	-	-	44.6%	44	0	0	0.5	-	-
1/1	Knightwood Avenue Left Right	O	-		-	-	-	38	1639	285	13.3%	38	0	0	0.1	7.3	0.3
2/1+2/2	Bartons Road (E) Right Ahead	U+O	-		-	-	-	853	1915:1787	1901+13	44.6 : 44.6%	6	0	0	0.4	1.7	0.4
J3: Bartons Road/ Site Access	-	-	-		-	-	-	-	-	-	54.1%	364	0	0	0.9	-	-
2/1	Site Access Right Left	O	-		-	-	-	217	1743	401	54.1%	217	0	0	0.6	9.7	0.6
3/1+3/2	Bartons Road (W) Ahead Right	U+O	-		-	-	-	781	1915:1665	1512+351	41.9 : 41.9%	147	0	0	0.4	1.7	0.4
C1					PRC for Signalled Lanes (%):		-0.5	Total Delay for Signalled Lanes (pcuHr):				26.06	Cycle Time (s): 90				
					PRC Over All Lanes (%):		-0.5	Total Delay Over All Lanes(pcuHr):				27.48					

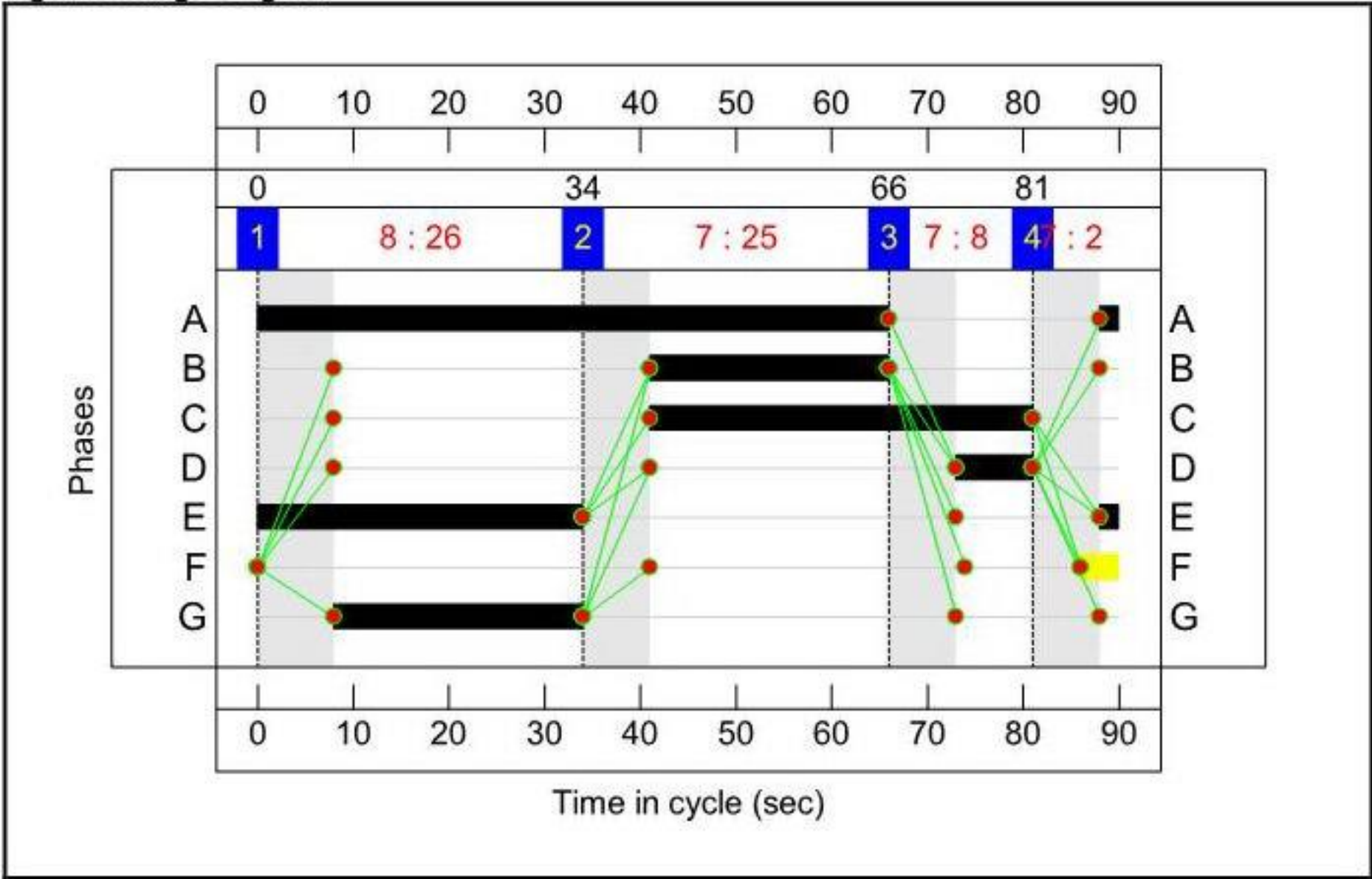
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	26	25	8	2
Change Point	0	34	66	81

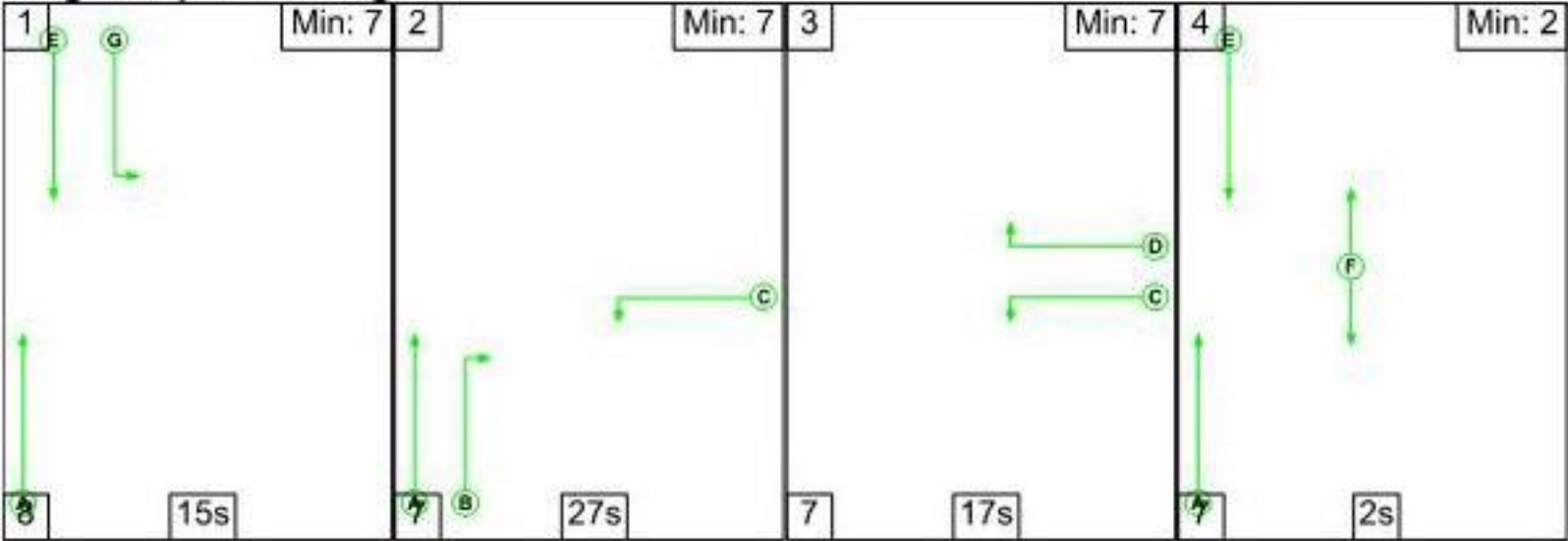
Signal Timings Diagram



Results Summary
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	91.2%	241	0	0	25.9	-	-
J1: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	91.2%	0	0	0	25.1	-	-
1/2+1/1	Petersfield Road (N) Left Ahead	U	E G		1	36:26	-	667	2095:1749	507+243	88.9 : 88.9%	-	-	-	8.4	45.1	18.1
2/1+2/2	Bartons Road Right Left	U	C D		1	40:8	-	664	1743:1953	571+189	87.3 : 87.3%	-	-	-	7.7	41.7	15.0
3/1+3/2	Petersfield Road (S) Ahead Right	U	A B		1	68:25	-	814	1940:1849	359+534	91.2 : 91.2%	-	-	-	9.1	40.1	16.3
J2: Bartons Road/ Knightwood Avenue	-	-	-		-	-	-	-	-	-	33.6%	34	0	0	0.3	-	-
1/1	Knightwood Avenue Left Right	O	-		-	-	-	30	1641	345	8.7%	30	0	0	0.0	5.7	0.0
2/1+2/2	Bartons Road (E) Right Ahead	U+O	-		-	-	-	643	1915:1787	1902+12	33.6 : 33.6%	4	0	0	0.3	1.4	0.3
J3: Bartons Road/ Site Access	-	-	-		-	-	-	-	-	-	37.0%	207	0	0	0.5	-	-
2/1	Site Access Right Left	O	-		-	-	-	130	1742	470	27.7%	130	0	0	0.2	5.3	0.2
3/1+3/2	Bartons Road (W) Ahead Right	U+O	-		-	-	-	697	1915:1665	1676+208	37.0 : 37.0%	77	0	0	0.3	1.5	0.3
C1																	

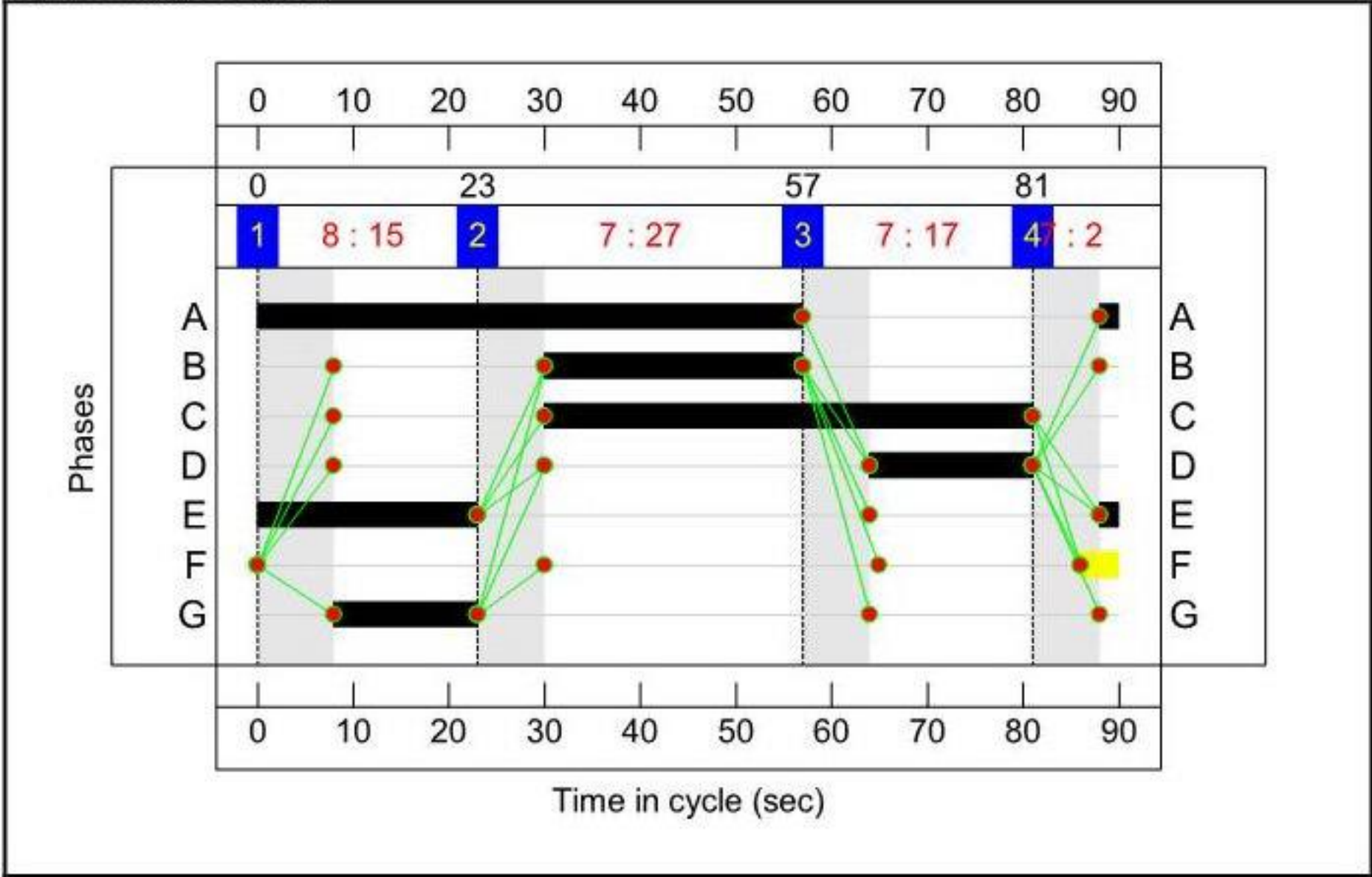
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	15	27	17	2
Change Point	0	23	57	81

Signal Timings Diagram



Results Summary
Network Results

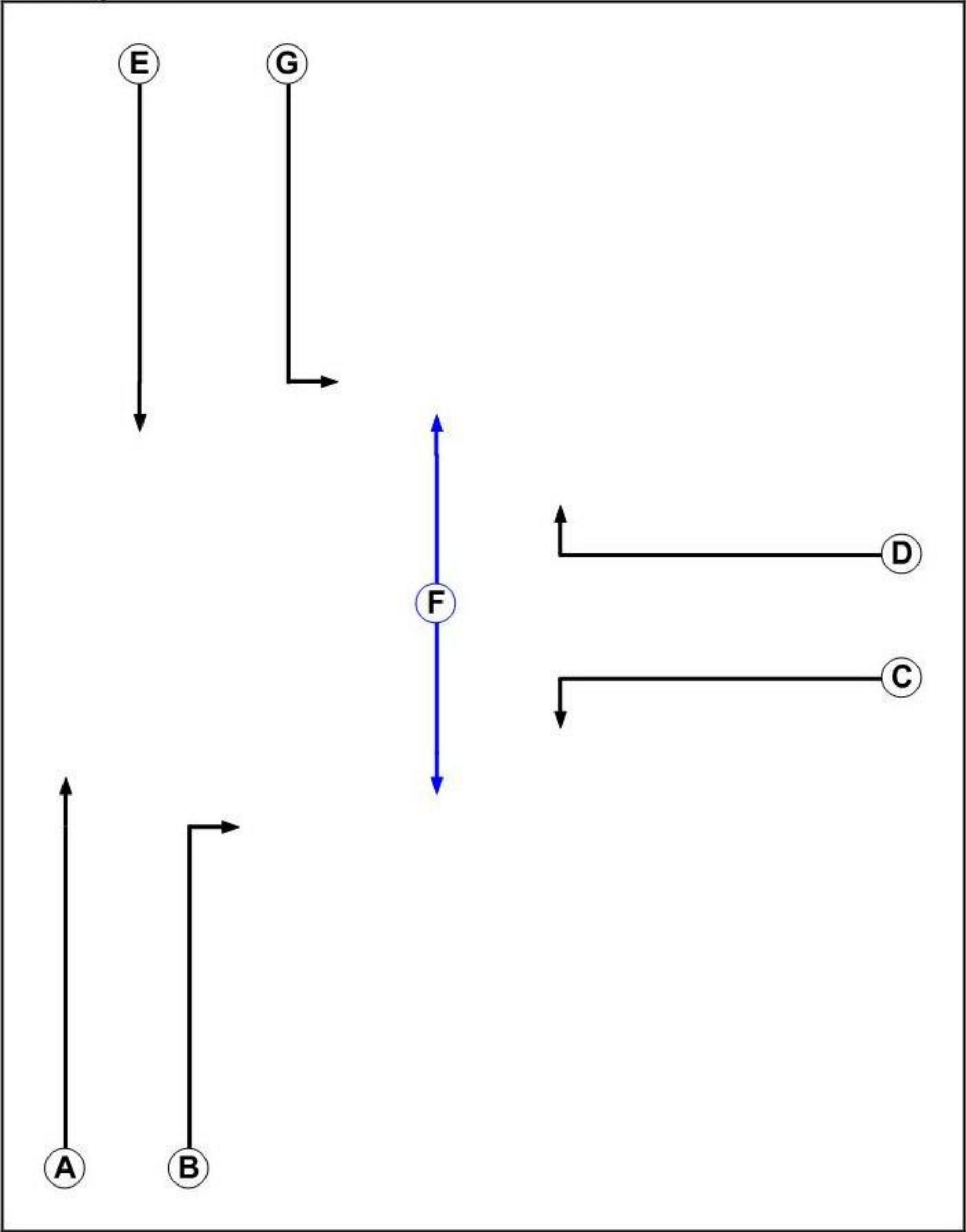
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	91.4%	290	0	0	27.1	-	-
J1: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	91.4%	0	0	0	26.1	-	-
1/2+1/1	Petersfield Road (N) Left Ahead	U	E G		1	25:15	-	463	2095:1749	359+162	89.0 : 89.0%	-	-	-	7.6	58.8	13.6
2/1+2/2	Bartons Road Right Left	U	C D		1	51:17	-	833	1743:1953	688+235	90.3 : 90.3%	-	-	-	8.4	36.3	17.5
3/1+3/2	Petersfield Road (S) Ahead Right	U	A B		1	59:27	-	1032	1940:1849	553+575	91.4 : 91.4%	-	-	-	10.2	35.5	17.4
J2: Bartons Road/ Knightwood Avenue	-	-	-		-	-	-	-	-	-	43.1%	28	0	0	0.4	-	-
1/1	Knightwood Avenue Left Right	O	-		-	-	-	22	1620	343	6.4%	22	0	0	0.0	5.6	0.0
2/1+2/2	Bartons Road (E) Right Ahead	U+O	-		-	-	-	824	1915:1787	1900+14	43.1 : 43.1%	6	0	0	0.4	1.7	0.4
J3: Bartons Road/ Site Access	-	-	-		-	-	-	-	-	-	35.4%	262	0	0	0.5	-	-
2/1	Site Access Right Left	O	-		-	-	-	150	1743	424	35.4%	150	0	0	0.3	6.6	0.3
3/1+3/2	Bartons Road (W) Ahead Right	U+O	-		-	-	-	639	1915:1665	1539+327	34.2 : 34.2%	112	0	0	0.3	1.5	0.3
C1					PRC for Signalled Lanes (%):		-1.6	Total Delay for Signalled Lanes (pcuHr):				26.12	Cycle Time (s): 90				
					PRC Over All Lanes (%):		-1.6	Total Delay Over All Lanes(pcuHr):				27.07					

Results Summary
Results Summary

User and Project Details

Project:	Bartons Road, Havant
Title:	B2149 Petersfield Road/ Bartons Road
Location:	
Additional detail:	
File name:	B2149 Petersfield Road_ Bartons Road Linsig Model - WITH PRIORITY JUNCTIONS.lsg3x
Author:	
Company:	
Address:	

Phase Diagram



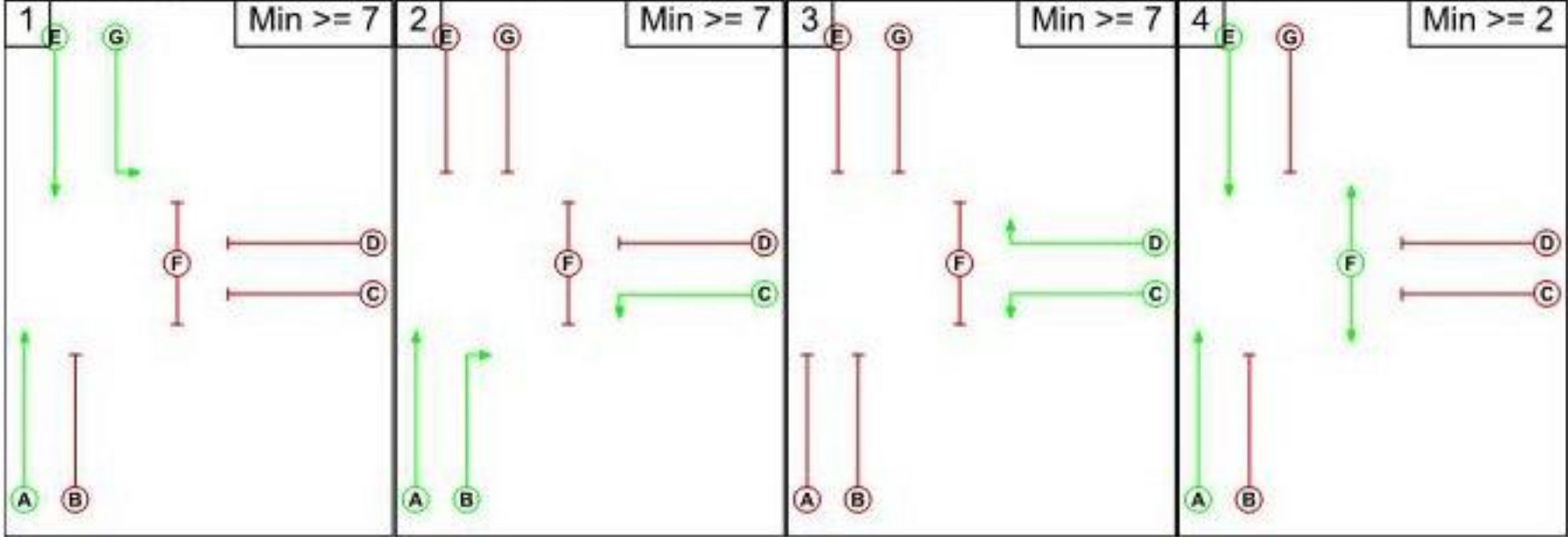
Phase Intergreens Matrix

Terminating Phase	Starting Phase							
		A	B	C	D	E	F	G
	A		-	-	7	-	-	-
	B	-		-	7	7	8	7
	C	-	-		-	7	5	-
	D	7	7	-		7	5	7
	E	-	7	7	7		-	-
	F	-	8	8	8	-		8
	G	-	7	-	7	-	7	

Phases in Stage

Stage No.	Phases in Stage
1	A E G
2	A B C
3	C D
4	A E F

Stage Diagram



Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2025 Sat'	12:30	13:30	01:00	
2: 'CD1 Sat (Linden Homes)'	12:30	13:30	01:00	
3: 'CD2 Sat (Land South of Bartons Road)'	12:30	13:30	01:00	
4: 'CD3 Sat (Land West of Havant Crematorium)'	12:30	13:30	01:00	
5: '2025 + CD Sat'	12:30	13:30	01:00	F1+F2+F3+F4
6: 'PD1 Sat Residential'	12:30	13:30	01:00	
7: 'PD2 Sat Drive-Thrus NEW'	12:30	13:30	01:00	
8: 'PD3 Sat Drive-Thrus PASS-BY'	12:30	13:30	01:00	
9: '2025 + CD + PD Sat'	12:30	13:30	01:00	F5+F6+F7+F8
10: '2025 AM'	08:00	09:00	01:00	
11: 'CD1 AM (Linden Homes)'	08:00	09:00	01:00	
12: 'CD2 AM (Land South of Bartons Road)'	08:00	09:00	01:00	
13: 'CD3 AM (Land West of Havant Crematorium)'	08:00	09:00	01:00	
14: '2025 + CD AM'	08:00	09:00	01:00	F10 + F11 + F12 + F13
15: 'PD1 AM Residential'	08:00	09:00	01:00	
16: 'PD2 AM Drive-Thrus NEW'	08:00	09:00	01:00	
17: 'PD3 AM Drive-Thrus PASS-BY'	08:00	09:00	01:00	
18: '2025 + CD + PD AM'	08:00	09:00	01:00	F14 + F15 + F16 + F17
19: '2025 PM'	17:00	18:00	01:00	
20: 'CD1 PM (Linden Homes)'	17:00	18:00	01:00	
21: 'CD2 PM (Land South of Bartons Road)'	17:00	18:00	01:00	
22: 'CD3 PM (Land West of Havant Crematorium)'	17:00	18:00	01:00	
23: '2025 + CD PM'	17:00	18:00	01:00	F19 + F20 + F21 + F22
24: 'PD1 PM Residential'	17:00	18:00	01:00	
25: 'PD2 PM Drive-Thrus NEW'	17:00	18:00	01:00	
26: 'PD3 PM Drive-Thrus PASS-BY'	17:00	18:00	01:00	
27: '2025 + CD + PD PM'	17:00	18:00	01:00	F23 + F24 + F25 + F26

Traffic Flows, Desired
FG1: '2025 Sat'
Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	493	28	520	0	1041
	B	384	0	0	110	0	494
	C	31	0	0	7	0	38
	D	594	101	6	0	0	701
	E	0	0	0	0	0	0
	Tot.	1009	594	34	637	0	2274

FG2: 'CD1 Sat (Linden Homes)'
Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	0	0
	B	0	0	0	1	0	1
	C	0	0	0	0	0	0
	D	1	0	0	0	0	1
	E	0	0	0	0	0	0
	Tot.	1	0	0	1	0	2

Results Summary

FG3: 'CD2 Sat (Land South of Bartons Road)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	17	0	17
	B	0	0	0	6	0	6
	C	0	0	0	0	0	0
	D	18	7	0	0	0	25
	E	0	0	0	0	0	0
	Tot.	18	7	0	23	0	48

FG4: 'CD3 Sat (Land West of Havant Crematorium)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	6	0	6
	B	0	0	0	2	0	2
	C	0	0	0	0	0	0
	D	7	3	0	0	0	10
	E	0	0	0	0	0	0
	Tot.	7	3	0	8	0	18

FG5: '2025 + CD Sat'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	493	28	543	0	1064
	B	384	0	0	119	0	503
	C	31	0	0	7	0	38
	D	620	111	6	0	0	737
	E	0	0	0	0	0	0
	Tot.	1035	604	34	669	0	2342

FG6: 'PD1 Sat Residential'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	14	14
	B	0	0	0	0	3	3
	C	0	0	0	0	0	0
	D	0	0	0	0	4	4
	E	17	4	0	5	0	26
	Tot.	17	4	0	5	21	47

Results Summary

Results Summary

FG7: 'PD2 Sat Drive-Thrus NEW'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	32	32
	B	0	0	0	0	15	15
	C	0	0	0	0	0	0
	D	0	0	0	0	22	22
	E	32	15	0	22	0	69
	Tot.	32	15	0	22	69	138

FG8: 'PD3 Sat Drive-Thrus PASS-BY'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	-27	0	-18	45	0
	B	-21	0	0	-17	38	0
	C	0	0	0	0	0	0
	D	-20	-19	0	0	39	0
	E	41	46	0	35	0	122
	Tot.	0	0	0	0	122	122

FG9: '2025 + CD + PD Sat'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	466	28	525	91	1110
	B	363	0	0	102	56	521
	C	31	0	0	7	0	38
	D	600	92	6	0	65	763
	E	90	65	0	62	0	217
	Tot.	1084	623	34	696	212	2649

FG10: '2025 AM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	336	11	431	0	778
	B	464	0	0	183	0	647
	C	25	0	0	5	0	30
	D	387	124	4	0	0	515
	E	0	0	0	0	0	0
	Tot.	876	460	15	619	0	1970

Results Summary

Results Summary

FG11: 'CD1 AM (Linden Homes)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	0	0
	B	0	0	0	1	0	1
	C	0	0	0	0	0	0
	D	1	0	0	0	0	1
	E	0	0	0	0	0	0
	Tot.	1	0	0	1	0	2

FG12: 'CD2 AM (Land South of Bartons Road)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	9	0	9
	B	0	0	0	3	0	3
	C	0	0	0	0	0	0
	D	24	9	0	0	0	33
	E	0	0	0	0	0	0
	Tot.	24	9	0	12	0	45

FG13: 'CD3 AM (Land West of Havant Crematorium)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	4	0	4
	B	0	0	0	1	0	1
	C	0	0	0	0	0	0
	D	10	4	0	0	0	14
	E	0	0	0	0	0	0
	Tot.	10	4	0	5	0	19

FG14: '2025 + CD AM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	336	11	444	0	791
	B	464	0	0	188	0	652
	C	25	0	0	5	0	30
	D	422	137	4	0	0	563
	E	0	0	0	0	0	0
	Tot.	911	473	15	637	0	2036

Results Summary

Results Summary

FG15: 'PD1 AM Residential'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	8	8
	B	0	0	0	0	2	2
	C	0	0	0	0	0	0
	D	0	0	0	0	2	2
	E	24	6	0	7	0	37
	Tot.	24	6	0	7	12	49

FG16: 'PD2 AM Drive-Thrus NEW'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	15	15
	B	0	0	0	0	13	13
	C	0	0	0	0	0	0
	D	0	0	0	0	11	11
	E	15	13	0	11	0	39
	Tot.	15	13	0	11	39	78

FG17: 'PD3 AM Drive-Thrus PASS-BY'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	-9	0	-9	18	0
	B	-13	0	0	-8	21	0
	C	0	0	0	0	0	0
	D	-8	-7	0	0	15	0
	E	21	16	0	17	0	54
	Tot.	0	0	0	0	54	54

FG18: '2025 + CD + PD AM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	327	11	435	41	814
	B	451	0	0	180	36	667
	C	25	0	0	5	0	30
	D	414	130	4	0	28	576
	E	60	35	0	35	0	130
	Tot.	950	492	15	655	105	2217

Results Summary

Results Summary

FG19: '2025 PM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	525	38	386	0	949
	B	331	0	0	103	0	434
	C	15	0	0	7	0	22
	D	536	172	6	0	0	714
	E	0	0	0	0	0	0
	Tot.	882	697	44	496	0	2119

FG20: 'CD1 PM (Linden Homes)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	1	0	1
	B	0	0	0	0	0	0
	C	0	0	0	0	0	0
	D	1	0	0	0	0	1
	E	0	0	0	0	0	0
	Tot.	1	0	0	1	0	2

FG21: 'CD2 PM (Land South of Bartons Road)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	27	0	27
	B	0	0	0	10	0	10
	C	0	0	0	0	0	0
	D	15	5	0	0	0	20
	E	0	0	0	0	0	0
	Tot.	15	5	0	37	0	57

FG22: 'CD3 PM (Land West of Havant Crematorium)'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	9	0	9
	B	0	0	0	3	0	3
	C	0	0	0	0	0	0
	D	5	2	0	0	0	7
	E	0	0	0	0	0	0
	Tot.	5	2	0	12	0	19

Results Summary

Results Summary

FG23: '2025 + CD PM'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	525	38	423	0	986
	B	331	0	0	116	0	447
	C	15	0	0	7	0	22
	D	557	179	6	0	0	742
	E	0	0	0	0	0	0
	Tot.	903	704	44	546	0	2197

FG24: 'PD1 PM Residential'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	21	21
	B	0	0	0	0	5	5
	C	0	0	0	0	0	0
	D	0	0	0	0	6	6
	E	12	3	0	4	0	19
	Tot.	12	3	0	4	32	51

FG25: 'PD2 PM Drive-Thrus NEW'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	0	0	0	25	25
	B	0	0	0	0	11	11
	C	0	0	0	0	0	0
	D	0	0	0	0	19	19
	E	25	11	0	19	0	55
	Tot.	25	11	0	19	55	110

FG26: 'PD3 PM Drive-Thrus PASS-BY'

Desired Flow :

	Destination						
		A	B	C	D	E	Tot.
Origin	A	0	-19	0	-10	29	0
	B	-12	0	0	-9	21	0
	C	0	0	0	0	0	0
	D	-13	-13	0	0	26	0
	E	25	32	0	19	0	76
	Tot.	0	0	0	0	76	76

Results Summary

Results Summary

FG27: '2025 + CD + PD PM'

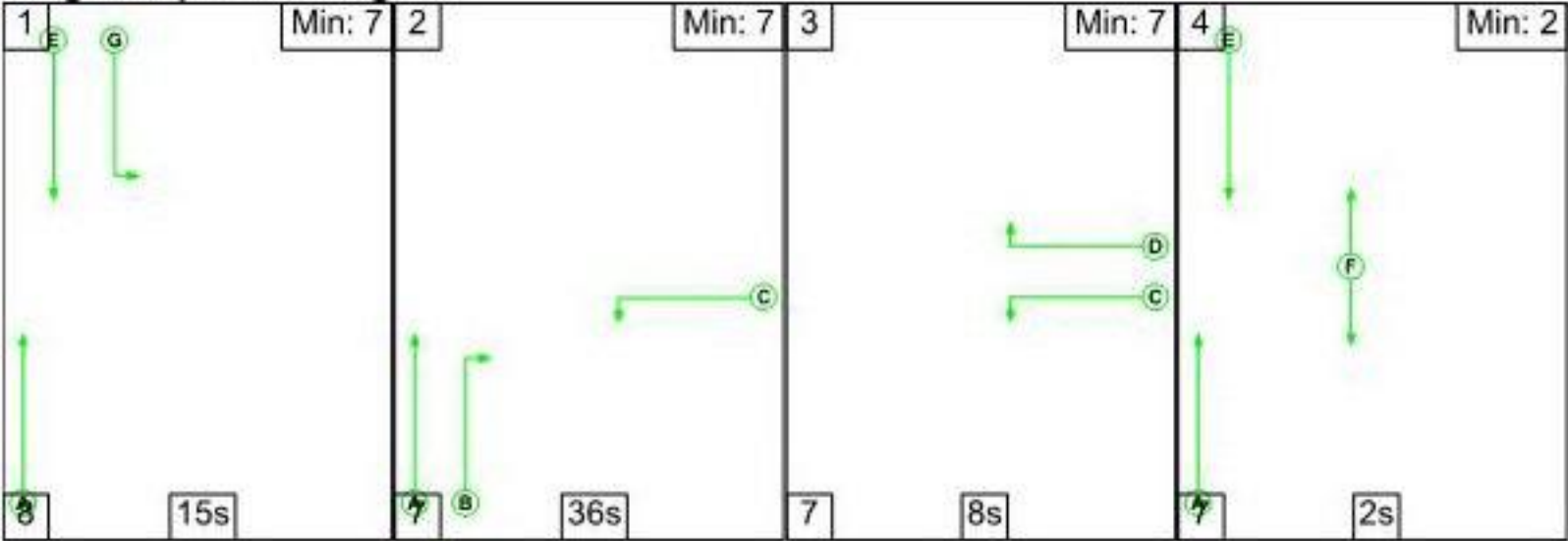
Desired Flow :

Origin	Destination						
		A	B	C	D	E	Tot.
	A	0	506	38	413	75	1032
	B	319	0	0	107	37	463
	C	15	0	0	7	0	22
	D	544	166	6	0	51	767
	E	62	46	0	42	0	150
	Tot.	940	718	44	569	163	2434

Results Summary

Scenario 1: '2025 + CD + PD Sat' (FG9: '2025 + CD + PD Sat', Plan 1: 'Network Control Plan 1')

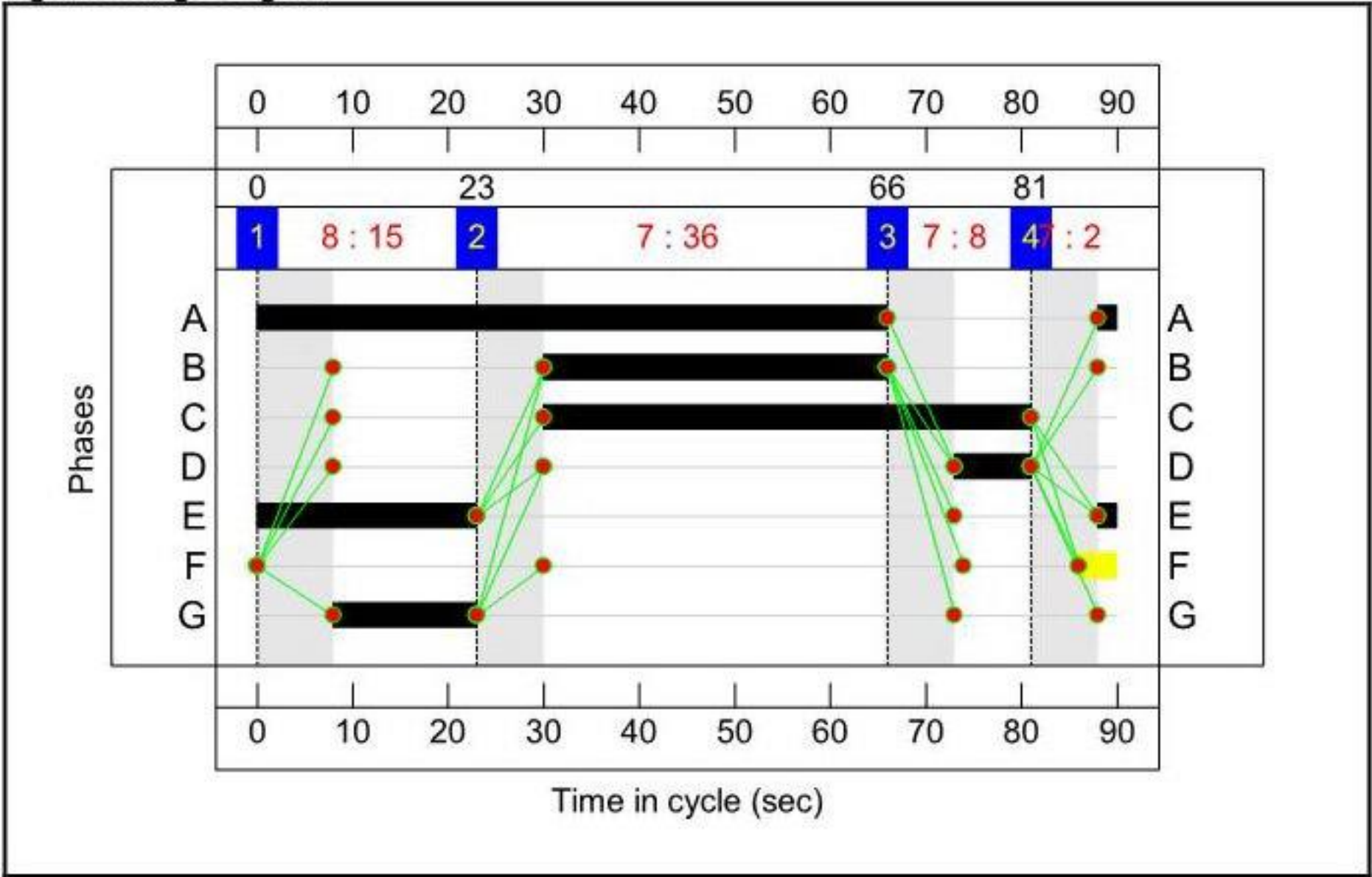
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	15	36	8	2
Change Point	0	23	66	81

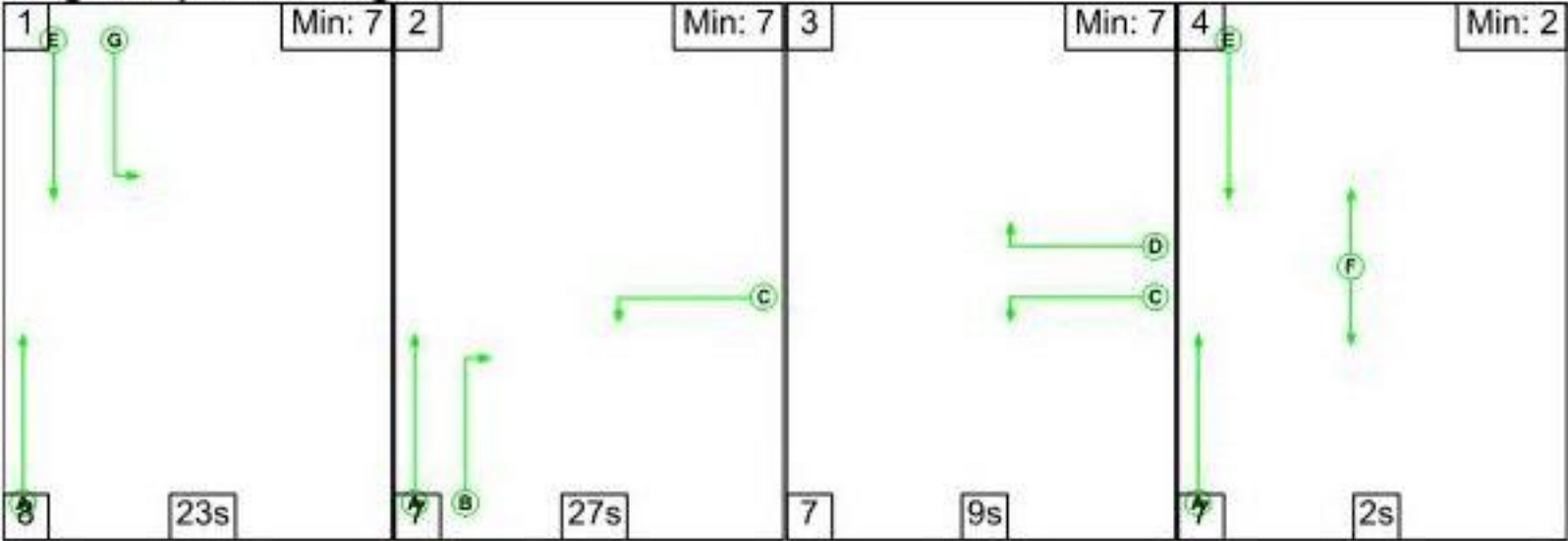
Signal Timings Diagram



Results Summary
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	86.9%	408	0	0	23.3	-	-
J1: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	86.9%	0	0	0	21.9	-	-
1/2+1/1	Petersfield Road (N) Left Ahead	U	E G		1	25:15	-	521	2095:1749	431+188	84.2 : 84.2%	-	-	-	6.8	47.1	13.7
2/1+2/2	Bartons Road Right Left	U	C D		1	51:8	-	878	1743:1953	855+186	84.3 : 84.3%	-	-	-	7.2	29.5	18.5
3/1+3/2	Petersfield Road (S) Ahead Right	U	A B		1	68:36	-	1110	1940:1849	536+741	86.9 : 86.9%	-	-	-	7.9	25.6	17.7
J2: Bartons Road/ Knightwood Avenue	-	-	-		-	-	-	-	-	-	44.6%	44	0	0	0.5	-	-
1/1	Knightwood Avenue Left Right	O	-		-	-	-	38	1639	285	13.3%	38	0	0	0.1	7.3	0.3
2/1+2/2	Bartons Road (E) Right Ahead	U+O	-		-	-	-	853	1915:1787	1901+13	44.6 : 44.6%	6	0	0	0.4	1.7	0.4
J3: Bartons Road/ Site Access	-	-	-		-	-	-	-	-	-	53.8%	364	0	0	0.9	-	-
2/1	Site Access Right Left	O	-		-	-	-	217	1743	403	53.8%	217	0	0	0.6	9.6	0.6
3/1+3/2	Bartons Road (W) Ahead Right	U+O	-		-	-	-	781	1915:1665	1512+351	41.9 : 41.9%	147	0	0	0.4	1.7	0.4
C1 PRC for Signalled Lanes (%): 3.6 PRC Over All Lanes (%): 3.6 Total Delay for Signalled Lanes (pcuHr): 21.89 Total Delay Over All Lanes(pcuHr): 23.31 Cycle Time (s): 90																	

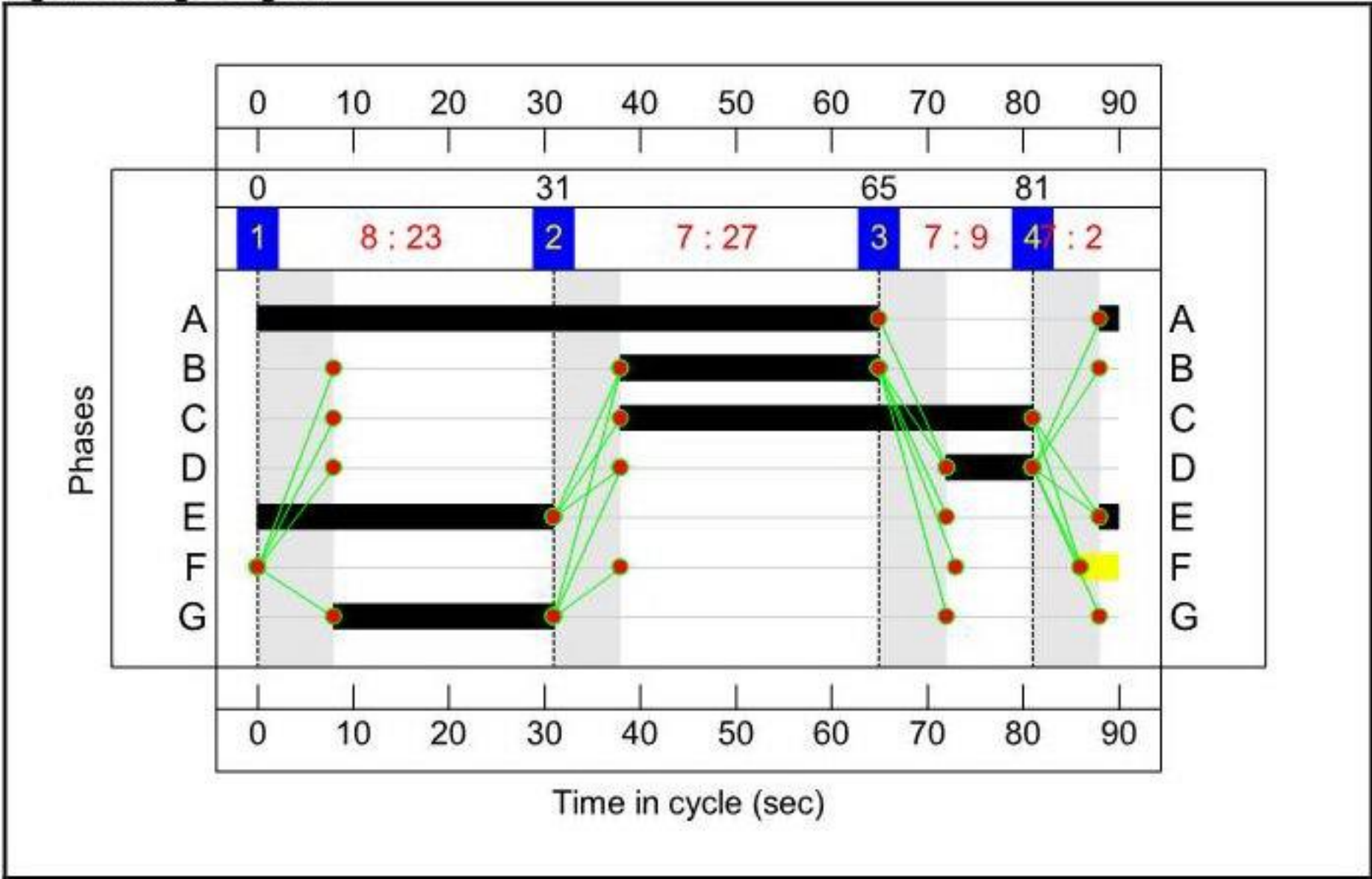
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	23	27	9	2
Change Point	0	31	65	81

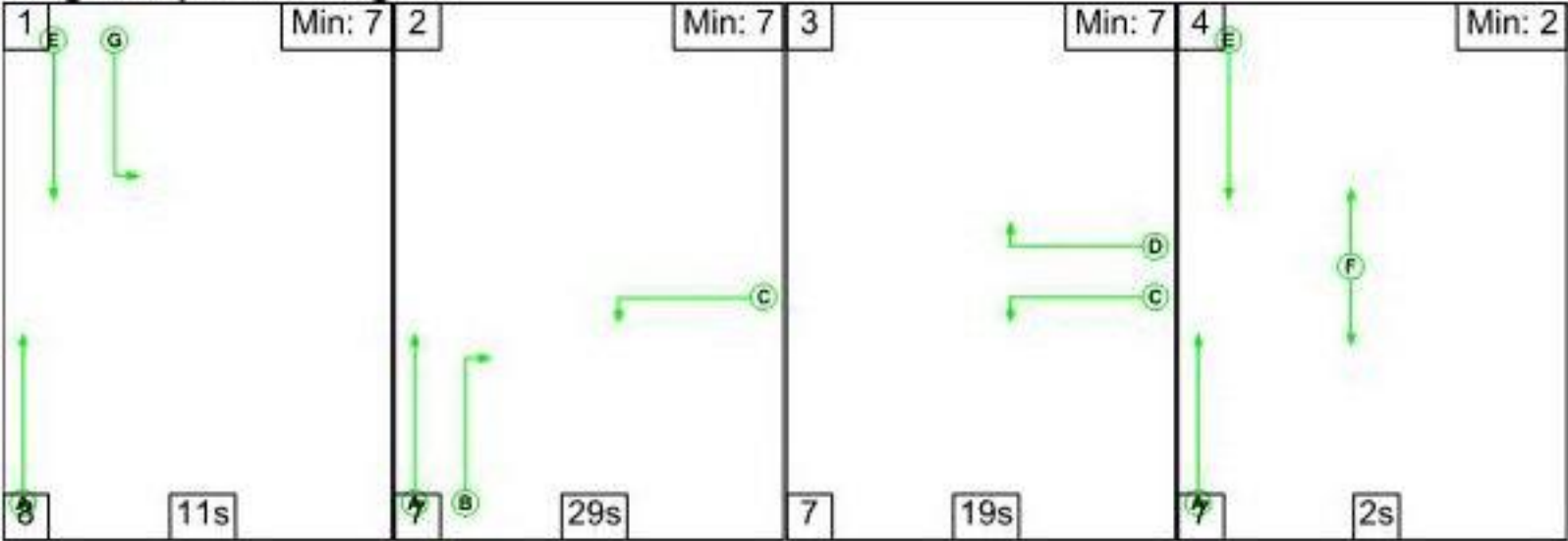
Signal Timings Diagram



Results Summary
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	85.1%	241	0	0	21.7	-	-
J1: B2149 Petersfield Road/ Bartons Road	-	-	-		-	-	-	-	-	-	85.1%	0	0	0	20.9	-	-
1/2+1/1	Petersfield Road (N) Left Ahead	U	E G		1	33:23	-	667	2095:1749	533+255	84.6 : 84.6%	-	-	-	7.2	39.1	16.7
2/1+2/2	Bartons Road Right Left	U	C D		1	43:9	-	664	1743:1953	586+194	85.1 : 85.1%	-	-	-	6.8	37.0	13.6
3/1+3/2	Petersfield Road (S) Ahead Right	U	A B		1	67:27	-	814	1940:1849	386+575	84.7 : 84.7%	-	-	-	6.9	30.4	14.0
J2: Bartons Road/ Knightwood Avenue	-	-	-		-	-	-	-	-	-	33.6%	34	0	0	0.3	-	-
1/1	Knightwood Avenue Left Right	O	-		-	-	-	30	1641	346	8.7%	30	0	0	0.0	5.7	0.0
2/1+2/2	Bartons Road (E) Right Ahead	U+O	-		-	-	-	643	1915:1787	1902+12	33.6 : 33.6%	4	0	0	0.3	1.4	0.3
J3: Bartons Road/ Site Access	-	-	-		-	-	-	-	-	-	37.0%	207	0	0	0.5	-	-
2/1	Site Access Right Left	O	-		-	-	-	130	1742	471	27.6%	130	0	0	0.2	5.3	0.2
3/1+3/2	Bartons Road (W) Ahead Right	U+O	-		-	-	-	697	1915:1665	1676+208	37.0 : 37.0%	77	0	0	0.3	1.5	0.3
C1					PRC for Signalled Lanes (%):		5.8	Total Delay for Signalled Lanes (pcuHr):				20.95	Cycle Time (s): 90				
					PRC Over All Lanes (%):		5.8	Total Delay Over All Lanes(pcuHr):				21.73					

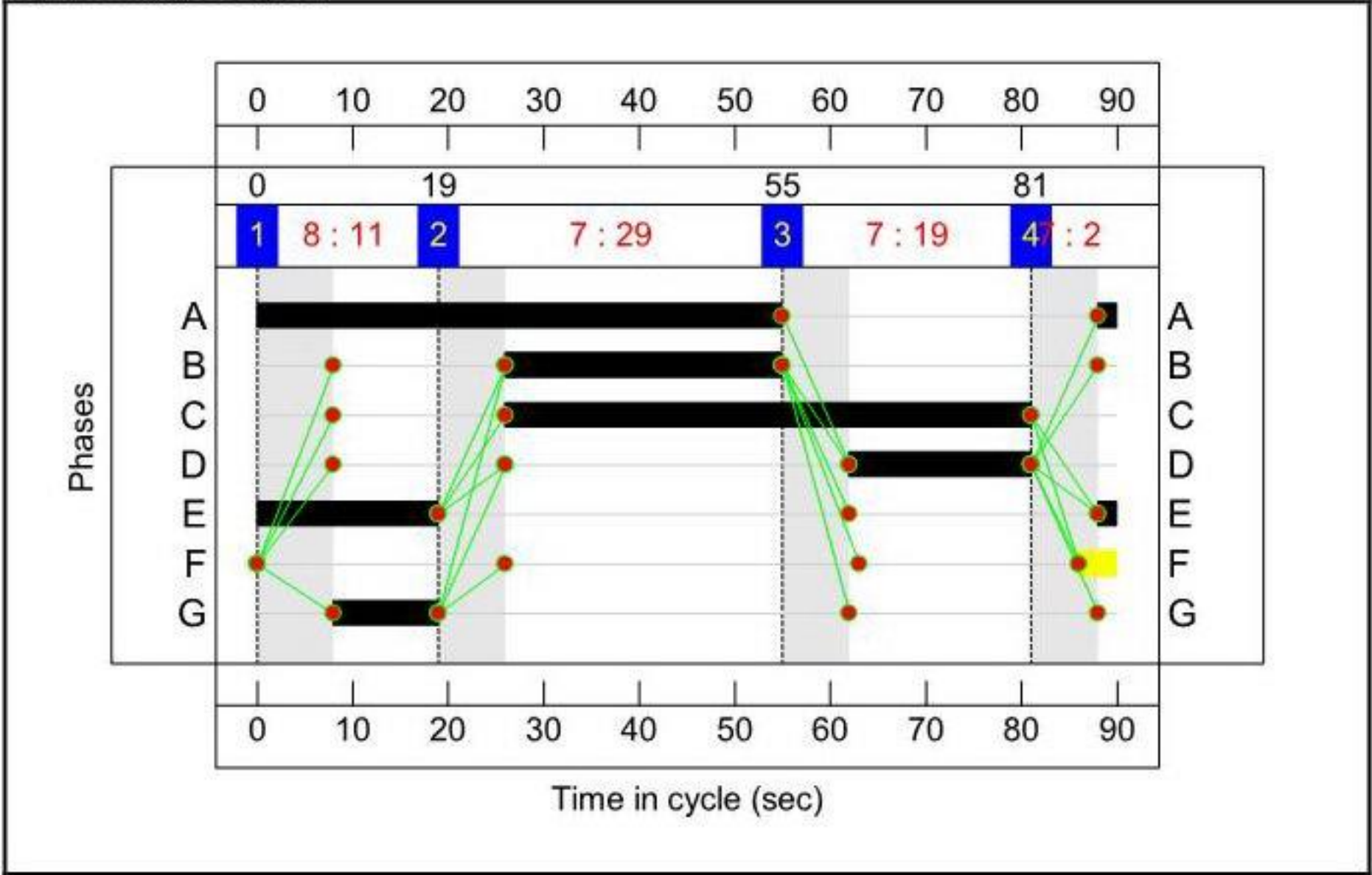
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	11	29	19	2
Change Point	0	19	55	81

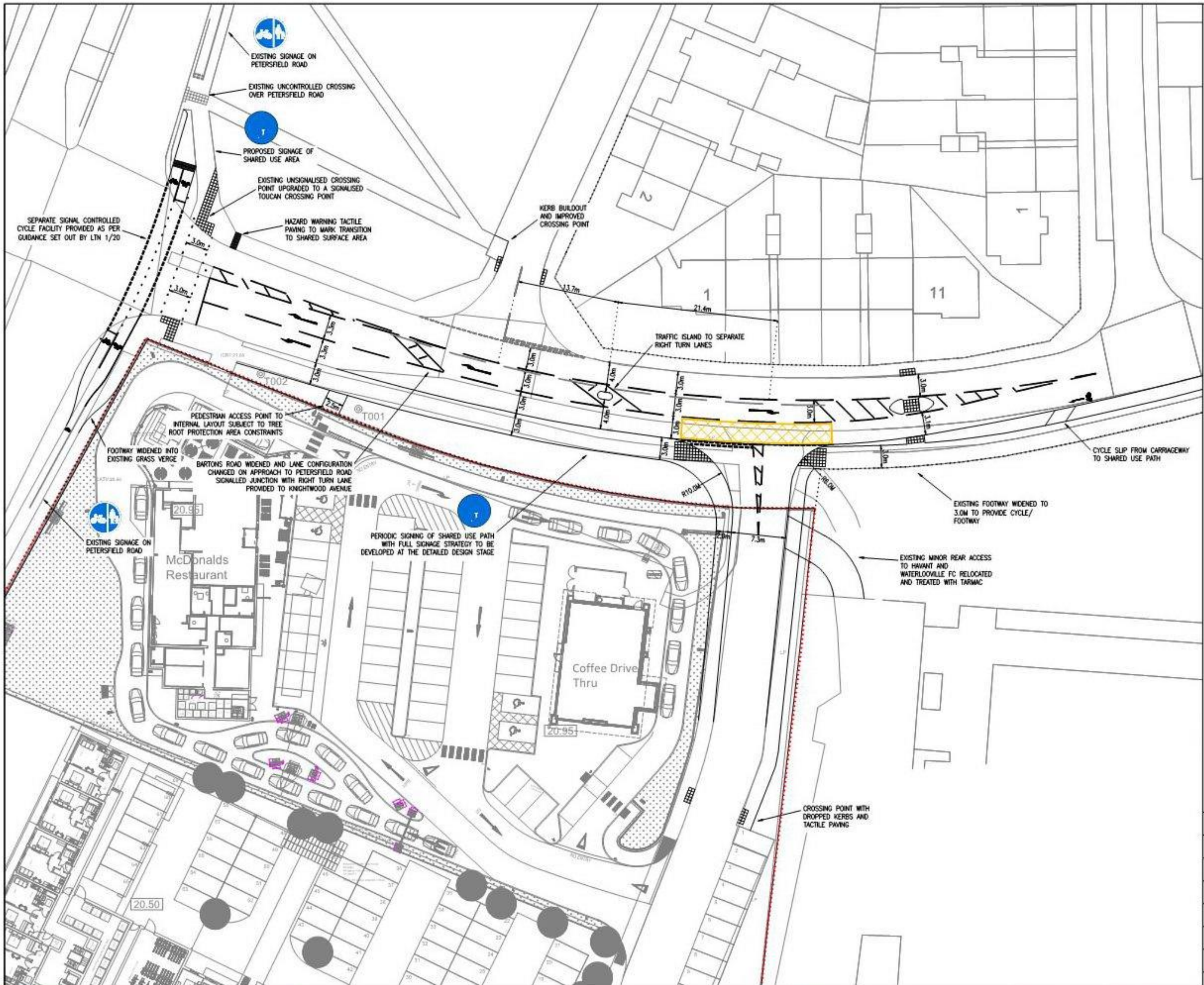
Signal Timings Diagram



Results Summary
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: B2149 Petersfield Road/ Bartons Road	-	-	-	-	-	-	-	-	-	-	87.2%	290	0	0	22.9	-	-
J1: B2149 Petersfield Road/ Bartons Road	-	-	-	-	-	-	-	-	-	-	87.2%	0	0	0	21.9	-	-
1/2+1/1	Petersfield Road (N) Left Ahead	U	E G		1	21:11	-	463	2095:1749	366+165	87.2 : 87.2%	-	-	-	7.3	56.6	13.2
2/1+2/2	Bartons Road Right Left	U	C D		1	55:19	-	833	1743:1953	717+245	86.6 : 86.6%	-	-	-	6.6	28.7	14.5
3/1+3/2	Petersfield Road (S) Ahead Right	U	A B		1	57:29	-	1032	1940:1849	593+616	85.3 : 85.3%	-	-	-	8.0	27.9	14.9
J2: Bartons Road/ Knightwood Avenue	-	-	-	-	-	-	-	-	-	-	43.1%	28	0	0	0.4	-	-
1/1	Knightwood Avenue Left Right	O	-		-	-	-	22	1620	343	6.4%	22	0	0	0.0	5.6	0.0
2/1+2/2	Bartons Road (E) Right Ahead	U+O	-		-	-	-	824	1915:1787	1900+14	43.1 : 43.1%	6	0	0	0.4	1.7	0.4
J3: Bartons Road/ Site Access	-	-	-	-	-	-	-	-	-	-	35.3%	262	0	0	0.5	-	-
2/1	Site Access Right Left	O	-		-	-	-	150	1743	425	35.3%	150	0	0	0.3	6.5	0.3
3/1+3/2	Bartons Road (W) Ahead Right	U+O	-		-	-	-	639	1915:1665	1539+327	34.2 : 34.2%	112	0	0	0.3	1.5	0.3
C1					PRC for Signalled Lanes (%):		3.2	Total Delay for Signalled Lanes (pcuHr):				21.91	Cycle Time (s): 90				
					PRC Over All Lanes (%):		3.2	Total Delay Over All Lanes(pcuHr):				22.85					

Appendix H

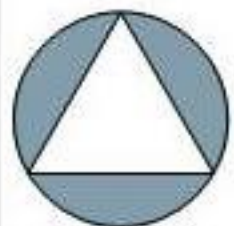


GENERAL NOTES

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KEY

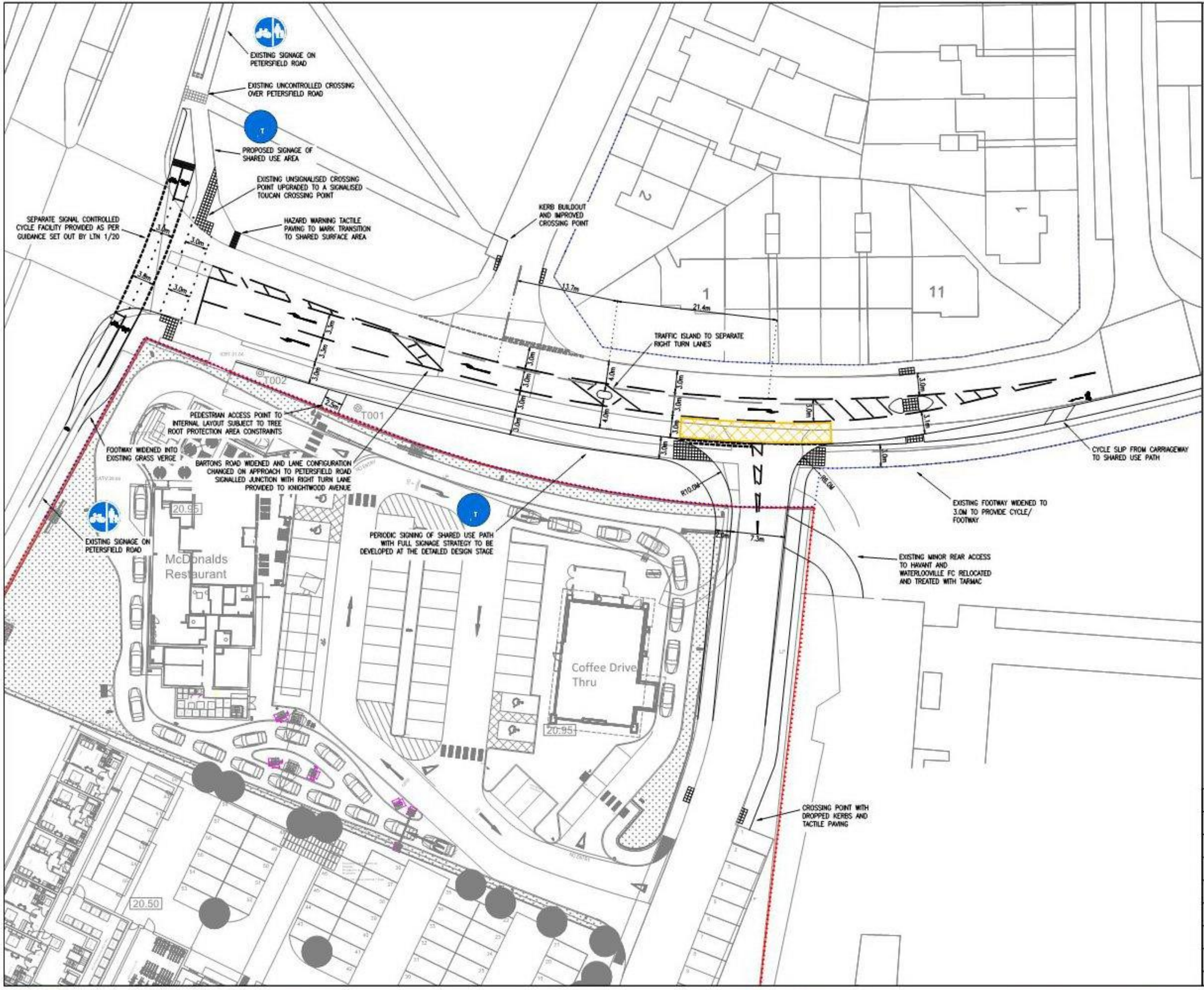
----- HIGHWAY BOUNDARY



NORTH

G	SLIGHT CHANGES FOLL. HCC COMMENTS	10.06.21	AST	RH
F	ACCESS KERBS REALIGNED + SIGNS ADDED	20.05.21	AST	RH
E	WESTBOUND ALIGNMENT EASED	18.05.21	AST	RH
D	CHANGES TO ACCOMMODATE TRACKING	27.04.21	AST	RH
C	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
B	REVISED TO REFLECT RSA COMMENTS	12.04.21	AST	RH
A	REVISED TO REFLECT HCC COMMENTS	01.04.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS WESTERN SECTION GENERAL ARRANGEMENT	 Paul Basham Associates Ltd Regus Cockermouth, Lower Coast Street, Brixton, BS1 3AG 01179 718820 info@paulbashamassociates.com www.paulbashamassociates.com	Client 	Checked By RH	Checked Date 18.01.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 08.01.21	Client Drawing No. -	PBA Drawing No. 106.0019.007	Revision G	



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KEY

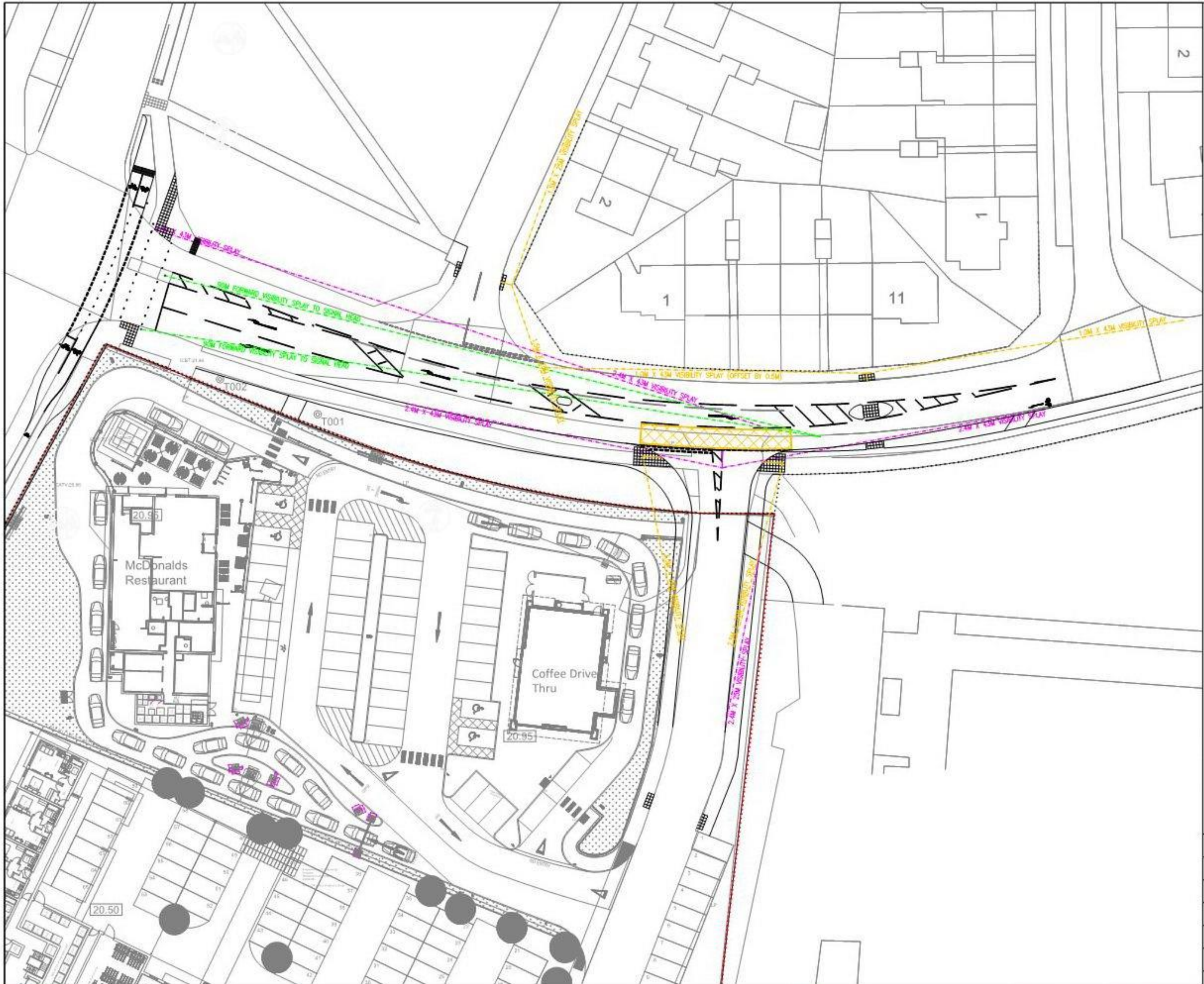
----- HIGHWAY BOUNDARY



H	KERB BUILDOUT + VISIBILITY SPLAYS ADDED	22.07.21	AST	RH
G	SIGHT CHANGES FOLL. HCC COMMENTS	10.06.21	AST	RH
F	ACCESS KERBS REALIGNED + SIGNS ADDED	20.05.21	AST	RH
E	WESTBOUND ALIGNMENT EASED	18.05.21	AST	RH
D	CHANGES TO ACCOMMODATE TRACKING	27.04.21	AST	RH
C	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
B	REVISED TO REFLECT RSA COMMENTS	12.04.21	AST	RH
A	REVISED TO REFLECT HCC COMMENTS	01.04.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name BARTONS ROAD, HAVANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS WESTERN SECTION GENERAL ARRANGEMENT	Client fortitudo	Checked By RH	Checked Date 18.01.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY			Drawn By AST	Drawn Date 08.01.21	Client Drawing No. -	PBA Drawing No. 106.0019.007	Revision H	





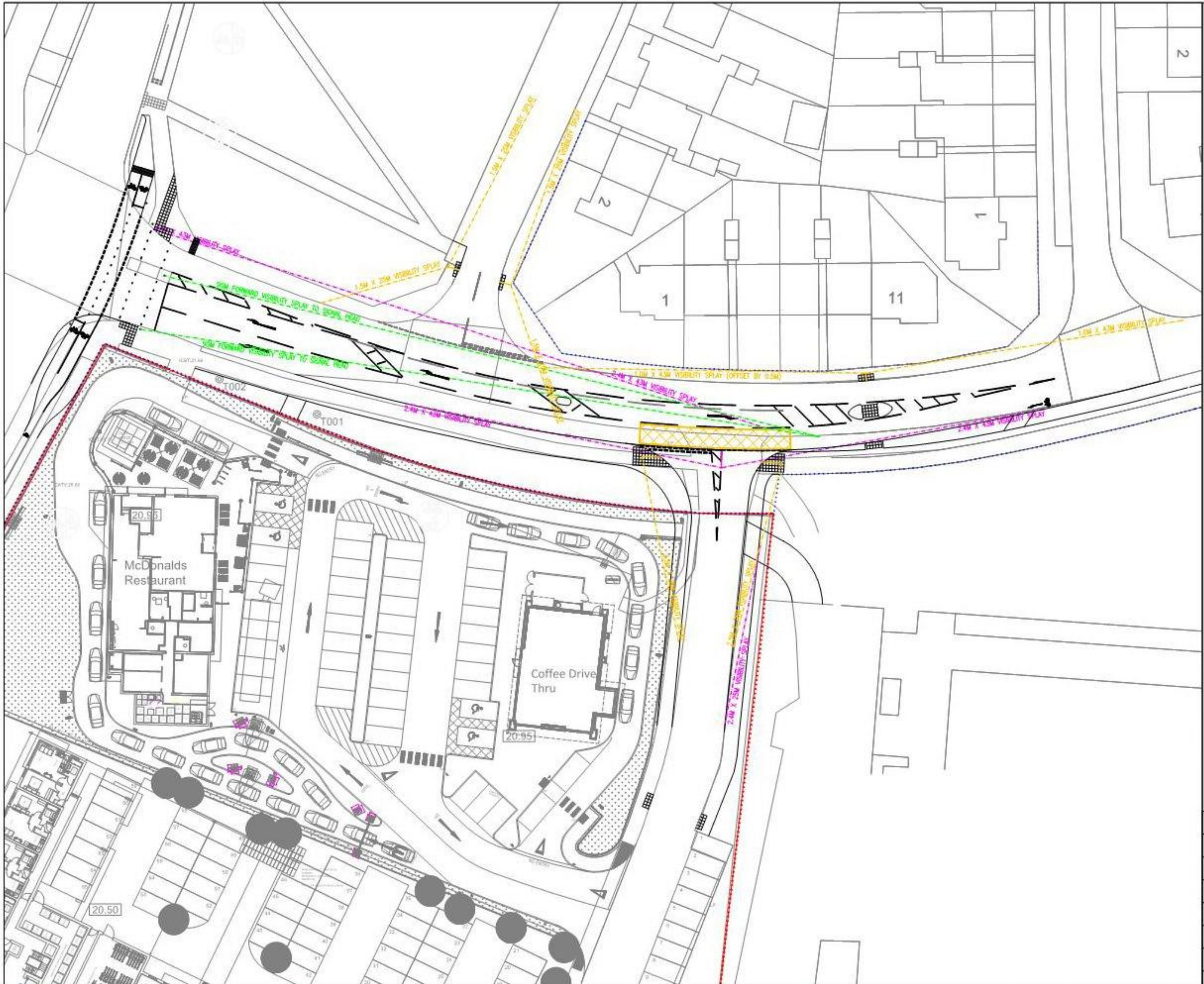
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KEY
----- HIGHWAY BOUNDARY



F	SLIGHT CHANGES FOLL. HCC COMMENTS	10.06.21	AST	RH
E	ACCESS KERBS REALIGNED + SIGNS ADDED	20.05.21	AST	RH
D	CHANGES TO ACCOMMODATE TRACKING	27.04.21	AST	RH
C	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
B	REVISED TO REFLECT RSA COMMENTS	12.04.21	AST	RH
A	REVISED TO REFLECT HCC COMMENTS	01.04.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS WESTERN SECTION VISIBILITY	 Paul Basham Associates Ltd Regus Cockermouth, Lower Cocker Street, Belper, S41 3AG 01779 718920 info@paulbashamassociates.com	Client 	Checked By RH	Checked Date 18.01.21	Scale 1:500	(AT A3 SIZE)	
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 08.01.21	Client Drawing No. -	PBA Drawing No. 106.0019.008	Revision F



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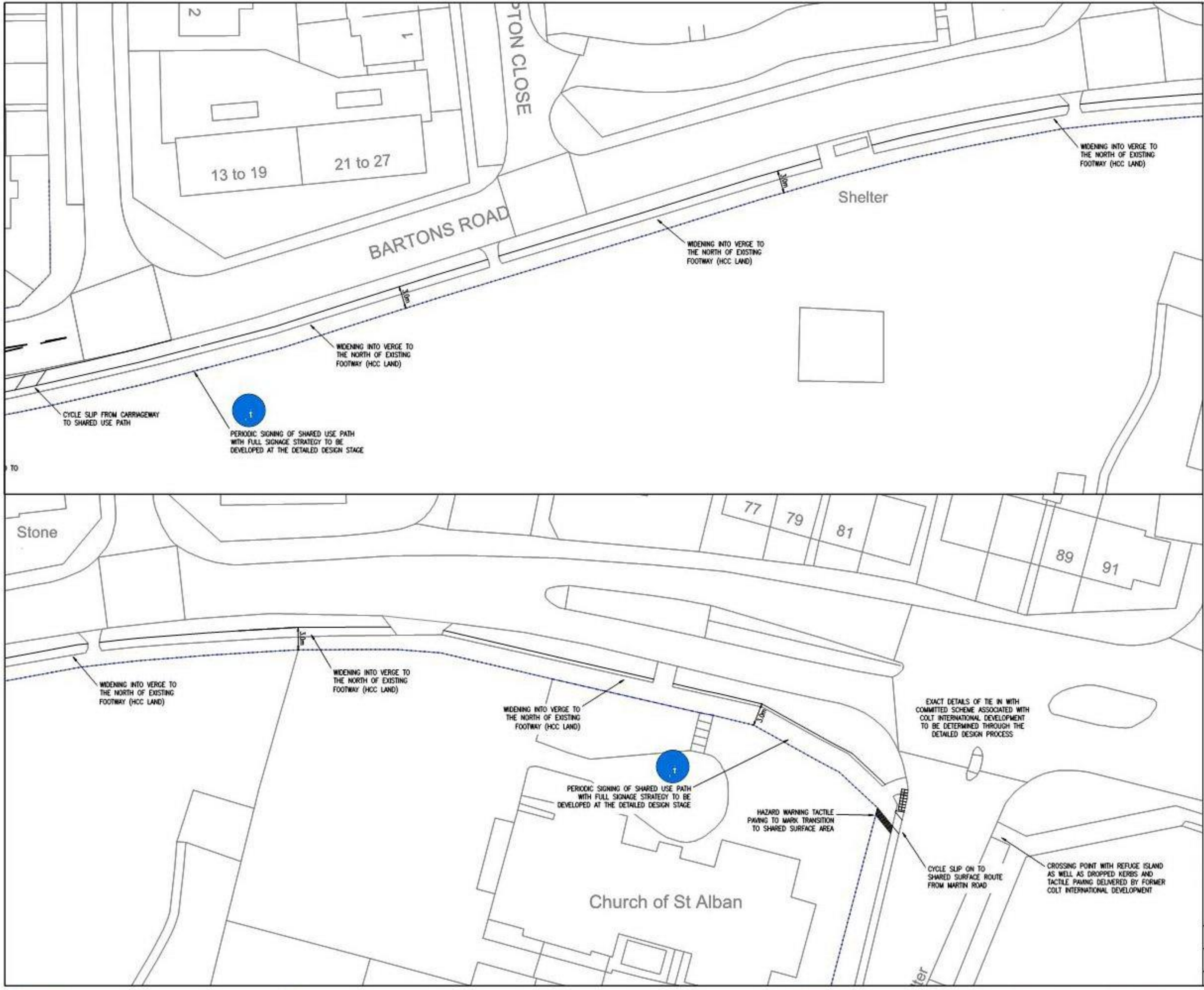
KEY

----- HIGHWAY BOUNDARY



G	KERB BUILDOUT + VISIBILITY SPLAYS ADDED	22.07.21	AST	RH
F	SIGHT CHANGES FOLL. HCC COMMENTS	10.06.21	AST	RH
E	ACCESS KERBS REALIGNED + SIGNS ADDED	20.05.21	AST	RH
D	CHANGES TO ACCOMMODATE TRACKING	27.04.21	AST	RH
C	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
B	REVISED TO REFLECT RSA COMMENTS	12.04.21	AST	RH
A	REVISED TO REFLECT HCC COMMENTS	01.04.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name BARTONS ROAD, HAVANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS WESTERN SECTION VISIBILITY	 Paul Basham Associates Ltd Rogus Cadell Road, Lower Cadell Street, Havant, PO15 3AQ 01793 115612 info@paulbashamassociates.com www.paulbashamassociates.com	Client 	Checked By RH	Checked Date 18.01.21	Scale 1:500	(AT A3 SIZE)	
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 08.01.21	Client Drawing No. -	PBA Drawing No. 106.0019.008	Revision G



- GENERAL NOTES**
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- KEY**
- HIGHWAY BOUNDARY



B	SIGNAGE ADDED	20.05.21	AST	RH
A	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS MIDDLE AND EASTERN SECTIONS GENERAL ARRANGEMENT	 Paul Basham Associates Ltd Regus Cockermouth, Lower Coads Street, Belper, BS1 3AG 01779 718820 info@paulbashamassociates.com www.paulbashamassociates.com	Client 	Checked By RH	Checked Date 18.01.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 08.01.21	Client Drawing No. -	PBA Drawing No. 106.0019.009	Revision B	

Appendix I



Martin-Brower UK Ltd
Third Floor (South Wing)
One Park Lane,
Hemel Hempstead,
Herts, HP2 4YJ
Tel: +44 (0)1442 431500
Fax: +44 (0)1442 431572
martinbrower.com

Catherine,

I understand that you would like confirmation on the number of expected deliveries at the proposed restaurant at Bartons Road, Havant. We have reviewed this restaurant carefully and we would typically expect that the supply demand would require 3-4 deliveries per week using our standard 16.5m articulated delivery vehicle. We do not anticipate any reason why this restaurant would generate more than 5 deliveries per week if serviced using this size delivery vehicle.

Kind Regards

Katie Kirk
Senior Service Operations Manager at Martin Brower



INVESTORS
IN PEOPLE

Gold
until 2022

Registered Office:
Third Floor (South Wing), One Park Lane,
Hemel Hempstead, Herts, HP2 4YJ
Registered in England & Wales: 1601427

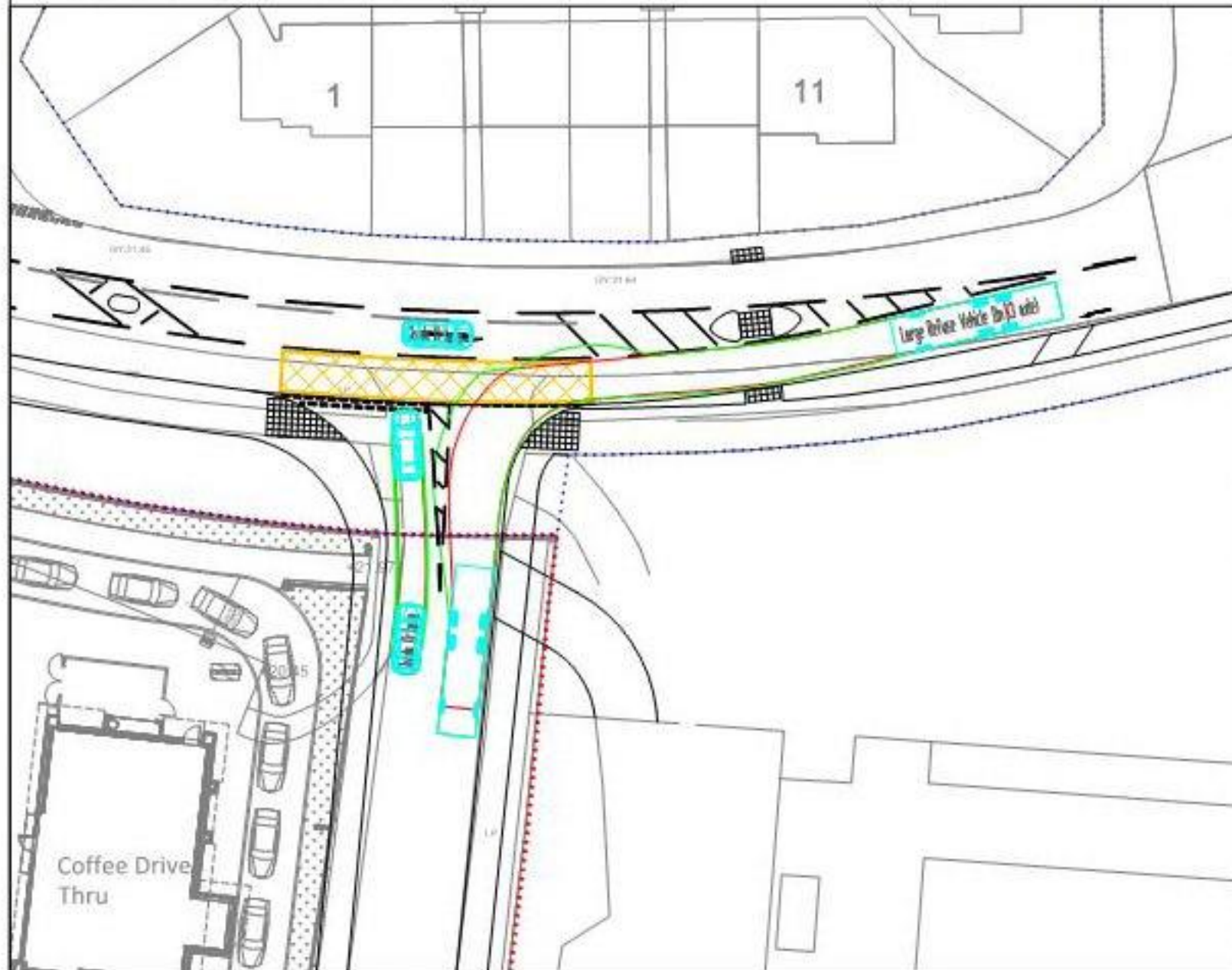
Appendix J



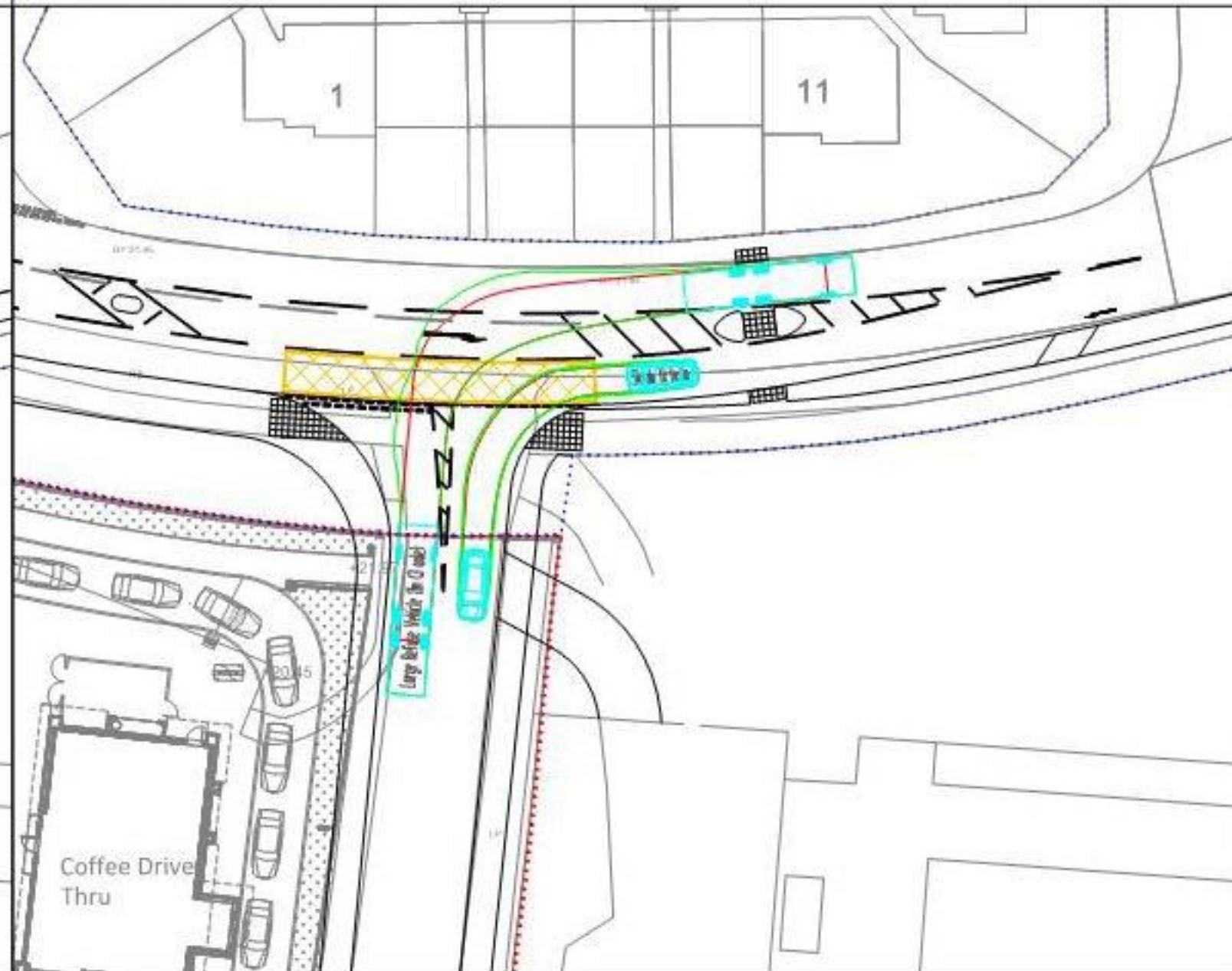
ARTICULATED HGV – RIGHT IN



ARTICULATED HGV – LEFT OUT



LARGE REFUSE VEHICLE – LEFT IN

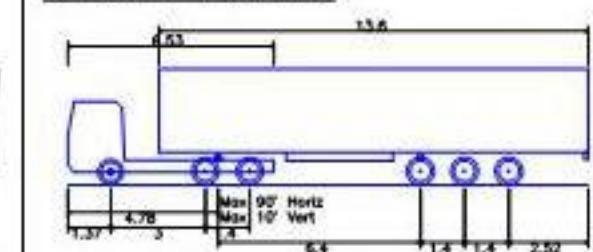


LARGE REFUSE VEHICLE – RIGHT OUT

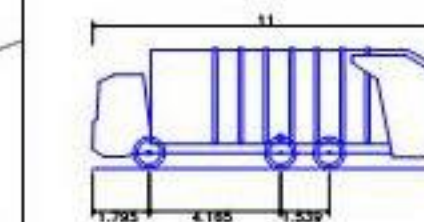
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VEHICLE PROFILE



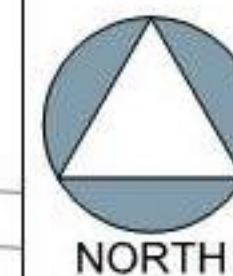
Max Legal Length (UK) Articulated Vehicle (16.5m)
Overall Length 16.500m
Overall Width 2.550m
Overall Body Height 3.681m
Min Body Ground Clearance 0.411m
Max Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 6.530m



Large Refuse Vehicle 11m (3 axle)
Overall Length 11.000m
Overall Width 2.450m
Overall Body Height 3.814m
Min Body Ground Clearance 0.366m
Track Width 2.450m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.500m

KEY

----- HIGHWAY BOUNDARY

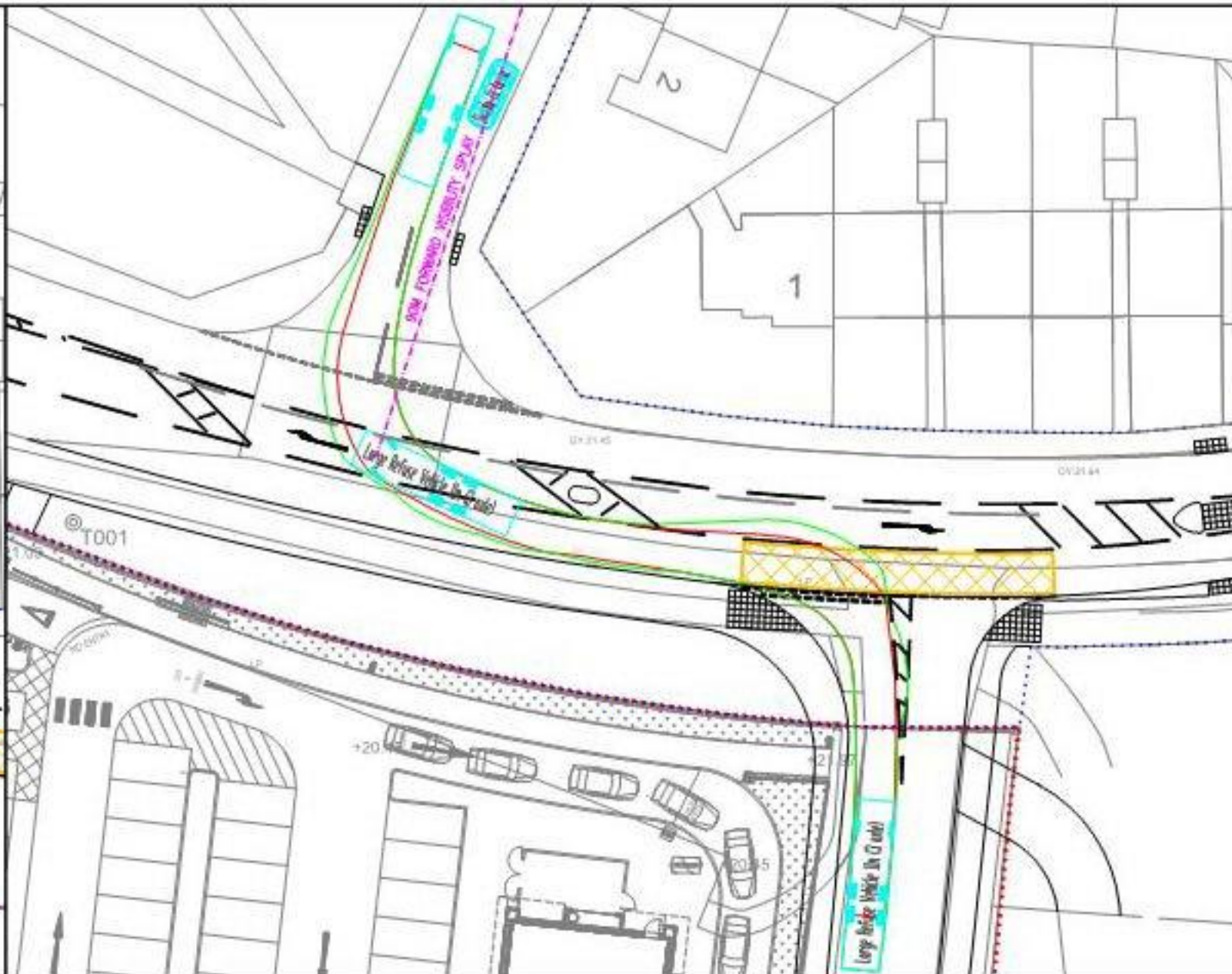


Rev	Description	Date	By	Chkd
C	ROADMARKINGS AMENDED	10.06.21	AST	RH
B	KERBLINES AND ROADMARKINGS AMENDED	20.05.21	AST	RH
A	NEW GENERAL ARRANGEMENT	27.04.21	AST	RH

Project Name BARTONS ROAD, HAVANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS SITE ACCESS TRACKING ARTICULATED HGV AND REFUSE VEHICLE	Client fortitudo	Checked By RH	Checked Date 12.04.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY		Paul Basham Associates Ltd Regus Cockfield, Lower Cooke Street, Brixton, BS1 3AG 01179 718820 info@paulbashamassociates.com www.paulbashamassociates.com	Drawn By AST	Drawn Date 12.04.21	Client Drawing No. -	PBA Drawing No. 106.0019.100	Revision C	



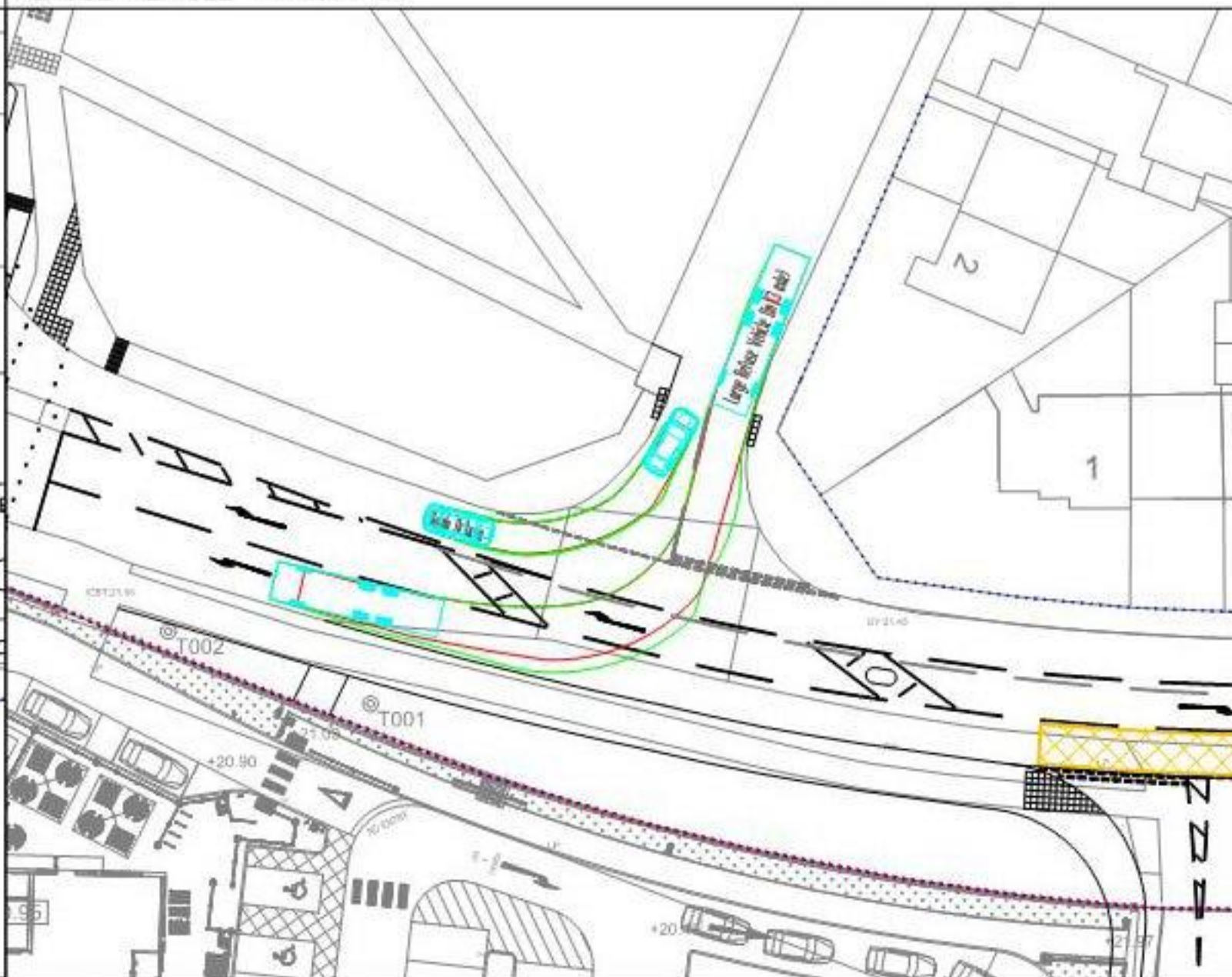
REFUSE VEHICLE - LEFT IN



REFUSE VEHICLE - RIGHT IN



REFUSE VEHICLE - LEFT OUT

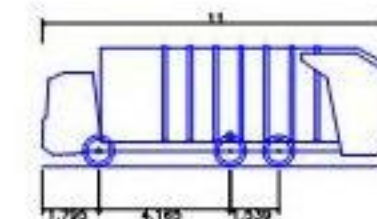


REFUSE VEHICLE - RIGHT OUT

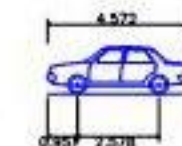
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VEHICLE PROFILE



Large Refuse Vehicle 11m (3 axle)
Overall Length 11.000m
Overall Width 2.450m
Overall Body Height 3.814m
Min Body Ground Clearance 0.366m
Track Width 2.450m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.500m



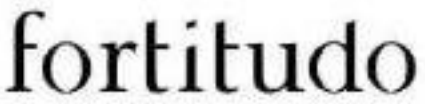
Skoda Octavia
Overall Length 4.572m
Overall Width 1.769m
Overall Body Height 1.488m
Min Body Ground Clearance 0.249m
Max Track Width 1.713m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 5.100m

KEY

----- HIGHWAY BOUNDARY

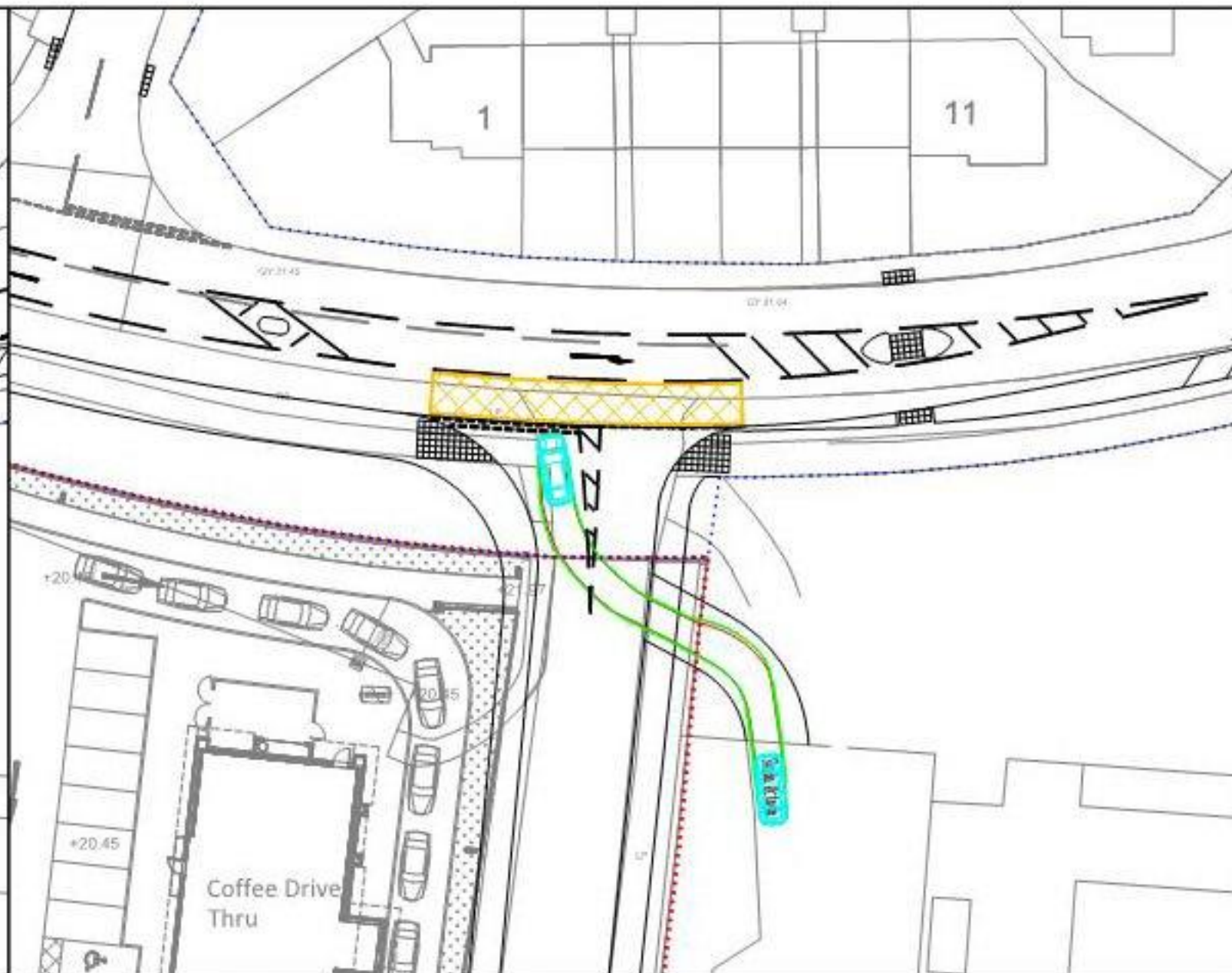


Rev	Description	Date	By	Chkd
C	ROADMARKINGS AMENDED	10.06.21	AST	RH
B	KERBLINES AND ROADMARKINGS AMENDED	20.05.21	AST	RH
A	NEW GENERAL ARRANGEMENT	27.04.21	AST	RH

Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS KNIGHTWOOD AVENUE TRACKING REFUSE VEHICLE AND CAR	 Paul Basham Associates Ltd Rugby Cathedral, Lower Castle Street, Rugby, CV1 3AG 01793 718820 info@paulbashamassociates.com	Client 	Checked By RH	Checked Date 12.04.21	Scale 1:500	Client Drawing No. -	PBA Drawing No. 106.0019.101	Revision C
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 12.04.21				



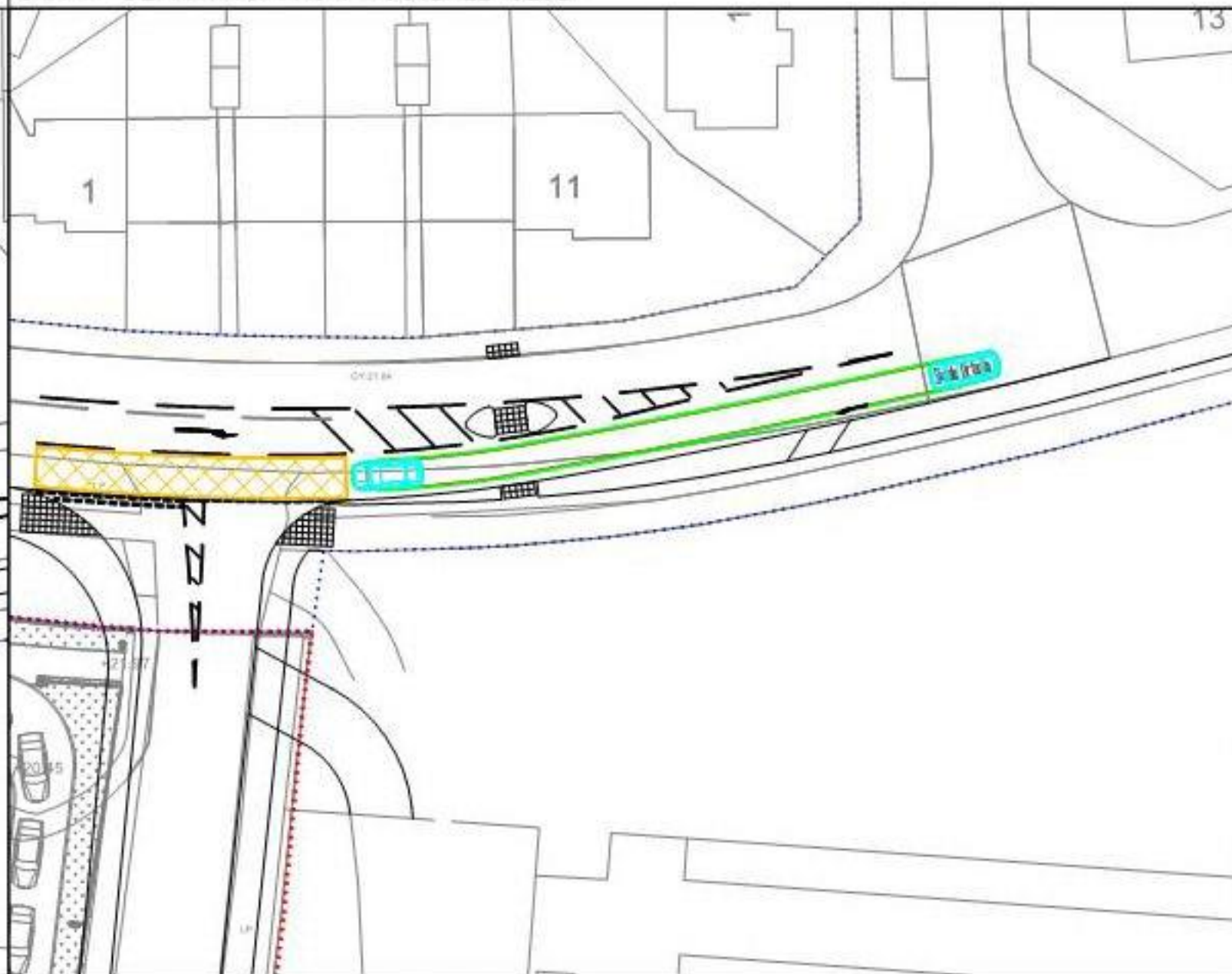
CAR – ARRIVING TO FOOTBALL CLUB



CAR – DEPARTING FROM FOOTBALL CLUB



CAR – RIGHT TURN INTO SITE



CAR – WESTBOUND ON BARTONS ROAD

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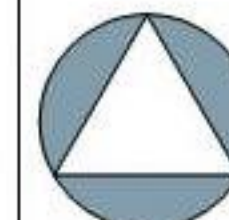
VEHICLE PROFILE



Skoda Octavia	
Overall Length	4.572m
Overall Width	1.769m
Overall Body Height	1.488m
Min Body Ground Clearance	0.249m
Max Track Width	1.713m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.100m

KEY

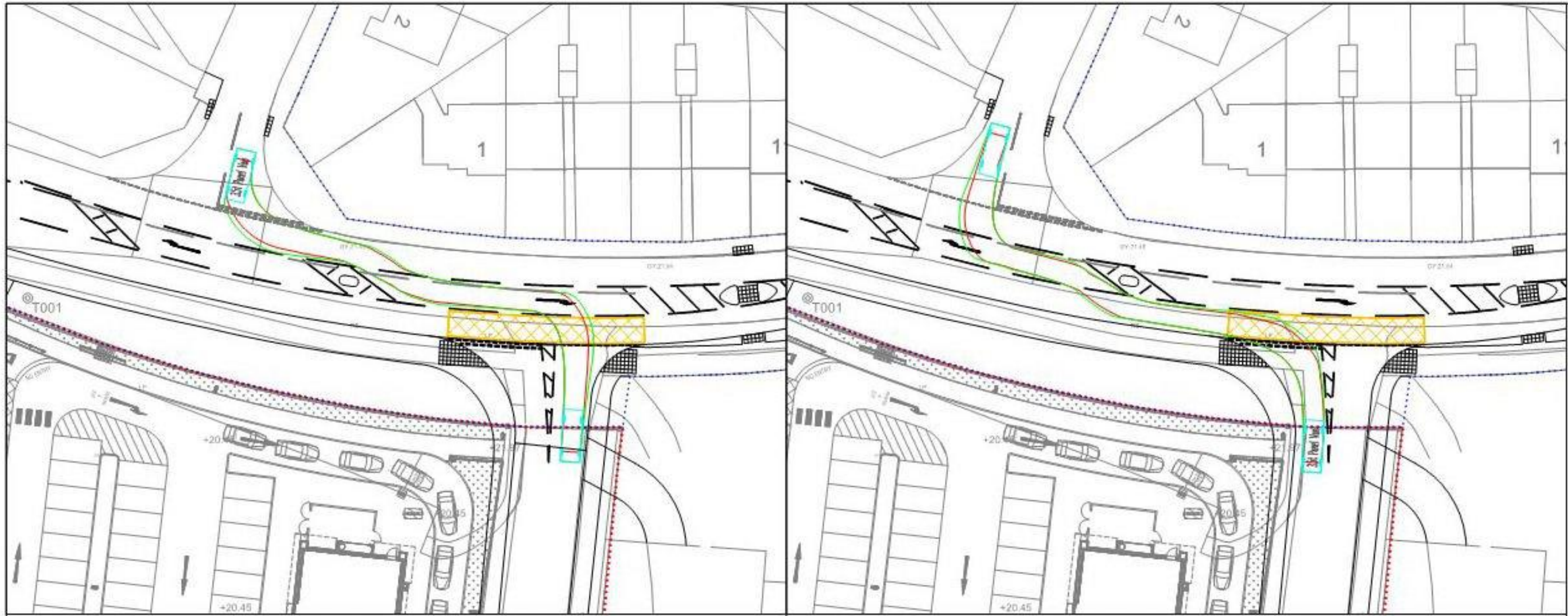
..... HIGHWAY BOUNDARY



NORTH

Rev	Description	Date	By	Chkd
C	ROADMARKINGS AMENDED	10.06.21	AST	RH
B	KERBLINES AND ROADMARKINGS AMENDED	20.05.21	AST	RH
A	NEW GENERAL ARRANGEMENT	27.04.21	AST	RH

Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS FOOTBALL CLUB TRACKING CAR	Client fortitudo	Checked By RH	Checked Date 12.04.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY		Paul Basham Associates Ltd Regus Cockermouth, Lower Cocko Street, Brixton, BS1 3AG 01179 718820 info@paulbashamassociates.com www.paulbashamassociates.com	Drawn By AST	Drawn Date 12.04.21	Client Drawing No. -	PBA Drawing No. 106.0019.102	Revision C	



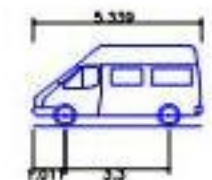
PANEL VAN (3.5T) – LEFT RIGHT STAGGER TO SITE ACCESS

PANEL VAN (3.5T) – LEFT RIGHT STAGGER TO KNIGHTWOOD AVENUE

GENERAL NOTES

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VEHICLE PROFILE



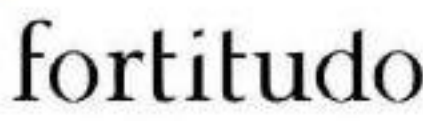
3.5t Panel Van	5.339m
Overall Length	1.986m
Overall Width	2.565m
Overall Body Height	0.338m
Min Body Ground Clearance	1.986m
Track Width	4.00s
Lock to lock time	6.400m
Kerb to Kerb Turning Radius	

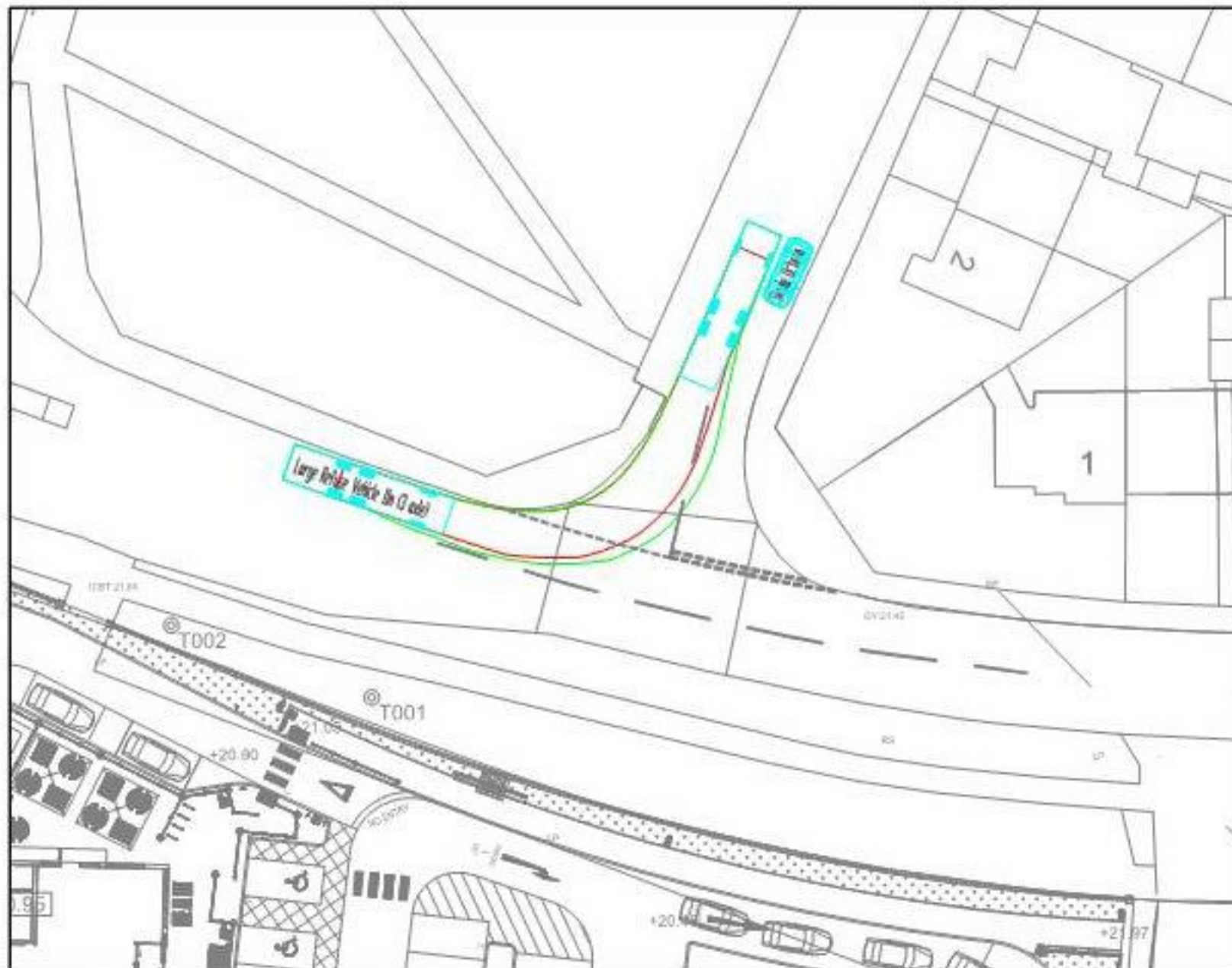
KEY

..... HIGHWAY BOUNDARY

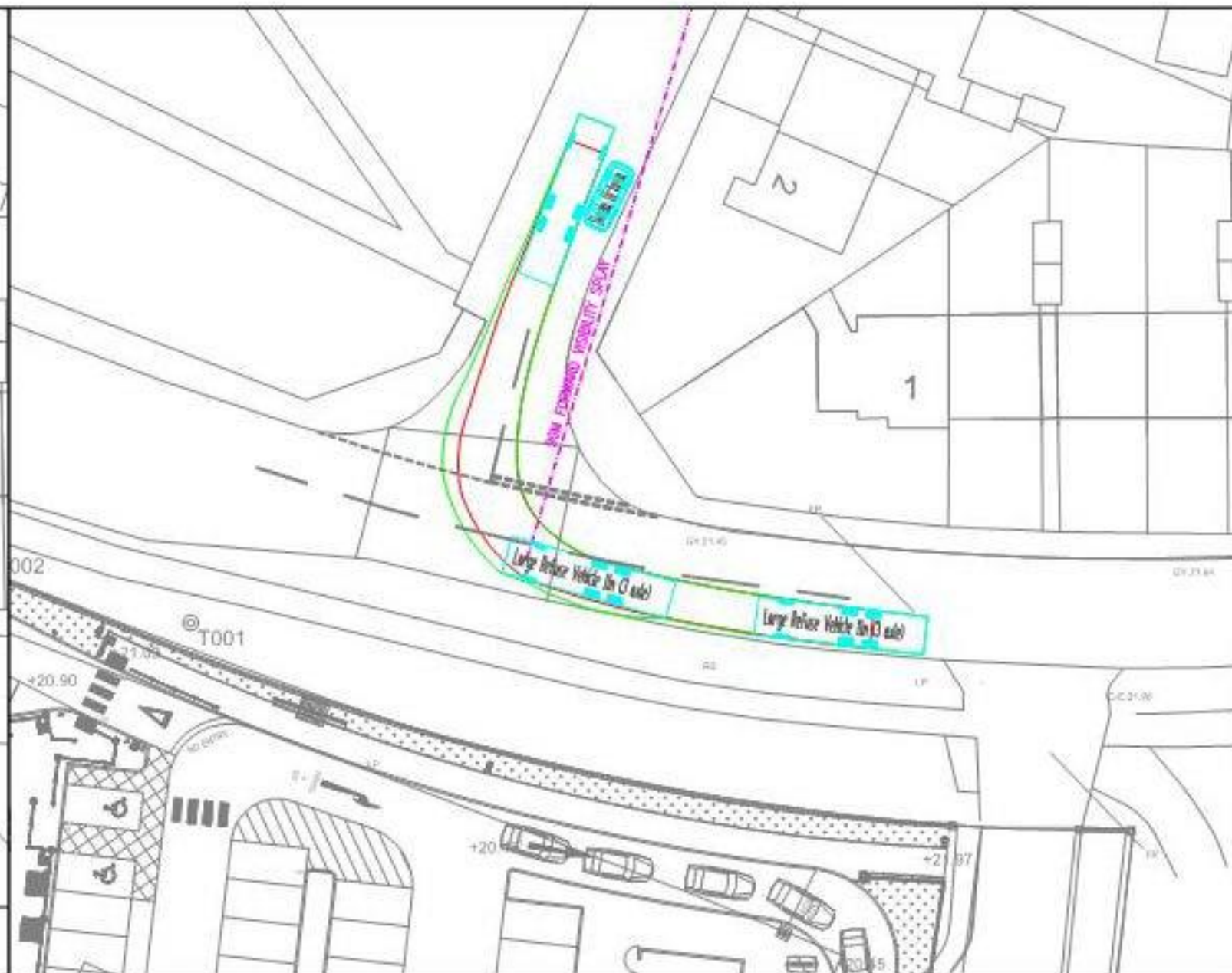


B	ROADMARKINGS AMENDED	10.06.21	AST	RH
A	KERBLINES AND ROADMARKINGS AMENDED	20.05.21	AST	RH
Rev	Description	Date	By	Chkd

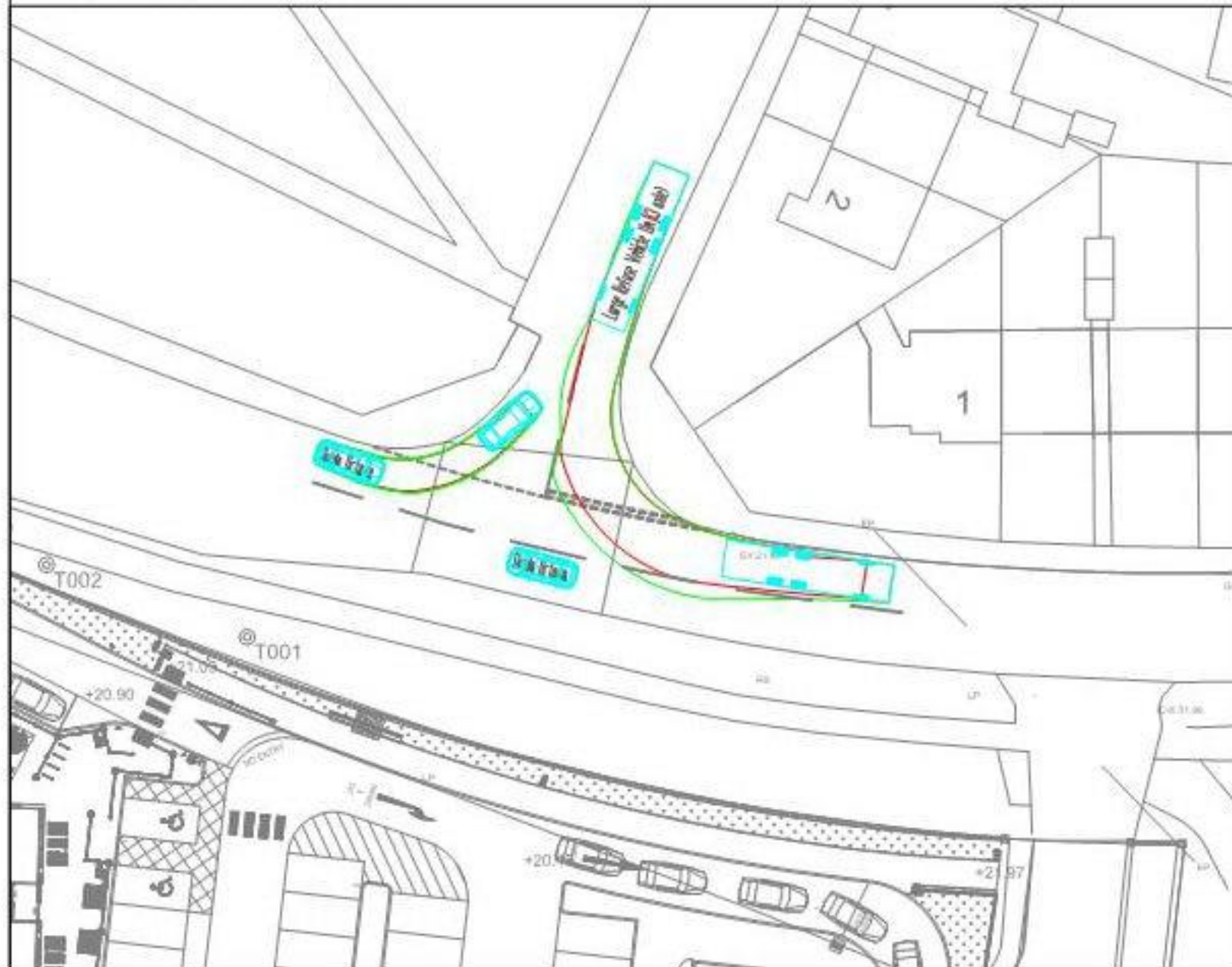
Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS TRACKING PANTECHNICON	 Paul Basham Associates Ltd Regus Cockermouth, Lower Cockin Street, Cockerham, Cumbria, LA6 1AG 01579 715830 info@paulbashamassociates.com	Client 	Checked By RH	Checked Date 27.04.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 27.04.21	Client Drawing No. -	PBA Drawing No. 106.0019.103	Revision B	



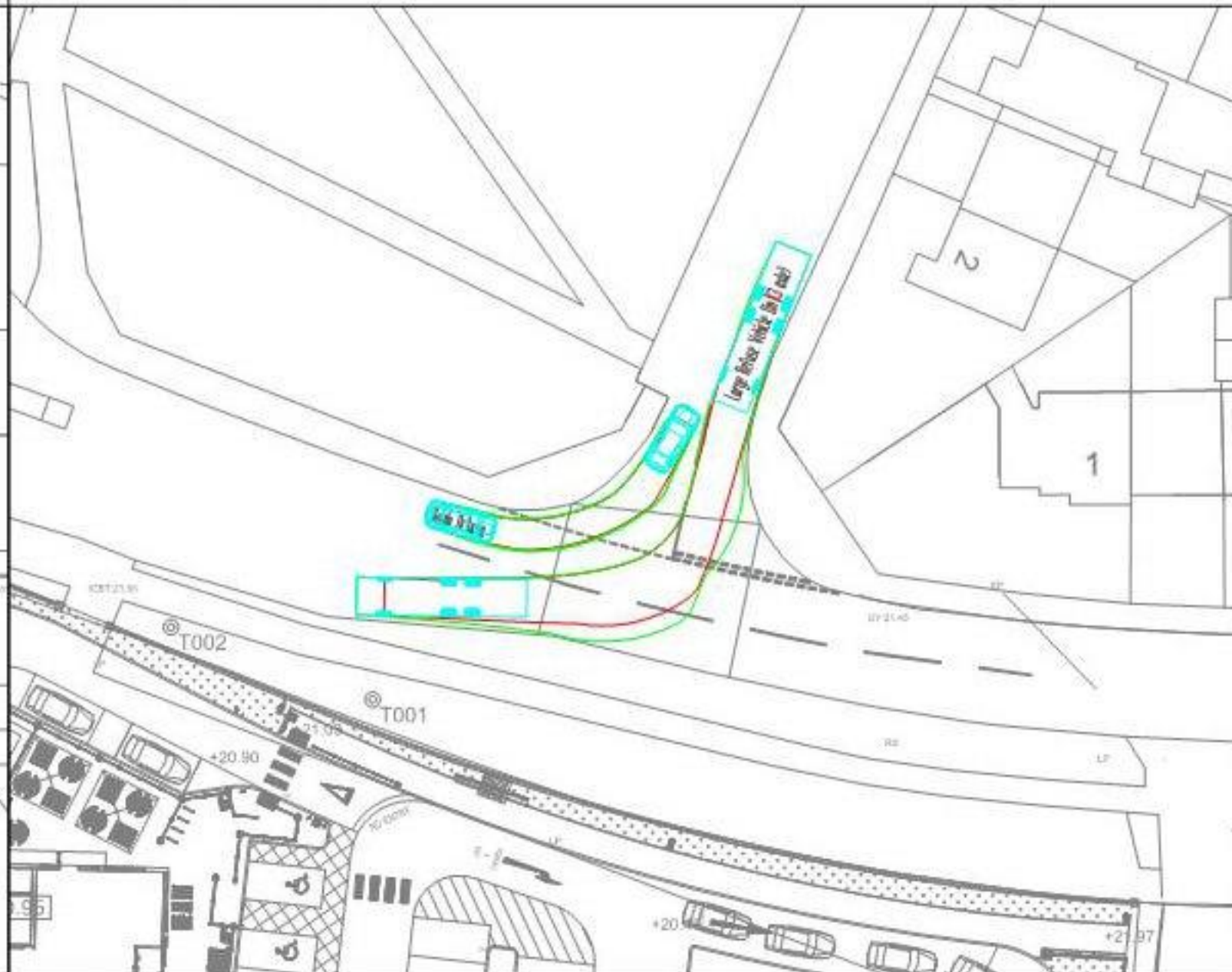
REFUSE VEHICLE - LEFT IN



REFUSE VEHICLE - RIGHT IN



REFUSE VEHICLE - LEFT OUT

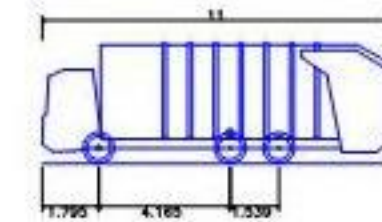


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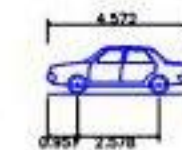
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VEHICLE PROFILE



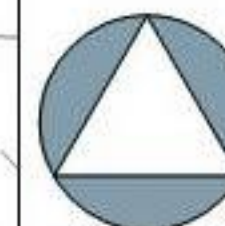
Large Refuse Vehicle 11m (3 axle)
Overall Length 11.000m
Overall Width 2.450m
Overall Body Height 3.814m
Min Body Ground Clearance 0.366m
Track Width 2.450m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.500m



Skoda Octavia
Overall Length 4.572m
Overall Width 1.769m
Overall Body Height 1.488m
Min Body Ground Clearance 0.249m
Max Track Width 1.713m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 5.100m

KEY

----- HIGHWAY BOUNDARY



NORTH

Project Name BARTONS ROAD, HAYANT	Title EXISTING BARTONS ROAD ARRANGEMENT KNIGHTWOOD AVENUE TRACKING REFUSE VEHICLE AND CAR	 Paul Basham Associates Ltd Rugby Corporation, Lower Coast Street, Bristol, BS1 3AG 01179 718824 info@paulbashamassociates.com www.paulbashamassociates.com	Client 	Checked By RH	Checked Date 21.05.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 21.05.21	Client Drawing No. -	PBA Drawing No. 106.0019.104	Revision -	

Appendix K

ROAD SAFETY AUDIT BRIEF (GG119)

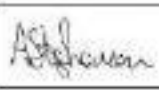
Table C.1 Project Summary

Date:	23.07.21
Document Reference:	106.0019.RSAB/3
Prepared by:	Paul Basham Associates
On behalf of:	Fortitudo

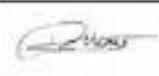
Authorisation Sheet

Project:	106.0019 Bartons Road, Havant
Report Title:	Stage 1 Road Safety Audit Brief

Prepared By

Name:	Alex Stephenson
Signed:	
Organisation:	Paul Basham Associates
Date:	23.07.21

I approve the RSA Brief and instruct the RSA to take place on behalf of the overseeing organisation

Name:	Rob Hardyman
Signed:	
Organisation:	Paul Basham Associates
Date:	23.07.21

ROAD SAFETY AUDIT BRIEF (GG119)

Table C.2. General Details

Highway Scheme Name and Road Number:	Bartons Road			
Type of scheme: (Description of highway works)	Widening of carriageway to provide right turn lane facilities for existing junction and widen approach to signalled junction			
RSA Stage:	1			
Overseeing Organisation Details:		Design Organisation Details:		
M&S Traffic Ltd		Alex Stephenson Paul Basham Associates Regus Castlemead Lower Castle Street Bristol BS1 3AG a.stephenson@paulbashamassociates.com		
Police Contact Details:		Maintaining Agent Contact Details:		
		Hampshire County Council		
RSA Team Membership:				
Martin Morris		Bryan Shawyer		
Terms of Reference:				

Table C.3 Scheme Details

General:
Widening of carriageway to provide right turn lane facilities for existing junction, widen approach to signalled junction and provision of a parallel cycle crossing.
Design Standards applied to the Scheme Design:
MfS/ DMRB

ROAD SAFETY AUDIT BRIEF (GG119)

Design Speeds:

30mph

Speed Limits:

30mph on Bartons Road, 40mph on Petersfield Road

Existing Traffic Flows/Queues:

Attached

Forecast Traffic Flows:

Attached

Pedestrian, cyclist and equestrian desire lines:

There is a National Cycle Network Route along the east side of Petersfield Road and a planned cycle/pedestrian route along the south side of Bartons Road.

Environmental Constraints:

-

Table C.4 Locality

Description of Locality:	Predominantly residential uses surrounding the site, with a proposed development of apartment blocks and two drive-thrus to the south as well as an existing football club.
Map:	
General Description:	The improvement works are associated with the development of the site to the south of Bartons Road and to the east of Petersfield Road from office block to flats and two drive-thru units.
Relevant Factors which may affect Road Safety:	NA

ROAD SAFETY AUDIT BRIEF (GG119)

Table C.5 Analysis:

Collision Data Analysis:	There has been one serious collision and one slight collision at the Petersfield Road/ Bartons Road junction. The serious collision involved a car colliding with a pedal cycle which was crossing Petersfield Road while the slight collision involved a car colliding with street furniture.
Collision Data Image:	
Departures from Standards:	The right turn lanes for the site access and for Knightwood Avenue are shorter than as prescribed by DMRB however the principles set out by MfS should apply for Bartons Road not DMRB. There has been no departure from MfS standards.
Summary of previous Road Safety Audit Stage reports, road safety audit response reports and evidence of agreed actions:	NA
Strategic Decisions:	NA

List of Included Documents:

Reference Number	Revision	Title	Date:
106.0019/TF	-	Traffic Flows	July 2021
-	-	Signal Staging/ Modelling Results	July 2021

ROAD SAFETY AUDIT BRIEF (GG119)

List of Included Drawings:

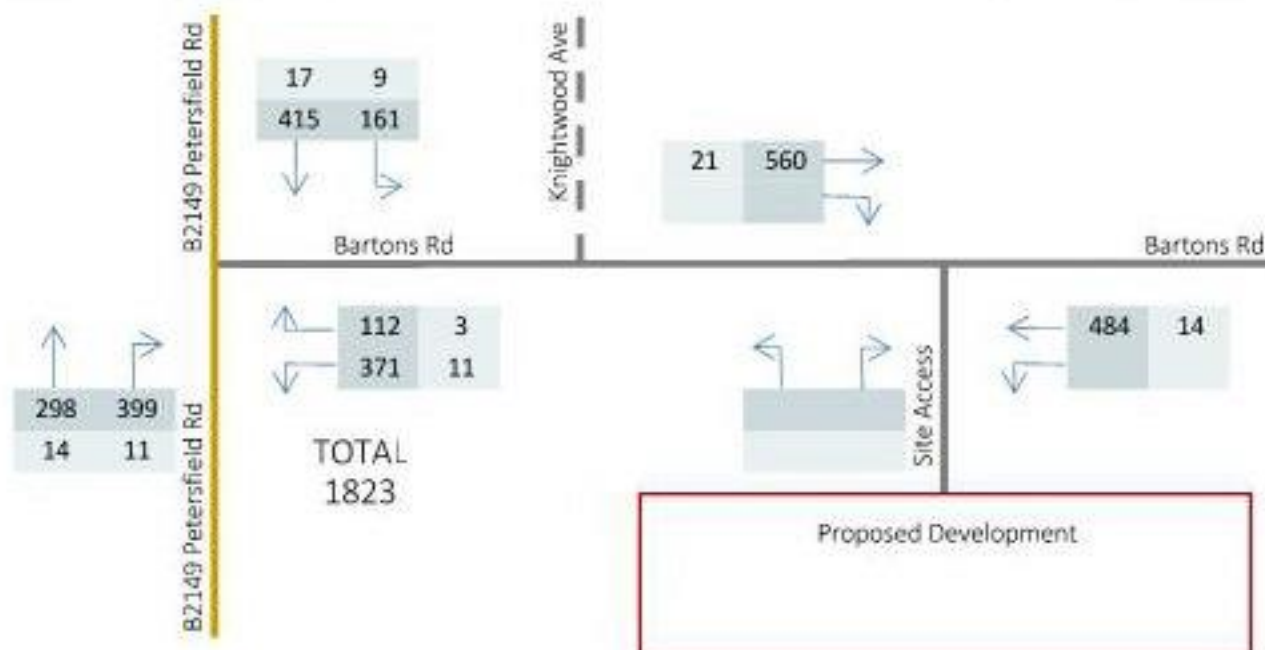
Drawing Number	Revision	Title
106.0019.007	H	Western Section GA
106.0019.008	G	Western Section Visibility
106.0019.009	B	Eastern Section GA
106.0019.100	C	Tracking Site Access
106.0019.101	C	Tracking Knightwood Avenue
106.0019.102	C	Tracking Car
106.0019.103	B	Tracking Panel Van

Table C.6 Checklist

Site Location Plan	Y	Scale layout plans	Y
Departures and relaxations from standards	Y	Construction/typical details	NA
Previous RSA Report	Y	Previous RSA response reports and evidence of agreed actions	Y
Collision data and collision data analysis	Y	Road traffic collision plot	Y
Traffic signal staging	Y	Traffic counts	Y
Speed surveys	Y	Pedestrian, cyclist and horse riding desire lines and volumes	Y
Walking, cycling and horse-riding assessment	NA	Items outside the scope of the RSA/strategic decisions	NA
Other factors that may impact road safety	Y	Design speeds/speed limits	Y
Design standards used	Y	Adjacent land uses	Y

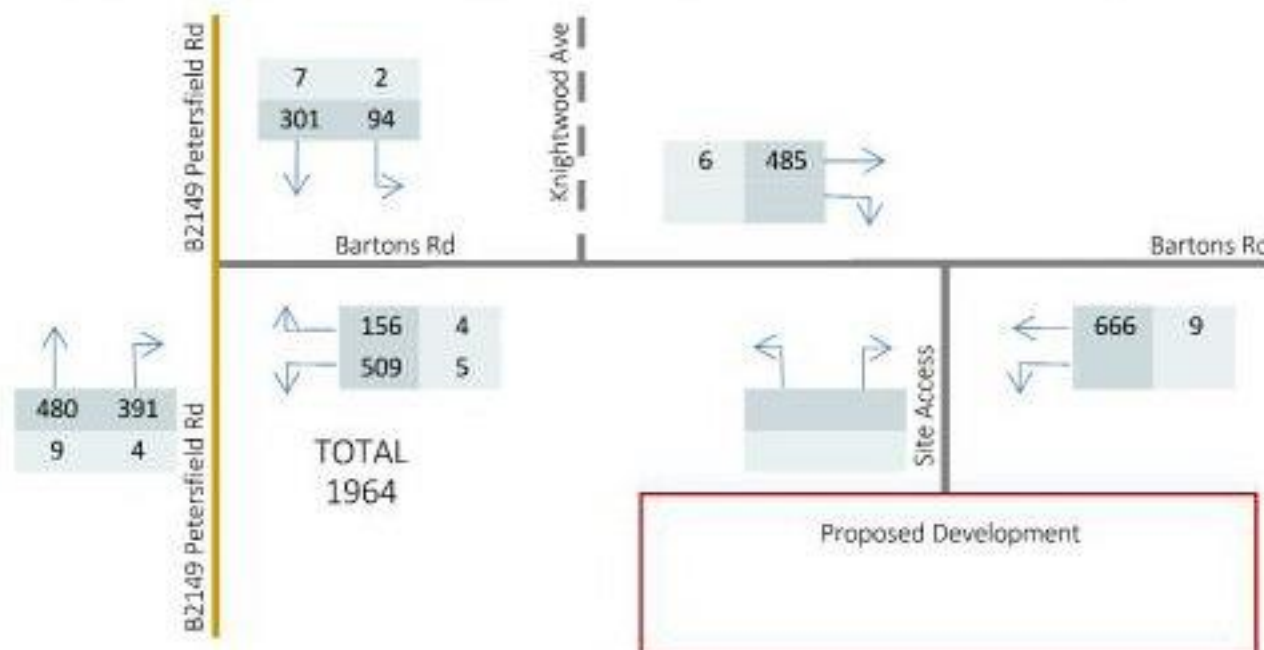
2020 Forecast Traffic Flows - AM Peak Hour (08:00-09:00)

Growth factor: 1.0317



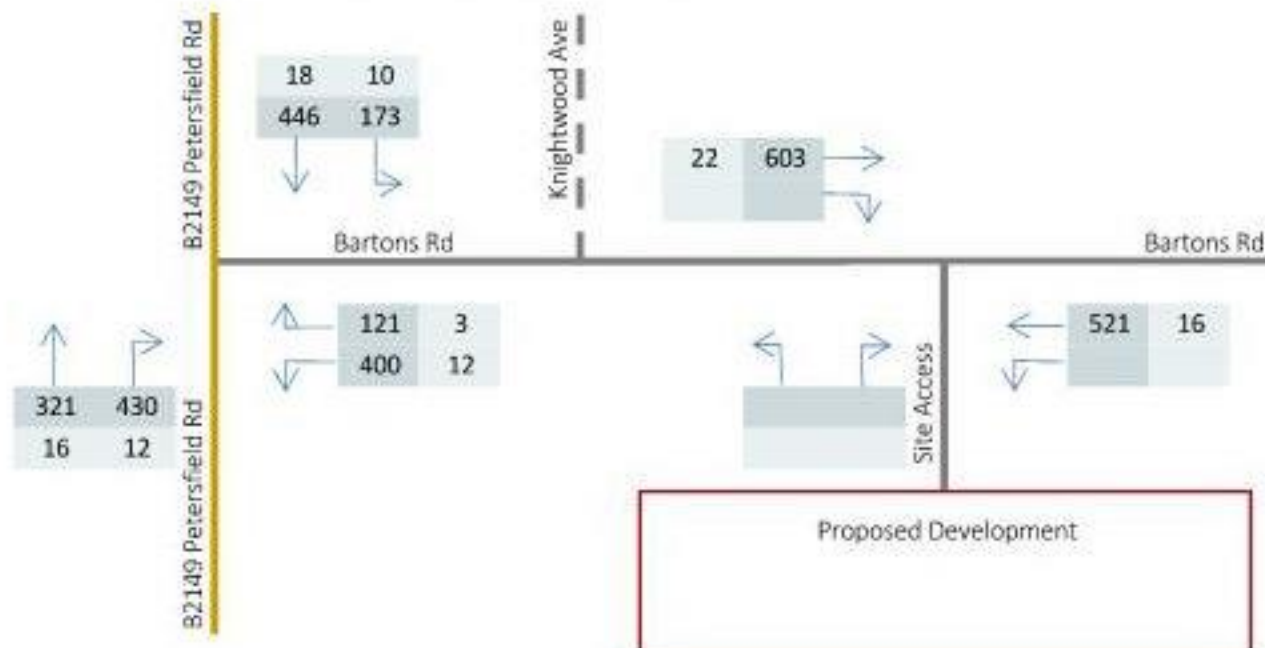
2020 Forecast Traffic Flows - PM Peak Hour (17:00-18:00)

Growth factor: 1.0288



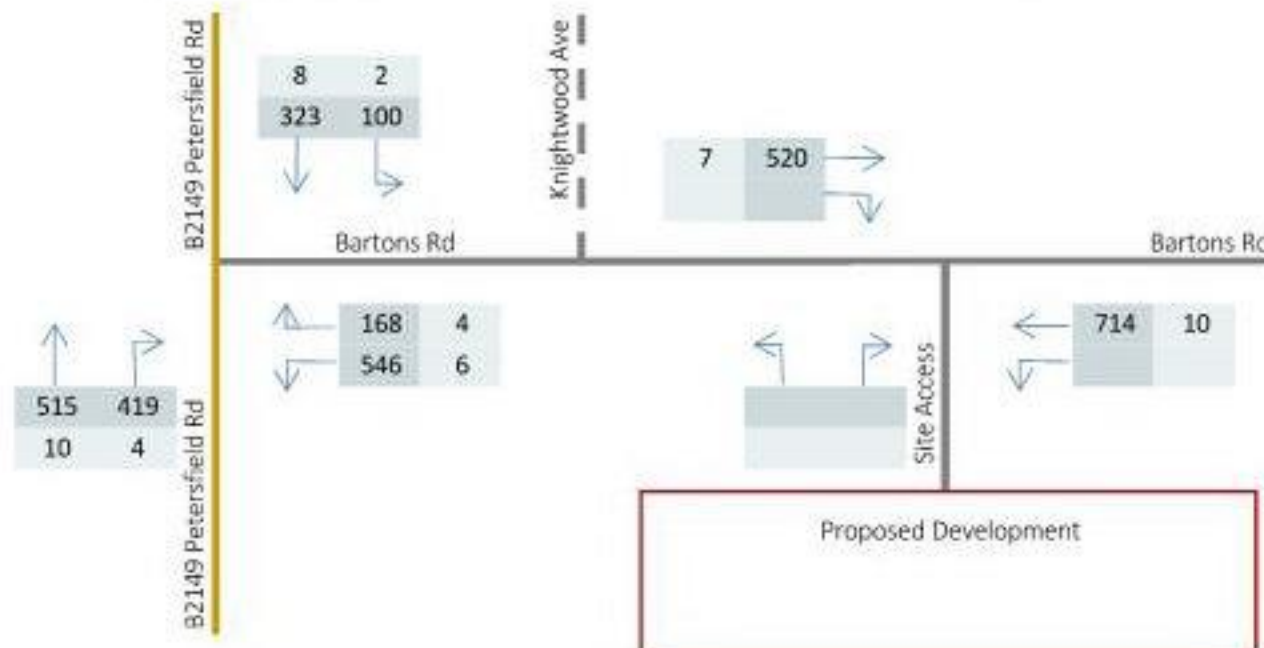
2025 Forecast Traffic Flows - AM Peak Hour (08:00-09:00)

Growth factor: 1.1099

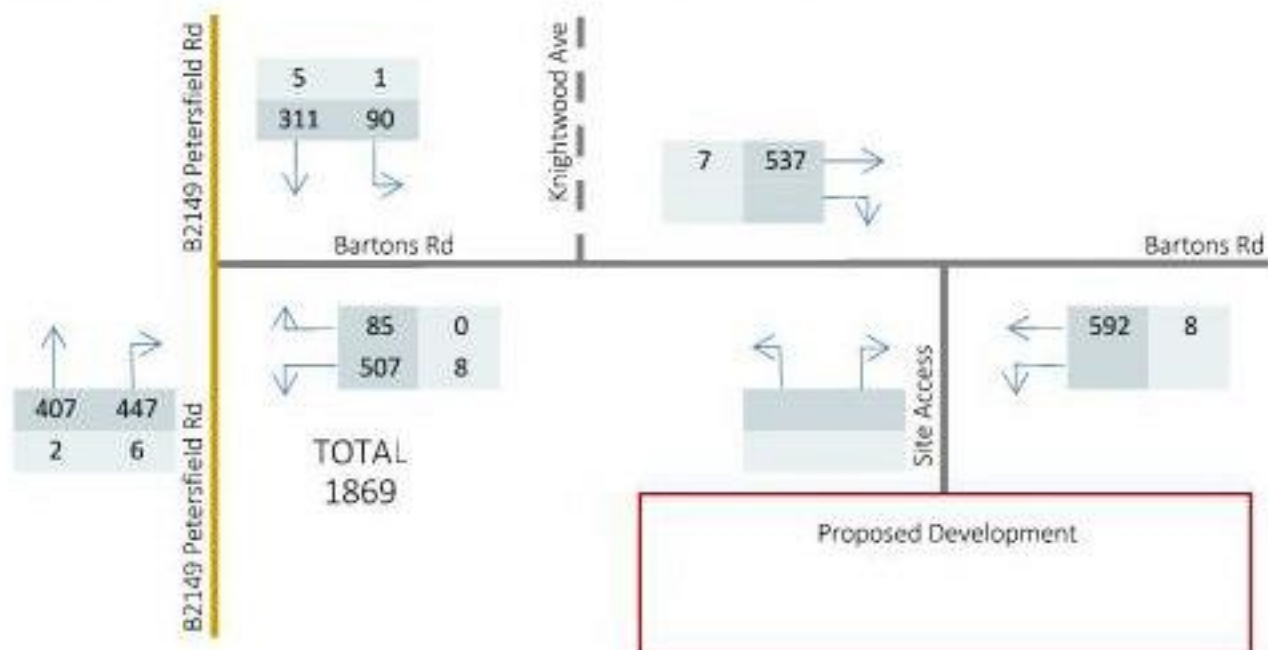


2025 Forecast Traffic Flows - PM Peak Hour (17:00-18:00)

Growth factor: 1.1033

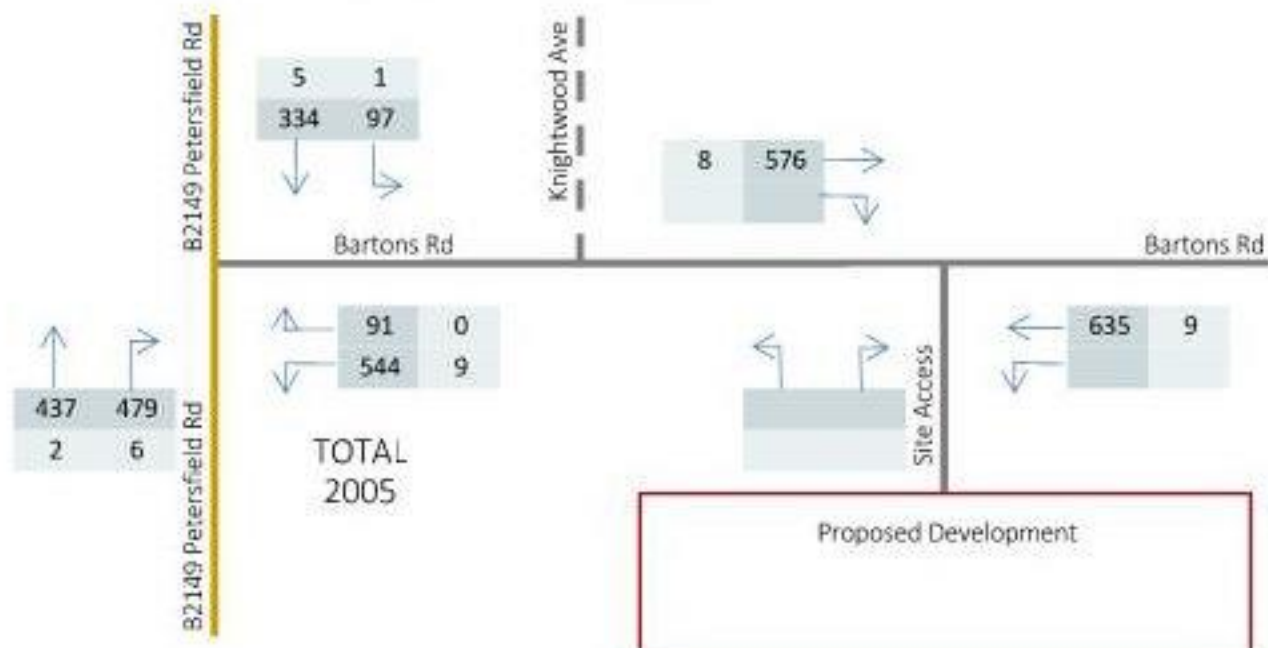


2020 Recorded Traffic Flows - Saturday Peak Hour (12:30-13:30)

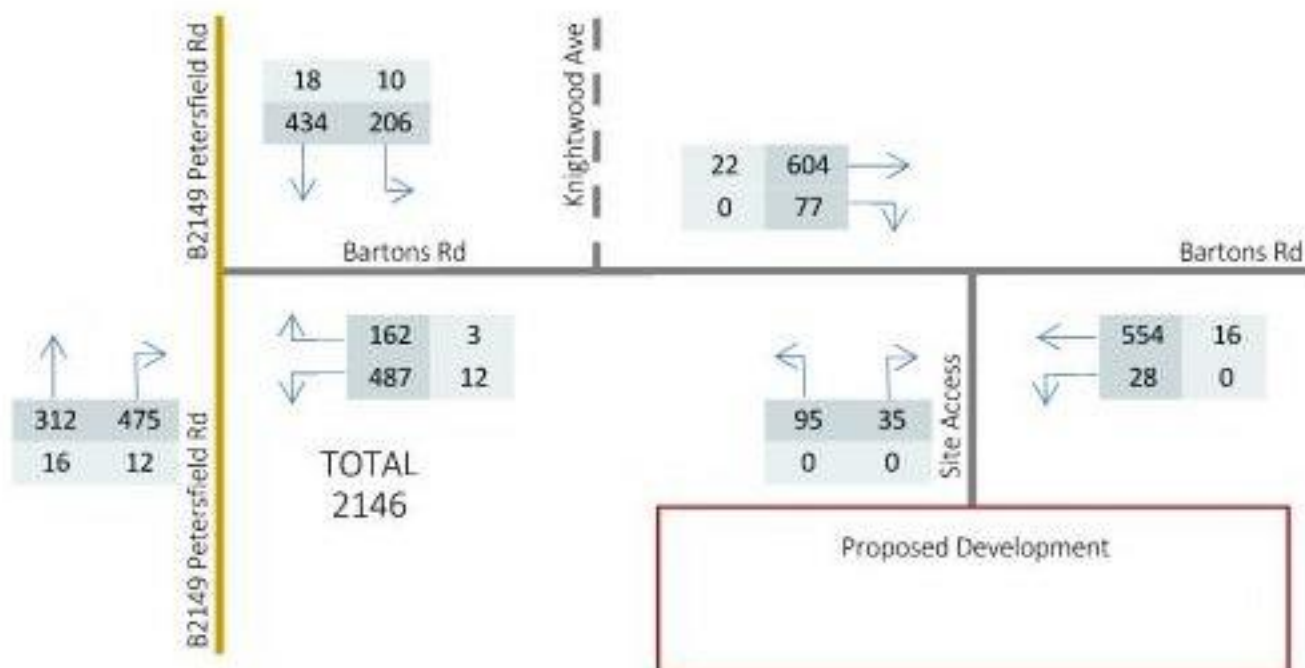


2025 Forecast Traffic Flows - Saturday Peak (12:30-13:30)

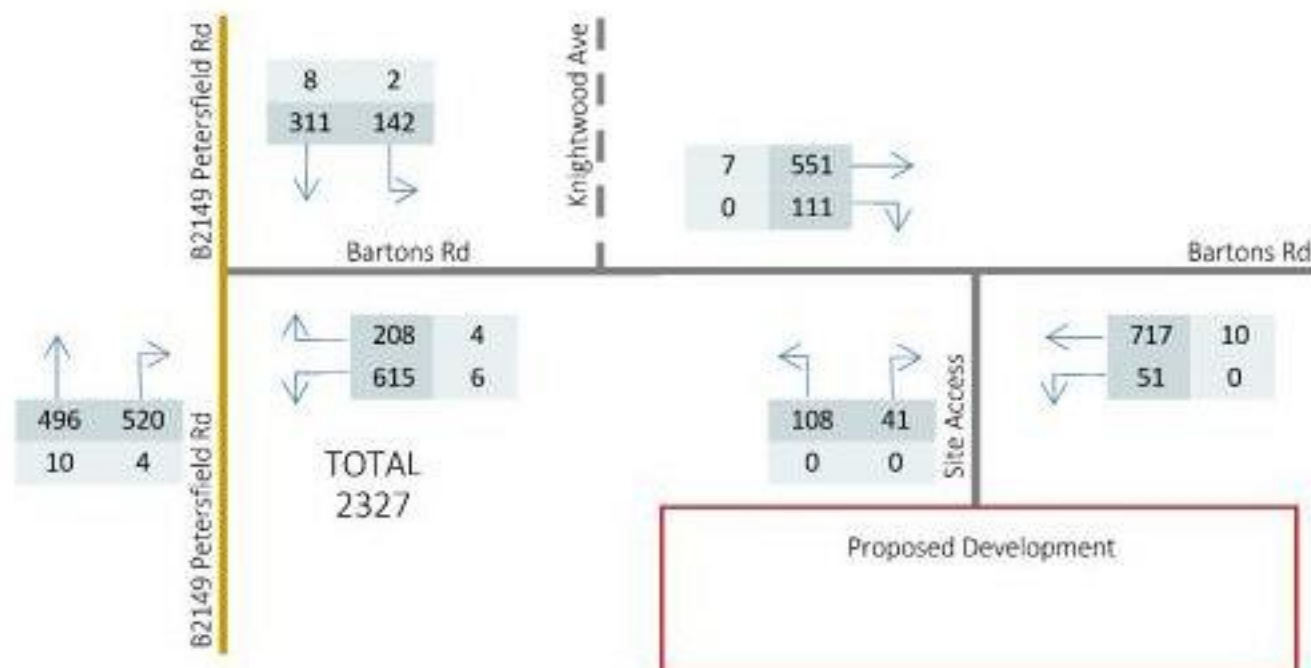
Growth factor: 1.0725



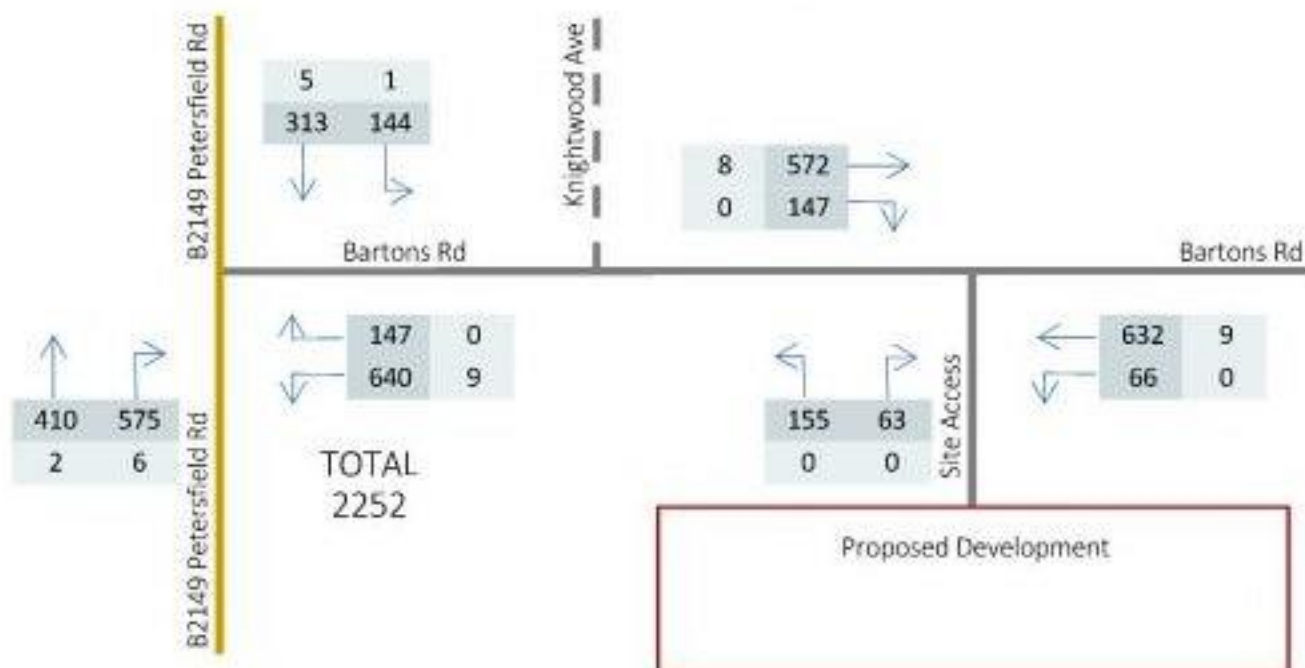
2025 Flows + Committed + Proposed Development - AM Peak Hour (08:00-09:00)



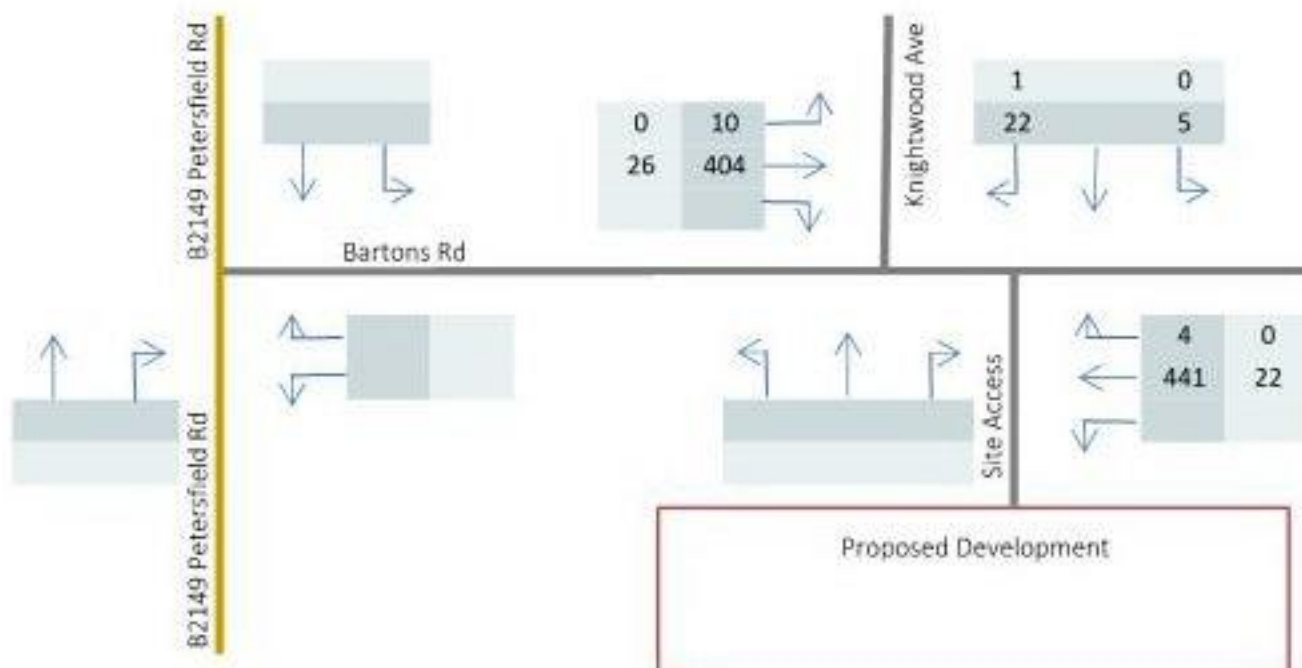
2025 Flows + Committed + Proposed Development - PM Peak Hour (17:00-18:00)



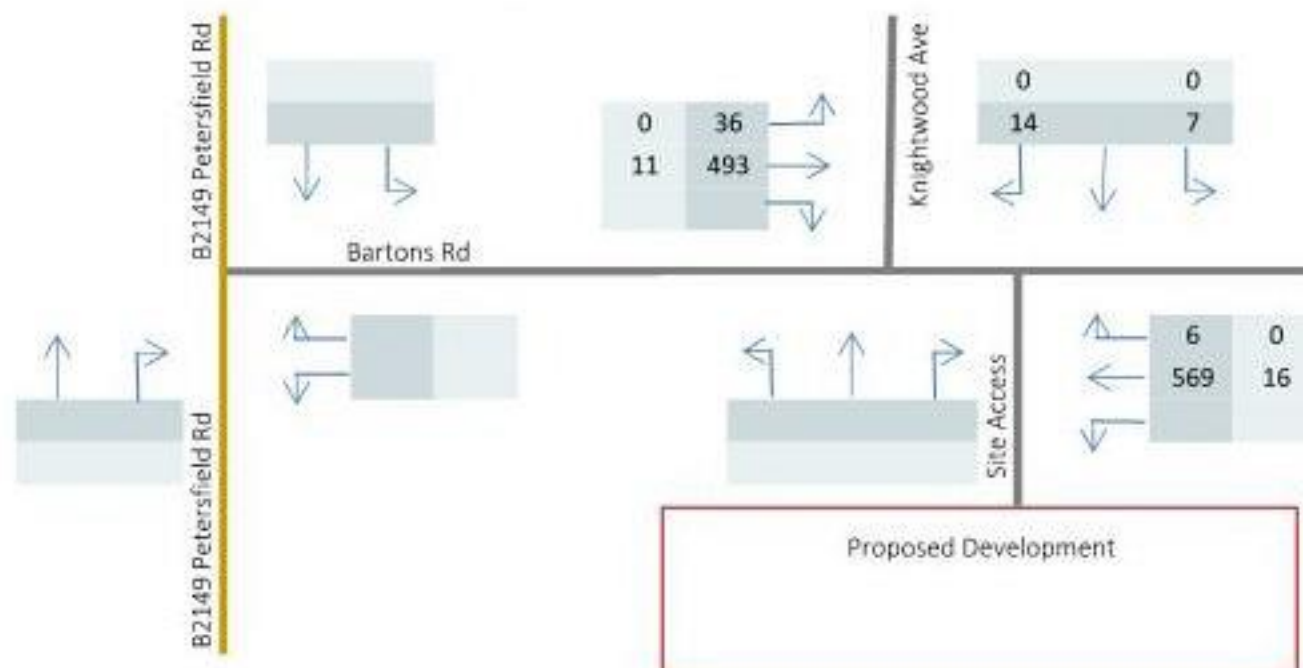
2025 Flows + Committed + Proposed Development - Saturday Peak (08:00-09:00)



2021 Recorded Flows - AM Peak Hour (08:00-09:00)

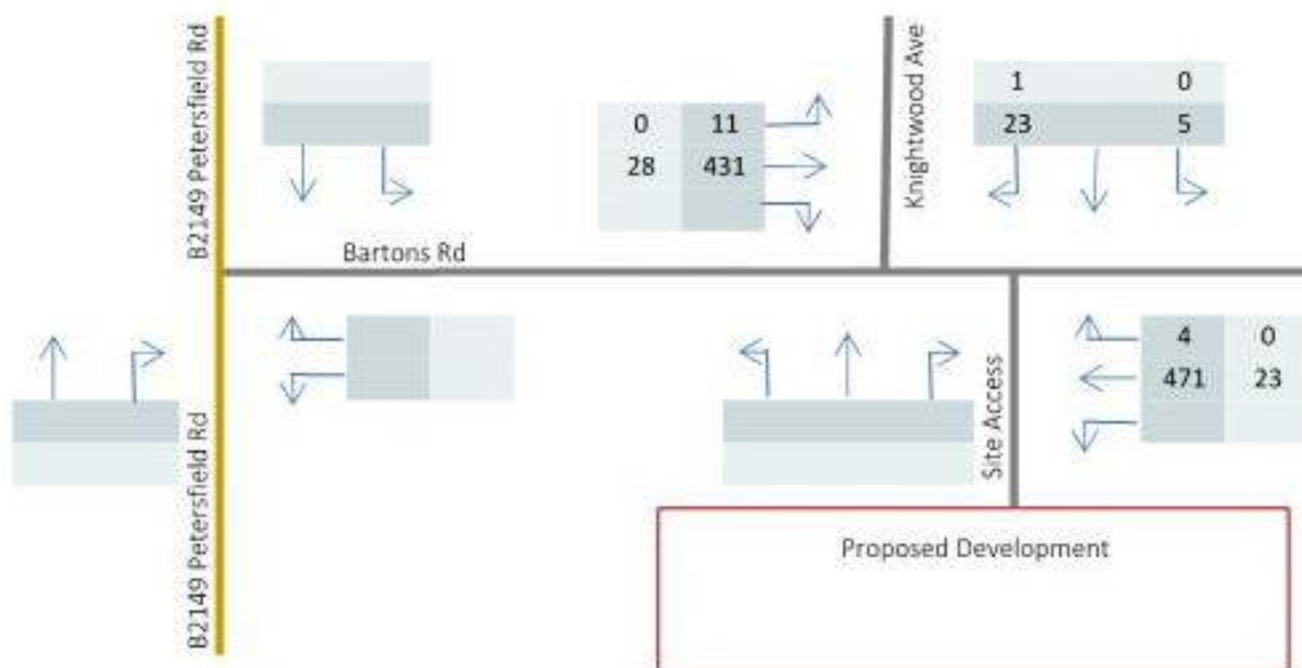


2021 Recorded Flows - PM Peak Hour (17:00-18:00)



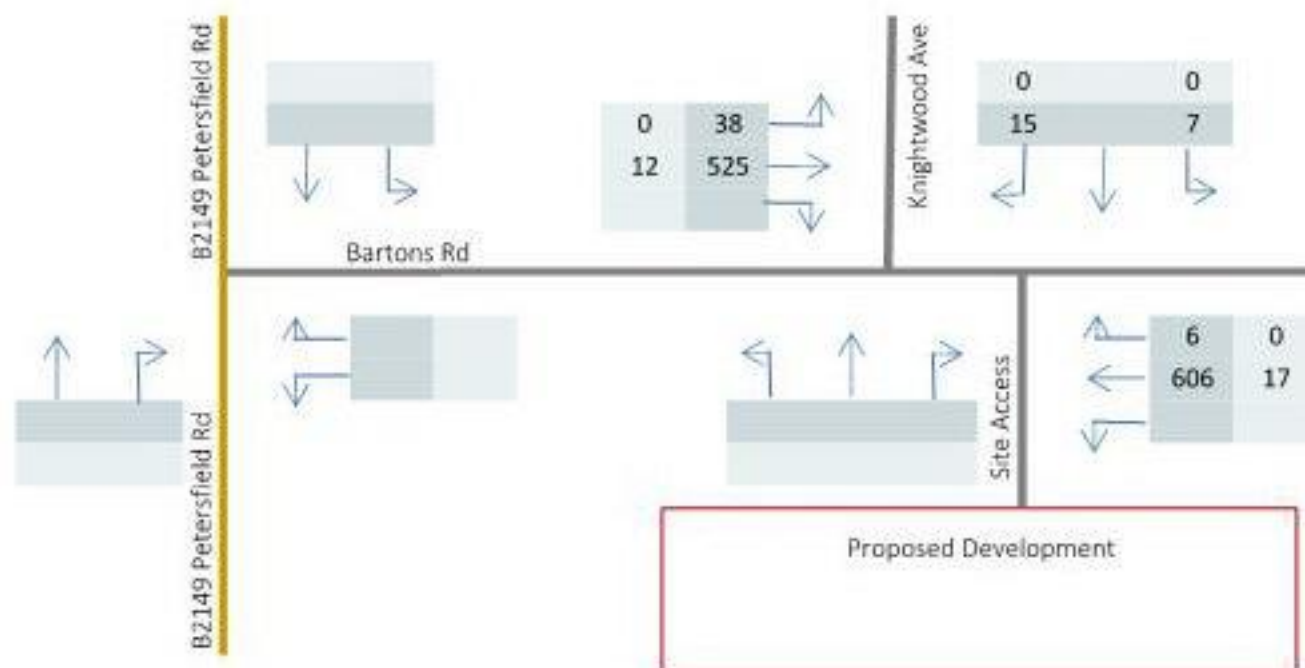
2025 Forecast Flows - AM Peak Hour (08:00-09:00)

Growth factor: 1.0673

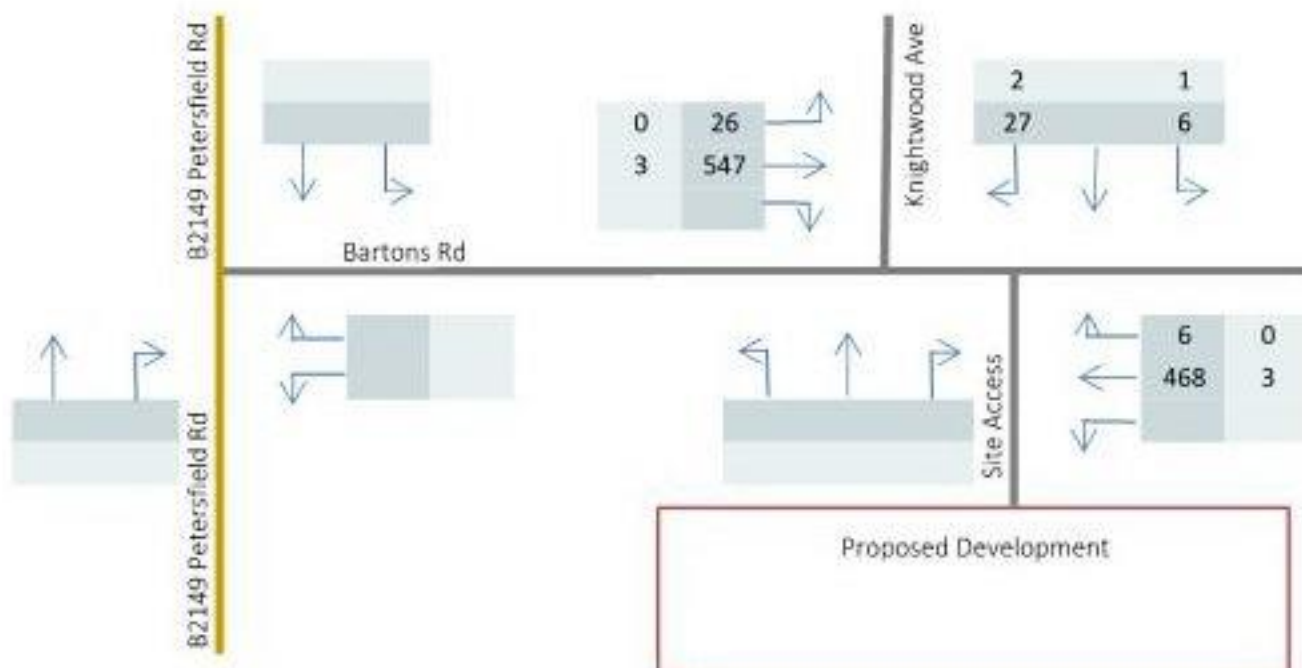


2025 Forecast Flows - PM Peak Hour (17:00-18:00)

Growth factor: 1.0655

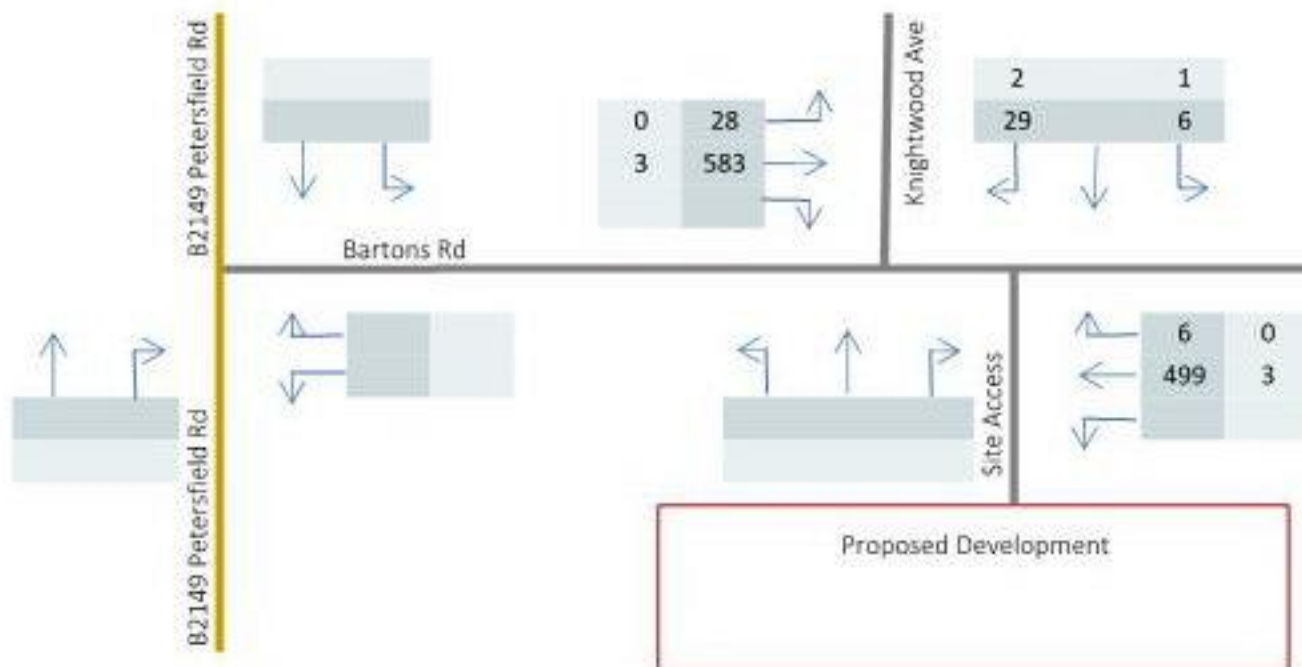


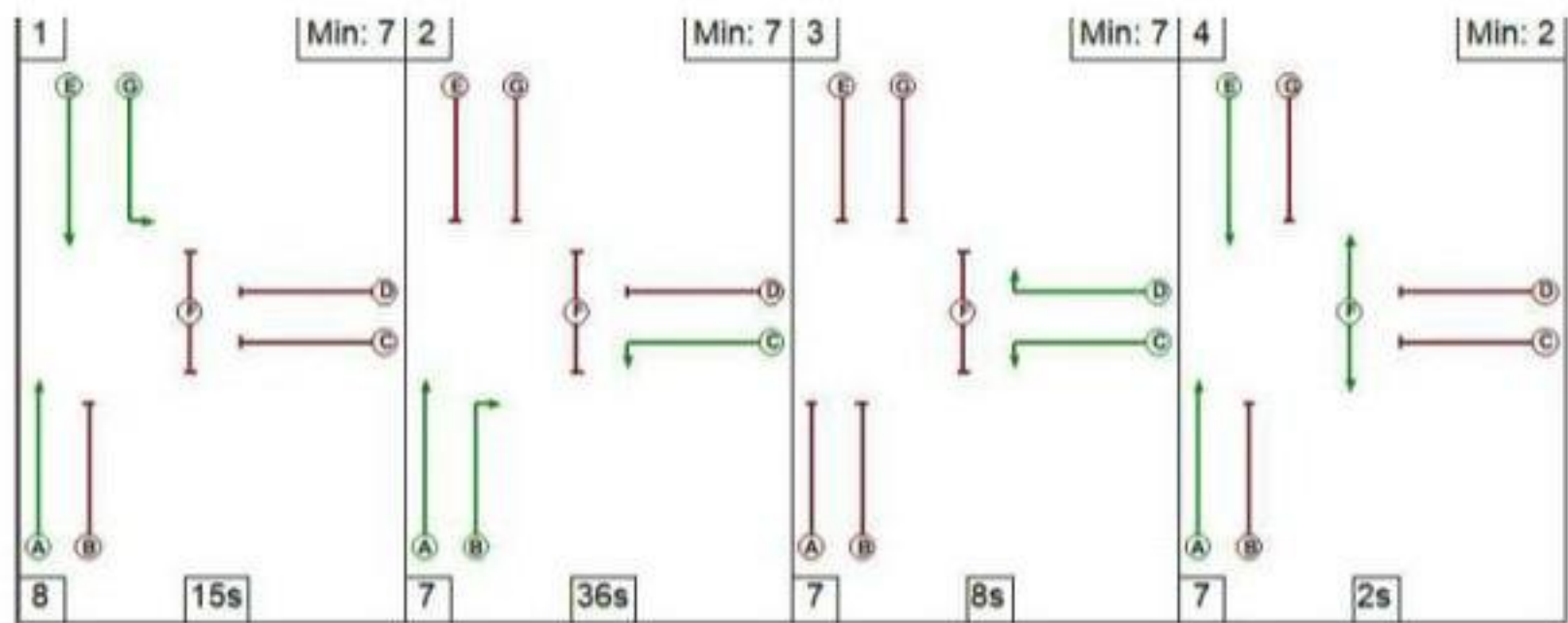
2021 Recorded Flows - Saturday Peak Hour (12:30-13:30)



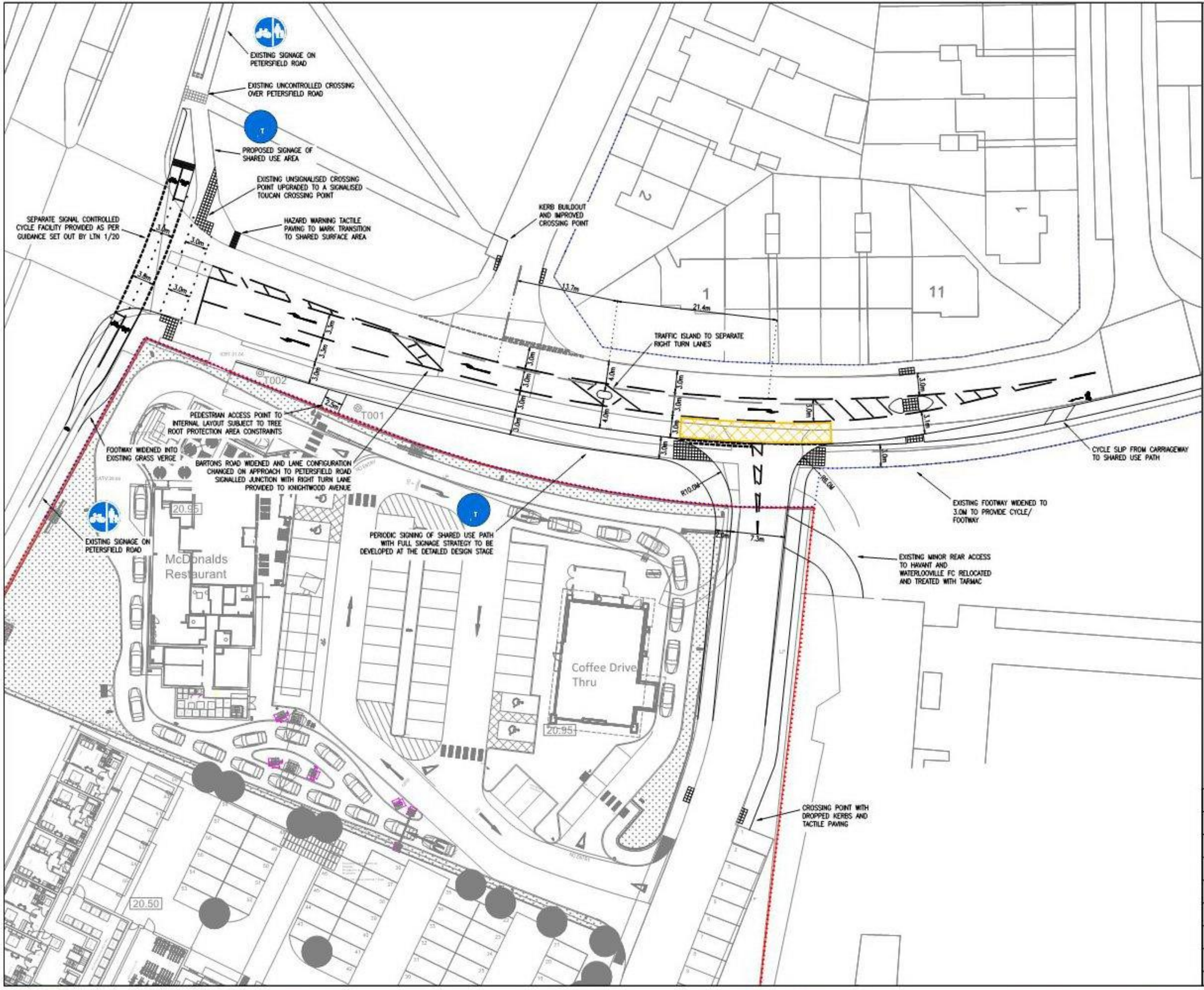
2025 Forecast Flows - Saturday Peak Hour (12:30-13:30)

Growth factor: 1.0663





Scenario	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)			Sat Peak (12:30-13:30)		
	Queue ¹	Delay ²	Sat % ³	Queue ¹	Delay ²	Sat % ³	Queue ¹	Delay ²	Sat % ³
Forecast 2025 Assessment Year + Committed Development + Proposed Development									
Petersfield Rd North	16.7	39.1	84.6	13.2	56.6	87.2	13.7	47.1	84.2
Bartons Road	13.6	37.0	85.1	14.5	28.7	86.6	18.5	29.5	84.3
Petersfield Rd South	14.0	30.4	84.7	14.9	27.9	85.3	17.7	25.6	86.9



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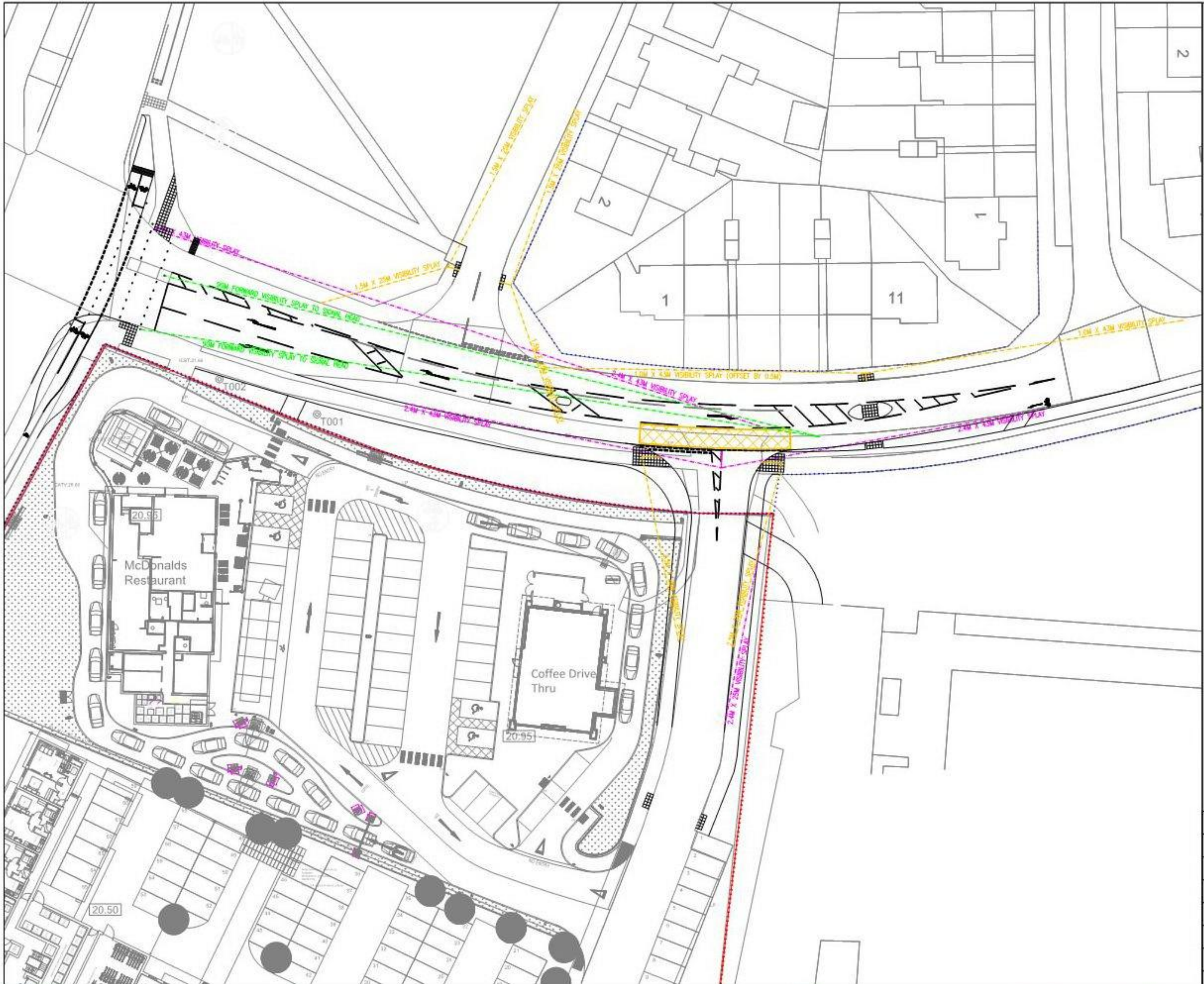
----- HIGHWAY BOUNDARY



H	KERB BUILDOUT + VISIBILITY SPLAYS ADDED	22.07.21	AST	RH
G	SIGHT CHANGES FOLL. HCC COMMENTS	10.06.21	AST	RH
F	ACCESS KERBS REALIGNED + SIGNS ADDED	20.05.21	AST	RH
E	WESTBOUND ALIGNMENT EASED	18.05.21	AST	RH
D	CHANGES TO ACCOMMODATE TRACKING	27.04.21	AST	RH
C	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
B	REVISED TO REFLECT RSA COMMENTS	12.04.21	AST	RH
A	REVISED TO REFLECT HCC COMMENTS	01.04.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name BARTONS ROAD, HAVANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS WESTERN SECTION GENERAL ARRANGEMENT	Client fortitudo	Checked By RH	Checked Date 18.01.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY			Drawn By AST	Drawn Date 08.01.21	Client Drawing No. -	PBA Drawing No. 106.0019.007	Revision H	





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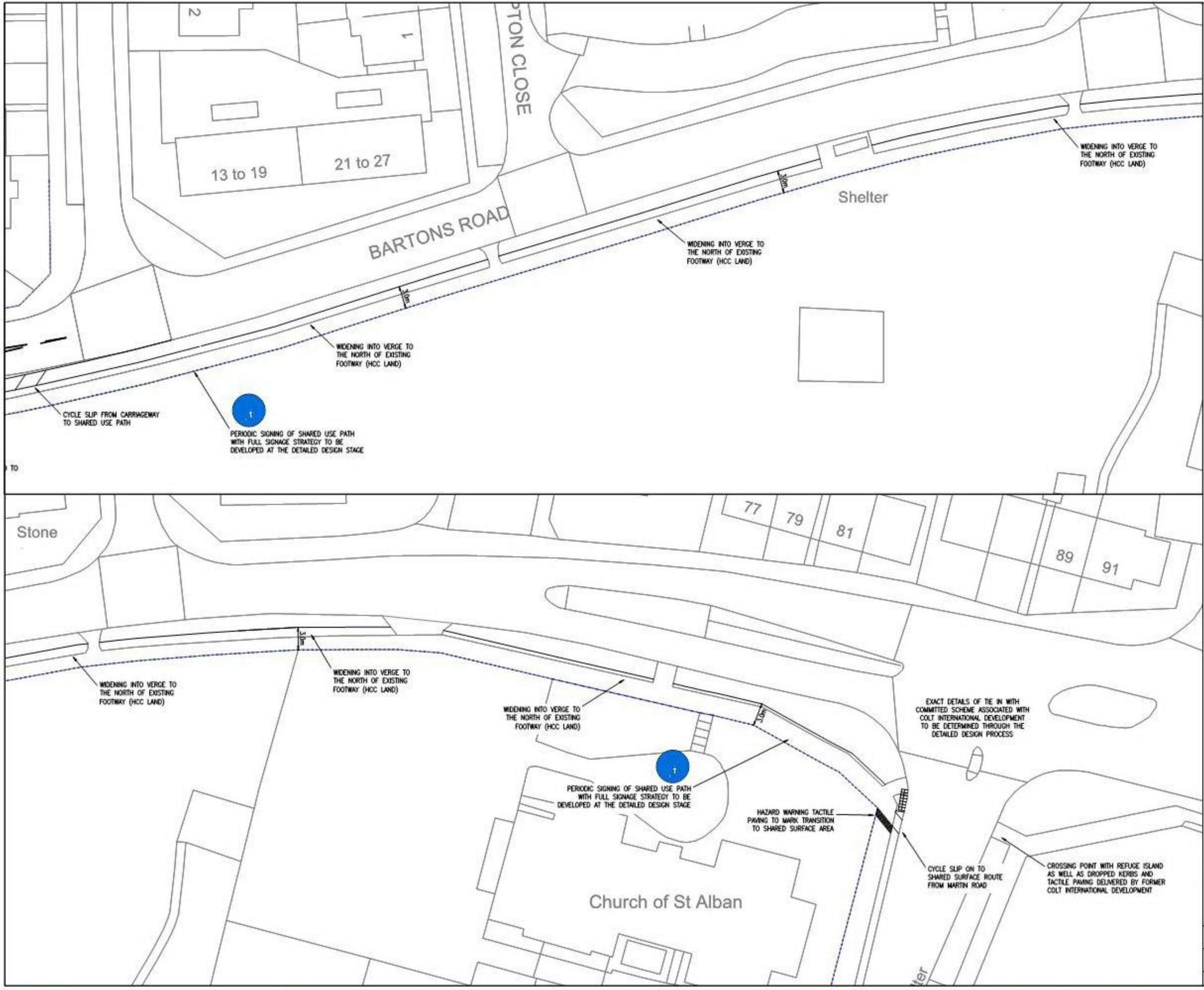
KEY

----- HIGHWAY BOUNDARY



G	KERB BUILDOUT + VISIBILITY SPLAYS ADDED	22.07.21	AST	RH
F	SIGHT CHANGES FOLL. HCC COMMENTS	10.06.21	AST	RH
E	ACCESS KERBS REALIGNED + SIGNS ADDED	20.05.21	AST	RH
D	CHANGES TO ACCOMMODATE TRACKING	27.04.21	AST	RH
C	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
B	REVISED TO REFLECT RSA COMMENTS	12.04.21	AST	RH
A	REVISED TO REFLECT HCC COMMENTS	01.04.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name BARTONS ROAD, HAVANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS WESTERN SECTION VISIBILITY	 Paul Basham Associates Ltd Rogus Cadernwood, Lower Cadis Street, Havant, PO15 3AQ 01793 115612 info@paulbashamassociates.com www.paulbashamassociates.com	Client 	Checked By RH	Checked Date 18.01.21	Scale 1:500	(AT A3 SIZE)	
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 08.01.21	Client Drawing No. -	PBA Drawing No. 106.0019.008	Revision G

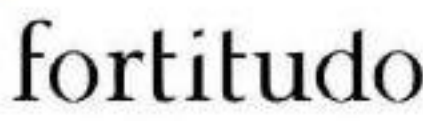


- GENERAL NOTES**
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KEY
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B	SIGNAGE ADDED	20.05.21	AST	RH
A	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
Rev	Description	Date	By	Chkd

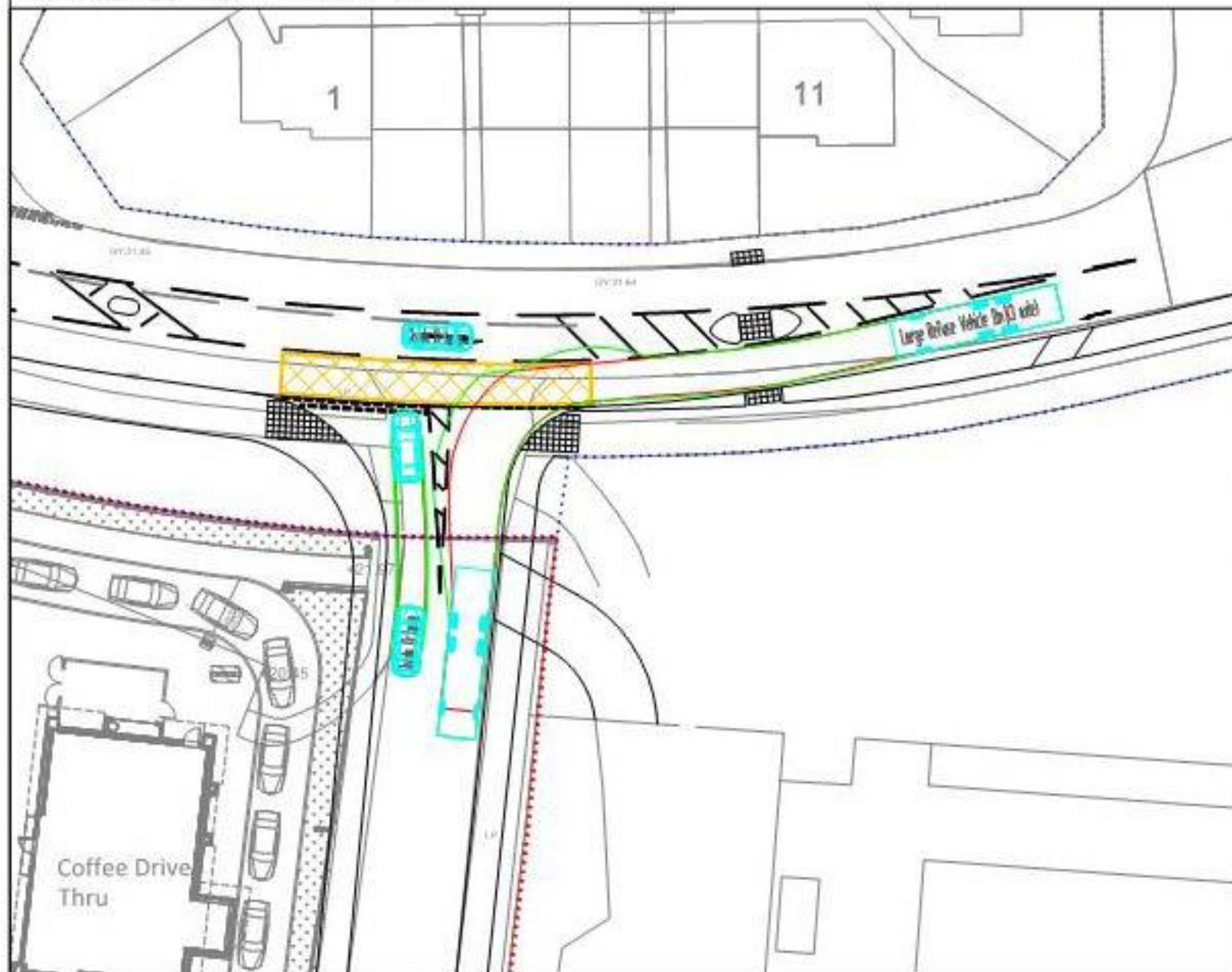
Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS MIDDLE AND EASTERN SECTIONS GENERAL ARRANGEMENT	 Paul Basham Associates Ltd Regus Cockermouth, Lower Coads Street, Belper, BS1 3AG 01779 718820 info@paulbashamassociates.com www.paulbashamassociates.com	Client 	Checked By RH	Checked Date 18.01.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 08.01.21	Client Drawing No. -	PBA Drawing No. 106.0019.009	Revision B	



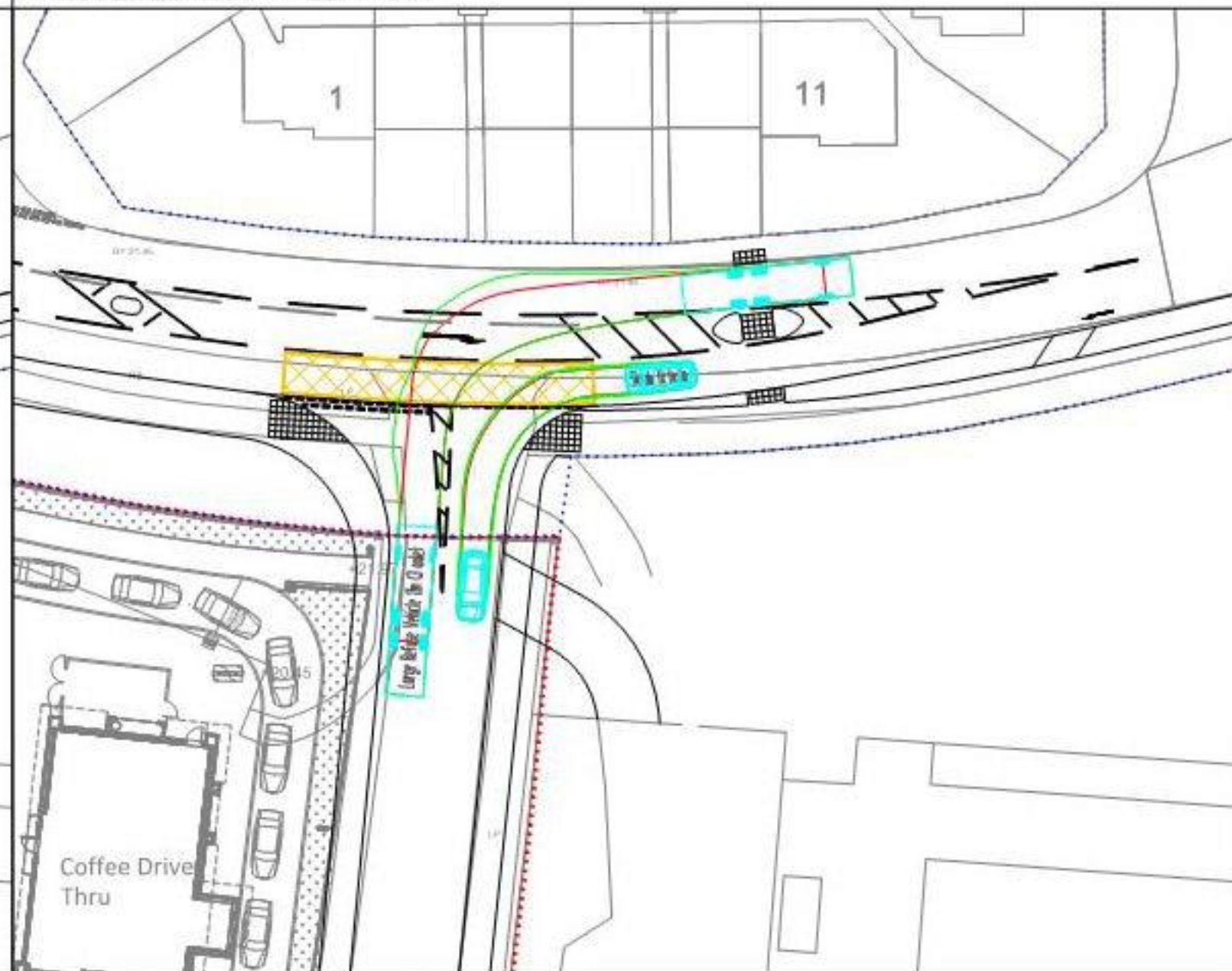
ARTICULATED HGV - RIGHT IN



ARTICULATED HGV - LEFT OUT



LARGE REFUSE VEHICLE - LEFT IN

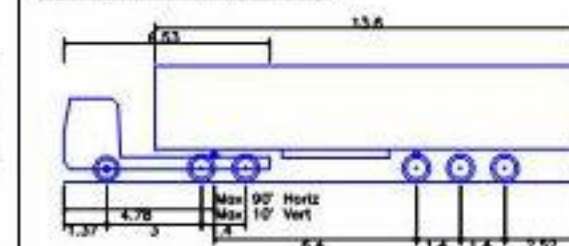


LARGE REFUSE VEHICLE - RIGHT OUT

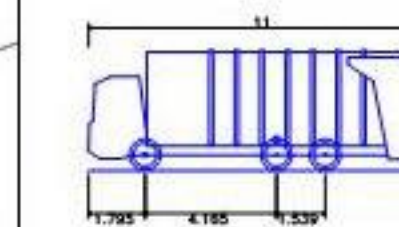
GENERAL NOTES

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VEHICLE PROFILE



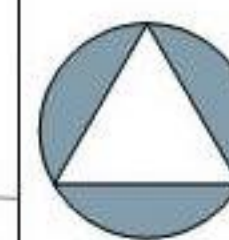
Max Legal Length (UK) Articulated Vehicle (16.5m)
Overall Length 16.500m
Overall Width 2.550m
Overall Body Height 3.681m
Min Body Ground Clearance 0.411m
Max Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 6.530m



Large Refuse Vehicle 11m (3 axle)
Overall Length 11.000m
Overall Width 2.450m
Overall Body Height 3.814m
Min Body Ground Clearance 0.366m
Track Width 2.450m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.500m

KEY

----- HIGHWAY BOUNDARY



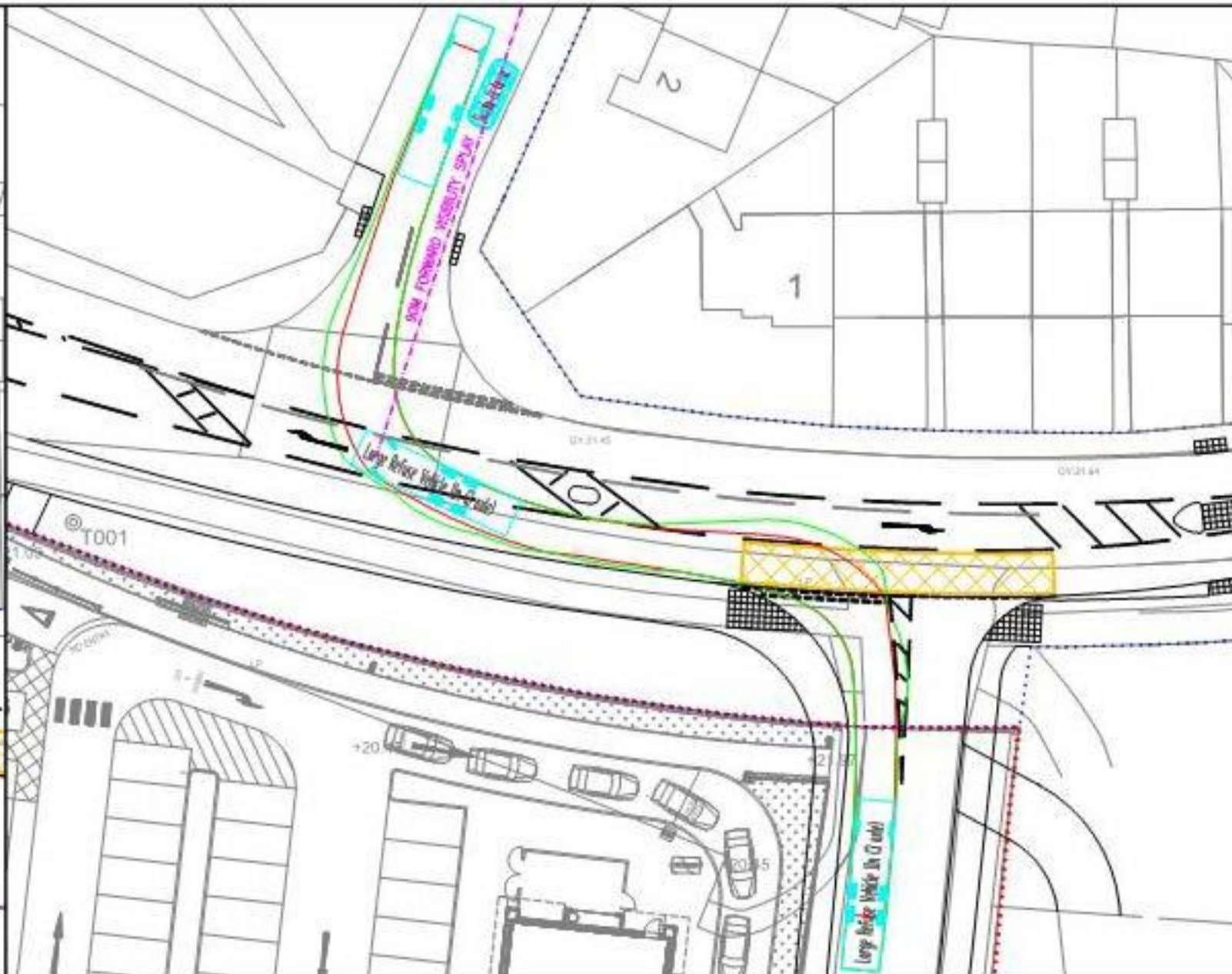
NORTH

Rev	Description	Date	By	Chkd
C	ROADMARKINGS AMENDED	10.06.21	AST	RH
B	KERBLINES AND ROADMARKINGS AMENDED	20.05.21	AST	RH
A	NEW GENERAL ARRANGEMENT	27.04.21	AST	RH

Project Name BARTONS ROAD, HAVANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS SITE ACCESS TRACKING ARTICULATED HGV AND REFUSE VEHICLE	Client fortitudo	Checked By RH	Checked Date 12.04.21	Scale 1:500	Client Drawing No. -	PBA Drawing No. 106.0019.100	Revision C
Project Phase PRELIMINARY		Paul Basham Associates Ltd Regus Cockfield, Lower Cooch Street, Basing, B51 3AG 01753 718820 info@paulbashamassociates.com	Drawn By AST	Drawn Date 12.04.21				



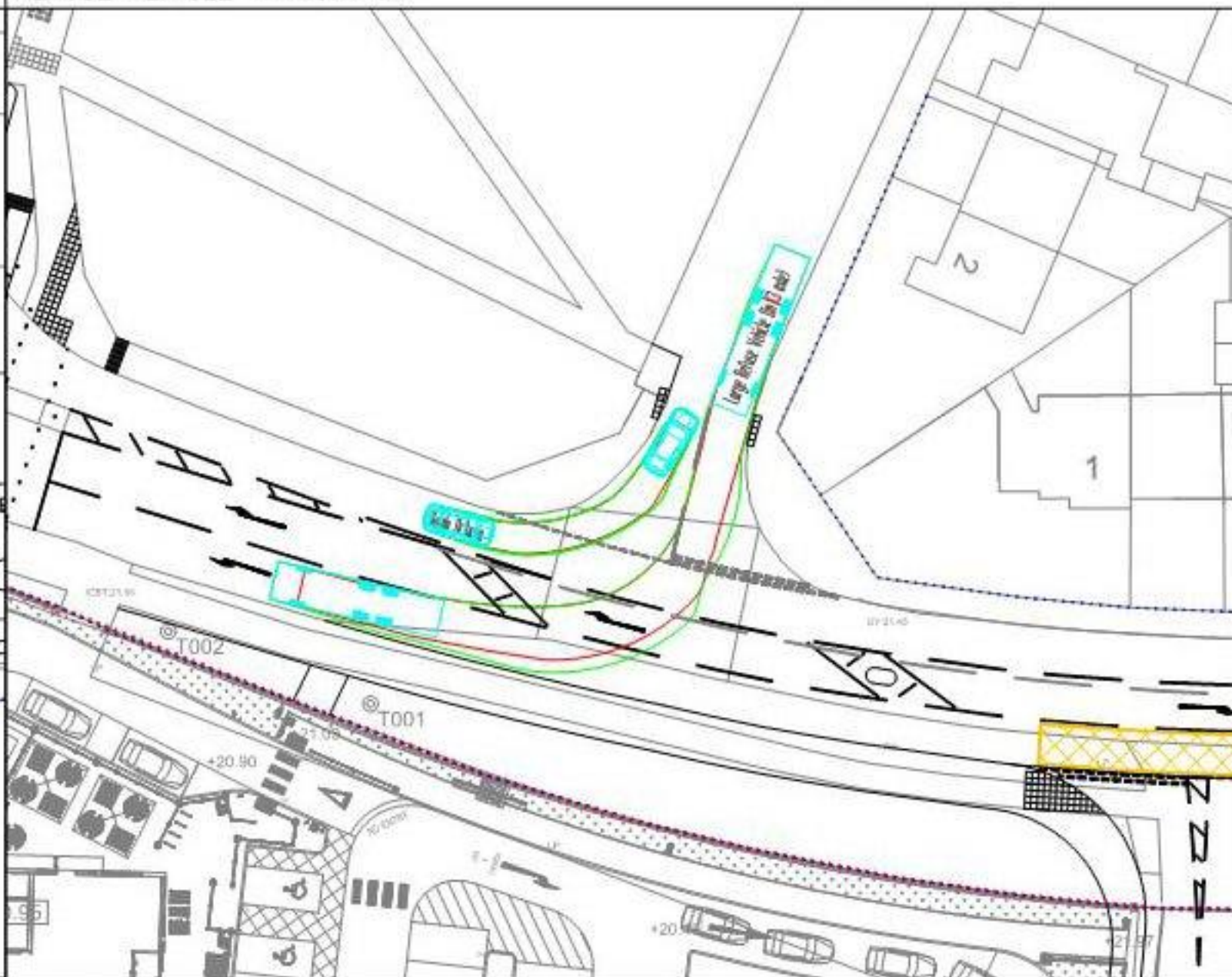
REFUSE VEHICLE - LEFT IN



REFUSE VEHICLE - RIGHT IN



REFUSE VEHICLE - LEFT OUT

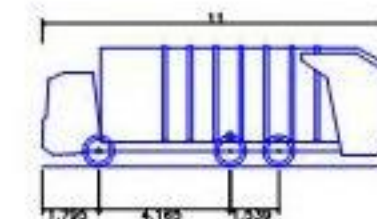


REFUSE VEHICLE - RIGHT OUT

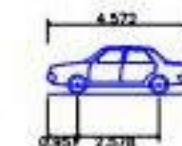
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VEHICLE PROFILE



Large Refuse Vehicle 11m (3 axle)
Overall Length 11.000m
Overall Width 2.450m
Overall Body Height 3.814m
Min Body Ground Clearance 0.366m
Track Width 2.450m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.500m



Skoda Octavia
Overall Length 4.572m
Overall Width 1.769m
Overall Body Height 1.488m
Min Body Ground Clearance 0.249m
Max Track Width 1.713m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 5.100m

KEY

----- HIGHWAY BOUNDARY

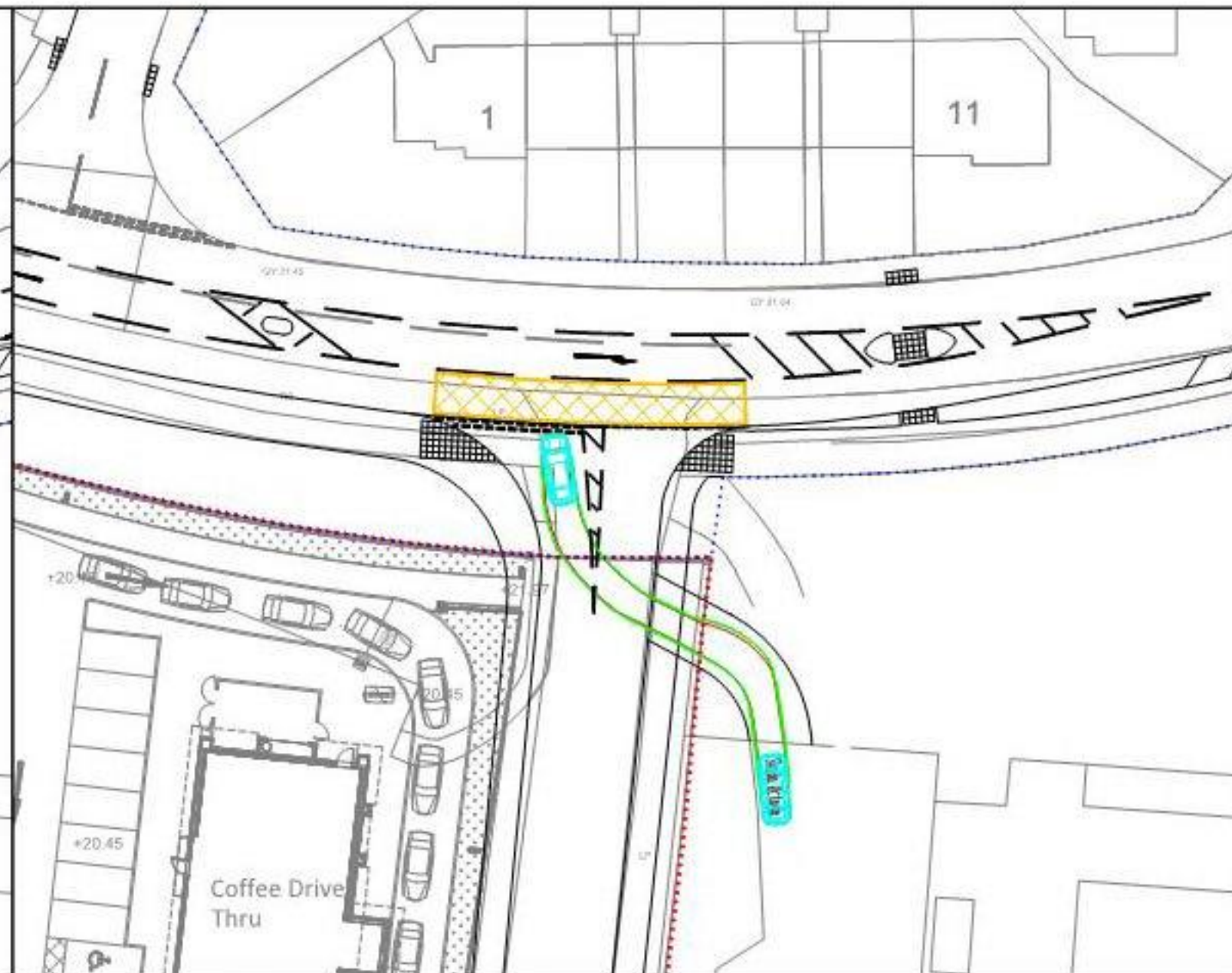


Rev	Description	Date	By	Chkd
C	ROADMARKINGS AMENDED	10.06.21	AST	RH
B	KERBLINES AND ROADMARKINGS AMENDED	20.05.21	AST	RH
A	NEW GENERAL ARRANGEMENT	27.04.21	AST	RH

Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS KNIGHTWOOD AVENUE TRACKING REFUSE VEHICLE AND CAR	 Paul Basham Associates Ltd Rugby Cathedral, Lower Castle Street, Rugby, CV1 3AG 01793 718820 info@paulbashamassociates.com	Client 	Checked By RH	Checked Date 12.04.21	Scale 1:500	Client Drawing No. -	PBA Drawing No. 106.0019.101	Revision C
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 12.04.21				



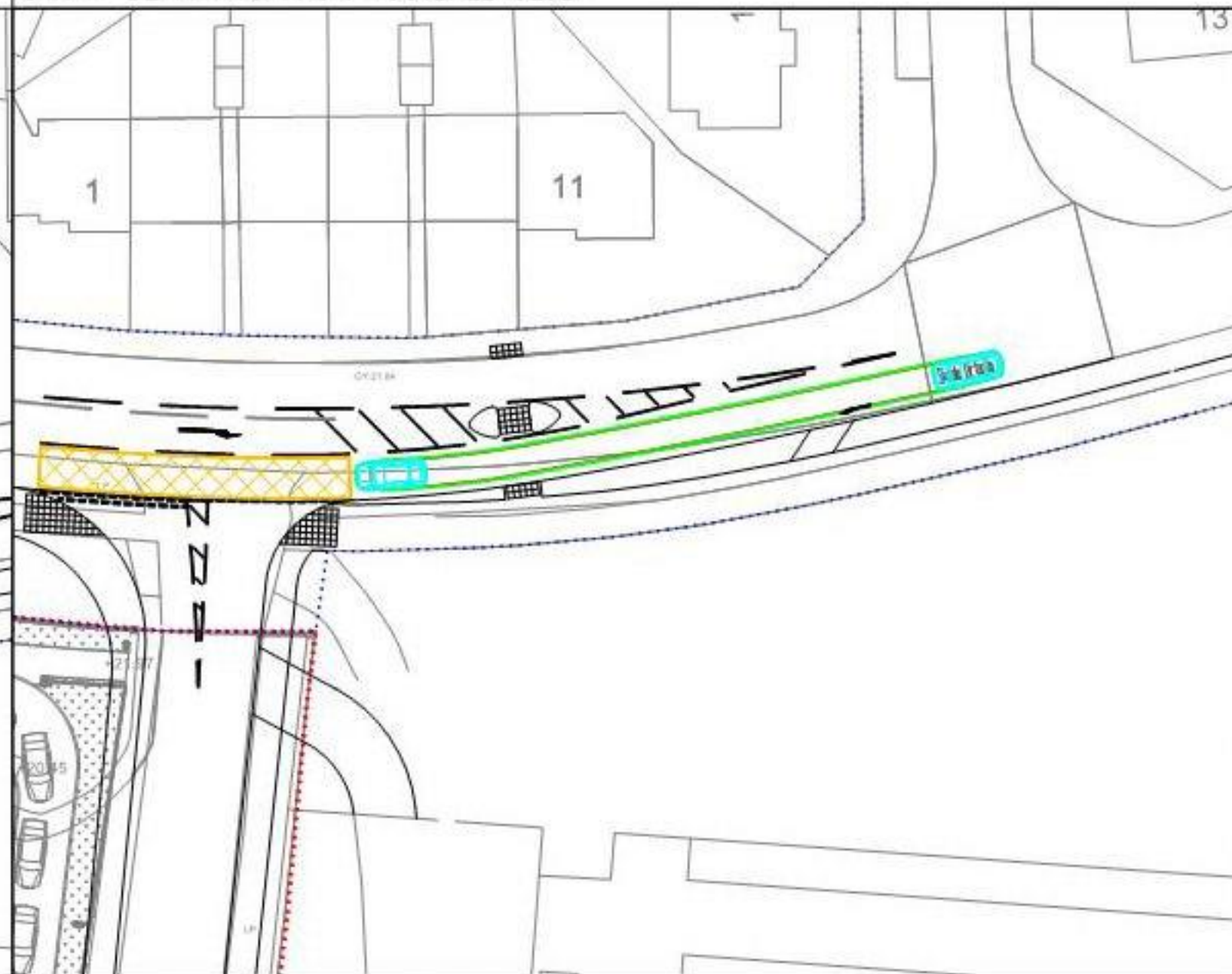
CAR – ARRIVING TO FOOTBALL CLUB



CAR – DEPARTING FROM FOOTBALL CLUB



CAR – RIGHT TURN INTO SITE



CAR – WESTBOUND ON BARTONS ROAD

GENERAL NOTES

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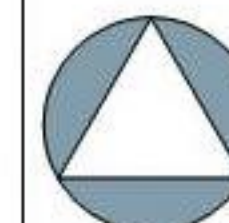
VEHICLE PROFILE



Skoda Octavia	
Overall Length	4.572m
Overall Width	1.769m
Overall Body Height	1.488m
Min Body Ground Clearance	0.249m
Max Track Width	1.713m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.100m

KEY

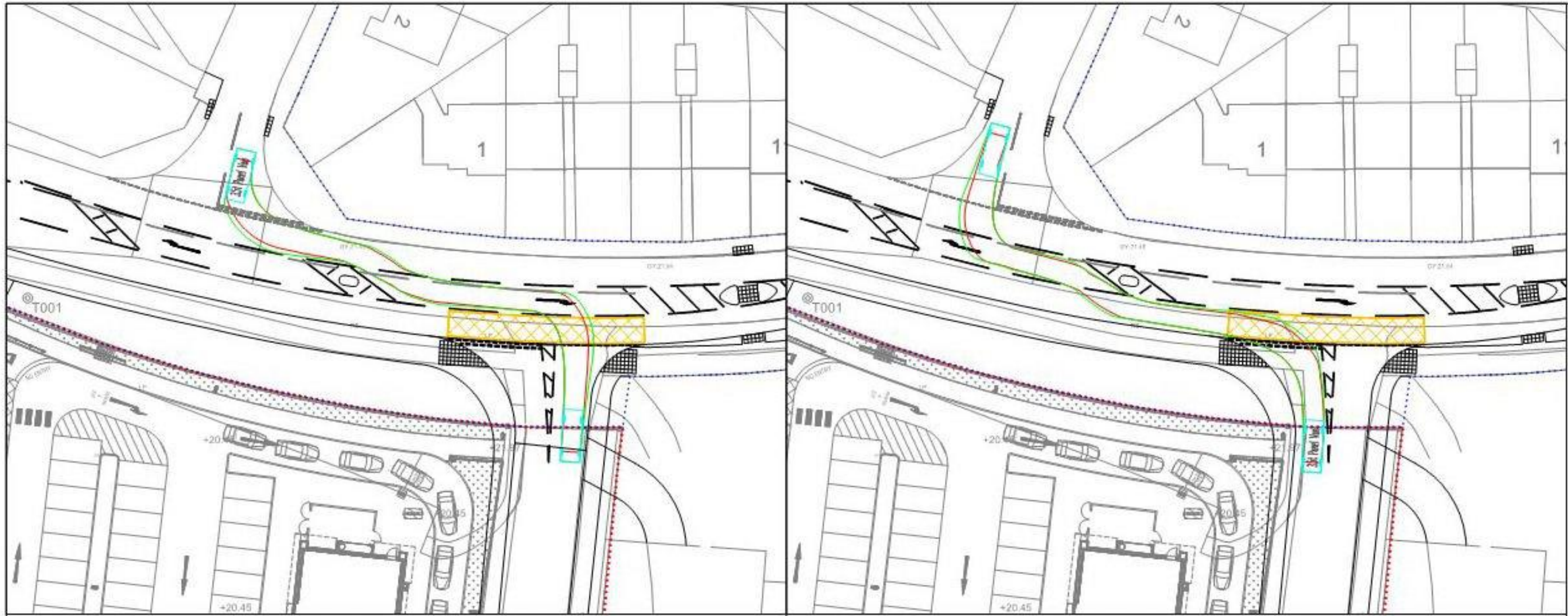
..... HIGHWAY BOUNDARY



NORTH

Rev	Description	Date	By	Chkd
C	ROADMARKINGS AMENDED	10.06.21	AST	RH
B	KERBLINES AND ROADMARKINGS AMENDED	20.05.21	AST	RH
A	NEW GENERAL ARRANGEMENT	27.04.21	AST	RH

Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS FOOTBALL CLUB TRACKING CAR	Client fortitudo	Checked By RH	Checked Date 12.04.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY		Paul Basham Associates Ltd Regus Cockermouth, Lower Coast Street, Brixton, BS1 3AG 01179 718820 info@paulbashamassociates.com www.paulbashamassociates.com	Drawn By AST	Drawn Date 12.04.21	Client Drawing No. -	PBA Drawing No. 106.0019.102	Revision C	



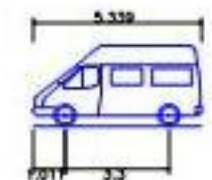
PANEL VAN (3.5T) – LEFT RIGHT STAGGER TO SITE ACCESS

PANEL VAN (3.5T) – LEFT RIGHT STAGGER TO KNIGHTWOOD AVENUE

GENERAL NOTES

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VEHICLE PROFILE



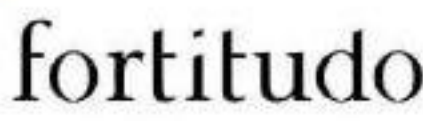
3.5t Panel Van	5.339m
Overall Length	1.988m
Overall Width	2.565m
Overall Body Height	0.338m
Min Body Ground Clearance	1.988m
Track Width	4.00s
Lock to lock time	6.400m
Kerb to Kerb Turning Radius	

KEY

..... HIGHWAY BOUNDARY



B	ROADMARKINGS AMENDED	10.06.21	AST	RH
A	KERBLINES AND ROADMARKINGS AMENDED	20.05.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name BARTONS ROAD, HAYANT	Title PROPOSED BARTONS ROAD IMPROVEMENTS TRACKING PANTECHNICON	 Paul Basham Associates Ltd Regus Cockermouth, Lower Coast Street, Brixton, BS1 3AG 01179 118830 info@paulbashamassociates.com	Client 	Checked By RH	Checked Date 27.04.21	Scale 1:500	(AT A3 SIZE)		
Project Phase PRELIMINARY				Drawn By AST	Drawn Date 27.04.21	Client Drawing No. -	PBA Drawing No. 106.0019.103	Revision B	

Appendix L



Road Safety Audit Stage 1

Bartons Road

Havant

Hampshire

Date: 27th July 2021

Report produced for: Paul Basham Associates

Report produced by: M & S Traffic

DOCUMENT CONTROL SHEET

M&S Traffic has prepared this report in accordance with the instructions from Paul Basham Associates. M&S Traffic shall not be liable for the use of any information contained herein for any purpose other than the sole and specific use for which it was prepared.

Project Title Bartons Road, Havant.

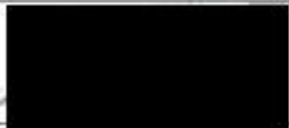
Report Title Road Safety Audit Stage 1

Revision

Status Final

Audit Reference PBA/21/106.0019/1R/MM

Record of Issue

Document Ref PBA/21/106.0019/1/MM	Prepared by: (Name)	Checked by: (Name)	Approved by (Signature)	Date Approved
Revision - B	Martin Morris	Bryan Shawyer		27 th July 2021
Designers Response				
Authority Response				

Distribution

Organisation	Contact	Copies
Paul Basham Associates	Alex Stephenson	-

CONTENTS

Document Control Sheet	2
Contents	3
1 Introduction	4
2 Safety issues raised at previous Audits	6
3 Items raised at the Stage 1 Audit	7
4 Issues identified during the Stage 1 Audit that are outside the terms of reference	11
5 Auditors Statement	12

Appendix A..... List of drawings

Appendix B..... Comment Location Drawing

Appendix C..... Road Safety Audit Decision Log

Appendix D..... Design Organisation Statement

Appendix E..... Overseeing Organisation Statement

1 INTRODUCTION

1.1 This report describes a Stage 1 Road Safety Audit carried out on Section 278 works associated with the two drive through units off Bartons Road, Havant, Hampshire, including:

- The provision of a priority junction access on Bartons Road.
- Carriageway widening to provide a longer two-lane approach to the signalised junction with the B2149.
- The provision of a pedestrian refuge and crossings points.
- The provision of right turn lanes into Knightswood Ave and the development.
- The provision of a controlled crossing phase for cyclists and pedestrians at the signalised junction with Bartons Road and the B2149, and the provision of a signal-controlled cyclist crossing facility.

The Audit was requested by the design organisation, Paul Basham Associates, Regus Castlemead, Office 326, Lower Castle Street, Bristol, BS1 3AG on behalf of Hampshire County Council, as the Highway Authority.

1.2 The Audit Team membership was as follows:

Martin Morris, PGD, MCIHT, MSoRSA – Audit Team Leader
Highways England Approved RSA Certificate of Competency

Bryan Shawyer B.Eng. (Hons), MSc, MCIHT, MSoRSA– Audit Team Member
Highways England Approved RSA Certificate of Competency

1.3 The audit was undertaken following the principles of GG 119, The Design Manual for Roads and Bridges. The documents available at the time the report was compiled are detailed in Appendix A.

1.4 The Audit took place at the Gillingham offices of M&S Traffic in May 2021 and comprised an examination of the documents provided as listed in Appendix A, plus a joint visit to the site of the proposed scheme during the on the 17th April 2021 between 17:00 and 17:30. Weather conditions at the time were overcast with rain and the road surface was wet. Traffic flows were moderate and free flow speeds were low. Low level pedestrian movements and no cycle movements were observed during the site visit. Note that the site visit was undertaken during the Covid 19 restriction period.

1.5 The report has been compiled, only with regards to the safety implications for road users of the layout presented in the supplied drawings. It has not been examined or verified for compliance with any other standards or criteria. This safety audit does not perform any “Technical Check” function on these proposals. It is assumed that the Project Sponsor is satisfied that such a “Technical Check” has been successfully completed prior to requesting this safety audit.

- 1.6 The auditors have been informed of the following Departure from Standard, mentioned in the Road Safety Audit Brief, "The right turn lanes for the site access and for Knightwood Avenue are shorter than as prescribed by DMRB however the principles set out by MfS should apply for Bartons Road not DMRB".
- 1.7 All comments and recommendations are referenced to the detailed drawings and the locations have been detailed relating to the plans supplied with the audit brief, Appendix B.

2 SAFETY ISSUES RAISED AT PREVIOUS AUDITS

- 2.1 The scheme was subject to a Stage 1 Road Safety Audit in April 2021 by M&S Traffic, where comments 3.1.1, 3.1.2, 3.1.3, 3.3.1, 3.3.2, 3.4.1 and 3.5.1 remain outstanding. These items are referred to again in 3.1.1, 3.1.2, 3.1.3, 3.3.1, 3.3.2, 3.4.1 and 3.5.1 of this report.

3 ITEMS RAISED AT THE STAGE 1 AUDIT

3.1 General

3.1.1 PROBLEM

Location: Bartons Road approach to the traffic signals.

Summary: Inappropriate surfacing could lead to vehicle to pedestrian / cyclist collisions or rear end shunts.

The proposals do not include the introduction of anti-skid surfacing or a surface with a high Polished Stone Value (PSV) on the approaches to the stop line. Surfacing with an inadequate PSV could lead to vehicles not being able to stop, leading to possible vehicle to pedestrian / cyclist collisions or rear end shunts.

RECOMMENDATION

It is recommended that high friction surfacing should be used on both approach lanes to the traffic signals.

3.1.2 PROBLEM

Location: The scheme.

Summary: Ponding of surface water could lead to loss of control collisions.

The carriageway is being widened and new kerblines are being introduced, where no details of carriageway drainage or carriageway vertical profiles and horizontal profiles have been provided for assessment. Ponding on the carriageway or water moving across the carriageway at junctions could lead to loss of control collisions.

RECOMMENDATION

It is recommended that drainage details should be provided for assessment or that the carriageway should be shaped so that the highway drains.

3.1.3 PROBLEM

Location: Proposed unsegregated footway / cycleway.

Summary: Insufficient construction details could lead to overshoot at junctions or cyclist loss of control collisions.

No details of the PSV of the unsegregated cycleway / footway surface were provided for assessment. Surfacing with an insufficient PSV could lead to overshoot at junctions or cyclist loss of control collisions in the event of sudden braking manoeuvres.

RECOMMENDATION

It is recommended that the PSV of the unsegregated footway / cycleway surface material should be a minimum of 55PSV.

3.2 Local Alignment

3.2.1 No comment.

3.3 Junctions

3.3.1 PROBLEM

Location: Proposed access junction with Bartons Road.

Summary: Left / right stagger could lead to side swipe collisions or rear end shunt collisions.

A staggered junction is proposed between the access road and Knightswood Avenue. This is a 'left / right' stagger, with side road centre lines scaled at approximately 37m apart on a posted 30mph road. Vehicles waiting to right turn into one side road could obstruct the visibility to the left out of the opposite side road such that an exiting vehicle could pull out into the path of an unseen main road vehicle, which could lead to side impact collisions or rear end shunts.

RECOMMENDATION

It is recommended that in accordance with CD 123 para 2.24 a minimum stagger distance of 50m, to ensure safe operation should be the preferred arrangement; however, this may be unachievable in this instance.

3.3.2 PROBLEM

Location: Signalised junction.

Summary: Operation of signalised could lead to rear end shunts or vehicle to pedestrian collisions.

No modelling data was supplied for assessment, however the emails received state that the junction will operate under 90% saturation. However, to achieve this the pedestrian call up will not operate during every cycle, however the cycle time is stated as being 90 seconds. Excessive waiting for pedestrians could lead to crossing without a green signal in their favour which could lead to rear end shunts or vehicle to pedestrian collisions.

RECOMMENDATION

It is recommended that the junction should be assessed at Stage 3 Road Safety Audit.

3.4 Non-Motorised User Provision

3.4.1 PROBLEM

Location: Northern kerbline, at the proposed pedestrian refuge crossing point.

Summary: Lack of visibility could lead vehicle to pedestrian collisions or rear end shunt collisions.

Whilst pedestrian intervisibility appeared adequate there was scope for the visibility splay to the east to be improved and obstructed should the hedge line continue to grow – see figure 1 below. Restricted restrict visibility could lead to vehicle to pedestrian collisions or rear end shunt collisions.



Figure 1: Hedge could restrict intervisibilty splay.

RECOMMENDATION

It is recommended that the hedge should be cut back and that a regular maintenance programme to retain the visibility splay should be employed.

3.4.2 PROBLEM

Location: Proposed crossing point in Knightwood Avenue.

Summary: Lack of visibility could lead vehicle to pedestrian collisions or rear end shunt collisions.

The crossing point immediately follows a parking bay, where parked vehicles could restrict intervisibility Restricted restrict visibility could lead to vehicle to pedestrian collisions or rear end shunt collisions.

RECOMMENDATION

It is recommended that parking bays should be removed to provide an adequate visibility splay.

3.5 Road Signs, Carriageway Markings and Lighting

3.5.1 PROBLEM

Location: The scheme.

Summary: Insufficient lighting compromise road safety.

Lamp columns are present in the proposed widening area where no details of relocation have been supplied for assessment. A lack of lighting or dark areas could compromise road safety.

RECOMMENDATION

It is recommended that lighting details should be supplied at Stage 2 Safety Audit.

4 ISSUES IDENTIFIED DURING THE AUDIT THAT ARE OUTSIDE THE TERMS OF REFERENCE

- 4.1 Any issues that the Audit Team wish to bring to the attention of the Client Organisation, which are not covered by the road safety implications of this audit have been included in the following section. These issues could include maintenance items, operational issues, or poor existing provision. It should be understood however, that in raising these issues, the Audit Team do not warrant that a full review of the existing highway environment has been undertaken beyond the scope of the audit.
- 4.2 The Audit Team had no issues to raise within this section.

5 AUDITOR TEAM STATEMENT

5.1 We certify that this audit has been carried out following the principles of GG 119.

Audit Team Leader

Martin Morris
PGD, MCIHT, MSoRSA
Highways England Approved RSA Certificate of Competency
M & S Traffic Ltd
Aeolus House
32 Hamelin Road
Gillingham
Kent ME7 3EX

Signed:



Date: 27/07/2021

Audit Team Member

Bryan Shawyer
BEng (Hons), MSc, MCIHT, MSoRSA
Highways England Approved RSA Certificate of Competency
M & S Traffic Ltd
Aeolus House
32 Hamelin Road
Gillingham
Kent ME7 3EX

Signed:



Date: 27/07/2021

APPENDIX A

List of drawings and documentation submitted for auditing:

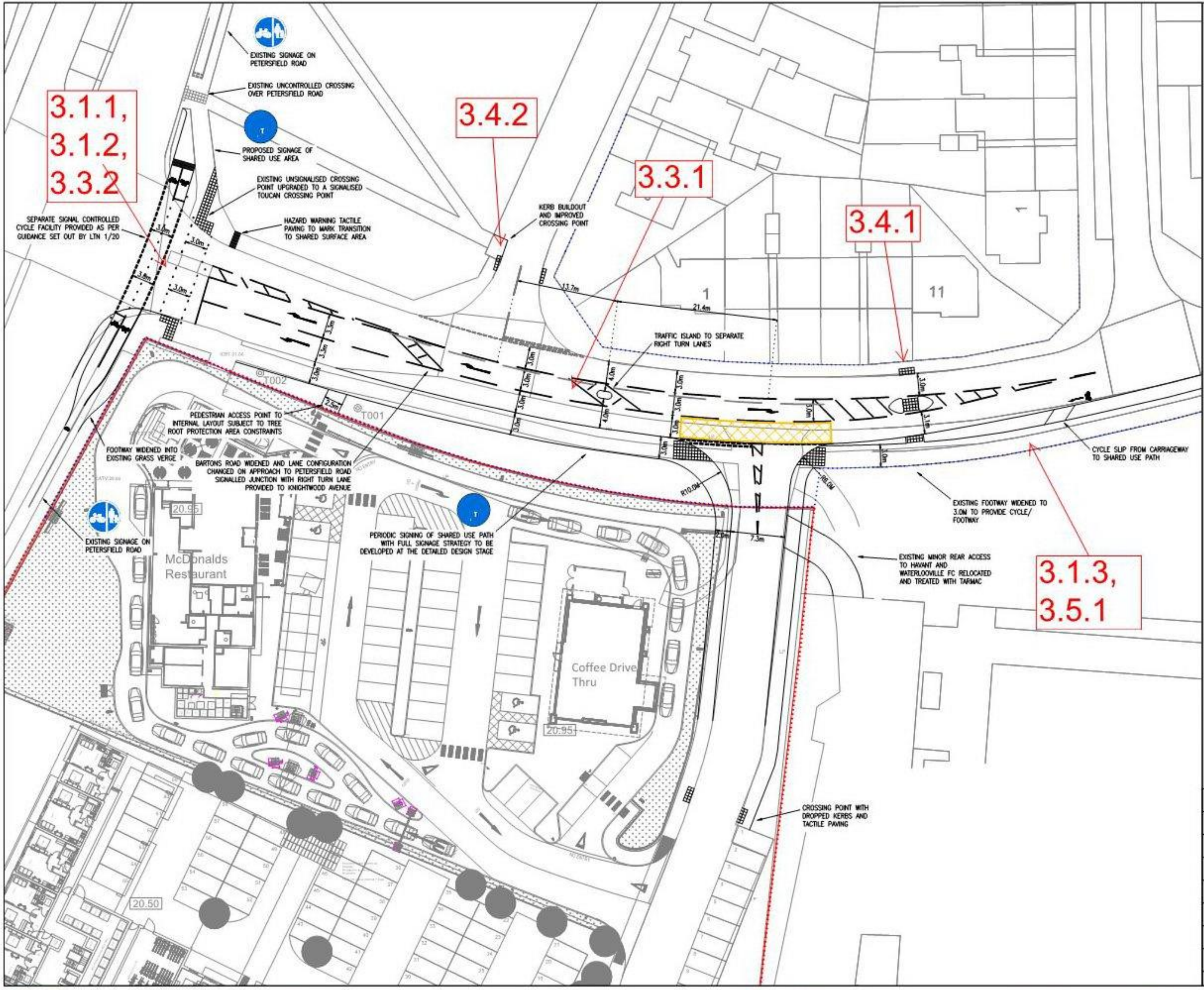
Drawing Number	Title
106.0019.008 Rev D	VISIBILITY
106.0019.007 Rev H	GENERAL ARRANGEMENT
106.0019.100A	SITE ACCESS TRACKING ARTICULATED HGV AND REFUSE VEHICLE
106.0019.101A	KNIGHTWOOD AVENUE TRACKING REFUSE VEHICLE AND CAR
106.0019.102A	FOOTBALL CLUB TRACKING CAR
106.0019.103A	TRACKING PANTECHNICON

Supporting Documentation:

- Stage 1 Road Safety Audit M&S Traffic May 2021.
- Road Safety Audit Brief July 2021 Paul Basham Associates.
- B2149 Petersfield Road_ Bartons Road Linsig Model - PROPOSED LAYOUT WITH CROSSINGS (REVISED)- Results Summary

APPENDIX B

Plan attached showing the locations of the problems identified as part of this audit (location numbers refer to paragraph numbers in the report).



- GENERAL NOTES**
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KEY
----- HIGHWAY BOUNDARY



H	KERB BUILDOUT + VISIBILITY SPLAYS ADDED	22.07.21	AST	RH
G	SIGHT CHANGES FOLL. HCC COMMENTS	10.06.21	AST	RH
F	ACCESS KERBS REALIGNED + SIGNS ADDED	20.05.21	AST	RH
E	WESTBOUND ALIGNMENT EASED	18.05.21	AST	RH
D	CHANGES TO ACCOMMODATE TRACKING	27.04.21	AST	RH
C	CYCLE/ FOOTWAY REALIGNED	16.04.21	AST	RH
B	REVISED TO REFLECT RSA COMMENTS	12.04.21	AST	RH
A	REVISED TO REFLECT HCC COMMENTS	01.04.21	AST	RH
Rev	Description	Date	By	Chkd

Project Name
BARTONS ROAD,
HAVANT

Project Phase
PRELIMINARY

Title
PROPOSED BARTONS ROAD IMPROVEMENTS
WESTERN SECTION
GENERAL ARRANGEMENT

Paul Basham Associates Ltd
Rogus Cadence Rd, Lower Caddis Street, Havant, RG21 3AG
01793 115612
info@paulbashamassociates.com www.paulbashamassociates.com

Client
fortitudo

Checked By
RH

Checked Date
18.01.21

Scale
1:500

Drawn By
AST

Drawn Date
08.01.21

Client Drawing No.
-

PBA Drawing No.
106.0019.007

Revision
H

APPENDIX C: Road Safety Audit Decision Log.

Auditors: Martin Morris (Team Leader) and Bryan Shawyer (Team Member).

Scheme: Stage 1 RSA Bartons Road, Havant.

Date Audit Completed: 27th July 2021

This response is to a Stage 1 Road Safety Audit to the design standard detailed within GG 119 of Volume 5, Section 2, Part 2, of the Design Manual for Roads and Bridges, as detailed by the Highways Agency.

RSA Problem	RSA Recommendation	Design Organisation response)	Overseeing Organisation response	Agreed RSA action
3.1.1 The proposals do not include the introduction of anti-skid surfacing or a surface with a high Polished Stone Value (PSV) on the approaches to the stop line. Surfacing with an inadequate PSV could lead to vehicles not being able to stop, leading to possible vehicle to pedestrian / cyclist collisions or rear end shunts.	It is recommended that high friction surfacing should be used on both approach lanes to the traffic signals.	High friction surfacing will be provided with full details provided at the detailed design stage		
3.1.2 The carriageway is being widened and new kerblines are being introduced, where no details of carriageway drainage or carriageway vertical profiles and horizontal profiles have been provided for assessment. Ponding on the carriageway or water	It is recommended that drainage details should be provided for assessment or that the carriageway should be shaped so that the highway drains.	Drainage details will be provided at the detailed design stage		

moving across the carriageway at junctions could lead to loss of control collisions.				
3.1.3 No details of the PSV of the unsegregated cycleway / footway surface were provided for assessment. Surfacing with an insufficient PSV could lead to overshoot at junctions or cyclist loss of control collisions in the event of sudden braking manoeuvres.	It is recommended that the PSV of the unsegregated footway / cycleway surface material should be a minimum of 55PSV.	High friction surfacing will be provided with full details provided at the detailed design stage		
3.3.1 A staggered junction is proposed between the access road and Knightswood Avenue. This is a 'left / right' stagger, with side road centre lines scaled at approximately 37m apart on a posted 30mph road. Vehicles waiting to right turn into one side road could obstruct the visibility to the left out of the opposite side road such that an exiting vehicle could pull out into the path of an unseen main road vehicle, which could lead to side impact collisions or rear end shunts.	It is recommended that in accordance with CD 123 para 2.24 a minimum stagger distance of 50m, to ensure safe operation should be the preferred arrangement; however, this may be unachievable in this instance.	DMRB does not apply to Bartons Road and the junctions in question are existing, as confirmed by HCC		
3.3.2 No modelling data was supplied for assessment, however the	It is recommended that the junction should be assessed at Stage 3	The cycle times are 90s which is standard for signalled junctions and is not an excessively long wait time		

emails received state that the junction will operate under 90% saturation. However, to achieve this the pedestrian call up will not operate during every cycle, however the cycle time is stated as being 90 seconds. Excessive waiting for pedestrians could lead to crossing without a green signal in their favour which could lead to rear end shunts or vehicle to pedestrian collisions.	Road Safety Audit.			
3.4.1 Whilst pedestrian intervisibility appeared adequate there was scope for the visibility splay to the east to be improved and obstructed should the hedge line continue to grow – see figure 1. Restricted restrict visibility could lead to vehicle to pedestrian collisions or rear end shunt collisions.	It is recommended that the hedge should be cut back and that a regular maintenance programme to retain the visibility splay should be employed.	The hedgerow should be regularly cut back as required as part of HCC's maintenance programme		
3.4.2 The crossing point immediately follows a parking bay, where parked vehicles could restrict intervisibility Restricted restrict visibility could lead to vehicle to pedestrian collisions or rear end shunt collisions.	It is recommended that parking bays should be removed to provide an adequate visibility splay.	This is an existing crossing point which is being improved and removal of parking bays would not be a proportional response		

3.5.1 Lamp columns are present in the proposed widening area where no details of relocation have been supplied for assessment. A lack of lighting or dark areas could compromise road safety.	It is recommended that lighting details should be supplied at Stage 2 Safety Audit.	Lighting details will be provided at the detailed design stage		
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APPENDIX D: DESIGN ORGANISATION STATEMENT

PROJECT NAME: Stage 1 RSA Bartons Road, Havant.	
On behalf of the Design Organisation I certify that:	
1) The actions identified in response to the problems raised in this RSA have been discussed and agreed with the Overseeing Organisation	
Name	
Signed	
Position	
Organisation	Paul Basham Associates Ltd
Date	

APPENDIX E: OVERSEEING ORGANISATION STATEMENT

PROJECT NAME: Stage 1 RSA Bartons Road, Havant.	
On behalf of the Overseeing Organisation I certify that: 1) The actions identified in response to the problems raised in this RSA have been discussed and agreed with the Design Organisation; and 2) The agreed RSA actions will be progressed.	
Name	
Signed	
Position	
Organisation	
Date	