Kingsnorth Green, Ashford - Transport and Highway Evidence

Appeal Reference: APP/E2205/W/23/3320146

Rebuttal to GTA note titled 'Response to Stantec Technical Note dated 29th September 2023' (6th October 2023).

1. Introduction

1.1 Stantec on behalf of the appellants has been engaging with Kingsnorth Parish Council (KPC) and their appointed consultants GTA Civils and Transport Ltd. (GTA) in order to:

1. seek clarity on KPC's concerns
2. provide further information where possible
3. agree matters as far as possible

1.2 As noted in my main proof of evidence (Chapter 4) the KPC Statement of Case listed several issues relating to transport and highways. I examined each one and concluded that there was nothing substantive, nor any further evidence presented, that would lead to any concerns.

1.3 At a meeting held with KPC and GTA on 11th September to discuss and explore the concerns as set out, it was stated that the capacity and operation of the Pound Lane/Ashford Road/Church Hill signalised junction and the potential for traffic in 2030 to divert from this junction because of congestion and use Stumble Lane as a result of the Bond Lane closure. This was addressed in my main proof (Appendix A).

1.4 A further meeting was held with KPC and GTA on 28th September 2023 at which KPC and GTA queried the closure of Bond Lane and requested further analysis. A technical note was issued to KPC and GTA on 29th September 2023 addressing the points made (appended to this rebuttal).

2. Response to GTA Note

2.1 A technical note prepared by GTA was received on the morning of 9th October 2023. It is noted that in this technical note it appears that there are 2 remaining points of concern:

1. Pound Lane/Ashford Road/Church Hill proposed signalised junction
2. Bond Lane Closure

2.2 In relation to point 1 above It is noted that GTA (and presumably KPC) accept that the junction will operate satisfactorily and therefore traffic will not unduly divert using less favourable routes i.e. Stumble Lane.

2.3 However KPC and GTA are now suggesting that as a result of agreeing that the Pound Lane/Ashford Road/ Church Hill junction will operate satisfactorily, there is no need to close Bond Lane.

2.4 This is not a traffic capacity/mitigation technical issue, but one relating to design, safety and amenity. In my view this is somewhat subjective.

2.5 KPC and GTA do not object to the principle of development on transport and highway grounds. It would seem that KPC and GTA agree that there is no reason why the development can not come forward from a transport or highway perspective – just a question of whether Bond Lane is closed to through traffic or not, and the associated access strategy for the development.

2.6 KPC and GTA are now also suggesting the removal of development accesses off Bond Lane. This is not supported by any technical analysis.

2.7 In the GTA note reference is made to comments made by Kent County Council at a meeting on 3rd May 2017. In this meeting KCC stated that the rural characteristics should be maintained, and that KCC would be concerned about any intensification in use of Bond Lane. It was on this basis that the proposal to close Bond Lane was made and subsequently agreed with KCC.

2.8 In examining Bond Lane, it is noted that it is largely single track approximately 4m wide with very few passing places. Bond Lane has visibility restricted in places due to adjacent hedgerows and other vegetation. In places there are steep sided ditches adjacent to Bond Lane which are an impediment to allow vehicles to pass. There are also several accesses to properties which also have poor visibility when emerging on to Bond Lane.

2.9 Whilst traffic flows are low on Bond Lane and would remain so with the development, even if Bond Lane was left open, I agree with KCC that any intensification of use could result in some harm. I therefore conclude that the closure of Bond Lane as proposed and agreed with KCC is preferred.

3. Summary

3.1 KPC and GTA have agreed the traffic capacity analysis carried out for the development proposals. They agree that the Pound Lane/Ashford Road/ Church Hill signalised junction will operate satisfactorily, and that traffic will not unduly divert (rat run).

3.2 However they now suggest that Bond Lane should remain open and development accesses removed. This is not supported by any technical evidence, and would seem to be a subjective preference. Moreover the closure of Bond Lane is not suggested to cause a severe impact.

3.3 Bond Lane is narrow, and I agree that any intensification of use could have safety and amenity issues. I therefore conclude that the current proposals are appropriate and acceptable.

Appendix 1 - Stantec Technical Note

Response to GTA in regard to Court Lodge Flows and Pound Lane/Ashford Road Junction (29th September 2023 ref. 5521/TN02)

TECHNICAL NOTE

Job Name:	Kingsnorth Green, Ashford
Job No:	332410008
Note No:	5521/TN02
Date:	29th September 2023
Prepared By:	F Capon/J Lewis
Subject:	**Response to GTA in regard to Court Lodge Flows and Pound Lane/Ashford Road Junction**

1. Introduction

1.1. This Technical Note has been produced to respond to comments made by Kingsnorth Parish Council (KPC) and their consultants GTA via email on 22nd September 2022 in relation to the Planning Inquiry for non-determination relating to the site at Kingsnorth Green, Ashford (Inquiry APP/E2205/W/23/3320146 & planning application 15/00856/AS).

1.2. The comments that were raised within the email were in relation to the Pound Lane/Ashford Road/Church Hill junction, following on from a Technical Note produced by Stantec titled "Response to KPC Queries regarding Pound Lane / Church Hill Signal Scheme" dated September 2023.

1.3. The GTA comments are summarised as follows, with a copy of the GTA email being included at Appendix A:

- No Scenario 3 and 4, which include Court Lodge, within the most recent modelling of the Pound Lane/Ashford Road/Church Hill junction within the September 2023 technical note.
- Discrepancy in flows between model undertaken and reported within Stantec Technical Note of June 2018 and the September 2023 Technical Note.
- Intergreen values for vehicle-to-vehicle movements.
- Lack of PRC values reported comparing the change between the 2018 LinSig model and the 2023 LinSig model.

1.4. This Technical Note updates the LinSig model for the Pound Lane/Ashford Road/Church Hill junction in reviewing the comments above and provides further evidence to confirm the future operation of the junction in light of new traffic flow information, recorded at the request of the Inspector in relation to the EIA baseline. This data has been submitted to PINS previously.

1.5. At a subsequent meeting between GTA, KPC and Stantec on 28th September 2023, GTA requested an assessment of Bond Lane, assuming it would remain open (e.g. not stopped-up as per the Site proposals), querying what capacity Bond Lane would have to accommodate a level of development. Stantec has looked at this hypothetical scenario within this Technical Note.

2. Junction Modelling

2.1. GTA has noted a discrepancy in traffic flows relating to the Court Lodge scenarios 3 and 4, identified between the LinSig results contained within the Stantec Technical Note dated 5th June 2018 and the results within the Stantec Technical Note of September 2023. This was due to the Court Lodge application being in a scenario testing phase in 2018 and the transport consultant on that project (Brookbanks) presenting different scenarios to KCC at that time. It is also noted that KCC confirmed no objection to the Kingsnorth Green application in October 2018, however Brookbanks continued to work on the Court Lodge access strategy and as a result the trips, distribution, and assignment of traffic for that site changed in the following two-year period.

2.2. In order to provide clarity and appraisal of the most up to date situation, Stantec have investigated the Court Lodge Application on the Ashford Planning Portal (18/01822) to ascertain the latest development flows for Court Lodge.

2.3. Traffic data for Court Lodge flows have been extracted from Appendix F of the Transport Assessment (1281 TA01 Rv3, Issue record shows rev 4 dated 13.12.2019) uploaded to the planning portal on 17th January 2020 as an appendix to the Environmental Statement. These traffic flows are included in that report as Figure 5a and 5p, and are also included in this Technical Note within Appendix B.

Updated Linsig with July 2023 Survey informing the Baseline

2.4. This section of the Technical Note responds to the GTA query relating to Court Lodge traffic modelling scenarios 3 and 4.

2.5. In July 2023, a traffic survey was undertaken at the Pound Lane/Ashford Road/Church Hill junction as part of work responding to queries raised by the Planning Inspectorate in relation to the sites Environmental Statement. A comparison of this data to previously collected data was presented to the Inspector. These flows have been used to undertake a sensitivity test, to understand the operation of the junction, given the level of growth as predicted within the original PBA Transport Assessment has not occurred.

2.6. The current traffic data has been growthed to 2032 (the date at which the development is expected to be completed) using the following TEMPro 8 factors (e.g. the most recent version of TEMPro) assuming the Core TEMPro scenario. It is noted that within version 8 of TEMPro, there is a reduction in the yearly growth compared to TEMPro 7.2 which corresponds to the results of the most recent traffic survey undertaken in July 2023.

Table 1 TEMPro Factors for 2023 – 2032 – Core Scenario

Area Description		AM Peak		Average	PM Peak		Average
Level	Name	Origin	Destination		Origin	Destination	
Authority	Ashford	1.072	1.0626	1.0673	1.0656	1.0723	1.0690
E02005004	Ashford 009	1.0682	1.0641	1.0662	1.0644	1.0666	1.0655
			Average	**1.0667**		**Average**	**1.0672**

2.7. The results have been summarised below. The full outputs can be seen in Appendix C.

Table 2: DoS and PRC Junction Capacity Revised model – Baseline + Development + CL

Arm	Revised Model – 2023 Survey (2032 + Committed Development + Dev + Updated CL flows)	
	AM Peak	PM Peak
Ashford Road N	57.1%	73.7%
Church Hill	84.0%	87.0%
Ashford Road S	84.6%	86.7%
Pound Lane	60.1%	27.0%
Junction PRC	6.3	3.4

Table 3: Delay (s/PCU) of Revised model – Baseline + Development + CL

Arm	Revised Model – 2023 Survey (2032 + Committed Development + Dev + Updated CL flows)	
	AM Peak	PM Peak
Ashford Road N	19.2	22.6
Church Hill	69.7	81.1
Ashford Road S	30.9	51.4
Pound Lane	282.7	238.9

Table 4: Mean Max Queue Length (PCU) of Revised model – Baseline + Development + CL

Arm	Revised Model – 2023 Survey (2032 + Committed Development + Dev + Updated CL flows)	
	AM Peak	PM Peak
Ashford Road N	15.9	25.6
Church Hill	14.1	15.1
Ashford Road S	33.0	24.2
Pound Lane	3.0	1.2

2.8. As can be seen above, the update to the baseline data shows that delay would be reduced on all arms with the exception of Pound Lane which sees a minor change. It is noted that Pound Lane arm of the junction would serve only a very small amount of traffic, due to the proposed stopping up to the west.

2.9. The overall conclusion of the sensitivity exercise is that the original PBA Transport Assessment traffic modelling exercise showed levels of forecast traffic growth for both the Baseline and Horizon Year that have not been realised in practice, as confirmed by July 2023 traffic surveys. This trend of lower traffic growth is also confirmed in the latest version TEMPro (v8), with the corresponding DfT data release notes confirming lower traffic growth expectations for a number of economic and societal reasons.

2.10. These updates to the traffic model confirm that with both Kingsnorth Green and Court Lodge within the model, the junction is expected to operate within capacity on all arms, with corresponding positive PRC values. Our contention also remains that the traffic assessment assumes a very worst-case scenario, in that unadjusted TEMPro factors have been used in the assessment alongside specifically applied flows from committed developments, all as agreed at scoping with KCC Highways.

2.11. In terms of levels of delay, it is found that the levels do not significantly differ from those reported in the last Stantec Technical Note, therefore the conclusion remains the same that it is unlikely that the imposition of the signal junction is unlikely to result in higher demand for rat running on Steeds Lane and Stumble Lane.

Traffic Model Intergreen Values

2.12. It is confirmed that the Intergreens for the vehicle-to-vehicle movements have been calculated using the Department for Transport "Traffic Advisory Leaflet 1/06 (DfT TAL 1/06) Part 4", "Table for calculating Intergreen time" and have been calculated to be 5 seconds. These intergreens take account of the distances between conflicting movements and are considered to be sufficient to allow clearance of vehicles.

3. Bond Lane Closure

3.1. Following the meeting with KPC and GTA on 28th September 2023, consideration has been given to a scenario where Bond Lane would remain open and provide access to Site areas 3 and 4.

3.2. It is noted that Bond Lane is mostly single track, measuring around 3.5 to 4.0 metres in width with only a small number of passing place opportunities and reduced forward visibility around bends. These matters do restrict the potential to add further traffic flow to the route as the more dwellings that feed onto Bond Lane, the more likely conflicts between vehicles trying to pass each other are likely to occur. This could result in vehicles 'bumping up' onto the verge, degrading the verge and impacting the amenity of the lane. This was a factor in the scoping discussions with the Highway Authority.

3.3. It should also be noted that Bond Lane has deep ditches on one or both sides of the carriageway for the majority of its length. This presents a potential safety issue if the number of vehicles using this road was to increase. This is because, at nighttime in particular, drivers may not see theses ditches and when trying to move over to let a car travelling in the opposing direction pass, they may end up crashing their car into these ditches. There is visual evidence on Bond Lane at the current time of vehicles having encroached onto the verge, therefore it is judged that any increase in flow is likely to result in further encroachment and degradation.

3.4. The new abovementioned traffic survey data collected on 19th July 2023, suggests that at the current time in the AM peak (0800-0900), around 13 vehicles are travelling south on Bond Lane and around 12 vehicles are travelling north. Whereas in the PM peak (1700-1800), around 12 vehicles are travelling south on Bond Lane and around 10 are travelling north.

3.5. There is no simplistic way to assess the capacity of a constrained road such as Bond Lane, however it is Stantec's professional judgement that Bond Lane would only be able to accommodate a limited number of additional dwellings without the amenity and safety of the road being compromised.

3.6. Therefore, the current proposals to stop-up Bond Lane, as discussed and agreed with KCC Highways, is seen as the best option for the delivery of the proposed development at Kingsnorth Green.

4. Conclusion

4.1. This Technical Note addresses comments raised by GTA in relation to Court Lodge flows and the Pound Lane/Ashford Road/Church Hill junction.

4.2. The sensitivity test undertaken using newly acquired 2023 survey data and TEMPro 8 growth factors sees the junction operating fully within capacity for both morning and evening peak scenarios. This is with the inclusion of Court Lodge development traffic. The findings of the last Stantec Technical Note therefore remain that the imposition of the junction signalisation is unlikely to lead to increased rat running on Stumble Lane and Steeds Lane.

4.3. Further assessment of the potential for Bond Lane to remain open has been undertaken and concludes that Bond Lane is likely to have capacity for only a very limited quantum of new development to be accessed off it without significantly impacting amenity and safety, therefore confirming the justification, as set out in the planning application, to stop-up Bond Lane.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Reviewed	Approved
332410008/5521/TN002	-	29.09.23	FM/JL	HW	JL/MP

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TECHNICAL NOTE

Appendix A

Wenman, Hannah

Subject: RE: Kingsnorth Green - APP/E2205/W/23/3320146 Planning Reference: AS/15/00856

From: Richard Wells <RWells@gtacivils.co.uk>
Sent: Friday, September 22, 2023 3:02 PM
To: Parkinson, Michael <michael.parkinson@stantec.com>; Peter Le Rossignol <manager@kingsnorthparishcouncil.gov.uk>; Roger New <rnew@gtacivils.co.uk>; Cllr. James Ransley <james.ransley@kingsnorthparishcouncil.gov.uk>
Cc: Lewis, Jason <jason.lewis@stantec.com>; Capon, Felicity <Felicity.Capon@stantec.com>
Subject: RE: Kingsnorth Green - APP/E2205/W/23/3320146 Planning Reference: AS/15/00856

Hi Michael, thank you for your September technical note. We have provided our review below.

We welcome further discussion, our availability is Wednesday 27th/Thursday 28th next week.

We have looked at the revised Linsig output and TN and noted that this only includes scenarios 1 & 2 (AM & PM 2030 Baseline + Committed + Development) and does not include Scenarios 3 & 4 for the AM & PM 2030 Baseline + Committed + Development + Court Lodge.
Could we see the results of scenarios 3 & 4 also be included in the revised input/output model and in the technical note.
We note use of the triple cycle pedestrian model for the comparison, presumably in favour of the bonus green model, and made the adjustments to the lane widths and turning radii etc. The predicted saturation flows, therefore, are now a reasonable reflection of the layout drawing provided.
We note revision of the inter-green values and made one adjustment, which we concur with.
We believe the vehicle to vehicle inter-green value of 5 seconds is a little on the low side, and the absolute minimum, particularly for the opposed turning movements from the Ashford Road which has 40mph speed limit on each approach. That said, they do meet the guidance of Chapter 6 signs manual, but it also states that inter-greens are a safety margin' to allow traffic to clear the junction safely and they should be based on local factors.

The revised PRC results comparison for the remodelled scenarios 1 & 2 were not included - and when compared to the original model the results are;

	Original PRC	Revised PRC	Difference
Scenario 1 - AM Peak	+5.6%	+1.3%	-4.3%
Scenario 2 - PM Peak	+4.3%	-4.7%	-9%

The revised model results show that the DoS for Ashford Road (S) and Church Hill is 94.2% oversaturated during the scenario 2 PM peak.
We assume the revised modelling of scenarios 3 & 4 (inclusion of the Court Lodge flows) would indicate significantly worse PRC results than those results shown in the original model.
We have replicated the revised Linsig model in order to run scenarios 3 & 4 and the results are;

	Original PRC (PBA-TN2018)	Revised PRC	Difference
Scenario 3 - AM Peak	+3.8%	-13.1%	-16.9%
Scenario 4 – PM Peak	+4.4%	-46.0%	-50.4%

There is a discrepancy between the flows shown in the PBA Technical note 2018 for scenarios 3 & 4, which includes the flows from the CL development, and I have attached the screen shots taken from the TN 2018 and the latest Linsig input data parameters provided.

Kind regards

Richard Wells BSc MCIHT
Associate Director

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Civil Engineering - Transport Planning - Flood Risk

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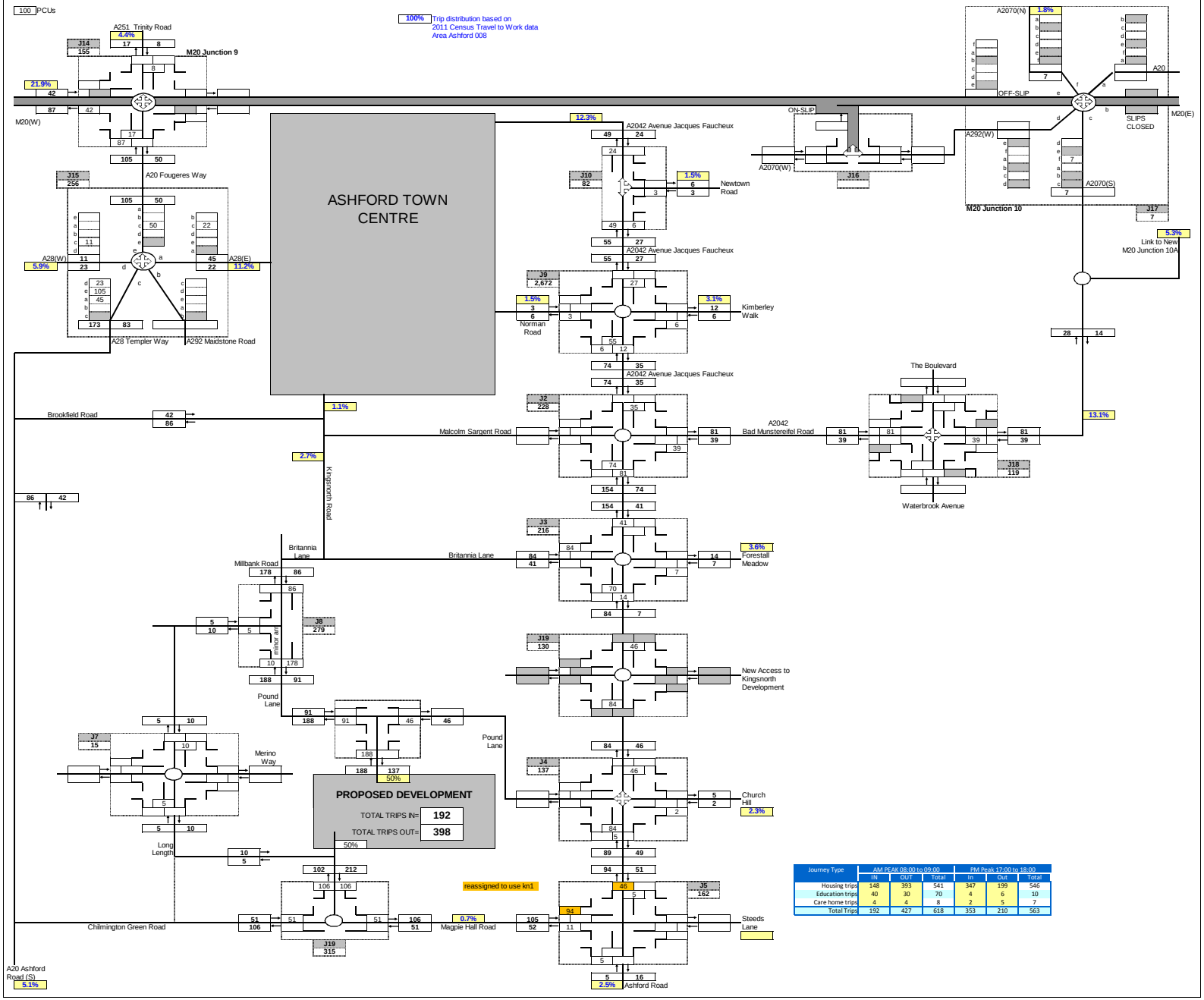
TECHNICAL NOTE

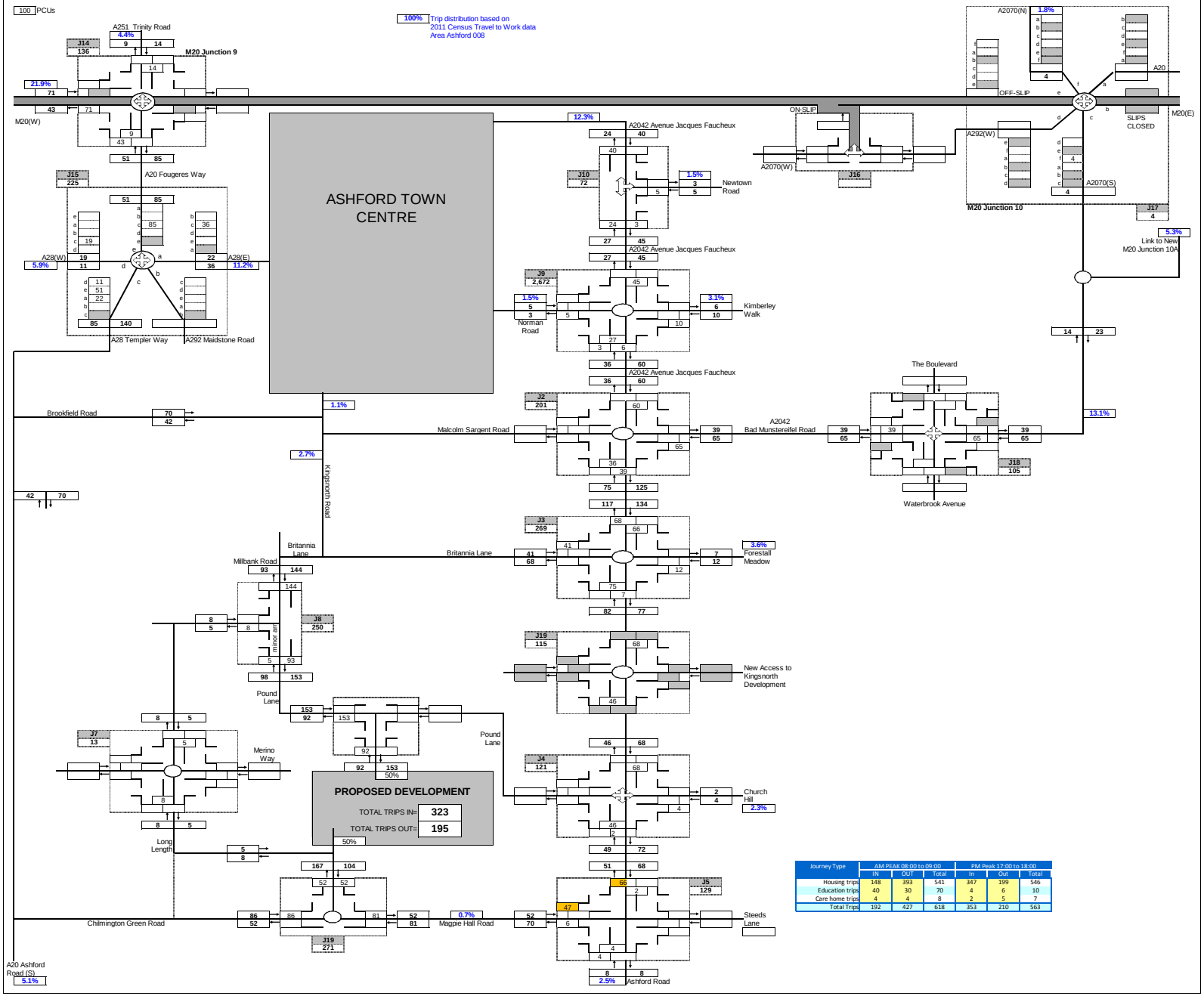
Appendix B

Client:	HALLAM LAND MANAGEMENT	**AM PEAK**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	1281A - LAND AT COURT LODGE, ASHFORD		13/12/2019	
Title:	Peak Hour Development Traffic Flows (PCUs)		Figure 5a	



Journey Type	AM PEAK 08:00 to 09:00			PM Peak 17:00 to 18:00		
	IN	OUT	Total	In	Out	Total
Housing trips	148	393	541	347	199	546
Education trips	40	30	70	4	6	10
Care home trips	4	4	8	2	5	7
Total Trips	192	427	618	353	210	563

Client:	HALLAM LAND MANAGEMENT	**PM PEAK**	Prepared by: S.M.T.	Brookbanks Consulting
Job:	1281A - LAND AT COURT LODGE, ASHFORD		13/12/2019	
Title:	Peak Hour Development Traffic Flows (PCUs)		Figure 5p	



Journey Type	AM PEAK 08:00 to 09:00			PM Peak 17:00 to 18:00		
	IN	OUT	Total	In	Out	Total
Housing trips	148	393	541	347	199	546
Education trips	40	30	70	4	6	10
Care home trips	4	4	8	2	5	7
Total Trips	192	427	618	353	210	563

TECHNICAL NOTE

Appendix C

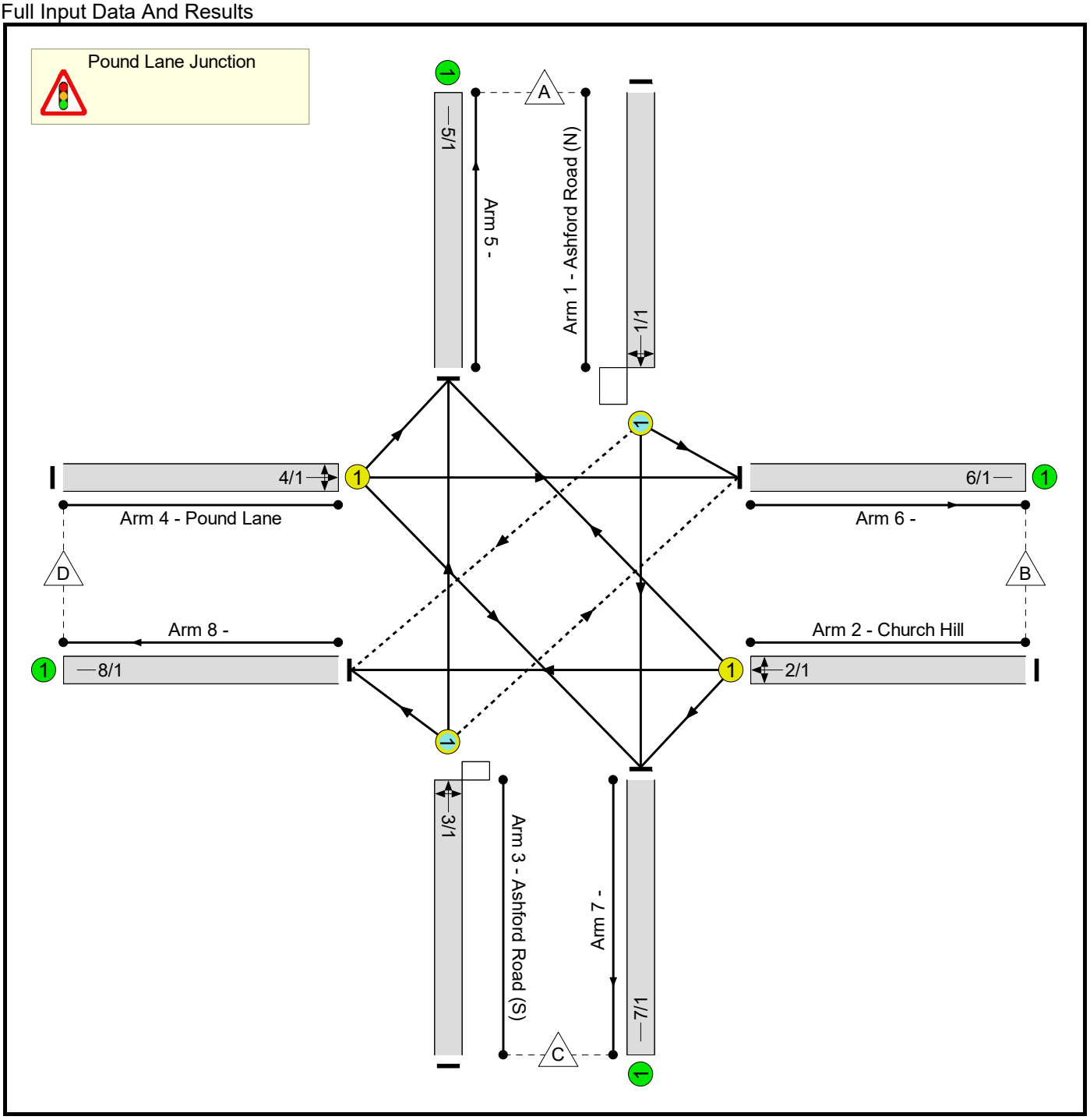
Full Input Data And Results

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Pound Lane - Church Hill signalled Junction v2.13 - TC + Peds (Updated Flows).lsg3x
Author:	
Company:	
Address:	

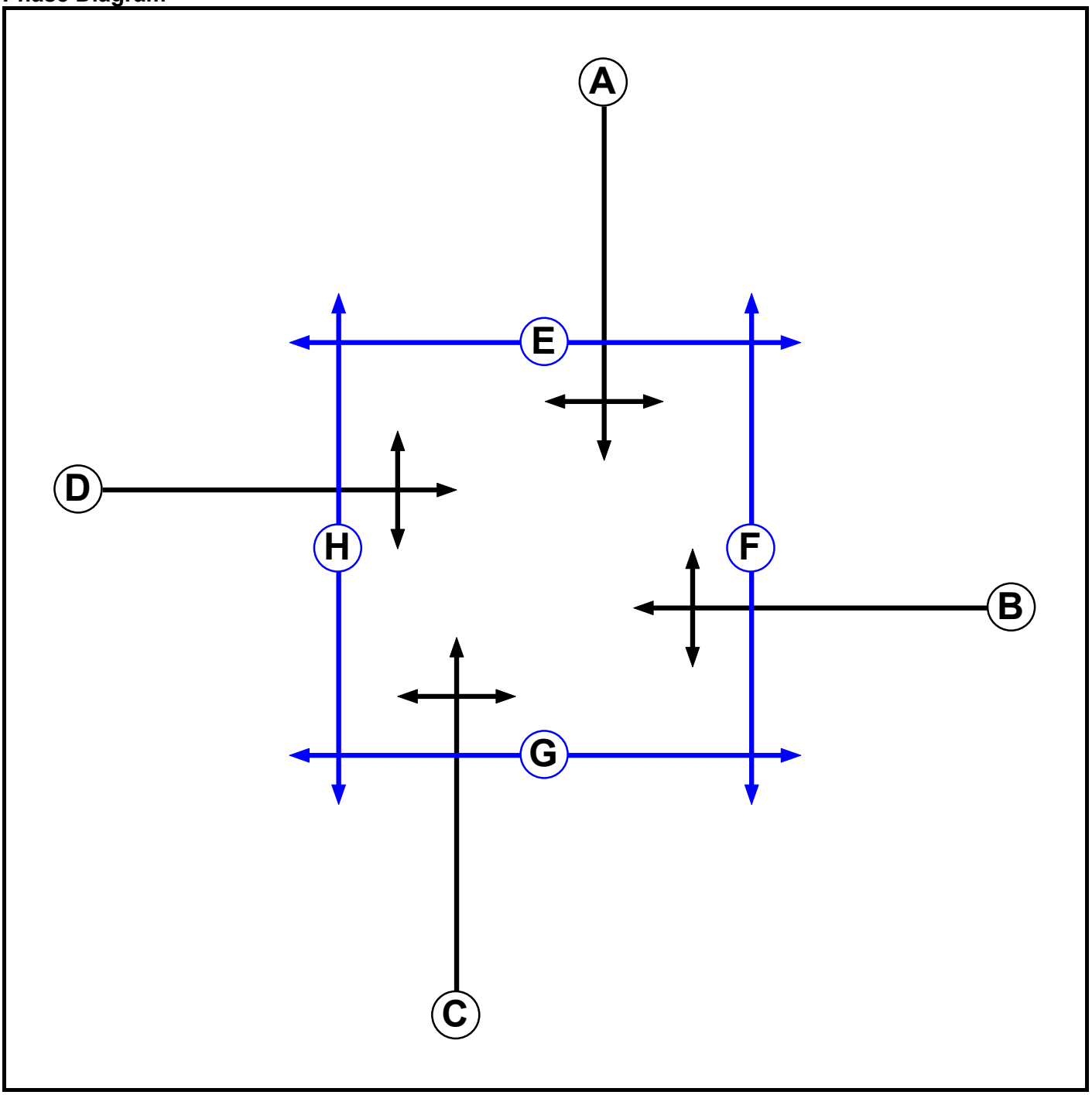
Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Pedestrian		4	4
F	Pedestrian		4	4
G	Pedestrian		4	4
H	Pedestrian		4	4

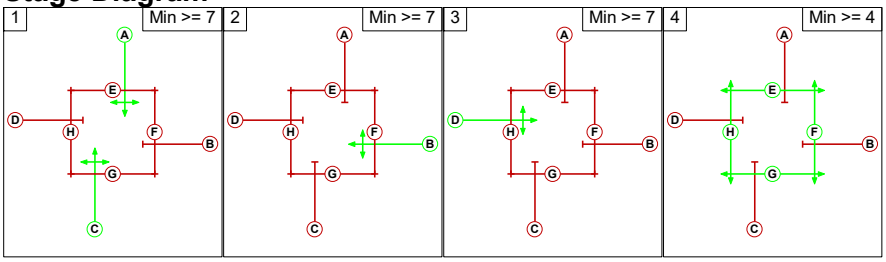
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H
A		5	-	5	5	7	8	8
B	5		5	5	8	5	7	9
C	-	5		5	8	7	5	8
D	5	5	5		7	8	9	5
E	9	9	9	9		-	-	-
F	8	8	8	8	-		-	-
G	8	8	8	8	-	-		-
H	7	7	7	7	-	-	-	

Phases in Stage

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

Stage Diagram



Phase Delays

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

Full Input Data And Results

Prohibited Stage Change

	To Stage				
From Stage		1	2	3	4
	1		5	5	8
	2	5		5	9
	3	5	5		9
	4	9	9	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Pound Lane Junction

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (Ashford Road (N))	8/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 8/1 (Left)	2.00	2.00	0.50	2	2.00
3/1 (Ashford Road (S))	6/1 (Right)	1439	0	1/1	1.09	To 6/1 (Left) To 7/1 (Ahead)	1.00	1.00	0.50	1	1.00

Full Input Data And Results

Lane Input Data

Junction: Pound Lane Junction

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Ashford Road (N))	O	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Left	14.90
											Arm 7 Ahead	Inf
											Arm 8 Right	6.80
2/1 (Church Hill)	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Right	16.96
											Arm 7 Left	3.90
											Arm 8 Ahead	Inf
3/1 (Ashford Road (S))	O	C	2	3	60.0	Geom	-	3.12	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	9.30
											Arm 8 Left	2.00
4/1 (Pound Lane)	U	D	2	3	60.0	Geom	-	2.90	0.00	Y	Arm 5 Left	7.29
											Arm 6 Ahead	Inf
											Arm 7 Right	15.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2032 + Committed + Dev AM'	07:50	08:50	01:00	
2: '2032 + Committed + Dev PM'	17:00	18:00	01:00	
3: 'CL AM'	07:50	08:50	01:00	
4: 'CL PM'	17:00	18:00	01:00	
5: '2032 + Committed + Dev + CL AM'	07:50	08:50	01:00	F1+F3
6: '2032 + Committed + Dev + CL PM'	08:00	09:00	01:00	F2+F4

Scenario 1: '2032 + Committed + Dev AM' (FG1: '2032 + Committed + Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Full Input Data And Results

		Destination				
		A	B	C	D	Tot.
Origin	A	0	104	482	4	590
	B	158	0	178	3	339
	C	811	47	0	1	859
	D	11	10	2	0	23
	Tot.	980	161	662	8	1811

Traffic Lane Flows

Lane	Scenario 1: 2032 + Committed + Dev AM
Junction: Pound Lane Junction	
1/1	590
2/1	339
3/1	859
4/1	23
5/1	980
6/1	161
7/1	662
8/1	8

Lane Saturation Flows

Junction: Pound Lane Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Ashford Road (N))	3.00	0.00	Y	Arm 6 Left	14.90	17.6 %	1879	1879
				Arm 7 Ahead	Inf	81.7 %		
				Arm 8 Right	6.80	0.7 %		
2/1 (Church Hill)	3.00	0.00	Y	Arm 5 Right	16.96	46.6 %	1540	1540
				Arm 7 Left	3.90	52.5 %		
				Arm 8 Ahead	Inf	0.9 %		
3/1 (Ashford Road (S))	3.12	0.00	Y	Arm 5 Ahead	Inf	94.4 %	1908	1908
				Arm 6 Right	9.30	5.5 %		
				Arm 8 Left	2.00	0.1 %		
4/1 (Pound Lane)	2.90	0.00	Y	Arm 5 Left	7.29	47.8 %	1721	1721
				Arm 6 Ahead	Inf	43.5 %		
				Arm 7 Right	15.00	8.7 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: '2032 + Committed + Dev PM' (FG2: '2032 + Committed + Dev PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	97	678	11	786
	B	176	0	145	5	326
	C	391	113	0	3	507
	D	6	2	2	0	10
	Tot.	573	212	825	19	1629

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2032 + Committed + Dev PM
Junction: Pound Lane Junction	
1/1	786
2/1	326
3/1	507
4/1	10
5/1	573
6/1	212
7/1	825
8/1	19

Lane Saturation Flows

Junction: Pound Lane Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Ashford Road (N))	3.00	0.00	Y	Arm 6 Left	14.90	12.3 %	1886	1886
				Arm 7 Ahead	Inf	86.3 %		
				Arm 8 Right	6.80	1.4 %		
2/1 (Church Hill)	3.00	0.00	Y	Arm 5 Right	16.96	54.0 %	1571	1571
				Arm 7 Left	3.90	44.5 %		
				Arm 8 Ahead	Inf	1.5 %		
3/1 (Ashford Road (S))	3.12	0.00	Y	Arm 5 Ahead	Inf	77.1 %	1852	1852
				Arm 6 Right	9.30	22.3 %		
				Arm 8 Left	2.00	0.6 %		
4/1 (Pound Lane)	2.90	0.00	Y	Arm 5 Left	7.29	60.0 %	1666	1666
				Arm 6 Ahead	Inf	20.0 %		
				Arm 7 Right	15.00	20.0 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: '2032 + Committed + Dev + CL AM' (FG5: '2032 + Committed + Dev + CL AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	104	528	4	636
	B	158	0	180	3	341
	C	895	52	0	1	948
	D	11	10	2	0	23
	Tot.	1064	166	710	8	1948

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2032 + Committed + Dev + CL AM
Junction: Pound Lane Junction	
1/1	636
2/1	341
3/1	948
4/1	23
5/1	1064
6/1	166
7/1	710
8/1	8

Lane Saturation Flows

Junction: Pound Lane Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Ashford Road (N))	3.00	0.00	Y	Arm 6 Left	14.90	16.4 %	1881	1881
				Arm 7 Ahead	Inf	83.0 %		
				Arm 8 Right	6.80	0.6 %		
2/1 (Church Hill)	3.00	0.00	Y	Arm 5 Right	16.96	46.3 %	1539	1539
				Arm 7 Left	3.90	52.8 %		
				Arm 8 Ahead	Inf	0.9 %		
3/1 (Ashford Road (S))	3.12	0.00	Y	Arm 5 Ahead	Inf	94.4 %	1909	1909
				Arm 6 Right	9.30	5.5 %		
				Arm 8 Left	2.00	0.1 %		
4/1 (Pound Lane)	2.90	0.00	Y	Arm 5 Left	7.29	47.8 %	1721	1721
				Arm 6 Ahead	Inf	43.5 %		
				Arm 7 Right	15.00	8.7 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 4: '2032 + Committed + Dev + CL PM' (FG6: '2032 + Committed + Dev + CL PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	97	746	11	854
	B	176	0	149	5	330
	C	437	115	0	3	555
	D	6	2	2	0	10
	Tot.	619	214	897	19	1749

Full Input Data And Results

Traffic Lane Flows

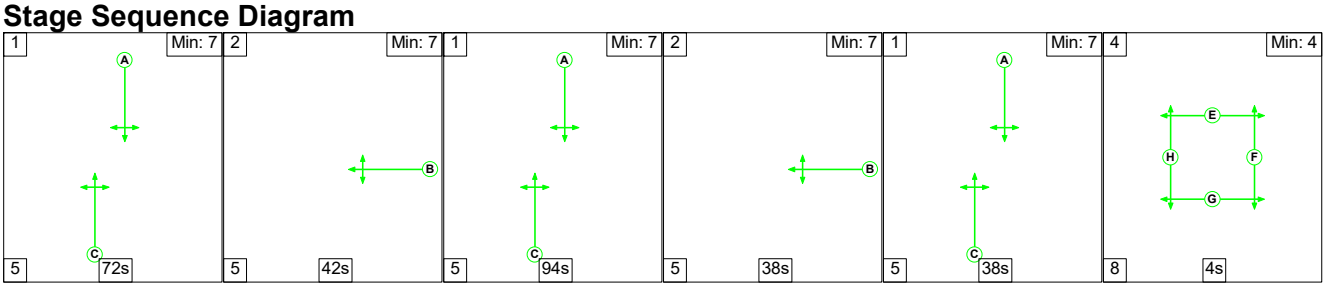
Lane	Scenario 4: 2032 + Committed + Dev + CL PM
Junction: Pound Lane Junction	
1/1	854
2/1	330
3/1	555
4/1	10
5/1	619
6/1	214
7/1	897
8/1	19

Lane Saturation Flows

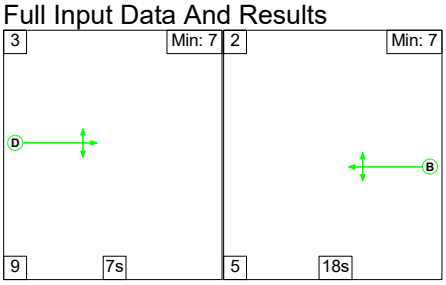
Junction: Pound Lane Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Ashford Road (N))	3.00	0.00	Y	Arm 6 Left	14.90	11.4 %	1888	1888
				Arm 7 Ahead	Inf	87.4 %		
				Arm 8 Right	6.80	1.3 %		
2/1 (Church Hill)	3.00	0.00	Y	Arm 5 Right	16.96	53.3 %	1569	1569
				Arm 7 Left	3.90	45.2 %		
				Arm 8 Ahead	Inf	1.5 %		
3/1 (Ashford Road (S))	3.12	0.00	Y	Arm 5 Ahead	Inf	78.7 %	1857	1857
				Arm 6 Right	9.30	20.7 %		
				Arm 8 Left	2.00	0.5 %		
4/1 (Pound Lane)	2.90	0.00	Y	Arm 5 Left	7.29	60.0 %	1666	1666
				Arm 6 Ahead	Inf	20.0 %		
				Arm 7 Right	15.00	20.0 %		
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2032 + Committed + Dev AM' (FG1: '2032 + Committed + Dev AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



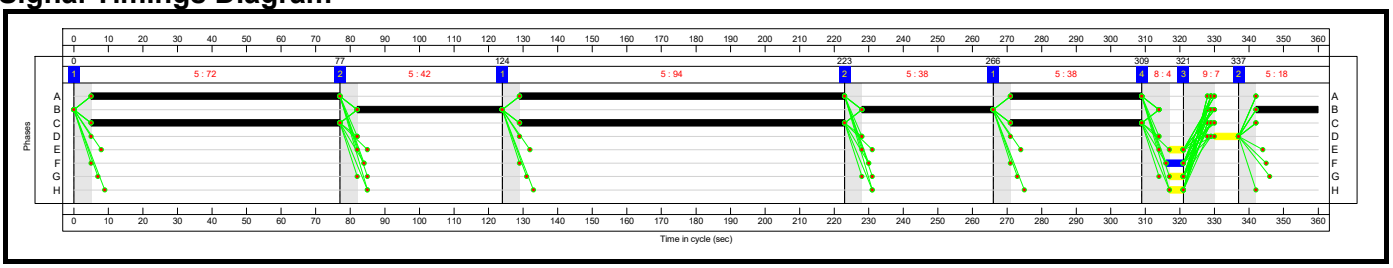
Full Input Data And Results

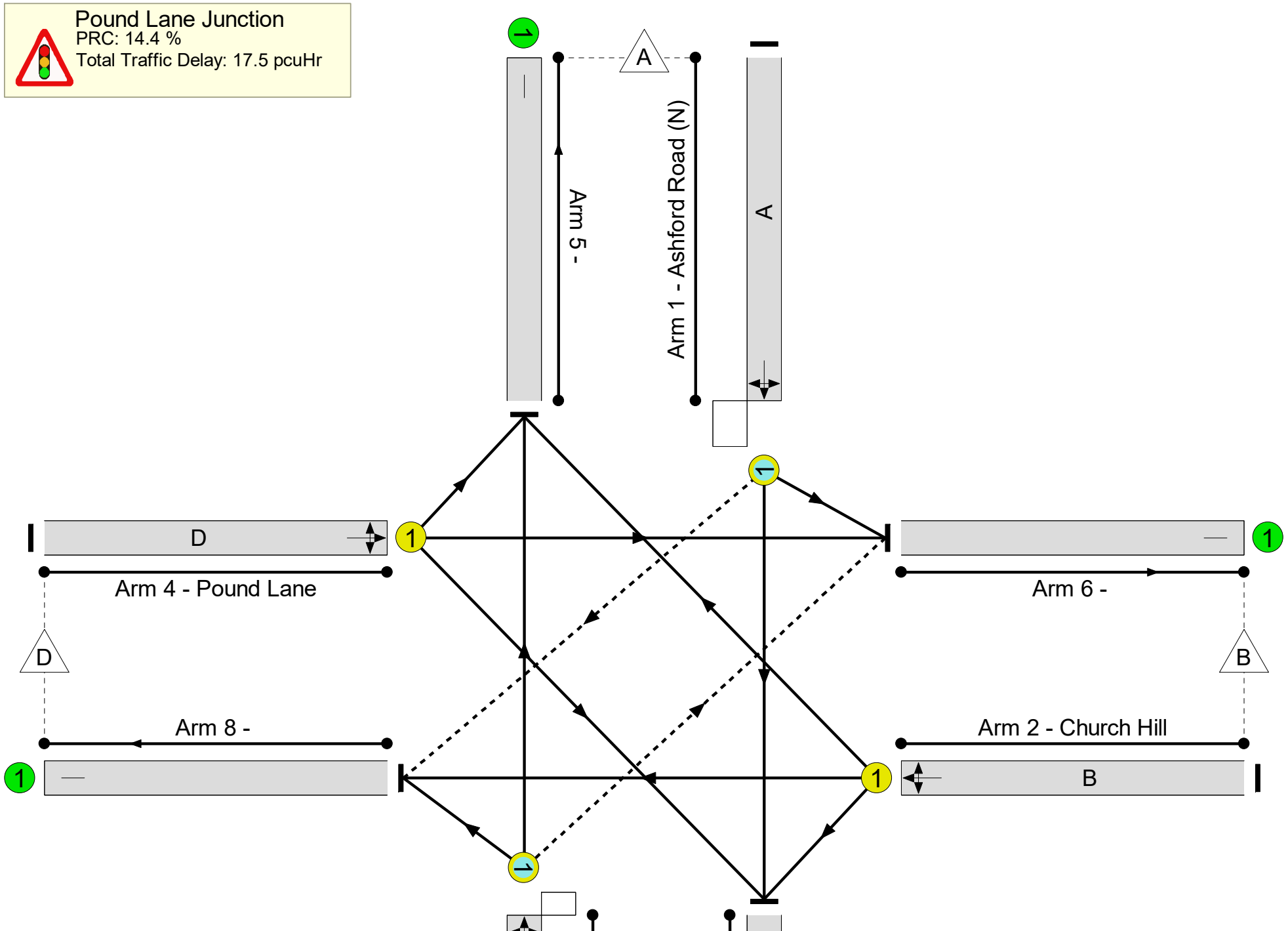


Stage Timings

Stage	1	2	1	2	1	4	3	2
Duration	72	42	94	38	38	4	7	18
Change Point	0	77	124	223	266	309	321	337

Signal Timings Diagram




Pound Lane Junction
PRC: 14.4 %
Total Traffic Delay: 17.5 pcuHr
A
Arm 1 - Ashford Road (N)
A
Arm 5 -
D
Arm 4 - Pound Lane
D
Arm 6 -
B
Arm 8 -
Arm 2 - Church Hill
B

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.7%**
Pound Lane Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.7%**
1/1	Ashford Road (N) Left Ahead Right	O	N/A	N/A	A		3	204	-	590	1879	1080	54.6%
2/1	Church Hill Right Left Ahead	U	N/A	N/A	B		3	98	-	339	1540	432	78.5%
3/1	Ashford Road (S) Ahead Right Left	O	N/A	N/A	C		3	204	-	859	1908	1092	78.7%
4/1	Pound Lane Left Ahead Right	U	N/A	N/A	D		1	7	-	23	1721	38	60.1%
5/1		U	N/A	N/A	-		-	-	-	980	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	161	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	662	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	8	Inf	Inf	0.0%

Full Input Data And Results

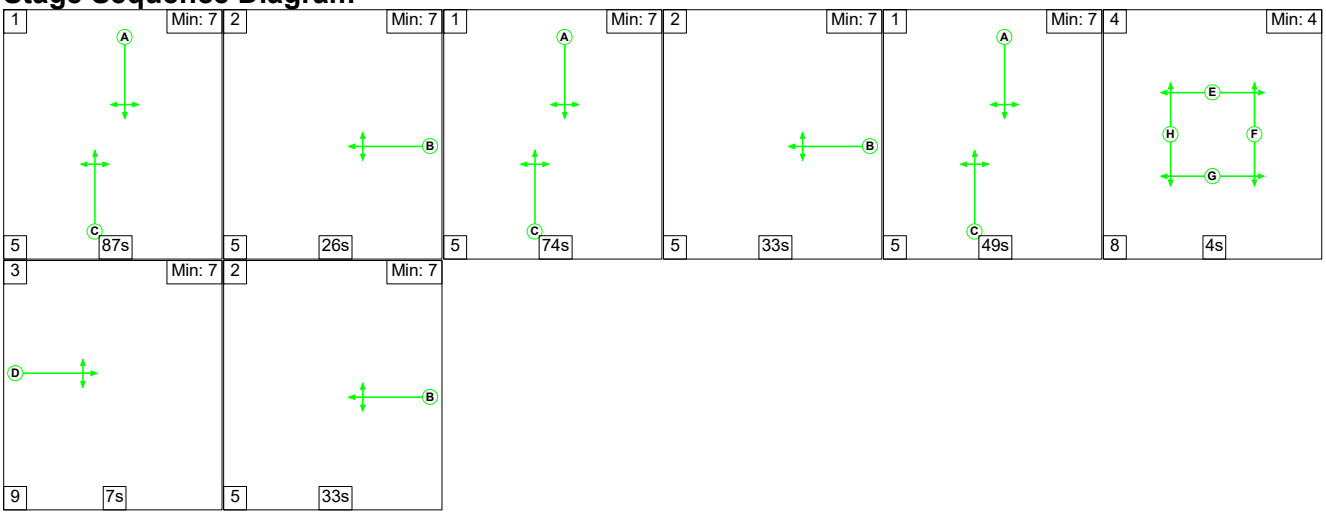
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**50**	**0**	**1**	**12.5**	**4.9**	**0.1**	**17.5**	**-**	**-**	**-**	**-**
Pound Lane Junction	**-**	**-**	**50**	**0**	**1**	**12.5**	**4.9**	**0.1**	**17.5**	**-**	**-**	**-**	**-**
1/1	590	590	3	0	1	2.6	0.6	0.0	3.2	19.7	13.1	0.6	13.7
2/1	339	339	-	-	-	4.0	1.8	-	5.8	61.5	12.4	1.8	14.2
3/1	859	859	47	0	0	4.7	1.8	0.1	6.6	27.8	23.9	1.8	25.7
4/1	23	23	-	-	-	1.1	0.7	-	1.8	282.7	2.3	0.7	3.0
5/1	980	980	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	161	161	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	662	662	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	8	8	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 14.4 Total Delay for Signalled Lanes (pcuHr): 17.46 Cycle Time (s): 360
PRC Over All Lanes (%): 14.4 Total Delay Over All Lanes(pcuHr): 17.46

Full Input Data And Results

Scenario 2: '2032 + Committed + Dev PM' (FG2: '2032 + Committed + Dev PM', Plan 1: 'Network Control Plan 1')

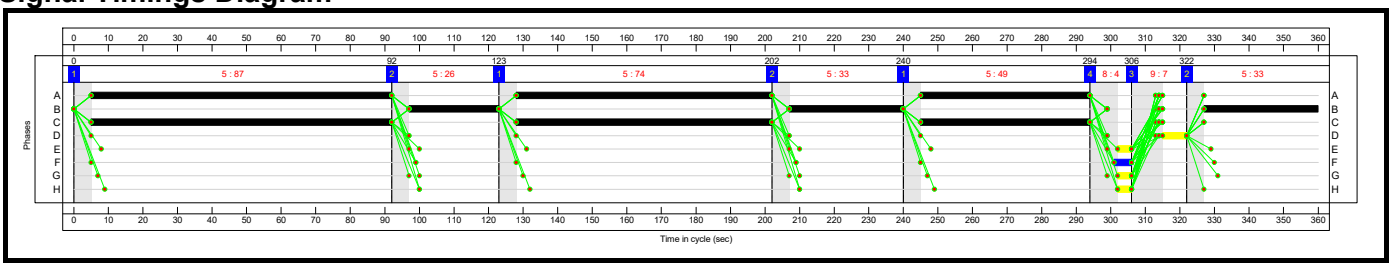
Stage Sequence Diagram

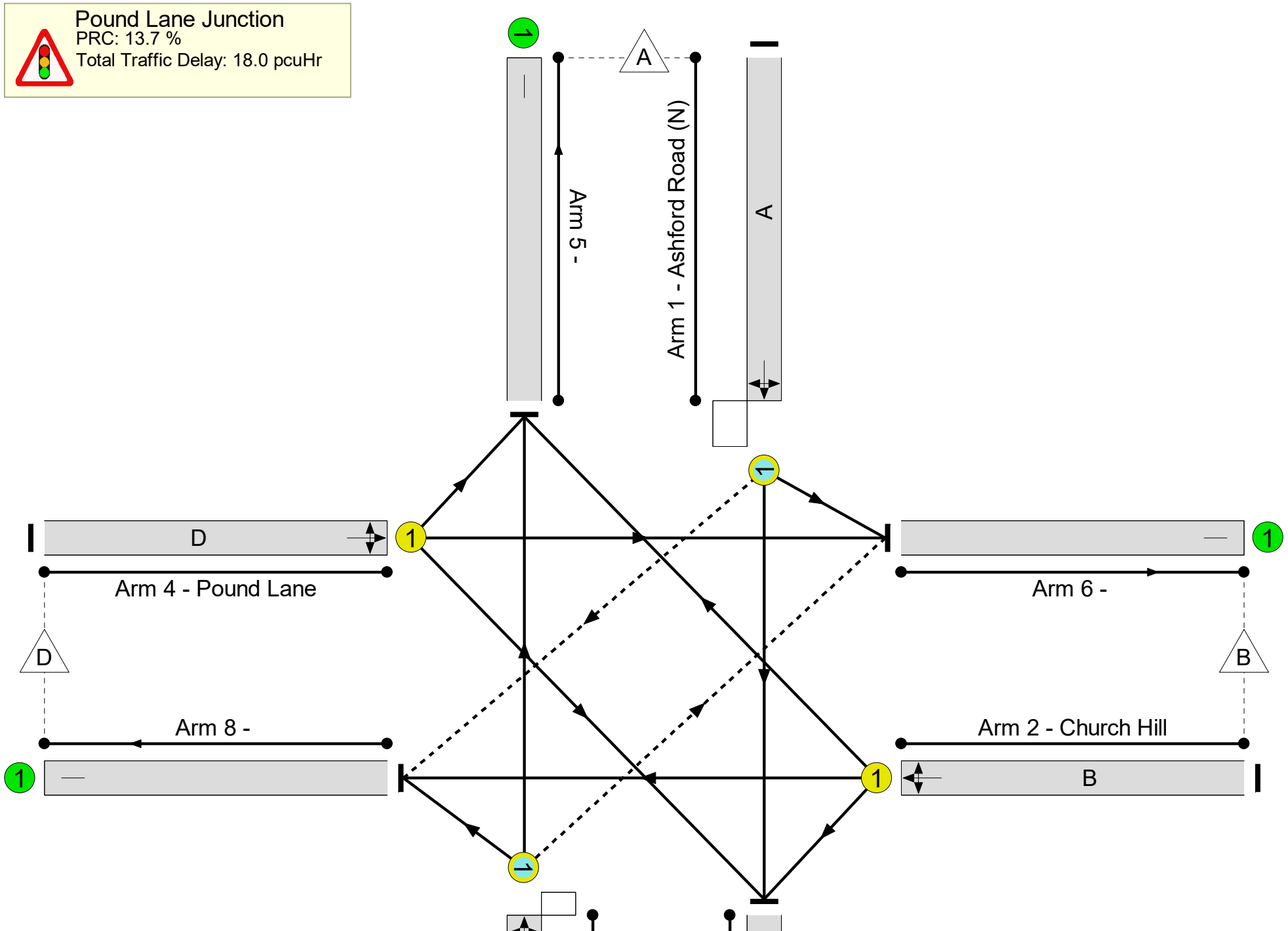


Stage Timings

Stage	1	2	1	2	1	4	3	2
Duration	87	26	74	33	49	4	7	33
Change Point	0	92	123	202	240	294	306	322

Signal Timings Diagram




Pound Lane Junction
PRC: 13.7 %
Total Traffic Delay: 18.0 pcuHr
A
Arm 1 - Ashford Road (N)
A
Arm 5 -
D
Arm 4 - Pound Lane
D
Arm 6 -
B
Arm 8 -
Arm 2 - Church Hill
B

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.2%**
Pound Lane Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.2%**
1/1	Ashford Road (N) Left Ahead Right	O	N/A	N/A	A		3	210	-	786	1886	1116	70.4%
2/1	Church Hill Right Left Ahead	U	N/A	N/A	B		3	92	-	326	1571	415	78.6%
3/1	Ashford Road (S) Ahead Right Left	O	N/A	N/A	C		3	210	-	507	1852	641	79.2%
4/1	Pound Lane Left Ahead Right	U	N/A	N/A	D		1	7	-	10	1666	37	27.0%
5/1		U	N/A	N/A	-		-	-	-	573	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	212	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	825	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	19	Inf	Inf	0.0%

Full Input Data And Results

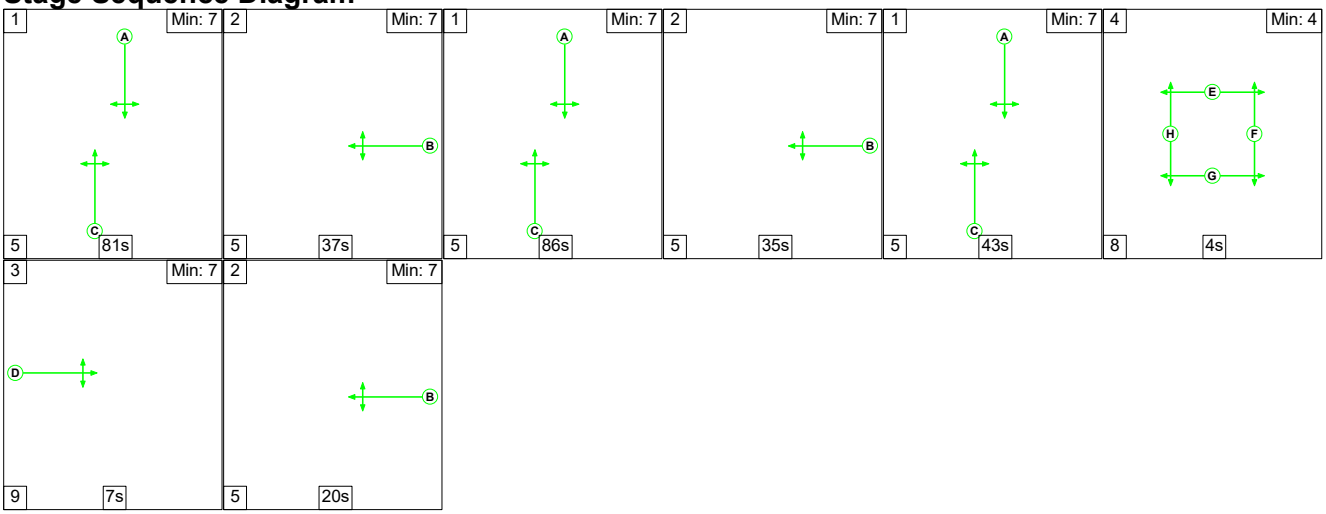
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**124**	**0**	**0**	**12.7**	**5.0**	**0.3**	**18.0**	**-**	**-**	**-**	**-**
Pound Lane Junction	**-**	**-**	**124**	**0**	**0**	**12.7**	**5.0**	**0.3**	**18.0**	**-**	**-**	**-**	**-**
1/1	786	786	11	0	0	4.1	1.2	0.0	5.3	24.2	26.2	1.2	27.4
2/1	326	326	-	-	-	3.7	1.8	-	5.5	60.7	11.0	1.8	12.7
3/1	507	507	113	0	0	4.4	1.8	0.3	6.6	46.7	22.1	1.8	24.0
4/1	10	10	-	-	-	0.5	0.2	-	0.7	238.9	1.0	0.2	1.2
5/1	573	573	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	212	212	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	825	825	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	19	19	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 13.7 Total Delay for Signalled Lanes (pcuHr): 18.04 Cycle Time (s): 360
PRC Over All Lanes (%): 13.7 Total Delay Over All Lanes(pcuHr): 18.04

Full Input Data And Results

Scenario 3: '2032 + Committed + Dev + CL AM' (FG5: '2032 + Committed + Dev + CL AM', Plan 1: 'Network Control Plan 1')

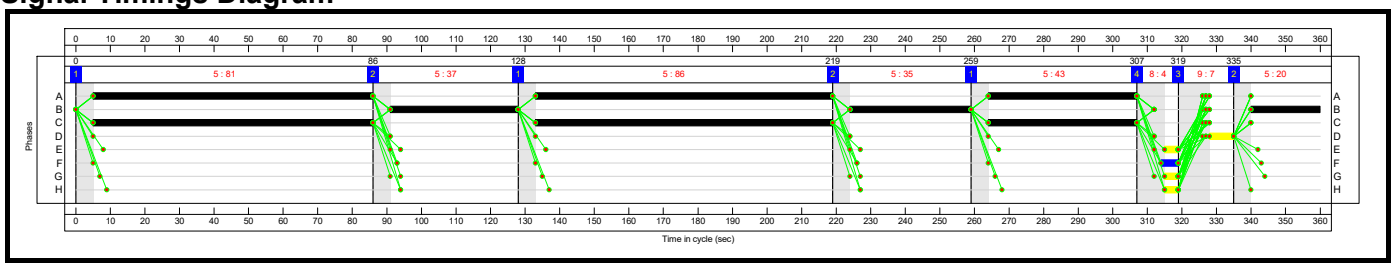
Stage Sequence Diagram



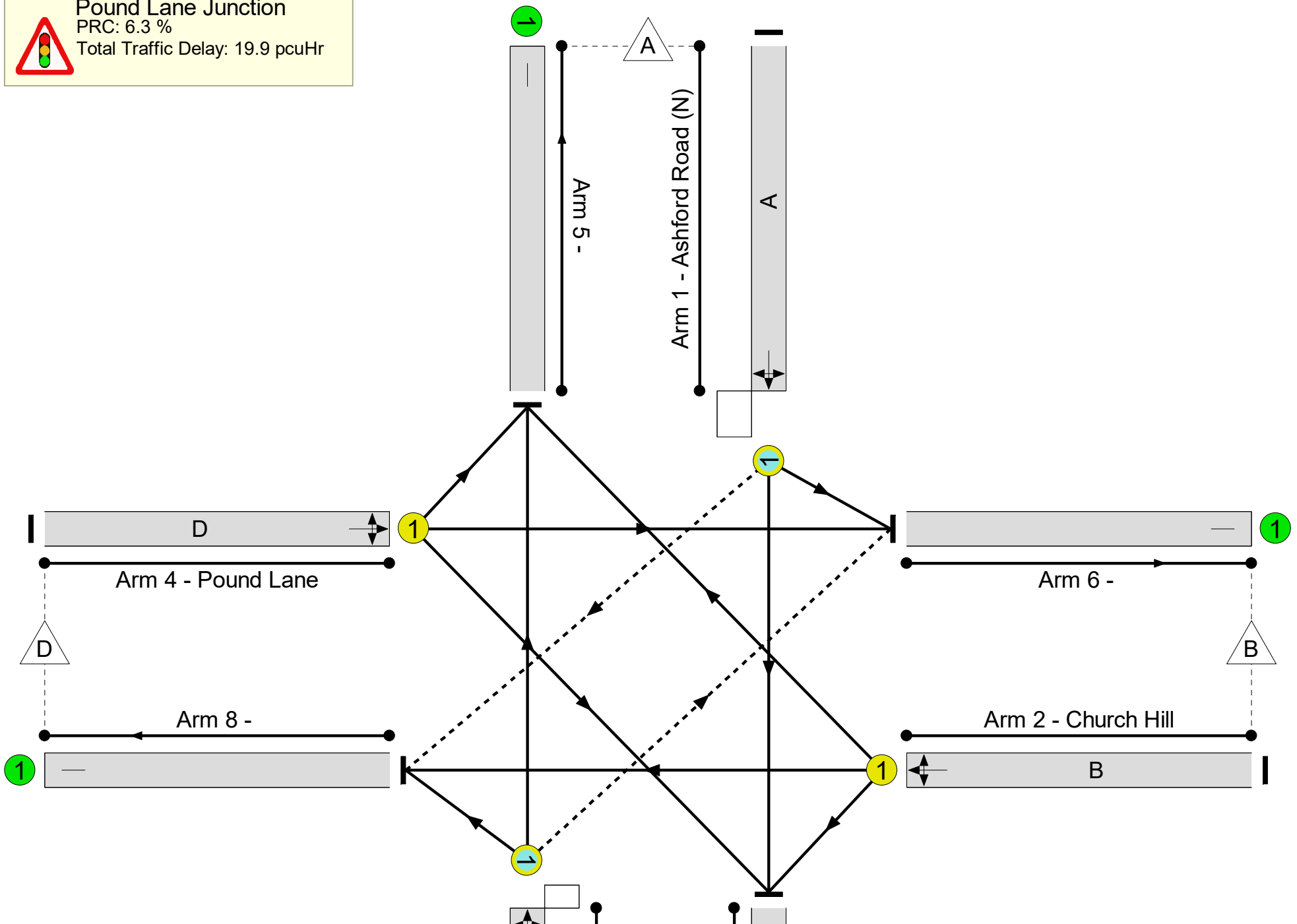
Stage Timings

Stage	1	2	1	2	1	4	3	2
Duration	81	37	86	35	43	4	7	20
Change Point	0	86	128	219	259	307	319	335

Signal Timings Diagram



Pound Lane Junction
PRC: 6.3 %
Total Traffic Delay: 19.9 pcuHr



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.6%**
Pound Lane Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.6%**
1/1	Ashford Road (N) Left Ahead Right	O	N/A	N/A	A		3	210	-	636	1881	1113	57.1%
2/1	Church Hill Right Left Ahead	U	N/A	N/A	B		3	92	-	341	1539	406	84.0%
3/1	Ashford Road (S) Ahead Right Left	O	N/A	N/A	C		3	210	-	948	1909	1120	84.6%
4/1	Pound Lane Left Ahead Right	U	N/A	N/A	D		1	7	-	23	1721	38	60.1%
5/1		U	N/A	N/A	-		-	-	-	1064	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	166	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	710	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	8	Inf	Inf	0.0%

Full Input Data And Results

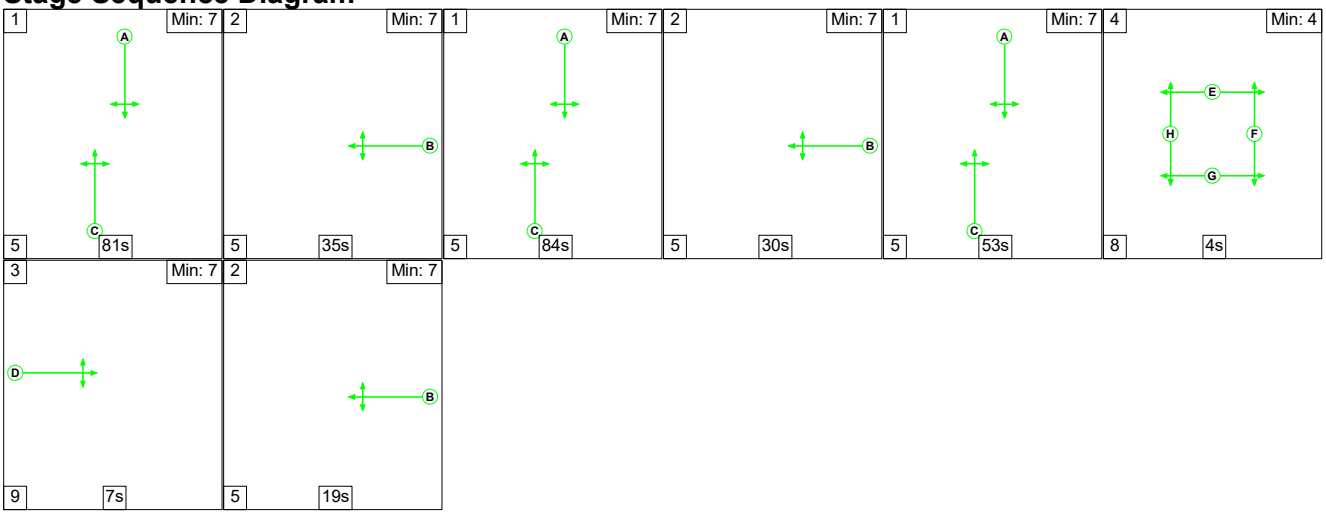
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**55**	**0**	**1**	**13.4**	**6.5**	**0.1**	**19.9**	**-**	**-**	**-**	**-**
Pound Lane Junction	**-**	**-**	**55**	**0**	**1**	**13.4**	**6.5**	**0.1**	**19.9**	**-**	**-**	**-**	**-**
1/1	636	636	3	0	1	2.7	0.7	0.0	3.4	19.2	15.2	0.7	15.9
2/1	341	341	-	-	-	4.2	2.4	-	6.6	69.7	11.7	2.4	14.1
3/1	948	948	52	0	0	5.4	2.7	0.1	8.1	30.9	30.3	2.7	33.0
4/1	23	23	-	-	-	1.1	0.7	-	1.8	282.7	2.3	0.7	3.0
5/1	1064	1064	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	166	166	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	710	710	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	8	8	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 6.3 Total Delay for Signalled Lanes (pcuHr): 19.94 Cycle Time (s): 360
PRC Over All Lanes (%): 6.3 Total Delay Over All Lanes(pcuHr): 19.94

Full Input Data And Results

Scenario 4: '2032 + Committed + Dev + CL PM' (FG6: '2032 + Committed + Dev + CL PM', Plan 1: 'Network Control Plan 1')

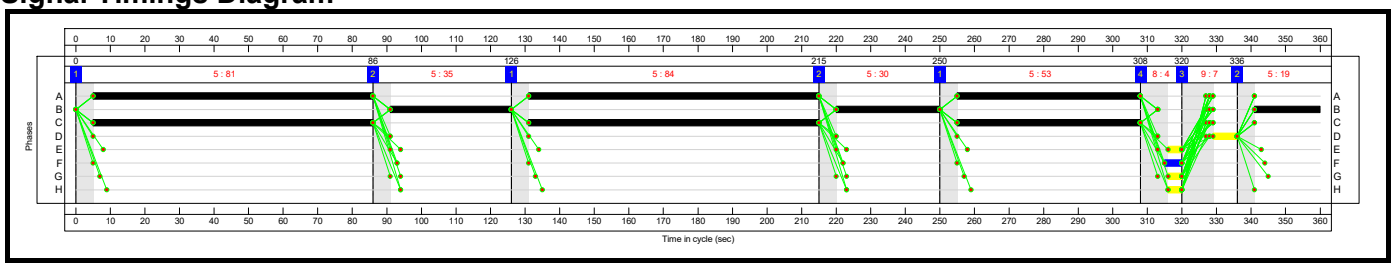
Stage Sequence Diagram

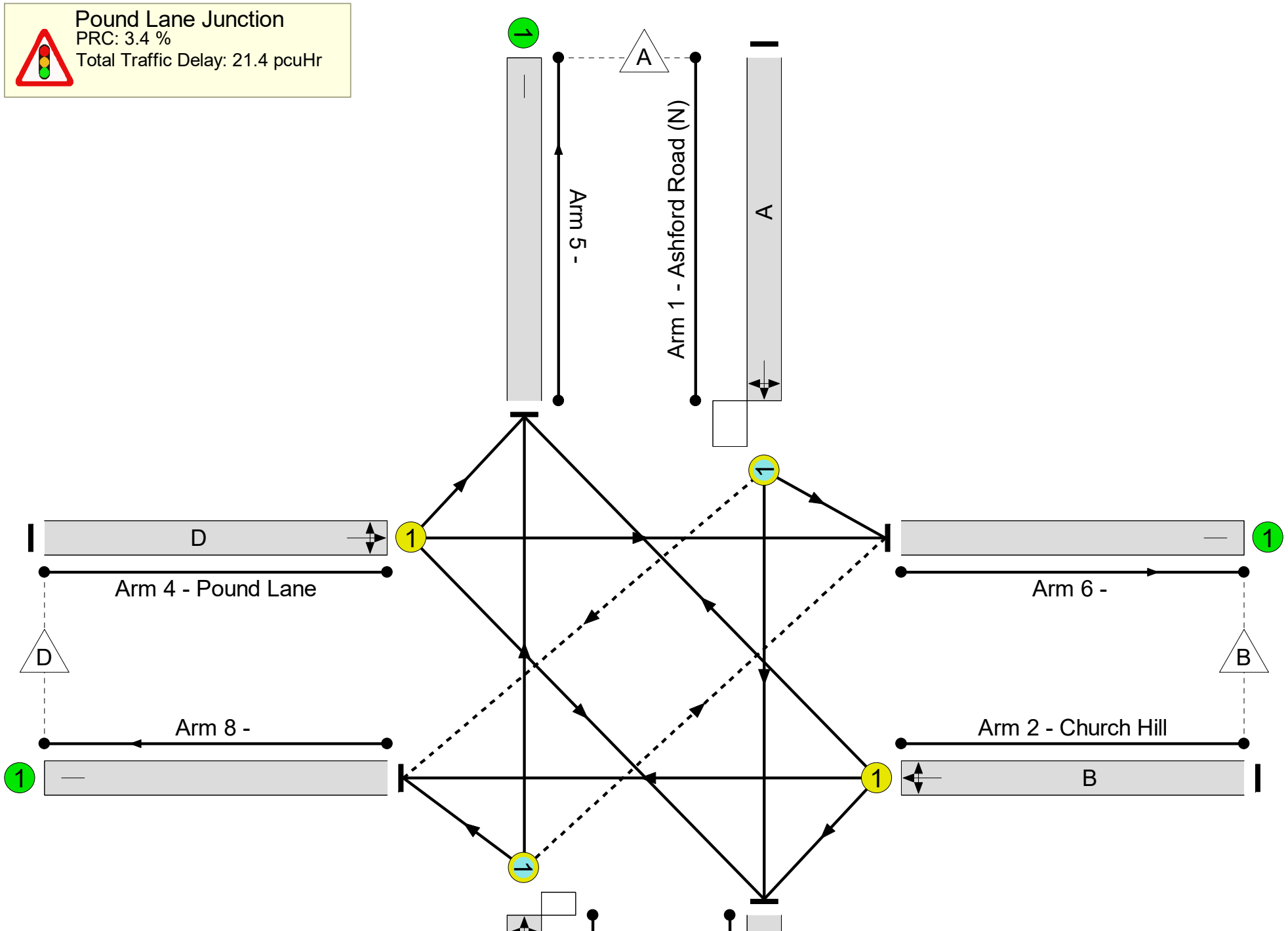


Stage Timings

Stage	1	2	1	2	1	4	3	2
Duration	81	35	84	30	53	4	7	19
Change Point	0	86	126	215	250	308	320	336

Signal Timings Diagram




Pound Lane Junction
PRC: 3.4 %
Total Traffic Delay: 21.4 pcuHr
A
Arm 1 - Ashford Road (N)
A
Arm 5 -
D
Arm 4 - Pound Lane
D
Arm 8 -
Arm 6 -
B
Arm 2 - Church Hill
B

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.0%**
Pound Lane Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.0%**
1/1	Ashford Road (N) Left Ahead Right	O	N/A	N/A	A		3	218	-	854	1888	1159	73.7%
2/1	Church Hill Right Left Ahead	U	N/A	N/A	B		3	84	-	330	1569	379	87.0%
3/1	Ashford Road (S) Ahead Right Left	O	N/A	N/A	C		3	218	-	555	1857	640	86.7%
4/1	Pound Lane Left Ahead Right	U	N/A	N/A	D		1	7	-	10	1666	37	27.0%
5/1		U	N/A	N/A	-		-	-	-	619	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	214	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	897	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	19	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**125**	**0**	**1**	**13.4**	**7.6**	**0.4**	**21.4**	**-**	**-**	**-**	**-**
Pound Lane Junction	**-**	**-**	**125**	**0**	**1**	**13.4**	**7.6**	**0.4**	**21.4**	**-**	**-**	**-**	**-**
1/1	854	854	10	0	1	4.0	1.4	0.0	5.4	22.6	24.2	1.4	25.6
2/1	330	330	-	-	-	4.4	3.0	-	7.4	81.1	12.1	3.0	15.1
3/1	555	555	115	0	0	4.5	3.0	0.4	7.9	51.4	21.1	3.0	24.2
4/1	10	10	-	-	-	0.5	0.2	-	0.7	238.9	1.0	0.2	1.2
5/1	619	619	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	214	214	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	897	897	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	19	19	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 3.4 Total Delay for Signalled Lanes (pcuHr): 21.39 Cycle Time (s): 360
PRC Over All Lanes (%): 3.4 Total Delay Over All Lanes(pcuHr): 21.39