

**Appendix 3.29 -  
Vectos Traffic Modelling  
Response (13 Oct 2020)**

**Bhanderi, Pushpa**

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**From:** Hard, Matt  
**Sent:** 13 October 2020 09:49  
**To:** Debra Harrison (Debra.Harrison@trafford.gov.uk)  
**Cc:** Gareth Davis (gareth.davis@vectos.co.uk); Tom Reader; Welch, Victoria; Payne, Hannah; Guy Pearson-Gregory (guy.pearson-gregory@accruicap.com)  
**Subject:** Former B&Q - traffic modelling  
**Attachments:** Great Stone Road Modelling Response to TfGM Oct 20.pdf

Debra

Following the latest request from TfGM, please see Vectos's full response. I would be grateful if you could share with TfGM.

Thanks

**Matthew Hard BA(Hons) MSc MRTPI**  
Associate Director

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## TRAFFORD PLACE

### GREAT STONE ROAD, TRAFFORD - TRAFFIC MODELLING RESPONSE TO TfGM

#### 1 INTRODUCTION

- 1.1 Vectos prepared a junction model of the Great Stone Road / Talbot Road junction in support of the planning application (reference 00400/OUT/20) for residential development at the former B&Q site off Great Stone Road, Trafford. The modelling assessed the anticipated effects of the proposed development upon the operation of the junction during the weekday morning and evening peak hours. The findings revealed that the proposed development would have a negligible effect upon the operation of the junction.
- 1.2 TfGM have reviewed the modelling and have suggested that the model could be refined to better reflect the junction operation particularly with respect to the PM peak. The LINSIG modelling results as shown in the TA are given in **Table 1** below and in the PM this showed the junction operating over capacity.

Arm	AM Peak		PM Peak	
	DoS	MMQ (PCU)	DoS	MMQ (PCU)
Great Stone Road North – Ahead, Left, Right	56.2%	6.0	92.9%	13.9
Great Stone Road South – Left, Ahead	86.4%	12.1	101.6%	21.3
Great Stone Road South - Right	66.5%	4.7	51.9%	1.8
Talbot Road East – Left, Ahead, Right	44.5%	0.4	103.6%	40.6
Talbot Road West – Right, Left, Ahead	88.2%	16.7	101.4%	21.8
<b>PRC %</b>	<b>2%</b>		<b>-15.3%</b>	

**Table 1: Baseline LinSig Model Results as Presented in TA**

- 1.3 TfGM considered that the baseline operation should be within capacity in the PM peak. Looking at the modelling the Baseline model included geometrically calculated exit lane saturation flows which can in certain circumstances have a notable adverse effect on junction performance and therefore we have reverted the Exit Lane Saturation Flows to unconstrained links rather than geometrically calculated. Vectos acknowledge that the application of geometrically calculated saturation flows on the exit lanes may not be the best representation of this junction. The change to unconstrained saturation flows is therefore considered appropriate.

1.4 With the exit lane saturation flow parameters amended, the resulting junction modelling results for the Base and Base + Development scenarios are presented in **Table 2**.

Arm	Base				Base + Development			
	AM Peak		PM Peak		AM Peak		PM Peak	
	DoS	MMQ (PCU)	DoS	MMQ (PCU)	DoS	MMQ (PCU)	DoS	MMQ (PCU)
Great Stone Road North Ahead, Left, Right	56.2%	6	84.1%	11	56.3%	6	84.2%	11
Great Stone Road South Left, Ahead	86.4%	12	87.0%	12	87.5%	13	86.6%	12
Great Stone Road South Right	66.5%	5	43.7%	2	67.4%	5	43.7%	2
Talbot Road East Left, Ahead, Right	46.6%	4	88.9%	12	46.6%	4	88.9%	12
Talbot Road West Right, Left, Ahead	88.2%	17	89.2%	11	88.3%	17	89.5%	11
<b>PRC %</b>	<b>2.0%</b>		<b>0.9%</b>		<b>2.0%</b>		<b>0.6%</b>	

**Table 2: Revised LinSig Model Results**

1.5 It can be seen from **Table 2** that the revised junction modelling results show the baseline junction situation as within capacity, with positive practical reserve capacity figures addressing the concern raised by TfGM. The full LinSig output is appended to this Note.

1.6 It is important to note that the conclusions of the original Transport Assessment are unchanged. Namely that the addition of the proposed development traffic results in a negligible change in junction performance. The conclusions of the Transport Assessment remain valid in light of the amended model results, in that the proposed development traffic is not expected to result in any material change to the operation of the junction.





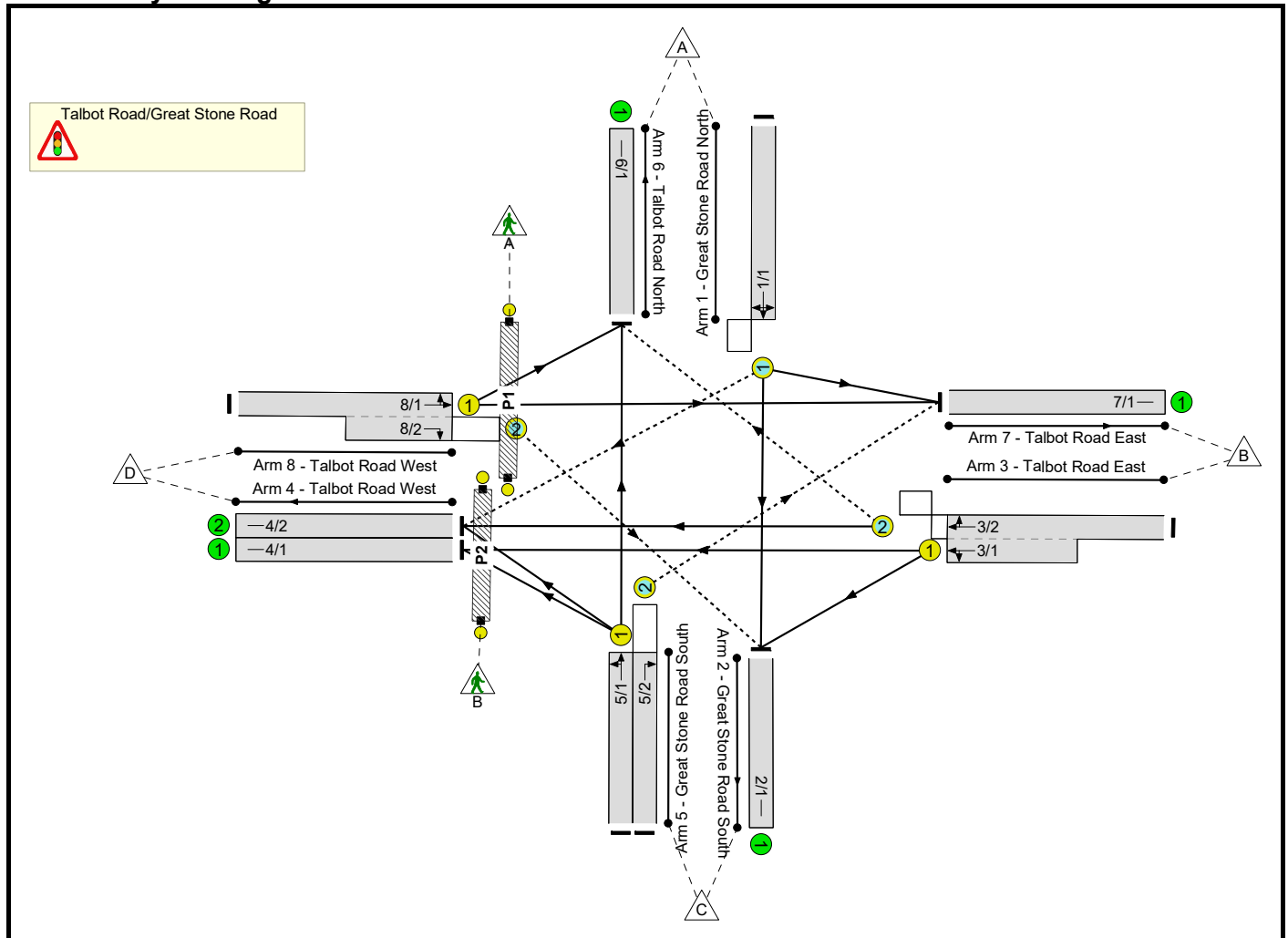
## LinSig Output

Full Input Data And Results  
**Full Input Data And Results**

**User and Project Details**

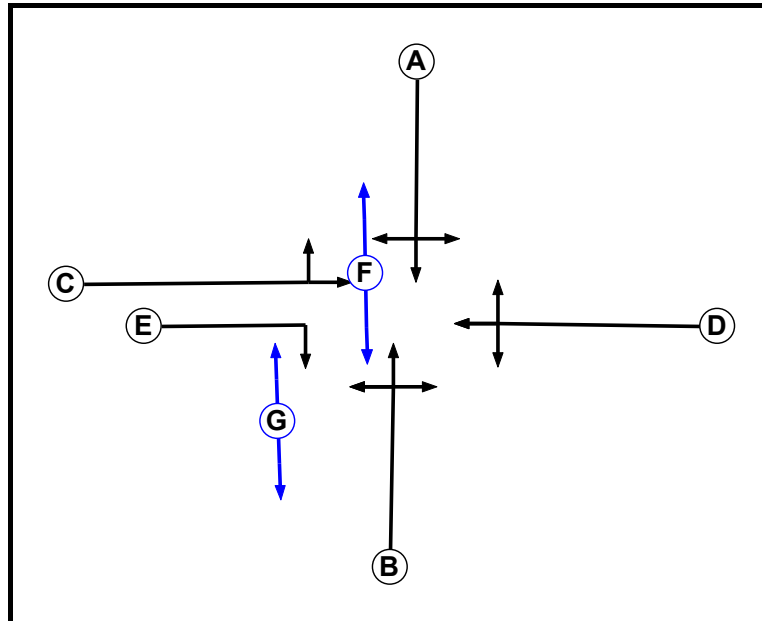
<b>Project:</b>	<b>VN201595</b>
<b>Title:</b>	<b>Great Stone Road Trafford</b>
<b>Location:</b>	
<b>Date Completed:</b>	October 2020
<b>Additional detail:</b>	
<b>File name:</b>	Talbot Road_Great Stone Road - Revised Oct20.lsg3x
<b>Author:</b>	Tim Ashley
<b>Company:</b>	Vectos (North) Ltd
<b>Address:</b>	

**Network Layout Diagram**



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		3	3
F	Pedestrian		5	5
G	Pedestrian		5	5

Phase Intergreens Matrix

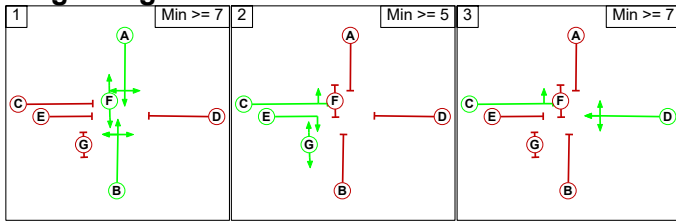
		Starting Phase						
		A	B	C	D	E	F	G
Terminating Phase	A	-	7	7	7	-	8	
	B	-	10	10	10	-	11	
	C	7	7	-	-	5	-	
	D	7	7	-	7	-	7	
	E	7	7	4	5	-	-	
	F	-	5	-	5	-	-	
	G	5	5	5	-	-	-	

Phases in Stage

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

Full Input Data And Results

**Stage Diagram**



**Phase Delays**

Term. Stage	Start Stage	Phase	Type	Value	Cont value
2	3	E	Losing	1	1

**Prohibited Stage Change**

		To Stage		
		1	2	3
From Stage	1		11	10
	2	7		5
	3	7	7	



Full Input Data And Results

**Give-Way Lane Input Data**

Junction: Talbot Road/Great Stone Road											
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 (Great Stone Road North)	4/2 (Right)	1439	0	5/1	1.09	All	2.00	2.00	0.50	2	2.00
3/2 (Talbot Road East)	6/1 (Right)	1439	0	8/1	1.09	All	3.00	2.00	0.50	3	3.00
5/2 (Great Stone Road South)	7/1 (Right)	1439	0	1/1	1.09	To 2/1 (Ahead) To 7/1 (Left)	3.00	-	0.50	3	3.00
8/2 (Talbot Road West)	2/1 (Right)	1439	0	3/1	1.09	All	3.00	-	0.50	3	3.00
				3/2	1.09	To 4/2 (Ahead)					

## Full Input Data And Results

## Lane Input Data

Junction: Talbot Road/Great Stone Road												
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 (Great Stone Road North)	O	A	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 2 Ahead Arm 4 Right Arm 7 Left	Inf 35.00 16.00
2/1 (Great Stone Road South)	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (Talbot Road East)	U	D	2	3	8.2	Geom	-	2.60	0.00	Y	Arm 2 Left Arm 4 Ahead	16.00 Inf
3/2 (Talbot Road East)	O	D	2	3	60.0	Geom	-	2.60	0.00	Y	Arm 4 Ahead Arm 6 Right	Inf 35.00
4/1 (Talbot Road West)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Talbot Road West)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Great Stone Road South)	U	B	2	3	60.0	Geom	-	3.20	0.00	Y	Arm 4 Left Arm 6 Ahead	16.00 Inf
5/2 (Great Stone Road South)	O	B	2	3	60.0	Geom	-	3.50	0.00	N	Arm 7 Right	35.00
6/1 (Talbot Road North)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Talbot Road East)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Talbot Road West)	U	C	2	3	60.0	Geom	-	2.60	0.00	Y	Arm 6 Left Arm 7 Ahead	16.00 Inf
8/2 (Talbot Road West)	O	E	2	3	6.7	Geom	-	2.60	0.00	Y	Arm 2 Right	35.00

Full Input Data And Results

**Traffic Flow Groups**

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM Peak Baseline'	07:45	08:45	01:00	
2: 'PM Peak Baseline'	16:30	17:30	01:00	
3: 'AM Peak plus Development'	07:45	08:45	01:00	
4: 'PM Peak plus Development'	16:30	17:30	01:00	

**Scenario 1: 'AM Peak'** (FG1: 'AM Peak Baseline', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

Origin	Destination					
	A	B	C	D	Tot.	
A	0	65	219	40	324	
B	76	0	75	256	407	
C	278	204	0	213	695	
D	80	583	246	0	909	
Tot.	434	852	540	509	2335	

**Traffic Lane Flows**

Lane	Scenario 1: AM Peak
<b>Junction: Talbot Road/Great Stone Road</b>	
1/1	324
2/1	540
3/1 (short)	202
3/2 (with short)	407(In) 205(Out)
4/1	234
4/2	275
5/1	491
5/2	204
6/1	434
7/1	852
8/1 (with short)	909(In) 663(Out)
8/2 (short)	246

Full Input Data And Results

**Lane Saturation Flows**

Junction: Talbot Road/Great Stone Road								
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 (Great Stone Road North)	3.75	0.00	Y	Arm 2 Ahead	Inf	67.6 %	1943	1943
				Arm 4 Right	35.00	12.3 %		
				Arm 7 Left	16.00	20.1 %		
2/1 (Great Stone Road South Lane 1)				Infinite Saturation Flow			Inf	Inf
3/1 (Talbot Road East)	2.60	0.00	Y	Arm 2 Left	16.00	37.1 %	1812	1812
				Arm 4 Ahead	Inf	62.9 %		
3/2 (Talbot Road East)	2.60	0.00	Y	Arm 4 Ahead	Inf	62.9 %	1846	1846
				Arm 6 Right	35.00	37.1 %		
4/1 (Talbot Road West Lane 1)				Infinite Saturation Flow			Inf	Inf
4/2 (Talbot Road West Lane 2)				Infinite Saturation Flow			Inf	Inf
5/1 (Great Stone Road South)	3.20	0.00	Y	Arm 4 Left	16.00	43.4 %	1859	1859
				Arm 6 Ahead	Inf	56.6 %		
5/2 (Great Stone Road South)	3.50	0.00	N	Arm 7 Right	35.00	100.0 %	2018	2018
6/1 (Talbot Road North Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Talbot Road East Lane 1)				Infinite Saturation Flow			Inf	Inf
8/1 (Talbot Road West)	2.60	0.00	Y	Arm 6 Left	16.00	12.1 %	1854	1854
				Arm 7 Ahead	Inf	87.9 %		
8/2 (Talbot Road West)	2.60	0.00	Y	Arm 2 Right	35.00	100.0 %	1798	1798

**Scenario 2: 'PM Peak' (FG2: 'PM Peak Baseline', Plan 1: 'Network Control Plan 1')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
	A	B	C	D	Tot.	
Origin	A	0	24	327	60	411
	B	34	0	156	636	826
	C	150	70	0	267	487
	D	42	213	319	0	574
	Tot.	226	307	802	963	2298

## Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 2: PM Peak
<b>Junction: Talbot Road/Great Stone Road</b>	
1/1	411
2/1	802
3/1 (short)	406
3/2 (with short)	826(In) 420(Out)
4/1	384
4/2	579
5/1	417
5/2	70
6/1	226
7/1	307
8/1 (with short)	574(In) 255(Out)
8/2 (short)	319

Full Input Data And Results

**Lane Saturation Flows**

Junction: Talbot Road/Great Stone Road								
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 (Great Stone Road North)	3.75	0.00	Y	Arm 2 Ahead	Inf	79.6 %	1967	1967
				Arm 4 Right	35.00	14.6 %		
				Arm 7 Left	16.00	5.8 %		
2/1 (Great Stone Road South Lane 1)				Infinite Saturation Flow			Inf	Inf
3/1 (Talbot Road East)	2.60	0.00	Y	Arm 2 Left	16.00	38.4 %	1810	1810
				Arm 4 Ahead	Inf	61.6 %		
3/2 (Talbot Road East)	2.60	0.00	Y	Arm 4 Ahead	Inf	91.9 %	1869	1869
				Arm 6 Right	35.00	8.1 %		
4/1 (Talbot Road West Lane 1)				Infinite Saturation Flow			Inf	Inf
4/2 (Talbot Road West Lane 2)				Infinite Saturation Flow			Inf	Inf
5/1 (Great Stone Road South)	3.20	0.00	Y	Arm 4 Left	16.00	64.0 %	1825	1825
				Arm 6 Ahead	Inf	36.0 %		
5/2 (Great Stone Road South)	3.50	0.00	N	Arm 7 Right	35.00	100.0 %	2018	2018
6/1 (Talbot Road North Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Talbot Road East Lane 1)				Infinite Saturation Flow			Inf	Inf
8/1 (Talbot Road West)	2.60	0.00	Y	Arm 6 Left	16.00	16.5 %	1846	1846
				Arm 7 Ahead	Inf	83.5 %		
8/2 (Talbot Road West)	2.60	0.00	Y	Arm 2 Right	35.00	100.0 %	1798	1798

**Scenario 3: 'AM Peak plus Development'** (FG3: 'AM Peak plus Development', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
	A	B	C	D	Tot.	
Origin	A	0	65	220	40	325
	B	76	0	75	256	407
	C	281	206	0	216	703
	D	80	583	247	0	910
	Tot.	437	854	542	512	2345

## Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 3: AM Peak plus Development
<b>Junction: Talbot Road/Great Stone Road</b>	
1/1	325
2/1	542
3/1 (short)	202
3/2 (with short)	407(In) 205(Out)
4/1	235
4/2	277
5/1	497
5/2	206
6/1	437
7/1	854
8/1 (with short)	910(In) 663(Out)
8/2 (short)	247

Full Input Data And Results

**Lane Saturation Flows**

Junction: Talbot Road/Great Stone Road								
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 (Great Stone Road North)	3.75	0.00	Y	Arm 2 Ahead	Inf	67.7 %	1943	1943
				Arm 4 Right	35.00	12.3 %		
				Arm 7 Left	16.00	20.0 %		
2/1 (Great Stone Road South Lane 1)				Infinite Saturation Flow			Inf	Inf
3/1 (Talbot Road East)	2.60	0.00	Y	Arm 2 Left	16.00	37.1 %	1812	1812
				Arm 4 Ahead	Inf	62.9 %		
3/2 (Talbot Road East)	2.60	0.00	Y	Arm 4 Ahead	Inf	62.9 %	1846	1846
				Arm 6 Right	35.00	37.1 %		
4/1 (Talbot Road West Lane 1)				Infinite Saturation Flow			Inf	Inf
4/2 (Talbot Road West Lane 2)				Infinite Saturation Flow			Inf	Inf
5/1 (Great Stone Road South)	3.20	0.00	Y	Arm 4 Left	16.00	43.5 %	1859	1859
				Arm 6 Ahead	Inf	56.5 %		
5/2 (Great Stone Road South)	3.50	0.00	N	Arm 7 Right	35.00	100.0 %	2018	2018
6/1 (Talbot Road North Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Talbot Road East Lane 1)				Infinite Saturation Flow			Inf	Inf
8/1 (Talbot Road West)	2.60	0.00	Y	Arm 6 Left	16.00	12.1 %	1854	1854
				Arm 7 Ahead	Inf	87.9 %		
8/2 (Talbot Road West)	2.60	0.00	Y	Arm 2 Right	35.00	100.0 %	1798	1798

**Scenario 4: 'PM Peak plus Development'** (FG4: 'PM Peak plus Development', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination					
	A	B	C	D	Tot.	
Origin	A	0	24	328	60	412
	B	34	0	156	636	826
	C	149	70	0	266	485
	D	42	213	320	0	575
	Tot.	225	307	804	962	2298



## Full Input Data And Results

**Traffic Lane Flows**

<b>Lane</b>	<b>Scenario 4: PM Peak plus Development</b>
<b>Junction: Talbot Road/Great Stone Road</b>	
1/1	412
2/1	804
3/1 (short)	406
3/2 (with short)	826(In) 420(Out)
4/1	383
4/2	579
5/1	415
5/2	70
6/1	225
7/1	307
8/1 (with short)	575(In) 255(Out)
8/2 (short)	320

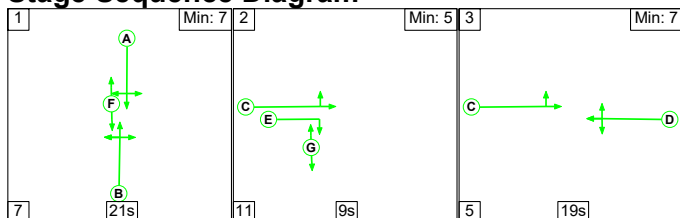
Full Input Data And Results

**Lane Saturation Flows**

Junction: Talbot Road/Great Stone Road								
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 (Great Stone Road North)	3.75	0.00	Y	Arm 2 Ahead	Inf	79.6 %	1967	1967
				Arm 4 Right	35.00	14.6 %		
				Arm 7 Left	16.00	5.8 %		
2/1 (Great Stone Road South Lane 1)				Infinite Saturation Flow			Inf	Inf
3/1 (Talbot Road East)	2.60	0.00	Y	Arm 2 Left	16.00	38.4 %	1810	1810
				Arm 4 Ahead	Inf	61.6 %		
3/2 (Talbot Road East)	2.60	0.00	Y	Arm 4 Ahead	Inf	91.9 %	1869	1869
				Arm 6 Right	35.00	8.1 %		
4/1 (Talbot Road West Lane 1)				Infinite Saturation Flow			Inf	Inf
4/2 (Talbot Road West Lane 2)				Infinite Saturation Flow			Inf	Inf
5/1 (Great Stone Road South)	3.20	0.00	Y	Arm 4 Left	16.00	64.1 %	1825	1825
				Arm 6 Ahead	Inf	35.9 %		
5/2 (Great Stone Road South)	3.50	0.00	N	Arm 7 Right	35.00	100.0 %	2018	2018
6/1 (Talbot Road North Lane 1)				Infinite Saturation Flow			Inf	Inf
7/1 (Talbot Road East Lane 1)				Infinite Saturation Flow			Inf	Inf
8/1 (Talbot Road West)	2.60	0.00	Y	Arm 6 Left	16.00	16.5 %	1846	1846
				Arm 7 Ahead	Inf	83.5 %		
8/2 (Talbot Road West)	2.60	0.00	Y	Arm 2 Right	35.00	100.0 %	1798	1798

**Scenario 1: 'AM Peak' (FG1: 'AM Peak Baseline', Plan 1: 'Network Control Plan 1')**

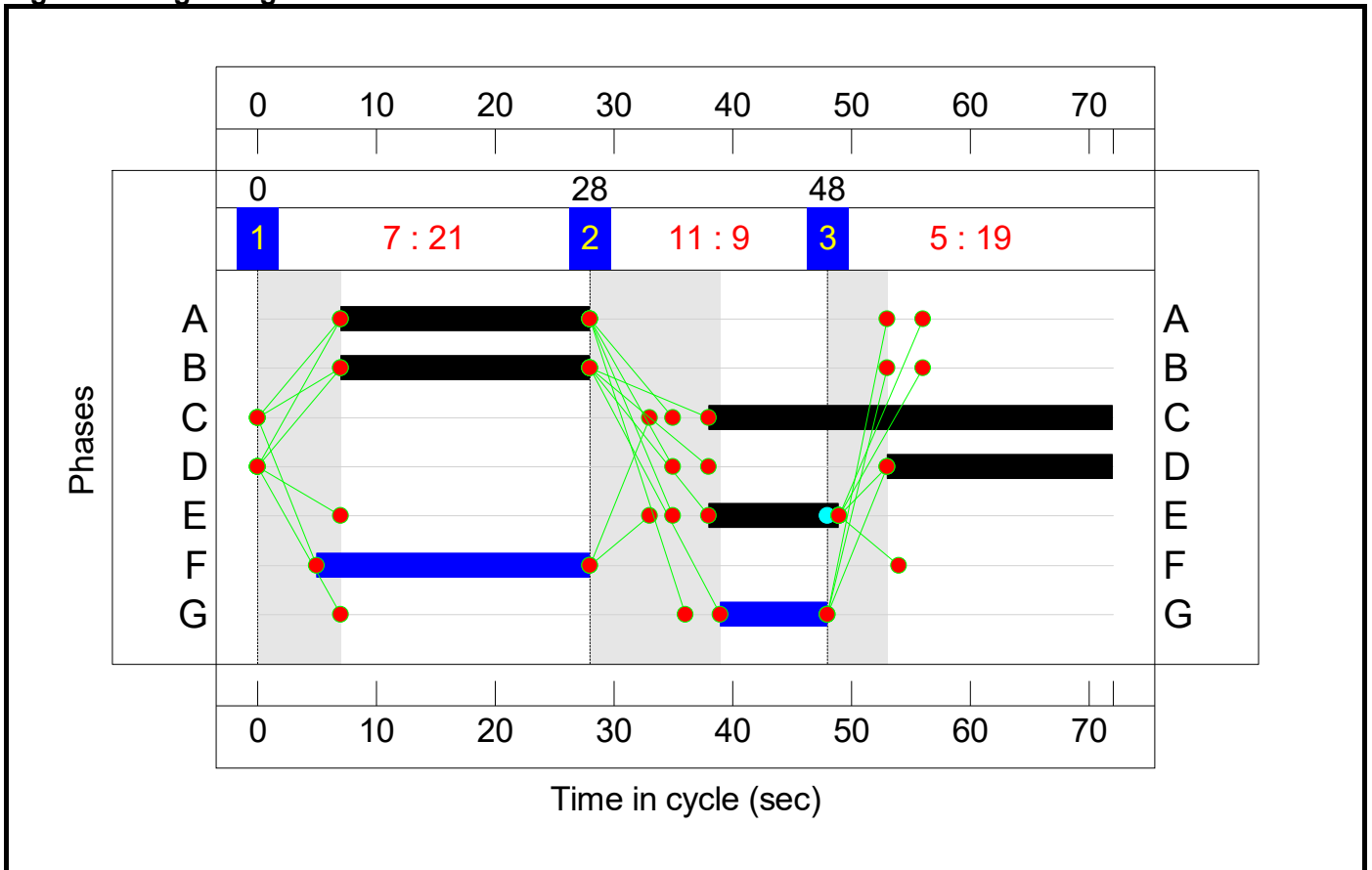
**Stage Sequence Diagram**



**Stage Timings**

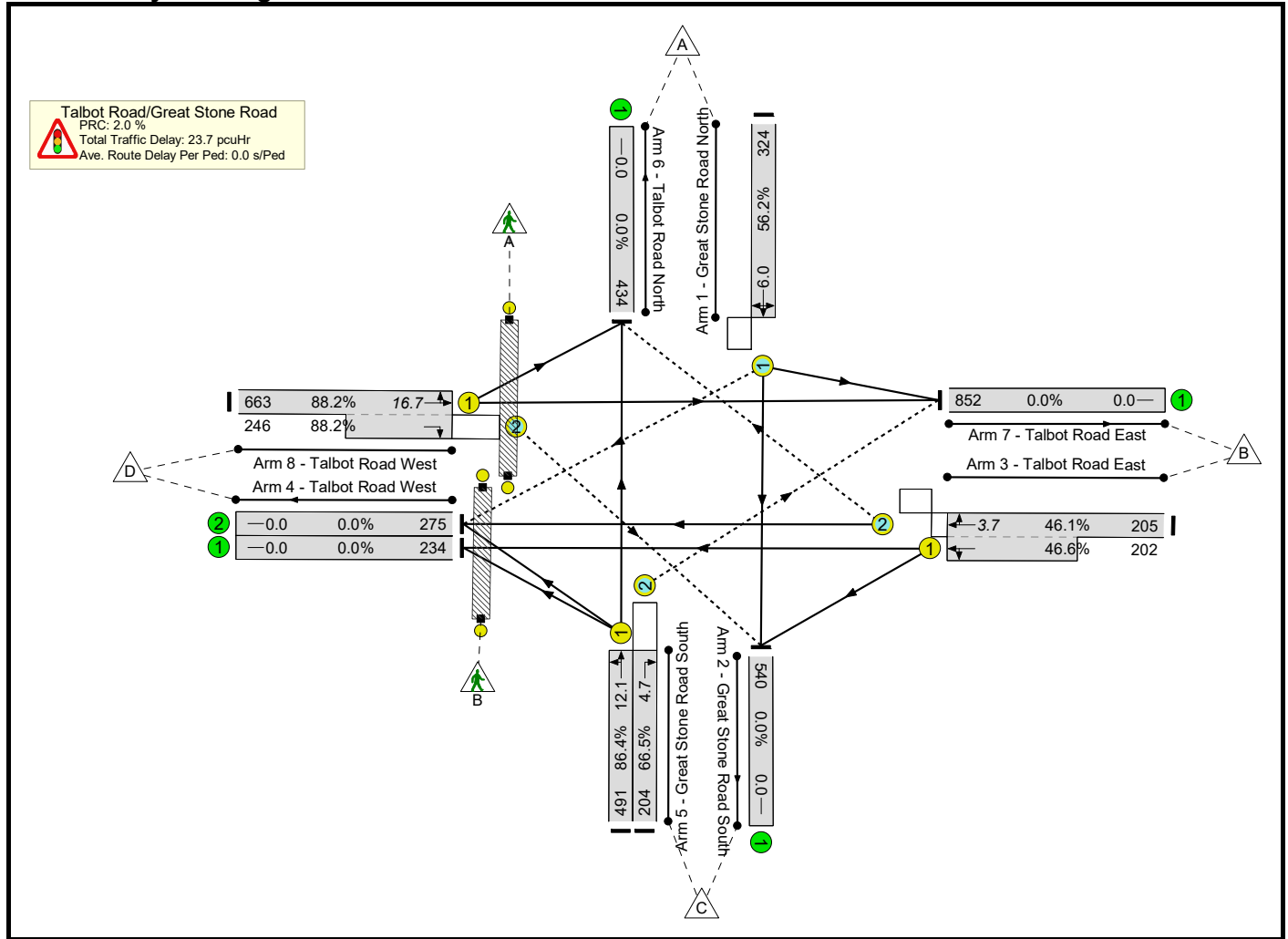
Stage	1	2	3
Duration	21	9	19
Change Point	0	28	48

**Signal Timings Diagram**



Full Input Data And Results

Network Layout Diagram



## 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: Great Stone Road Trafford	-	-	N/A	-	-		-	-	-	-	-	-	88.2%
Talbot Road/Great Stone Road	-	-	N/A	-	-		-	-	-	-	-	-	88.2%
1/1	Great Stone Road North Ahead Right Left	O	N/A	N/A	A		1	21	-	324	1943	577	56.2%
2/1	Great Stone Road South	U	N/A	N/A	-		-	-	-	540	Inf	Inf	0.0%
3/2+3/1	Talbot Road East Left Ahead Right	O+U	N/A	N/A	D		1	19	-	407	1846:1812	445+434	46.1 : 46.6%
4/1	Talbot Road West	U	N/A	N/A	-		-	-	-	234	Inf	Inf	0.0%
4/2	Talbot Road West	U	N/A	N/A	-		-	-	-	275	Inf	Inf	0.0%
5/1	Great Stone Road South Left Ahead	U	N/A	N/A	B		1	21	-	491	1859	568	86.4%
5/2	Great Stone Road South Right	O	N/A	N/A	B		1	21	-	204	2018	307	66.5%
6/1	Talbot Road North	U	N/A	N/A	-		-	-	-	434	Inf	Inf	0.0%
7/1	Talbot Road East	U	N/A	N/A	-		-	-	-	852	Inf	Inf	0.0%
8/1+8/2	Talbot Road West Right Left Ahead	U+O	N/A	N/A	C E		1	34:11	-	909	1854:1798	752+279	88.2 : 88.2%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	23	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	9	-	0	-	0	0.0%

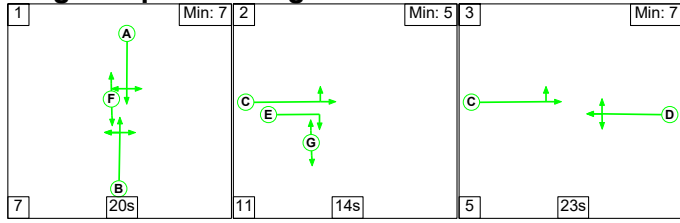
Full Input Data And Results

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)
<b>Network: Great Stone Road Trafford</b>	-	-	303	225	38	14.3	8.5	0.8	23.7	-	-	-	-
<b>Talbot Road/Great Stone Road</b>	-	-	303	225	38	14.3	8.5	0.8	23.7	-	-	-	-
1/1	324	324	40	0	0	1.9	0.6	0.1	2.7	29.5	5.4	0.6	6.0
2/1	540	540	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	407	407	75	0	1	2.4	0.4	0.2	3.0	26.5	3.3	0.4	3.7
4/1	234	234	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	275	275	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	491	491	-	-	-	3.2	3.0	-	6.2	45.3	9.1	3.0	12.1
5/2	204	204	188	0	16	1.2	1.0	0.5	2.6	46.7	3.7	1.0	4.7
6/1	434	434	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	852	852	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	909	909	0	225	21	5.6	3.5	0.0	9.2	36.3	13.2	3.5	16.7
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
C1      PRC for Signalled Lanes (%): 2.0      Total Delay for Signalled Lanes (pcuHr): 23.65      Cycle Time (s): 72 PRC Over All Lanes (%): 2.0      Total Delay Over All Lanes(pcuHr): 23.65													

Full Input Data And Results

Scenario 2: 'PM Peak' (FG2: 'PM Peak Baseline', Plan 1: 'Network Control Plan 1')

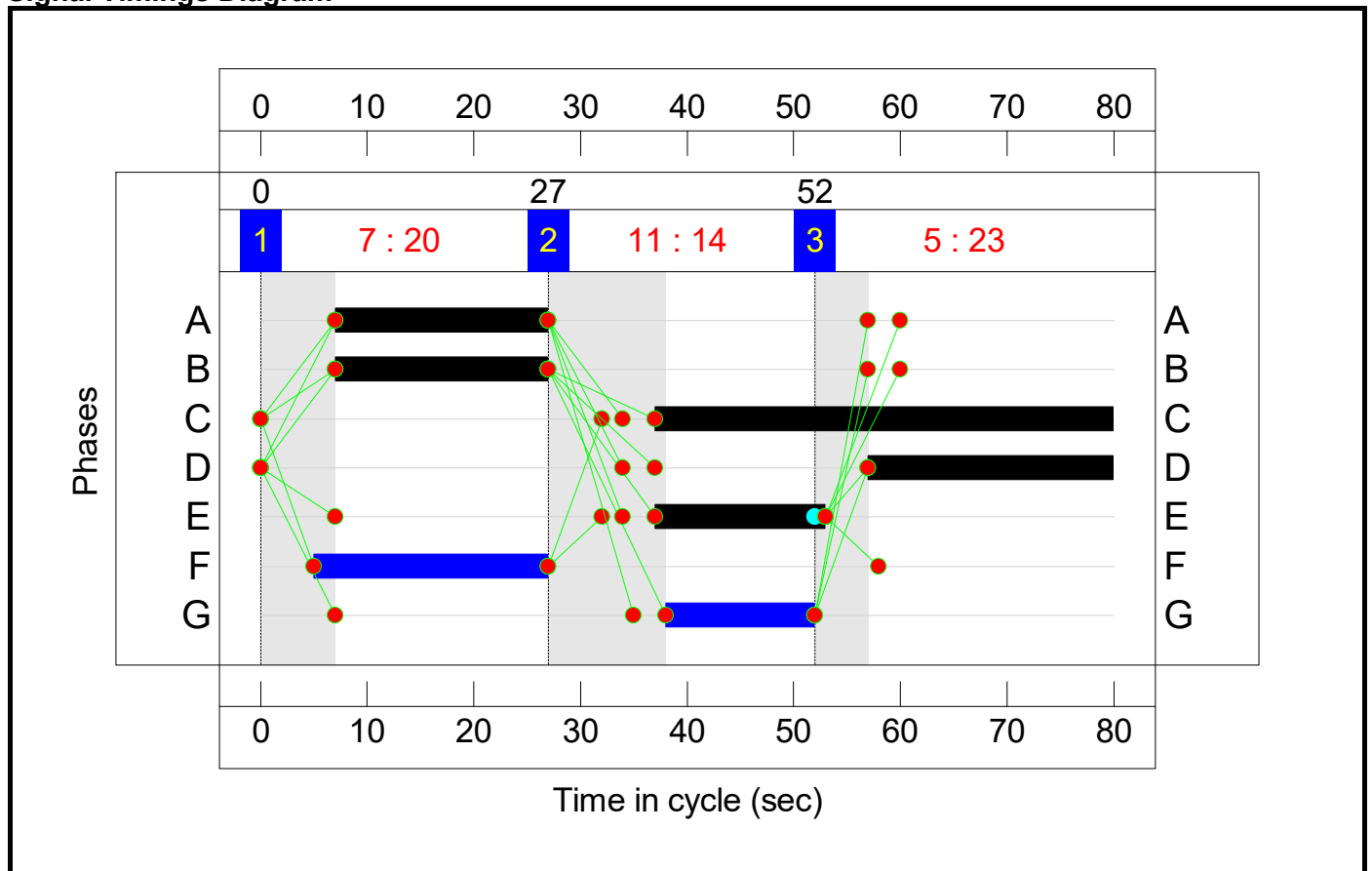
Stage Sequence Diagram



Stage Timings

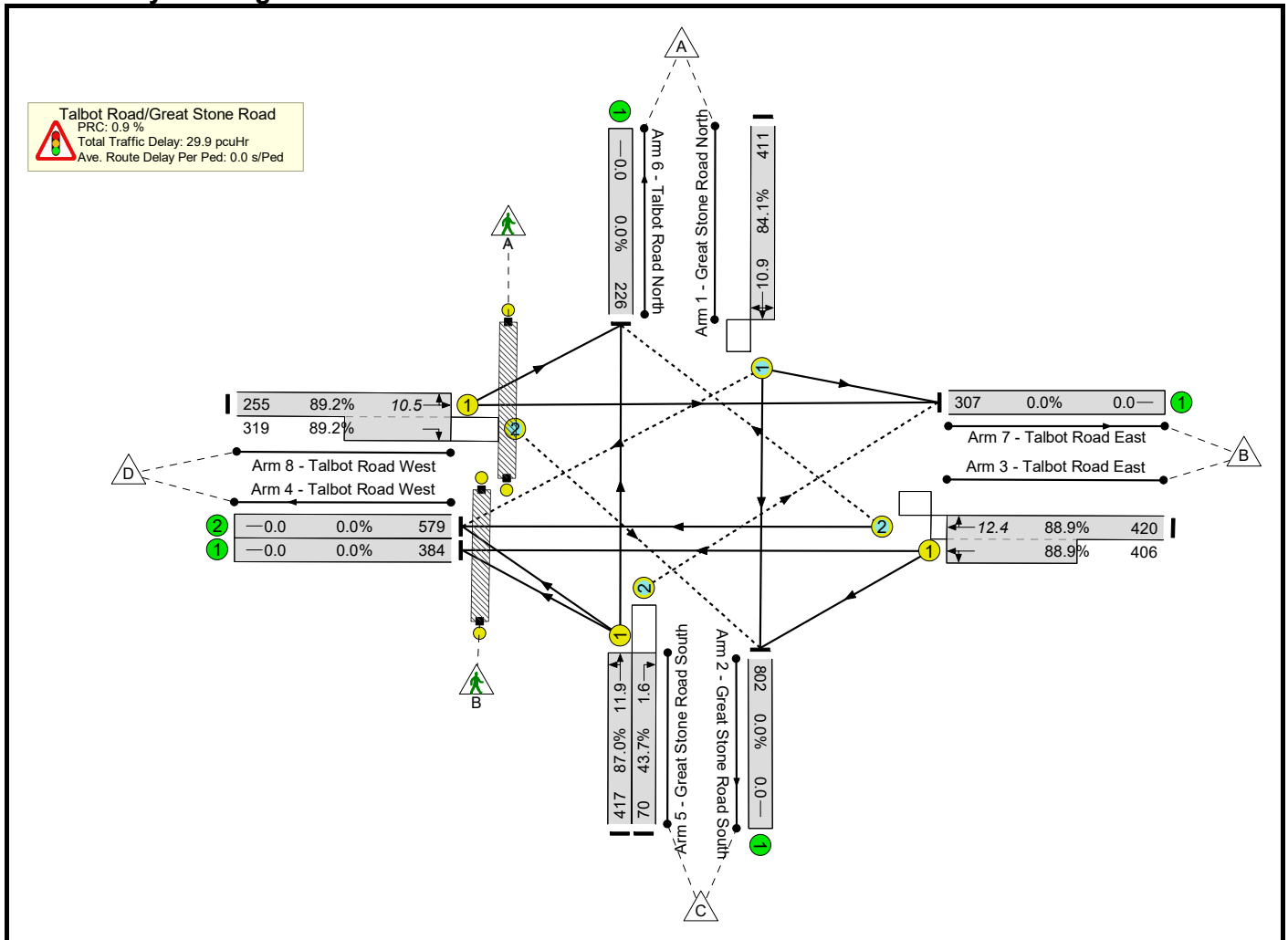
Stage	1	2	3
Duration	20	14	23
Change Point	0	27	52

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram





## 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: Great Stone Road Trafford	-	-	N/A	-	-		-	-	-	-	-	-	89.2%
Talbot Road/Great Stone Road	-	-	N/A	-	-		-	-	-	-	-	-	89.2%
1/1	Great Stone Road North Ahead Right Left	O	N/A	N/A	A		1	20	-	411	1967	489	84.1%
2/1	Great Stone Road South	U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
3/2+3/1	Talbot Road East Left Ahead Right	O+U	N/A	N/A	D		1	23	-	826	1869:1810	472+457	88.9 : 88.9%
4/1	Talbot Road West	U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
4/2	Talbot Road West	U	N/A	N/A	-		-	-	-	579	Inf	Inf	0.0%
5/1	Great Stone Road South Left Ahead	U	N/A	N/A	B		1	20	-	417	1825	479	87.0%
5/2	Great Stone Road South Right	O	N/A	N/A	B		1	20	-	70	2018	160	43.7%
6/1	Talbot Road North	U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
7/1	Talbot Road East	U	N/A	N/A	-		-	-	-	307	Inf	Inf	0.0%
8/1+8/2	Talbot Road West Right Left Ahead	U+O	N/A	N/A	C E		1	43:16	-	574	1846:1798	286+358	89.2 : 89.2%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	22	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	14	-	0	-	0	0.0%

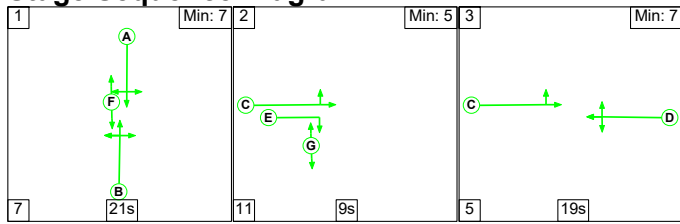
Full Input Data And Results

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)
<b>Network: Great Stone Road Trafford</b>	-	-	142	307	34	16.0	13.4	0.5	29.9	-	-	-	-
<b>Talbot Road/Great Stone Road</b>	-	-	142	307	34	16.0	13.4	0.5	29.9	-	-	-	-
1/1	411	411	40	0	20	3.1	2.5	0.2	5.8	50.9	8.4	2.5	10.9
2/1	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	826	826	34	0	0	5.8	3.7	0.0	9.5	41.6	8.7	3.7	12.4
4/1	384	384	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	579	579	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	417	417	-	-	-	3.3	3.1	-	6.3	54.6	8.8	3.1	11.9
5/2	70	70	69	0	1	0.4	0.4	0.3	1.1	56.2	1.2	0.4	1.6
6/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	307	307	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	574	574	0	307	12	3.3	3.7	0.0	7.1	44.4	6.7	3.7	10.5
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
C1      PRC for Signalled Lanes (%): 0.9      Total Delay for Signalled Lanes (pcuHr): 29.86      Cycle Time (s): 80 PRC Over All Lanes (%): 0.9      Total Delay Over All Lanes(pcuHr): 29.86													

Full Input Data And Results

Scenario 3: 'AM Peak plus Development' (FG3: 'AM Peak plus Development', Plan 1: 'Network Control Plan 1')

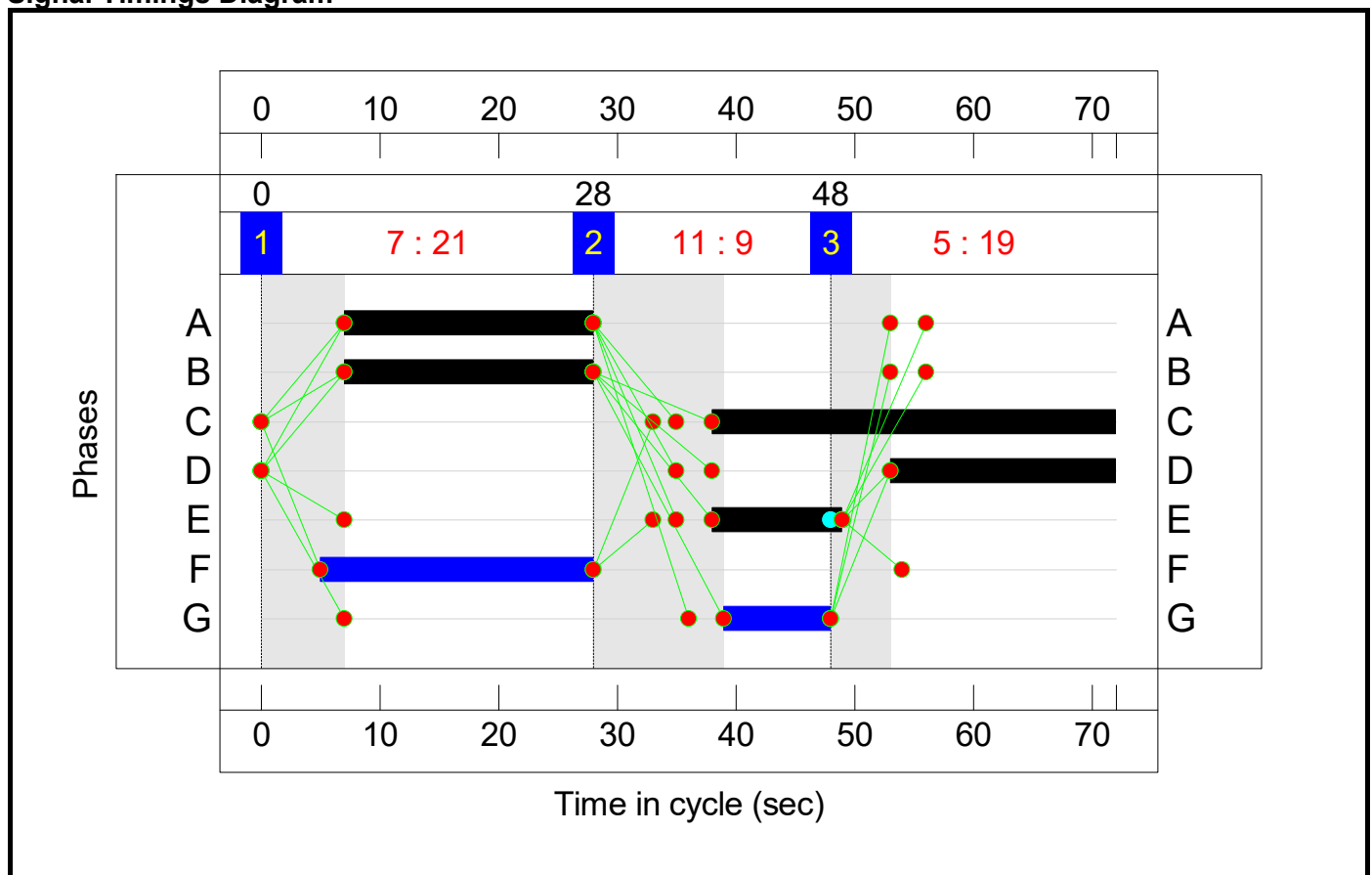
Stage Sequence Diagram



Stage Timings

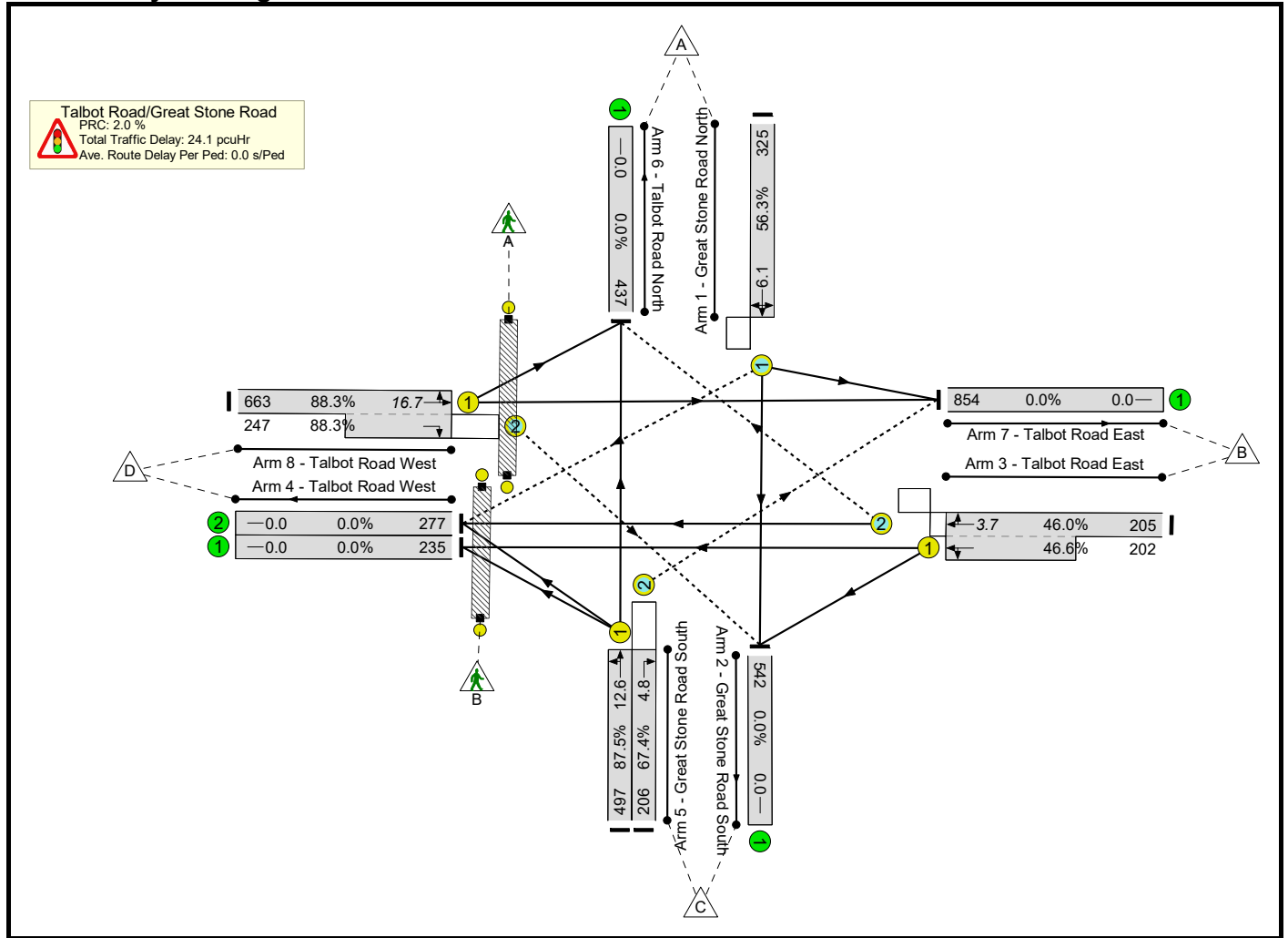
Stage	1	2	3
Duration	21	9	19
Change Point	0	28	48

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



## 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: Great Stone Road Trafford	-	-	N/A	-	-		-	-	-	-	-	-	88.3%
Talbot Road/Great Stone Road	-	-	N/A	-	-		-	-	-	-	-	-	88.3%
1/1	Great Stone Road North Ahead Right Left	O	N/A	N/A	A		1	21	-	325	1943	577	56.3%
2/1	Great Stone Road South	U	N/A	N/A	-		-	-	-	542	Inf	Inf	0.0%
3/2+3/1	Talbot Road East Left Ahead Right	O+U	N/A	N/A	D		1	19	-	407	1846:1812	446+434	46.0 : 46.6%
4/1	Talbot Road West	U	N/A	N/A	-		-	-	-	235	Inf	Inf	0.0%
4/2	Talbot Road West	U	N/A	N/A	-		-	-	-	277	Inf	Inf	0.0%
5/1	Great Stone Road South Left Ahead	U	N/A	N/A	B		1	21	-	497	1859	568	87.5%
5/2	Great Stone Road South Right	O	N/A	N/A	B		1	21	-	206	2018	306	67.4%
6/1	Talbot Road North	U	N/A	N/A	-		-	-	-	437	Inf	Inf	0.0%
7/1	Talbot Road East	U	N/A	N/A	-		-	-	-	854	Inf	Inf	0.0%
8/1+8/2	Talbot Road West Right Left Ahead	U+O	N/A	N/A	C E		1	34:11	-	910	1854:1798	751+280	88.3 : 88.3%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	23	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	9	-	0	-	0	0.0%

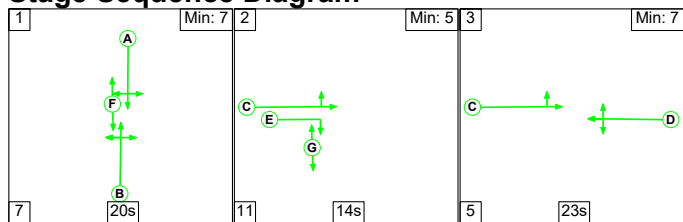
Full Input Data And Results

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)
<b>Network: Great Stone Road Trafford</b>	-	-	302	225	42	14.4	8.8	0.8	24.1	-	-	-	-
<b>Talbot Road/Great Stone Road</b>	-	-	302	225	42	14.4	8.8	0.8	24.1	-	-	-	-
1/1	325	325	40	0	0	1.9	0.6	0.1	2.7	29.6	5.4	0.6	6.1
2/1	542	542	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	407	407	75	0	1	2.4	0.4	0.2	3.0	26.5	3.3	0.4	3.7
4/1	235	235	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	277	277	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	497	497	-	-	-	3.3	3.2	-	6.5	46.9	9.4	3.2	12.6
5/2	206	206	187	0	19	1.2	1.0	0.5	2.7	47.3	3.8	1.0	4.8
6/1	437	437	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	854	854	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	910	910	0	225	22	5.7	3.6	0.0	9.2	36.4	13.2	3.6	16.7
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
C1      PRC for Signalled Lanes (%): 2.0      Total Delay for Signalled Lanes (pcuHr): 24.06      Cycle Time (s): 72 PRC Over All Lanes (%): 2.0      Total Delay Over All Lanes(pcuHr): 24.06													

Full Input Data And Results

Scenario 4: 'PM Peak plus Development' (FG4: 'PM Peak plus Development', Plan 1: 'Network Control Plan 1')

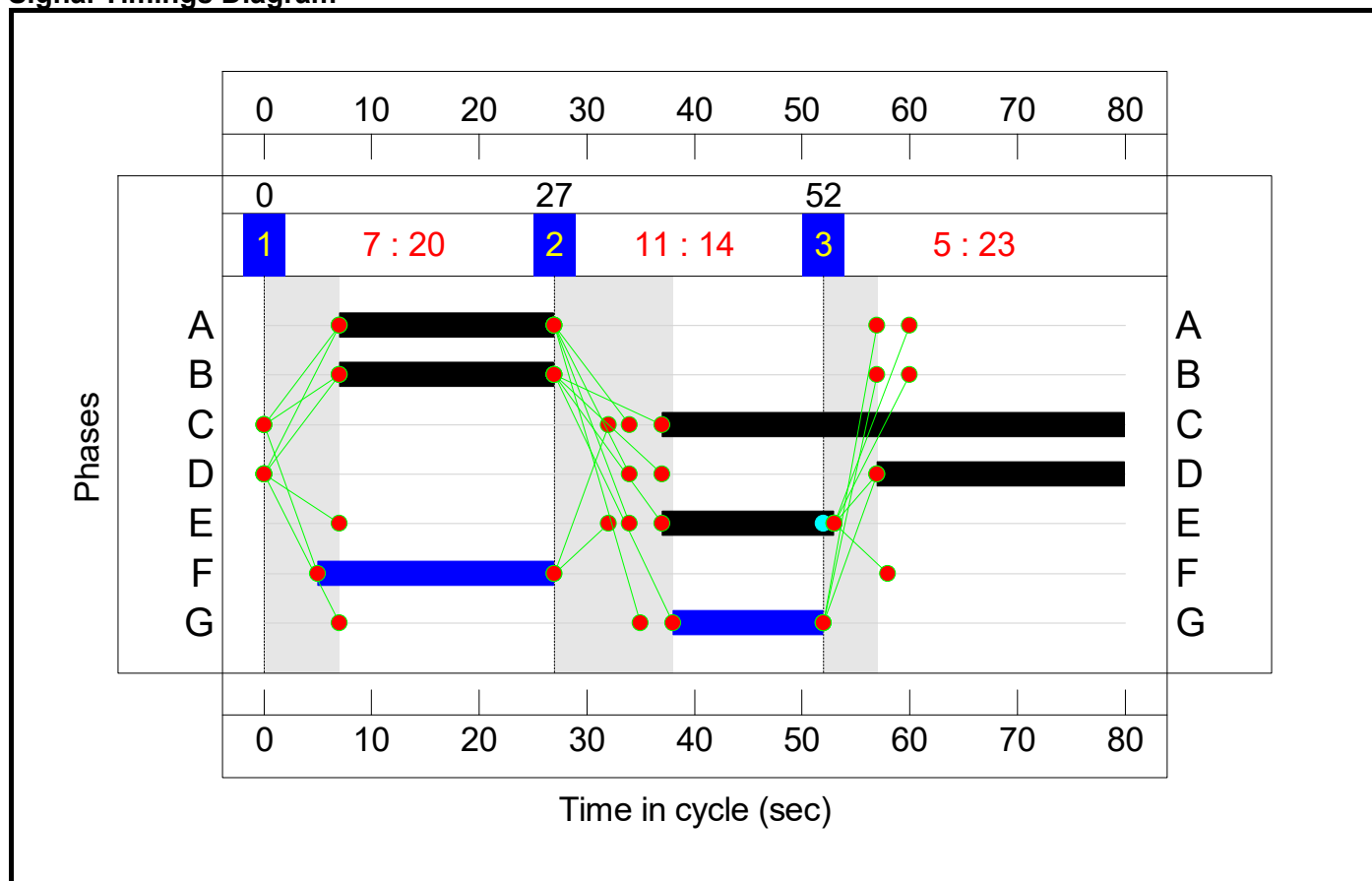
Stage Sequence Diagram



Stage Timings

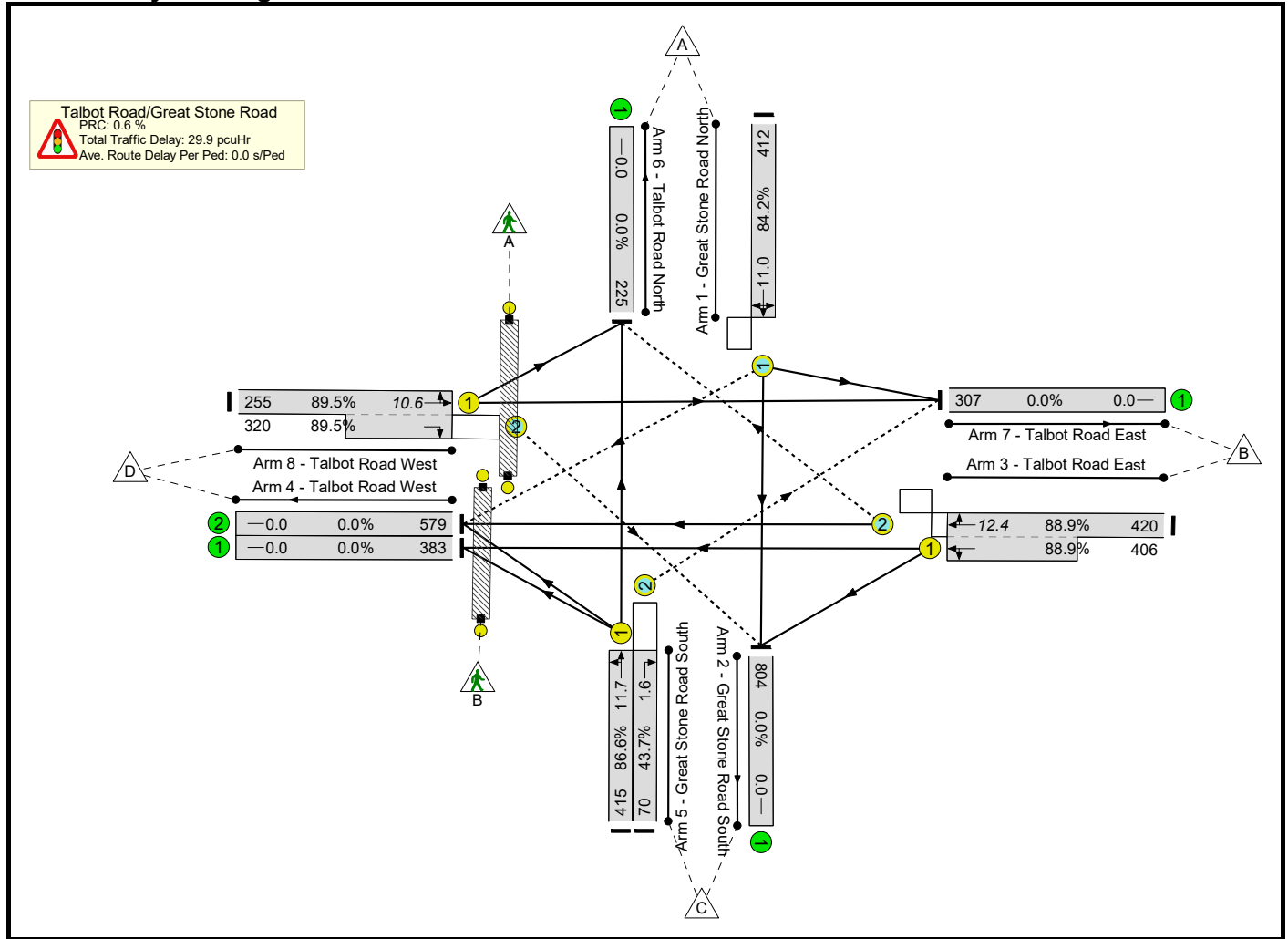
Stage	1	2	3
Duration	20	14	23
Change Point	0	27	52

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram





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 (%)
<b>Network: Great Stone Road Trafford</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>89.5%</b>
<b>Talbot Road/Great Stone Road</b>	-	-	N/A	-	-		-	-	-	-	-	-	<b>89.5%</b>
1/1	Great Stone Road North Ahead Right Left	O	N/A	N/A	A		1	20	-	412	1967	489	84.2%
2/1	Great Stone Road South	U	N/A	N/A	-		-	-	-	804	Inf	Inf	0.0%
3/2+3/1	Talbot Road East Left Ahead Right	O+U	N/A	N/A	D		1	23	-	826	1869:1810	472+457	88.9 : 88.9%
4/1	Talbot Road West	U	N/A	N/A	-		-	-	-	383	Inf	Inf	0.0%
4/2	Talbot Road West	U	N/A	N/A	-		-	-	-	579	Inf	Inf	0.0%
5/1	Great Stone Road South Left Ahead	U	N/A	N/A	B		1	20	-	415	1825	479	86.6%
5/2	Great Stone Road South Right	O	N/A	N/A	B		1	20	-	70	2018	160	43.7%
6/1	Talbot Road North	U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
7/1	Talbot Road East	U	N/A	N/A	-		-	-	-	307	Inf	Inf	0.0%
8/1+8/2	Talbot Road West Right Left Ahead	U+O	N/A	N/A	C E		1	43:16	-	575	1846:1798	285+358	89.5 : 89.5%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	22	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	14	-	0	-	0	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)
<b>Network: Great Stone Road Trafford</b>	-	-	144	308	32	16.0	13.4	0.5	29.9	-	-	-	-
<b>Talbot Road/Great Stone Road</b>	-	-	144	308	32	16.0	13.4	0.5	29.9	-	-	-	-
1/1	412	412	42	0	18	3.2	2.5	0.2	5.8	51.1	8.5	2.5	11.0
2/1	804	804	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	826	826	34	0	0	5.8	3.7	0.0	9.5	41.6	8.7	3.7	12.4
4/1	383	383	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	579	579	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	415	415	-	-	-	3.2	3.0	-	6.2	53.9	8.8	3.0	11.7
5/2	70	70	68	0	2	0.4	0.4	0.3	1.1	56.3	1.2	0.4	1.6
6/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	307	307	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	575	575	0	308	12	3.3	3.8	0.0	7.2	44.9	6.8	3.8	10.6
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
C1      PRC for Signalled Lanes (%): 0.6      Total Delay for Signalled Lanes (pcuHr): 29.88      Cycle Time (s): 80 PRC Over All Lanes (%): 0.6      Total Delay Over All Lanes(pcuHr): 29.88													