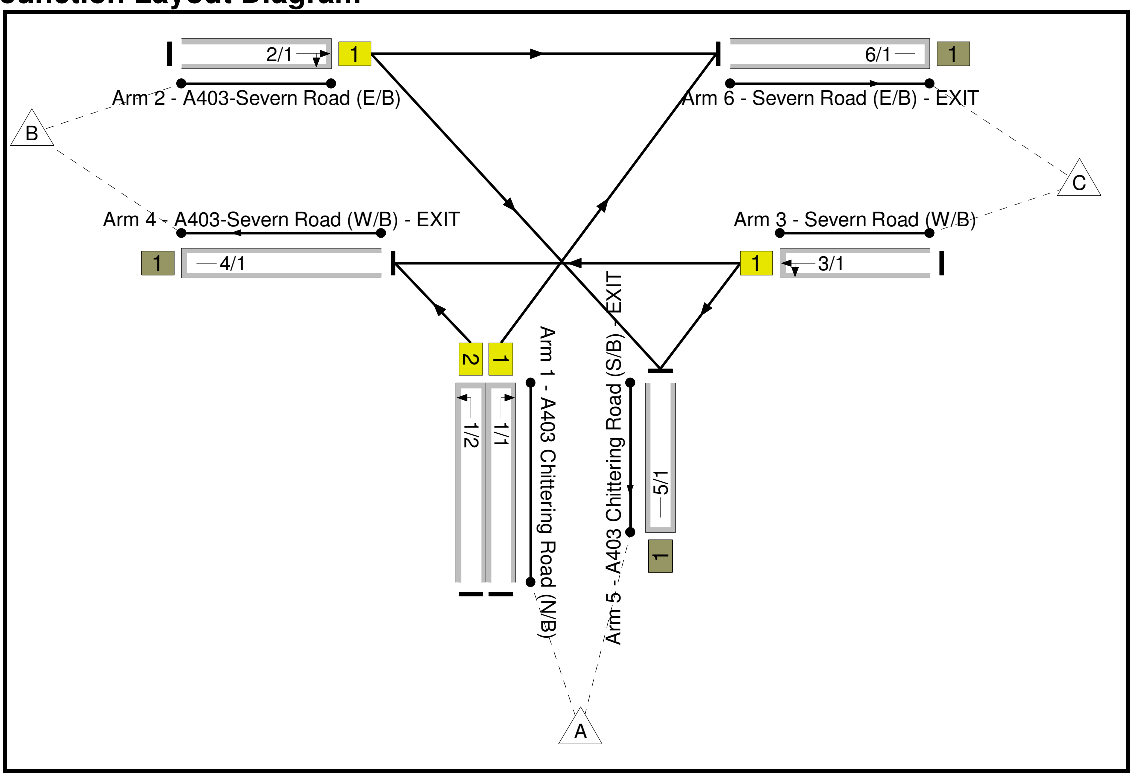
CHITTENING RD / SEVERN RD - JUNCTION IMPROVEMENT ASSESSMENT

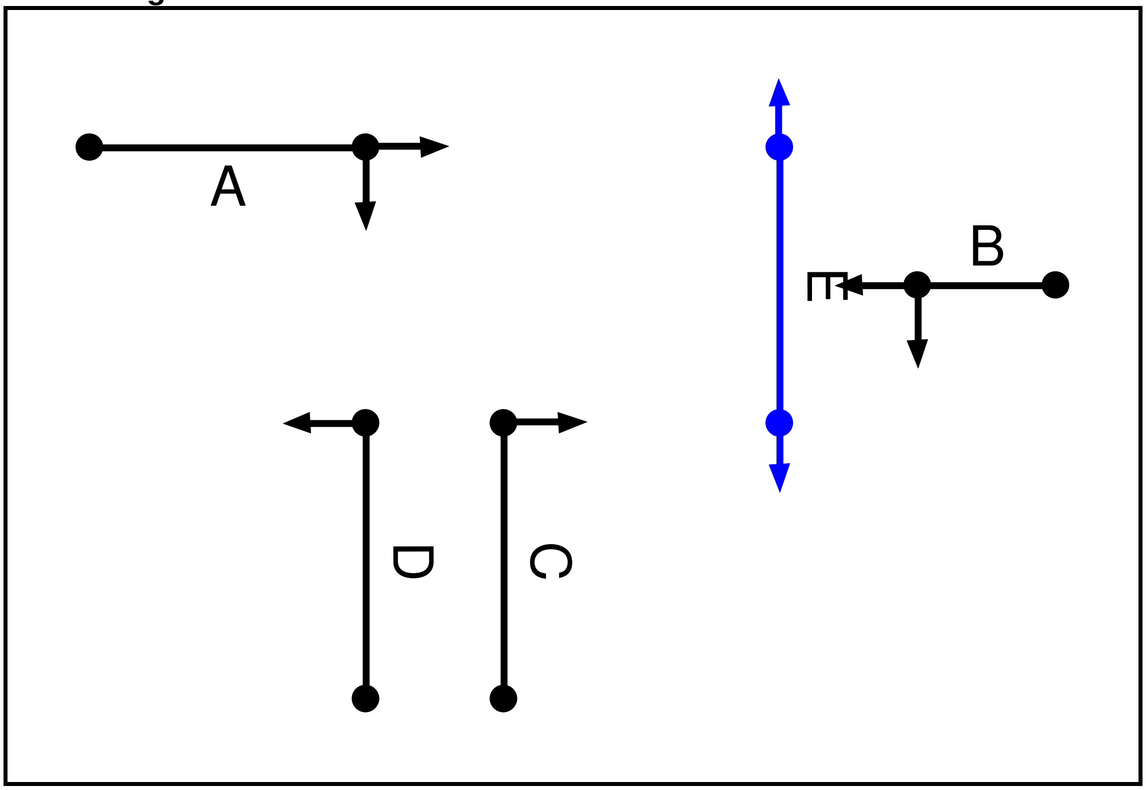
User and Project Details

Project:	**PROPOSED RRC, SEVERN ROAD, AVONMOUTH**
Title:	
Location:	A403-CHITTENING ROAD / SEVERN ROAD
File name:	091020_402-0036-00374_Severn_Rd_Improvements.lsgx
Author:	STUART CHOAK
Company:	SLR CONSULTING LTD
Address:	LANGFORD LODGE, 109 PEMBROKE ROAD, CLIFTON, BRISTOL, BS8 3EU
Controller:	Generic
SCN:	402.0036.00374
Notes:	

Junction Layout Diagram



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	Pedestrian		6	6

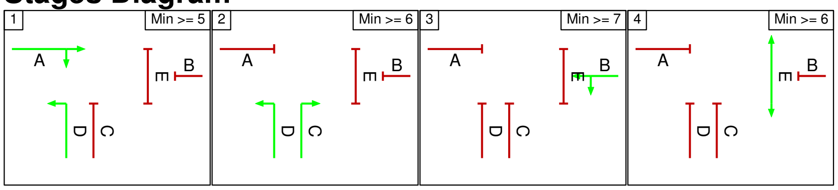
Phase Intergreens Matrix

	Starting Phase					
		A	B	C	D	E
Terminating Phase	A		5	5	-	-
	B	5		6	7	5
	C	5	6		-	-
	D	-	7	-		-
	E	11	11	11	11	

Phases in Stage

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

Stages Diagram



Phase Delays

There are no phase delays defined in this stage stream

Prohibited Stage Changes

		To Stage			
		1	2	3	4
From Stage	1		5	7	0
	2	5		7	0
	3	7	7		5
	4	11	11	11	

Link Input Data

Arm/ Link	Link Name	Link Type	Num Lanes	Phases	Start Disp.	End Disp.
1/1	A403 Chittering Road (N/B) Right	U	1	C	2	3
1/2	A403 Chittering Road (N/B) Left	U	1	D	2	3
2/1	A403-Severn Road (E/B) Right Ahead	U	1	A	2	3
3/1	Severn Road (W/B) Ahead Left	U	1	B	2	3
4/1	A403-Severn Road (W/B) - EXIT	U	1		2	3
5/1	A403 Chittering Road (S/B) - EXIT	U	1		2	3
6/1	Severn Road (E/B) - EXIT	U	1		2	3

Give-Way Link Input Data

Lane Input Data

Arm/ Lane	Link Num	Physical Length (PCU)	Expected Usage (PCU)	Sat Flow Type	User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)
1/1 (A403 Chittering Road (N/B) Lane 1)	Link 2 (A403 Chittering Road (N/B) Left)	Inf	Inf	Geom	1800	3.50	0.00	Y	Arm 4 Left (A403-Severn Road (W/B) - EXIT)	20.00
1/2 (A403 Chittering Road (N/B) Lane 2)	Link 1 (A403 Chittering Road (N/B) Right)	Inf	Inf	Geom	1800	3.70	0.00	N	Arm 6 Right (Severn Road (E/B) - EXIT)	13.00
2/1 (A403-Severn Road (E/B) Lane 1)	Link 1 (A403-Severn Road (E/B) Right Ahead)	Inf	Inf	Geom	1800	3.70	0.00	Y	Arm 5 Right (A403 Chittering Road (S/B) - EXIT)	18.00
									Arm 6 Ahead (Severn Road (E/B) - EXIT)	Inf
3/1 (Severn Road (W/B) Lane 1)	Link 1 (Severn Road (W/B) Ahead Left)	Inf	Inf	Geom	1800	3.65	0.00	Y	Arm 4 Ahead (A403-Severn Road (W/B) - EXIT)	Inf
									Arm 5 Left (A403 Chittering Road (S/B) - EXIT)	15.00
4/1 (A403-Severn Road (W/B) - EXIT Lane 1)	Link 1 (A403-Severn Road (W/B) - EXIT)	Inf	Inf	Inf (Exit)	1800	3.25	0.00	Y		
5/1 (A403 Chittering Road (S/B) - EXIT Lane 1)	Link 1 (A403 Chittering Road (S/B) - EXIT)	Inf	Inf	Inf (Exit)	1800	3.25	0.00	Y		

6/1 (Severn Road (E/B) - EXIT Lane 1)	Link 1 (Severn Road (E/B) - EXIT)	Inf	Inf	Inf (Exit)	1800	3.25	0.00	Y		

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM Peak - Base + Development'	07:30	08:30	01:00	
2: 'PM Peak - Base + Development'	17:00	18:00	01:00	

Flow Group 1: 'AM Peak - Base + Development'

Traffic Flow Matrix

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	662	100	762
	B	591	0	134	725
	C	139	97	0	236
	Tot.	730	759	234	1723

Link Traffic Flows

Arm/Link	Flow Group 1: AM Peak - Base + Development
1/1	100
1/2	662
2/1	725
3/1	236
4/1	759
5/1	730
6/1	234

Lane Saturation Flows

Arm/ Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat flow (PCU/Hr)
1/1 (A403 Chittering Road (N/B) Lane 1)	3.50	0.00	Y	Arm 4 Left (A403-Severn Road (W/B) - EXIT)	20.00	100.0 %	1828
1/2 (A403 Chittering Road (N/B) Lane 2)	3.70	0.00	N	Arm 6 Right (Severn Road (E/B) - EXIT)	13.00	100.0 %	1905
2/1 (A403-Severn Road (E/B) Lane 1)	3.70	0.00	Y	Arm 5 Right (A403 Chittering Road (S/B) - EXIT)	18.00	81.5 %	1859
				Arm 6 Ahead (Severn Road (E/B) - EXIT)	Inf	18.5 %	
3/1 (Severn Road (W/B) Lane 1)	3.65	0.00	Y	Arm 4 Ahead (A403-Severn Road (W/B) - EXIT)	Inf	41.1 %	1870
				Arm 5 Left (A403 Chittering Road (S/B) - EXIT)	15.00	58.9 %	
4/1 (A403-Severn Road (W/B) - EXIT Lane 1)	Infinite Saturation Flow (on Exit Link)						Inf
5/1 (A403 Chittering Road (S/B) - EXIT Lane 1)	Infinite Saturation Flow (on Exit Link)						Inf
6/1 (Severn Road (E/B) - EXIT Lane 1)	Infinite Saturation Flow (on Exit Link)						Inf

Flow Group 2: 'PM Peak - Base + Development'
Traffic Flow Matrix
Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	759	125	884
	B	406	0	123	529
	C	80	114	0	194
	Tot.	486	873	248	1607

Link Traffic Flows

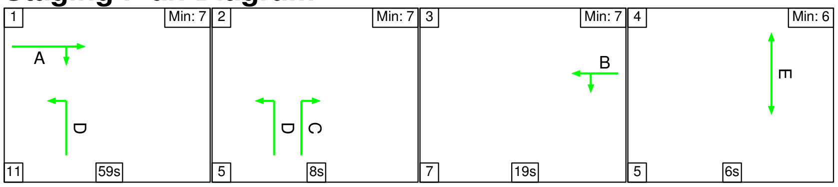
Arm/Link	Flow Group 2: PM Peak - Base + Development
1/1	125
1/2	759
2/1	529
3/1	194
4/1	873
5/1	486
6/1	248

Lane Saturation Flows

Arm/ Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat flow (PCU/Hr)
1/1 (A403 Chittering Road (N/B) Lane 1)	3.50	0.00	Y	Arm 4 Left (A403-Severn Road (W/B) - EXIT)	20.00	100.0 %	1828
1/2 (A403 Chittering Road (N/B) Lane 2)	3.70	0.00	N	Arm 6 Right (Severn Road (E/B) - EXIT)	13.00	100.0 %	1905
2/1 (A403-Severn Road (E/B) Lane 1)	3.70	0.00	Y	Arm 5 Right (A403 Chittering Road (S/B) - EXIT)	18.00	76.7 %	1866
				Arm 6 Ahead (Severn Road (E/B) - EXIT)	Inf	23.3 %	
3/1 (Severn Road (W/B) Lane 1)	3.65	0.00	Y	Arm 4 Ahead (A403-Severn Road (W/B) - EXIT)	Inf	58.8 %	1902
				Arm 5 Left (A403 Chittering Road (S/B) - EXIT)	15.00	41.2 %	
4/1 (A403-Severn Road (W/B) - EXIT Lane 1)	Infinite Saturation Flow (on Exit Link)						Inf
5/1 (A403 Chittering Road (S/B) - EXIT Lane 1)	Infinite Saturation Flow (on Exit Link)						Inf
6/1 (Severn Road (E/B) - EXIT Lane 1)	Infinite Saturation Flow (on Exit Link)						Inf

Scenario 1: 'AM Peak - Base + Development'
Staging Plan 1: 'Staging Plan No. 1'
Flow Group 1: 'AM Peak - Base + Development'

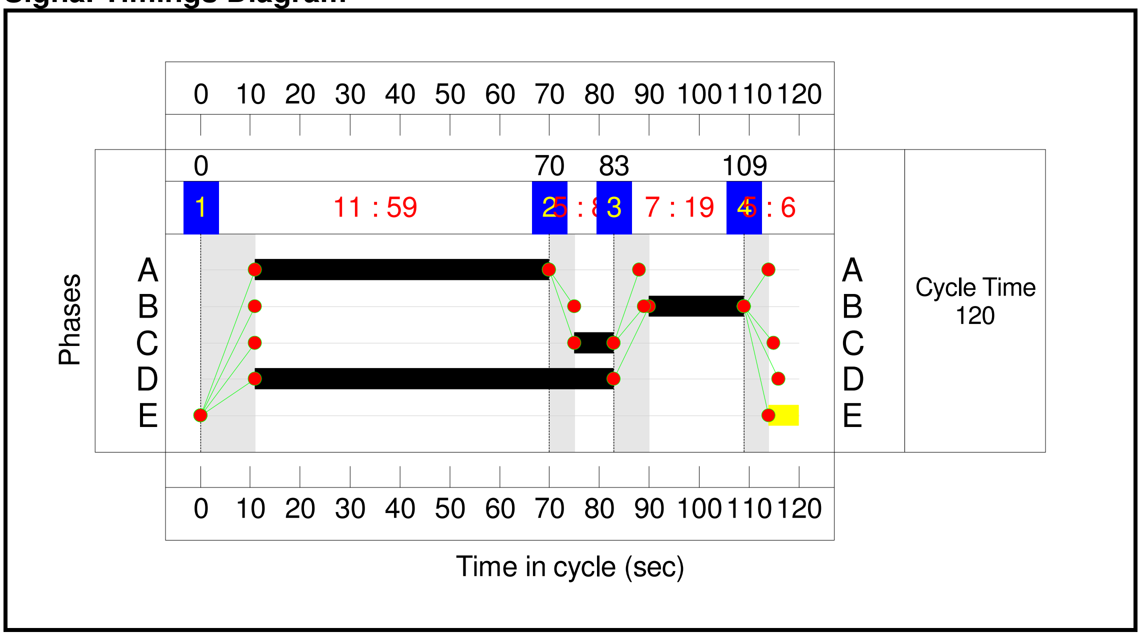
Staging Plan Diagram



Stage Timings

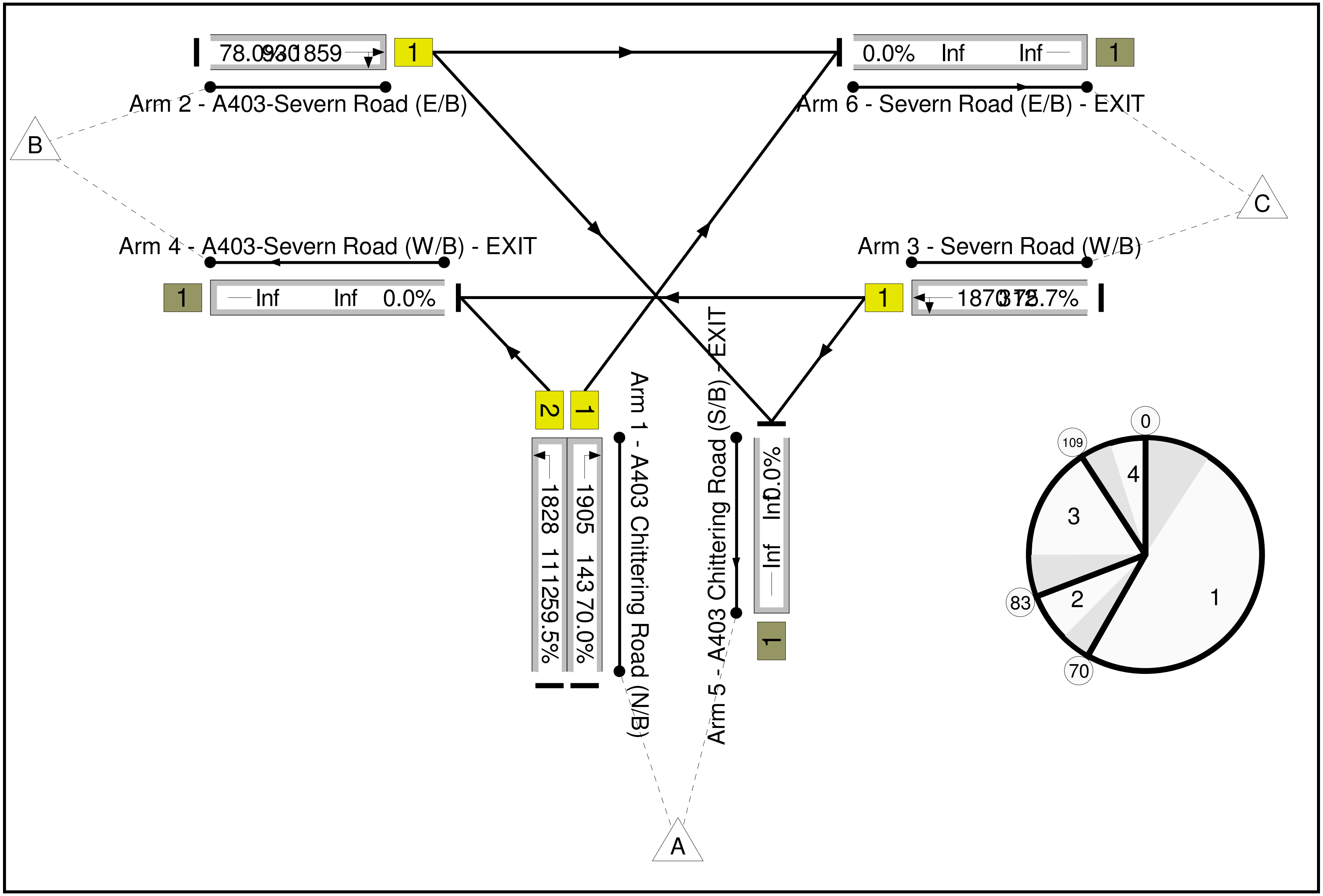
Stage	1	2	3	4
Duration	59	8	19	6
Change Point	0	70	83	109

Signal Timings Diagram



Junction Layout Diagram

CHITTENING RD / SEVERN RD - JUNCTION IMPROVEMENT ASSESSMENT



Link Results

Link Num	Link Desc	Link Type	Stage Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Ave Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
1/1	A403 Chittering Road (N/B) Right	U	N/A	N/A	C		1	8	-	100	1905	1905	143	70.0
1/2	A403 Chittering Road (N/B) Left	U	N/A	N/A	D		1	72	-	662	1828	1828	1112	59.5
2/1	A403-Severn Road (E/B) Right Ahead	U	N/A	N/A	A		1	59	-	725	1859	1859	930	78.0
3/1	Severn Road (W/B) Ahead Left	U	N/A	N/A	B		1	19	-	236	1870	1870	312	75.7
4/1	A403-Severn Road (W/B) - EXIT	U	N/A	N/A	-		-	-	-	759	Inf	Inf	Inf	0.0
5/1	A403 Chittering Road (S/B) - EXIT	U	N/A	N/A	-		-	-	-	730	Inf	Inf	Inf	0.0
6/1	Severn Road (E/B) - EXIT	U	N/A	N/A	-		-	-	-	234	Inf	Inf	Inf	0.0

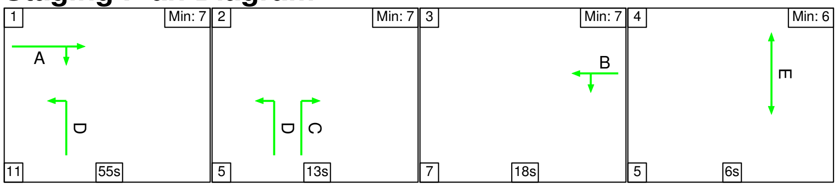
CHITTENING RD / SEVERN RD - JUNCTION IMPROVEMENT ASSESSMENT

Link Num	Entering (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 Veh (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
1/1	100	100	-	-	-	1.5	1.1	-	2.6	94.1	3.3	1.1	4.4	
1/2	662	662	-	-	-	2.7	0.7	-	3.4	18.4	13.4	0.7	14.2	
2/1	725	725	-	-	-	5.0	1.7	-	6.7	33.2	19.7	1.7	21.5	
3/1	236	236	-	-	-	3.1	1.5	-	4.6	70.6	7.5	1.5	9.0	
4/1	759	759	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
5/1	730	730	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	234	234	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

PRC for Signalled Links (%): 15.4 Total Delay for Signalled Links (pcuHr): 17.32
PRC Over All Links (%): 15.4 Total Delay Over All Links(pcuHr): 17.32 Cycle Time (s): 120

Scenario 2: 'PM Peak - Base + Development'
Staging Plan 1: 'Staging Plan No. 1'
Flow Group 2: 'PM Peak - Base + Development'

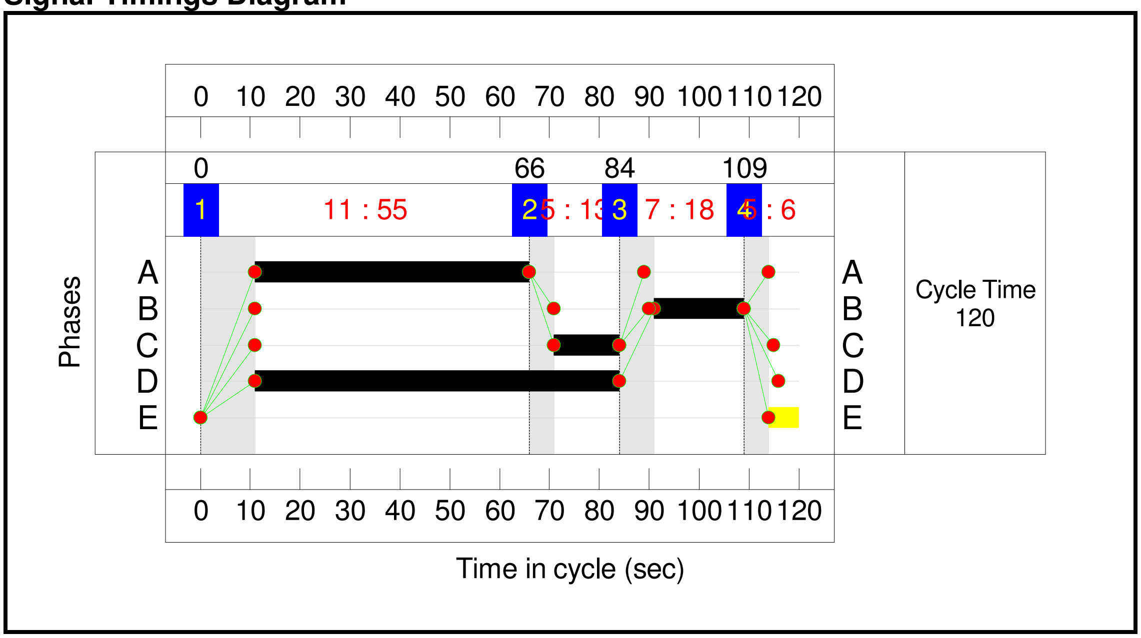
Staging Plan Diagram



Stage Timings

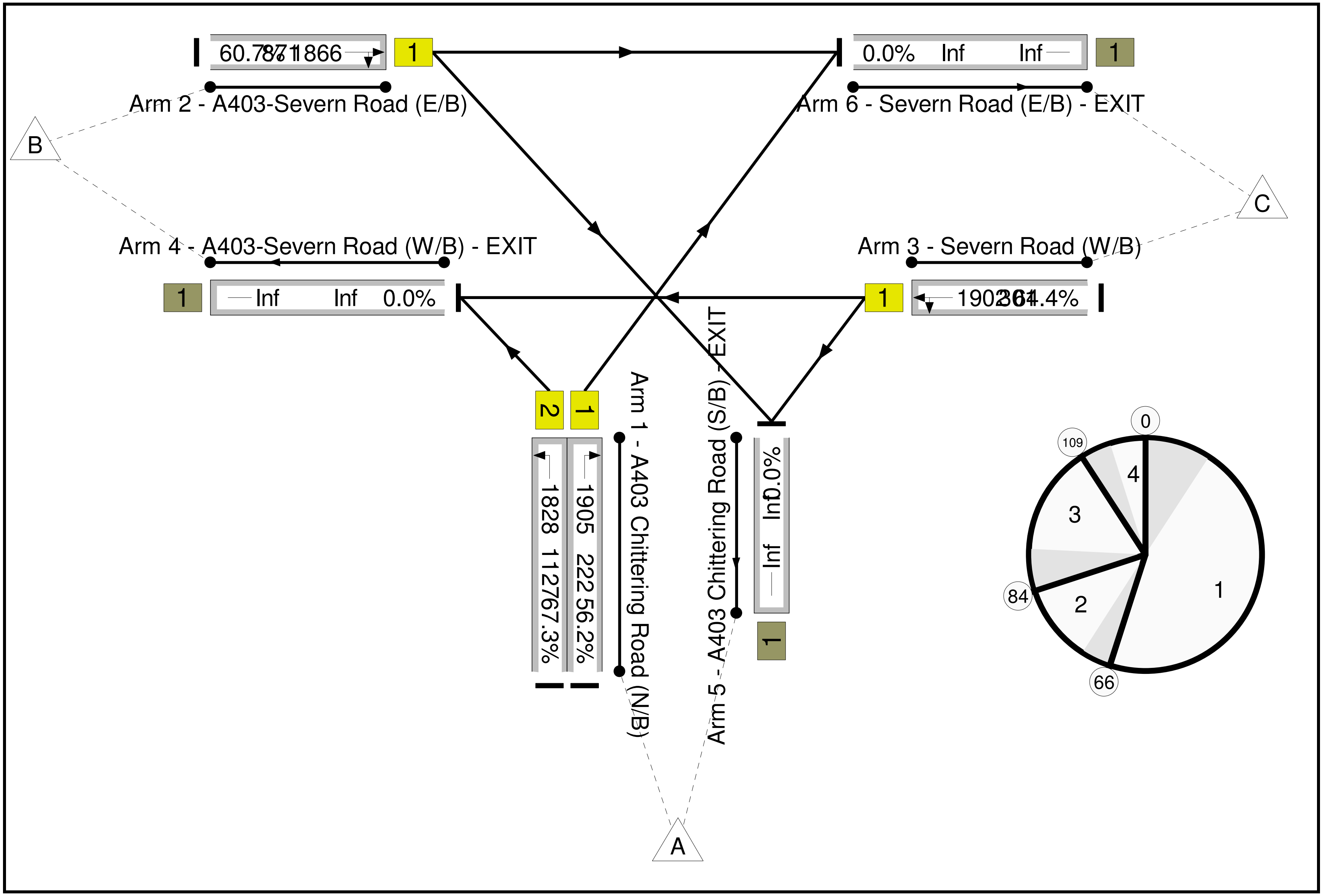
Stage	1	2	3	4
Duration	55	13	18	6
Change Point	0	66	84	109

Signal Timings Diagram



Junction Layout Diagram

CHITTENING RD / SEVERN RD - JUNCTION IMPROVEMENT ASSESSMENT



Link Results

Link Num	Link Desc	Link Type	Stage Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Max Sat Flow (pcu/Hr)	Ave Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
1/1	A403 Chittering Road (N/B) Right	U	N/A	N/A	C		1	13	-	125	1905	1905	222	56.2
1/2	A403 Chittering Road (N/B) Left	U	N/A	N/A	D		1	73	-	759	1828	1828	1127	67.3
2/1	A403-Severn Road (E/B) Right Ahead	U	N/A	N/A	A		1	55	-	529	1866	1866	871	60.7
3/1	Severn Road (W/B) Ahead Left	U	N/A	N/A	B		1	18	-	194	1902	1902	301	64.4
4/1	A403-Severn Road (W/B) - EXIT	U	N/A	N/A	-		-	-	-	873	Inf	Inf	Inf	0.0
5/1	A403 Chittering Road (S/B) - EXIT	U	N/A	N/A	-		-	-	-	486	Inf	Inf	Inf	0.0
6/1	Severn Road (E/B) - EXIT	U	N/A	N/A	-		-	-	-	248	Inf	Inf	Inf	0.0

CHITTENING RD / SEVERN RD - JUNCTION IMPROVEMENT ASSESSMENT

Link Num	Entering (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 Veh (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
1/1	125	125	-	-	-	1.7	0.6	-	2.4	68.4	3.9	0.6	4.6	
1/2	759	759	-	-	-	3.2	1.0	-	4.2	19.9	16.4	1.0	17.5	
2/1	529	529	-	-	-	3.5	0.8	-	4.3	29.1	13.1	0.8	13.8	
3/1	194	194	-	-	-	2.6	0.9	-	3.4	63.9	6.0	0.9	6.9	
4/1	873	873	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
5/1	486	486	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	248	248	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

PRC for Signalled Links (%): 33.7 Total Delay for Signalled Links (pcuHr): 14.29
PRC Over All Links (%): 33.7 Total Delay Over All Links(pcuHr): 14.29 Cycle Time (s): 120