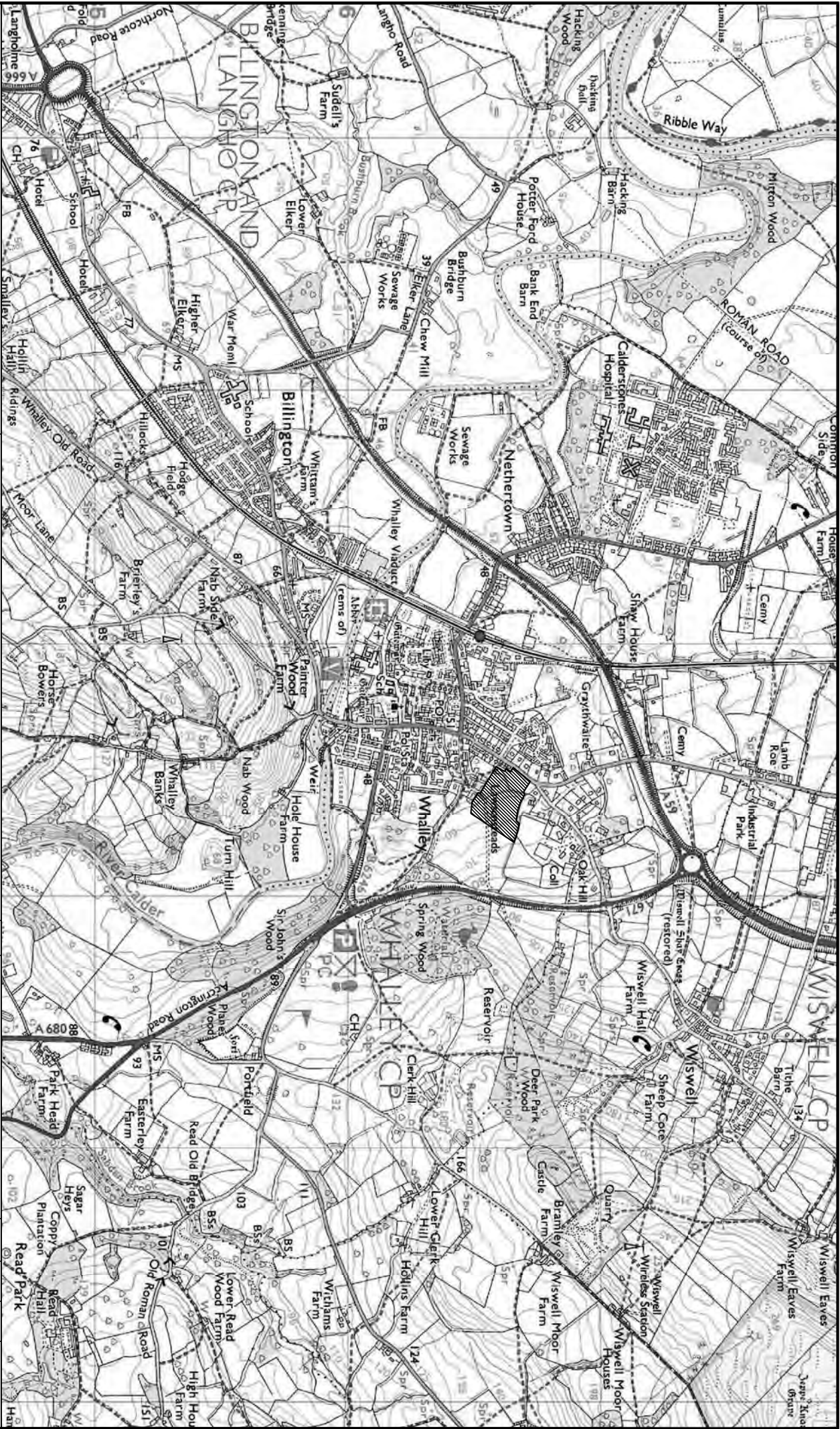


APPENDIX BGH 1



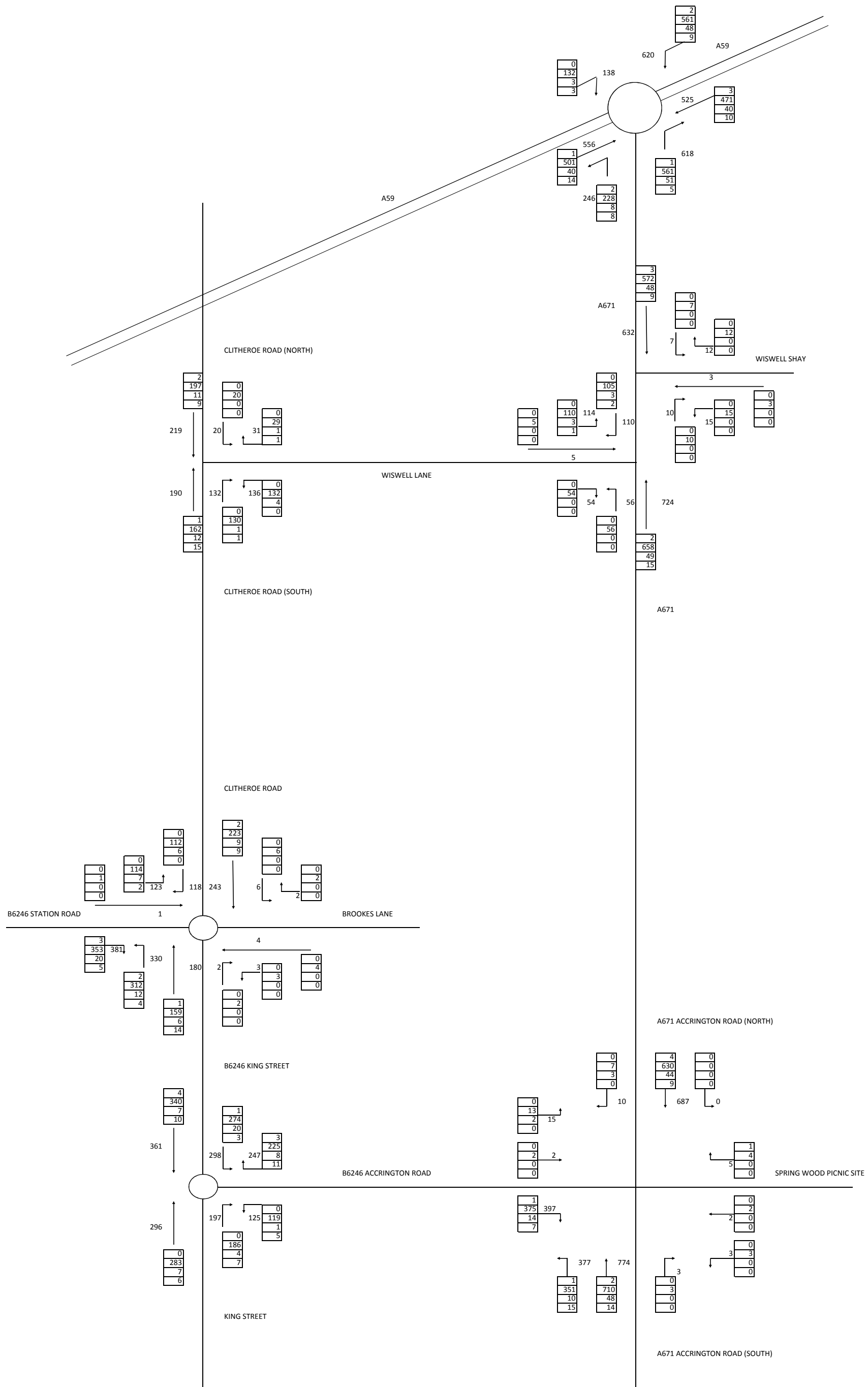
Client		COMMERCIAL ESTATES GROUP LTD	
Project		PROPOSED DEVELOPMENT LAWSONSTEADS FARM, WHALLEY	
Title		SITE LOCATION PLAN	
Rev		Amendments	
Scale		1:20,000 @ A4	
Drawn		AM	
Job No		10/228	
Date		March 2012	
Checked		DJP	
Drawing No		BGH1	
Doc Sheet No		Approved	
DJP		Rev	
Date		-	

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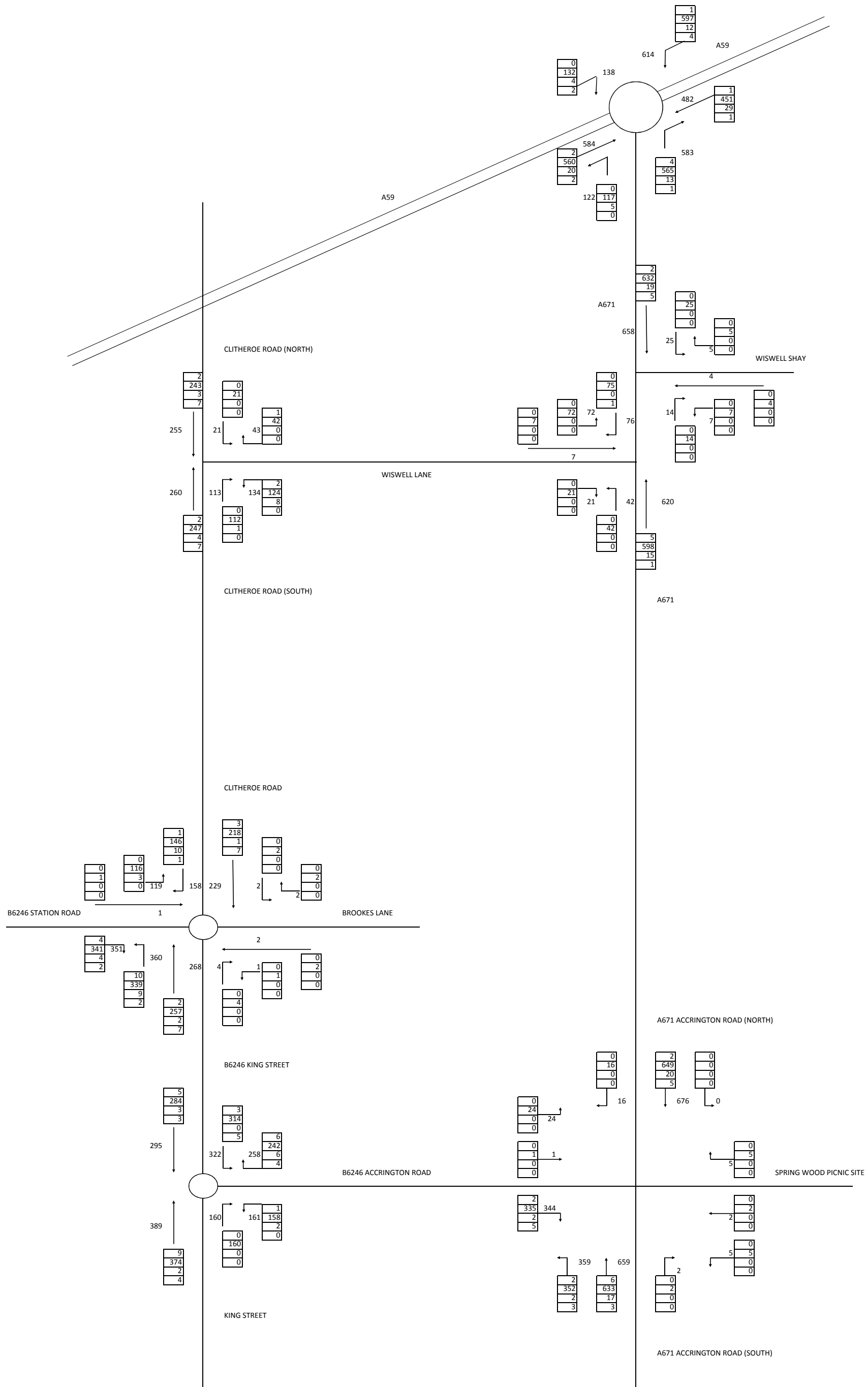
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APPENDIX BGH 2

**2010 EXISTING TRAFFIC FLOWS
CEG, WHALLEY
08:00 - 09:00**



**2010 EXISTING TRAFFIC FLOWS
CEG, WHALLEY
17:00 - 18:00**



APPENDIX BGH 3

ARCADY 8	
Version: 8.0.0.296 [27 Feb 2012]	
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Filename: 2010 Existing and 2017 Base Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\PICADY\Clitheroe Road-Wiswell Lane

Report generation date: 28/03/2012 10:17:26

Existing Layout - 2010 Existing, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Stream B-AC	0.58	0.19	0.37	B	76% [Stream B-AC]
Stream C-AB	0.59	0.13	0.31	A	
Stream C-A	-	-	-	-	
Stream A-B	-	-	-	-	
Stream A-C	-	-	-	-	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met

'D1 - 2010 Existing, AM Peak' model duration: 07:45 - 09:15

'D2 - 2010 Existing, PM Peak' model duration: 16:45 - 18:15

'D3 - 2017 Base, AM Peak' model duration: 07:45 - 09:15

'D4 - 2017 Base, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 10:17:23

File summary

File Description

Title	2010 Existing and 2016 Assessment
Location	Clitheroe Road/Wiswell Lane
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	rspencer [BGH19]

Description	Citheroe Road/Wiswell Lane - Priority Junction
--------------------	--

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2010 Existing, AM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing	ARCADY		✓				100.000	100.000	

3

Junction	Stream	Intercept (Veh/hr)	for A-B	for A-C	for C-A	for C-B
1	B-A	493.080	0.084	0.212	0.133	0.303
1	B-C	633.380	0.091	0.229	-	-
1	C-B	620.292	0.225	0.225	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	239.00	100.000
B	ONE HOUR	✓	167.00	100.000
C	ONE HOUR	✓	322.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

	To		
	A	B	C
From	A	0.000	20.000
	B	31.000	0.000
	C	190.000	132.000

Turning Proportions (Veh) - Junction 1 (for whole period)

	To		
	A	B	C
From	A	0.00	0.08
	B	0.19	0.00
	C	0.59	0.41

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

	To		
	A	B	C
From	A	1.000	1.087

From	B	1.063	1.000	1.027
	C	1.137	1.013	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

From	To			
		A	B	C
	A	0.000	0.000	8.660
	B	6.250	0.000	2.740
	C	13.740	1.330	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
B-AC	0.37	0.19	0.58	B	153.24	229.86	38.90	0.17	0.43	38.91	0.17
C-AB	0.31	0.13	0.59	A	165.18	247.78	38.86	0.16	0.43	38.86	0.16
C-A	-	-	-	-	130.29	195.43	-	-	-	-	-
A-B	-	-	-	-	18.35	27.53	-	-	-	-	-
A-C	-	-	-	-	200.96	301.44	-	-	-	-	-

Main Results for each time segment

Main results: (07:45-08:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	125.73	31.43	124.48	0.00	524.36	0.240	0.00	0.31	0.150	A
C-AB	126.74	31.68	125.55	0.00	660.68	0.192	0.00	0.30	0.112	A
C-A	115.68	28.92	115.68	0.00	-	-	-	-	-	-
A-B	15.06	3.76	15.06	0.00	-	-	-	-	-	-
A-C	164.87	41.22	164.87	0.00	-	-	-	-	-	-

Main results: (08:00-08:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	150.13	37.53	149.74	0.00	512.75	0.293	0.31	0.41	0.165	A
C-AB	159.29	39.82	158.89	0.00	671.05	0.237	0.30	0.40	0.117	A
C-A	130.18	32.54	130.18	0.00	-	-	-	-	-	-
A-B	17.98	4.49	17.98	0.00	-	-	-	-	-	-
A-C	196.88	49.22	196.88	0.00	-	-	-	-	-	-

Main results: (08:15-08:30)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	183.87	45.97	183.19	0.00	496.46	0.370	0.41	0.58	0.191	B
C-AB	209.13	52.28	208.41	0.00	685.80	0.305	0.40	0.58	0.125	A
C-A	145.40	36.35	145.40	0.00	-	-	-	-	-	-
A-B	22.02	5.51	22.02	0.00	-	-	-	-	-	-

A-C	241.12	60.28	241.12	0.00	-	-	-	-	-	-
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Main results: (08:30-08:45)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	183.87	45.97	183.85	0.00	496.39	0.370	0.58	0.58	0.192	B
C-AB	209.32	52.33	209.29	0.00	685.94	0.305	0.58	0.59	0.126	A
C-A	145.21	36.30	145.21	0.00	-	-	-	-	-	-
A-B	22.02	5.51	22.02	0.00	-	-	-	-	-	-
A-C	241.12	60.28	241.12	0.00	-	-	-	-	-	-

Main results: (08:45-09:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	150.13	37.53	150.78	0.00	512.65	0.293	0.58	0.42	0.166	A
C-AB	159.54	39.89	160.23	0.00	671.22	0.238	0.59	0.41	0.118	A
C-A	129.93	32.48	129.93	0.00	-	-	-	-	-	-
A-B	17.98	4.49	17.98	0.00	-	-	-	-	-	-
A-C	196.88	49.22	196.88	0.00	-	-	-	-	-	-

Main results: (09:00-09:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	125.73	31.43	126.13	0.00	524.21	0.240	0.42	0.32	0.151	A
C-AB	127.09	31.77	127.51	0.00	660.78	0.192	0.41	0.31	0.113	A
C-A	115.33	28.83	115.33	0.00	-	-	-	-	-	-
A-B	15.06	3.76	15.06	0.00	-	-	-	-	-	-
A-C	164.87	41.22	164.87	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	4.47	0.30	0.150	A	A
C-AB	4.41	0.29	0.112	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	5.94	0.40	0.165	A	A
C-AB	6.02	0.40	0.117	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	8.33	0.56	0.191	B	B
C-AB	8.74	0.58	0.125	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-

A-C	-	-	-	-	-
-----	---	---	---	---	---

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	8.71	0.58	0.192	B	B
C-AB	8.87	0.59	0.126	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	6.53	0.44	0.166	A	A
C-AB	6.21	0.41	0.118	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	4.94	0.33	0.151	A	A
C-AB	4.59	0.31	0.113	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\PICADY\Clitheroe Road-Wiswell Lane

Report generation date: 28/03/2012 10:20:59

Existing Layout - 2010 Existing, PM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

PM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Stream B-AC	0.69	0.22	0.41	B	59% [Stream B-AC]
Stream C-AB	0.55	0.11	0.27	A	
Stream C-A	-	-	-	-	
Stream A-B	-	-	-	-	
Stream A-C	-	-	-	-	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, AM Peak' model duration: 07:45 - 09:15

'D2 - 2010 Existing, PM Peak' model duration: 16:45 - 18:15

'D3 - 2017 Base, AM Peak' model duration: 07:45 - 09:15

'D4 - 2017 Base, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 10:20:57

File summary

File Description

Title	2010 Existing and 2016 Assessment
Location	Clitheroe Road/Wiswell Lane
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	rspencer [BGH19]

Description	Citheroe Road/Wiswell Lane - Priority Junction
--------------------	--

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2010 Existing, PM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing	ARCADY		✓				100.000	100.000	

Layout	Scenario						100.000	100.000	
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Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing, PM Peak	2010 Existing	PM Peak		ONE HOUR	18:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	T-Junction	Two-way	A,B,C		0.17	A

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	59	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm Type
A	Clitheroe Road (North)		Major
B	Wiswell Lane		Minor
C	Clitheroe Road (South)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	7.50		0.00		2.20	80.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.00										25	15

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept	Slope for	Slope for	Slope for	Slope for
----------	--------	-----------	-----------	-----------	-----------	-----------

		(Veh/hr)	A-B	A-C	C-A	C-B
1	B-A	493.080	0.084	0.212	0.133	0.303
1	B-C	633.380	0.091	0.229	-	-
1	C-B	620.292	0.225	0.225	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	276.00	100.000
B	ONE HOUR	✓	177.00	100.000
C	ONE HOUR	✓	373.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.000	21.000	255.000
	B	43.000	0.000	134.000
	C	260.000	113.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.00	0.08	0.92
	B	0.24	0.00	0.76
	C	0.70	0.30	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.000	1.039
	B	1.000	1.000	1.060

	C	1.042	1.010	1.000
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Heavy Vehicle Percentages - Junction 1 (for whole period)

	To			
From		A	B	C
	A	0.000	0.000	3.900
	B	0.000	0.000	6.000
	C	4.200	1.000	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
B-AC	0.41	0.22	0.69	B	162.42	243.63	45.30	0.19	0.50	45.31	0.19
C-AB	0.27	0.11	0.55	A	157.25	235.87	36.16	0.15	0.40	36.16	0.15
C-A	-	-	-	-	185.03	277.54	-	-	-	-	-
A-B	-	-	-	-	19.27	28.90	-	-	-	-	-
A-C	-	-	-	-	233.99	350.99	-	-	-	-	-

Main Results for each time segment

Main results: (16:45-17:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	133.26	33.31	131.84	0.00	504.49	0.264	0.00	0.35	0.160	A
C-AB	118.04	29.51	116.94	0.00	697.69	0.169	0.00	0.27	0.103	A
C-A	162.77	40.69	162.77	0.00	-	-	-	-	-	-
A-B	15.81	3.95	15.81	0.00	-	-	-	-	-	-
A-C	191.98	47.99	191.98	0.00	-	-	-	-	-	-

Main results: (17:00-17:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	159.12	39.78	158.65	0.00	491.40	0.324	0.35	0.47	0.180	B
C-AB	150.84	37.71	150.45	0.00	715.22	0.211	0.27	0.37	0.106	A
C-A	184.48	46.12	184.48	0.00	-	-	-	-	-	-
A-B	18.88	4.72	18.88	0.00	-	-	-	-	-	-
A-C	229.24	57.31	229.24	0.00	-	-	-	-	-	-

Main results: (17:15-17:30)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	194.88	48.72	194.03	0.00	473.01	0.412	0.47	0.68	0.214	B
C-AB	202.40	50.60	201.71	0.00	739.83	0.274	0.37	0.54	0.112	A
C-A	208.28	52.07	208.28	0.00	-	-	-	-	-	-
A-B	23.12	5.78	23.12	0.00	-	-	-	-	-	-
A-C	280.76	70.19	280.76	0.00	-	-	-	-	-	-

Main results: (17:30-17:45)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	194.88	48.72	194.85	0.00	472.94	0.412	0.68	0.69	0.216	B
C-AB	202.63	50.66	202.61	0.00	740.05	0.274	0.54	0.55	0.112	A
C-A	208.05	52.01	208.05	0.00	-	-	-	-	-	-
A-B	23.12	5.78	23.12	0.00	-	-	-	-	-	-
A-C	280.76	70.19	280.76	0.00	-	-	-	-	-	-

Main results: (17:45-18:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	159.12	39.78	159.94	0.00	491.30	0.324	0.69	0.49	0.182	B
C-AB	151.12	37.78	151.78	0.00	715.54	0.211	0.55	0.38	0.107	A
C-A	184.20	46.05	184.20	0.00	-	-	-	-	-	-
A-B	18.88	4.72	18.88	0.00	-	-	-	-	-	-
A-C	229.24	57.31	229.24	0.00	-	-	-	-	-	-

Main results: (18:00-18:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	133.26	33.31	133.75	0.00	504.33	0.264	0.49	0.36	0.162	A
C-AB	118.45	29.61	118.85	0.00	697.97	0.170	0.38	0.28	0.104	A
C-A	162.36	40.59	162.36	0.00	-	-	-	-	-	-
A-B	15.81	3.95	15.81	0.00	-	-	-	-	-	-
A-C	191.98	47.99	191.98	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	5.06	0.34	0.160	A	A
C-AB	4.07	0.27	0.103	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:00-17:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	6.83	0.46	0.180	B	B
C-AB	5.61	0.37	0.106	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:15-17:30)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	9.83	0.66	0.214	B	B
C-AB	8.20	0.55	0.112	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:30-17:45)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	10.34	0.69	0.216	B	B
C-AB	8.31	0.55	0.112	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:45-18:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	7.60	0.51	0.182	B	B
C-AB	5.75	0.38	0.107	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (18:00-18:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	5.64	0.38	0.162	A	A
C-AB	4.23	0.28	0.104	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base AM Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\Clitheroe Road-Brookes Lane-King Street-Station Road

Report generation date: 28/03/2012 10:24:03

Existing Layout - 2010 Existing, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Arm A	5.79	0.93	0.88	F	-7% [Arm A]
Arm B	0.05	0.30	0.05	C	
Arm C	2.98	0.33	0.76	C	
Arm D	2.98	0.33	0.76	C	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, AM Peak' model duration: 07:45 - 09:15

'D2 - 2017 Base, AM Peak' model duration: 07:45 - 09:15

Run using ARCADY 8.0.0.296 at 28/03/2012 10:24:01

File summary

File Description

Title	2010 Existing and 2016 Base AM Assessment
Location	Clitheroe Road-Brookes Lane-King Street-Station Road
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	R Spencer
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2010 Existing, AM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Report Set Details

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing, AM Peak	2010 Existing	AM Peak		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Junction Delay (min)	Junction LOS
untitled	Mini-roundabout	A,B,C,D	0.49	

Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		-7	Arm A

Arms

Arms

Arm	Name	Description
A	Clitheroe Road	
B	Brookes Lane	
C	King Street	
D	Station Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00
D	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.00	3.00	3.10	0.01	9.00	6.50	-2.40	
B	2.40	2.40	3.30	0.01	14.00	10.00	-2.40	
C	3.00	3.00	4.20	4.00	12.50	4.00	3.00	
D	3.00	3.00	3.30	2.00	15.50	10.40	2.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.625	771.199
B		(calculated)	(calculated)	0.598	726.551
C		(calculated)	(calculated)	0.685	893.740
D		(calculated)	(calculated)	0.644	928.582

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	367.00	100.000
B	ONE HOUR	✓	9.00	100.000
C	ONE HOUR	✓	512.00	100.000
D	ONE HOUR	✓	505.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
From		A	B	C	D
	A	0.000	6.000	243.000	118.000
	B	2.000	0.000	3.000	4.000
	C	180.000	2.000	0.000	330.000
	D	123.000	1.000	381.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
From		A	B	C	D
	A	0.00	0.02	0.66	0.32
	B	0.22	0.00	0.33	0.44
	C	0.35	0.00	0.00	0.64
	D	0.24	0.00	0.75	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.074	1.050
	B	1.000	1.000	1.000	1.000
	C	1.111	1.000	1.000	1.048
	D	1.073	1.000	1.066	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	0.000	7.400	5.000
	B	0.000	0.000	0.000	0.000
	C	11.100	0.000	0.000	4.800
	D	7.300	0.000	6.600	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	0.88	0.93	5.79	F	336.77	505.15	233.09	0.46	2.59	233.15	0.46
B	0.05	0.30	0.05	C	8.26	12.39	2.81	0.23	0.03	2.81	0.23
C	0.76	0.33	2.98	C	469.82	704.73	159.16	0.23	1.77	159.20	0.23
D	0.76	0.33	2.98	C	463.40	695.10	156.48	0.23	1.74	156.52	0.23

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	276.30	69.07	272.30	227.32	286.25	0.00	545.09	397.60	0.507	0.00	1.00	0.217	B
B	6.78	1.69	6.70	6.69	551.86	0.00	374.57	146.68	0.018	0.00	0.02	0.163	A
C	385.46	96.37	381.57	466.54	92.02	0.00	773.58	686.74	0.498	0.00	0.97	0.152	A
D	380.19	95.05	376.44	336.46	137.12	0.00	778.09	686.69	0.489	0.00	0.94	0.148	A

Main results: (08:00-08:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	329.93	82.48	326.96	272.97	343.68	0.00	509.18	397.60	0.648	1.00	1.74	0.324	C
B	8.09	2.02	8.06	8.03	662.60	0.00	303.93	146.68	0.027	0.02	0.03	0.203	B
C	460.28	115.07	458.24	560.16	110.50	0.00	761.18	686.74	0.605	0.97	1.48	0.197	B
D	453.99	113.50	451.97	404.05	164.68	0.00	759.66	686.68	0.598	0.94	1.44	0.194	B

Main results: (08:15-08:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
-----	-----------------------	-------------------------	---------------------	--------------------	---------------------------	----------------------------	-------------------	------------------------------	-----	-------------------	-----------------	-------------	-----

	(veh/hr)	(veh)	(veh/hr)			(Ped/hr)		(veh/hr)		(veh)	(veh)		
A	404.08	101.02	391.05	332.48	418.48	0.00	462.41	397.60	0.874	1.74	5.00	0.734	E
B	9.91	2.48	9.83	9.66	799.87	0.00	216.39	146.68	0.046	0.03	0.05	0.290	C
C	563.72	140.93	558.24	677.40	132.29	0.00	746.57	686.74	0.755	1.48	2.85	0.310	C
D	556.02	139.00	550.34	489.90	200.62	0.00	735.62	686.69	0.756	1.44	2.86	0.314	C

Main results: (08:30-08:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	404.08	101.02	400.88	335.51	422.43	0.00	459.94	397.60	0.879	5.00	5.79	0.927	F
B	9.91	2.48	9.90	9.85	813.45	0.00	207.72	146.68	0.048	0.05	0.05	0.303	C
C	563.72	140.93	563.21	687.86	135.49	0.00	744.42	686.74	0.757	2.85	2.98	0.329	C
D	556.02	139.00	555.54	496.30	202.40	0.00	734.43	686.69	0.757	2.86	2.98	0.333	C

Main results: (08:45-09:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	329.93	82.48	345.10	277.55	349.59	0.00	505.48	397.60	0.653	5.79	2.00	0.404	C
B	8.09	2.02	8.17	8.37	686.32	0.00	288.81	146.68	0.028	0.05	0.03	0.214	B
C	460.28	115.07	465.81	578.09	116.41	0.00	757.21	686.74	0.608	2.98	1.60	0.210	B
D	453.99	113.50	459.75	414.82	167.39	0.00	757.84	686.68	0.599	2.98	1.54	0.205	B

Main results: (09:00-09:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	276.30	69.07	280.02	231.00	290.81	0.00	542.24	397.60	0.510	2.00	1.07	0.232	B
B	6.78	1.69	6.82	6.85	563.97	0.00	366.84	146.68	0.018	0.03	0.02	0.167	B
C	385.46	96.37	387.79	476.22	94.58	0.00	771.86	686.74	0.499	1.60	1.02	0.157	A
D	380.19	95.05	382.45	343.01	139.36	0.00	776.59	686.69	0.490	1.54	0.98	0.153	A

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	13.89	0.93	0.217	B	B
B	0.26	0.02	0.163	A	A
C	13.78	0.92	0.152	A	A
D	13.29	0.89	0.148	A	A

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	24.01	1.60	0.324	C	B
B	0.39	0.03	0.203	B	B
C	21.07	1.40	0.197	B	B
D	20.48	1.37	0.194	B	B

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	60.04	4.00	0.734	E	D
B	0.67	0.04	0.290	C	B
C	38.63	2.58	0.310	C	B
D	38.62	2.57	0.314	C	B

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	81.85	5.46	0.927	F	E
B	0.73	0.05	0.303	C	B
C	43.98	2.93	0.329	C	B
D	44.01	2.93	0.333	C	B

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	36.17	2.41	0.404	C	C
B	0.46	0.03	0.214	B	B
C	25.72	1.71	0.210	B	B
D	24.74	1.65	0.205	B	B

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	17.13	1.14	0.232	B	B
B	0.29	0.02	0.167	B	B
C	15.99	1.07	0.157	A	A
D	15.35	1.02	0.153	A	A

ARCADY 8

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Filename: 2010 Existing and 2017 Base PM Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\Clitheroe Road-Brookes Lane-King Street-Station Road

Report generation date: 28/03/2012 10:32:11

Existing Layout - 2010 Existing, PM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

PM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Arm A	5.21	0.78	0.86	E	-6% [Arm C]
Arm B	0.02	0.27	0.02	C	
Arm C	10.37	0.95	0.94	F	
Arm D	2.52	0.30	0.72	C	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, PM Peak' model duration: 16:45 - 18:15

'D2 - 2017 Base, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 10:32:09

File summary

File Description

Title	2010 Existing and 2016 Base PM Assessment
Location	Clitheroe Road-Brookes Lane-King Street-Station Road
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	R Spencer
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2010 Existing, PM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Report Set Details

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing, PM Peak	2010 Existing	PM Peak		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Junction Delay (min)	Junction LOS
untitled	Mini-roundabout	A,B,C,D	0.70	E

Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		-6	Arm C

Arms

Arms

Arm	Name	Description
A	Clitheroe Road	
B	Brookes Lane	
C	King Street	
D	Station Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00
D	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.00	3.00	3.10	0.01	9.00	6.50	-2.40	
B	2.40	2.40	3.30	0.01	14.00	10.00	-2.40	
C	3.00	3.00	4.20	4.00	12.50	4.00	3.00	
D	3.00	3.00	3.30	2.00	15.50	10.40	2.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

Slope / Intersect / Capacity

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.625	771.199
B		(calculated)	(calculated)	0.598	726.551
C		(calculated)	(calculated)	0.685	893.740
D		(calculated)	(calculated)	0.644	928.582

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	389.00	100.000
B	ONE HOUR	✓	5.00	100.000
C	ONE HOUR	✓	632.00	100.000
D	ONE HOUR	✓	471.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
From		A	B	C	D
	A	0.000	2.000	229.000	158.000
	B	2.000	0.000	1.000	2.000
	C	268.000	4.000	0.000	360.000
	D	119.000	1.000	351.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
From		A	B	C	D
	A	0.00	0.01	0.59	0.41
	B	0.40	0.00	0.20	0.40
	C	0.42	0.01	0.00	0.57
	D	0.25	0.00	0.75	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

Average RFC for vehicle - Junction 1 for whole period

	To				
		A	B	C	D
	A	1.000	1.000	1.035	1.070
	B	1.000	1.000	1.000	1.000
	C	1.034	1.000	1.000	1.031
	D	1.025	1.000	1.017	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To				
		A	B	C	D
	A	0.000	0.000	3.500	7.000
	B	0.000	0.000	0.000	0.000
	C	3.400	0.000	0.000	3.100
	D	2.500	0.000	1.700	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	0.86	0.78	5.21	E	356.95	535.43	220.67	0.41	2.45	220.73	0.41
B	0.02	0.27	0.02	C	4.59	6.88	1.45	0.21	0.02	1.45	0.21
C	0.94	0.95	10.37	F	579.93	869.90	387.97	0.45	4.31	388.07	0.45
D	0.72	0.30	2.52	C	432.20	648.29	135.03	0.21	1.50	135.06	0.21

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	292.86	73.21	288.81	289.45	265.52	0.00	574.29	421.85	0.510	0.00	1.01	0.207	B
B	3.76	0.94	3.73	5.20	549.12	0.00	386.88	151.90	0.010	0.00	0.01	0.157	A
C	475.80	118.95	469.76	432.56	120.29	0.00	780.66	663.59	0.609	0.00	1.51	0.190	B
D	354.59	88.65	351.30	386.38	203.67	0.00	778.25	686.29	0.456	0.00	0.82	0.139	A

Main results: (17:00-17:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	349.70	87.43	346.85	347.22	318.71	0.00	542.06	421.85	0.645	1.01	1.73	0.303	C
B	4.49	1.12	4.48	6.24	659.32	0.00	318.72	151.90	0.014	0.01	0.01	0.191	B
C	568.15	142.04	563.35	519.33	144.46	0.00	763.52	663.59	0.744	1.51	2.71	0.293	C
D	423.42	105.85	421.68	463.57	244.25	0.00	751.75	686.29	0.563	0.82	1.26	0.181	B

Main results: (17:15-17:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
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A	428.30	107.07	416.72	417.38	388.37	0.00	499.86	421.85	0.857	1.73	4.62	0.646	E
B	5.51	1.38	5.47	7.49	797.60	0.00	233.24	151.89	0.024	0.01	0.02	0.263	C
C	695.84	173.96	672.88	629.43	173.63	0.00	742.83	663.59	0.937	2.71	8.45	0.696	E
D	518.58	129.64	513.96	554.73	291.78	0.00	720.70	686.29	0.720	1.26	2.41	0.284	C

Main results: (17:30-17:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	428.30	107.07	425.93	424.94	391.58	0.00	497.91	421.85	0.860	4.62	5.21	0.783	E
B	5.51	1.38	5.50	7.65	809.87	0.00	225.60	151.89	0.024	0.02	0.02	0.273	C
C	695.84	173.96	688.18	637.97	177.40	0.00	740.16	663.59	0.940	8.45	10.37	0.954	F
D	518.58	129.64	518.13	567.21	298.38	0.00	716.39	686.29	0.724	2.41	2.52	0.301	C

Main results: (17:45-18:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	349.70	87.43	362.73	363.00	323.68	0.00	539.06	421.85	0.649	5.21	1.95	0.362	C
B	4.49	1.12	4.53	6.55	679.85	0.00	305.92	151.90	0.015	0.02	0.02	0.199	B
C	568.15	142.04	596.72	533.43	150.95	0.00	758.91	663.59	0.749	10.37	3.23	0.421	D
D	423.42	105.85	428.04	489.05	258.63	0.00	742.35	686.29	0.570	2.52	1.36	0.194	B

Main results: (18:00-18:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	292.86	73.21	296.36	296.10	269.57	0.00	571.83	421.85	0.512	1.95	1.08	0.220	B
B	3.76	0.94	3.78	5.33	560.60	0.00	379.76	151.90	0.010	0.02	0.01	0.160	A
C	475.80	118.95	482.22	440.98	123.40	0.00	778.45	663.59	0.611	3.23	1.62	0.207	B
D	354.59	88.65	356.62	396.57	209.05	0.00	774.73	686.29	0.458	1.36	0.86	0.144	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	14.10	0.94	0.207	B	B
B	0.14	0.01	0.157	A	A
C	20.94	1.40	0.190	B	B
D	11.72	0.78	0.139	A	A

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	23.92	1.59	0.303	C	B
B	0.21	0.01	0.191	B	B
C	37.05	2.47	0.293	C	B
D	17.94	1.20	0.181	B	B

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	56.74	3.78	0.646	E	D
B	0.34	0.02	0.263	C	B
C	97.32	6.49	0.696	E	D
D	32.96	2.20	0.284	C	B

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	74.45	4.96	0.783	E	D
B	0.37	0.02	0.273	C	B
C	142.89	9.53	0.954	F	E
D	37.18	2.48	0.301	C	B

Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	34.22	2.28	0.362	C	C
B	0.24	0.02	0.199	B	B
C	63.61	4.24	0.421	D	C
D	21.80	1.45	0.194	B	B

Queueing Delay results: (18:00-18:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	17.24	1.15	0.220	B	B
B	0.16	0.01	0.160	A	A
C	26.16	1.74	0.207	B	B
D	13.44	0.90	0.144	A	A

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base AM Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\B6246 King Street-Accrington Road-King Street

Report generation date: 28/03/2012 10:34:24

Existing Layout - 2010 Existing, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Arm A	35.90	2.81	1.08	F	-18% [Arm A]
Arm B	1.78	0.27	0.65	C	
Arm C	8.68	1.03	0.93	F	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

"D1 - 2010 Existing, AM Peak" model duration: 07:45 - 09:15

"D2 - 2017 Base, AM Peak" model duration: 07:45 - 09:15

Run using ARCADY 8.0.0.296 at 28/03/2012 10:34:23

File summary

File Description

Title	2010 Existing and 2016 Base AM Assessment
Location	B6246 King Street-Accrington Road-King Street
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	rspencer [BGH19]
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2010 Existing, AM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing, AM Peak	2010 Existing	AM Peak		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Junction Delay (min)	Junction LOS
untitled	Mini-roundabout	A,B,C	1.61	F

Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		-18	Arm A

Arms

Arms

Arm	Name	Description
A	B6246 King Street	
B	B6246 Accrington Road	
C	King Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	2.70	2.70	4.10	4.20	15.00	10.00	0.00	
B	3.80	3.80	4.90	10.00	11.00	2.00	0.00	
C	3.50	3.50	3.50	0.00	16.00	16.00	0.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.527	834.959

B		(calculated)	(calculated)	0.585	899.867
C		(calculated)	(calculated)	0.607	792.631

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	659.00	100.000
B	ONE HOUR	✓	372.00	100.000
C	ONE HOUR	✓	493.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

	To			
		A	B	C
From	A	0.000	298.000	361.000
	B	247.000	0.000	125.000
	C	296.000	197.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

	To			
		A	B	C
From	A	0.00	0.45	0.55
	B	0.66	0.00	0.34
	C	0.60	0.40	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

	To			
		A	B	C
From	A	1.000	1.077	1.047
	B	1.077	1.000	1.048
	C	1.044	1.056	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To			
		A	B	C

From	To			
		A	B	C
	A	0.000	7.700	4.700
	B	7.700	0.000	4.800
	C	4.400	5.600	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	1.08	2.81	35.90	F	604.71	907.06	1197.44	1.32	13.30	1197.70	1.32
B	0.65	0.27	1.78	C	341.35	512.03	104.17	0.20	1.16	104.19	0.20
C	0.93	1.03	8.68	F	452.38	678.58	331.51	0.49	3.68	331.61	0.49

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	496.13	124.03	487.39	403.82	146.19	0.00	710.60	683.41	0.698	0.00	2.18	0.260	C
B	280.06	70.01	277.37	366.59	267.00	0.00	690.00	628.40	0.406	0.00	0.67	0.144	A
C	371.15	92.79	365.84	360.20	184.17	0.00	640.94	495.62	0.579	0.00	1.33	0.214	B

Main results: (08:00-08:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	592.43	148.11	582.09	484.78	175.44	0.00	695.26	683.41	0.852	2.18	4.77	0.489	D
B	334.42	83.60	333.10	438.67	318.87	0.00	660.24	628.40	0.507	0.67	1.00	0.183	B
C	443.19	110.80	439.05	430.80	221.17	0.00	617.87	495.62	0.717	1.33	2.37	0.328	C

Main results: (08:15-08:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	725.57	181.39	657.83	584.29	209.15	0.00	677.58	683.41	1.071	4.77	21.70	1.489	F
B	409.58	102.39	406.68	506.62	360.36	0.00	636.44	628.41	0.644	1.00	1.73	0.258	C
C	542.80	135.70	523.40	497.02	270.03	0.00	587.41	495.60	0.924	2.37	7.21	0.770	E

Main results: (08:30-08:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	725.57	181.39	668.78	594.18	214.56	0.00	674.74	683.41	1.075	21.70	35.90	2.612	F
B	409.58	102.39	409.35	516.98	366.36	0.00	633.00	628.41	0.647	1.73	1.78	0.268	C
C	542.80	135.70	536.94	503.91	271.80	0.00	586.31	495.60	0.926	7.21	8.68	1.030	F

Main results: (08:45-09:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
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	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)	Flow (Veh/hr)	(Ped/hr)	(Veh/hr)	(Veh/hr)		(Veh)	(Veh)	(min)	
A	592.43	148.11	670.75	504.02	186.55	0.00	689.43	683.41	0.859	35.90	16.32	2.423	F
B	334.42	83.60	336.94	489.86	367.44	0.00	632.38	628.40	0.529	1.78	1.15	0.205	B
C	443.19	110.80	466.84	480.66	223.72	0.00	616.28	495.62	0.719	8.68	2.77	0.452	D

Main results: (09:00-09:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	496.13	124.03	551.35	413.13	150.45	0.00	708.36	683.41	0.700	18.32	2.51	0.497	D
B	280.06	70.01	281.75	399.77	302.03	0.00	669.90	628.40	0.418	1.15	0.73	0.155	A
C	371.15	92.79	376.51	396.70	187.08	0.00	639.13	495.62	0.581	2.77	1.43	0.233	B

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	29.27	1.95	0.260	D	B
B	9.59	0.64	0.144	A	A
C	18.38	1.23	0.214	B	B

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	60.76	4.05	0.489	D	C
B	14.37	0.96	0.183	B	B
C	32.30	2.15	0.328	C	B

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	209.12	13.94	1.489	F	F
B	24.07	1.60	0.256	C	B
C	83.54	5.57	0.770	E	D

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	433.39	28.89	2.812	F	F
B	26.43	1.76	0.268	C	B
C	120.57	8.04	1.030	F	E

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	391.64	26.11	2.423	F	F
B	18.27	1.22	0.205	B	B
C	53.66	3.58	0.452	D	C

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	73.26	4.88	0.497	B	C
B	11.44	0.76	0.155	A	A
C	23.07	1.54	0.233	B	B

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution.

Filename: 2010 Existing and 2017 Base PM Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\B6246 King Street-Accrington Road-King Street

Report generation date: 28/03/2012 10:41:26

Existing Layout - 2010 Existing, PM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

PM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Arm A	9.28	0.88	0.93	F	-12% [Arm C]
Arm B	1.98	0.26	0.67	C	
Arm C	16.49	1.67	1.00	F	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, PM Peak' model duration: 16:45 - 18:15

'D2 - 2017 Base, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 10:41:24

File summary

File Description

Title	2010 Existing and 2016 Base PM Assessment
Location	B6246 King Street-Accrington Road-King Street
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	rspencer [BGH19]
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2010 Existing, PM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing, PM Peak	2010 Existing	PM Peak		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Junction Delay (min)	Junction LOS
untitled	Mini-roundabout	A,B,C	0.99	F

Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		-12	Arm C

Arms

Arms

Arm	Name	Description
A	B6246 King Street	
B	B6246 Accrington Road	
C	King Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	2.70	2.70	4.10	4.20	15.00	10.00	0.00	
B	3.80	3.80	4.90	10.00	11.00	2.00	0.00	
C	3.50	3.50	3.50	0.00	16.00	16.00	0.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.527	834.959
B		(calculated)	(calculated)	0.585	899.867

C		(calculated)	(calculated)	0.607	792.631
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The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	617.00	100.000
B	ONE HOUR	✓	419.00	100.000
C	ONE HOUR	✓	549.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.000	322.000	295.000
	B	258.000	0.000	161.000
	C	389.000	160.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.00	0.52	0.48
	B	0.62	0.00	0.38
	C	0.71	0.29	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.016	1.020
	B	1.039	1.000	1.012
	C	1.015	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
--	--	----	--	--

From		A	B	C
	A	0.000	1.600	2.000
	B	3.900	0.000	1.200
	C	1.500	0.000	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	0.93	0.88	9.28	F	566.17	849.26	366.39	0.43	4.07	366.50	0.43
B	0.67	0.26	1.98	C	384.48	576.72	111.05	0.19	1.23	111.07	0.19
C	1.00	1.67	16.49	F	503.77	755.66	534.86	0.71	5.94	534.99	0.71

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	464.51	116.13	458.41	480.84	118.61	0.00	758.89	740.79	0.612	0.00	1.53	0.196	B
B	315.44	78.86	312.57	357.84	219.17	0.00	747.73	669.45	0.422	0.00	0.72	0.137	A
C	413.32	103.33	406.99	339.28	192.47	0.00	664.17	527.02	0.622	0.00	1.58	0.228	B

Main results: (17:00-17:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	554.67	138.67	550.00	576.62	142.13	0.00	746.72	740.79	0.743	1.53	2.69	0.298	C
B	376.67	94.17	375.28	429.16	262.97	0.00	722.34	669.45	0.521	0.72	1.07	0.172	B
C	493.54	123.38	487.67	407.17	231.08	0.00	640.07	527.02	0.771	1.58	3.05	0.379	C

Main results: (17:15-17:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	679.33	169.83	659.09	685.45	165.94	0.00	734.39	740.79	0.925	2.69	7.75	0.663	E
B	461.33	115.33	457.96	509.91	315.12	0.00	692.10	669.45	0.667	1.07	1.91	0.253	C
C	604.46	151.11	569.40	491.10	281.99	0.00	608.29	527.00	0.994	3.05	11.82	1.054	F

Main results: (17:30-17:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	679.33	169.83	673.20	698.95	170.72	0.00	731.92	740.79	0.928	7.75	9.28	0.878	F
B	461.33	115.33	461.05	522.05	321.87	0.00	688.19	669.45	0.670	1.91	1.98	0.263	C
C	604.46	151.11	585.77	499.03	283.90	0.00	607.11	527.00	0.996	11.82	16.49	1.671	F

Main results: (17:45-18:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
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A	554.67	138.67	578.70	619.36	158.51	0.00	738.24	740.79	0.751	9.28	3.28	0.421	D
B	376.67	94.17	380.00	460.52	276.69	0.00	714.39	669.45	0.527	1.98	1.14	0.181	B
C	493.54	123.38	543.89	422.70	233.99	0.00	638.25	527.02	0.773	16.49	3.90	0.812	E

Main results: (18:00-18:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	464.51	116.13	471.05	494.23	122.99	0.00	756.62	740.79	0.614	3.28	1.64	0.215	B
B	315.44	78.86	317.02	368.82	225.22	0.00	744.23	669.45	0.424	1.14	0.75	0.141	A
C	413.32	103.33	422.02	347.03	195.21	0.00	662.46	527.02	0.624	3.90	1.73	0.258	C

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	21.10	1.41	0.196	B	B
B	10.25	0.68	0.137	A	A
C	21.67	1.44	0.228	B	B

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	36.80	2.45	0.298	C	B
B	15.28	1.02	0.172	B	B
C	40.75	2.72	0.379	C	C

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	90.97	6.06	0.663	E	D
B	26.49	1.77	0.253	C	B
C	124.48	8.30	1.054	F	E

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	129.27	8.62	0.878	F	D
B	29.24	1.95	0.263	C	B
C	214.34	14.29	1.671	F	F

Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	61.71	4.11	0.421	D	C
B	18.12	1.21	0.181	B	B
C	105.06	7.00	0.812	E	D

Queueing Delay results: (18:00-18:15)

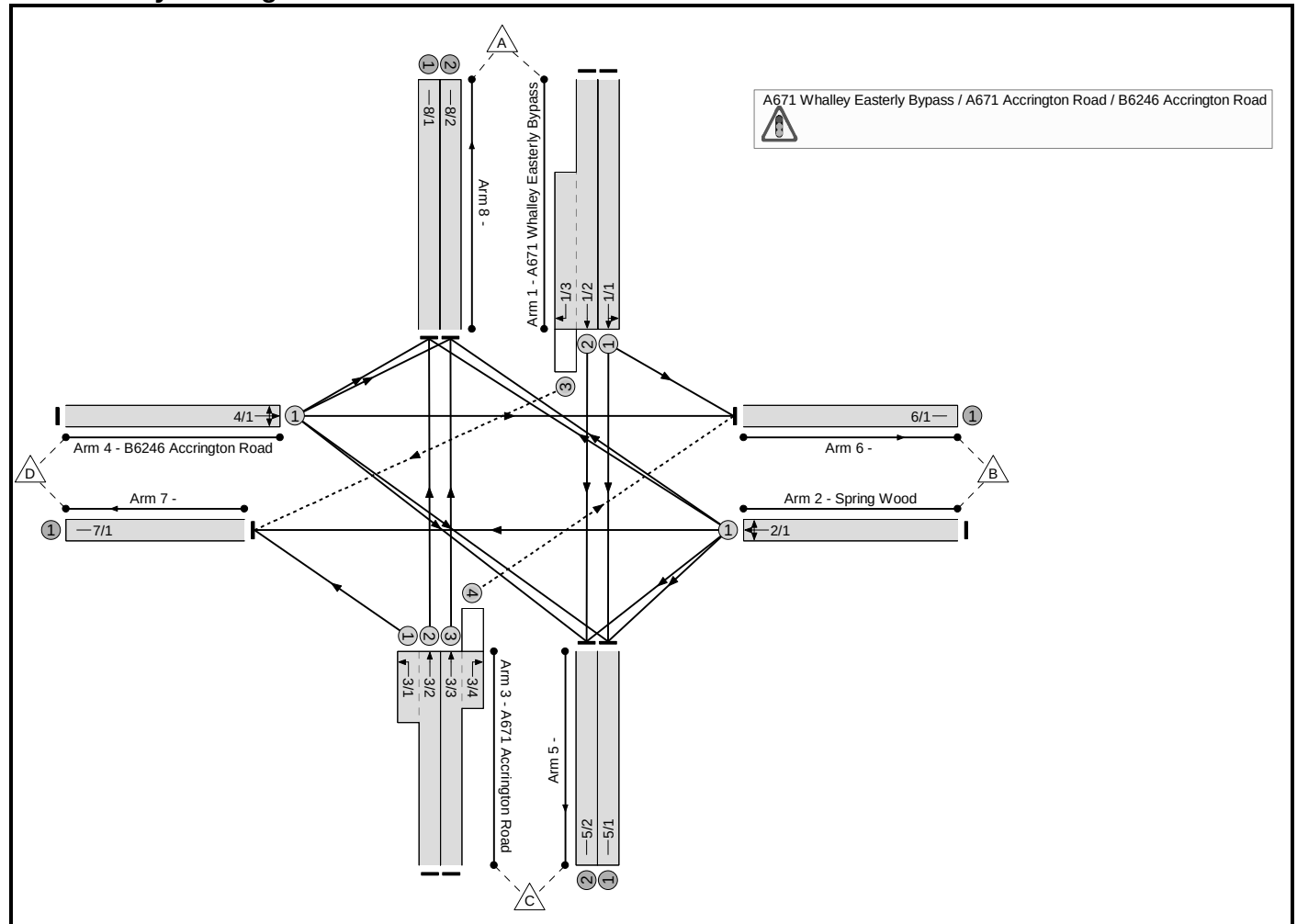
Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	26.55	1.77	0.215	B	B
B	11.66	0.78	0.141	A	A
C	28.55	1.90	0.258	C	B

A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010
A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010

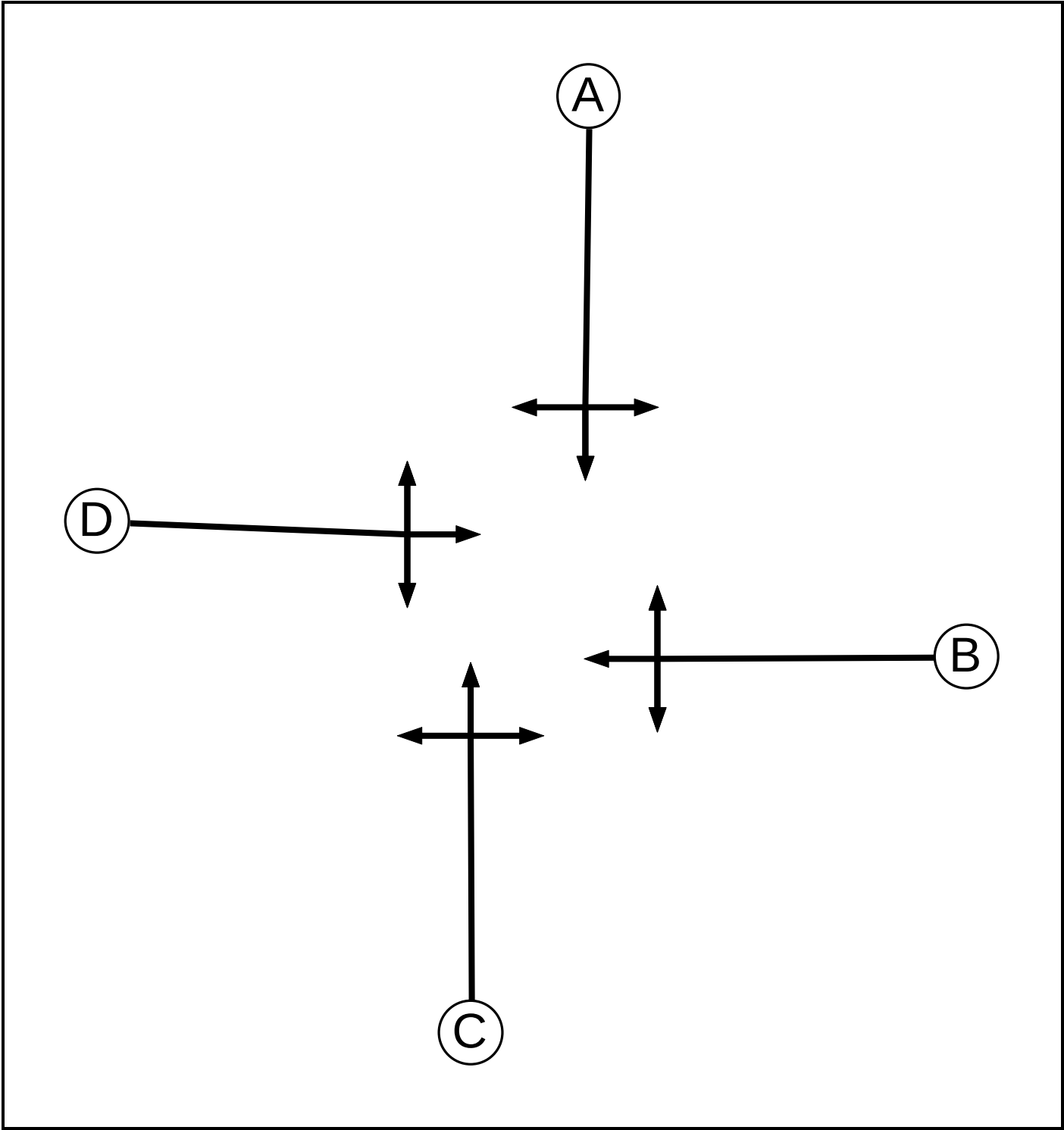
User and Project Details

Project:	Proposed Residential Development, Whalley Road, Barrow
Title:	Existing Layout Assessment
Location:	A671 Whalley Easterly Bypass/A671 Accrington Road/B6246 Accrington Road
File name:	A671 Whalley Easterly Bypass - B6246 Accrington Road_March 2012.lsg3x
Author:	Richard Ian Spencer
Company:	Bryan G Hall Ltd
Address:	Suite E8, Josephs Well, Hanover Way, Leeds, LS3 1AB
Notes:	No pedestrian facilities present as of November 2009. Site observations indicate an average cycle time of 70 seconds.

Network 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

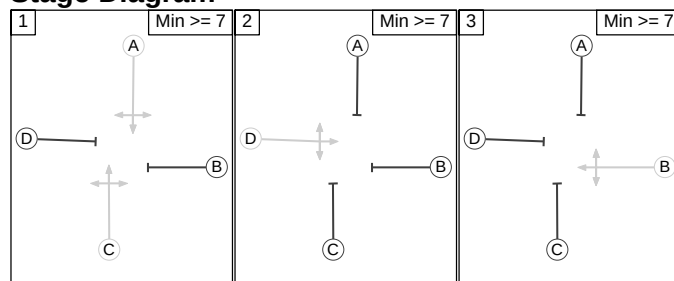
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Phase Delays

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

Prohibited Stage Change

From Stage	To Stage		
	1	2	3
	1	6	6
	2	6	7
3	5	6	

A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010

Give-Way Lane Input Data

Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road										
Lane	Movement	Max 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)
1/3 (A671 Whalley Easterly Bypass)	7/1 (Right)	1439	3/1	1.09	3/1	3.00	-	0.50	3	3.00
			3/2	1.09	3/2					
3/4 (A671 Accrington Road)	6/1 (Right)	1439	1/1	1.09	1/1	3.00	-	0.50	3	3.00
			1/2	1.09	1/2					

A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010

Lane Input Data

Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington 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 (A671 Whalley Easterly Bypass)	U	A	2	3	60.0	Geom	-	3.70	0.00	Y	Arm 5 Ahead	Inf
1/2 (A671 Whalley Easterly Bypass)	U	A	2	3	60.0	Geom	-	3.60	0.00	N	Arm 6 Left	10.00
1/3 (A671 Whalley Easterly Bypass)	O	A	2	3	11.0	Geom	-	3.30	0.00	N	Arm 5 Ahead	Inf
2/1 (Spring Wood)	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 7 Right	10.00
3/1 (A671 Accrington Road)	U	C	2	3	5.0	Geom	-	2.90	0.00	Y	Arm 5 Left	9.00
3/2 (A671 Accrington Road)	U	C	2	3	60.0	Geom	-	3.70	0.00	Y	Arm 7 Ahead	Inf
3/3 (A671 Accrington Road)	U	C	2	3	60.0	Geom	-	3.80	0.00	N	Arm 8 Right	13.00
3/4 (A671 Accrington Road)	O	C	2	3	4.0	Geom	-	3.20	0.00	N	Arm 7 Left	17.00
4/1 (B6246 Accrington Road)	U	D	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 8 Ahead	Inf
5/1	U		2	3	60.0	Inf	-	-	-	-	Arm 8 Left	17.00
5/2	U		2	3	60.0	Inf	-	-	-	-	Arm 5 Right	22.00
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2010 Existing Traffic Flows AM Peak'	08:00	09:00	01:00	
2: '2010 Existing Traffic Flows PM Peak'	17:00	18:00	01:00	

Scenario 1: '2010 Existing Traffic Flows AM Peak' (FG1: '2010 Existing Traffic Flows AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	0	751	14	765
	B	5	0	3	2	10
	C	849	3	0	405	1257
	D	18	2	422	0	442
	Tot.	872	5	1176	421	2474

Traffic Lane Flows

Lane	Scenario 1: 2010 Existing Traffic Flows AM Peak
Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	
1/1	357
1/2 (with short)	408(In) 394(Out)
1/3 (short)	14
2/1	10
3/1 (short)	405
3/2 (with short)	727(In) 322(Out)
3/3 (with short)	530(In) 527(Out)
3/4 (short)	3
4/1	442
5/1	569
5/2	607
6/1	5
7/1	421
8/1	334
8/2	538

Lane Saturation Flows

Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington 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 (A671 Whalley Easterly Bypass)	3.70	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1985	1985
				Arm 6 Left	10.00	0.0 %		
1/2 (A671 Whalley Easterly Bypass)	3.60	0.00	N	Arm 5 Ahead	Inf	100.0 %	2115	2115
1/3 (A671 Whalley Easterly Bypass)	3.30	0.00	N	Arm 7 Right	10.00	100.0 %	1813	1813
2/1 (Spring Wood)	3.00	0.00	Y	Arm 5 Left	9.00	30.0 %	1729	1729
				Arm 7 Ahead	Inf	20.0 %		
				Arm 8 Right	13.00	50.0 %		
3/1 (A671 Accrington Road)	2.90	0.00	Y	Arm 7 Left	17.00	100.0 %	1751	1751
3/2 (A671 Accrington Road)	3.70	0.00	N	Arm 8 Ahead	Inf	100.0 %	2125	2125
3/3 (A671 Accrington Road)	3.80	0.00	N	Arm 8 Ahead	Inf	100.0 %	2135	2135
3/4 (A671 Accrington Road)	3.20	0.00	N	Arm 6 Right	16.00	100.0 %	1897	1897
4/1 (B6246 Accrington Road)	4.00	0.00	Y	Arm 5 Right	22.00	95.5 %	1885	1885
				Arm 6 Ahead	Inf	0.5 %		
				Arm 8 Left	17.00	4.1 %		
5/1	Infinite Saturation Flow						Inf	Inf
5/2	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
8/2	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2010 Existing Traffic Flows PM Peak' (FG2: '2010 Existing Traffic Flows PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	0	706	16	722
	B	5	0	5	2	12
	C	683	2	0	364	1049
	D	24	1	351	0	376
	Tot.	712	3	1062	382	2159

A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010

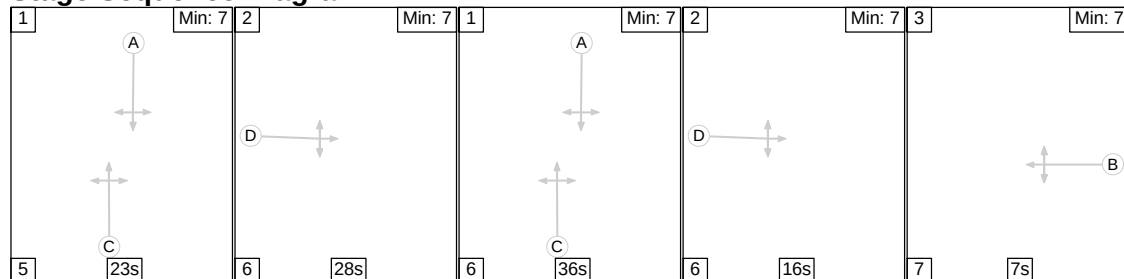
Traffic Lane Flows

Lane	Scenario 2: 2010 Existing Traffic Flows PM Peak
Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	
1/1	335
1/2 (with short)	387(In) 371(Out)
1/3 (short)	16
2/1	12
3/1 (short)	364
3/2 (with short)	626(In) 262(Out)
3/3 (with short)	423(In) 421(Out)
3/4 (short)	2
4/1	376
5/1	512
5/2	550
6/1	3
7/1	382
8/1	277
8/2	435

Lane Saturation Flows

Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington 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 (A671 Whalley Easterly Bypass)	3.70	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1985	1985
				Arm 6 Left	10.00	0.0 %		
1/2 (A671 Whalley Easterly Bypass)	3.60	0.00	N	Arm 5 Ahead	Inf	100.0 %	2115	2115
1/3 (A671 Whalley Easterly Bypass)	3.30	0.00	N	Arm 7 Right	10.00	100.0 %	1813	1813
2/1 (Spring Wood)	3.00	0.00	Y	Arm 5 Left	9.00	41.7 %	1714	1714
				Arm 7 Ahead	Inf	16.7 %		
				Arm 8 Right	13.00	41.7 %		
3/1 (A671 Accrington Road)	2.90	0.00	Y	Arm 7 Left	17.00	100.0 %	1751	1751
3/2 (A671 Accrington Road)	3.70	0.00	N	Arm 8 Ahead	Inf	100.0 %	2125	2125
3/3 (A671 Accrington Road)	3.80	0.00	N	Arm 8 Ahead	Inf	100.0 %	2135	2135
3/4 (A671 Accrington Road) 4/1 (B6246 Accrington Road)	3.20	0.00	N	Arm 6 Right	16.00	100.0 %	1897	1897
				Arm 5 Right	22.00	93.4 %		
	4.00	0.00	Y	Arm 6 Ahead	Inf	0.3 %	1884	1884
				Arm 8 Left	17.00	6.4 %		
5/1	Infinite Saturation Flow						Inf	Inf
5/2	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
8/2	Infinite Saturation Flow						Inf	Inf

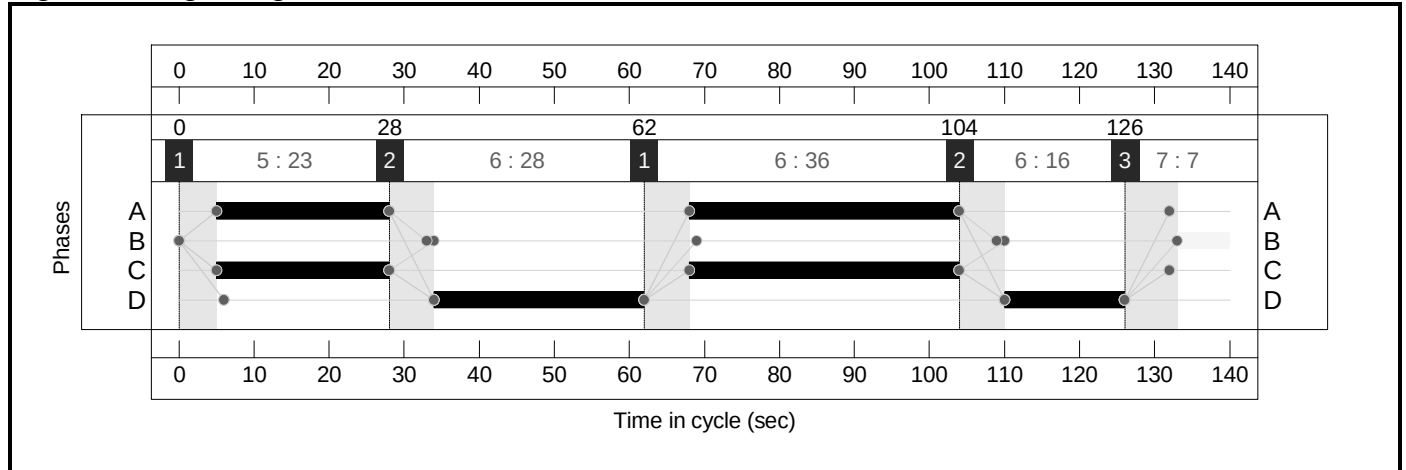
Scenario 1: '2010 Existing Traffic Flows AM Peak' (FG1: '2010 Existing Traffic Flows AM Peak', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Timings

Stage	1	2	1	2	3
Duration	23	28	36	16	7
Change Point	0	28	62	104	126

Signal Timings Diagram



A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010

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: Existing Layout Assessment	-	-	N/A	-	-		-	-	-	-	-	-	71.4%
A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	-	-	N/A	-	-		-	-	-	-	-	-	71.4%
1/1	A671 Whalley Easterly Bypass Ahead Left	U	N/A	N/A	A		2	59	-	357	1985	865	41.3%
1/2+1/3	A671 Whalley Easterly Bypass Ahead Right	U+O	N/A	N/A	A		2	59	-	408	2115:1813	931	43.8%
2/1	Spring Wood Left Ahead Right	U	N/A	N/A	B		1	7	-	10	1729	99	10.1%
3/2+3/1	A671 Accrington Road Left Ahead	U	N/A	N/A	C		2	59	-	727	2125:1751	1018	71.4%
3/3+3/4	A671 Accrington Road Right Ahead	U+O	N/A	N/A	C		2	59	-	530	2135:1897	923	57.4%
4/1	B6246 Accrington Road Right Ahead Left	U	N/A	N/A	D		2	44	-	442	1885	619	71.4%

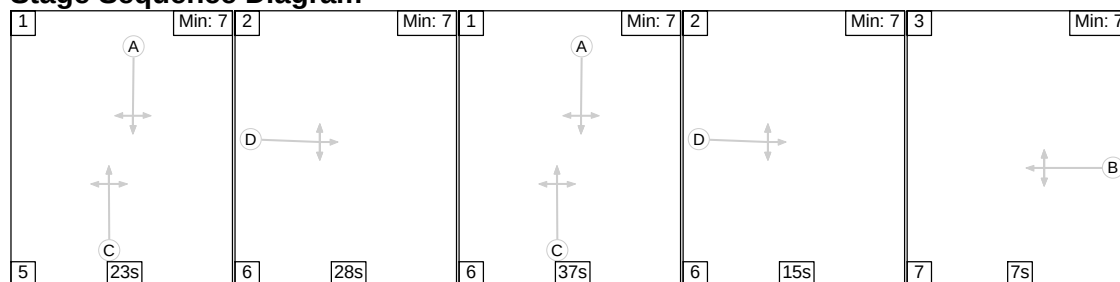
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Existing Layout Assessment	-	-	17	0	0	10.6	3.9	0.0	14.6	-	-	-	-
A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	-	-	17	0	0	10.6	3.9	0.0	14.6	-	-	-	-
1/1	357	357	-	-	-	1.3	0.4	-	1.7	17.1	4.8	0.4	5.1
1/2+1/3	408	408	14	0	0	1.5	0.4	0.0	2.0	17.3	5.4	0.4	5.8
2/1	10	10	-	-	-	0.2	0.1	-	0.2	82.9	0.4	0.1	0.4
3/2+3/1	727	727	-	-	-	2.8	1.2	-	4.1	20.2	6.7	1.2	8.0
3/3+3/4	530	530	3	0	0	2.2	0.7	0.0	2.9	19.5	7.8	0.7	8.5
4/1	442	442	-	-	-	2.5	1.2	-	3.8	30.6	7.5	1.2	8.7

A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010

C1	PRC for Signalled Lanes (%):	26.0	Total Delay for Signalled Lanes (pcuHr):	14.59	Cycle Time (s):	140
	PRC Over All Lanes (%):	26.0	Total Delay Over All Lanes(pcuHr):	14.59		

Scenario 2: '2010 Existing Traffic Flows PM Peak' (FG2: '2010 Existing Traffic Flows PM Peak', Plan 1: 'Network Control Plan 1')

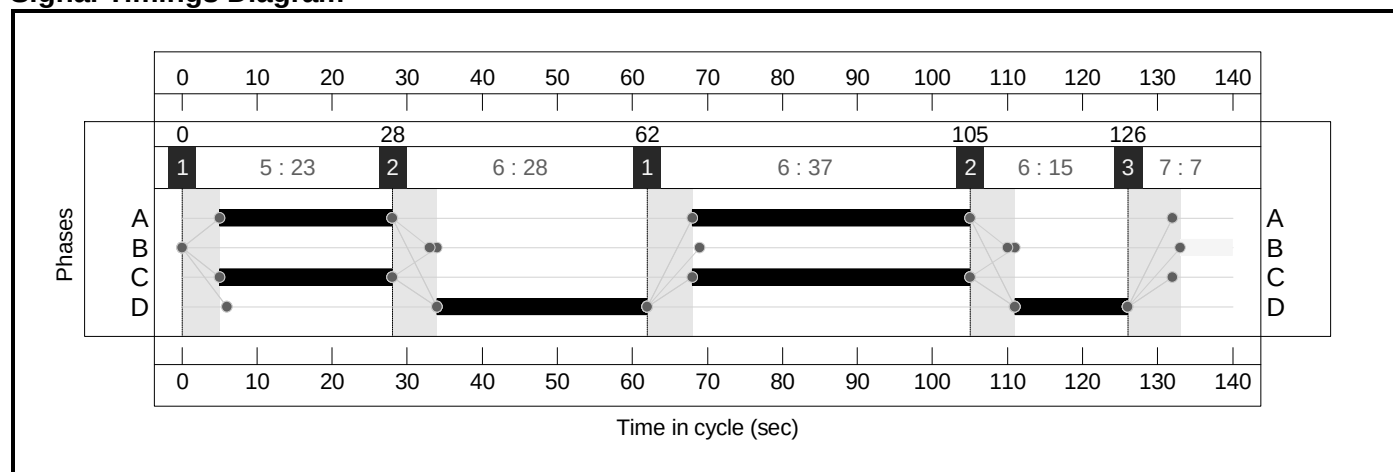
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	3
Duration	23	28	37	15	7
Change Point	0	28	62	105	126

Signal Timings Diagram



A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010

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: Existing Layout Assessment	-	-	N/A	-	-		-	-	-	-	-	-	62.1%
A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	-	-	N/A	-	-		-	-	-	-	-	-	62.1%
1/1	A671 Whalley Easterly Bypass Ahead Left	U	N/A	N/A	A		2	60	-	335	1985	879	38.1%
1/2+1/3	A671 Whalley Easterly Bypass Ahead Right	U+O	N/A	N/A	A		2	60	-	387	2115:1813	950	40.7%
2/1	Spring Wood Left Ahead Right	U	N/A	N/A	B		1	7	-	12	1714	98	12.3%
3/2+3/1	A671 Accrington Road Left Ahead	U	N/A	N/A	C		2	60	-	626	2125:1751	1009	62.0%
3/3+3/4	A671 Accrington Road Right Ahead	U+O	N/A	N/A	C		2	60	-	423	2135:1897	938	45.1%
4/1	B6246 Accrington Road Right Ahead Left	U	N/A	N/A	D		2	43	-	376	1884	606	62.1%

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: Existing Layout Assessment	-	-	18	0	0	8.8	2.8	0.0	11.6	-	-	-	-
A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	-	-	18	0	0	8.8	2.8	0.0	11.6	-	-	-	-
1/1	335	335	-	-	-	1.2	0.3	-	1.5	16.4	4.3	0.3	4.6
1/2+1/3	387	387	16	0	0	1.4	0.3	0.0	1.8	16.5	4.8	0.3	5.2
2/1	12	12	-	-	-	0.2	0.1	-	0.3	83.6	0.4	0.1	0.5
3/2+3/1	626	626	-	-	-	2.3	0.8	-	3.1	17.8	5.0	0.8	5.8
3/3+3/4	423	423	2	0	0	1.6	0.4	0.0	2.0	17.1	5.6	0.4	6.0
4/1	376	376	-	-	-	2.1	0.8	-	2.9	27.9	6.2	0.8	7.0

A671 Whalley Easterly Bypass/B6246 Accrington Road - Existing 2010

C1	PRC for Signalled Lanes (%):	45.0	Total Delay for Signalled Lanes (pcuHr):	11.61	Cycle Time (s):	140
	PRC Over All Lanes (%):	45.0	Total Delay Over All Lanes(pcuHr):	11.61		

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\PICADY\A671-Wiswell Lane-Wiswell Shay

Report generation date: 28/03/2012 11:15:53

Existing Layout - 2010 Existing, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Stream B-CD	0.04	0.12	0.04	A	25% [Stream D-C]
Stream B-A	0.06	0.26	0.05	C	
Stream A-B	-	-	-	-	
Stream A-C	-	-	-	-	
Stream A-D	-	-	-	-	
Stream AB-C	-	-	-	-	
Stream AB-D	0.35	0.17	0.26	B	
Stream D-AB	0.38	0.17	0.28	B	
Stream D-C	0.30	0.31	0.23	C	
Stream C-D	-	-	-	-	
Stream C-A	-	-	-	-	
Stream C-B	-	-	-	-	
Stream CD-A	-	-	-	-	
Stream CD-B	0.03	0.12	0.03	A	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

"D1 - 2010 Existing, AM Peak" model duration: 07:45 - 09:15

"D2 - 2010 Existing, PM Peak" model duration: 16:45 - 18:15

"D3 - 2017 Base, AM Peak" model duration: 07:45 - 09:15

"D4 - 2017 Base, PM Peak" model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 11:15:36

File summary

File Description

Title	2010 Existing and 2016 Base Assessment
Location	A671 Accrington Road / Wiswell Lane / Wiswell Shay

Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	06/352
Enumerator	rspencer [BGH19]
Description	Staggered Major/Minor Priority Junction with two right turn holding lanes

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout 2010 Existing AM Peak

Existing Layout - 2010 Existing, AM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing, AM Peak	2010 Existing	AM Peak		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		0.19	B

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	25	Stream D-C

Arms

Arms

Arm	Name	Description	Arm Type
A	A671 Accrington Road North		Major
B	Wiswell Shay		Minor
C	A671 Accrington Road South		Major
D	Wiswell Lane		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	11.80		0.00	✓	2.50	150.00		
C	12.00		0.00	✓	2.50	150.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	7.00	4.50	3.50	3.00	✓	1.00	25	25

D	One lane plus flare				10.00	10.00	5.00	3.30	3.00	✓	2.00	70	40
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Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
1	AB-D	682.406	-	-	-	-	-	0.198	0.198	0.198	-	-
1	B-A	507.952	0.068	0.173	0.173	-	-	0.109	0.247	-	0.109	0.247
1	B-CD	701.583	0.079	0.201	0.201	-	-	-	-	-	-	-
1	CD-B	682.406	0.195	0.195	0.195	-	-	-	-	-	-	-
1	D-AB	711.238	-	-	-	-	-	0.206	0.206	0.082	-	-
1	D-C	563.831	-	0.122	0.277	0.122	0.277	0.194	0.194	0.077	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	749.00	100.000
B	ONE HOUR	✓	30.00	100.000
C	ONE HOUR	✓	790.00	100.000
D	ONE HOUR	✓	173.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

	To			
	A	B	C	D
From A	0.000	7.000	632.000	110.000
From B	13.000	0.000	15.000	0.000

From	B	12.000	0.000	15.000	0.000
C	724.000	10.000	0.000	56.000	
D	114.000	5.000	54.000	0.000	

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.01	0.84	0.15
	B	0.40	0.00	0.50	0.10
	C	0.92	0.01	0.00	0.07
	D	0.66	0.03	0.31	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.090	1.050
	B	1.000	1.000	1.000	1.000
	C	1.090	1.000	1.000	1.000
	D	1.040	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	0.000	9.000	5.000
	B	0.000	0.000	0.000	0.000
	C	9.000	0.000	0.000	0.000
	D	4.000	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
B-CD	0.04	0.12	0.04	A	16.52	24.78	2.81	0.11	0.03	2.81	0.11
B-A	0.05	0.26	0.06	C	11.01	16.52	3.69	0.22	0.04	3.69	0.22
A-B	-	-	-	-	6.42	9.64	-	-	-	-	-
A-C	-	-	-	-	579.93	869.90	-	-	-	-	-
A-D	-	-	-	-	100.94	151.41	-	-	-	-	-
AB-C	-	-	-	-	593.68	890.52	-	-	-	-	-
AB-D	0.26	0.17	0.35	B	103.69	155.53	23.67	0.15	0.26	23.67	0.15
D-AB	0.28	0.17	0.38	B	109.20	163.79	24.82	0.15	0.28	24.82	0.15
D-C	0.23	0.31	0.30	C	49.55	74.33	18.07	0.24	0.20	18.08	0.24
C-D	-	-	-	-	51.39	77.08	-	-	-	-	-
C-A	-	-	-	-	664.36	996.53	-	-	-	-	-
C-B	-	-	-	-	9.18	13.76	-	-	-	-	-
CD-A	-	-	-	-	768.83	1153.25	-	-	-	-	-
CD-B	0.03	0.12	0.03	A	13.76	20.64	2.37	0.11	0.03	2.37	0.11

Main Results for each time segment

Main results: (07:45-08:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	13.55	3.39	13.46	0.00	575.49	0.024	0.00	0.02	0.107	A
B-A	9.03	2.26	8.92	0.00	325.86	0.028	0.00	0.03	0.189	B
A-B	5.27	1.32	5.27	0.00	-	-	-	-	-	-
A-C	475.80	118.95	475.80	0.00	-	-	-	-	-	-
A-D	82.81	20.70	82.81	0.00	-	-	-	-	-	-
AB-C	487.01	121.75	487.01	0.00	-	-	-	-	-	-
AB-D	85.06	21.26	84.30	0.00	529.37	0.161	0.00	0.19	0.135	A
D-AB	89.59	22.40	88.81	0.00	546.05	0.164	0.00	0.19	0.131	A
D-C	40.65	10.16	40.14	0.00	354.18	0.115	0.00	0.13	0.191	B
C-D	42.16	10.54	42.16	0.00	-	-	-	-	-	-
C-A	545.07	136.27	545.07	0.00	-	-	-	-	-	-
C-B	7.53	1.88	7.53	0.00	-	-	-	-	-	-
CD-A	630.15	157.54	630.15	0.00	-	-	-	-	-	-
CD-B	11.26	2.82	11.18	0.00	563.06	0.020	0.00	0.02	0.109	A

Main results: (08:00-08:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	16.18	4.05	16.16	0.00	550.38	0.029	0.02	0.03	0.112	A
B-A	10.79	2.70	10.75	0.00	290.52	0.037	0.03	0.04	0.214	B
A-B	6.29	1.57	6.29	0.00	-	-	-	-	-	-
A-C	568.16	142.04	568.16	0.00	-	-	-	-	-	-
A-D	98.89	24.72	98.89	0.00	-	-	-	-	-	-
AB-C	581.62	145.40	581.62	0.00	-	-	-	-	-	-
AB-D	101.58	25.40	101.35	0.00	505.81	0.201	0.19	0.25	0.148	A
D-AB	106.98	26.74	106.72	0.00	517.04	0.207	0.19	0.26	0.146	A
D-C	48.54	12.14	48.33	0.00	313.06	0.155	0.13	0.18	0.226	B
C-D	50.34	12.59	50.34	0.00	-	-	-	-	-	-
C-A	650.86	162.72	650.86	0.00	-	-	-	-	-	-
C-B	8.99	2.25	8.99	0.00	-	-	-	-	-	-
CD-A	753.10	188.28	753.10	0.00	-	-	-	-	-	-
CD-B	13.47	3.37	13.45	0.00	539.89	0.025	0.02	0.03	0.114	A

Main results: (08:15-08:30)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	19.82	4.95	19.78	0.00	515.52	0.038	0.03	0.04	0.121	A
B-A	13.21	3.30	13.14	0.00	241.61	0.055	0.04	0.06	0.263	C
A-B	7.71	1.93	7.71	0.00	-	-	-	-	-	-
A-C	695.84	173.96	695.84	0.00	-	-	-	-	-	-
A-D	121.11	30.28	121.11	0.00	-	-	-	-	-	-
AB-C	712.33	178.08	712.33	0.00	-	-	-	-	-	-
AB-D	124.41	31.10	124.00	0.00	473.24	0.263	0.25	0.35	0.172	B
D-AB	131.02	32.76	130.55	0.00	474.53	0.276	0.26	0.38	0.174	B
D-C	59.46	14.86	59.00	0.00	256.01	0.232	0.18	0.29	0.304	C

C-D	61.66	15.41	61.66	0.00	-	-	-	-	-	-
C-A	797.14	199.28	797.14	0.00	-	-	-	-	-	-
C-B	11.01	2.75	11.01	0.00	-	-	-	-	-	-
CD-A	922.20	230.55	922.20	0.00	-	-	-	-	-	-
CD-B	16.50	4.12	16.46	0.00	507.86	0.032	0.03	0.03	0.122	A

Main results: (08:30-08:45)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	19.82	4.95	19.82	0.00	515.32	0.038	0.04	0.04	0.121	A
B-A	13.21	3.30	13.21	0.00	241.62	0.055	0.06	0.06	0.263	C
A-B	7.71	1.93	7.71	0.00	-	-	-	-	-	-
A-C	695.84	173.96	695.84	0.00	-	-	-	-	-	-
A-D	121.11	30.28	121.11	0.00	-	-	-	-	-	-
AB-C	712.36	178.09	712.36	0.00	-	-	-	-	-	-
AB-D	124.42	31.10	124.40	0.00	473.25	0.263	0.35	0.35	0.172	B
D-AB	131.02	32.76	131.01	0.00	474.22	0.276	0.38	0.38	0.175	B
D-C	59.46	14.86	59.44	0.00	255.89	0.232	0.29	0.30	0.305	C
C-D	61.66	15.41	61.66	0.00	-	-	-	-	-	-
C-A	797.14	199.28	797.14	0.00	-	-	-	-	-	-
C-B	11.01	2.75	11.01	0.00	-	-	-	-	-	-
CD-A	922.64	230.66	922.64	0.00	-	-	-	-	-	-
CD-B	16.51	4.13	16.51	0.00	507.86	0.033	0.03	0.03	0.122	A

Main results: (08:45-09:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	16.18	4.05	16.22	0.00	550.01	0.029	0.04	0.03	0.112	A
B-A	10.79	2.70	10.86	0.00	290.59	0.037	0.06	0.04	0.215	B
A-B	6.29	1.57	6.29	0.00	-	-	-	-	-	-
A-C	568.16	142.04	568.16	0.00	-	-	-	-	-	-
A-D	98.89	24.72	98.89	0.00	-	-	-	-	-	-
AB-C	581.67	145.42	581.67	0.00	-	-	-	-	-	-
AB-D	101.59	25.40	101.99	0.00	505.81	0.201	0.35	0.25	0.149	A
D-AB	106.98	26.74	107.44	0.00	516.65	0.207	0.38	0.26	0.147	A
D-C	48.54	12.14	48.99	0.00	312.92	0.155	0.30	0.19	0.228	B
C-D	50.34	12.59	50.34	0.00	-	-	-	-	-	-
C-A	650.86	162.72	650.86	0.00	-	-	-	-	-	-
C-B	8.99	2.25	8.99	0.00	-	-	-	-	-	-
CD-A	753.79	188.45	753.79	0.00	-	-	-	-	-	-
CD-B	13.50	3.38	13.53	0.00	539.89	0.025	0.03	0.03	0.114	A

Main results: (09:00-09:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	13.55	3.39	13.58	0.00	575.02	0.024	0.03	0.02	0.107	A
B-A	9.03	2.26	9.08	0.00	325.95	0.028	0.04	0.03	0.189	B
A-B	5.27	1.32	5.27	0.00	-	-	-	-	-	-
A-C	475.80	118.95	475.80	0.00	-	-	-	-	-	-
A-D	82.81	20.70	82.81	0.00	-	-	-	-	-	-
AB-C	487.12	121.78	487.12	0.00	-	-	-	-	-	-
AB-D	85.08	21.27	85.32	0.00	529.37	0.161	0.25	0.19	0.135	A
D-AB	89.59	22.40	89.85	0.00	545.67	0.164	0.26	0.20	0.132	A
D-C	40.65	10.16	40.87	0.00	353.94	0.115	0.19	0.13	0.192	B
C-D	42.16	10.54	42.16	0.00	-	-	-	-	-	-

C-A	545.07	136.27	545.07	0.00	-	-	-	-	-	-
C-B	7.53	1.88	7.53	0.00	-	-	-	-	-	-
CD-A	631.14	157.79	631.14	0.00	-	-	-	-	-	-
CD-B	11.30	2.83	11.32	0.00	563.06	0.020	0.03	0.02	0.109	A

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.35	0.02	0.107	A	A
B-A	0.40	0.03	0.189	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.73	0.18	0.135	A	A
D-AB	2.81	0.19	0.131	A	A
D-C	1.83	0.12	0.191	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.29	0.02	0.109	A	A

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.44	0.03	0.112	A	A
B-A	0.55	0.04	0.214	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	3.63	0.24	0.148	A	A
D-AB	3.77	0.25	0.146	A	A
D-C	2.61	0.17	0.226	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.37	0.02	0.114	A	A

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.58	0.04	0.121	A	A
B-A	0.82	0.05	0.263	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	5.10	0.34	0.172	B	B
D-AB	5.44	0.36	0.174	B	B
D-C	4.20	0.28	0.304	C	B

C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.49	0.03	0.122	A	A

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.60	0.04	0.121	A	A
B-A	0.86	0.06	0.263	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	5.29	0.35	0.172	B	B
D-AB	5.66	0.38	0.175	B	B
D-C	4.46	0.30	0.305	C	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.50	0.03	0.122	A	A

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.47	0.03	0.112	A	A
B-A	0.61	0.04	0.215	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	3.93	0.26	0.149	A	A
D-AB	4.09	0.27	0.147	A	A
D-C	2.93	0.20	0.228	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.40	0.03	0.114	A	A

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.37	0.02	0.107	A	A
B-A	0.45	0.03	0.189	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.98	0.20	0.135	A	A
D-AB	3.06	0.20	0.132	A	A
D-C	2.04	0.14	0.192	B	B

C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.32	0.02	0.109	A	A

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\PICADY\A671-Wiswell Lane-Wiswell Shay

Report generation date: 28/03/2012 11:21:04

Existing Layout - 2010 Existing, PM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

PM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Stream B-CD	0.02	0.11	0.02	A	62% [Stream D-C]
Stream B-A	0.02	0.23	0.02	B	
Stream A-B	-	-	-	-	
Stream A-C	-	-	-	-	
Stream A-D	-	-	-	-	
Stream AB-C	-	-	-	-	
Stream AB-D	0.20	0.14	0.17	A	
Stream D-AB	0.19	0.13	0.16	A	
Stream D-C	0.08	0.22	0.08	B	
Stream C-D	-	-	-	-	
Stream C-A	-	-	-	-	
Stream C-B	-	-	-	-	
Stream CD-A	-	-	-	-	
Stream CD-B	0.05	0.12	0.05	A	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

"D1 - 2010 Existing, AM Peak" model duration: 07:45 - 09:15

"D2 - 2010 Existing, PM Peak" model duration: 16:45 - 18:15

"D3 - 2017 Base, AM Peak" model duration: 07:45 - 09:15

"D4 - 2017 Base, PM Peak" model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 11:20:14

File summary

File Description

Title	2010 Existing and 2016 Base Assessment
Location	A671 Accrington Road / Wiswell Lane / Wiswell Shay

Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	06/352
Enumerator	rspencer [BGH19]
Description	Staggered Major/Minor Priority Junction with two right turn holding lanes

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout 2010 Existing BM Book

Existing Layout - 2010 Existing, PM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing, PM Peak	2010 Existing	PM Peak		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		0.14	A

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	62	Stream D-C

Arms

Arms

Arm	Name	Description	Arm Type
A	A671 Accrington Road North		Major
B	Wiswell Shay		Minor
C	A671 Accrington Road South		Major
D	Wiswell Lane		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	11.80		0.00	✓	2.50	150.00		
C	12.00		0.00	✓	2.50	150.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	7.00	4.50	3.50	3.00	✓	1.00	25	25
D	One lane plus flare				10.00	10.00	5.00	3.30	3.00	✓	2.00	70	40

C	620.000	14.000	0.000	42.000
D	72.000	7.000	21.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

	To				
From		A	B	C	D
	A	0.00	0.03	0.87	0.10
	B	0.31	0.00	0.44	0.25
	C	0.92	0.02	0.00	0.06
	D	0.72	0.07	0.21	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

	To				
From		A	B	C	D
	A	1.000	1.000	1.040	1.010
	B	1.000	1.000	1.000	1.000
	C	1.030	1.000	1.000	1.000
	D	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To				
From		A	B	C	D
	A	0.000	0.000	4.000	1.000
	B	0.000	0.000	0.000	0.000
	C	3.000	0.000	0.000	0.000
	D	0.000	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
B-CD	0.02	0.11	0.02	A	10.09	15.14	1.61	0.11	0.02	1.61	0.11
B-A	0.02	0.23	0.02	B	4.59	6.88	1.42	0.21	0.02	1.42	0.21
A-B	-	-	-	-	22.94	34.41	-	-	-	-	-
A-C	-	-	-	-	603.79	905.69	-	-	-	-	-
A-D	-	-	-	-	69.74	104.61	-	-	-	-	-
AB-C	-	-	-	-	610.21	915.31	-	-	-	-	-
AB-D	0.17	0.14	0.20	A	73.41	110.11	13.89	0.13	0.15	13.89	0.13
D-AB	0.16	0.13	0.19	A	72.49	108.74	12.89	0.12	0.14	12.89	0.12
D-C	0.08	0.22	0.08	B	19.27	28.90	5.48	0.19	0.06	5.48	0.19
C-D	-	-	-	-	38.54	57.81	-	-	-	-	-
C-A	-	-	-	-	568.92	853.38	-	-	-	-	-
C-B	-	-	-	-	12.85	19.27	-	-	-	-	-
CD-A	-	-	-	-	634.93	952.39	-	-	-	-	-
CD-B	0.05	0.12	0.05	A	19.26	28.90	3.33	0.12	0.04	3.33	0.12

Main Results for each time segment

Main results: (16:45-17:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	8.28	2.07	8.23	0.00	601.20	0.014	0.00	0.01	0.101	A
B-A	3.76	0.94	3.72	0.00	334.21	0.011	0.00	0.01	0.182	B
A-B	18.82	4.71	18.82	0.00	-	-	-	-	-	-
A-C	495.38	123.84	495.38	0.00	-	-	-	-	-	-
A-D	57.22	14.30	57.22	0.00	-	-	-	-	-	-
AB-C	500.61	125.15	500.61	0.00	-	-	-	-	-	-
AB-D	60.21	15.05	59.74	0.00	573.58	0.105	0.00	0.12	0.117	A
D-AB	59.48	14.87	59.04	0.00	606.28	0.098	0.00	0.11	0.109	A
D-C	15.81	3.95	15.64	0.00	380.04	0.042	0.00	0.04	0.165	A
C-D	31.62	7.90	31.62	0.00	-	-	-	-	-	-
C-A	466.77	116.69	466.77	0.00	-	-	-	-	-	-
C-B	10.54	2.63	10.54	0.00	-	-	-	-	-	-
CD-A	520.58	130.15	520.58	0.00	-	-	-	-	-	-
CD-B	15.77	3.94	15.66	0.00	566.78	0.026	0.00	0.03	0.109	A

Main results: (17:00-17:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	9.89	2.47	9.88	0.00	577.23	0.017	0.01	0.02	0.106	A
B-A	4.49	1.12	4.48	0.00	303.77	0.015	0.01	0.01	0.200	B
A-B	22.47	5.62	22.47	0.00	-	-	-	-	-	-
A-C	591.53	147.88	591.53	0.00	-	-	-	-	-	-
A-D	68.32	17.08	68.32	0.00	-	-	-	-	-	-
AB-C	597.81	149.45	597.81	0.00	-	-	-	-	-	-
AB-D	71.91	17.98	71.79	0.00	553.71	0.130	0.12	0.15	0.124	A
D-AB	71.02	17.75	70.90	0.00	584.14	0.122	0.11	0.14	0.117	A
D-C	18.88	4.72	18.82	0.00	345.81	0.055	0.04	0.06	0.183	B
C-D	37.76	9.44	37.76	0.00	-	-	-	-	-	-
C-A	557.37	139.34	557.37	0.00	-	-	-	-	-	-
C-B	12.59	3.15	12.59	0.00	-	-	-	-	-	-
CD-A	621.99	155.50	621.99	0.00	-	-	-	-	-	-
CD-B	18.87	4.72	18.84	0.00	544.34	0.035	0.03	0.04	0.114	A

Main results: (17:15-17:30)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	12.11	3.03	12.09	0.00	544.22	0.022	0.02	0.02	0.113	A
B-A	5.51	1.38	5.48	0.00	261.60	0.021	0.01	0.02	0.234	B
A-B	27.53	6.88	27.53	0.00	-	-	-	-	-	-
A-C	724.47	181.12	724.47	0.00	-	-	-	-	-	-
A-D	83.68	20.92	83.68	0.00	-	-	-	-	-	-
AB-C	732.16	183.04	732.16	0.00	-	-	-	-	-	-
AB-D	88.07	22.02	87.87	0.00	526.23	0.167	0.15	0.20	0.137	A
D-AB	86.98	21.75	86.79	0.00	553.15	0.157	0.14	0.18	0.129	A
D-C	23.12	5.78	23.02	0.00	298.58	0.077	0.06	0.08	0.218	B
C-D	46.24	11.56	46.24	0.00	-	-	-	-	-	-

C-A	682.63	170.66	682.63	0.00	-	-	-	-	-	-
C-B	15.41	3.85	15.41	0.00	-	-	-	-	-	-
CD-A	761.74	190.43	761.74	0.00	-	-	-	-	-	-
CD-B	23.10	5.78	23.06	0.00	513.30	0.045	0.04	0.05	0.122	A

Main results: (17:30-17:45)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	12.11	3.03	12.11	0.00	544.09	0.022	0.02	0.02	0.113	A
B-A	5.51	1.38	5.50	0.00	261.63	0.021	0.02	0.02	0.234	B
A-B	27.53	6.88	27.53	0.00	-	-	-	-	-	-
A-C	724.47	181.12	724.47	0.00	-	-	-	-	-	-
A-D	83.68	20.92	83.68	0.00	-	-	-	-	-	-
AB-C	732.18	183.04	732.18	0.00	-	-	-	-	-	-
AB-D	88.08	22.02	88.08	0.00	526.23	0.167	0.20	0.20	0.137	A
D-AB	86.98	21.75	86.98	0.00	553.08	0.157	0.18	0.19	0.129	A
D-C	23.12	5.78	23.12	0.00	298.53	0.077	0.08	0.08	0.218	B
C-D	46.24	11.56	46.24	0.00	-	-	-	-	-	-
C-A	682.63	170.66	682.63	0.00	-	-	-	-	-	-
C-B	15.41	3.85	15.41	0.00	-	-	-	-	-	-
CD-A	761.90	190.48	761.90	0.00	-	-	-	-	-	-
CD-B	23.12	5.78	23.12	0.00	513.30	0.045	0.05	0.05	0.122	A

Main results: (17:45-18:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	9.89	2.47	9.91	0.00	576.98	0.017	0.02	0.02	0.106	A
B-A	4.49	1.12	4.52	0.00	303.85	0.015	0.02	0.02	0.200	B
A-B	22.47	5.62	22.47	0.00	-	-	-	-	-	-
A-C	591.53	147.88	591.53	0.00	-	-	-	-	-	-
A-D	68.32	17.08	68.32	0.00	-	-	-	-	-	-
AB-C	597.83	149.46	597.83	0.00	-	-	-	-	-	-
AB-D	71.93	17.98	72.12	0.00	553.71	0.130	0.20	0.15	0.125	A
D-AB	71.02	17.75	71.20	0.00	584.04	0.122	0.19	0.14	0.117	A
D-C	18.88	4.72	18.98	0.00	345.75	0.055	0.08	0.06	0.184	B
C-D	37.76	9.44	37.76	0.00	-	-	-	-	-	-
C-A	557.37	139.34	557.37	0.00	-	-	-	-	-	-
C-B	12.59	3.15	12.59	0.00	-	-	-	-	-	-
CD-A	622.26	155.57	622.26	0.00	-	-	-	-	-	-
CD-B	18.89	4.72	18.94	0.00	544.34	0.035	0.05	0.04	0.114	A

Main results: (18:00-18:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	8.28	2.07	8.30	0.00	600.84	0.014	0.02	0.01	0.101	A
B-A	3.76	0.94	3.78	0.00	334.32	0.011	0.02	0.01	0.182	B
A-B	18.82	4.71	18.82	0.00	-	-	-	-	-	-
A-C	495.38	123.84	495.38	0.00	-	-	-	-	-	-
A-D	57.22	14.30	57.22	0.00	-	-	-	-	-	-
AB-C	500.65	125.16	500.65	0.00	-	-	-	-	-	-
AB-D	60.23	15.06	60.36	0.00	573.58	0.105	0.15	0.12	0.117	A
D-AB	59.48	14.87	59.60	0.00	606.14	0.098	0.14	0.11	0.110	A
D-C	15.81	3.95	15.87	0.00	379.91	0.042	0.06	0.04	0.165	A
C-D	31.62	7.90	31.62	0.00	-	-	-	-	-	-
C-A	466.77	116.69	466.77	0.00	-	-	-	-	-	-

C-B	10.54	2.63	10.54	0.00	-	-	-	-	-	-
CD-A	521.08	130.27	521.08	0.00	-	-	-	-	-	-
CD-B	15.82	3.96	15.85	0.00	566.78	0.028	0.04	0.03	0.109	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.20	0.01	0.101	A	A
B-A	0.16	0.01	0.182	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	1.69	0.11	0.117	A	A
D-AB	1.57	0.10	0.109	A	A
D-C	0.62	0.04	0.165	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.41	0.03	0.109	A	A

Queueing Delay results: (17:00-17:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.26	0.02	0.106	A	A
B-A	0.22	0.01	0.200	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.17	0.14	0.124	A	A
D-AB	2.02	0.13	0.117	A	A
D-C	0.83	0.06	0.183	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.52	0.03	0.114	A	A

Queueing Delay results: (17:15-17:30)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.33	0.02	0.113	A	A
B-A	0.31	0.02	0.234	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.91	0.19	0.137	A	A
D-AB	2.71	0.18	0.129	A	A
D-C	1.20	0.08	0.218	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	-	-	-	-	-

C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.69	0.05	0.122	A	A

Queueing Delay results: (17:30-17:45)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.34	0.02	0.113	A	A
B-A	0.32	0.02	0.234	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.99	0.20	0.137	A	A
D-AB	2.78	0.19	0.129	A	A
D-C	1.25	0.08	0.218	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.70	0.05	0.122	A	A

Queueing Delay results: (17:45-18:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.27	0.02	0.106	A	A
B-A	0.24	0.02	0.200	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.32	0.15	0.125	A	A
D-AB	2.14	0.14	0.117	A	A
D-C	0.91	0.06	0.184	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.56	0.04	0.114	A	A

Queueing Delay results: (18:00-18:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.21	0.01	0.101	A	A
B-A	0.18	0.01	0.182	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	1.81	0.12	0.117	A	A
D-AB	1.68	0.11	0.110	A	A
D-C	0.68	0.05	0.165	A	A
C-D	-	-	-	-	-

C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.44	0.03	0.109	A	A

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base AM Peak Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\A59-A671
Whalley Easterly Bypass\AM PEAK ASSESSMENT

Report generation date: 28/03/2012 11:33:15

Existing Layout - 2010 Existing, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing					
Arm A	1.39	0.07	0.58	A	32% [Arm B]
Arm B	1.94	0.12	0.66	A	
Arm C	0.79	0.06	0.44	A	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, AM Peak' model duration: 07:45 - 09:15

'D2 - 2017 Base, AM Peak' model duration: 07:45 - 09:15

Run using ARCADY 8.0.0.296 at 28/03/2012 11:33:13

File summary

File Description

Title	2010 Existing and 2016 Base AM Peak Assessment
Location	A59/A671 Whalley Easterly Bypass - Roundabout Junction
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	06/352
Enumerator	rspencer [BGH19]
Description	A59/A671 Whalley Easterly Bypass - Roundabout Junction

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2010 Existing, AM Peak

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm C - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
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Existing Layout	ARCADY		✓				100.000	100.000	
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Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing, AM Peak	2010 Existing	AM Peak		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	Roundabout	A,B,C				0.08	A

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	32	Arm B

Arms

Arms

Arm	Name	Description
A	A59 North	
B	A671 Whalley Easterly Bypass	
C	A59 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	L - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A	7.60	7.60	0.00	35.00	93.00	18.00	
B	3.50	6.30	40.00	55.00	93.00	20.00	
C	3.80	7.30	140.00	90.00	93.00	20.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.572	2446.949
B		(calculated)	(calculated)	0.491	1869.058
C		(calculated)	(calculated)	0.552	2288.510

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	1145.00	100.000
B	ONE HOUR	✓	864.00	100.000
C	ONE HOUR	✓	694.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.000	620.000	525.000
	B	618.000	0.000	246.000
	C	556.000	138.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.00	0.54	0.46
	B	0.72	0.00	0.28
	C	0.80	0.20	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.080	1.100
	B	1.090	1.000	1.070

	C	1.100	1.040	1.000
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Heavy Vehicle Percentages - Junction 1 (for whole period)

	To			
		A	B	C
	A	0.000	8.000	10.000
	B	9.000	0.000	7.000
From	C	10.000	4.000	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	0.58	0.07	1.39	A	1050.67	1576.01	87.31	0.06	0.97	87.31	0.06
B	0.66	0.12	1.94	A	792.82	1189.23	111.43	0.09	1.24	111.44	0.09
C	0.44	0.06	0.79	A	636.83	955.24	51.21	0.05	0.57	51.21	0.05

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	862.02	215.50	859.43	880.48	103.58	0.00	2190.01	2071.81	0.394	0.00	0.65	0.045	A
B	650.46	162.62	647.52	568.95	394.06	0.00	1527.25	1250.08	0.426	0.00	0.74	0.068	A
C	522.48	130.62	520.91	578.43	463.16	0.00	1847.09	1608.70	0.283	0.00	0.39	0.045	A

Main results: (08:00-08:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1029.33	257.33	1028.36	1053.98	123.95	0.00	2178.88	2071.82	0.472	0.65	0.89	0.052	A
B	776.72	194.18	775.34	680.79	471.52	0.00	1488.63	1250.08	0.522	0.74	1.08	0.084	A
C	623.89	155.97	623.35	692.28	554.59	0.00	1796.52	1608.70	0.347	0.39	0.53	0.051	A

Main results: (08:15-08:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1260.67	315.17	1258.70	1289.37	151.74	0.00	2163.70	2071.81	0.583	0.89	1.38	0.066	A
B	951.28	237.82	947.92	833.30	577.13	0.00	1435.97	1250.08	0.662	1.08	1.92	0.122	A
C	764.11	191.03	763.08	847.03	678.03	0.00	1728.24	1608.70	0.442	0.53	0.79	0.062	A

Main results: (08:30-08:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1260.67	315.17	1260.64	1292.52	151.94	0.00	2163.58	2071.81	0.583	1.38	1.39	0.066	A
B	951.28	237.82	951.18	834.55	578.02	0.00	1435.53	1250.08	0.663	1.92	1.94	0.124	A
C	764.11	191.03	763.08	847.03	678.03	0.00	1728.05	1608.70	0.442	0.79	0.79	0.062	A

0	729.11	151.33	729.11	540.00	000.00	0.00	1729.53	1000.70	0.472	0.13	0.13	0.002	A
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Main results: (08:45-09:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1029.33	257.33	1031.28	1058.61	124.26	0.00	2178.71	2071.82	0.472	1.39	0.90	0.052	A
B	776.72	194.18	780.06	682.68	472.86	0.00	1487.96	1250.08	0.522	1.94	1.10	0.085	A
C	623.89	155.97	624.91	694.96	557.96	0.00	1794.66	1608.70	0.348	0.79	0.54	0.051	A

Main results: (09:00-09:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	862.02	215.50	863.01	885.32	104.00	0.00	2189.78	2071.81	0.394	0.90	0.65	0.045	A
B	650.46	162.62	651.89	571.31	395.70	0.00	1526.43	1250.08	0.426	1.10	0.75	0.069	A
C	522.48	130.62	523.04	581.31	466.28	0.00	1845.36	1608.70	0.283	0.54	0.40	0.045	A

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	9.49	0.63	0.045	A	A
B	10.72	0.71	0.068	A	A
C	5.78	0.39	0.045	A	A

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	13.10	0.87	0.052	A	A
B	15.72	1.05	0.084	A	A
C	7.82	0.52	0.051	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	20.16	1.34	0.066	A	A
B	27.35	1.82	0.122	A	A
C	11.55	0.77	0.062	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	20.79	1.39	0.066	A	A
B	28.97	1.93	0.124	A	A
C	11.84	0.79	0.062	A	A

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	13.82	0.92	0.052	A	A
B	17.16	1.14	0.085	A	A
C	8.18	0.55	0.051	A	A

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
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A	9.95	0.66	0.045	A	A
B	11.50	0.77	0.069	A	A
C	6.04	0.40	0.045	A	A

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base PM Peak Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\A59-A671
Whalley Easterly Bypass\PM PEAK ASSESSMENT

Report generation date: 28/03/2012 11:35:20

Existing Layout - 2010 Existing 2010, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2010 Existing 2010					
Arm A	1.14	0.06	0.53	A	67% [Arm B]
Arm B	0.99	0.08	0.50	A	
Arm C	0.75	0.06	0.43	A	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

"D1 - 2010 Existing 2010, AM Peak" model duration: 16:45 - 18:15

"D2 - 2017 Base, AM Peak" model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 11:35:19

File summary

File Description

Title	2010 Existing and 2016 Base PM Peak Assessment
Location	A59/A671 Whalley Easterly Bypass - Roundabout Junction
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	06/352
Enumerator	rspencer [BGH19]
Description	A59/A671 Whalley Easterly Bypass - Roundabout Junction

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2010 Existing 2010, AM Peak

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm C - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
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Existing Layout	ARCADY		✓				100.000	100.000	
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Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2010 Existing 2010, AM Peak	2010 Existing 2010	AM Peak		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	Roundabout	A,B,C				0.06	A

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	67	Arm B

Arms

Arms

Arm	Name	Description
A	A59 North	
B	A671 Whalley Easterly Bypass	
C	A59 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	F - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A	7.60	7.60	0.00	35.00	93.00	18.00	
B	3.50	6.30	40.00	55.00	93.00	20.00	
C	3.80	7.30	140.00	90.00	93.00	20.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.572	2446.949
B		(calculated)	(calculated)	0.491	1869.058
C		(calculated)	(calculated)	0.552	2288.510

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	1096.00	100.000
B	ONE HOUR	✓	705.00	100.000
C	ONE HOUR	✓	722.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.000	614.000	482.000
	B	583.000	0.000	122.000
	C	584.000	138.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.00	0.56	0.44
	B	0.83	0.00	0.17
	C	0.81	0.19	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.030	1.060

From	B	1.020	1.000	1.040
	C	1.040	1.040	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	3.000	6.000
	B	2.000	0.000	4.000
	C	4.000	4.000	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	0.53	0.06	1.14	A	1005.71	1508.57	73.65	0.05	0.82	73.66	0.05
B	0.50	0.08	0.99	A	646.92	970.38	63.12	0.07	0.70	63.12	0.07
C	0.43	0.06	0.75	A	662.52	993.78	49.04	0.05	0.54	49.04	0.05

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	825.13	206.28	822.88	875.78	103.60	0.00	2286.53	2171.12	0.361	0.00	0.56	0.041	A
B	530.76	132.69	528.86	564.60	361.89	0.00	1642.00	1340.18	0.323	0.00	0.48	0.054	A
C	543.56	135.89	542.03	453.41	437.34	0.00	1963.66	1600.35	0.277	0.00	0.38	0.042	A

Main results: (17:00-17:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	985.28	246.32	984.49	1048.12	123.96	0.00	2274.91	2171.12	0.433	0.56	0.76	0.046	A
B	633.78	158.45	633.09	675.49	432.96	0.00	1605.82	1340.18	0.395	0.48	0.65	0.062	A
C	649.06	162.27	648.55	542.52	523.53	0.00	1916.98	1600.35	0.339	0.38	0.51	0.047	A

Main results: (17:15-17:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1206.72	301.68	1205.21	1283.01	151.76	0.00	2259.05	2171.13	0.534	0.76	1.14	0.057	A
B	776.22	194.06	774.87	826.94	530.03	0.00	1556.41	1340.18	0.499	0.65	0.99	0.077	A
C	794.94	198.73	793.99	664.12	640.78	0.00	1853.49	1600.35	0.429	0.51	0.75	0.057	A

Main results: (17:30-17:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1206.72	301.68	1206.70	1284.86	151.94	0.00	2258.95	2171.13	0.534	1.14	1.14	0.057	A
B	776.22	194.06	776.20	827.95	530.68	0.00	1556.08	1340.18	0.499	0.99	0.99	0.077	A

C	794.94	198.73	794.93	665.00	641.88	0.00	1852.90	1600.35	0.429	0.75	0.75	0.057	A
---	--------	--------	--------	--------	--------	------	---------	---------	-------	------	------	-------	---

Main results: (17:45-18:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	985.28	246.32	986.78	1050.96	124.24	0.00	2274.75	2171.12	0.433	1.14	0.77	0.047	A
B	633.78	158.45	635.12	677.05	433.97	0.00	1605.31	1340.18	0.395	0.99	0.66	0.062	A
C	649.06	162.27	650.00	543.87	525.21	0.00	1916.08	1600.35	0.339	0.75	0.51	0.047	A

Main results: (18:00-18:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	825.13	206.28	825.93	879.58	103.99	0.00	2286.30	2171.12	0.361	0.77	0.57	0.041	A
B	530.76	132.69	531.47	566.69	363.23	0.00	1641.32	1340.18	0.323	0.66	0.48	0.054	A
C	543.56	135.89	544.08	455.20	439.50	0.00	1962.49	1600.35	0.277	0.51	0.38	0.042	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	8.28	0.55	0.041	A	A
B	6.97	0.46	0.054	A	A
C	5.62	0.37	0.042	A	A

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	11.22	0.75	0.046	A	A
B	9.53	0.64	0.062	A	A
C	7.53	0.50	0.047	A	A

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	16.68	1.11	0.057	A	A
B	14.38	0.96	0.077	A	A
C	10.98	0.73	0.057	A	A

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	17.11	1.14	0.057	A	A
B	14.82	0.99	0.077	A	A
C	11.22	0.75	0.057	A	A

Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	11.74	0.78	0.047	A	A
B	10.07	0.67	0.062	A	A
C	7.85	0.52	0.047	A	A

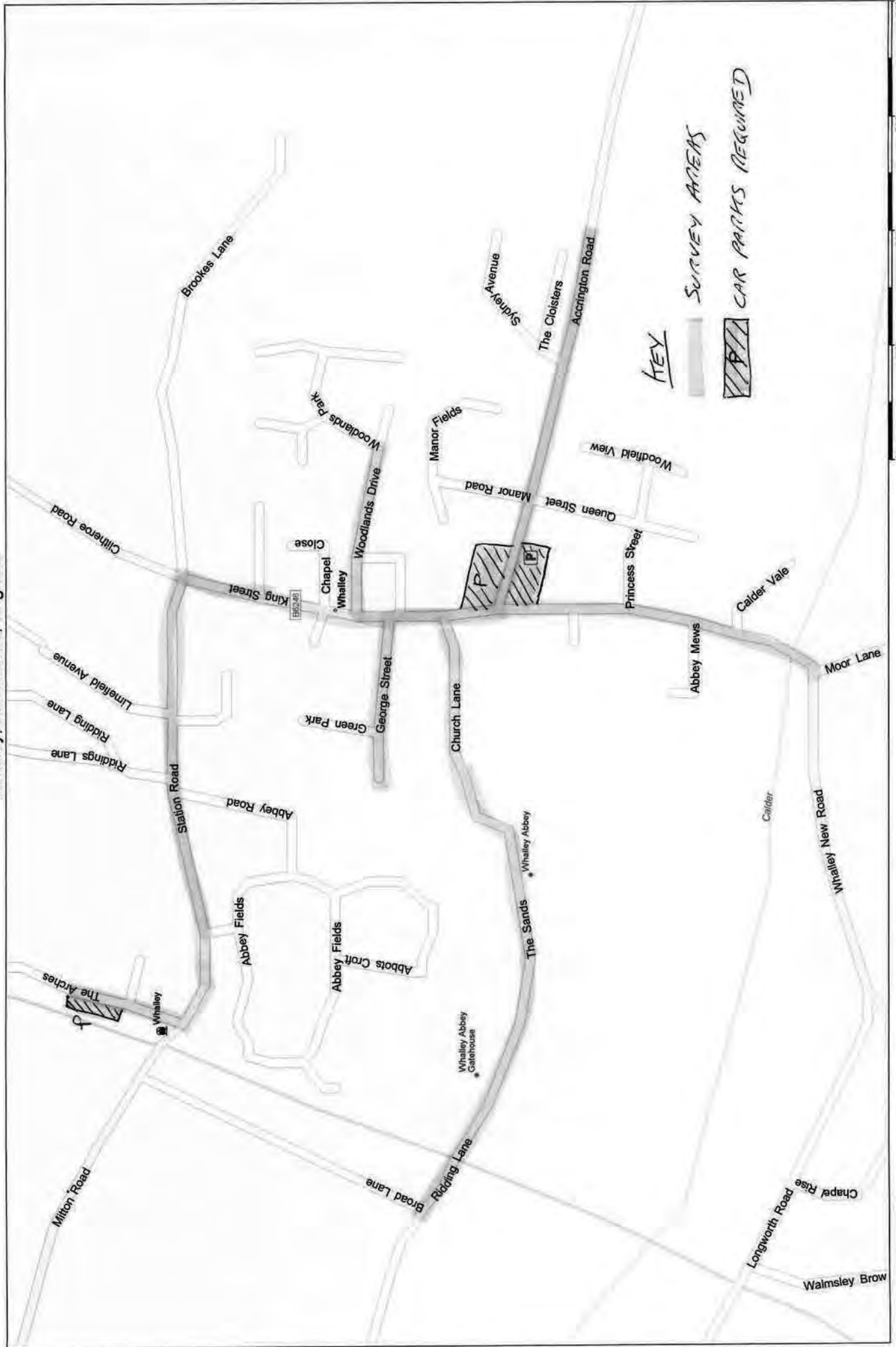
Queueing Delay results: (18:00-18:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
-----	--------------------------------	--------------------------------------	--	-------------------------------	-----------------------------

	min)	min/min)	(min)	Service	Service
A	8.63	0.58	0.041	A	A
B	7.33	0.49	0.054	A	A
C	5.85	0.39	0.042	A	A

APPENDIX BGH 4

Whalley, Lancashire, England



SITE LAYOUT

ZONE	DESCRIPTIONS	APPROX. CAPACITY
1	WHALLEY RAILWAY STATION CAR PARK	16
2	THE ARCHES - WESTERN SIDE OF ROAD	8
3	THE ARCHES - EASTERN SIDE OF ROAD	6
4	STATION ROAD SOUTHERN SIDE (BETWEEN THE ARCHES & ABBEY FIELDS)	0
5	STATION ROAD SOUTHERN SIDE (BETWEEN ABBEY FIELDS & ABBEY ROAD)	0
6	STATION ROAD NORTHERN SIDE (BETWEEN THE ARCHES & RIDDINGS LANE)	0
7	STATION ROAD SOUTHERN SIDE (BETWEEN ABBEY ROAD & THE GROVE)	0
8	STATION ROAD NORTHERN SIDE (BETWEEN RIDDINGS LANE & LIMEFIELD AVENUE)	0
9	STATION ROAD SOUTHERN SIDE (BETWEEN THE GROVE & KING STREET)	13
10	STATION ROAD NORTHERN SIDE (BETWEEN LIMEFIELD AVENUE & KING STREET)	8
11	KING STREET EASTERN SIDE (BETWEEN BROOKES LANE & BROOKSIDE CLOSE)	0
12	KING STREET EASTERN SIDE (BETWEEN BROOKSIDE CLOSE & CHAPEL CLOSE)	11
13	KING STREET WESTERN SIDE (BETWEEN STATION ROAD & GREENBANK)	15
14	KING STREET WESTERN SIDE (BETWEEN GREENBANK & GEORGE STREET)	3
15	GEORGE STREET NORTHERN SIDE	6
16	GEORGE STREET SOUTHERN SIDE	16
17	KING STREET WESTERN SIDE (BETWEEN GEORGE STREET & CHURCH LANE)	6
18	KING STREET WESTERN SIDE (BETWEEN CHURCH LANE & ACCRINGTON ROAD)	0
19	THE SWAN HOTEL CAR PARK	30
20	CHURCH LANE NORTHERN SIDE - UP TO SCHOOL	18
21	CHURCH LANE SOUTHERN SIDE - UP TO SCHOOL	31
22	THE SANDS NORTHERN SIDE - FROM SCHOOL TO BROAD LANE	31
23	THE SANDS SOUTHERN SIDE - FROM SCHOOL TO BROAD LANE	39
24	KING STREET WESTERN SIDE (BETWEEN ACCRINGTON ROAD & BACK KING STREET)	3
25	KING STREET WESTERN SIDE (BETWEEN BACK KING STREET & ABBEY MEWS)	16
26	KING STREET WESTERN SIDE (BETWEEN ABBEY MEWS & MOOR LANE)	4
27	KING STREET EASTERN SIDE (BETWEEN MOOR LANE & CALDER VALE)	0
28	KING STREET EASTERN SIDE (BETWEEN CALDER VALE & PRINCESS STREET)	8
29	KING STREET EASTERN SIDE (BETWEEN PRINCESS STREET & ACCRINGTON ROAD)	0
30	ACCRINGTON ROAD SOUTHERN SIDE (BETWEEN KING STREET & QUEEN STREET)	4
31	ACCRINGTON ROAD SOUTHERN SIDE (BETWEEN QUEEN STREET & 100 M EAST OF SYDNEY AVENUE)	36
32	ACCRINGTON ROAD NORTHERN SIDE (BETWEEN 100M EAST OF SYDNEY AVE & SYDNEY AVE)	15
33	ACCRINGTON ROAD NORTHERN SIDE (BETWEEN SYDNEY AVENUE & MANOR ROAD)	19
34	ACCRINGTON ROAD NORTHERN SIDE (BETWEEN MANOR STREET & KING STREET)	2
35	KING STREET EASTERN SIDE (BETWEEN ACCRINGTON ROAD & WOODLANDS)	7
36	KING STREET EASTERN SIDE (BETWEEN WOODLANDS & WOODLANDS GROVE)	0
37	WOODLANDS GROVE SOUTHERN SIDE (BETWEEN KINGS STREET & WOODLANDS PARK)	9
38	WOODLANDS GROVE NORTHERN SIDE (BETWEEN KINGS STREET & WOODLANDS PARK)	18
39	KING STREET EASTERN SIDE (BETWEEN WOODLANDS GROVE & CHAPEL CLOSE)	3
40	THE WHALLEY ARMS CAR PARK	38

APPENDIX BGH 5

Friday 15 October 2010

On Street Parking Only

TIME	Total Spaces Available	Total OCC	% Max Occupancy	Total OCC < 2 HOURS	% OCC < 2 HOURS	Total OCC > 2 HOURS	% OCC > 2 HOURS
08:00	358	83	23	35	42	48	58
08:30	358	114	32	52	46	62	54
09:00	358	146	41	46	32	100	68
09:30	358	162	45	46	28	116	72
10:00	358	174	49	47	27	127	73
10:30	358	172	48	47	27	125	73
11:00	358	170	47	40	24	129	76
11:30	358	169	47	37	22	132	78
12:00	358	183	51	52	28	130	71
12:30	358	160	45	40	25	120	75
13:00	358	169	47	56	33	113	67
13:30	358	169	47	54	32	114	67
14:00	358	158	44	41	26	117	74
14:30	358	165	46	46	28	119	72
15:00	358	182	51	62	34	120	66
15:30	358	161	45	49	30	112	70
16:00	358	154	43	50	32	104	68
16:30	358	145	41	60	41	85	59
17:00	358	127	35	51	40	76	60
17:30	358	110	31	44	40	66	60
18:00	358	104	29	45	43	59	57

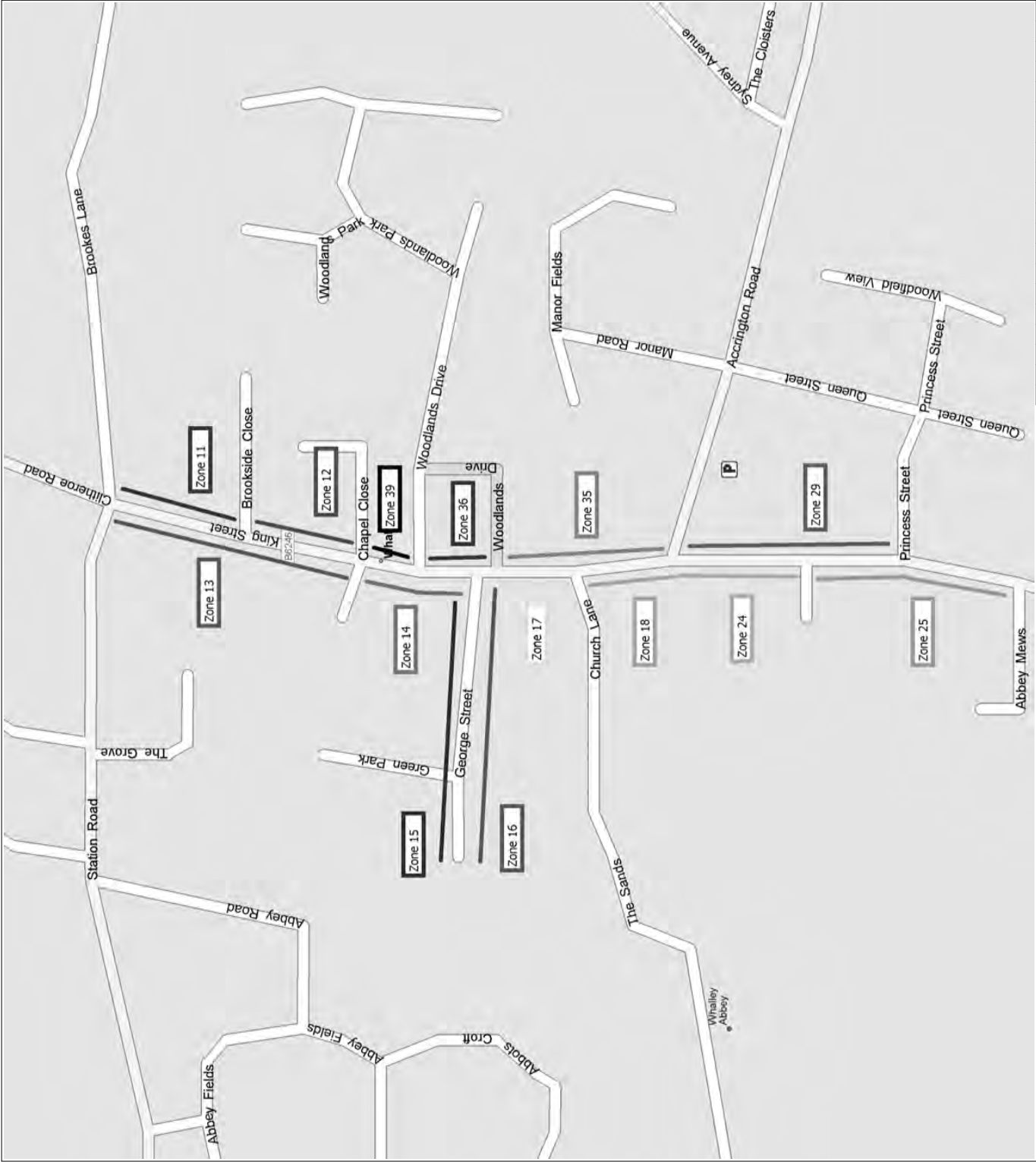
Saturday 16 October 2010

On Street Parking Only

TIME	Total Spaces Available	Total OCC	% Max Occupancy	Total OCC< 2 HOURS	% OCC< 2 HOURS	Total OCC > 2 HOURS	% OCC > 2 HOURS
08:00	358	74	21	23	31	51	69
08:30	358	88	25	29	33	59	67
09:00	358	99	28	28	28	71	72
09:30	358	116	32	36	31	80	69
10:00	358	121	34	31	26	90	74
10:30	358	126	35	35	28	91	72
11:00	358	139	39	47	34	92	66
11:30	358	144	40	55	38	89	62
12:00	358	139	39	50	36	89	64
12:30	358	137	38	51	37	86	63
13:00	358	145	41	52	36	93	64
13:30	358	160	45	64	40	96	60
14:00	358	161	45	67	42	94	58
14:30	358	161	45	74	46	87	54
15:00	358	145	41	55	38	90	62
15:30	358	183	51	93	51	90	49
16:00	358	156	44	73	47	83	53
16:30	358	190	53	114	60	76	40
17:00	358	162	45	90	56	72	44
17:30	358	104	29	50	48	54	52
18:00	358	92	26	48	52	44	48

APPENDIX BGH 6

Whalley, Lancashire, England



Friday 15 October 2010

On Street Town Centre Parking Only (Zones 11, 12, 13, 14, 15, 16, 17, 18, 24, 25, 29, 35, 36 & 39)

TIME	Total Spaces Avaialble	Total OCC	% Max Occupancy	Total OCC< 2 HOURS	% OCC< 2 HOURS	Total OCC > 2 HOURS	% OCC > 2 HOURS
08:00	86	23	27	11	48	12	52
08:30	86	35	41	18	51	17	49
09:00	86	58	67	23	40	35	60
09:30	86	61	71	21	34	40	66
10:00	86	67	78	22	33	45	67
10:30	86	64	74	22	34	42	66
11:00	86	65	76	20	31	44	68
11:30	86	64	74	16	25	48	75
12:00	86	70	81	23	33	46	66
12:30	86	60	70	15	25	45	75
13:00	86	66	77	25	38	41	62
13:30	86	67	78	25	37	41	61
14:00	86	60	70	18	30	42	70
14:30	86	60	70	19	32	41	68
15:00	86	60	70	22	37	38	63
15:30	86	60	70	23	38	37	62
16:00	86	59	69	23	39	36	61
16:30	86	56	65	28	50	28	50
17:00	86	51	59	28	55	23	45
17:30	86	42	49	23	55	19	45
18:00	86	42	49	26	62	16	38

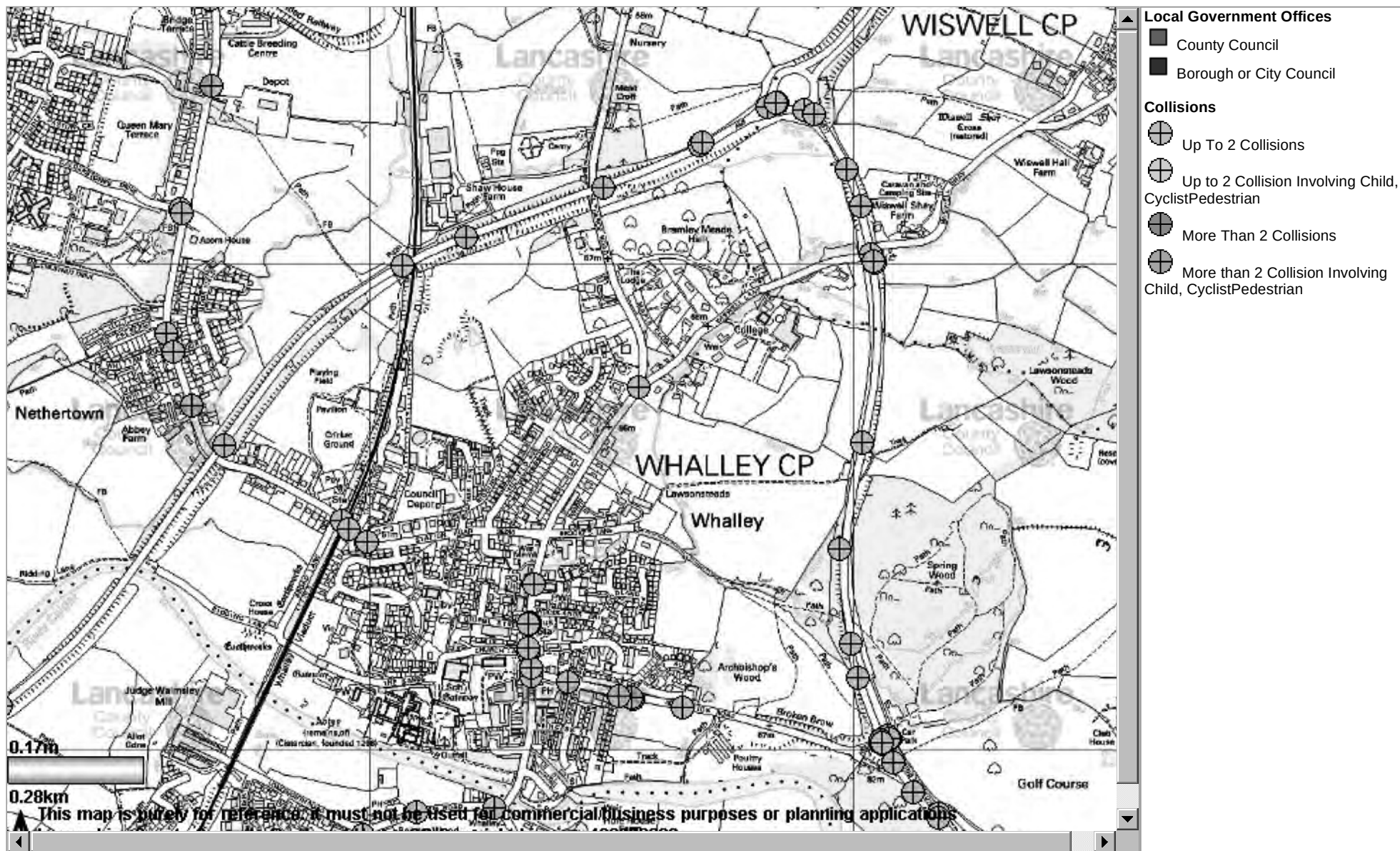
Saturday 16 October 2010

On Street Town Centre Parking (Zones 11, 12, 13, 14, 15, 16, 17, 18, 24, 25, 29, 35, 36 & 39)

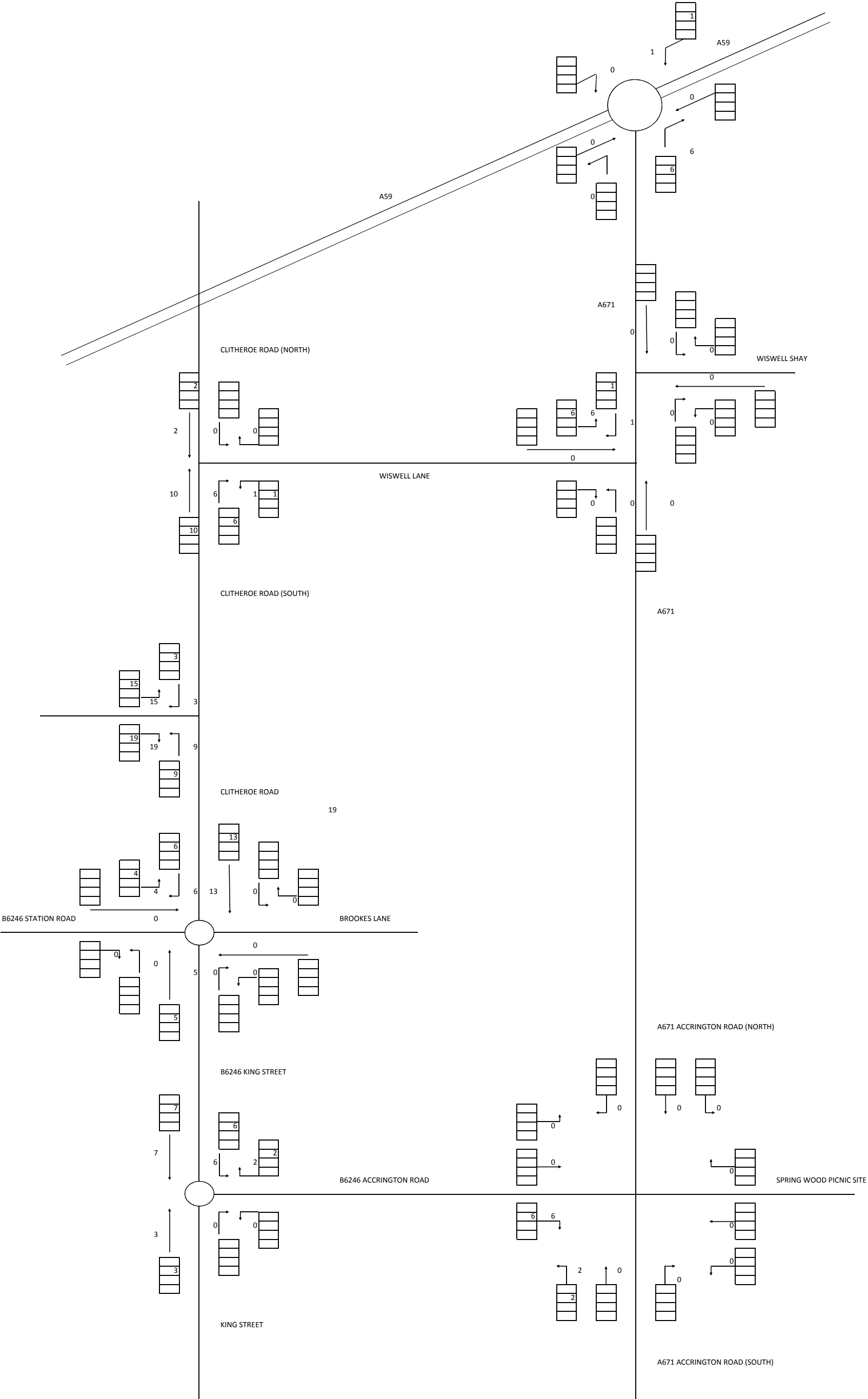
TIME	Total Spaces Available	Total OCC	% Max Occupancy	Total OCC < 2 HOURS	% OCC < 2 HOURS	Total OCC > 2 HOURS	% OCC > 2 HOURS
08:00	86	24	28	11	46	13	54
08:30	86	37	43	17	46	20	54
09:00	86	50	58	21	42	29	58
09:30	86	58	67	24	41	34	59
10:00	86	60	70	24	40	36	60
10:30	86	57	66	22	39	35	61
11:00	86	60	70	27	45	34	57
11:30	86	69	80	34	49	35	51
12:00	86	63	73	28	44	35	56
12:30	86	64	74	32	50	32	50
13:00	86	66	77	34	52	32	48
13:30	86	70	81	35	50	35	50
14:00	86	71	83	40	56	31	44
14:30	86	67	78	36	54	31	46
15:00	86	59	69	27	46	32	54
15:30	86	69	80	36	52	33	48
16:00	86	57	66	27	47	30	53
16:30	86	59	69	35	59	24	41
17:00	86	50	58	27	54	23	46
17:30	86	36	42	19	53	17	47
18:00	86	37	43	22	59	15	41

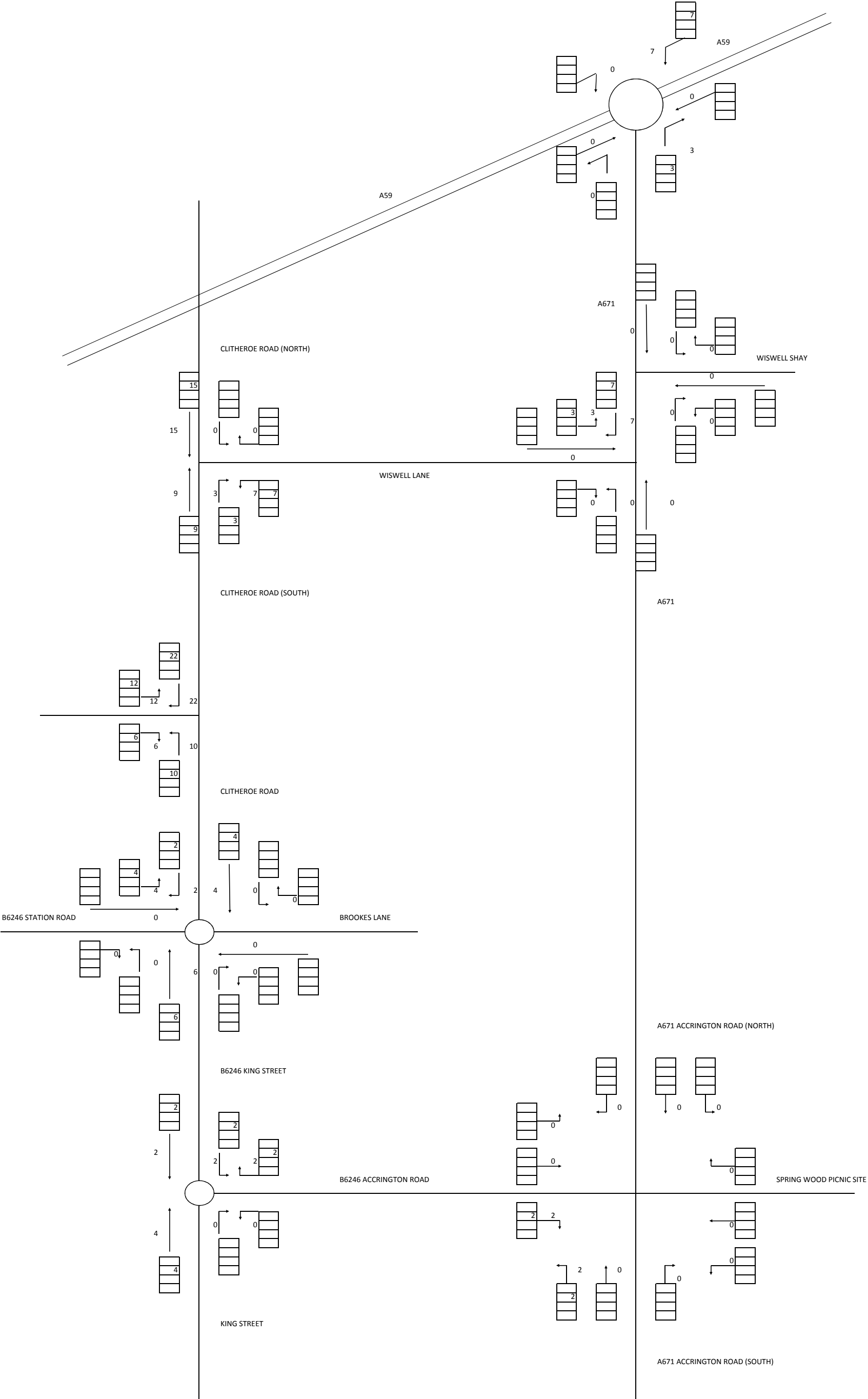
APPENDIX BGH 7

Personal Injury Accidents - Whalley

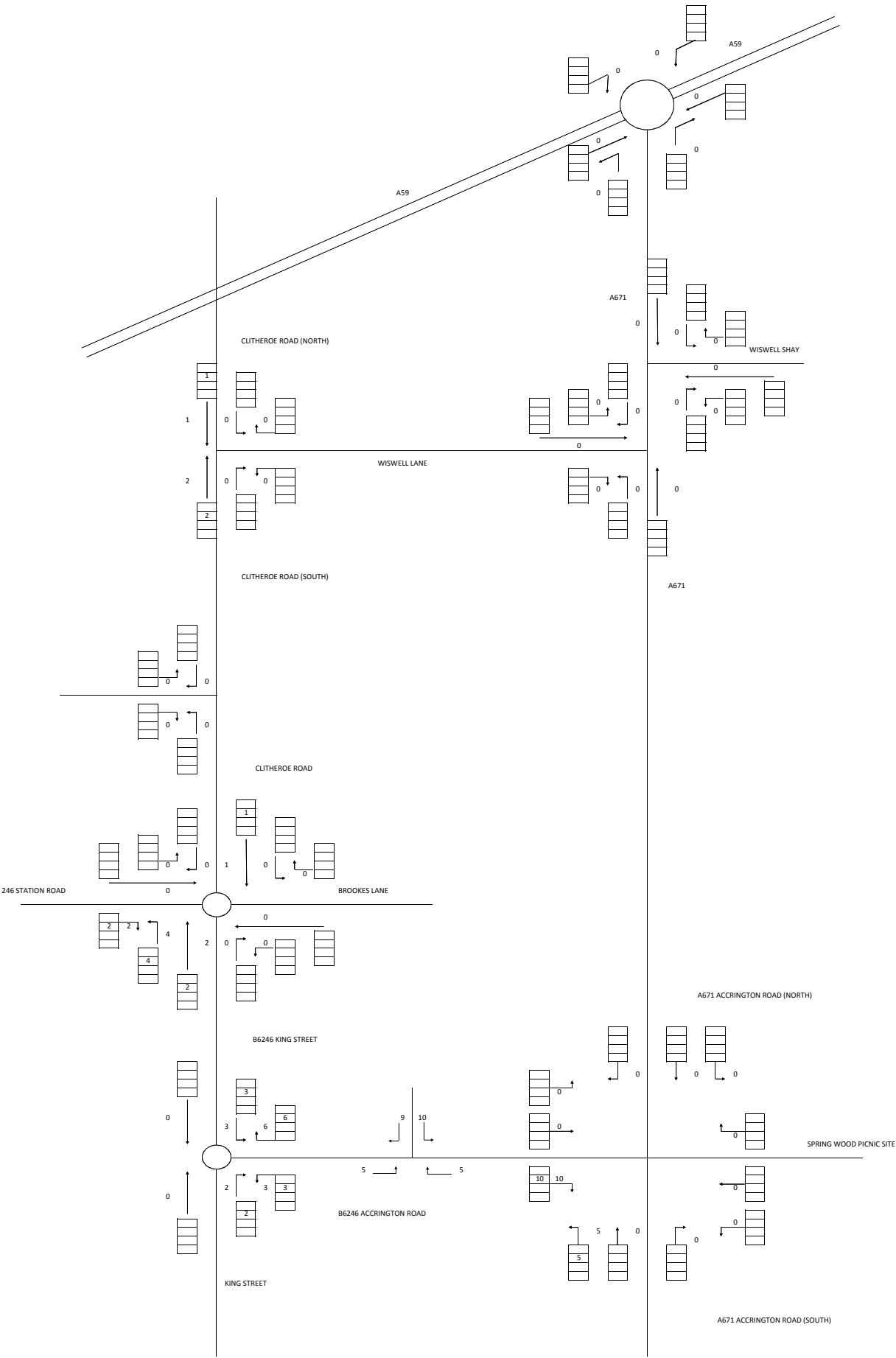


APPENDIX BGH 8

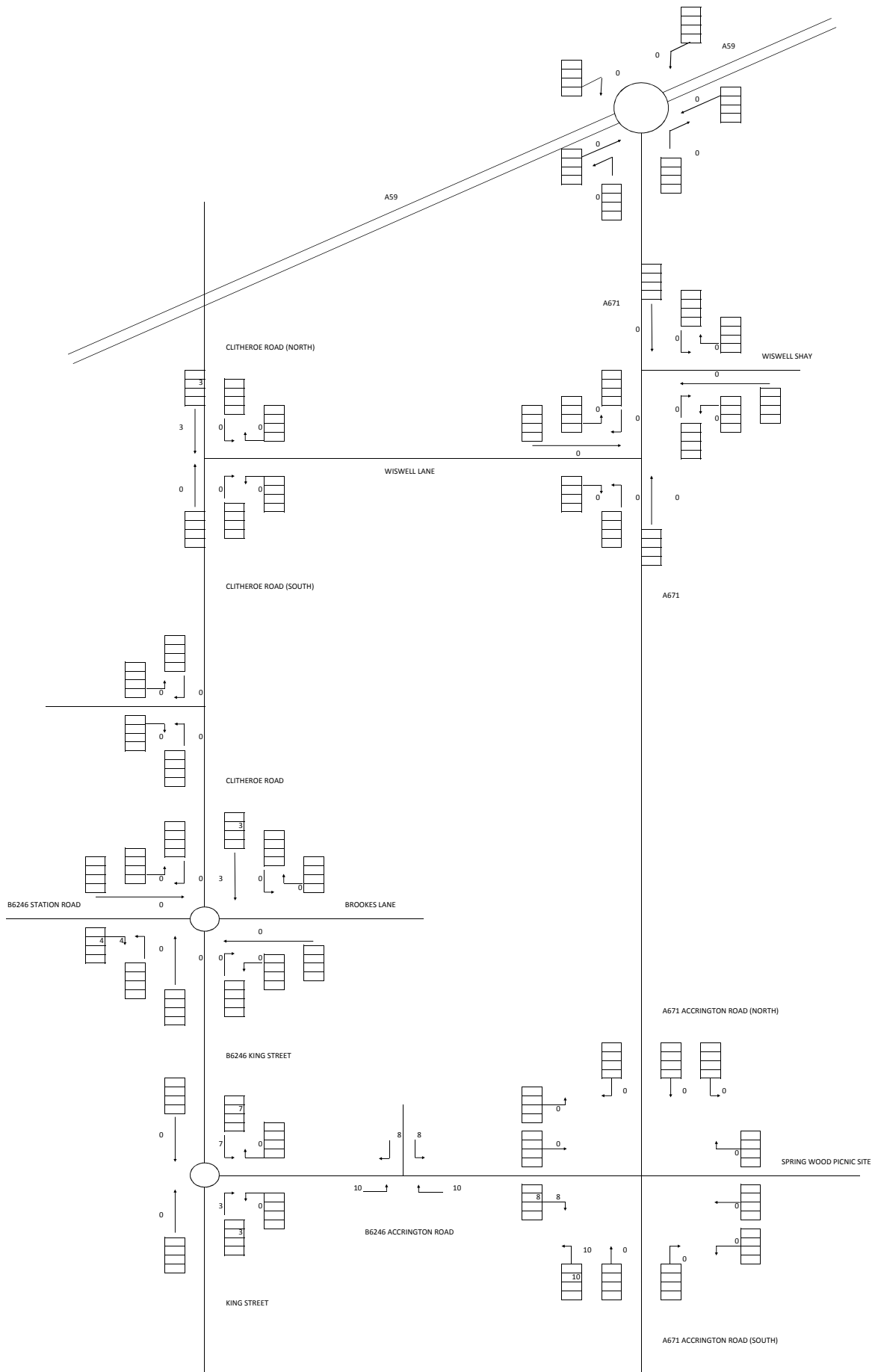




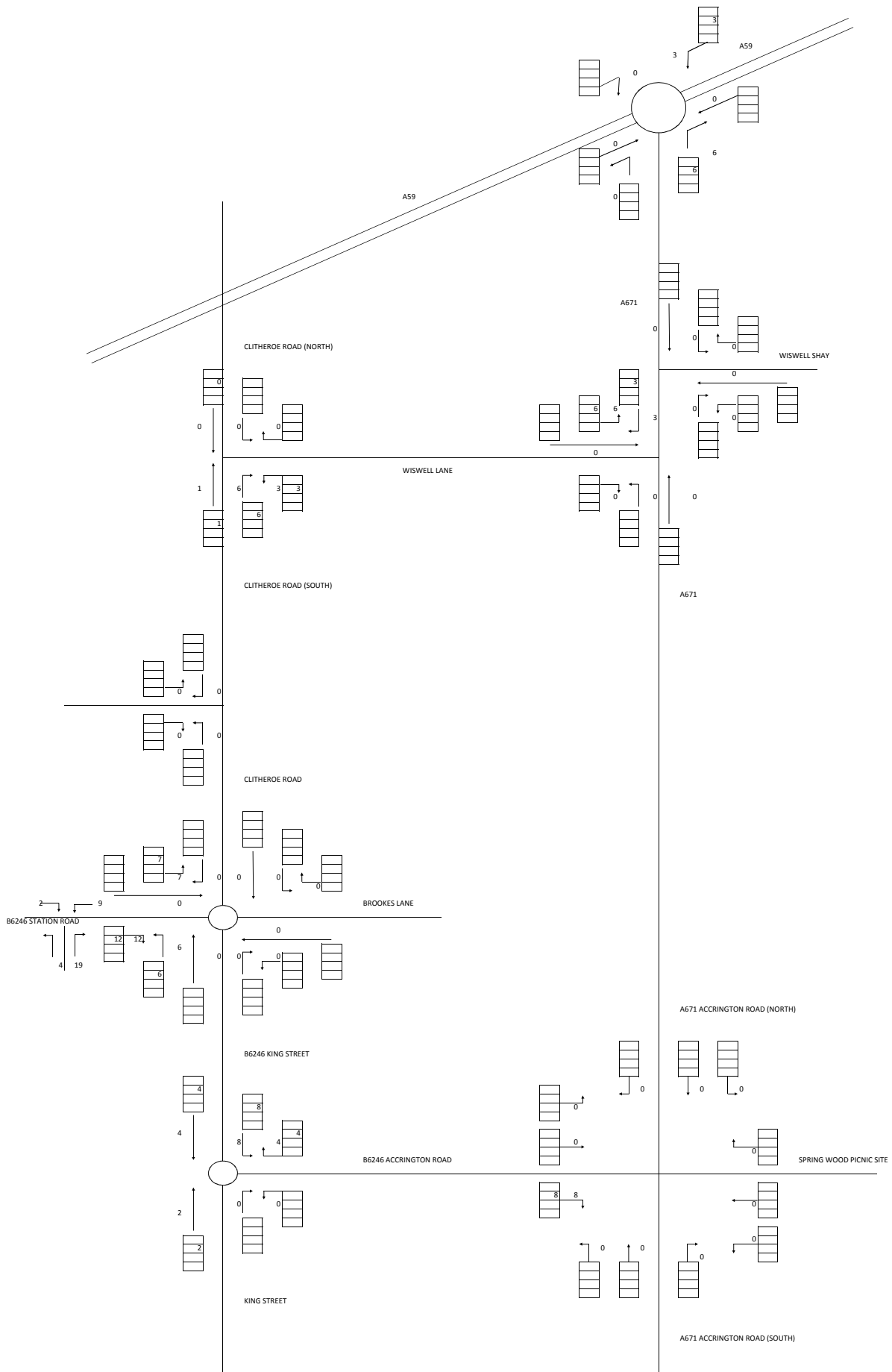
BRIERY HOMES COMMITTED DEVELOPMENT TRAFFIC FLOWS
CEG, WHALLEY
8:00 - 9:00



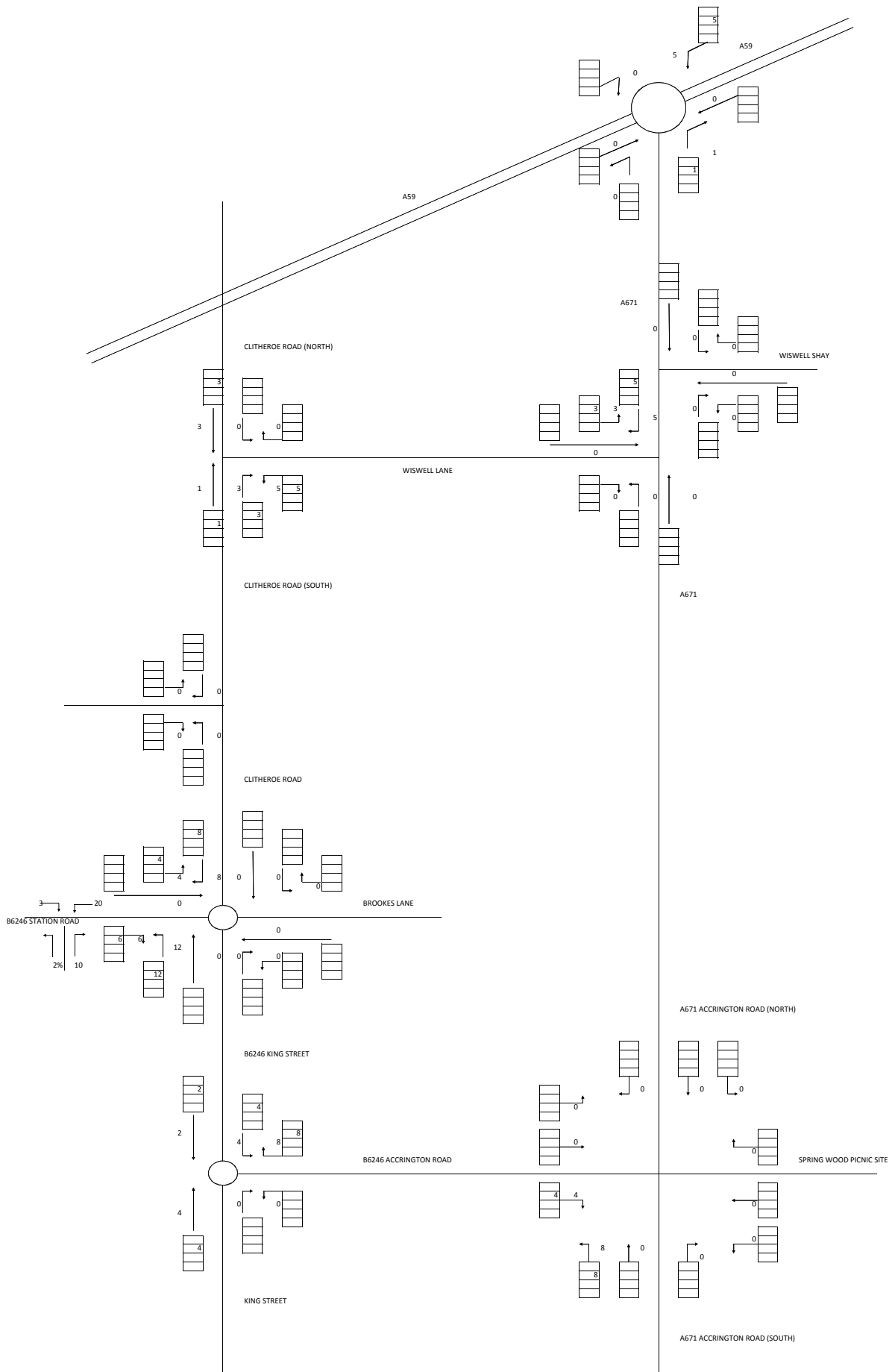
BRIERY HOMES COMMITTED DEVELOPMENT TRAFFIC FLOWS
CEG, WHALLEY
17:00 - 18:00



CALDERSTONES COMMITTED DEVELOPMENT TRAFFIC FLOWS
CEG, WHALLEY
8:00 - 9:00



CALDERSTONES COMMITTED DEVELOPMENT TRAFFIC FLOWS
CEG, WHALLEY
17:00 - 18:00



APPENDIX BGH 9

2017 BASE TRAFFIC FLOWS
CEG, WHALLEY
08:00 - 09:00

**2017 BASE TRAFFIC FLOWS
CEG, WHALLEY
17:00 - 18:00**

APPENDIX BGH 10

ARCADY 8	
Version: 8.0.0.296 [27 Feb 2012]	
© Copyright Transport Research Laboratory 2012	
For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 E-mail: software@trl.co.uk Web: http://www.trlsoftware.co.uk	
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution	

Filename: 2010 Existing and 2017 Base Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\PICADY\Clitheroe Road-Wiswell Lane

Report generation date: 28/03/2012 13:49:50

Existing Layout - 2017 Base, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Base					
Stream B-AC	0.66	0.20	0.40	B	65% [Stream B-AC]
Stream C-AB	0.75	0.13	0.35	A	
Stream C-A	-	-	-	-	
Stream A-B	-	-	-	-	
Stream A-C	-	-	-	-	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met

'D1 - 2010 Existing, AM Peak' model duration: 07:45 - 09:15

'D2 - 2010 Existing, PM Peak' model duration: 16:45 - 18:15

'D3 - 2017 Base, AM Peak' model duration: 07:45 - 09:15

'D4 - 2017 Base, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 13:49:47

File summary

File Description

Title	2010 Existing and 2016 Assessment
Location	Clitheroe Road/Wiswell Lane
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	rspencer [BGH19]

Description	Citheroe Road/Wiswell Lane - Priority Junction
--------------------	--

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2017 Base, AM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing	ARCADY		✓				100.000	100.000	

Demand Set Details

Junction Network

Junctions

Junction Network Options

Arms

Arms

Major Arm Geometry

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Pedestrian Crossings

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

3

Junction	Stream	Intercept (Veh/hr)	for A-B	for A-C	for C-A	for C-B
1	B-A	493.080	0.084	0.212	0.133	0.303
1	B-C	633.380	0.091	0.229	-	-
1	C-B	620.292	0.225	0.225	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	252.00	100.000
B	ONE HOUR	✓	178.00	100.000
C	ONE HOUR	✓	361.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.000	21.000	231.000
	B	32.000	0.000	146.000
	C	211.000	150.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.00	0.08	0.92
	B	0.18	0.00	0.82
	C	0.58	0.42	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.000	1.087

From	B	1.063	1.000	1.027
	C	1.137	1.013	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	0.000	8.660
	B	6.250	0.000	2.740
	C	13.740	1.330	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
B-AC	0.40	0.20	0.66	B	163.34	245.00	43.30	0.18	0.48	43.31	0.18
C-AB	0.35	0.13	0.75	A	194.31	291.46	48.37	0.17	0.54	48.38	0.17
C-A	-	-	-	-	136.95	205.43	-	-	-	-	-
A-B	-	-	-	-	19.27	28.90	-	-	-	-	-
A-C	-	-	-	-	211.97	317.95	-	-	-	-	-

Main Results for each time segment

Main results: (07:45-08:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	134.01	33.50	132.64	0.00	521.40	0.257	0.00	0.34	0.154	A
C-AB	147.95	36.99	146.51	0.00	668.67	0.221	0.00	0.36	0.115	A
C-A	123.83	30.96	123.83	0.00	-	-	-	-	-	-
A-B	15.81	3.95	15.81	0.00	-	-	-	-	-	-
A-C	173.91	43.48	173.91	0.00	-	-	-	-	-	-

Main results: (08:00-08:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	160.02	40.00	159.58	0.00	508.84	0.314	0.34	0.45	0.172	B
C-AB	187.02	46.75	186.50	0.00	680.79	0.275	0.36	0.49	0.121	A
C-A	137.51	34.38	137.51	0.00	-	-	-	-	-	-
A-B	18.88	4.72	18.88	0.00	-	-	-	-	-	-
A-C	207.66	51.92	207.66	0.00	-	-	-	-	-	-

Main results: (08:15-08:30)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	195.98	49.00	195.19	0.00	491.16	0.399	0.45	0.65	0.202	B
C-AB	247.40	61.85	246.43	0.00	697.96	0.354	0.49	0.73	0.133	A
C-A	150.07	37.52	150.07	0.00	-	-	-	-	-	-
A-B	23.12	5.78	23.12	0.00	-	-	-	-	-	-

A-C	254.34	63.58	254.34	0.00	-	-	-	-	-	-
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Main results: (08:30-08:45)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	195.98	49.00	195.95	0.00	491.07	0.399	0.65	0.66	0.203	B
C-AB	247.69	61.92	247.65	0.00	698.18	0.355	0.73	0.74	0.134	A
C-A	149.78	37.45	149.78	0.00	-	-	-	-	-	-
A-B	23.12	5.78	23.12	0.00	-	-	-	-	-	-
A-C	254.34	63.58	254.34	0.00	-	-	-	-	-	-

Main results: (08:45-09:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	160.02	40.00	160.78	0.00	508.71	0.315	0.66	0.47	0.173	B
C-AB	187.38	46.84	188.30	0.00	681.07	0.275	0.74	0.51	0.123	A
C-A	137.15	34.29	137.15	0.00	-	-	-	-	-	-
A-B	18.88	4.72	18.88	0.00	-	-	-	-	-	-
A-C	207.66	51.92	207.66	0.00	-	-	-	-	-	-

Main results: (09:00-09:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	134.01	33.50	134.47	0.00	521.21	0.257	0.47	0.35	0.155	A
C-AB	148.42	37.11	148.98	0.00	668.86	0.222	0.51	0.37	0.116	A
C-A	123.36	30.84	123.36	0.00	-	-	-	-	-	-
A-B	15.81	3.95	15.81	0.00	-	-	-	-	-	-
A-C	173.91	43.48	173.91	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	4.89	0.33	0.154	A	A
C-AB	5.33	0.36	0.115	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	6.56	0.44	0.172	B	B
C-AB	7.42	0.49	0.121	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	9.35	0.62	0.202	B	B
C-AB	11.06	0.74	0.133	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-

A-C	-	-	-	-	-
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Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	9.81	0.65	0.203	B	B
C-AB	11.27	0.75	0.134	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	7.26	0.48	0.173	B	B
C-AB	7.68	0.51	0.123	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	5.43	0.36	0.155	A	A
C-AB	5.58	0.37	0.116	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2017 Predicted Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical 'Single Access Clitheroe Rd Scenario' (55 Dwellings)
\PICADY\Clitheroe Road-Wiswell Lane\Clitheroe Road-Wiswell Lane

Report generation date: 30/03/2012 15:13:23

Existing Layout - 2017 Predicted, PM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

PM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Predicted					
Stream B-AC	0.90	0.25	0.48	B	42% [Stream B-AC]
Stream C-AB	0.69	0.12	0.32	A	
Stream C-A	-	-	-	-	
Stream A-B	-	-	-	-	
Stream A-C	-	-	-	-	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2017 Predicted, AM Peak' model duration: 07:45 - 09:15

'D2 - 2017 Predicted, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 30/03/2012 15:13:22

File summary

File Description

Title	2016 Predicted Assessment 'Through Route Scenario'
Location	Clitheroe Road/Wiswell Lane
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	rspencer [BGH19]
Description	Clitheroe Road/Wiswell Lane - Priority Junction

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

Existing Layout - 2017 Predicted, PM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Predicted, PM Peak	2017 Predicted	PM Peak		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	T-Junction	Two-way	A,B,C		0.18	B

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	42	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm Type
A	Clitheroe Road (North)		Major
B	Wiswell Lane		Minor
C	Clitheroe Road (South)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
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C	7.50	0.00	2.20	80.00	✓	0.00
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Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.00										25	15

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	493.080	0.084	0.212	0.133	0.303
1	B-C	633.380	0.091	0.229	-	-
1	C-B	620.292	0.225	0.225	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	318.00	100.000
B	ONE HOUR	✓	202.00	100.000
C	ONE HOUR	✓	416.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

	To		
	A	B	C

From	A	0.000	22.000	296.000
	B	45.000	0.000	157.000
	C	289.000	127.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

	To			
		A	B	C
	A	0.00	0.07	0.93
	B	0.22	0.00	0.78
From	C	0.69	0.31	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

	To			
		A	B	C
	A	1.000	1.000	1.034
	B	1.000	1.000	1.051
From	C	1.038	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To			
		A	B	C
	A	0.000	0.000	3.370
	B	0.000	0.000	5.100
From	C	3.800	0.000	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
B-AC	0.48	0.25	0.90	B	185.36	278.04	56.88	0.20	0.63	56.89	0.20
C-AB	0.32	0.12	0.69	A	184.98	277.47	44.57	0.16	0.50	44.58	0.16
C-A	-	-	-	-	196.75	295.12	-	-	-	-	-
A-B	-	-	-	-	20.19	30.28	-	-	-	-	-
A-C	-	-	-	-	271.61	407.42	-	-	-	-	-

Main Results for each time segment

Main results: (16:45-17:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	152.08	38.02	150.37	0.00	502.17	0.303	0.00	0.43	0.170	B
C-AB	137.41	34.35	136.10	0.00	711.31	0.193	0.00	0.33	0.104	A
C-A	175.77	43.94	175.77	0.00	-	-	-	-	-	-

A-B	16.56	4.14	16.56	0.00	-	-	-	-	-	-
A-C	222.84	55.71	222.84	0.00	-	-	-	-	-	-

Main results: (17:00-17:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	181.59	45.40	180.97	0.00	487.30	0.373	0.43	0.58	0.195	B
C-AB	176.95	44.24	176.45	0.00	730.63	0.242	0.33	0.45	0.108	A
C-A	197.03	49.26	197.03	0.00	-	-	-	-	-	-
A-B	19.78	4.94	19.78	0.00	-	-	-	-	-	-
A-C	266.10	66.52	266.10	0.00	-	-	-	-	-	-

Main results: (17:15-17:30)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	222.41	55.60	221.19	0.00	466.32	0.477	0.58	0.89	0.244	B
C-AB	239.95	59.99	239.03	0.00	757.81	0.317	0.45	0.68	0.116	A
C-A	218.08	54.52	218.08	0.00	-	-	-	-	-	-
A-B	24.22	6.06	24.22	0.00	-	-	-	-	-	-
A-C	325.90	81.48	325.90	0.00	-	-	-	-	-	-

Main results: (17:30-17:45)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	222.41	55.60	222.35	0.00	466.23	0.477	0.89	0.90	0.246	B
C-AB	240.28	60.07	240.25	0.00	758.12	0.317	0.68	0.69	0.116	A
C-A	217.75	54.44	217.75	0.00	-	-	-	-	-	-
A-B	24.22	6.06	24.22	0.00	-	-	-	-	-	-
A-C	325.90	81.48	325.90	0.00	-	-	-	-	-	-

Main results: (17:45-18:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	181.59	45.40	182.76	0.00	487.18	0.373	0.90	0.61	0.198	B
C-AB	177.35	44.34	178.24	0.00	731.09	0.243	0.69	0.47	0.109	A
C-A	196.62	49.16	196.62	0.00	-	-	-	-	-	-
A-B	19.78	4.94	19.78	0.00	-	-	-	-	-	-
A-C	266.10	66.52	266.10	0.00	-	-	-	-	-	-

Main results: (18:00-18:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-AC	152.08	38.02	152.73	0.00	502.00	0.303	0.61	0.44	0.172	B
C-AB	137.96	34.49	138.48	0.00	711.68	0.194	0.47	0.34	0.105	A
C-A	175.23	43.81	175.23	0.00	-	-	-	-	-	-
A-B	16.56	4.14	16.56	0.00	-	-	-	-	-	-
A-C	222.84	55.71	222.84	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	6.09	0.41	0.170	B	B
C-AB	4.86	0.32	0.104	A	A
C-A	-	-	-	-	-

C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:00-17:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	8.42	0.56	0.195	B	B
C-AB	6.83	0.46	0.108	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:15-17:30)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	12.60	0.84	0.244	B	B
C-AB	10.30	0.69	0.116	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:30-17:45)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	13.40	0.89	0.246	B	B
C-AB	10.46	0.70	0.116	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (17:45-18:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	9.51	0.63	0.198	B	B
C-AB	7.04	0.47	0.109	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (18:00-18:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	6.86	0.46	0.172	B	B
C-AB	5.08	0.34	0.105	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2017 Predicted AM Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical 'Single Access Clitheroe Rd Scenario' (55 Dwellings)
ARCADY\Clitheroe Road-Brookes Lane-King Street-Station Road

Report generation date: 30/03/2012 14:57:16

Existing Layout - 2017 Predicted, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Predicted					
Arm A	18.47	2.40	1.03	F	-15% [Arm A]
Arm B	0.06	0.38	0.06	C	
Arm C	4.39	0.45	0.83	D	
Arm D	4.85	0.51	0.84	D	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

T2 - 2017 Predicted, AM Peak: model duration: 07:45 - 09:15

Run using ARCADY 8.0.0.296 at 30/03/2012 14:57:15

File summary

File Description

Title	2010 Existing and 2016 Base AM Assessment
Location	Clitheroe Road-Brookes Lane-King Street-Station Road
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	R Spencer
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

Existing Layout - 2017 Predicted, AM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Predicted, AM Peak	2017 Predicted	AM Peak		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Junction Delay (min)	Junction LOS
untitled	Mini-roundabout	A,B,C,D	1.00	F

Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		-15	Arm A

Arms

Arms

Arm	Name	Description
A	Clitheroe Road	
B	Brookes Lane	
C	King Street	
D	Station Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00

B	0.00	99999.00		0.00
C	0.00	99999.00		0.00
D	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.00	3.00	3.10	0.01	9.00	6.50	-2.40	
B	2.40	2.40	3.30	0.01	14.00	10.00	-2.40	
C	3.00	3.00	4.20	4.00	12.50	4.00	3.00	
D	3.00	3.00	3.30	2.00	15.50	10.40	2.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.625	771.199
B		(calculated)	(calculated)	0.598	726.551
C		(calculated)	(calculated)	0.685	893.740
D		(calculated)	(calculated)	0.644	928.582

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	415.00	100.000
B	ONE HOUR	✓	9.00	100.000
C	ONE HOUR	✓	555.00	100.000
D	ONE HOUR	✓	554.00	100.000

Turning Proportions

2012-03-30 14:57:17 ARCADY 8 (8.0.0.296)

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	6.000	276.000	133.000
	B	2.000	0.000	3.000	4.000
	C	199.000	2.000	0.000	354.000
	D	142.000	1.000	411.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.01	0.67	0.32
	B	0.22	0.00	0.33	0.44
	C	0.36	0.00	0.00	0.64
	D	0.26	0.00	0.74	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.067	1.047
	B	1.000	1.000	1.000	1.000
	C	1.108	1.000	1.000	1.048
	D	1.065	1.000	1.063	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	0.000	6.740	4.650
	B	0.000	0.000	0.000	0.000
	C	10.770	0.000	0.000	4.800
	D	6.470	0.000	6.330	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	1.03	2.40	18.47	F	380.81	571.22	562.08	0.98	6.25	562.21	0.98
B	0.06	0.38	0.06	C	8.26	12.39	3.39	0.27	0.04	3.40	0.27
C	0.83	0.45	4.39	D	509.28	763.92	215.28	0.28	2.39	215.34	0.28
D	0.84	0.51	4.85	D	508.36	762.54	224.11	0.29	2.49	224.17	0.29

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	312.43	78.11	307.03	255.36	308.25	0.00	534.49	405.99	0.585	0.00	1.35	0.258	C
B	6.78	1.69	6.70	6.67	608.61	0.00	339.87	148.53	0.020	0.00	0.02	0.180	B
C	417.83	104.46	413.16	512.44	102.86	0.00	767.03	685.18	0.545	0.00	1.17	0.167	B
D	417.08	104.27	412.49	364.91	151.12	0.00	771.92	686.80	0.540	0.00	1.15	0.165	A

Main results: (08:00-08:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	373.08	93.27	367.56	306.57	369.98	0.00	495.79	405.99	0.752	1.35	2.73	0.449	D
B	8.09	2.02	8.05	8.00	729.55	0.00	263.03	148.53	0.031	0.02	0.03	0.235	B
C	498.94	124.73	496.09	614.44	123.16	0.00	753.45	685.18	0.662	1.17	1.88	0.230	B
D	498.04	124.51	495.10	437.80	181.45	0.00	751.61	686.80	0.663	1.15	1.88	0.231	B

Main results: (08:15-08:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	456.92	114.23	419.72	371.81	448.09	0.00	446.83	405.99	1.023	2.73	12.03	1.394	F
B	9.91	2.48	9.81	9.32	858.48	0.00	181.09	148.53	0.055	0.03	0.06	0.350	C
C	611.07	152.77	602.25	727.24	141.05	0.00	741.49	685.18	0.824	1.88	4.08	0.407	C
D	609.97	152.49	599.61	523.01	220.29	0.00	725.60	686.80	0.841	1.88	4.47	0.443	D

Main results: (08:30-08:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	456.92	114.23	431.17	376.81	454.69	0.00	442.69	405.99	1.032	12.03	18.47	2.402	F
B	9.91	2.48	9.89	9.53	876.32	0.00	169.76	148.53	0.058	0.06	0.06	0.375	C
C	611.07	152.77	609.83	741.44	144.78	0.00	738.99	685.18	0.827	4.08	4.39	0.454	D
D	609.97	152.49	608.44	531.55	223.05	0.00	723.75	686.80	0.843	4.47	4.85	0.505	D

Main results: (08:45-09:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	373.08	93.27	431.45	314.40	380.47	0.00	489.21	405.99	0.763	18.47	3.87	1.310	F
B	8.09	2.02	8.18	8.99	802.94	0.00	216.45	148.53	0.037	0.06	0.04	0.288	C
C	498.94	124.73	507.83	667.39	143.72	0.00	739.66	685.18	0.675	4.39	2.17	0.268	C
D	498.04	124.51	509.14	465.82	185.73	0.00	748.74	686.80	0.665	4.85	2.08	0.261	C

Main results: (09:00-09:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	312.43	78.11	321.96	260.47	314.27	0.00	530.71	405.99	0.589	3.87	1.49	0.299	C
B	6.78	1.69	6.85	6.93	629.30	0.00	326.73	148.53	0.021	0.04	0.02	0.188	B
C	417.83	104.46	421.57	528.40	107.75	0.00	763.76	685.18	0.547	2.17	1.24	0.177	B
D	417.08	104.27	420.55	375.12	154.20	0.00	769.86	686.80	0.542	2.08	1.21	0.173	B

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
-----	--------------------------------	--------------------------------------	--	-------------------------------	-----------------------------

	Delay (min)	Rate Of Delay (veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	18.44	1.23	0.258	C	B
B	0.29	0.02	0.180	B	B
C	16.39	1.09	0.167	B	B
D	16.13	1.08	0.165	A	A

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	36.14	2.41	0.449	D	C
B	0.45	0.03	0.235	B	B
C	26.36	1.76	0.230	B	B
D	26.37	1.76	0.231	B	B

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	121.73	8.12	1.394	F	F
B	0.80	0.05	0.350	C	C
C	53.13	3.54	0.407	C	C
D	57.18	3.81	0.443	D	C

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	230.51	15.37	2.402	F	F
B	0.89	0.06	0.375	C	C
C	64.05	4.27	0.454	D	C
D	70.48	4.70	0.505	D	C

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	129.99	8.67	1.310	F	E
B	0.62	0.04	0.288	C	B
C	35.71	2.38	0.268	C	B
D	34.76	2.32	0.261	C	B

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	25.27	1.68	0.299	C	B
B	0.33	0.02	0.188	B	B
C	19.65	1.31	0.177	B	B
D	19.19	1.28	0.173	B	B

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base PM Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\Clitheroe Road-Brookes Lane-King Street-Station Road

Report generation date: 28/03/2012 14:01:37

Existing Layout - 2017 Base, PM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

PM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Base					
Arm A	11.17	1.51	0.96	F	-13% [Arm C]
Arm B	0.03	0.32	0.03	C	
Arm C	22.81	1.81	1.02	F	
Arm D	3.52	0.39	0.79	C	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, PM Peak' model duration: 16:45 - 18:15

'D2 - 2017 Base, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 14:01:35

File summary

File Description

Title	2010 Existing and 2016 Base PM Assessment
Location	Clitheroe Road-Brookes Lane-King Street-Station Road
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	R Spencer
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2017 Base, PM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Report Set Details

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Base, PM Peak	2017 Base	PM Peak		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Junction Delay (min)	Junction LOS
untitled	Mini-roundabout	A,B,C,D	1.29	F

Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		-13	Arm C

Arms

Arms

Arm	Name	Description
A	Clitheroe Road	
B	Brookes Lane	
C	King Street	
D	Station Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00
D	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	3.00	3.00	3.10	0.01	9.00	6.50	-2.40	
B	2.40	2.40	3.30	0.01	14.00	10.00	-2.40	
C	3.00	3.00	4.20	4.00	12.50	4.00	3.00	
D	3.00	3.00	3.30	2.00	15.50	10.40	2.50	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.625	771.199
B		(calculated)	(calculated)	0.598	726.551
C		(calculated)	(calculated)	0.685	893.740
D		(calculated)	(calculated)	0.644	928.582

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	423.00	100.000
B	ONE HOUR	✓	5.00	100.000
C	ONE HOUR	✓	678.00	100.000
D	ONE HOUR	✓	510.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
From		A	B	C	D
	A	0.000	2.000	246.000	175.000
	B	2.000	0.000	1.000	2.000
	C	286.000	4.000	0.000	388.000
	D	132.000	1.000	377.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
From		A	B	C	D
	A	0.00	0.00	0.58	0.41
	B	0.40	0.00	0.20	0.40
	C	0.42	0.01	0.00	0.57
	D	0.26	0.00	0.74	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.033	1.063
	B	1.000	1.000	1.000	1.000
	C	1.032	1.000	1.000	1.028
	D	1.023	1.000	1.016	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	0.000	3.250	6.290
	B	0.000	0.000	0.000	0.000
	C	3.150	0.000	0.000	2.840
	D	2.270	0.000	1.590	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	0.96	1.51	11.17	F	388.15	582.23	378.05	0.65	4.20	378.15	0.65
B	0.03	0.32	0.03	C	4.59	6.88	1.65	0.24	0.02	1.65	0.24
C	1.02	1.81	22.81	F	622.14	933.22	723.51	0.78	8.04	723.67	0.78
D	0.79	0.39	3.52	C	467.98	701.98	176.50	0.25	1.96	176.55	0.25

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	318.46	79.61	313.47	312.05	284.67	0.00	565.09	425.38	0.564	0.00	1.25	0.234	B
B	3.76	0.94	3.72	5.20	592.94	0.00	380.71	152.27	0.010	0.00	0.01	0.168	B
C	510.43	127.61	503.02	464.00	132.67	0.00	774.39	662.56	0.659	0.00	1.85	0.216	B
D	383.95	95.99	380.07	419.04	216.65	0.00	771.13	688.99	0.498	0.00	0.97	0.152	A

Main results: (17:00-17:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	380.27	95.07	375.91	373.81	341.64	0.00	530.47	425.39	0.717	1.25	2.34	0.378	C
B	4.49	1.12	4.47	6.22	711.32	0.00	287.67	152.27	0.016	0.01	0.02	0.212	B
C	609.51	152.38	602.05	556.70	159.10	0.00	755.72	662.56	0.807	1.85	3.72	0.373	C
D	458.48	114.62	456.14	501.85	259.31	0.00	743.30	688.99	0.617	0.97	1.56	0.207	B

Main results: (17:15-17:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
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	(veh/hr)	(veh)	(veh/hr)	(veh/hr)	(veh/hr)	(veh/hr)	(veh/hr)	(veh/hr)	(veh)	(veh)	(veh)	(veh)	
A	465.73	116.43	441.33	441.22	415.16	0.00	485.80	425.38	0.959	2.34	8.44	1.015	F
B	5.51	1.38	5.46	7.31	849.18	0.00	202.74	152.26	0.027	0.02	0.03	0.304	C
C	746.49	186.62	700.52	667.69	186.95	0.00	736.05	662.56	1.014	3.72	15.21	1.065	F
D	561.52	140.38	554.56	585.65	301.82	0.00	715.56	688.99	0.785	1.56	3.30	0.358	C

Main results: (17:30-17:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	465.73	116.43	454.79	449.37	419.75	0.00	483.01	425.38	0.964	8.44	11.17	1.511	F
B	5.51	1.38	5.50	7.47	867.06	0.00	191.64	152.26	0.029	0.03	0.03	0.322	C
C	746.49	186.62	716.08	680.01	192.55	0.00	732.09	662.56	1.020	15.21	22.81	1.812	F
D	561.52	140.38	560.62	600.14	308.49	0.00	711.21	688.99	0.790	3.30	3.52	0.393	C

Main results: (17:45-18:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	380.27	95.07	413.42	408.56	348.89	0.00	526.07	425.39	0.723	11.17	2.89	0.642	E
B	4.49	1.12	4.54	6.87	755.44	0.00	260.20	152.27	0.017	0.03	0.02	0.235	B
C	609.51	152.38	678.74	585.31	174.67	0.00	744.70	662.56	0.818	22.81	5.51	1.104	F
D	458.48	114.62	465.32	561.27	292.13	0.00	721.88	688.99	0.635	3.52	1.81	0.240	B

Main results: (18:00-18:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	318.46	79.61	324.58	322.86	289.99	0.00	561.86	425.38	0.567	2.89	1.36	0.259	C
B	3.76	0.94	3.79	5.39	609.18	0.00	350.65	152.27	0.011	0.02	0.01	0.173	B
C	510.43	127.61	524.28	475.65	137.31	0.00	771.10	662.56	0.662	5.51	2.04	0.255	C
D	383.95	95.99	387.08	435.83	225.77	0.00	765.18	688.99	0.502	1.81	1.03	0.160	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	17.16	1.14	0.234	B	B
B	0.15	0.01	0.168	B	B
C	25.33	1.69	0.216	B	B
D	13.75	0.92	0.152	A	A

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	31.58	2.11	0.378	C	C
B	0.23	0.02	0.212	B	B
C	49.14	3.28	0.373	C	C
D	22.00	1.47	0.207	B	B

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	92.44	6.16	1.015	F	E
B	0.39	0.03	0.304	C	B
C	155.84	10.39	1.065	F	E
D	43.72	2.92	0.358	C	C

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	148.87	9.92	1.511	F	F
B	0.43	0.03	0.322	C	B
C	287.45	19.16	1.812	F	F
D	51.48	3.43	0.393	C	C

Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	65.88	4.39	0.642	E	D
B	0.28	0.02	0.235	B	B
C	170.81	11.39	1.104	F	E
D	29.33	1.96	0.240	B	B

Queueing Delay results: (18:00-18:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	22.12	1.47	0.259	C	B
B	0.17	0.01	0.173	B	B
C	34.94	2.33	0.255	C	B
D	16.22	1.08	0.160	A	A

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base AM Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\B6246 King Street-Accrington Road-King Street

Report generation date: 28/03/2012 14:02:51

Existing Layout - 2017 Base, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Base					
Arm A	66.39	5.60	1.17	F	-24% [Arm A]
Arm B	2.20	0.31	0.69	C	
Arm C	16.62	1.77	1.00	F	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, AM Peak' model duration: 07:45 - 09:15

'D2 - 2017 Base, AM Peak' model duration: 07:45 - 09:15

Run using ARCADY 8.0.0.296 at 28/03/2012 14:02:50

File summary

File Description

Title	2010 Existing and 2016 Base AM Assessment
Location	B6246 King Street-Accrington Road-King Street
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	rspencer [BGH19]
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2017 Base, AM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Base, AM Peak	2017 Base	AM Peak		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Junction Delay (min)	Junction LOS
untitled	Mini-roundabout	A,B,C	3.08	F

Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		-24	Arm A

Arms

Arms

Arm	Name	Description
A	B6246 King Street	
B	B6246 Accrington Road	
C	King Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	2.70	2.70	4.10	4.20	15.00	10.00	0.00	
B	3.80	3.80	4.90	10.00	11.00	2.00	0.00	
C	3.50	3.50	3.50	0.00	16.00	16.00	0.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.527	834.959

B		(calculated)	(calculated)	0.585	899.867
C		(calculated)	(calculated)	0.607	792.631

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	716.00	100.000
B	ONE HOUR	✓	402.00	100.000
C	ONE HOUR	✓	521.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

	To			
		A	B	C
From	A	0.000	328.000	388.000
	B	269.000	0.000	133.000
	C	314.000	207.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

	To			
		A	B	C
From	A	0.00	0.46	0.54
	B	0.67	0.00	0.33
	C	0.60	0.40	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

	To			
		A	B	C
From	A	1.000	1.073	1.044
	B	1.071	1.000	1.045
	C	1.041	1.053	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To			
		A	B	C

From	To		
	A	B	C
	A	0.000	7.320
	B	7.060	0.000
C	4.140	5.310	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	1.17	5.60	66.39	F	657.01	985.52	2799.22	2.84	31.10	2817.27	2.86
B	0.69	0.31	2.20	C	368.88	553.33	126.39	0.23	1.40	126.43	0.23
C	1.00	1.77	16.62	F	476.08	717.12	536.69	0.75	5.96	536.83	0.75

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	539.04	134.76	527.44	433.06	153.36	0.00	709.27	686.68	0.760	0.00	2.90	0.313	C
B	302.65	75.66	299.52	394.98	285.82	0.00	682.96	633.37	0.443	0.00	0.78	0.155	A
C	392.24	98.06	385.99	384.92	200.43	0.00	633.20	494.39	0.619	0.00	1.56	0.237	B

Main results: (08:00-08:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	643.67	160.92	623.90	519.45	183.77	0.00	693.31	686.68	0.928	2.90	7.84	0.712	E
B	361.39	90.35	359.70	469.58	338.09	0.00	652.92	633.38	0.554	0.78	1.20	0.203	B
C	468.37	117.09	462.52	457.10	240.69	0.00	608.19	494.37	0.770	1.56	3.02	0.396	C

Main results: (08:15-08:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	788.33	197.08	669.73	618.32	214.00	0.00	677.45	686.68	1.164	7.84	37.49	2.301	F
B	442.61	110.65	438.92	520.80	362.92	0.00	638.65	633.39	0.693	1.20	2.13	0.295	C
C	573.63	143.41	538.61	508.14	293.70	0.00	575.25	494.37	0.997	3.02	11.78	1.106	F

Main results: (08:30-08:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	788.33	197.08	672.74	630.04	220.22	0.00	674.19	686.68	1.169	37.49	66.39	4.822	F
B	442.61	110.65	442.34	528.40	364.56	0.00	637.71	633.39	0.694	2.13	2.20	0.306	C
C	573.63	143.41	554.26	510.91	295.99	0.00	573.82	494.37	1.000	11.78	16.62	1.769	F

Main results: (08:45-09:00)

Arm	Total Demand	Junction Arrivals	Entry Flow	Exit Flow	Circulating	Pedestrian Demand	Capacity	Saturation Capacity	RFC	Start Queue	End Queue	Delay	LOS
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	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)	Flow (Veh/hr)	(Ped/hr)	(Veh/hr)	(Veh/hr)		(Veh)	(Veh)	(min)	
A	643.67	160.92	671.39	556.98	206.27	0.00	681.51	686.68	0.944	66.39	59.46	5.600	F
B	361.39	90.35	364.79	513.83	363.83	0.00	638.13	633.38	0.566	2.20	1.35	0.222	B
C	468.37	117.09	519.15	484.52	244.10	0.00	606.07	494.37	0.773	16.62	3.92	0.882	F

Main results: (09:00-09:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	539.04	134.76	694.44	445.33	159.36	0.00	706.12	686.68	0.763	59.46	20.61	3.543	F
B	302.65	75.66	304.27	477.48	376.32	0.00	630.96	633.37	0.480	1.35	0.94	0.185	B
C	392.24	98.06	401.09	476.98	203.60	0.00	631.23	494.39	0.621	3.92	1.71	0.270	C

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	37.73	2.52	0.313	C	B
B	11.09	0.74	0.155	A	A
C	21.34	1.42	0.237	B	B

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	92.06	6.14	0.712	E	D
B	17.15	1.14	0.203	B	B
C	40.29	2.69	0.396	C	C

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	345.45	23.03	2.301	F	F
B	29.31	1.95	0.295	C	B
C	123.51	8.23	1.106	F	E

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	779.59	51.97	4.822	F	F
B	32.54	2.17	0.306	C	B
C	215.00	14.33	1.769	F	F

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	943.88	62.93	5.600	F	F
B	21.51	1.43	0.222	B	B
C	108.16	7.21	0.882	F	D

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	600.52	40.03	3.543	F	F
B	14.79	0.99	0.185	B	B
C	28.41	1.89	0.270	C	B

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Version: 8.0.0.296 [27 Feb 2012]

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Report generation date: 28/03/2012 14:19:08

Existing Layout - 2017 Base, PM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

PM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Base					
Arm A	17.91	1.51	0.99	F	-18% [Arm C]
Arm B	2.50	0.31	0.72	C	
Arm C	35.22	3.11	1.09	F	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, PM Peak' model duration: 16:45 - 18:15

'D2 - 2017 Base, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 14:19:06

File summary

File Description

Title	2010 Existing and 2016 Base PM Assessment
Location	B6246 King Street-Accrington Road-King Street
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	10/228
Enumerator	rspencer [BGH19]
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2017 Base, PM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Base, PM Peak	2017 Base	PM Peak		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Junction Delay (min)	Junction LOS
untitled	Mini-roundabout	A,B,C	1.74	F

Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		-18	Arm C

Arms

Arms

Arm	Name	Description
A	B6246 King Street	
B	B6246 Accrington Road	
C	King Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A	2.70	2.70	4.10	4.20	15.00	10.00	0.00	
B	3.80	3.80	4.90	10.00	11.00	2.00	0.00	
C	3.50	3.50	3.50	0.00	16.00	16.00	0.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.527	834.959

B		(calculated)	(calculated)	0.585	899.867
C		(calculated)	(calculated)	0.607	792.631

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	662.00	100.000
B	ONE HOUR	✓	448.00	100.000
C	ONE HOUR	✓	585.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

	To			
		A	B	C
From	A	0.000	350.000	312.000
	B	280.000	0.000	168.000
	C	415.000	170.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

	To			
		A	B	C
From	A	0.00	0.53	0.47
	B	0.63	0.00	0.38
	C	0.71	0.29	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

	To			
		A	B	C
From	A	1.000	1.014	1.019
	B	1.036	1.000	1.012
	C	1.015	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To			
		A	B	C

From	To			
		A	B	C
	A	0.000	1.430	1.920
	B	3.570	0.000	1.190
	C	1.450	0.000	0.000

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	0.99	1.51	17.91	F	607.46	911.19	610.33	0.67	6.78	610.51	0.67
B	0.72	0.31	2.50	C	411.09	616.64	134.78	0.22	1.50	134.81	0.22
C	1.09	3.11	35.22	F	536.80	805.21	1140.64	1.42	12.67	1140.86	1.42

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	498.39	124.60	490.98	515.66	125.72	0.00	756.18	742.62	0.659	0.00	1.85	0.221	B
B	337.28	84.32	334.00	385.30	231.40	0.00	742.09	673.25	0.455	0.00	0.82	0.146	A
C	440.42	110.10	432.62	356.65	208.75	0.00	654.64	522.68	0.673	0.00	1.95	0.262	C

Main results: (17:00-17:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	595.12	148.78	588.16	617.05	150.10	0.00	743.54	742.62	0.800	1.85	3.59	0.370	C
B	402.74	100.69	401.00	461.06	277.20	0.00	715.50	673.25	0.563	0.82	1.25	0.190	B
C	525.90	131.48	516.52	427.58	250.63	0.00	628.58	522.68	0.837	1.95	4.29	0.497	D

Main results: (17:15-17:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	728.88	182.22	691.63	714.56	167.58	0.00	734.48	742.62	0.992	3.59	12.90	0.958	F
B	493.25	123.31	488.73	533.25	325.97	0.00	687.20	673.25	0.718	1.25	2.38	0.296	C
C	644.09	161.02	576.68	509.24	305.46	0.00	594.45	522.66	1.084	4.29	21.15	1.627	F

Main results: (17:30-17:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	728.88	182.22	708.84	724.97	170.81	0.00	732.81	742.62	0.995	12.90	17.91	1.506	F
B	493.25	123.31	492.78	545.58	334.07	0.00	682.49	673.25	0.723	2.38	2.50	0.315	C
C	644.09	161.02	587.79	518.87	307.99	0.00	592.88	522.66	1.086	21.15	35.22	3.108	F

Main results: (17:45-18:00)

Arm	Total Demand	Junction Arrivals	Entry Flow	Exit Flow	Circulating	Pedestrian Demand	Capacity	Saturation Capacity	RFC	Start Queue	End Queue	Delay	LOS
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	(Veh/hr)	(Veh)	(Veh/hr)	(Veh/hr)	Flow (Veh/hr)	(Ped/hr)	(Veh/hr)	(Veh/hr)		(Veh)	(Veh)	(min)	
A	595.12	148.78	645.87	686.43	176.94	0.00	729.63	742.62	0.816	17.91	5.23	0.876	F
B	402.74	100.69	407.16	518.42	304.40	0.00	699.71	673.25	0.576	2.50	1.40	0.208	B
C	525.90	131.48	608.90	457.09	254.48	0.00	626.18	522.68	0.840	35.22	14.48	2.548	F

Main results: (18:00-18:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	498.39	124.60	510.92	559.36	142.23	0.00	747.62	742.62	0.667	5.23	2.09	0.266	C
B	337.28	84.32	339.43	412.36	240.80	0.00	736.63	673.25	0.458	1.40	0.86	0.152	A
C	440.42	110.10	489.45	368.08	212.14	0.00	652.53	522.68	0.675	14.48	2.22	0.466	D

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	25.26	1.68	0.221	B	B
B	11.64	0.78	0.146	A	A
C	26.23	1.75	0.262	C	B

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	47.71	3.18	0.370	C	C
B	17.86	1.19	0.190	B	B
C	54.94	3.66	0.497	D	C

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	137.33	9.16	0.958	F	E
B	32.57	2.17	0.296	C	B
C	200.94	13.40	1.627	F	F

Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	233.38	15.56	1.506	F	F
B	36.86	2.46	0.315	C	B
C	424.01	28.27	3.108	F	F

Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	131.22	8.75	0.876	F	D
B	22.36	1.49	0.208	B	B
C	372.75	24.85	2.548	F	F

Queueing Delay results: (18:00-18:15)

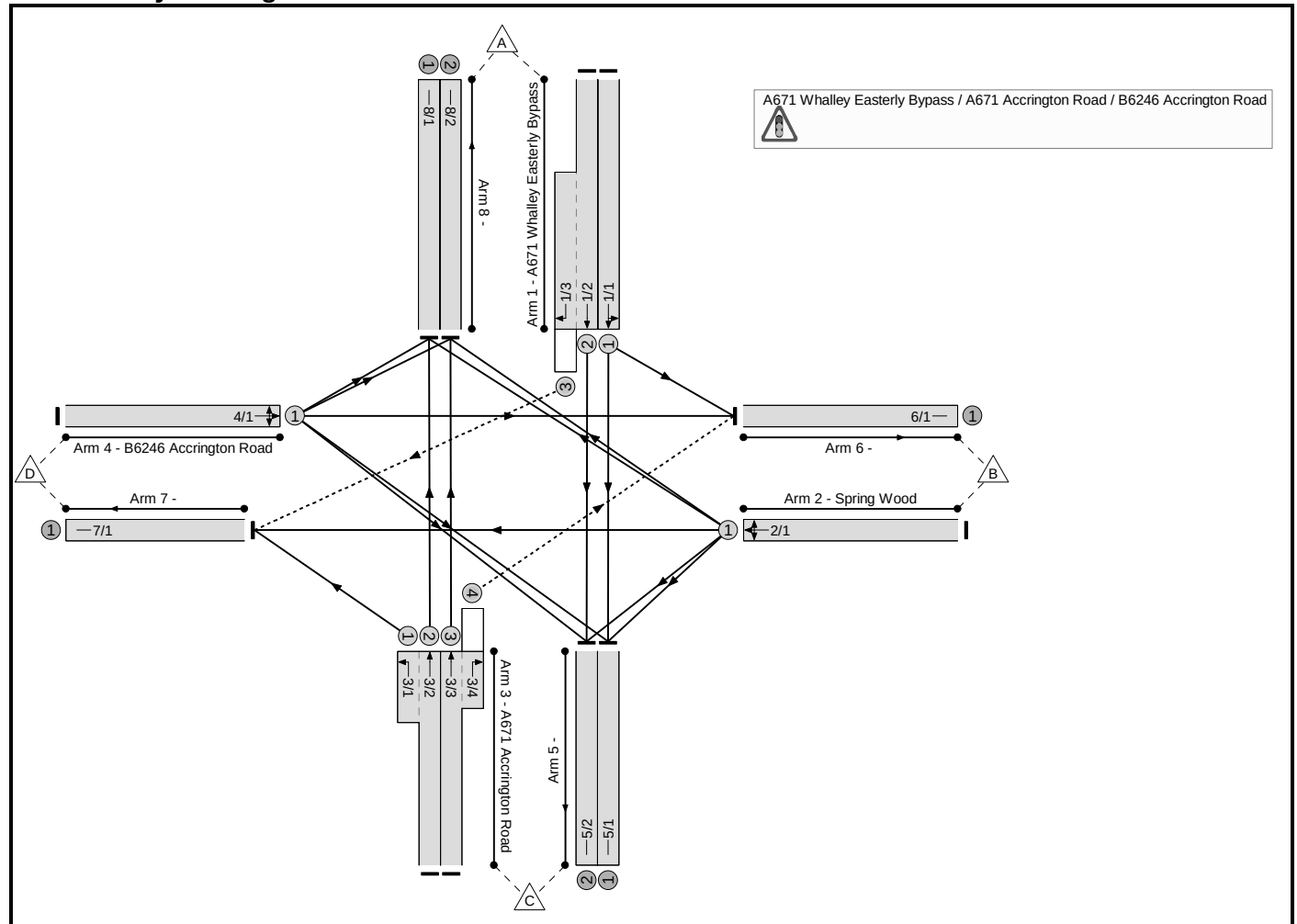
Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	35.44	2.36	0.266	E	B
B	13.49	0.90	0.152	A	A
C	61.77	4.12	0.466	D	C

A671 Whalley Easterly Bypass/B6246 Accrington Road - Base 2017
A671 Whalley Easterly Bypass/B6246 Accrington Road - Base 2017

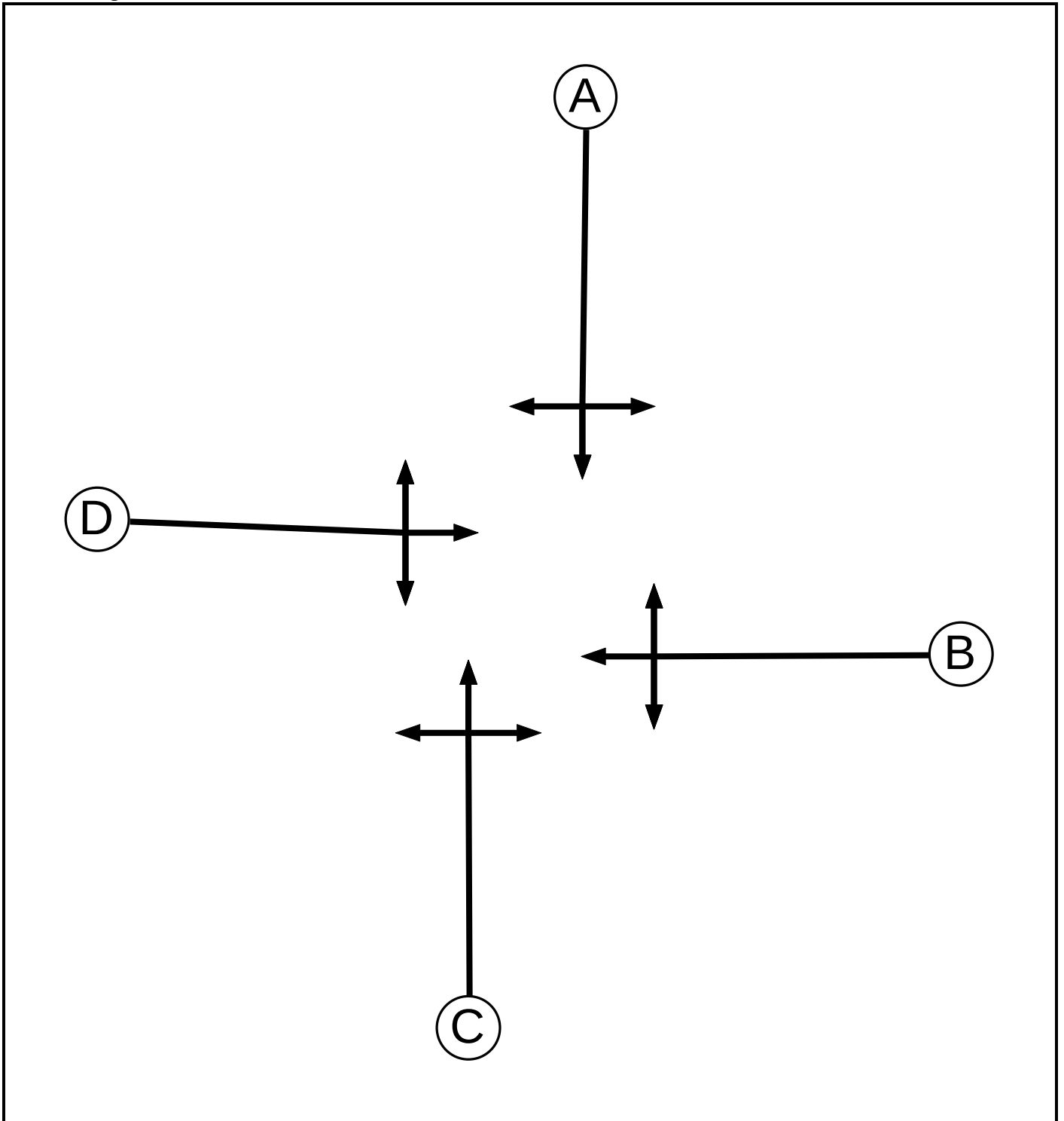
User and Project Details

Project:	Proposed Residential Development, Whalley Road, Barrow
Title:	Existing Layout Assessment
Location:	A671 Whalley Easterly Bypass/A671 Accrington Road/B6246 Accrington Road
File name:	A671 Whalley Easterly Bypass - B6246 Accrington Road_March 2012.lsg3x
Author:	Richard Ian Spencer
Company:	Bryan G Hall Ltd
Address:	Suite E8, Josephs Well, Hanover Way, Leeds, LS3 1AB
Notes:	No pedestrian facilities present as of November 2009. Site observations indicate an average cycle time of 70 seconds.

Network 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

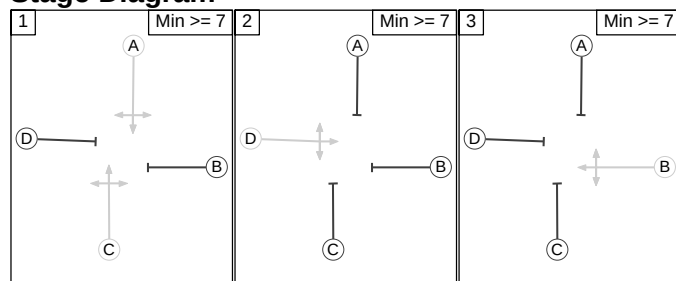
Phase Intergreens Matrix

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

Phases in Stage

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

Stage Diagram



Phase Delays

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

Prohibited Stage Change

From Stage	To Stage		
	1	2	3
	1	6	6
	2	6	7
3	5	6	

A671 Whalley Easterly Bypass/B6246 Accrington Road - Base 2017

Give-Way Lane Input Data

Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road										
Lane	Movement	Max 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)
1/3 (A671 Whalley Easterly Bypass)	7/1 (Right)	1439	3/1	1.09	3/1	3.00	-	0.50	3	3.00
			3/2	1.09	3/2					
3/4 (A671 Accrington Road)	6/1 (Right)	1439	1/1	1.09	1/1	3.00	-	0.50	3	3.00
			1/2	1.09	1/2					

Lane Input Data

Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington 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 (A671 Whalley Easterly Bypass)	U	A	2	3	60.0	Geom	-	3.70	0.00	Y	Arm 5 Ahead	Inf
1/2 (A671 Whalley Easterly Bypass)	U	A	2	3	60.0	Geom	-	3.60	0.00	N	Arm 6 Left	10.00
1/3 (A671 Whalley Easterly Bypass)	O	A	2	3	11.0	Geom	-	3.30	0.00	N	Arm 5 Ahead	Inf
2/1 (Spring Wood)	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 7 Right	10.00
3/1 (A671 Accrington Road)	U	C	2	3	5.0	Geom	-	2.90	0.00	Y	Arm 5 Left	9.00
3/2 (A671 Accrington Road)	U	C	2	3	60.0	Geom	-	3.70	0.00	Y	Arm 7 Ahead	Inf
3/3 (A671 Accrington Road)	U	C	2	3	60.0	Geom	-	3.80	0.00	N	Arm 8 Right	13.00
3/4 (A671 Accrington Road)	O	C	2	3	4.0	Geom	-	3.20	0.00	N	Arm 7 Left	17.00
4/1 (B6246 Accrington Road)	U	D	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 8 Ahead	Inf
5/1	U		2	3	60.0	Inf	-	-	-	-	Arm 8 Left	17.00
5/2	U		2	3	60.0	Inf	-	-	-	-	Arm 5 Right	22.00
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
3: '2017 Base Traffic Flows AM Peak'	08:00	09:00	01:00	
4: '2017 Base Traffic Flows PM Peak'	17:00	18:00	01:00	

Scenario 3: '2017 Base Traffic Flows AM Peak' (FG3: '2017 Base Traffic Flows AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	0	771	13	784
	B	5	0	3	2	10
	C	872	3	0	426	1301
	D	18	2	460	0	480
	Tot.	895	5	1234	441	2575

Traffic Lane Flows

Lane	Scenario 3: 2017 Base Traffic Flows AM Peak
Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	
1/1	367
1/2 (with short)	417(In) 404(Out)
1/3 (short)	13
2/1	10
3/1 (short)	426
3/2 (with short)	730(In) 304(Out)
3/3 (with short)	571(In) 568(Out)
3/4 (short)	3
4/1	480
5/1	598
5/2	636
6/1	5
7/1	441
8/1	316
8/2	579

Lane Saturation Flows

Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington 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 (A671 Whalley Easterly Bypass)	3.70	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1985	1985
				Arm 6 Left	10.00	0.0 %		
1/2 (A671 Whalley Easterly Bypass)	3.60	0.00	N	Arm 5 Ahead	Inf	100.0 %	2115	2115
1/3 (A671 Whalley Easterly Bypass)	3.30	0.00	N	Arm 7 Right	10.00	100.0 %	1813	1813
2/1 (Spring Wood)	3.00	0.00	Y	Arm 5 Left	9.00	30.0 %	1729	1729
				Arm 7 Ahead	Inf	20.0 %		
				Arm 8 Right	13.00	50.0 %		
3/1 (A671 Accrington Road)	2.90	0.00	Y	Arm 7 Left	17.00	100.0 %	1751	1751
3/2 (A671 Accrington Road)	3.70	0.00	N	Arm 8 Ahead	Inf	100.0 %	2125	2125
3/3 (A671 Accrington Road)	3.80	0.00	N	Arm 8 Ahead	Inf	100.0 %	2135	2135
3/4 (A671 Accrington Road)	3.20	0.00	N	Arm 6 Right	16.00	100.0 %	1897	1897
				Arm 5 Right	22.00	95.8 %		
4/1 (B6246 Accrington Road)	4.00	0.00	Y	Arm 6 Ahead	Inf	0.4 %	1886	1886
				Arm 8 Left	17.00	3.8 %		
5/1	Infinite Saturation Flow						Inf	Inf
5/2	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
8/2	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2017 Base Traffic Flows PM Peak' (FG4: '2017 Base Traffic Flows PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	0	732	17	749
	B	5	0	5	2	12
	C	710	2	0	401	1113
	D	25	1	381	0	407
	Tot.	740	3	1118	420	2281

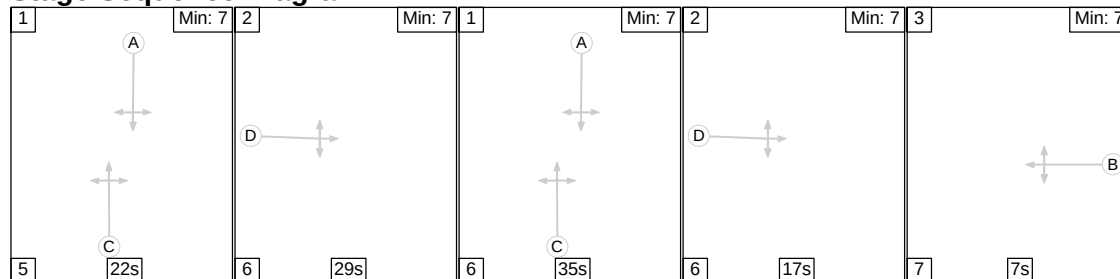
Traffic Lane Flows

Lane	Scenario 4: 2017 Base Traffic Flows PM Peak
Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	
1/1	347
1/2 (with short)	402(In) 385(Out)
1/3 (short)	17
2/1	12
3/1 (short)	401
3/2 (with short)	640(In) 239(Out)
3/3 (with short)	473(In) 471(Out)
3/4 (short)	2
4/1	407
5/1	539
5/2	579
6/1	3
7/1	420
8/1	255
8/2	485

Lane Saturation Flows

Junction: A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington 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 (A671 Whalley Easterly Bypass)	3.70	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1985	1985
				Arm 6 Left	10.00	0.0 %		
1/2 (A671 Whalley Easterly Bypass)	3.60	0.00	N	Arm 5 Ahead	Inf	100.0 %	2115	2115
1/3 (A671 Whalley Easterly Bypass)	3.30	0.00	N	Arm 7 Right	10.00	100.0 %	1813	1813
2/1 (Spring Wood)	3.00	0.00	Y	Arm 5 Left	9.00	41.7 %	1714	1714
				Arm 7 Ahead	Inf	16.7 %		
				Arm 8 Right	13.00	41.7 %		
3/1 (A671 Accrington Road)	2.90	0.00	Y	Arm 7 Left	17.00	100.0 %	1751	1751
3/2 (A671 Accrington Road)	3.70	0.00	N	Arm 8 Ahead	Inf	100.0 %	2125	2125
3/3 (A671 Accrington Road)	3.80	0.00	N	Arm 8 Ahead	Inf	100.0 %	2135	2135
3/4 (A671 Accrington Road) 4/1 (B6246 Accrington Road)	3.20	0.00	N	Arm 6 Right	16.00	100.0 %	1897	1897
				Arm 5 Right	22.00	93.6 %		
	4.00	0.00	Y	Arm 6 Ahead	Inf	0.2 %	1885	1885
				Arm 8 Left	17.00	6.1 %		
5/1	Infinite Saturation Flow						Inf	Inf
5/2	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
8/2	Infinite Saturation Flow						Inf	Inf

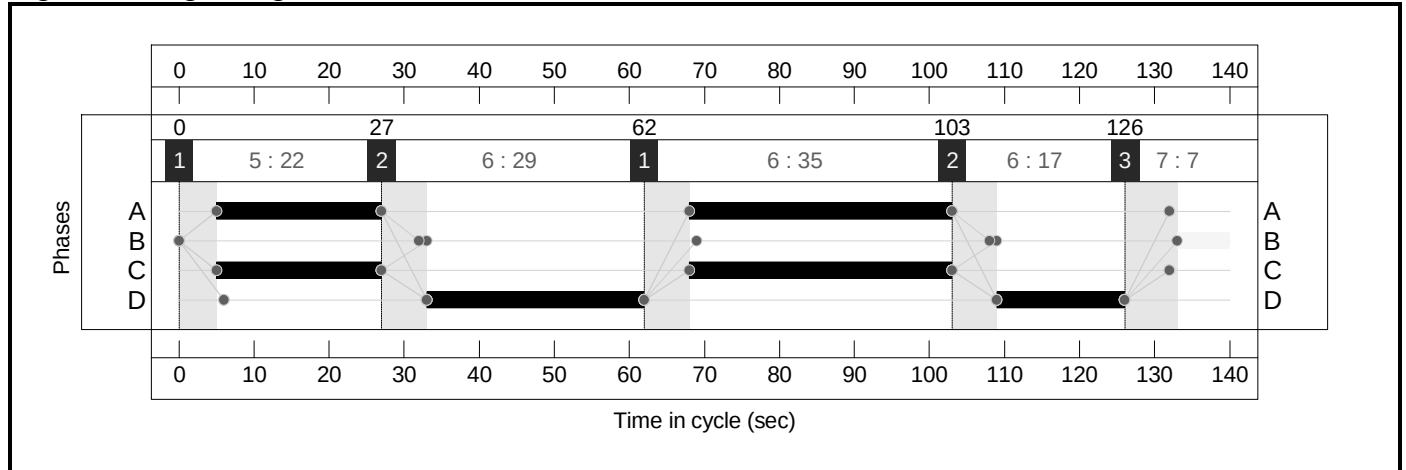
Scenario 3: '2017 Base Traffic Flows AM Peak' (FG3: '2017 Base Traffic Flows AM Peak', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Timings

Stage	1	2	1	2	3
Duration	22	29	35	17	7
Change Point	0	27	62	103	126

Signal Timings Diagram



A671 Whalley Easterly Bypass/B6246 Accrington Road - Base 2017

Network Results

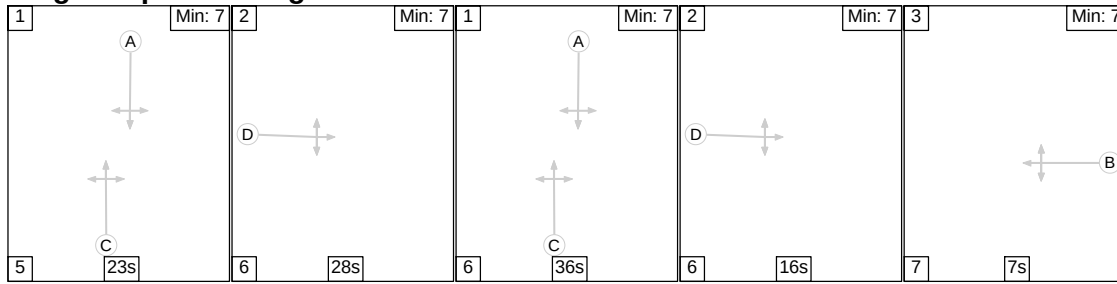
Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Existing Layout Assessment	-	-	N/A	-	-		-	-	-	-	-	-	75.5%
A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	-	-	N/A	-	-		-	-	-	-	-	-	75.5%
1/1	A671 Whalley Easterly Bypass Ahead Left	U	N/A	N/A	A		2	57	-	367	1985	837	43.9%
1/2+1/3	A671 Whalley Easterly Bypass Ahead Right	U+O	N/A	N/A	A		2	57	-	417	2115:1813	900	46.4%
2/1	Spring Wood Left Ahead Right	U	N/A	N/A	B		1	7	-	10	1729	99	10.1%
3/2+3/1	A671 Accrington Road Left Ahead	U	N/A	N/A	C		2	57	-	730	2125:1751	967	75.5%
3/3+3/4	A671 Accrington Road Right Ahead	U+O	N/A	N/A	C		2	57	-	571	2135:1897	893	64.0%
4/1	B6246 Accrington Road Right Ahead Left	U	N/A	N/A	D		2	46	-	480	1886	647	74.2%

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: Existing Layout Assessment	-	-	16	0	0	11.6	4.7	0.0	16.3	-	-	-	-
A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	-	-	16	0	0	11.6	4.7	0.0	16.3	-	-	-	-
1/1	367	367	-	-	-	1.5	0.4	-	1.9	18.2	5.1	0.4	5.5
1/2+1/3	417	417	13	0	0	1.7	0.4	0.0	2.1	18.4	5.6	0.4	6.0
2/1	10	10	-	-	-	0.2	0.1	-	0.2	82.9	0.4	0.1	0.4
3/2+3/1	730	730	-	-	-	3.0	1.5	-	4.6	22.5	7.8	1.5	9.3
3/3+3/4	571	571	3	0	0	2.6	0.9	0.0	3.4	21.7	8.9	0.9	9.7
4/1	480	480	-	-	-	2.7	1.4	-	4.1	30.9	8.1	1.4	9.5

A671 Whalley Easterly Bypass/B6246 Accrington Road - Base 2017

C1	PRC for Signalled Lanes (%):	19.2	Total Delay for Signalled Lanes (pcuHr):	16.34	Cycle Time (s):	140
	PRC Over All Lanes (%):	19.2	Total Delay Over All Lanes(pcuHr):	16.34		

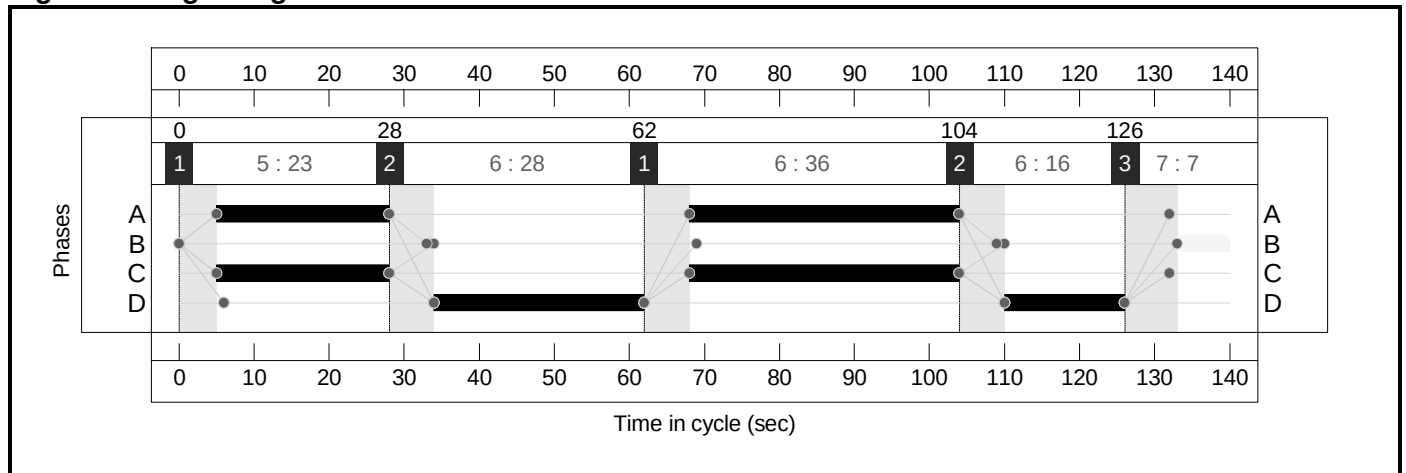
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	3
Duration	23	28	36	16	7
Change Point	0	28	62	104	126

Signal Timings Diagram



A671 Whalley Easterly Bypass/B6246 Accrington Road - Base 2017

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: Existing Layout Assessment	-	-	N/A	-	-		-	-	-	-	-	-	66.7%
A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	-	-	N/A	-	-		-	-	-	-	-	-	66.7%
1/1	A671 Whalley Easterly Bypass Ahead Left	U	N/A	N/A	A		2	59	-	347	1985	865	40.1%
1/2+1/3	A671 Whalley Easterly Bypass Ahead Right	U+O	N/A	N/A	A		2	59	-	402	2115:1813	936	43.0%
2/1	Spring Wood Left Ahead Right	U	N/A	N/A	B		1	7	-	12	1714	98	12.3%
3/2+3/1	A671 Accrington Road Left Ahead	U	N/A	N/A	C		2	59	-	640	2125:1751	959	66.7%
3/3+3/4	A671 Accrington Road Right Ahead	U+O	N/A	N/A	C		2	59	-	473	2135:1897	923	51.2%
4/1	B6246 Accrington Road Right Ahead Left	U	N/A	N/A	D		2	44	-	407	1885	619	65.7%

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: Existing Layout Assessment	-	-	19	0	0	9.7	3.3	0.0	12.9	-	-	-	-
A671 Whalley Easterly Bypass / A671 Accrington Road / B6246 Accrington Road	-	-	19	0	0	9.7	3.3	0.0	12.9	-	-	-	-
1/1	347	347	-	-	-	1.3	0.3	-	1.6	17.0	4.6	0.3	5.0
1/2+1/3	402	402	17	0	0	1.5	0.4	0.0	1.9	17.2	5.1	0.4	5.5
2/1	12	12	-	-	-	0.2	0.1	-	0.3	83.6	0.4	0.1	0.5
3/2+3/1	640	640	-	-	-	2.5	1.0	-	3.5	19.4	6.3	1.0	7.3
3/3+3/4	473	473	2	0	0	1.9	0.5	0.0	2.4	18.4	6.7	0.5	7.2
4/1	407	407	-	-	-	2.3	0.9	-	3.2	28.5	6.7	0.9	7.6

A671 Whalley Easterly Bypass/B6246 Accrington Road - Base 2017

C1	PRC for Signalled Lanes (%):	34.9	Total Delay for Signalled Lanes (pcuHr):	12.94	Cycle Time (s):	140
	PRC Over All Lanes (%):	34.9	Total Delay Over All Lanes(pcuHr):	12.94		

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\PICADY\A671-Wiswell Lane-Wiswell Shay

Report generation date: 28/03/2012 14:35:58

« Existing Layout - 2017 Base, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Base					
Stream B-CD	0.04	0.12	0.04	A	19% [Stream D-C]
Stream B-A	0.07	0.28	0.06	C	
Stream A-B	-	-	-	-	
Stream A-C	-	-	-	-	
Stream A-D	-	-	-	-	
Stream AB-C	-	-	-	-	
Stream AB-D	0.40	0.18	0.29	B	
Stream D-AB	0.47	0.19	0.32	B	
Stream D-C	0.34	0.34	0.26	C	
Stream C-D	-	-	-	-	
Stream C-A	-	-	-	-	
Stream C-B	-	-	-	-	
Stream CD-A	-	-	-	-	
Stream CD-B	0.03	0.12	0.03	A	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

"D1 - 2010 Existing, AM Peak" model duration: 07:45 - 09:15

"D2 - 2010 Existing, PM Peak" model duration: 16:45 - 18:15

"D3 - 2017 Base, AM Peak" model duration: 07:45 - 09:15

"D4 - 2017 Base, PM Peak" model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 14:35:39

File summary

File Description

Title	2010 Existing and 2016 Base Assessment
Location	A671 Accrington Road / Wiswell Lane / Wiswell Shay

Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	06/352
Enumerator	rspencer [BGH19]
Description	Staggered Major/Minor Priority Junction with two right turn holding lanes

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout 2017 Peak AM Peak

Existing Layout - 2017 Base, AM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Base, AM Peak	2017 Base	AM Peak		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		0.20	B

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	19	Stream D-C

Arms

Arms

Arm	Name	Description	Arm Type
A	A671 Accrington Road North		Major
B	Wiswell Shay		Minor
C	A671 Accrington Road South		Major
D	Wiswell Lane		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	11.80		0.00	✓	2.50	150.00		
C	12.00		0.00	✓	2.50	150.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	7.00	4.50	3.50	3.00	✓	1.00	25	25

D	One lane plus flare				10.00	10.00	5.00	3.30	3.00	✓	2.00	70	40
---	---------------------	--	--	--	-------	-------	------	------	------	---	------	----	----

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
1	AB-D	682.406	-	-	-	-	-	0.198	0.198	0.198	-	-
1	B-A	509.146	0.069	0.173	0.173	-	-	0.109	0.247	-	0.109	0.247
1	B-CD	700.048	0.079	0.200	0.200	-	-	-	-	-	-	-
1	CD-B	682.406	0.195	0.195	0.195	-	-	-	-	-	-	-
1	D-AB	712.434	-	-	-	-	-	0.206	0.206	0.082	-	-
1	D-C	562.234	-	0.122	0.276	0.122	0.276	0.194	0.194	0.077	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	785.00	100.000
B	ONE HOUR	✓	32.00	100.000
C	ONE HOUR	✓	824.00	100.000
D	ONE HOUR	✓	192.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

	To			
	A	B	C	D
A	0.000	7.000	659.000	119.000
B	13.000	0.000	15.000	0.000

From	To	A	B	C	D
A	B	13.000	0.000	16.000	0.000
A	C	755.000	10.000	0.000	59.000
A	D	131.000	5.000	56.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

From	To			
	A	B	C	D
A	0.00	0.01	0.84	0.15
B	0.41	0.00	0.50	0.09
C	0.92	0.01	0.00	0.07
D	0.68	0.03	0.29	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

From	To			
	A	B	C	D
A	1.000	1.000	1.090	1.042
B	1.000	1.000	1.000	1.000
C	1.089	1.000	1.000	1.000
D	1.031	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

From	To			
	A	B	C	D
A	0.000	0.000	8.950	4.200
B	0.000	0.000	0.000	0.000
C	8.870	0.000	0.000	0.000
D	3.050	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
B-CD	0.04	0.12	0.04	A	17.43	26.15	3.02	0.12	0.03	3.02	0.12
B-A	0.06	0.28	0.07	C	11.93	17.89	4.19	0.23	0.05	4.19	0.23
A-B	-	-	-	-	6.42	9.64	-	-	-	-	-
A-C	-	-	-	-	604.71	907.06	-	-	-	-	-
A-D	-	-	-	-	109.20	163.79	-	-	-	-	-
AB-C	-	-	-	-	619.38	929.07	-	-	-	-	-
AB-D	0.29	0.18	0.40	B	111.95	167.92	26.33	0.16	0.29	26.33	0.16
D-AB	0.32	0.19	0.47	B	124.80	187.19	29.90	0.16	0.33	29.90	0.16
D-C	0.26	0.34	0.34	C	51.39	77.08	20.07	0.26	0.22	20.07	0.26
C-D	-	-	-	-	54.14	81.21	-	-	-	-	-
C-A	-	-	-	-	692.80	1039.20	-	-	-	-	-
C-B	-	-	-	-	9.18	13.76	-	-	-	-	-
CD-A	-	-	-	-	812.86	1219.29	-	-	-	-	-
CD-B	0.03	0.12	0.03	A	13.76	20.64	2.40	0.12	0.03	2.40	0.12

Main Results for each time segment

Main results: (07:45-08:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	14.30	3.58	14.20	0.00	568.15	0.025	0.00	0.03	0.108	A
B-A	9.79	2.45	9.66	0.00	317.68	0.031	0.00	0.03	0.195	B
A-B	5.27	1.32	5.27	0.00	-	-	-	-	-	-
A-C	496.13	124.03	496.13	0.00	-	-	-	-	-	-
A-D	89.59	22.40	89.59	0.00	-	-	-	-	-	-
AB-C	508.09	127.02	508.09	0.00	-	-	-	-	-	-
AB-D	91.83	22.96	91.00	0.00	528.17	0.174	0.00	0.21	0.137	A
D-AB	102.39	25.60	101.47	0.00	545.59	0.188	0.00	0.23	0.135	A
D-C	42.16	10.54	41.61	0.00	343.58	0.123	0.00	0.14	0.198	B
C-D	44.42	11.10	44.42	0.00	-	-	-	-	-	-
C-A	568.40	142.10	568.40	0.00	-	-	-	-	-	-
C-B	7.53	1.88	7.53	0.00	-	-	-	-	-	-
CD-A	866.15	166.54	866.15	0.00	-	-	-	-	-	-
CD-B	11.26	2.81	11.18	0.00	557.53	0.020	0.00	0.02	0.110	A

Main results: (08:00-08:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	17.08	4.27	17.05	0.00	541.81	0.032	0.03	0.03	0.114	A
B-A	11.69	2.92	11.64	0.00	280.51	0.042	0.03	0.04	0.223	B
A-B	6.29	1.57	6.29	0.00	-	-	-	-	-	-
A-C	592.43	148.11	592.43	0.00	-	-	-	-	-	-
A-D	106.98	26.74	106.98	0.00	-	-	-	-	-	-
AB-C	606.79	151.70	606.79	0.00	-	-	-	-	-	-
AB-D	109.67	27.42	109.40	0.00	503.44	0.218	0.21	0.28	0.152	A
D-AB	122.26	30.57	121.94	0.00	514.72	0.238	0.23	0.31	0.153	A
D-C	50.34	12.59	50.10	0.00	300.55	0.168	0.14	0.20	0.239	B
C-D	53.04	13.26	53.04	0.00	-	-	-	-	-	-
C-A	678.73	169.68	678.73	0.00	-	-	-	-	-	-
C-B	8.99	2.25	8.99	0.00	-	-	-	-	-	-
CD-A	796.19	199.05	796.19	0.00	-	-	-	-	-	-
CD-B	13.47	3.37	13.45	0.00	533.29	0.025	0.02	0.03	0.115	A

Main results: (08:15-08:30)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	20.92	5.23	20.88	0.00	505.14	0.041	0.03	0.04	0.124	A
B-A	14.31	3.58	14.22	0.00	229.07	0.062	0.04	0.07	0.279	C
A-B	7.71	1.93	7.71	0.00	-	-	-	-	-	-
A-C	725.57	181.39	725.57	0.00	-	-	-	-	-	-
A-D	131.02	32.76	131.02	0.00	-	-	-	-	-	-
AB-C	743.16	185.79	743.16	0.00	-	-	-	-	-	-
AB-D	134.32	33.58	133.84	0.00	469.26	0.286	0.28	0.39	0.179	B
D-AB	149.74	37.43	149.12	0.00	468.82	0.319	0.31	0.46	0.187	B
D-C	61.66	15.41	61.11	0.00	240.62	0.256	0.20	0.33	0.333	C

C-D	64.96	16.24	64.96	0.00	-	-	-	-	-	-
C-A	831.27	207.82	831.27	0.00	-	-	-	-	-	-
C-B	11.01	2.75	11.01	0.00	-	-	-	-	-	-
CD-A	974.92	243.73	974.92	0.00	-	-	-	-	-	-
CD-B	16.49	4.12	16.46	0.00	499.77	0.033	0.03	0.03	0.124	A

Main results: (08:30-08:45)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	20.92	5.23	20.92	0.00	504.91	0.041	0.04	0.04	0.124	A
B-A	14.31	3.58	14.31	0.00	229.08	0.062	0.07	0.07	0.279	C
A-B	7.71	1.93	7.71	0.00	-	-	-	-	-	-
A-C	725.57	181.39	725.57	0.00	-	-	-	-	-	-
A-D	131.02	32.76	131.02	0.00	-	-	-	-	-	-
AB-C	743.19	185.80	743.19	0.00	-	-	-	-	-	-
AB-D	134.32	33.58	134.31	0.00	469.26	0.286	0.39	0.40	0.179	B
D-AB	149.74	37.43	149.72	0.00	468.41	0.320	0.46	0.47	0.188	B
D-C	61.66	15.41	61.64	0.00	240.48	0.256	0.33	0.34	0.335	C
C-D	64.96	16.24	64.96	0.00	-	-	-	-	-	-
C-A	831.27	207.82	831.27	0.00	-	-	-	-	-	-
C-B	11.01	2.75	11.01	0.00	-	-	-	-	-	-
CD-A	975.48	243.87	975.48	0.00	-	-	-	-	-	-
CD-B	16.51	4.13	16.51	0.00	499.77	0.033	0.03	0.03	0.124	A

Main results: (08:45-09:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	17.08	4.27	17.12	0.00	541.40	0.032	0.04	0.03	0.114	A
B-A	11.69	2.92	11.77	0.00	280.57	0.042	0.07	0.04	0.223	B
A-B	6.29	1.57	6.29	0.00	-	-	-	-	-	-
A-C	592.43	148.11	592.43	0.00	-	-	-	-	-	-
A-D	106.98	26.74	106.98	0.00	-	-	-	-	-	-
AB-C	606.85	151.71	606.85	0.00	-	-	-	-	-	-
AB-D	109.68	27.42	110.15	0.00	503.45	0.218	0.40	0.28	0.153	A
D-AB	122.26	30.57	122.86	0.00	514.24	0.238	0.47	0.32	0.154	A
D-C	50.34	12.59	50.88	0.00	300.37	0.168	0.34	0.21	0.241	B
C-D	53.04	13.26	53.04	0.00	-	-	-	-	-	-
C-A	678.73	169.68	678.73	0.00	-	-	-	-	-	-
C-B	8.99	2.25	8.99	0.00	-	-	-	-	-	-
CD-A	797.07	199.27	797.07	0.00	-	-	-	-	-	-
CD-B	13.51	3.38	13.54	0.00	533.29	0.025	0.03	0.03	0.115	A

Main results: (09:00-09:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	14.30	3.58	14.33	0.00	567.65	0.025	0.03	0.03	0.108	A
B-A	9.79	2.45	9.83	0.00	317.76	0.031	0.04	0.03	0.195	B
A-B	5.27	1.32	5.27	0.00	-	-	-	-	-	-
A-C	496.13	124.03	496.13	0.00	-	-	-	-	-	-
A-D	89.59	22.40	89.59	0.00	-	-	-	-	-	-
AB-C	508.20	127.05	508.20	0.00	-	-	-	-	-	-
AB-D	91.85	22.96	92.13	0.00	528.17	0.174	0.28	0.21	0.138	A
D-AB	102.39	25.60	102.72	0.00	545.16	0.188	0.32	0.23	0.136	A
D-C	42.16	10.54	42.41	0.00	343.29	0.123	0.21	0.14	0.200	B
C-D	44.42	11.10	44.42	0.00	-	-	-	-	-	-

C-A	568.40	142.10	568.40	0.00	-	-	-	-	-	-
C-B	7.53	1.88	7.53	0.00	-	-	-	-	-	-
CD-A	667.34	166.84	667.34	0.00	-	-	-	-	-	-
CD-B	11.30	2.83	11.33	0.00	557.53	0.020	0.03	0.02	0.110	A

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.37	0.02	0.108	A	A
B-A	0.45	0.03	0.195	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	3.00	0.20	0.137	A	A
D-AB	3.30	0.22	0.135	A	A
D-C	1.97	0.13	0.198	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.30	0.02	0.110	A	A

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.48	0.03	0.114	A	A
B-A	0.62	0.04	0.223	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	4.01	0.27	0.152	A	A
D-AB	4.48	0.30	0.153	A	A
D-C	2.85	0.19	0.239	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.38	0.03	0.115	A	A

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.63	0.04	0.124	A	A
B-A	0.94	0.06	0.279	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	5.72	0.38	0.179	B	B
D-AB	6.65	0.44	0.187	B	B
D-C	4.75	0.32	0.333	C	B

C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.50	0.03	0.124	A	A

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.64	0.04	0.124	A	A
B-A	0.99	0.07	0.279	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	5.95	0.40	0.179	B	B
D-AB	6.96	0.46	0.188	B	B
D-C	5.07	0.34	0.335	C	C
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.51	0.03	0.124	A	A

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.50	0.03	0.114	A	A
B-A	0.69	0.05	0.223	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	4.37	0.29	0.153	A	A
D-AB	4.90	0.33	0.154	A	A
D-C	3.23	0.22	0.241	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.40	0.03	0.115	A	A

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.40	0.03	0.108	A	A
B-A	0.50	0.03	0.195	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	3.28	0.22	0.138	A	A
D-AB	3.60	0.24	0.136	A	A
D-C	2.21	0.15	0.200	B	B

C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.32	0.02	0.110	A	A

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\PICADY\A671-Wiswell Lane-Wiswell Shay

Report generation date: 28/03/2012 14:46:51

« Existing Layout - 2017 Base, PM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

PM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Base					
Stream B-CD	0.02	0.12	0.02	A	53% [Stream D-C]
Stream B-A	0.02	0.25	0.02	B	
Stream A-B	-	-	-	-	
Stream A-C	-	-	-	-	
Stream A-D	-	-	-	-	
Stream AB-C	-	-	-	-	
Stream AB-D	0.25	0.15	0.20	A	
Stream D-AB	0.22	0.13	0.18	A	
Stream D-C	0.09	0.23	0.09	B	
Stream C-D	-	-	-	-	
Stream C-A	-	-	-	-	
Stream C-B	-	-	-	-	
Stream CD-A	-	-	-	-	
Stream CD-B	0.05	0.13	0.05	A	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, AM Peak' model duration: 07:45 - 09:15

'D2 - 2010 Existing, PM Peak' model duration: 16:45 - 18:15

'D3 - 2017 Base, AM Peak' model duration: 07:45 - 09:15

'D4 - 2017 Base, PM Peak' model duration: 16:45 - 18:15

Run using ARCADY 8.0.0.296 at 28/03/2012 14:45:50

File summary

File Description

Title	2010 Existing and 2016 Base Assessment
Location	A671 Accrington Road / Wiswell Lane / Wiswell Shay

Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	06/352
Enumerator	rspencer [BGH19]
Description	Staggered Major/Minor Priority Junction with two right turn holding lanes

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout 2017 Base PM Peak

Existing Layout - 2017 Base, PM Peak

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Base, PM Peak	2017 Base	PM Peak		ONE HOUR	16:45	18:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		0.15	A

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	53	Stream D-C

Arms

Arms

Arm	Name	Description	Arm Type
A	A671 Accrington Road North		Major
B	Wiswell Shay		Minor
C	A671 Accrington Road South		Major
D	Wiswell Lane		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	11.80		0.00	✓	2.50	150.00		
C	12.00		0.00	✓	2.50	150.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	7.00	4.50	3.50	3.00	✓	1.00	25	25

D	One lane plus flare				10.00	10.00	5.00	3.30	3.00	✓	2.00	70	40
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Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
1	AB-D	682.406	-	-	-	-	-	0.198	0.198	0.198	-	-
1	B-A	491.229	0.066	0.167	0.167	-	-	0.105	0.239	-	0.105	0.239
1	B-CD	723.064	0.082	0.207	0.207	-	-	-	-	-	-	-
1	CD-B	682.406	0.195	0.195	0.195	-	-	-	-	-	-	-
1	D-AB	718.122	-	-	-	-	-	0.208	0.208	0.082	-	-
1	D-C	554.638	-	0.120	0.273	0.120	0.273	0.191	0.191	0.076	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	806.00	100.000
B	ONE HOUR	✓	16.00	100.000
C	ONE HOUR	✓	707.00	100.000
D	ONE HOUR	✓	111.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

	To			
	A	B	C	D
From A	0.000	26.000	688.000	92.000
From B	5.000	0.000	7.000	4.000

From	B	3,000	0,000	7,000	4,000
C	648,000	15,000	0,000	44,000	
D	82,000	7,000	22,000	0,000	

Turning Proportions (Veh) - Junction 1 (for whole period)

	To				
		A	B	C	D
From	A	0.00	0.03	0.85	0.11
	B	0.31	0.00	0.44	0.25
	C	0.92	0.02	0.00	0.06
	D	0.74	0.06	0.20	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

	To				
		A	B	C	D
From	A	1.000	1.000	1.036	1.011
	B	1.000	1.000	1.000	1.000
	C	1.026	1.000	1.000	1.000
	D	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To				
		A	B	C	D
From	A	0.000	0.000	3.630	1.090
	B	0.000	0.000	0.000	0.000
	C	2.620	0.000	0.000	0.000
	D	0.000	0.000	0.000	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
B-CD	0.02	0.12	0.02	A	10.09	15.14	1.64	0.11	0.02	1.64	0.11
B-A	0.02	0.25	0.02	B	4.59	6.88	1.48	0.21	0.02	1.48	0.21
A-B	-	-	-	-	23.86	35.79	-	-	-	-	-
A-C	-	-	-	-	631.32	946.98	-	-	-	-	-
A-D	-	-	-	-	84.42	126.63	-	-	-	-	-
AB-C	-	-	-	-	637.74	956.61	-	-	-	-	-
AB-D	0.20	0.15	0.25	A	88.09	132.13	17.45	0.13	0.19	17.45	0.13
D-AB	0.18	0.13	0.22	A	81.67	122.50	14.98	0.12	0.17	14.98	0.12
D-C	0.09	0.23	0.09	B	20.19	30.28	6.02	0.20	0.07	6.02	0.20
C-D	-	-	-	-	40.38	60.56	-	-	-	-	-
C-A	-	-	-	-	594.62	891.92	-	-	-	-	-
C-B	-	-	-	-	13.76	20.65	-	-	-	-	-
CD-A	-	-	-	-	669.78	1004.67	-	-	-	-	-
CD-B	0.05	0.13	0.05	A	20.18	30.27	3.55	0.12	0.04	3.55	0.12

Main Results for each time segment

Main results: (16:45-17:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	8.28	2.07	8.23	0.00	594.12	0.014	0.00	0.01	0.102	A
B-A	3.76	0.94	3.72	0.00	325.45	0.012	0.00	0.01	0.186	B
A-B	19.57	4.89	19.57	0.00	-	-	-	-	-	-
A-C	517.96	129.49	517.96	0.00	-	-	-	-	-	-
A-D	69.26	17.32	69.26	0.00	-	-	-	-	-	-
AB-C	523.20	130.80	523.20	0.00	-	-	-	-	-	-
AB-D	72.25	18.06	71.68	0.00	568.72	0.127	0.00	0.14	0.121	A
D-AB	67.00	16.75	66.51	0.00	602.07	0.111	0.00	0.12	0.112	A
D-C	16.56	4.14	16.38	0.00	369.35	0.045	0.00	0.05	0.170	B
C-D	33.13	8.28	33.13	0.00	-	-	-	-	-	-
C-A	487.85	121.96	487.85	0.00	-	-	-	-	-	-
C-B	11.29	2.82	11.29	0.00	-	-	-	-	-	-
CD-A	549.12	137.28	549.12	0.00	-	-	-	-	-	-
CD-B	16.52	4.13	16.40	0.00	560.03	0.030	0.00	0.03	0.110	A

Main results: (17:00-17:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	9.89	2.47	9.87	0.00	568.75	0.017	0.01	0.02	0.107	A
B-A	4.49	1.12	4.48	0.00	293.30	0.015	0.01	0.02	0.208	B
A-B	23.37	5.84	23.37	0.00	-	-	-	-	-	-
A-C	618.50	154.62	618.50	0.00	-	-	-	-	-	-
A-D	82.71	20.68	82.71	0.00	-	-	-	-	-	-
AB-C	624.78	156.20	624.78	0.00	-	-	-	-	-	-
AB-D	86.30	21.57	86.13	0.00	548.02	0.157	0.14	0.19	0.130	A
D-AB	80.01	20.00	79.87	0.00	578.86	0.138	0.12	0.16	0.120	A
D-C	19.78	4.94	19.71	0.00	333.20	0.059	0.05	0.06	0.191	B
C-D	39.56	9.89	39.56	0.00	-	-	-	-	-	-
C-A	582.54	145.63	582.54	0.00	-	-	-	-	-	-
C-B	13.48	3.37	13.48	0.00	-	-	-	-	-	-
CD-A	656.13	164.03	656.13	0.00	-	-	-	-	-	-
CD-B	19.77	4.94	19.74	0.00	536.27	0.037	0.03	0.04	0.116	A

Main results: (17:15-17:30)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	12.11	3.03	12.09	0.00	533.79	0.023	0.02	0.02	0.115	A
B-A	5.51	1.38	5.48	0.00	248.79	0.022	0.02	0.02	0.247	B
A-B	28.63	7.16	28.63	0.00	-	-	-	-	-	-
A-C	757.50	189.38	757.50	0.00	-	-	-	-	-	-
A-D	101.29	25.32	101.29	0.00	-	-	-	-	-	-
AB-C	765.19	191.30	765.19	0.00	-	-	-	-	-	-
AB-D	105.69	26.42	105.42	0.00	519.40	0.203	0.19	0.25	0.145	A
D-AB	97.99	24.50	97.76	0.00	546.27	0.179	0.16	0.22	0.134	A
D-C	24.22	6.06	24.10	0.00	283.31	0.086	0.06	0.09	0.231	B

C-D	48.44	12.11	48.44	0.00	-	-	-	-	-	-
C-A	713.46	178.37	713.46	0.00	-	-	-	-	-	-
C-B	16.52	4.13	16.52	0.00	-	-	-	-	-	-
CD-A	803.54	200.88	803.54	0.00	-	-	-	-	-	-
CD-B	24.20	6.05	24.16	0.00	503.43	0.048	0.04	0.05	0.125	A

Main results: (17:30-17:45)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	12.11	3.03	12.11	0.00	533.65	0.023	0.02	0.02	0.115	A
B-A	5.51	1.38	5.50	0.00	248.81	0.022	0.02	0.02	0.247	B
A-B	28.63	7.16	28.63	0.00	-	-	-	-	-	-
A-C	757.50	189.38	757.50	0.00	-	-	-	-	-	-
A-D	101.29	25.32	101.29	0.00	-	-	-	-	-	-
AB-C	765.21	191.30	765.21	0.00	-	-	-	-	-	-
AB-D	105.70	26.42	105.69	0.00	519.40	0.204	0.25	0.25	0.145	A
D-AB	97.99	24.50	97.99	0.00	546.19	0.179	0.22	0.22	0.134	A
D-C	24.22	6.06	24.22	0.00	283.25	0.086	0.09	0.09	0.232	B
C-D	48.44	12.11	48.44	0.00	-	-	-	-	-	-
C-A	713.46	178.37	713.46	0.00	-	-	-	-	-	-
C-B	16.52	4.13	16.52	0.00	-	-	-	-	-	-
CD-A	803.74	200.93	803.74	0.00	-	-	-	-	-	-
CD-B	24.22	6.06	24.22	0.00	503.43	0.048	0.05	0.05	0.125	A

Main results: (17:45-18:00)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	9.89	2.47	9.91	0.00	568.48	0.017	0.02	0.02	0.107	A
B-A	4.49	1.12	4.52	0.00	293.38	0.015	0.02	0.02	0.208	B
A-B	23.37	5.84	23.37	0.00	-	-	-	-	-	-
A-C	618.50	154.62	618.50	0.00	-	-	-	-	-	-
A-D	82.71	20.68	82.71	0.00	-	-	-	-	-	-
AB-C	624.81	156.20	624.81	0.00	-	-	-	-	-	-
AB-D	86.31	21.58	86.57	0.00	548.02	0.157	0.25	0.19	0.130	A
D-AB	80.01	20.00	80.23	0.00	578.74	0.138	0.22	0.16	0.120	A
D-C	19.78	4.94	19.89	0.00	333.11	0.059	0.09	0.06	0.192	B
C-D	39.56	9.89	39.56	0.00	-	-	-	-	-	-
C-A	582.54	145.63	582.54	0.00	-	-	-	-	-	-
C-B	13.48	3.37	13.48	0.00	-	-	-	-	-	-
CD-A	656.46	164.11	656.46	0.00	-	-	-	-	-	-
CD-B	19.80	4.95	19.84	0.00	536.27	0.037	0.05	0.04	0.116	A

Main results: (18:00-18:15)

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
B-CD	8.28	2.07	8.30	0.00	593.74	0.014	0.02	0.01	0.102	A
B-A	3.76	0.94	3.78	0.00	325.56	0.012	0.02	0.01	0.186	B
A-B	19.57	4.89	19.57	0.00	-	-	-	-	-	-
A-C	517.96	129.49	517.96	0.00	-	-	-	-	-	-
A-D	69.26	17.32	69.26	0.00	-	-	-	-	-	-
AB-C	523.24	130.81	523.24	0.00	-	-	-	-	-	-
AB-D	72.28	18.07	72.45	0.00	568.72	0.127	0.19	0.15	0.121	A
D-AB	67.00	16.75	67.15	0.00	601.91	0.111	0.16	0.13	0.112	A
D-C	16.56	4.14	16.63	0.00	369.18	0.045	0.06	0.05	0.170	B
C-D	33.13	8.28	33.13	0.00	-	-	-	-	-	-

C-A	487.85	121.96	487.85	0.00	-	-	-	-	-	-
C-B	11.29	2.82	11.29	0.00	-	-	-	-	-	-
CD-A	549.71	137.43	549.71	0.00	-	-	-	-	-	-
CD-B	16.57	4.14	16.61	0.00	560.03	0.030	0.04	0.03	0.110	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:45-17:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.20	0.01	0.102	A	A
B-A	0.17	0.01	0.186	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.09	0.14	0.121	A	A
D-AB	1.80	0.12	0.112	A	A
D-C	0.67	0.04	0.170	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.44	0.03	0.110	A	A

Queueing Delay results: (17:00-17:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.26	0.02	0.107	A	A
B-A	0.22	0.01	0.208	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.71	0.18	0.130	A	A
D-AB	2.33	0.16	0.120	A	A
D-C	0.91	0.06	0.191	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.56	0.04	0.116	A	A

Queueing Delay results: (17:15-17:30)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.34	0.02	0.115	A	A
B-A	0.32	0.02	0.247	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	3.69	0.25	0.145	A	A
D-AB	3.16	0.21	0.134	A	A
D-C	1.33	0.09	0.231	B	B

C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.74	0.05	0.125	A	A

Queueing Delay results: (17:30-17:45)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.35	0.02	0.115	A	A
B-A	0.34	0.02	0.247	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	3.80	0.25	0.145	A	A
D-AB	3.26	0.22	0.134	A	A
D-C	1.39	0.09	0.232	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.75	0.05	0.125	A	A

Queueing Delay results: (17:45-18:00)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.27	0.02	0.107	A	A
B-A	0.24	0.02	0.208	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.91	0.19	0.130	A	A
D-AB	2.49	0.17	0.120	A	A
D-C	0.99	0.07	0.192	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.59	0.04	0.116	A	A

Queueing Delay results: (18:00-18:15)

Stream	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	0.22	0.01	0.102	A	A
B-A	0.18	0.01	0.186	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-C	-	-	-	-	-
AB-D	2.25	0.15	0.121	A	A
D-AB	1.94	0.13	0.112	A	A
D-C	0.73	0.05	0.170	B	B

C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-A	-	-	-	-	-
CD-B	0.47	0.03	0.110	A	A

ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]

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Filename: 2010 Existing and 2017 Base AM Peak Assessment.arc8

Path: Y:\2010\10-226 to 10-250\10-228 CEG, Whalley\Technical\Technical Existing and Base Models\ARCADY\A59-A671
Whalley Easterly Bypass\AM PEAK ASSESSMENT

Report generation date: 28/03/2012 14:50:02

Existing Layout - 2017 Base, AM Peak

- » Junction Network
- » Arms
- » Traffic Flows
- » Entry Flows
- » Turning Proportions
- » Vehicle Mix
- » Results

Summary of junction performance

AM Peak					
	Queue (Veh)	Delay (min)	RFC	LOS	Network Residual Capacity
Existing Layout - 2017 Base					
Arm A	1.57	0.07	0.61	A	26% [Arm B]
Arm B	2.33	0.14	0.70	A	
Arm C	0.87	0.07	0.47	A	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

'D1 - 2010 Existing, AM Peak' model duration: 07:45 - 09:15

'D2 - 2017 Base, AM Peak' model duration: 07:45 - 09:15

Run using ARCADY 8.0.0.296 at 28/03/2012 14:50:00

File summary

File Description

Title	2010 Existing and 2016 Base AM Peak Assessment
Location	A59/A671 Whalley Easterly Bypass - Roundabout Junction
Site Number	
Date	21/10/2011
Version	
Status	Completed
Identifier	
Client	CEG
Jobnumber	06/352
Enumerator	rspencer [BGH19]
Description	A59/A671 Whalley Easterly Bypass - Roundabout Junction

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (min)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	0.60	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	min	-Min	perMin

The junction diagram reflects the last run of ARCADY.

Existing Layout - 2017 Base, AM Peak

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm B - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm C - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
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Existing Layout	ARCADY		✓				100.000	100.000	
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Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Base, AM Peak	2017 Base	AM Peak		ONE HOUR	07:45	09:15	90	15				✓		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (min)	Junction LOS
untitled	Roundabout	A,B,C				0.09	A

Junction Network Options

Driving Side	Lighting	Road Surface	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	(Mini-roundabouts only)	26	Arm B

Arms

Arms

Arm	Name	Description
A	A59 North	
B	A671 Whalley Easterly Bypass	
C	A59 South	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
A	0.00	99999.00		0.00
B	0.00	99999.00		0.00
C	0.00	99999.00		0.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	L - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A	7.60	7.60	0.00	35.00	93.00	18.00	
B	3.50	6.30	40.00	55.00	93.00	20.00	
C	3.80	7.30	140.00	90.00	93.00	20.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A		(calculated)	(calculated)	0.572	2446.949
B		(calculated)	(calculated)	0.491	1869.058
C		(calculated)	(calculated)	0.552	2288.510

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	1197.00	100.000
B	ONE HOUR	✓	912.00	100.000
C	ONE HOUR	✓	723.00	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.000	650.000	547.000
	B	656.000	0.000	256.000
	C	579.000	144.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
From		A	B	C
	A	0.00	0.54	0.46
	B	0.72	0.00	0.28
	C	0.80	0.20	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
From		A	B	C
	A	1.000	1.091	1.095
	B	1.088	1.000	1.063
	C			

	C	1.098	1.042	1.000
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Heavy Vehicle Percentages - Junction 1 (for whole period)

From	To		
	A	B	C
	A	0.000	9.080
	B	8.840	0.000
	C	9.840	4.170

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (min)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (min)
A	0.61	0.07	1.57	A	1098.39	1647.58	96.87	0.06	1.08	96.87	0.06
B	0.70	0.14	2.33	A	836.87	1255.30	128.83	0.10	1.43	128.85	0.10
C	0.47	0.07	0.87	A	663.44	995.15	55.69	0.06	0.62	55.70	0.06

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	901.16	225.29	898.36	926.09	108.08	0.00	2180.35	2064.98	0.413	0.00	0.70	0.047	A
B	686.60	171.65	683.35	595.91	410.53	0.00	1524.44	1259.06	0.450	0.00	0.81	0.071	A
C	544.31	136.08	542.63	602.35	491.53	0.00	1833.41	1604.50	0.297	0.00	0.42	0.046	A

Main results: (08:00-08:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1076.08	269.02	1074.97	1108.59	129.33	0.00	2168.75	2064.97	0.496	0.70	0.98	0.055	A
B	819.87	204.97	818.25	713.07	491.24	0.00	1484.27	1259.06	0.552	0.81	1.22	0.090	A
C	649.96	162.49	649.35	720.92	588.56	0.00	1779.78	1604.50	0.365	0.42	0.57	0.053	A

Main results: (08:15-08:30)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1317.92	329.48	1315.59	1355.72	158.31	0.00	2152.94	2064.97	0.612	0.98	1.56	0.071	A
B	1004.13	251.03	999.84	872.72	601.20	0.00	1429.53	1259.06	0.702	1.22	2.29	0.138	A
C	796.04	199.01	794.86	881.85	719.18	0.00	1707.57	1604.50	0.466	0.57	0.87	0.066	A

Main results: (08:30-08:45)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1317.92	329.48	1317.88	1359.64	158.54	0.00	2152.82	2064.97	0.612	1.56	1.57	0.072	A
B	1004.13	251.03	1003.99	874.18	602.24	0.00	1429.01	1259.06	0.703	2.29	2.33	0.141	A
C	796.04	199.01	798.02	884.06	723.17	0.00	1705.92	1604.50	0.467	0.87	0.87	0.066	A

0	130.04	133.91	130.92	504.00	122.17	0.00	1163.32	1004.50	0.407	0.37	0.37	0.055	A
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Main results: (08:45-09:00)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	1076.08	269.02	1078.39	1114.26	129.69	0.00	2168.56	2064.97	0.496	1.57	0.99	0.055	A
B	819.87	204.97	824.17	715.27	492.80	0.00	1483.49	1259.06	0.553	2.33	1.25	0.092	A
C	649.96	162.49	651.13	724.14	592.82	0.00	1777.42	1604.50	0.366	0.87	0.58	0.053	A

Main results: (09:00-09:15)

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	RFC	Start Queue (Veh)	End Queue (Veh)	Delay (min)	LOS
A	901.16	225.29	902.30	931.49	108.53	0.00	2180.10	2064.98	0.413	0.99	0.71	0.047	A
B	686.60	171.65	688.30	598.50	412.33	0.00	1523.55	1259.06	0.451	1.25	0.83	0.072	A
C	544.31	136.08	544.93	605.54	495.09	0.00	1831.45	1604.50	0.297	0.58	0.42	0.047	A

Queueing Delay Results for each time segment

Queueing Delay results: (07:45-08:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	10.28	0.69	0.047	A	A
B	11.81	0.79	0.071	A	A
C	6.19	0.41	0.046	A	A

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	14.38	0.96	0.055	A	A
B	17.70	1.18	0.090	A	A
C	8.44	0.56	0.053	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	22.68	1.51	0.071	A	A
B	32.36	2.16	0.138	A	A
C	12.70	0.85	0.066	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	23.48	1.57	0.072	A	A
B	34.69	2.31	0.141	A	A
C	13.04	0.87	0.066	A	A

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
A	15.24	1.02	0.055	A	A
B	19.53	1.30	0.092	A	A
C	8.86	0.59	0.053	A	A

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (min)	Unsignalised Level Of Service	Signalised Level Of Service
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A	10.81	0.72	0.047	A	A
B	12.74	0.85	0.072	A	A
C	6.47	0.43	0.047	A	A