



**ODYSSEY MARKIDES LLP**  
**TRANSPORT NOTE**

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**PROJECT** : **Bessel's Way, Blewbury**  
**JOB NO.** : **14-216**  
**NOTE TITLE** : **Transport Note**  
**AUTHOR** : **DCP**  
**APPROVED** : **ACM**  
**DATE** : **September 2014**

**1. Introduction**

1.1 Odyssey Markides (OM) have been instructed by Fluid Architecture to provide Highways and Transport advice with respect to the potential development site at Land West of Bessel's Way, on the northern boundary of Blewbury.

1.2 The potential development would consist of approximately 80 residential dwellings with access onto Bessel's Way. A site visit was undertaken on 10 July 2014.

1.3 This Advice Note sets out a preliminary view of Transport and Highway matters that maybe relevant to the proposed development.

**2. Site Access Layout**

2.1 Following a site visit we have concluded that the preferred site access is located at the north side of the development. This is an existing access which is already used by other minor developments. The speed limit along this junction is 40 mph.

2.2 DMRB states that 2.4 m can be used for the "x distance" (distance back along the minor road from which the full visibility is measured) and 120 metres for the visibility line distance. Appendix A, shows the visibility splay analysis for this particular junction and clearly indicates that the required visibility splay can be achieved. In fact it is possible to do so even with an x-distance of 4.5 m.

### 3. Trip Generation

#### *Traffic Impact*

3.1 This section describes the predicted traffic generation of the proposed development. The TRICS database has been interrogated to determine appropriate trip rates for residential use for this particular location.

3.2 Reference has been made to the TRICS database for the open-market dwellings under the land-use category 'Residential' and then sub-category 'Houses Privately Owned'. Sites with similar characteristics and locations were chosen to generate average trip rates. The resulting trip rates are shown in Table 1.

Table 1: Trip Rates per Dwelling (Open-Market Units)

Period	Trip Rates ( Per Dwelling)		
	Inbound	Outbound	Two -Way
AM Peak (08:00 to 09:00)	0.211	0.465	0.676
PM Peak (17:00 to 18:00)	0.394	0.394	0.788
Daily (07:00 to 19:00)	3.043	3.353	6.396

#### *Future Traffic Generation – Proposed 'Open-Market' Units*

3.3 The ratio of open market units to affordable units has not yet been decided and the worst case scenario will be assumed that considers all dwellings as "open market" units. Using the trip rates in Table 1, it is estimated that the proposed 80 no. open-market units would generate the number of vehicular trips as shown in Table 2 below.

Table 2: Traffic Generation of Open-Market Units

Period	Traffic Generation		
	Inbound	Outbound	Two -Way
AM Peak (08:00 to 09:00)	17	37	54
PM Peak (17:00 to 18:00)	32	32	63
Daily (07:00 to 19:00)	243	268	512

#### *Existing Flows on Bessel's Way*

3.4 The existing traffic flows of Bessel's Way (North of Bessels Lea Road) have been obtained from Oxfordshire County Council. More specifically, a traffic flow survey, carried out in 2007 was used to derive the existing flows by applying a growth factor that was generated in Tempro 6.2 software. **Table 3** shows the resultant flows.

Table 3: Existing flows on Bessel's Way (North of Bessels Lea Road)

Period	Existing flows on Bessel's way		
	Southbound	Northbound	Two -Way
AM Peak (08:00 to 09:00)	177	155	332
PM Peak (17:00 to 18:00)	183	176	359

*Traffic Generation of development on existing flows*

3.5 The effect of the development's trip generation on existing flows on Bessel's Way was studied by first assuming that 25% of the site's demand would travel in the north direction and 75% to the south. This assumption is based on the number of destinations available in each direction. **Appendix B** shows the flow diagram for the predicted distribution of flows at the site access junction for AM and PM peak hours.

*Traffic Impact*

3.6 The data from the section above was incorporated in PICADY along with characteristics and dimensions of the future site access junction to produce the predicted queue length and the Ratio of Flow to Capacity (RFC) of the new junction. The peak 15-minute intervals for the AM and PM hours of these results are shown in **Table 4**. Full results can be found in **Appendix C**.

Table 4: Predicted RFC and queue length for peak 15-minute intervals

Time interval	Direction	RFC	Queue length
08:30-08:45	Site Access to Bessel's Way	0.100	0.11
	Bessel's Way North to Site Access	0.009	0.01
17:30 -17:45	Site Access to Bessel's Way	0.088	0.10
	Bessel's Way North to Site Access	0.019	0.02

3.7 Table 4 above shows that the RFC and Queue length generated from the specific development access road is likely to be negligible.

#### 4. Travel modes

*Buses*

4.1 The nearest bus stop is located on Bessels Lea Road approximately 500m to the south of the site. Services 94/95 run every 1 hour from Monday to Saturday and are operated by Thames Travel. The duration of the Journey is 15 minutes towards Didcot Town Centre and railway station.

*Rail*

4.2 Didcot Parkway Station and Cholsey Station are found within a 5km radius from the site which is considered as the acceptable cycling distance. As mentioned above there is a bus route from Didcot Station to a bus stop close to the site. The duration of travel from Didcot to Oxford is approximately 20 minutes and 3 trains are available per hour.

*Cycling:*

4.3 The roads in close proximity to the site are low trafficked and they are consequently easy to use by cyclists. There is also route 544 which is located at the London Rd/ Chilton Rd Junction approximately 4 km southwest from the site. Route 544 connects Didcot to Wantage which is a mixture of traffic free paths with short on-road sections. It is also worth mentioning that National Cycle Route 5 which connects Reading and Holyhead via Oxford passes through Didcot.

### *Pedestrians*

4.4 Maps obtained by Oxfordshire County Council show that a by-way is located through Bridus Way to the main village. There is also a bridleway and footpath leading to Blewburton Hill (considered as local wildlife and schedule ancient monuments site) starting at Bessel's way / Bessels Lea Rd Junction. Additionally, a footpath is located within the boundaries of the site which lies along Mill Brook stream leading to South Moreton. All three destinations are within the acceptable walking distance of 2 km.

## **5. Conclusion**

5.1 The report has illustrated that a suitable site access can easily be provided; the preferred access complies with the required design standards.

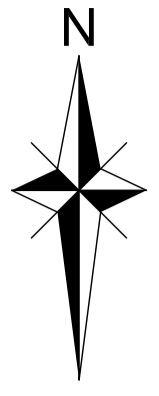
5.2 The proposed residential development is likely to result in a relatively modest increase in the number of vehicle trips to and from the site during the peak periods and daily. The RFC and queue lengths produced for the site access junction will be much lower than the permitted levels and therefore would not have a perceptible impact on the local highway network in terms of capacity and safety.

5.3 Finally, in terms of non-car modes of travel, there is a good walking network around the site and the roads are quiet which might encourage cycling. Didcot Parkway Station is located 4.3 km approximately from the site. The railway station is therefore close enough to cycle and can also be accessed by bus. Services 94 and 95 from the Bessels Lea Road both connect to the railway station.

5.4 In overall conclusion, we believe that there will not be any insurmountable Transport issues associated with the proposed redevelopment of this site.

## **APPENDIX A**

### **Visibility splay analysis**



**NOTES**

1. THIS DRAWING IS BASED UPON THE OS BASE.
  2. SWEEP PATH ANALYSIS BASED ON VEHICLE DIMENSIONED BELOW:
- 2.4 x 120 m sightline
  - Site boundary

Rev	Amendments	Dm	Chk	App	Date

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**Job Title**  
BESSELS WAY  
BLEWBURY OXON

**Drawing Title**  
VISIBILITY SPLAY ANALYSIS  
FOR SITE ACCESS

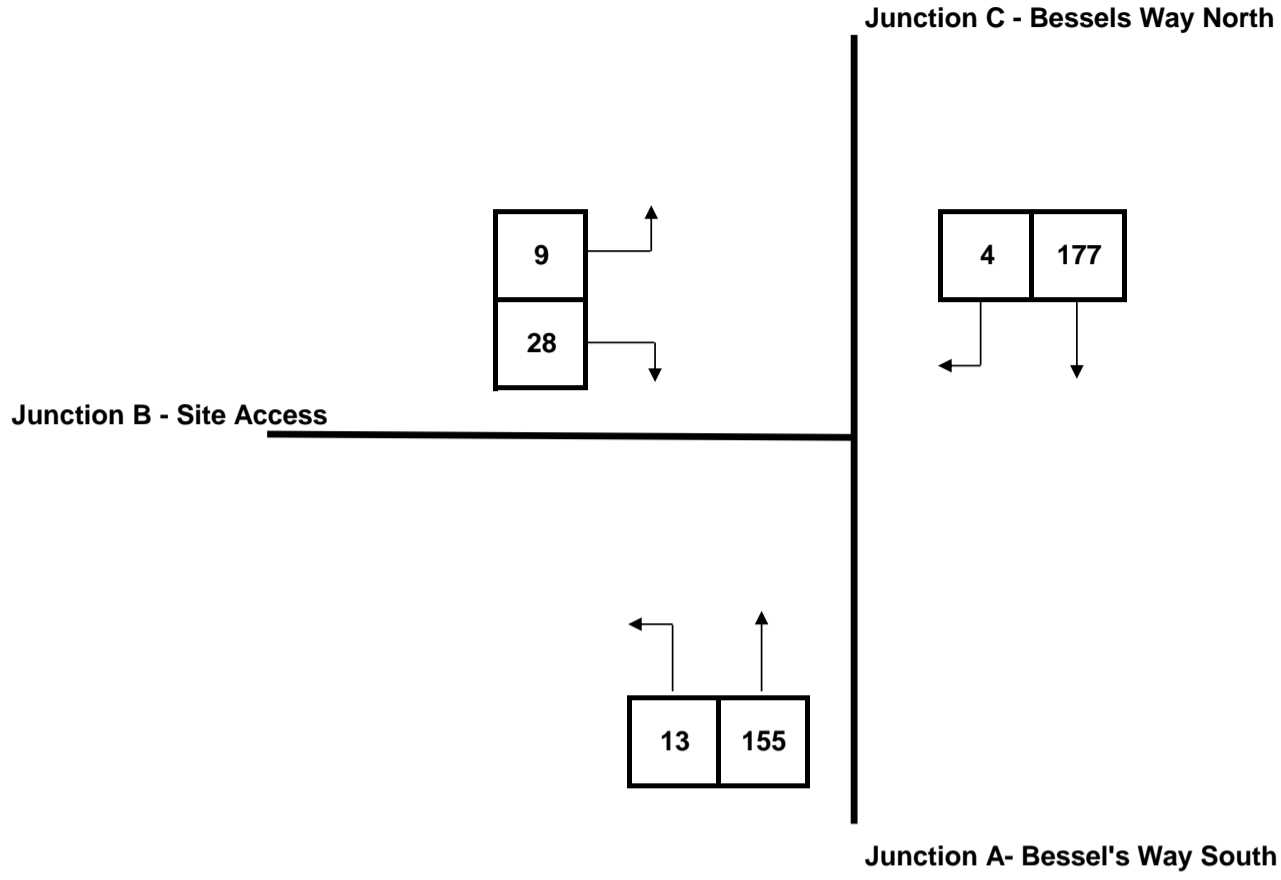
**Client**  
LANDMAZE

Scale 1:500 @A1	Date SEPT 2014	Designed DCP
Drawn DCP	Checked JB	Approved ACM
Job No 14-216	Drawing No 14-216-002	Rev

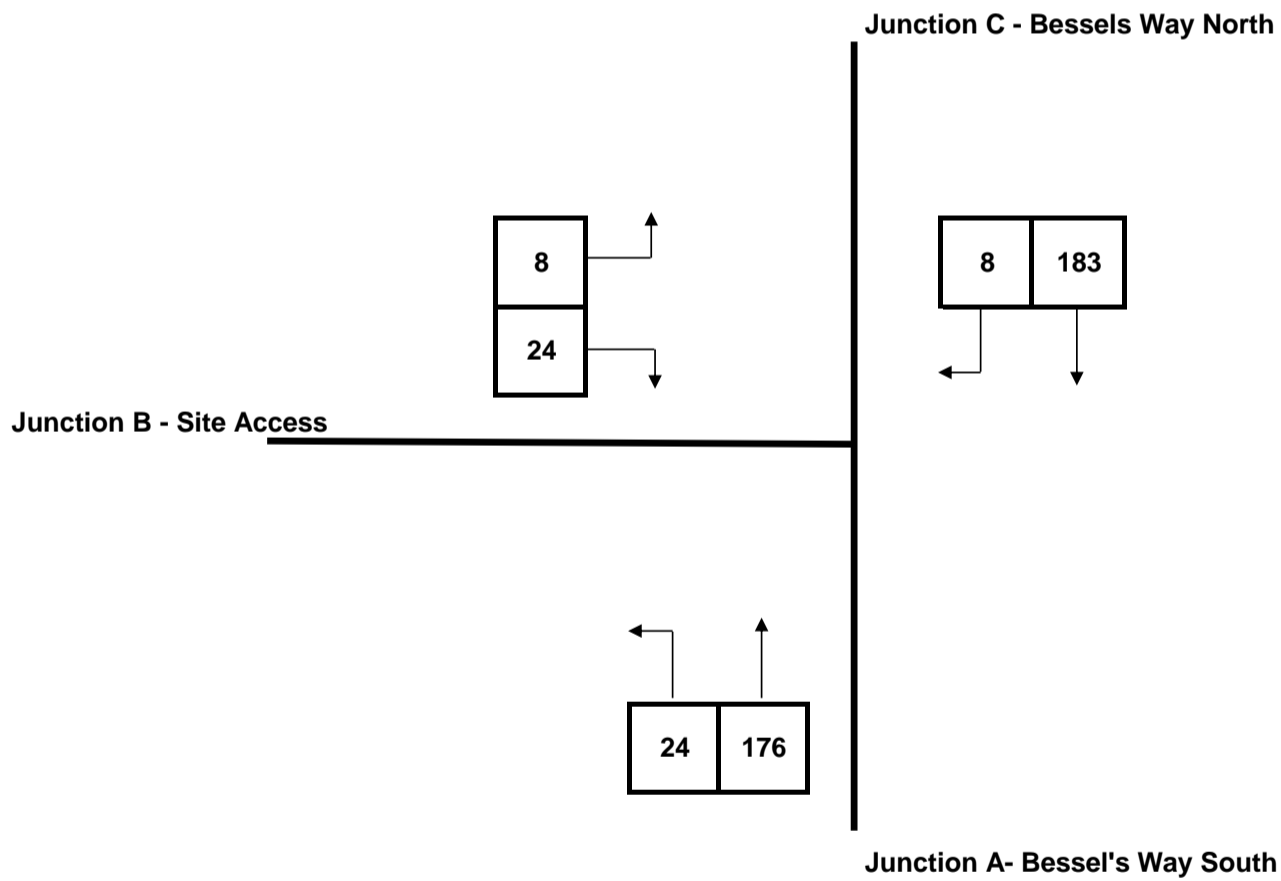
**APPENDIX B**

**Site access junction flow diagram**

# AM Peak



# PM Peak



Notes

Job Title:

Bessel's Way, Blewbury, OXON

Job No:

14-216

Drawing Title:

Appendix B: Site Access Junction flow diagrams

Date:

29/08/2014




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**APPENDIX C**  
**PICADY results**

<b>PICADY</b>		
GUI Version: 5.1 AE Analysis Program Release: 5.0 (MAY 2010)		
© Copyright TRL Limited, 2010 Adapted from PICADY/3 which is Crown Copyright by permission of the controller of HMSO		
For sales and distribution information, program advice and maintenance, contact:		
TRL Limited Crowthorne House Nine Mile Ride Wokingham, Berks. RG40 3GA, UK		Tel: +44 (0)1344 770758 Fax: +44 (0)1344 770864 E-mail: <a href="mailto:software@trl.co.uk">software@trl.co.uk</a> Web: <a href="http://www.trlsoftware.co.uk">www.trlsoftware.co.uk</a>
The user of this computer program for the solution of an engineering problem is in no way relieved of their responsibility for the correctness of the solution		

## Run Analysis

Parameter	Values
File Run	C:\Users\dpsyllides\Desktop\14-216-Picady results\Picady-14-216.vpi
Date Run	01 September 2014
Time Run	16:15:06
Driving Side	Drive On The Left

## Arm Names and Flow Scaling Factors

Arm	Arm Name	Flow Scaling Factor (%)
Arm A	Bessel's Way South	100
Arm B	Site Access	100
Arm C	Bessel's Way North	100

## Stream Labelling Convention

Stream A-B contains traffic going from A to B etc.

## Run Information

Parameter	Values
Run Title	Bessel's Way
Location	-
Date	29 August 2014
Enumerator	DPsyllides [W3436-ODYSSEY]
Job Number	14-216
Status	-
Client	-
Description	-

## Errors and Warnings

Parameter	Values
Warning	No Errors Or Warnings

## Geometric Data

### Geometric Parameters

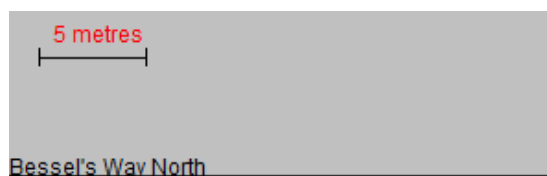
Parameter	Minor Arm B
Major Road Carriageway Width (m)	7.30
Major Road Kerbed Central Reserve Width (m)	0.00
Major Road Right Turning Lane Width (m)	2.20
Minor Road First Lane Width (m)	2.75
Minor Road Visibility To Right (m)	30
Minor Road Visibility To Left (m)	30
Major Road Right Turn Visibility (m)	120
Major Road Right Turn Blocks Traffic	Yes (if over 0 veh)

### Slope and Intercept Values

Stream	Intercept for Stream	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	489.488	0.084	0.213	0.134	0.304
B-C	626.733	0.091	0.229	-	-
C-B	643.456	0.235	0.235	-	-

Note: Streams may be combined in which case capacity will be adjusted  
These values do not allow for any site-specific corrections

## Junction Diagram



## Demand Data

### Modelling Periods

Parameter	Period	Duration (min)	Segment Length (min)
First Modelling Period	07:45-09:15	90	15
Second Modelling Period	16:45-18:15	90	15

### ODTAB Turning Counts

Demand Set: Bessel's Way  
Modelling Period: 07:45-09:15

From/To	Arm A	Arm B	Arm C
Arm A	0.0	13.0	155.0
Arm B	28.0	0.0	9.0
Arm C	177.0	4.0	0.0

**Demand Set:** Bessel's Way Demand Set

**Modelling Period:** 16:45-18:15

From/To	Arm A	Arm B	Arm C
Arm A	0.0	24.0	176.0
Arm B	24.0	0.0	8.0
Arm C	183.0	8.0	0.0

### ODTAB Synthesised Flows

**Demand Set:** Bessel's Way

**Modelling Period:** 07:45-09:15

Arm	Rising Time	Rising Flow (veh/min)	Peak Time	Peak Flow (veh/min)	Falling Time	Falling Flow (veh/min)
Arm A	08:00	2.100	08:30	3.150	09:00	2.100
Arm B	08:00	0.463	08:30	0.694	09:00	0.463
Arm C	08:00	2.263	08:30	3.394	09:00	2.263

### Heavy Vehicles Percentages

**Demand Set:** Bessel's Way

**Modelling Period:** 07:45-09:15

From/To	Arm A	Arm B	Arm C
Arm A	-	10.0	10.0
Arm B	10.0	-	10.0
Arm C	10.0	10.0	-

**Demand Set:** Bessel's Way Demand Set

**Modelling Period:** 16:45-18:15

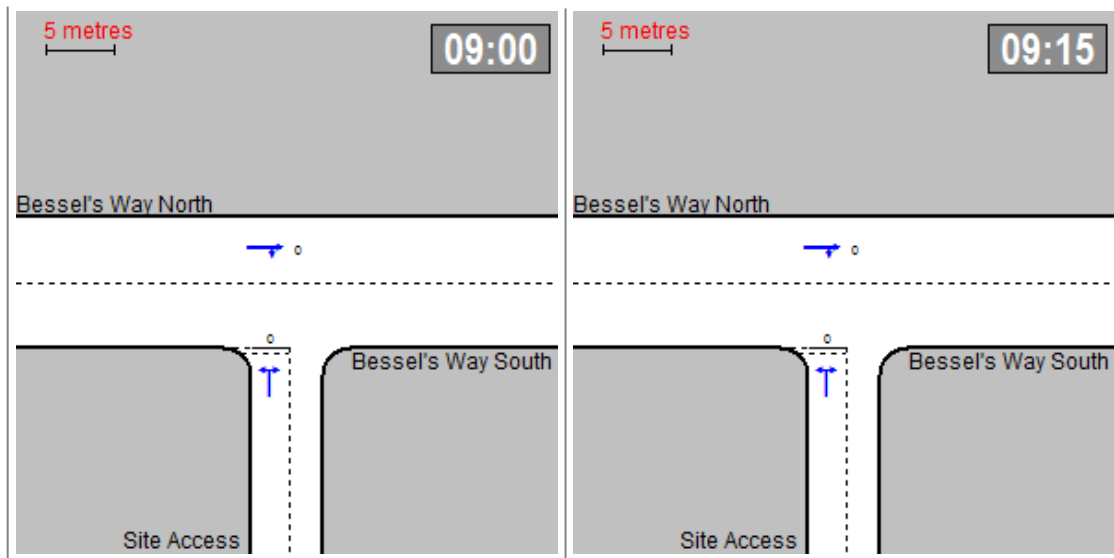
From/To	Arm A	Arm B	Arm C
Arm A	-	10.0	10.0
Arm B	10.0	-	10.0
Arm C	10.0	10.0	-

Default proportions of heavy vehicles are used

### Queue Diagrams

Demand Set: Bessel's Way  
Modelling Period: 07:45-09:15  
View Extent: 40m

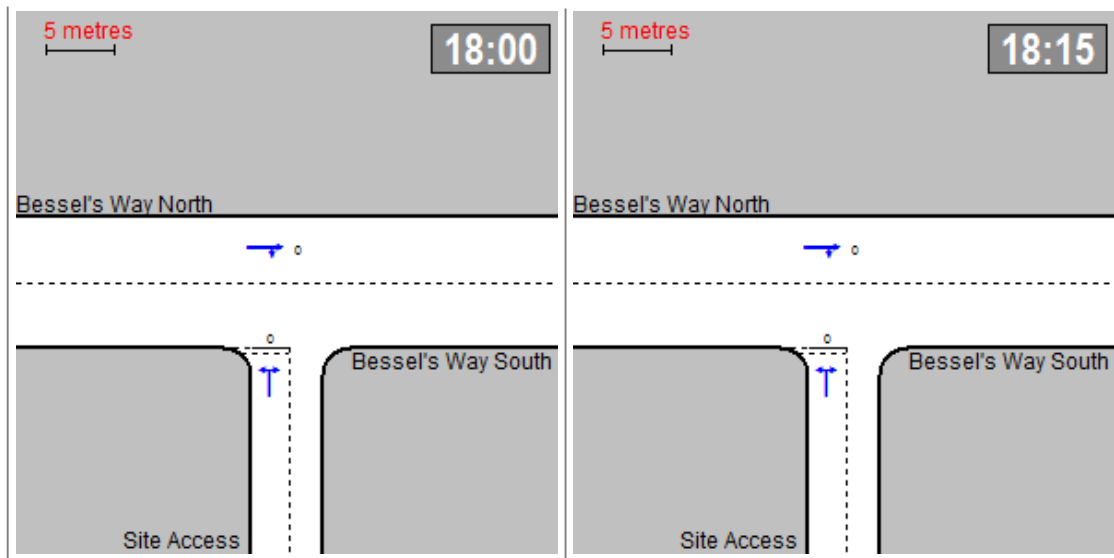




Demand Set: Bessel's Way Demand Set  
Modelling Period: 16:45-18:15  
View Extent: 40m

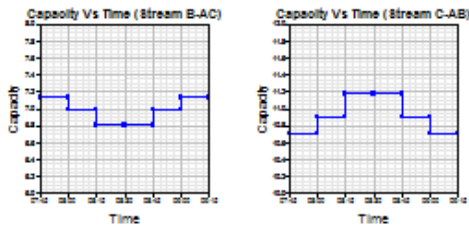




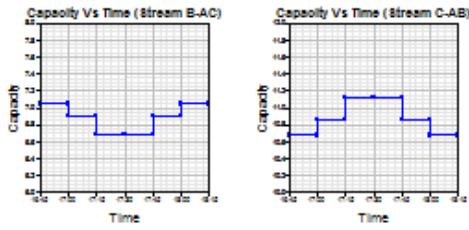


### Capacity Graph

Demand Set: Bessel's Way  
 Modelling Period: 07:45-09:15

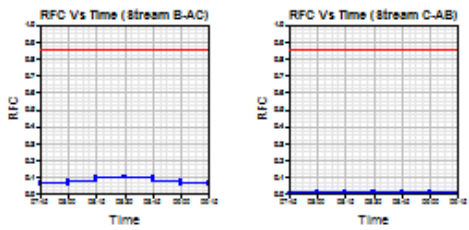


Demand Set: Bessel's Way Demand Set  
 Modelling Period: 16:45-18:15

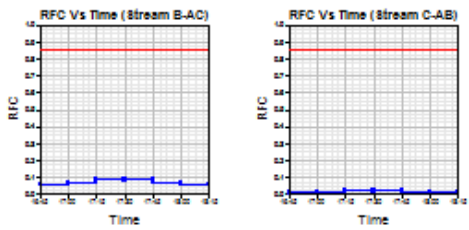


### RFC Graph

Demand Set: Bessel's Way  
 Modelling Period: 07:45-09:15

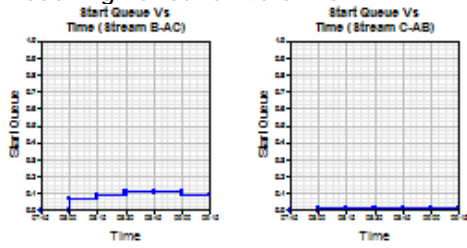


Demand Set: Bessel's Way Demand Set  
 Modelling Period: 16:45-18:15

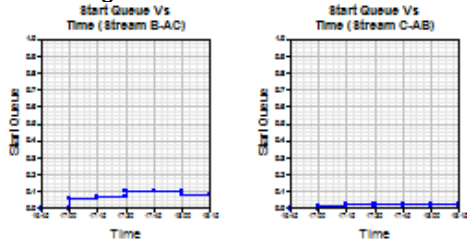


### Start Queue Graph

Demand Set: Bessel's Way  
 Modelling Period: 07:45-09:15

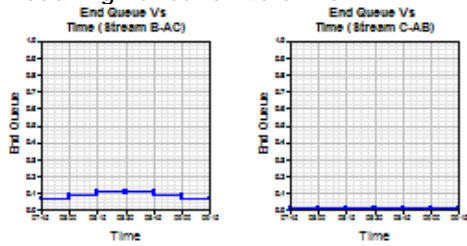


Demand Set: Bessel's Way Demand Set  
 Modelling Period: 16:45-18:15

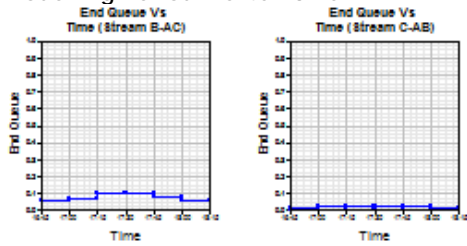


### End Queue Graph

Demand Set: Bessel's Way  
 Modelling Period: 07:45-09:15



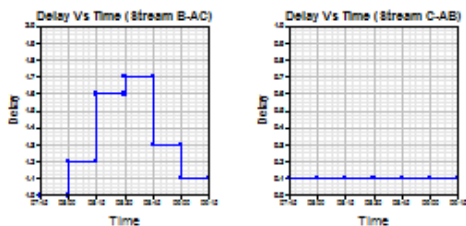
Demand Set: Bessel's Way Demand Set  
 Modelling Period: 16:45-18:15



## Delay Graph

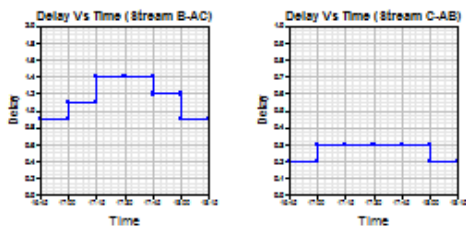
Demand Set: Bessel's Way

Modelling Period: 07:45-09:15



Demand Set: Bessel's Way Demand Set

Modelling Period: 16:45-18:15



## Queues & Delays

Demand Set: Bessel's Way

Modelling Period: 07:45-09:15

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
07:45-08:00	B-AC	0.46	7.13	0.065	-	0.00	0.07	-	1.0	0.15
	C-AB	0.06	10.71	0.006	-	0.00	0.01	-	0.1	0.09
	C-A	2.21	-	-	-	-	-	-	-	-
	A-B	0.16	-	-	-	-	-	-	-	-
	A-C	1.94	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
08:00-08:15	B-AC	0.55	6.99	0.079	-	0.07	0.09	-	1.2	0.16
	C-AB	0.08	10.90	0.007	-	0.01	0.01	-	0.1	0.09
	C-A	2.63	-	-	-	-	-	-	-	-
	A-B	0.19	-	-	-	-	-	-	-	-
	A-C	2.32	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
08:15-08:30	B-AC	0.68	6.80	0.100	-	0.09	0.11	-	1.6	0.16
	C-AB	0.10	11.17	0.009	-	0.01	0.01	-	0.1	0.09
	C-A	3.22	-	-	-	-	-	-	-	-
	A-B	0.24	-	-	-	-	-	-	-	-
	A-C	2.84	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
08:30-08:45	B-AC	0.68	6.80	0.100	-	0.11	0.11	-	1.7	0.16
	C-AB	0.10	11.17	0.009	-	0.01	0.01	-	0.1	0.09
	C-A	3.22	-	-	-	-	-	-	-	-
	A-B	0.24	-	-	-	-	-	-	-	-
	A-C	2.84	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
08:45-09:00	B-AC	0.55	6.99	0.079	-	0.11	0.09	-	1.3	0.16
	C-AB	0.08	10.90	0.007	-	0.01	0.01	-	0.1	0.09
	C-A	2.63	-	-	-	-	-	-	-	-
	A-B	0.19	-	-	-	-	-	-	-	-
	A-C	2.32	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
09:00-09:15	B-AC	0.46	7.13	0.065	-	0.09	0.07	-	1.1	0.15
	C-AB	0.06	10.71	0.006	-	0.01	0.01	-	0.1	0.09
	C-A	2.21	-	-	-	-	-	-	-	-
	A-B	0.16	-	-	-	-	-	-	-	-
	A-C	1.94	-	-	-	-	-	-	-	-

Demand Set: Bessel's Way Demand Set

Modelling Period: 16:45-18:15

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
16:45-17:00	B-AC	0.40	7.05	0.057	-	0.00	0.06	-	0.9	0.15
	C-AB	0.13	10.67	0.012	-	0.00	0.01	-	0.2	0.09
	C-A	2.27	-	-	-	-	-	-	-	-
	A-B	0.30	-	-	-	-	-	-	-	-
	A-C	2.21	-	-	-	-	-	-	-	-

Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:00-17:15	B-AC	0.48	6.90	0.070	-	0.06	0.07	-	1.1	0.16
	C-AB	0.16	10.86	0.015	-	0.01	0.02	-	0.3	0.09
	C-A	2.70	-	-	-	-	-	-	-	-
	A-B	0.36	-	-	-	-	-	-	-	-

	A-C	2.64	-	-	-	-	-	-	-	-
Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:15-17:30	B-AC	0.59	6.68	0.088	-	0.07	0.10	-	1.4	0.16
	C-AB	0.21	11.12	0.019	-	0.02	0.02	-	0.3	0.09
	C-A	3.30	-	-	-	-	-	-	-	-
	A-B	0.44	-	-	-	-	-	-	-	-
	A-C	3.23	-	-	-	-	-	-	-	-
Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:30-17:45	B-AC	0.59	6.68	0.088	-	0.10	0.10	-	1.4	0.16
	C-AB	0.21	11.12	0.019	-	0.02	0.02	-	0.3	0.09
	C-A	3.30	-	-	-	-	-	-	-	-
	A-B	0.44	-	-	-	-	-	-	-	-
	A-C	3.23	-	-	-	-	-	-	-	-
Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
17:45-18:00	B-AC	0.48	6.90	0.070	-	0.10	0.08	-	1.2	0.16
	C-AB	0.16	10.86	0.015	-	0.02	0.02	-	0.3	0.09
	C-A	2.70	-	-	-	-	-	-	-	-
	A-B	0.36	-	-	-	-	-	-	-	-
	A-C	2.64	-	-	-	-	-	-	-	-
Segment	Stream	Demand (veh/min)	Capacity (veh/min)	RFC	Ped. Flow (ped/min)	Start Queue (veh)	End Queue (veh)	Geometric Delay (veh.min/segment)	Delay (veh.min/segment)	Mean Arriving Vehicle Delay (min)
18:00-18:15	B-AC	0.40	7.05	0.057	-	0.08	0.06	-	0.9	0.15
	C-AB	0.13	10.67	0.012	-	0.02	0.01	-	0.2	0.09
	C-A	2.27	-	-	-	-	-	-	-	-
	A-B	0.30	-	-	-	-	-	-	-	-
	A-C	2.21	-	-	-	-	-	-	-	-

Entry capacities marked with an '(X)' are dominated by a pedestrian crossing in that time segment.

In time segments marked with a '(B)', traffic leaving the junction may block back from a crossing so impairing normal operation of the junction.

Delays marked with '###' could not be calculated.

## Overall Queues & Delays

### Queueing Delay Information Over Whole Period

Demand Set: Bessel's Way

Modelling Period: 07:45-09:15

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-AC	50.9	34.0	7.9	0.2	7.9	0.2
C-AB	7.3	4.9	0.7	0.1	0.7	0.1
C-A	241.8	161.2	-	-	-	-
A-B	17.9	11.9	-	-	-	-
A-C	213.3	142.2	-	-	-	-
<b>All</b>	<b>531.3</b>	<b>354.2</b>	<b>8.6</b>	<b>0.0</b>	<b>8.6</b>	<b>0.0</b>

Demand Set: Bessel's Way Demand Set

Modelling Period: 16:45-18:15

Stream	Total Demand (veh)	Total Demand (veh/h)	Queueing Delay (min)	Queueing Delay (min/veh)	Inclusive Delay (min)	Inclusive Delay (min/veh)
B-AC	44.0	29.4	6.9	0.2	6.9	0.2
C-AB	14.8	9.8	1.6	0.1	1.6	0.1
C-A	248.1	165.4	-	-	-	-
A-B	33.0	22.0	-	-	-	-
A-C	242.3	161.5	-	-	-	-
<b>All</b>	<b>582.2</b>	<b>388.2</b>	<b>8.4</b>	<b>0.0</b>	<b>8.4</b>	<b>0.0</b>

Delay is that occurring only within the time period.

Inclusive delay includes delay suffered by vehicles which are still queuing after the end of the time period.

These will only be significantly different if there is a large queue remaining at the end of the time period.

### PICADY 5 Run Successful