

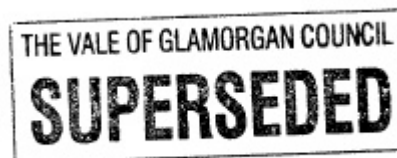
A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 5.0 (JANUARY 2009)

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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS  
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Run with file:-  
"j:\122000\122374-00\4 Internal Project Data\4-40 Calculations\Transport\Junction Assessments\  
15.Vere St\_Gladstone Rise\Cardiff Rd\_Vere St Roundabout\Cardiff Rd\_Vere St Rndbt.vai"  
(drive-on-the-left ) at 10:16:59 on wednesday, 15 July 2009

.FILE PROPERTIES  
\*\*\*\*\*

RUN TITLE: Cardiff Rd / Vere Street Roundabout  
LOCATION:  
DATE: 15/07/09  
CLIENT:  
ENUMERATOR: Ryan.Hopkins [WACCMSJQ2J]  
JOB NUMBER:  
STATUS:  
DESCRIPTION:

.INPUT DATA  
\*\*\*\*\*

ARM A - Vere Street (N)  
ARM B - Cardiff Road (S)  
ARM C - Gladstone Rd (N)

.GEOMETRIC DATA  
-----

| I | ARM   | I | V (M)  | I | E (M) | I | L (M) | I | R (M) | I | D (M) | I | PHI (DEG) | I | SLOPE | I | INTERCEPT (PCU/MIN) | I |
|---|-------|---|--------|---|-------|---|-------|---|-------|---|-------|---|-----------|---|-------|---|---------------------|---|
| I | ARM A | I | 5.48 * | I | 5.48  | I | 12.00 | I | 21.80 | I | 28.00 | I | 21.3      | I | 0.674 | I | 28.621              | I |
| I | ARM B | I | 3.46   | I | 4.63  | I | 15.70 | I | 16.40 | I | 27.00 | I | 50.9      | I | 0.537 | I | 20.392              | I |
| I | ARM C | I | 4.39   | I | 4.90  | I | 29.20 | I | 9.30  | I | 27.00 | I | 33.7      | I | 0.572 | I | 22.908              | I |

V = approach half-width              L = effective flare length              D = inscribed circle diameter  
E = entry width                          R = entry radius                          PHI = entry angle

\*\*WARNING\*\* ARM A - INPUT VALUE OF V ( 6.96) OUTSIDE ACCEPTABLE RANGE -  
HAS BEEN RESET AS INDICATED ABOVE (\*). (AG17 REF. 6.3.1).

.TRAFFIC DEMAND DATA  
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Only sets included in the current run are shown

.SCALING FACTORS

----- T13

| I | ARM | I | FLOW SCALE(%) | I |
|---|-----|---|---------------|---|
| I | A   | I | 100           | I |
| I | B   | I | 100           | I |
| I | C   | I | 100           | I |

.TIME PERIOD BEGINS(08.15)AND ENDS(09.45)  
.LENGTH OF TIME PERIOD - ( 90) MINUTES  
.LENGTH OF TIME SEGMENT - (15) MINUTES

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

.DEMAND SET TITLE: AM 2020 with Development

----- T15

| I | ARM   | I | NUMBER OF MINUTES FROM START WHEN FLOW STARTS | I | TOP OF PEAK | I | IS REACHED | I | FALLING | I | RATE OF FLOW (VEH/MIN) BEFORE PEAK | I | AT TOP OF PEAK | I | AFTER PEAK |
|---|-------|---|---|---|-------------|---|------------|---|---------|---|------------------------------------|---|----------------|---|------------|
| I | ARM A | I | 15.00   | I | 45.00       | I | 75.00      | I | 2.65    | I | 3.98                               | I | 2.65           | I |            |
| I | ARM B | I | 15.00   | I | 45.00       | I | 75.00      | I | 7.91    | I | 11.87                              | I | 7.91           | I |            |
| I | ARM C | I | 15.00   | I | 45.00       | I | 75.00      | I | 7.38    | I | 11.06                              | I | 7.38           | I |            |

DEMAND SET TITLE: AM 2020 with Development

T33

| TIME          | FROM/TO | TURNING PROPORTIONS |        |        |
|---------------|---------|---------------------|--------|--------|
|               |         | ARM A               | ARM B  | ARM C  |
| 08.15 - 09.45 | ARM A   | 0.000               | 0.594  | 0.406  |
|               |         | ( 0.0)              | ( 5.0) | ( 5.0) |
|               | ARM B   | 0.137               | 0.000  | 0.863  |
|               |         | ( 0.0)              | ( 0.0) | ( 4.0) |
|               | ARM C   | 0.154               | 0.846  | 0.000  |
|               |         | ( 5.0)              | ( 5.0) | ( 0.0) |

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

| TIME        | DEMAND (VEH/MIN) | CAPACITY (VEH/MIN) | DEMAND/CAPACITY (RFC) | PEDESTRIAN FLOW (PEDS/MIN) | START QUEUE (VEHS) | END QUEUE (VEHS) | DELAY (VEH.MIN/TIME SEGMENT) | GEOMETRIC DELAY (VEH.MIN/TIME SEGMENT) | AVERAGE DELAY PER ARRIVING VEHICLE (MIN) |
|-------------|------------------|--------------------|-----------------------|----------------------------|--------------------|------------------|------------------------------|--|--|
| 08.15-08.30 |                  |                    |                       |                            |                    |                  |                              |  |  |
| ARM A       | 2.66             | 23.06              | 0.115                 | -                          | 0.0                | 0.1              | 1.9                          | -                                      | 0.049                                    |
| ARM B       | 7.94             | 19.13              | 0.415                 | -                          | 0.0                | 0.7              | 10.2                         | -                                      | 0.089                                    |
| ARM C       | 7.40             | 21.23              | 0.349                 | -                          | 0.0                | 0.5              | 7.8                          | -                                      | 0.072                                    |
| 08.30-08.45 |                  |                    |                       |                            |                    |                  |                              |  |  |
| ARM A       | 3.18             | 22.23              | 0.143                 | -                          | 0.1                | 0.2              | 2.5                          | -                                      | 0.052                                    |
| ARM B       | 9.48             | 19.01              | 0.499                 | -                          | 0.7                | 1.0              | 14.3                         | -                                      | 0.105                                    |
| ARM C       | 8.84             | 21.11              | 0.419                 | -                          | 0.5                | 0.7              | 10.5                         | -                                      | 0.081                                    |
| 08.45-09.00 |                  |                    |                       |                            |                    |                  |                              |  |  |
| ARM A       | 3.89             | 21.10              | 0.184                 | -                          | 0.2                | 0.2              | 3.3                          | -                                      | 0.058                                    |
| ARM B       | 11.62            | 18.85              | 0.616                 | -                          | 1.0                | 1.6              | 22.5                         | -                                      | 0.137                                    |
| ARM C       | 10.83            | 20.95              | 0.517                 | -                          | 0.7                | 1.1              | 15.3                         | -                                      | 0.098                                    |
| 09.00-09.15 |                  |                    |                       |                            |                    |                  |                              |  |  |
| ARM A       | 3.89             | 21.09              | 0.184                 | -                          | 0.2                | 0.2              | 3.4                          | -                                      | 0.058                                    |
| ARM B       | 11.62            | 18.85              | 0.616                 | -                          | 1.6                | 1.6              | 23.7                         | -                                      | 0.138                                    |
| ARM C       | 10.83            | 20.95              | 0.517                 | -                          | 1.1                | 1.1              | 15.9                         | -                                      | 0.099                                    |
| 09.15-09.30 |                  |                    |                       |                            |                    |                  |                              |  |  |
| ARM A       | 3.18             | 22.21              | 0.143                 | -                          | 0.2                | 0.2              | 2.5                          | -                                      | 0.053                                    |
| ARM B       | 9.48             | 19.01              | 0.499                 | -                          | 1.6                | 1.0              | 15.7                         | -                                      | 0.106                                    |
| ARM C       | 8.84             | 21.10              | 0.419                 | -                          | 1.1                | 0.7              | 11.2                         | -                                      | 0.082                                    |
| 09.30-09.45 |                  |                    |                       |                            |                    |                  |                              |  |  |
| ARM A       | 2.66             | 23.03              | 0.115                 | -                          | 0.2                | 0.1              | 2.0                          | -                                      | 0.049                                    |
| ARM B       | 7.94             | 19.12              | 0.415                 | -                          | 1.0                | 0.7              | 11.1                         | -                                      | 0.090                                    |
| ARM C       | 7.40             | 21.22              | 0.349                 | -                          | 0.7                | 0.5              | 8.3                          | -                                      | 0.073                                    |

QUEUE AT ARM A

| TIME SEGMENT ENDING | NO. OF VEHICLES IN QUEUE |
|---------------------|--------------------------|
| 08.30               | 0.1                      |
| 08.45               | 0.2                      |
| 09.00               | 0.2                      |
| 09.15               | 0.2                      |
| 09.30               | 0.2                      |
| 09.45               | 0.1                      |

QUEUE AT ARM B

| TIME SEGMENT ENDING | NO. OF VEHICLES |
|---------------------|-----------------|
|---------------------|-----------------|

IN QUEUE

|       |     |    |
|-------|-----|----|
| 08.30 | 0.7 | *  |
| 08.45 | 1.0 | *  |
| 09.00 | 1.6 | ** |
| 09.15 | 1.6 | ** |
| 09.30 | 1.0 | *  |
| 09.45 | 0.7 | *  |

.QUEUE AT ARM C

| TIME SEGMENT ENDING | NO. OF VEHICLES IN QUEUE |   |
|---------------------|--------------------------|---|
| 08.30               | 0.5                      | * |
| 08.45               | 0.7                      | * |
| 09.00               | 1.1                      | * |
| 09.15               | 1.1                      | * |
| 09.30               | 0.7                      | * |
| 09.45               | 0.5                      | * |

.QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

|     |              |                    |                              |           |       |           |  |  |  | T75 |
|-----|--------------|--------------------|------------------------------|-----------|-------|-----------|--|--|--|-----|
| ARM | TOTAL DEMAND | * QUEUEING * DELAY | * INCLUSIVE QUEUEING * DELAY |           |       |           |  |  |  |     |
|     | (VEH)        | (VEH/H)            | (MIN)                        | (MIN/VEH) | (MIN) | (MIN/VEH) |  |  |  |     |
| A   | 291.8        | 194.5              | 15.6                         | 0.05      | 15.6  | 0.05      |  |  |  |     |
| B   | 871.3        | 580.9              | 97.4                         | 0.11      | 97.4  | 0.11      |  |  |  |     |
| C   | 812.1        | 541.4              | 68.9                         | 0.08      | 68.9  | 0.08      |  |  |  |     |
| ALL | 1975.2       | 1316.8             | 181.9                        | 0.09      | 182.0 | 0.09      |  |  |  |     |

\* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.  
 \* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING 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.

END OF JOB