

Dawson Highway/Kirkwood Road  
 2021 PM BG+Sur wDev Volumes Existing Geometry  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

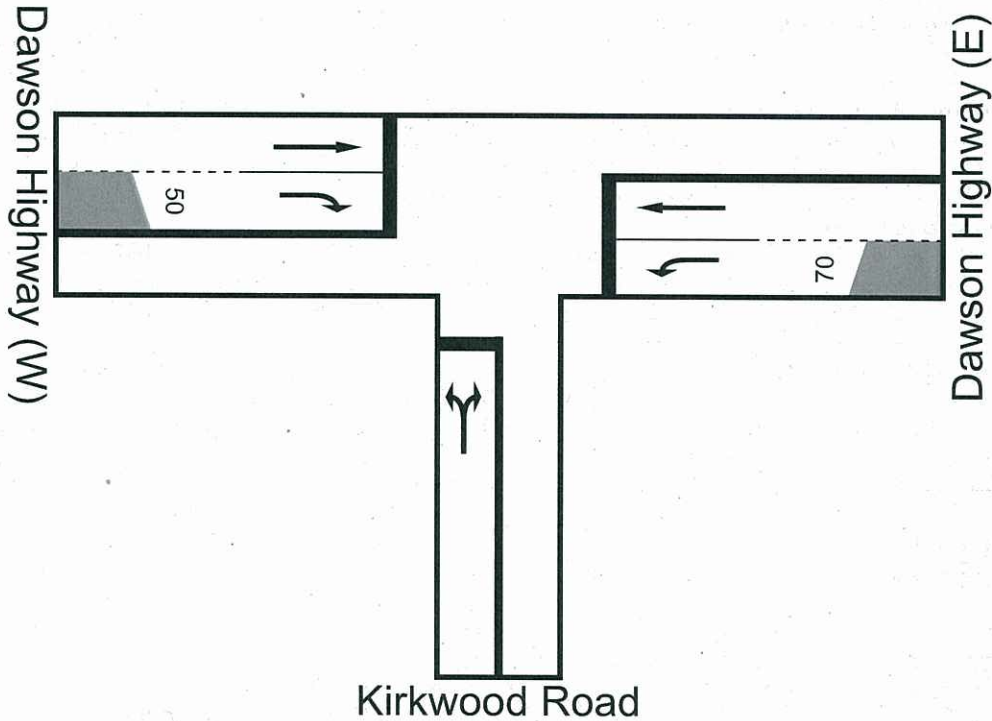
| Lane No.                 | Demand Flow (veh/h) |     |     |       | %HV | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|--------------------------|---------------------|-----|-----|-------|-----|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                          | L                   | T   | R   | Tot   |     |                  | 1st            | 2nd |           |                   |                   |               |
| South: Kirkwood Road     |                     |     |     |       |     |                  |                |     |           |                   |                   |               |
| 1 LR                     | 83                  |     | 77  | 160   | 12  |                  |                |     | 0.708     | 43.3              | 40                | 500           |
|                          | 83                  | 0   | 77  | 160   | 12  |                  |                |     | 0.708     | 43.3              | 40                |               |
| East: Dawson Highway (E) |                     |     |     |       |     |                  |                |     |           |                   |                   |               |
| 1 L                      | 122                 |     |     | 122   | 0   |                  |                |     | 0.066     | 8.2               | 0                 | 70            |
| 2 T                      |                     | 539 |     | 539   | 2   |                  |                |     | 0.280     | 0.0               | 0                 | 500           |
|                          | 122                 | 539 | 0   | 661   | 2   |                  |                |     | 0.280     | 1.5               |                   |               |
| West: Dawson Highway (W) |                     |     |     |       |     |                  |                |     |           |                   |                   |               |
| 1 T                      |                     | 307 |     | 307   | 3   |                  |                |     | 0.160     | 0.0               | 0                 | 500           |
| 2 R                      |                     |     | 143 | 143   | 8   |                  |                |     | 0.211     | 12.9              | 8                 | 50            |
|                          | 0                   | 307 | 143 | 450   | 4   |                  |                |     | 0.211     | 4.1               | 8                 |               |
| =====                    |                     |     |     |       |     |                  |                |     |           |                   |                   |               |
| ALL VEHICLES             |                     |     |     | Total | %   |                  |                |     | Max       | Aver.             | Max               |               |
|                          |                     |     |     | Flow  | HV  |                  |                |     | X         | Delay             | Queue             |               |
|                          |                     |     |     | 1271  | 4   |                  |                |     | 0.709     | 7.7               | 40                |               |
| =====                    |                     |     |     |       |     |                  |                |     |           |                   |                   |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Upgraded Geometry





Dawson Highway/Kirkwood Road

2021 AM BG+Sur wDev Volumes UG Geometry 1

Intersection ID: 0

Fixed-Time Signals, Cycle Time = 90 (User-given Cycle Time)

| Lane No.                 | Demand Flow (veh/h) |     |     |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) 1st 2nd | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|--------------------------|---------------------|-----|-----|------------|------|------------------|------------------------|-----------|-------------------|-------------------|---------------|
|                          | L                   | T   | R   | Tot        |      |                  |                        |           |                   |                   |               |
| South: Kirkwood Road     |                     |     |     |            |      |                  |                        |           |                   |                   |               |
| 1 LR                     | 148                 |     | 156 | 304        | 13   | 1949             | 27                     | 0.598     | 38.2              | 102               | 500           |
|                          | 148                 | 0   | 156 | 304        | 13   |                  |                        | 0.598     | 38.2              | 102               |               |
| East: Dawson Highway (E) |                     |     |     |            |      |                  |                        |           |                   |                   |               |
| 1 L                      | 46                  |     |     | 46         | 39   | 1949             | 51                     | 0.102     | 18.9              | 13                | 70            |
| 2 T                      |                     | 328 |     | 328        | 8    | 1949             | 51                     | 0.312     | 10.9              | 69                | 500           |
|                          | 46                  | 328 | 0   | 374        | 12   |                  |                        | 0.312     | 11.9              | 69                |               |
| West: Dawson Highway (W) |                     |     |     |            |      |                  |                        |           |                   |                   |               |
| 1 T                      |                     | 638 |     | 638        | 7    | 1949             | 51                     | 0.604     | 13.7              | 142               | 500           |
| 2 R                      |                     |     | 67  | 67         | 16   | 1949             | 43                     | 0.227     | 23.6              | 20                | 50            |
|                          | 0                   | 638 | 67  | 705        | 8    |                  |                        | 0.604     | 14.7              | 142               |               |
| =====                    |                     |     |     |            |      |                  |                        |           |                   |                   |               |
| ALL VEHICLES             |                     |     |     | Total Flow | % HV | Cycle Time       |                        | Max X     | Aver. Delay       | Max Queue         |               |
|                          |                     |     |     | 1383       | 10   | 90               |                        | 0.604     | 19.1              | 142               |               |
| =====                    |                     |     |     |            |      |                  |                        |           |                   |                   |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

## Phasing Summary

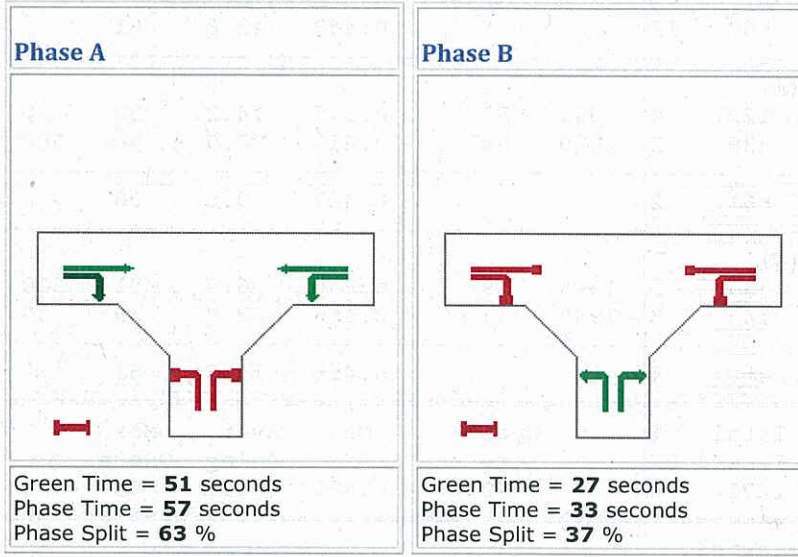
Dawson Highway/Kirkwood Road

2021 AM BG+Sur wDev Volumes UG Geometry 1

C = 90 seconds

Cycle Time Option: **User-specified cycle time**

Phase times determined by the program.



- |                  |                   |
|------------------|-------------------|
| Normal Movement  | Permitted/Opposed |
| Slip-Lane        | Opposed Slip-Lane |
| Stopped Movement | Continuous        |
| Turn On Red      |                   |



Dawson Highway/Kirkwood Road

2021 PM BG+Sur wDev Volumes UG Geometry 1

Intersection ID: 0

Fixed-Time Signals, Cycle Time = 90 (User-given Cycle Time)

| Lane No.                 | Demand Flow (veh/h) |     |     |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|--------------------------|---------------------|-----|-----|------------|------|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                          | L                   | T   | R   | Tot        |      |                  | 1st            | 2nd |           |                   |                   |               |
| South: Kirkwood Road     |                     |     |     |            |      |                  |                |     |           |                   |                   |               |
| 1 LR                     | 83                  |     | 77  | 160        | 12   | 1949             | 19             |     | 0.443     | 42.8              | 61                | 500           |
|                          | 83                  | 0   | 77  | 160        | 12   |                  |                |     | 0.443     | 42.8              | 61                |               |
| East: Dawson Highway (E) |                     |     |     |            |      |                  |                |     |           |                   |                   |               |
| 1 L                      | 122                 |     |     | 122        | 0    | 1949             | 59             |     | 0.177     | 14.2              | 20                | 70            |
| 2 T                      |                     | 539 |     | 539        | 2    | 1949             | 59             |     | 0.427     | 7.9               | 90                | 500           |
|                          | 122                 | 539 | 0   | 661        | 2    |                  |                |     | 0.427     | 9.0               | 90                |               |
| West: Dawson Highway (W) |                     |     |     |            |      |                  |                |     |           |                   |                   |               |
| 1 T                      |                     | 307 |     | 307        | 3    | 1949             | 59             |     | 0.245     | 6.7               | 51                | 500           |
| 2 R                      |                     |     | 143 | 143        | 8    | 1949             | 47             |     | 0.466     | 22.7              | 39                | 50            |
|                          | 0                   | 307 | 143 | 450        | 4    |                  |                |     | 0.466     | 11.8              | 51                |               |
| ALL VEHICLES             |                     |     |     |            |      |                  |                |     |           |                   |                   |               |
|                          |                     |     |     | Total Flow | % HV |                  | Cycle Time     |     | Max X     | Aver. Delay       | Max Queue         |               |
|                          |                     |     |     | 1271       | 4    |                  | 90             |     | 0.466     | 14.3              | 90                |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

# SIDRA INTERSECTION

## Phasing Summary

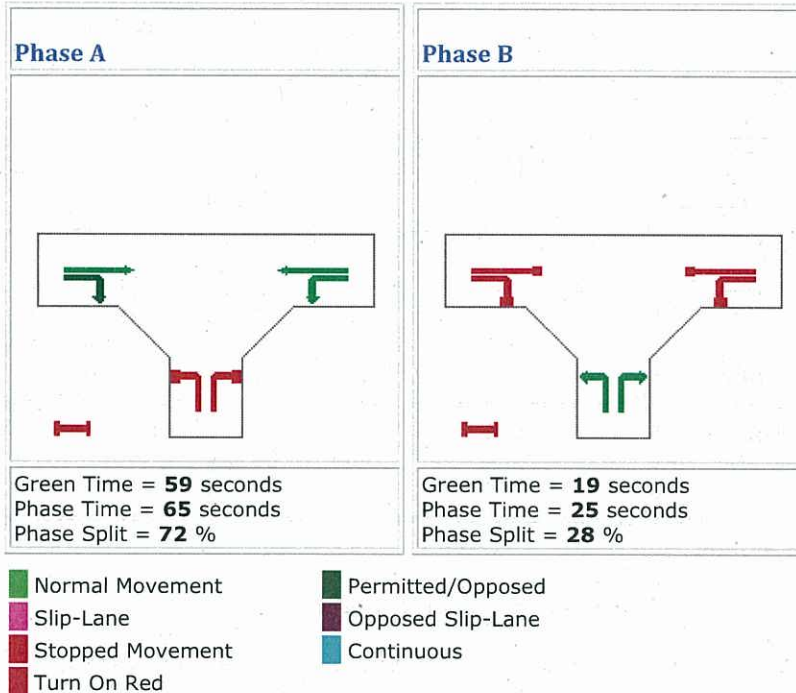
Dawson Highway/Kirkwood Road

2021 PM BG+Sur wDev Volumes UG Geometry 1

C = 90 seconds

Cycle Time Option: **User-specified cycle time**

Phase times determined by the program.





Dawson Highway/Kirkwood Road

2021 AM BG+Sur Volumes UG Geometry 1

Intersection ID: 0

Fixed-Time Signals, Cycle Time = 90 (User-given Cycle Time)

| Lane No.                 | Demand Flow (veh/h) |     |     |     | %HV  | Adj. Basic Satf. | Eff Grn (secs) |       | Deg Sat x   | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|--------------------------|---------------------|-----|-----|-----|------|------------------|----------------|-------|-------------|-------------------|-------------------|---------------|
|                          | L                   | T   | R   | Tot |      |                  | 1st            | 2nd   |             |                   |                   |               |
| South: Kirkwood Road     |                     |     |     |     |      |                  |                |       |             |                   |                   |               |
| 1 LR                     | 138                 |     | 156 | 294 | 13   | 1949             | 26             |       | 0.600       | 38.9              | 100               | 500           |
|                          | 138                 | 0   | 156 | 294 | 13   |                  |                |       | 0.600       | 38.9              | 100               |               |
| East: Dawson Highway (E) |                     |     |     |     |      |                  |                |       |             |                   |                   |               |
| 1 L                      | 46                  |     |     | 46  | 39   | 1949             | 52             |       | 0.101       | 18.5              | 12                | 70            |
| 2 T                      |                     | 328 |     | 328 | 8    | 1949             | 52             |       | 0.306       | 10.4              | 67                | 500           |
|                          | 46                  | 328 | 0   | 374 | 12   |                  |                |       | 0.306       | 11.4              | 67                |               |
| West: Dawson Highway (W) |                     |     |     |     |      |                  |                |       |             |                   |                   |               |
| 1 T                      |                     | 638 |     | 638 | 7    | 1949             | 52             |       | 0.592       | 13.0              | 139               | 500           |
| 2 R                      |                     |     | 64  | 64  | 17   | 1949             | 44             |       | 0.215       | 23.0              | 19                | 50            |
|                          | 0                   | 638 | 64  | 702 | 8    |                  |                |       | 0.592       | 13.9              | 139               |               |
| ALL VEHICLES             |                     |     |     |     |      |                  |                |       |             |                   |                   |               |
|                          | Total Flow          |     |     |     | % HV | Cycle Time       |                | Max X | Aver. Delay | Max Queue         |                   |               |
|                          | 1370                |     |     |     | 10   | 90               |                | 0.600 | 18.6        | 139               |                   |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

# SIDRA INTERSECTION

## Phasing Summary

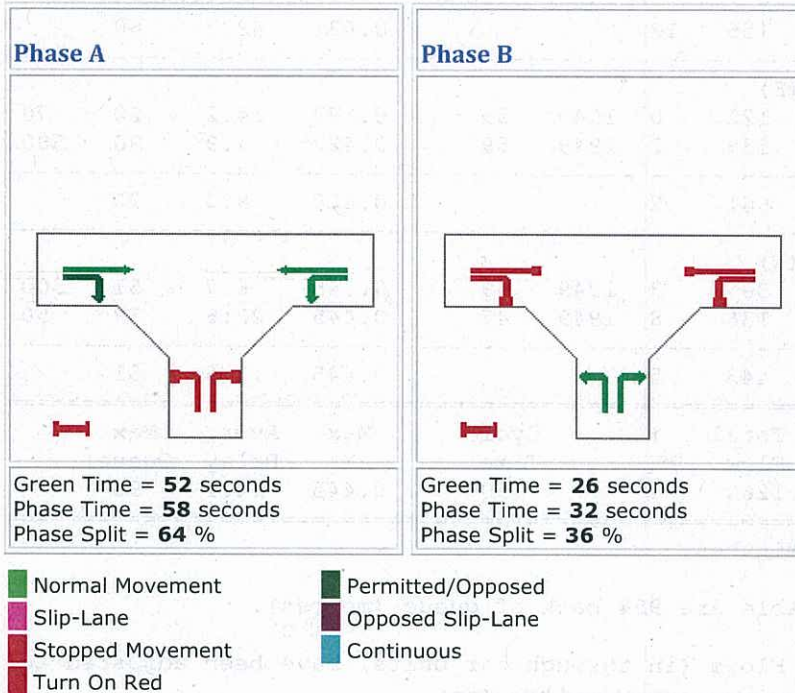
Dawson Highway/Kirkwood Road

2021 AM BG+Sur Volumes UG Geometry 1

C = 90 seconds

Cycle Time Option: **User-specified cycle time**

Phase times determined by the program.





Dawson Highway/Kirkwood Road

2021 PM BG+Sur Volumes UG Geometry 1

Intersection ID: 0

Fixed-Time Signals, Cycle Time = 90 (User-given Cycle Time)

| Lane No.                 | Demand Flow (veh/h) |     |     |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|--------------------------|---------------------|-----|-----|------------|------|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                          | L                   | T   | R   | Tot        |      |                  | 1st            | 2nd |           |                   |                   |               |
| South: Kirkwood Road     |                     |     |     |            |      |                  |                |     |           |                   |                   |               |
| 1 LR                     | 79                  |     | 77  | 156        | 12   | 1949             | 19             |     | 0.431     | 42.7              | 60                | 500           |
|                          | 79                  | 0   | 77  | 156        | 12   |                  |                |     | 0.431     | 42.7              | 60                |               |
| East: Dawson Highway (E) |                     |     |     |            |      |                  |                |     |           |                   |                   |               |
| 1 L                      | 122                 |     |     | 122        | 0    | 1949             | 59             |     | 0.177     | 14.2              | 20                | 70            |
| 2 T                      |                     | 539 |     | 539        | 2    | 1949             | 59             |     | 0.427     | 7.9               | 90                | 500           |
|                          | 122                 | 539 | 0   | 661        | 2    |                  |                |     | 0.427     | 9.0               | 90                |               |
| West: Dawson Highway (W) |                     |     |     |            |      |                  |                |     |           |                   |                   |               |
| 1 T                      |                     | 307 |     | 307        | 3    | 1949             | 59             |     | 0.245     | 6.7               | 51                | 500           |
| 2 R                      |                     |     | 136 | 136        | 8    | 1949             | 47             |     | 0.445     | 22.6              | 37                | 50            |
|                          | 0                   | 307 | 136 | 443        | 5    |                  |                |     | 0.445     | 11.6              | 51                |               |
| ALL VEHICLES             |                     |     |     |            |      |                  |                |     |           |                   |                   |               |
|                          |                     |     |     | Total Flow | % HV |                  | Cycle Time     |     | Max X     | Aver. Delay       | Max Queue         |               |
|                          |                     |     |     | 1260       | 4    |                  | 90             |     | 0.445     | 14.1              | 90                |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

## Phasing Summary

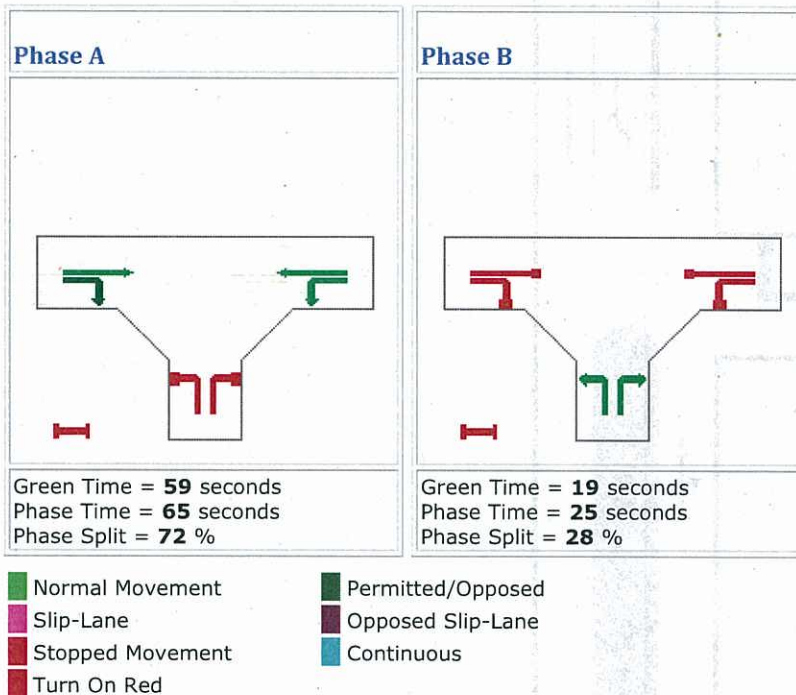
Dawson Highway/Kirkwood Road

2021 PM BG+Sur Volumes UG Geometry 1

C = 90 seconds

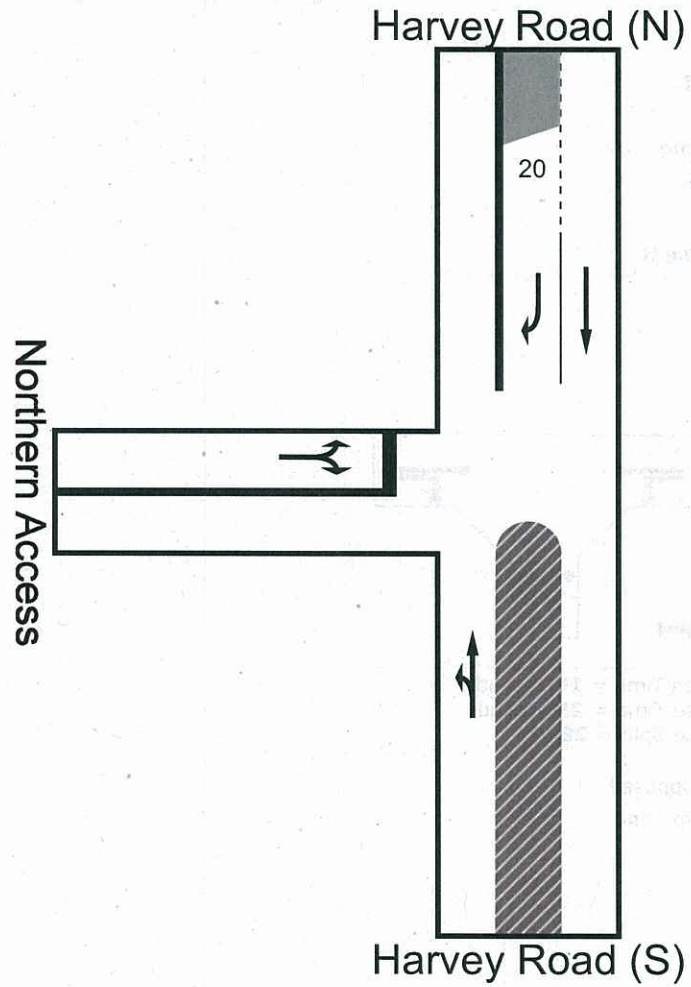
Cycle Time Option: **User-specified cycle time**

Phase times determined by the program.



## Harvey Road/Northern Access

Priority Controlled Geometry





Gladstone Harvey Road ULDA Subdivision - North Access  
 2011 BG + Sur wDev - AM Priority  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

| Lane No.               | Demand Flow (veh/h) |     |    |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|-----|----|------------|------|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                        | L                   | T   | R  | Tot        |      |                  | 1st            | 2nd |           |                   |                   |               |
| South: Harvey Road (S) |                     |     |    |            |      |                  |                |     |           |                   |                   |               |
| 1 LT                   | 9                   | 381 |    | 390        | 5    |                  |                |     | 0.207     | 0.2               | 0                 | 500           |
|                        | 9                   | 381 | 0  | 390        | 5    |                  |                |     | 0.207     | 0.2               |                   |               |
| North: Harvey Road (N) |                     |     |    |            |      |                  |                |     |           |                   |                   |               |
| 1 T                    |                     | 311 |    | 311        | 5    |                  |                |     | 0.165     | 0.0               | 0                 | 500           |
| 2 R                    |                     |     | 27 | 27         | 0    |                  |                |     | 0.033     | 10.2              | 1                 | 20            |
|                        | 0                   | 311 | 27 | 338        | 5    |                  |                |     | 0.165     | 0.8               | 1                 |               |
| West: Northern Access  |                     |     |    |            |      |                  |                |     |           |                   |                   |               |
| 1 LR                   | 106                 |     | 47 | 153        | 0    |                  |                |     | 0.307     | 17.2              | 12                | 500           |
|                        | 106                 | 0   | 47 | 153        | 0    |                  |                |     | 0.307     | 17.2              | 12                |               |
| ALL VEHICLES           |                     |     |    |            |      |                  |                |     |           |                   |                   |               |
|                        |                     |     |    | Total Flow | % HV |                  |                |     | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |     |    | 881        | 4    |                  |                |     | 0.307     | 3.4               | 12                |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Gladstone Harvey Road ULDA Subdivision - North Access  
 2011 BG + Sur wDev - PM Priority  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

| Lane No.               | Demand Flow (veh/h) |     |    |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|-----|----|------------|------|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                        | L                   | T   | R  | Tot        |      |                  | 1st            | 2nd |           |                   |                   |               |
| South: Harvey Road (S) |                     |     |    |            |      |                  |                |     |           |                   |                   |               |
| 1 LT                   | 27                  | 165 |    | 192        | 4    |                  |                |     | 0.102     | 1.2               | 0                 | 500           |
|                        | 27                  | 165 | 0  | 192        | 4    |                  |                |     | 0.102     | 1.2               |                   |               |
| North: Harvey Road (N) |                     |     |    |            |      |                  |                |     |           |                   |                   |               |
| 1 T                    |                     | 484 |    | 484        | 5    |                  |                |     | 0.256     | 0.0               | 0                 | 500           |
| 2 R                    |                     |     | 80 | 80         | 0    |                  |                |     | 0.091     | 9.2               | 2                 | 20            |
|                        | 0                   | 484 | 80 | 564        | 4    |                  |                |     | 0.256     | 1.3               | 2                 |               |
| West: Northern Access  |                     |     |    |            |      |                  |                |     |           |                   |                   |               |
| 1 LR                   | 53                  |     | 24 | 77         | 0    |                  |                |     | 0.142     | 15.2              | 5                 | 500           |
|                        | 53                  | 0   | 24 | 77         | 0    |                  |                |     | 0.142     | 15.2              | 5                 |               |
| ALL VEHICLES           |                     |     |    |            |      |                  |                |     |           |                   |                   |               |
|                        |                     |     |    | Total Flow | % HV |                  |                |     | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |     |    | 833        | 4    |                  |                |     | 0.256     | 2.6               | 5                 |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.



Gladstone Harvey Road ULDA Subdivision - North Access  
 2021 BG + Sur wDev - AM Priority  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

| Lane No.               | Demand Flow (veh/h) |      |    |       | %HV | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|------|----|-------|-----|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                        | L                   | T    | R  | Tot   |     |                  | 1st            | 2nd |           |                   |                   |               |
| South: Harvey Road (S) |                     |      |    |       |     |                  |                |     |           |                   |                   |               |
| 1 LT                   | 9                   | 1451 |    | 1460  | 5   |                  |                |     | 0.773     | 0.1               | 0                 | 500           |
|                        | 9                   | 1451 | 0  | 1460  | 5   |                  |                |     | 0.773     | 0.1               |                   |               |
| North: Harvey Road (N) |                     |      |    |       |     |                  |                |     |           |                   |                   |               |
| 1 T                    |                     | 578  |    | 578   | 5   |                  |                |     | 0.306     | 0.0               | 0                 | 500           |
| 2 R                    |                     |      | 27 | 27    | 0   |                  |                |     | 0.447     | 84.9              | 11                | 20            |
|                        | 0                   | 578  | 27 | 605   | 5   |                  |                |     | 0.447     | 3.8               | 11                |               |
| West: Northern Access  |                     |      |    |       |     |                  |                |     |           |                   |                   |               |
| 1 LR                   | 106                 |      | 47 | 153   | 0   |                  |                |     | 2.550     | 3008.2            | 872               | 500           |
|                        | 106                 | 0    | 47 | 153   | 0   |                  |                |     | 2.550     | 3008.2            | 872               |               |
| =====                  |                     |      |    |       |     |                  |                |     |           |                   |                   |               |
| ALL VEHICLES           |                     |      |    | Total | %   |                  |                |     | Max       | Aver.             | Max               |               |
|                        |                     |      |    | Flow  | HV  |                  |                |     | X         | Delay             | Queue             |               |
|                        |                     |      |    | 2218  | 5   |                  |                |     | 2.611     | 208.6             | 872               |               |
| =====                  |                     |      |    |       |     |                  |                |     |           |                   |                   |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.



Gladstone Harvey Road ULDA Subdivision - North Access  
 2021 BG + Sur wDev - PM Priority  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

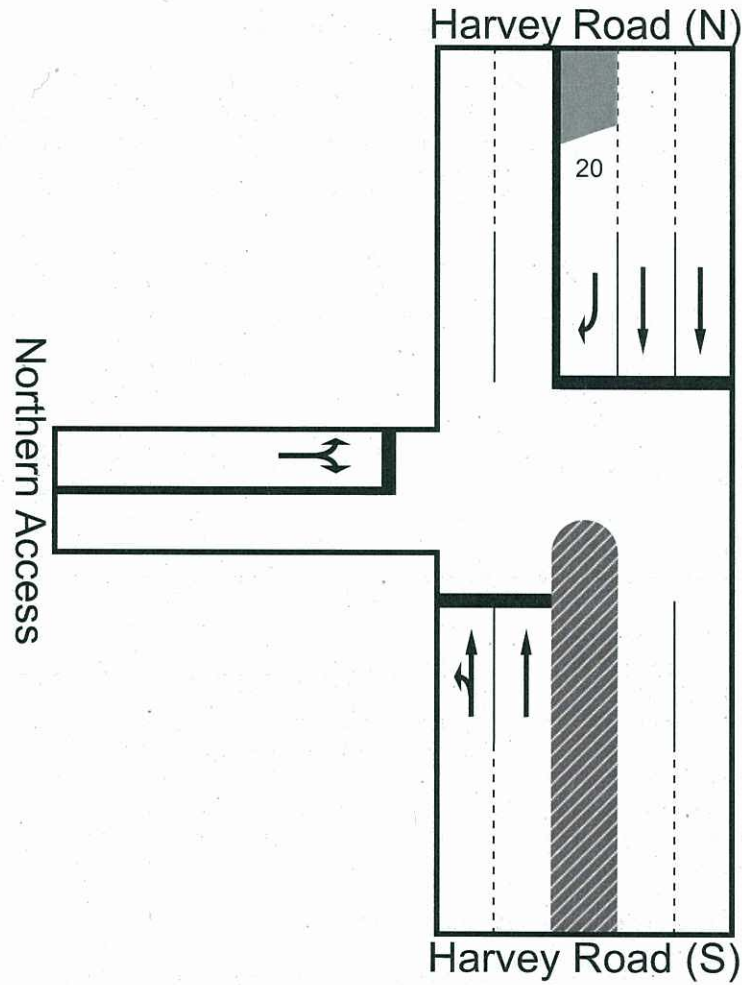
| Lane No.               | Demand Flow (veh/h) |      |    |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|------|----|------------|------|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                        | L                   | T    | R  | Tot        |      |                  | 1st            | 2nd |           |                   |                   |               |
| South: Harvey Road (S) |                     |      |    |            |      |                  |                |     |           |                   |                   |               |
| 1 LT                   | 27                  | 699  |    | 726        | 5    |                  |                |     | 0.385     | 0.3               | 0                 | 500           |
|                        | 27                  | 699  | 0  | 726        | 5    |                  |                |     | 0.385     | 0.3               |                   |               |
| North: Harvey Road (N) |                     |      |    |            |      |                  |                |     |           |                   |                   |               |
| 1 T                    |                     | 1285 |    | 1285       | 5    |                  |                |     | 0.680     | 0.0               | 0                 | 500           |
| 2 R                    |                     |      | 80 | 80         | 0    |                  |                |     | 0.139     | 13.5              | 4                 | 20            |
|                        | 0                   | 1285 | 80 | 1365       | 5    |                  |                |     | 0.680     | 0.8               | 4                 |               |
| West: Northern Access  |                     |      |    |            |      |                  |                |     |           |                   |                   |               |
| 1 LR                   | 53                  |      | 24 | 77         | 0    |                  |                |     | 1.118     | 601.4             | 143               | 500           |
|                        | 53                  | 0    | 24 | 77         | 0    |                  |                |     | 1.118     | 601.4             | 143               |               |
| ALL VEHICLES           |                     |      |    |            |      |                  |                |     |           |                   |                   |               |
|                        |                     |      |    | Total Flow | % HV |                  |                |     | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |      |    | 2168       | 5    |                  |                |     | 1.143     | 22.0              | 143               |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Signal Controlled Geometry





Gladstone Harvey Road ULDA Subdivision - North Access

2021 BG + Surrounding with Dev - AM Signals

Intersection ID: 0

Fixed-Time Signals, Cycle Time = 120 (User-given Cycle Time)

| Lane No.               | Demand Flow (veh/h) |      |    |      | %HV  | Adj. Basic Satf. | Eff Grn (secs) |       | Deg Sat x   | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|------|----|------|------|------------------|----------------|-------|-------------|-------------------|-------------------|---------------|
|                        | L                   | T    | R  | Tot  |      |                  | 1st            | 2nd   |             |                   |                   |               |
| South: Harvey Road (S) |                     |      |    |      |      |                  |                |       |             |                   |                   |               |
| 1 LT                   | 9                   | 721  |    | 730  | 5    | 1950             | 89             |       | 0.521       | 7.0               | 135               | 50            |
| 2 T                    |                     | 730  |    | 730  | 5    | 1950             | 89             |       | 0.521       | 6.9               | 135               | 500           |
|                        | 9                   | 1451 | 0  | 1460 | 5    |                  |                |       | 0.521       | 6.9               | 135               |               |
| North: Harvey Road (N) |                     |      |    |      |      |                  |                |       |             |                   |                   |               |
| 1 T                    |                     | 289  |    | 289  | 5    | 1949             | 89             |       | 0.206       | 5.0               | 48                | 50            |
| 2 T                    |                     | 289  |    | 289  | 5    | 1949             | 89             |       | 0.206       | 5.0               | 48                | 500           |
| 3 R                    |                     |      | 27 | 27   | 0    | 1949             | 70             |       | 0.240       | 21.3              | 8                 | 20            |
|                        | 0                   | 578  | 27 | 605  | 5    |                  |                |       | 0.240       | 5.7               | 48                |               |
| West: Northern Access  |                     |      |    |      |      |                  |                |       |             |                   |                   |               |
| 1 LR                   | 106                 |      | 47 | 153  | 0    | 1949             | 19             |       | 0.520       | 59.2              | 70                | 50            |
|                        | 106                 | 0    | 47 | 153  | 0    |                  |                |       | 0.520       | 59.2              | 70                |               |
| ALL VEHICLES           |                     |      |    |      |      |                  |                |       |             |                   |                   |               |
|                        | Total Flow          |      |    |      | % HV | Cycle Time       |                | Max X | Aver. Delay | Max Queue         |                   |               |
|                        | 2218                |      |    |      | 5    | 120              |                | 0.528 | 10.2        | 135               |                   |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

# SIDRA INTERSECTION

## Phasing Summary

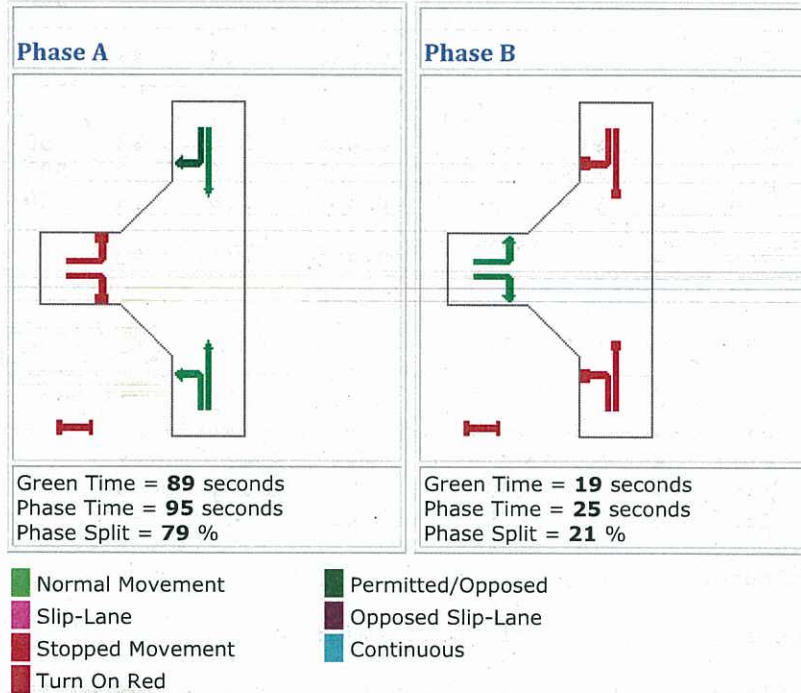
Gladstone Harvey Road ULDA Subdivision - North Access

2021 BG + Surrounding with Dev - AM Signals

C = 120 seconds

Cycle Time Option: **User-specified cycle time**

Phase times determined by the program.





Gladstone Harvey Road ULDA Subdivision - North Access

2021 BG + Surrounding with Dev - PM - Signals

Intersection ID: 0

Fixed-Time Signals, Cycle Time = 120 (User-given Cycle Time)

| Lane No.               | Demand Flow (veh/h) |      |    |      | %HV  | Adj. Basic Satf. | Eff Grn (secs) 1st 2nd | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|------|----|------|------|------------------|------------------------|-----------|-------------------|-------------------|---------------|
|                        | L                   | T    | R  | Tot  |      |                  |                        |           |                   |                   |               |
| South: Harvey Road (S) |                     |      |    |      |      |                  |                        |           |                   |                   |               |
| 1 LT                   | 27                  | 336  |    | 363  | 5    | 1950             | 96                     | 0.240     | 3.7               | 49                | 50            |
| 2 T                    |                     | 363  |    | 363  | 5    | 1950             | 96                     | 0.240     | 3.1               | 49                | 500           |
|                        | 27                  | 699  | 0  | 726  | 5    |                  |                        | 0.240     | 3.4               | 49                |               |
| North: Harvey Road (N) |                     |      |    |      |      |                  |                        |           |                   |                   |               |
| 1 T                    |                     | 643  |    | 643  | 5    | 1949             | 96                     | 0.425     | 3.8               | 92                | 50            |
| 2 T                    |                     | 643  |    | 643  | 5    | 1949             | 96                     | 0.425     | 3.8               | 92                | 500           |
| 3 R                    |                     |      | 80 | 80   | 0    | 1949             | 91                     | 0.358     | 12.6              | 13                | 20            |
|                        | 0                   | 1285 | 80 | 1365 | 5    |                  |                        | 0.425     | 4.3               | 92                |               |
| West: Northern Access  |                     |      |    |      |      |                  |                        |           |                   |                   |               |
| 1 LR                   | 53                  |      | 24 | 77   | 0    | 1949             | 12                     | 0.415     | 64.9              | 41                | 500           |
|                        | 53                  | 0    | 24 | 77   | 0    |                  |                        | 0.415     | 64.9              | 41                |               |
| ALL VEHICLES           |                     |      |    |      |      |                  |                        |           |                   |                   |               |
|                        | Total Flow          |      |    |      | % HV | Cycle Time       |                        | Max X     | Aver. Delay       | Max Queue         |               |
|                        | 2168                |      |    |      | 5    | 120              |                        | 0.425     | 6.2               | 92                |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

# SIDRA INTERSECTION

## Phasing Summary

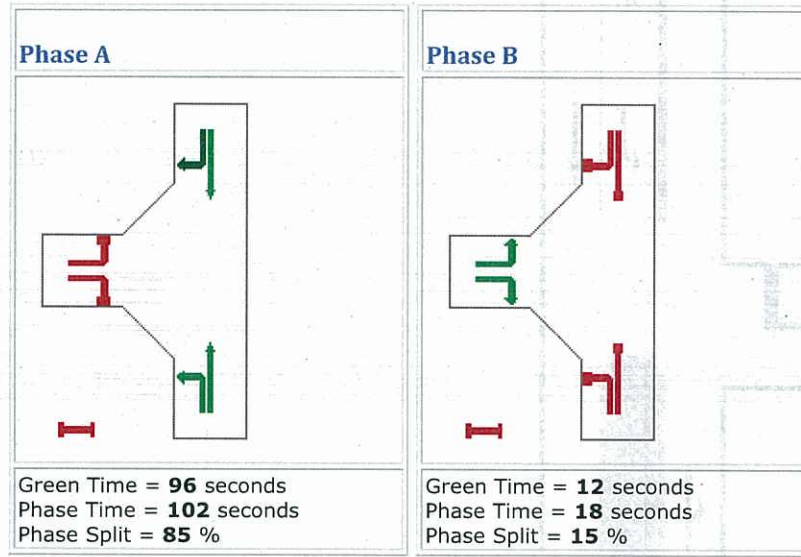
### Gladstone Harvey Road ULDA Subdivision - North Access

#### 2021 BG + Surrounding with Dev - PM - Signals

C = **120** seconds

Cycle Time Option: **User-specified cycle time**

Phase times determined by the program.

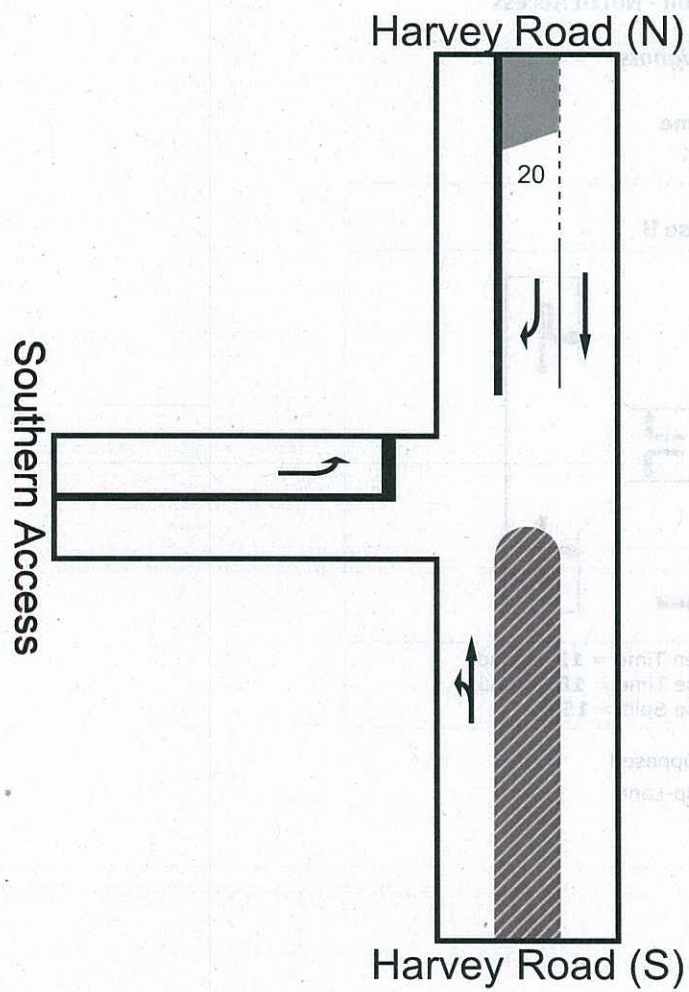


- |                  |                   |
|------------------|-------------------|
| Normal Movement  | Permitted/Opposed |
| Slip-Lane        | Opposed Slip-Lane |
| Stopped Movement | Continuous        |
| Turn On Red      |                   |



## Harvey Road / Southern Access

Priority Control Geometry



Gladstone Harvey Road ULDA Subdivision - South Access  
 2011 BG with Dev - AM Priority  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

| Lane No.               | Demand Flow (veh/h) |     |   |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|-----|---|------------|------|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                        | L                   | T   | R | Tot        |      |                  | 1st            | 2nd |           |                   |                   |               |
| South: Harvey Road (S) |                     |     |   |            |      |                  |                |     |           |                   |                   |               |
| 1 LT                   | 3                   | 355 |   | 358        | 5    |                  |                |     | 0.190     | 0.1               | 0                 | 500           |
|                        | 3                   | 355 | 0 | 358        | 5    |                  |                |     | 0.190     | 0.1               |                   |               |
| North: Harvey Road (N) |                     |     |   |            |      |                  |                |     |           |                   |                   |               |
| 1 T                    |                     | 349 |   | 349        | 5    |                  |                |     | 0.185     | 0.0               | 0                 | 500           |
| 2 R                    |                     |     | 9 | 9          | 0    |                  |                |     | 0.011     | 9.9               | 0                 | 20            |
|                        | 0                   | 349 | 9 | 358        | 5    |                  |                |     | 0.185     | 0.3               | 0                 |               |
| West: Southern Access  |                     |     |   |            |      |                  |                |     |           |                   |                   |               |
| 1 L                    | 35                  |     |   | 35         | 0    |                  |                |     | 0.044     | 12.7              | 1                 | 500           |
|                        | 35                  | 0   | 0 | 35         | 0    |                  |                |     | 0.044     | 12.7              | 1                 |               |
| ALL VEHICLES           |                     |     |   |            |      |                  |                |     |           |                   |                   |               |
|                        |                     |     |   | Total Flow | % HV |                  |                |     | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |     |   | 751        | 5    |                  |                |     | 0.190     | 0.7               | 1                 |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.



Gladstone Harvey Road ULDA Subdivision - South Access  
 2011 BG with Dev - PM Priority  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

| Lane No.               | Demand Flow (veh/h) |     |    |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) 1st 2nd | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|-----|----|------------|------|------------------|------------------------|-----------|-------------------|-------------------|---------------|
|                        | L                   | T   | R  | Tot        |      |                  |                        |           |                   |                   |               |
| South: Harvey Road (S) |                     |     |    |            |      |                  |                        |           |                   |                   |               |
| 1 LT                   | 9                   | 174 |    | 183        | 5    |                  |                        | 0.097     | 0.4               | 0                 | 500           |
|                        | 9                   | 174 | 0  | 183        | 5    |                  |                        | 0.097     | 0.4               |                   |               |
| North: Harvey Road (N) |                     |     |    |            |      |                  |                        |           |                   |                   |               |
| 1 T                    |                     | 481 |    | 481        | 5    |                  |                        | 0.255     | 0.0               | 0                 | 500           |
| 2 R                    |                     |     | 27 | 27         | 0    |                  |                        | 0.031     | 9.1               | 1                 | 20            |
|                        | 0                   | 481 | 27 | 508        | 5    |                  |                        | 0.255     | 0.5               | 1                 |               |
| West: Southern Access  |                     |     |    |            |      |                  |                        |           |                   |                   |               |
| 1 L                    | 18                  |     |    | 18         | 0    |                  |                        | 0.018     | 11.5              | 1                 | 500           |
|                        | 18                  | 0   | 0  | 18         | 0    |                  |                        | 0.018     | 11.5              | 1                 |               |
| ALL VEHICLES           |                     |     |    |            |      |                  |                        |           |                   |                   |               |
|                        |                     |     |    | Total Flow | % HV |                  |                        | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |     |    | 709        | 5    |                  |                        | 0.255     | 0.7               | 1                 |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Gladstone Harvey Road ULDA Subdivision - South Access  
 2021 BG with Dev - AM Priority  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

| Lane No.               | Demand Flow (veh/h) |      |   |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|------|---|------------|------|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                        | L                   | T    | R | Tot        |      |                  | 1st            | 2nd |           |                   |                   |               |
| South: Harvey Road (S) |                     |      |   |            |      |                  |                |     |           |                   |                   |               |
| 1 LT                   | 3                   | 1423 |   | 1426       | 5    |                  |                |     | 0.755     | 0.0               | 0                 | 500           |
|                        | 3                   | 1423 | 0 | 1426       | 5    |                  |                |     | 0.755     | 0.0               |                   |               |
| North: Harvey Road (N) |                     |      |   |            |      |                  |                |     |           |                   |                   |               |
| 1 T                    |                     | 616  |   | 616        | 5    |                  |                |     | 0.326     | 0.0               | 0                 | 500           |
| 2 R                    |                     |      | 9 | 9          | 0    |                  |                |     | 0.125     | 54.5              | 3                 | 20            |
|                        | 0                   | 616  | 9 | 625        | 5    |                  |                |     | 0.326     | 0.8               | 3                 |               |
| West: Southern Access  |                     |      |   |            |      |                  |                |     |           |                   |                   |               |
| 1 L                    | 35                  |      |   | 35         | 0    |                  |                |     | 0.831     | 206.0             | 24                | 500           |
|                        | 35                  | 0    | 0 | 35         | 0    |                  |                |     | 0.831     | 206.0             | 24                |               |
| ALL VEHICLES           |                     |      |   |            |      |                  |                |     |           |                   |                   |               |
|                        |                     |      |   | Total Flow | % HV |                  |                |     | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |      |   | 2086       | 5    |                  |                |     | 0.833     | 3.7               | 24                |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.



Gladstone Harvey Road ULDA Subdivision - South Access  
 2021 BG with Dev - PM Priority  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

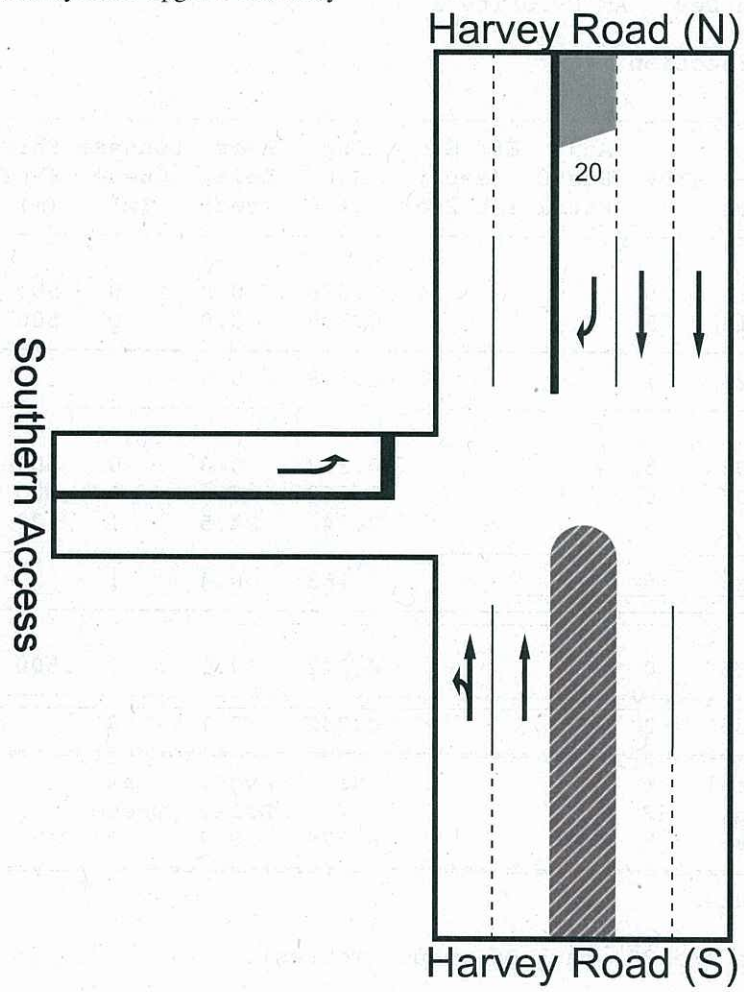
| Lane No.               | Demand Flow (veh/h) |      |    |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) 1st 2nd | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|------|----|------------|------|------------------|------------------------|-----------|-------------------|-------------------|---------------|
|                        | L                   | T    | R  | Tot        |      |                  |                        |           |                   |                   |               |
| South: Harvey Road (S) |                     |      |    |            |      |                  |                        |           |                   |                   |               |
| 1 LT                   | 9                   | 708  |    | 717        | 5    |                  |                        | 0.380     | 0.1               | 0                 | 500           |
|                        | 9                   | 708  | 0  | 717        | 5    |                  |                        | 0.380     | 0.1               |                   |               |
| North: Harvey Road (N) |                     |      |    |            |      |                  |                        |           |                   |                   |               |
| 1 T                    |                     | 1282 |    | 1282       | 5    |                  |                        | 0.679     | 0.0               | 0                 | 500           |
| 2 R                    |                     |      | 27 | 27         | 0    |                  |                        | 0.046     | 13.1              | 1                 | 20            |
|                        | 0                   | 1282 | 27 | 1309       | 5    |                  |                        | 0.679     | 0.3               | 1                 |               |
| West: Southern Access  |                     |      |    |            |      |                  |                        |           |                   |                   |               |
| 1 L                    | 18                  |      |    | 18         | 0    |                  |                        | 0.040     | 16.6              | 1                 | 500           |
|                        | 18                  | 0    | 0  | 18         | 0    |                  |                        | 0.040     | 16.6              | 1                 |               |
| =====                  |                     |      |    |            |      |                  |                        |           |                   |                   |               |
| ALL VEHICLES           |                     |      |    | Total Flow | % HV |                  |                        | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |      |    | 2044       | 5    |                  |                        | 0.679     | 0.4               | 1                 |               |
| =====                  |                     |      |    |            |      |                  |                        |           |                   |                   |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

# Harvey Road Upgrade Geometry





Gladstone Harvey Road ULDA Subdivision - South Access  
 2021 BG + Surrounding with Dev - AM Priority 2  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

| Lane No.               | Demand Flow (veh/h) |      |   |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) 1st 2nd | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|------|---|------------|------|------------------|------------------------|-----------|-------------------|-------------------|---------------|
|                        | L                   | T    | R | Tot        |      |                  |                        |           |                   |                   |               |
| South: Harvey Road (S) |                     |      |   |            |      |                  |                        |           |                   |                   |               |
| 1 LT                   | 3                   | 710  |   | 713        | 5    |                  |                        | 0.378     | 0.0               | 0                 | 500           |
| 2 T                    |                     | 713  |   | 713        | 5    |                  |                        | 0.378     | 0.0               | 0                 | 500           |
|                        | 3                   | 1423 | 0 | 1426       | 5    |                  |                        | 0.378     | 0.0               |                   |               |
| North: Harvey Road (N) |                     |      |   |            |      |                  |                        |           |                   |                   |               |
| 1 T                    |                     | 308  |   | 308        | 5    |                  |                        | 0.163     | 0.0               | 0                 | 500           |
| 2 T                    |                     | 308  |   | 308        | 5    |                  |                        | 0.163     | 0.0               | 0                 | 500           |
| 3 R                    |                     |      | 9 | 9          | 0    |                  |                        | 0.043     | 24.5              | 1                 | 20            |
|                        | 0                   | 616  | 9 | 625        | 5    |                  |                        | 0.163     | 0.4               | 1                 |               |
| West: Southern Access  |                     |      |   |            |      |                  |                        |           |                   |                   |               |
| 1 L                    | 35                  |      |   | 35         | 0    |                  |                        | 0.242     | 37.1              | 7                 | 500           |
|                        | 35                  | 0    | 0 | 35         | 0    |                  |                        | 0.242     | 37.1              | 7                 |               |
| ALL VEHICLES           |                     |      |   |            |      |                  |                        |           |                   |                   |               |
|                        |                     |      |   | Total Flow | % HV |                  |                        | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |      |   | 2086       | 5    |                  |                        | 0.378     | 0.7               | 7                 |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Gladstone Harvey Road ULDA Subdivision - South Access  
 2021 BG + Surrounding with Dev - PM Priority 2  
 Intersection ID: 0  
 Stop Sign Controlled Intersection

| Lane No.               | Demand Flow (veh/h) |      |    |            | %HV  | Adj. Basic Satf. | Eff Grn (secs) |     | Deg Sat x | Aver. Delay (sec) | Longest Queue (m) | Shrt Lane (m) |
|------------------------|---------------------|------|----|------------|------|------------------|----------------|-----|-----------|-------------------|-------------------|---------------|
|                        | L                   | T    | R  | Tot        |      |                  | 1st            | 2nd |           |                   |                   |               |
| South: Harvey Road (S) |                     |      |    |            |      |                  |                |     |           |                   |                   |               |
| 1 LT                   | 9                   | 349  |    | 358        | 5    |                  |                |     | 0.190     | 0.2               | 0                 | 500           |
| 2 T                    |                     | 359  |    | 359        | 5    |                  |                |     | 0.190     | 0.0               | 0                 | 500           |
|                        | 9                   | 708  | 0  | 717        | 5    |                  |                |     | 0.190     | 0.1               |                   |               |
| North: Harvey Road (N) |                     |      |    |            |      |                  |                |     |           |                   |                   |               |
| 1 T                    |                     | 641  |    | 641        | 5    |                  |                |     | 0.339     | 0.0               | 0                 | 500           |
| 2 T                    |                     | 641  |    | 641        | 5    |                  |                |     | 0.339     | 0.0               | 0                 | 500           |
| 3 R                    |                     |      | 27 | 27         | 0    |                  |                |     | 0.041     | 12.2              | 1                 | 20            |
|                        | 0                   | 1282 | 27 | 1309       | 5    |                  |                |     | 0.339     | 0.3               | 1                 |               |
| West: Southern Access  |                     |      |    |            |      |                  |                |     |           |                   |                   |               |
| 1 L                    | 18                  |      |    | 18         | 0    |                  |                |     | 0.035     | 15.6              | 1                 | 500           |
|                        | 18                  | 0    | 0  | 18         | 0    |                  |                |     | 0.035     | 15.6              | 1                 |               |
| ALL VEHICLES           |                     |      |    |            |      |                  |                |     |           |                   |                   |               |
|                        |                     |      |    | Total Flow | % HV |                  |                |     | Max X     | Aver. Delay       | Max Queue         |               |
|                        |                     |      |    | 2044       | 5    |                  |                |     | 0.339     | 0.3               | 1                 |               |

Peak flow period = 60 minutes.

Queue values in this table are 95% back of queue (metres).

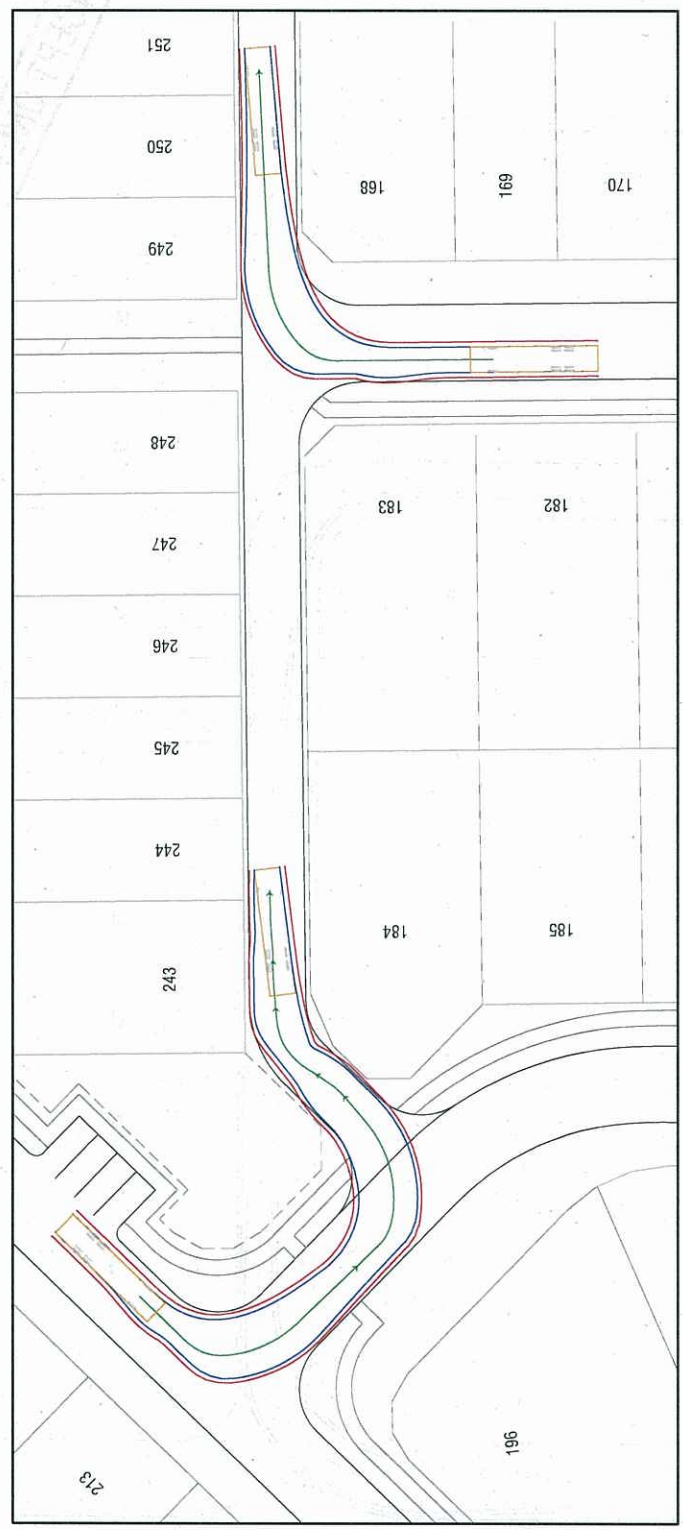
Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.



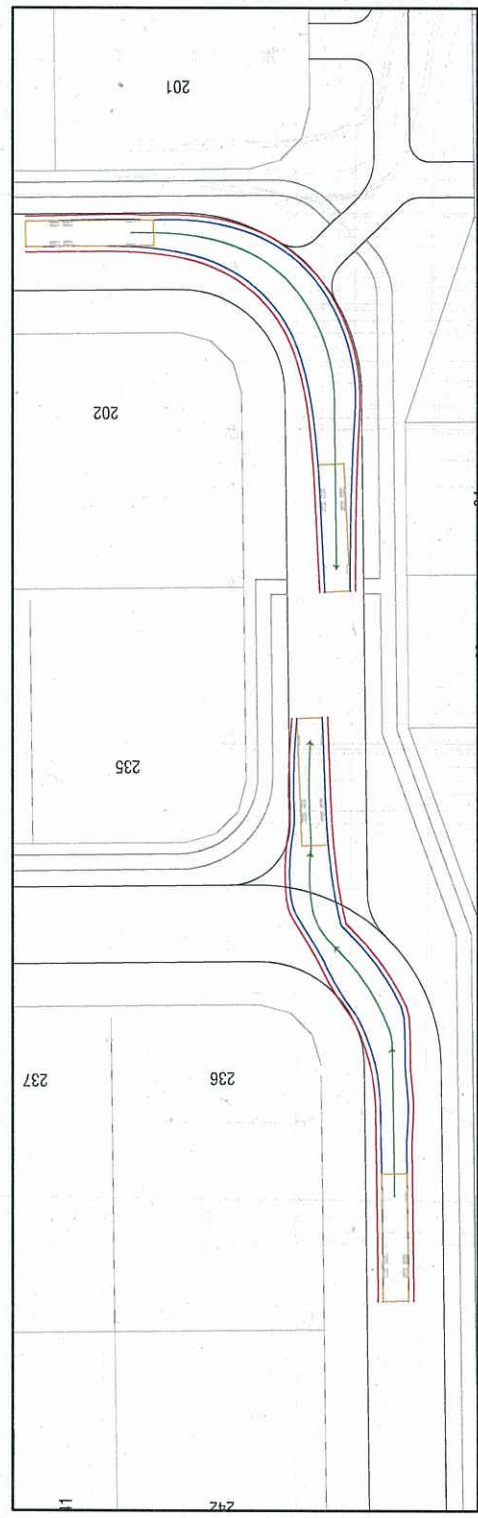
## **Appendix D**

### **Refuse Vehicle Swept Path Analysis**

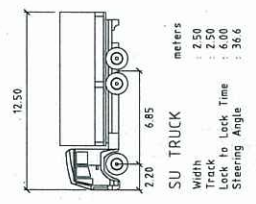
CONCEPT ONLY



Detail A



Detail B

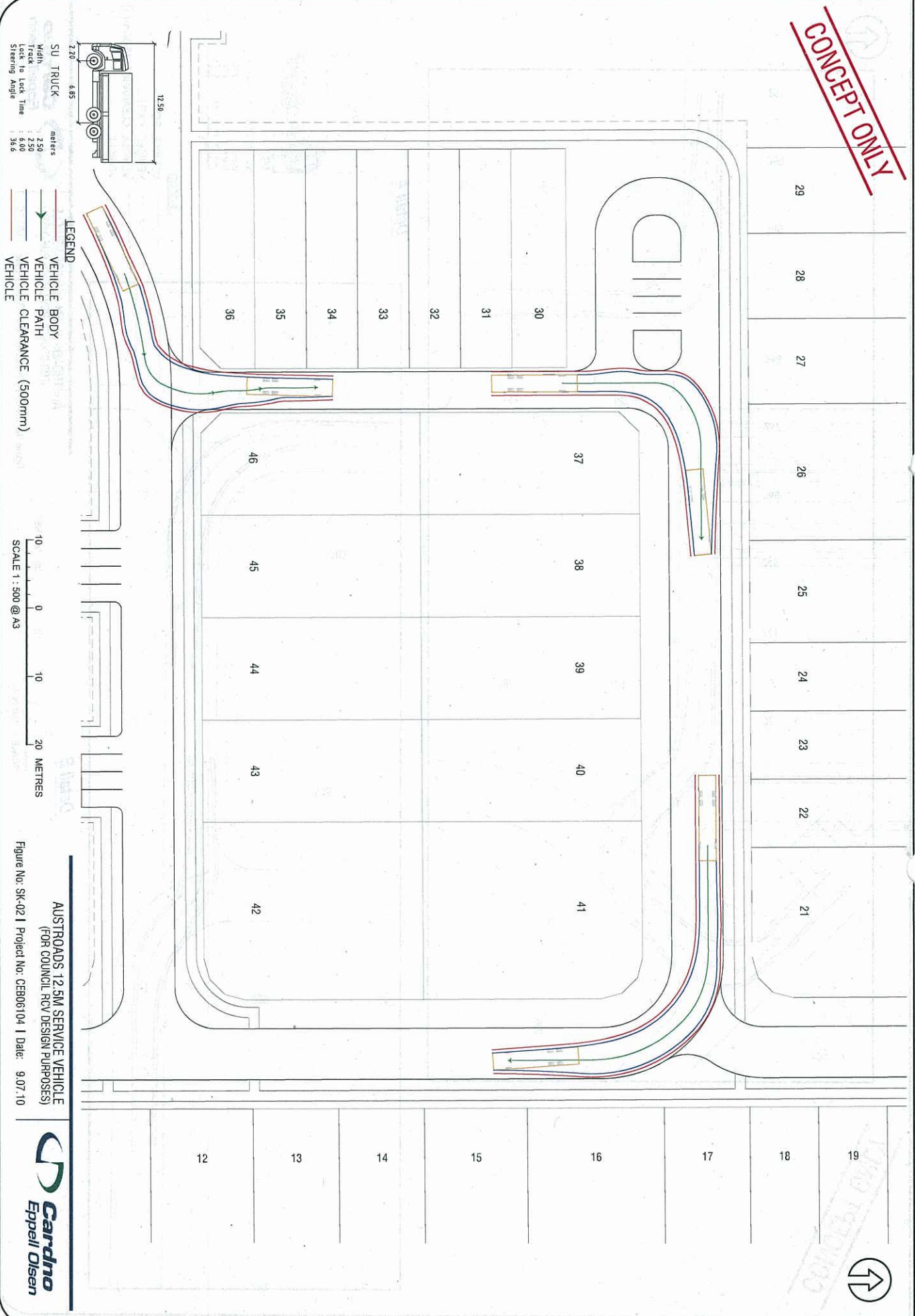


- LEGEND
- VEHICLE BODY
  - VEHICLE PATH
  - VEHICLE CLEARANCE (500mm)
  - VEHICLE





CONCEPT ONLY



FILE NAME: XJ 6104-SP-010

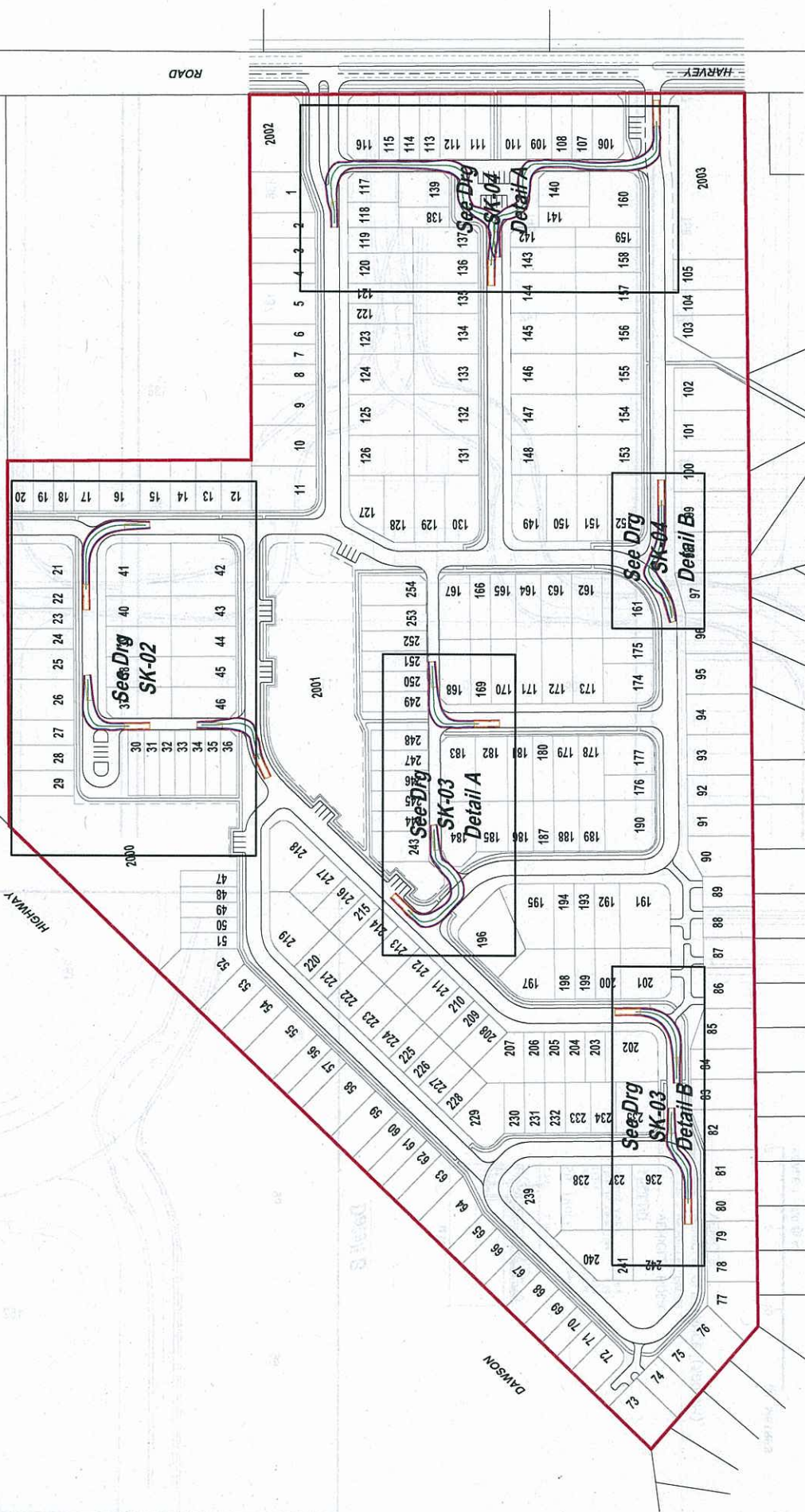
AUSTROADS 12.5M SERVICE VEHICLE  
(FOR COUNCIL RCV DESIGN PURPOSES)

Figure No: SK-02 | Project No: CEB06104 | Date: 9.07.10



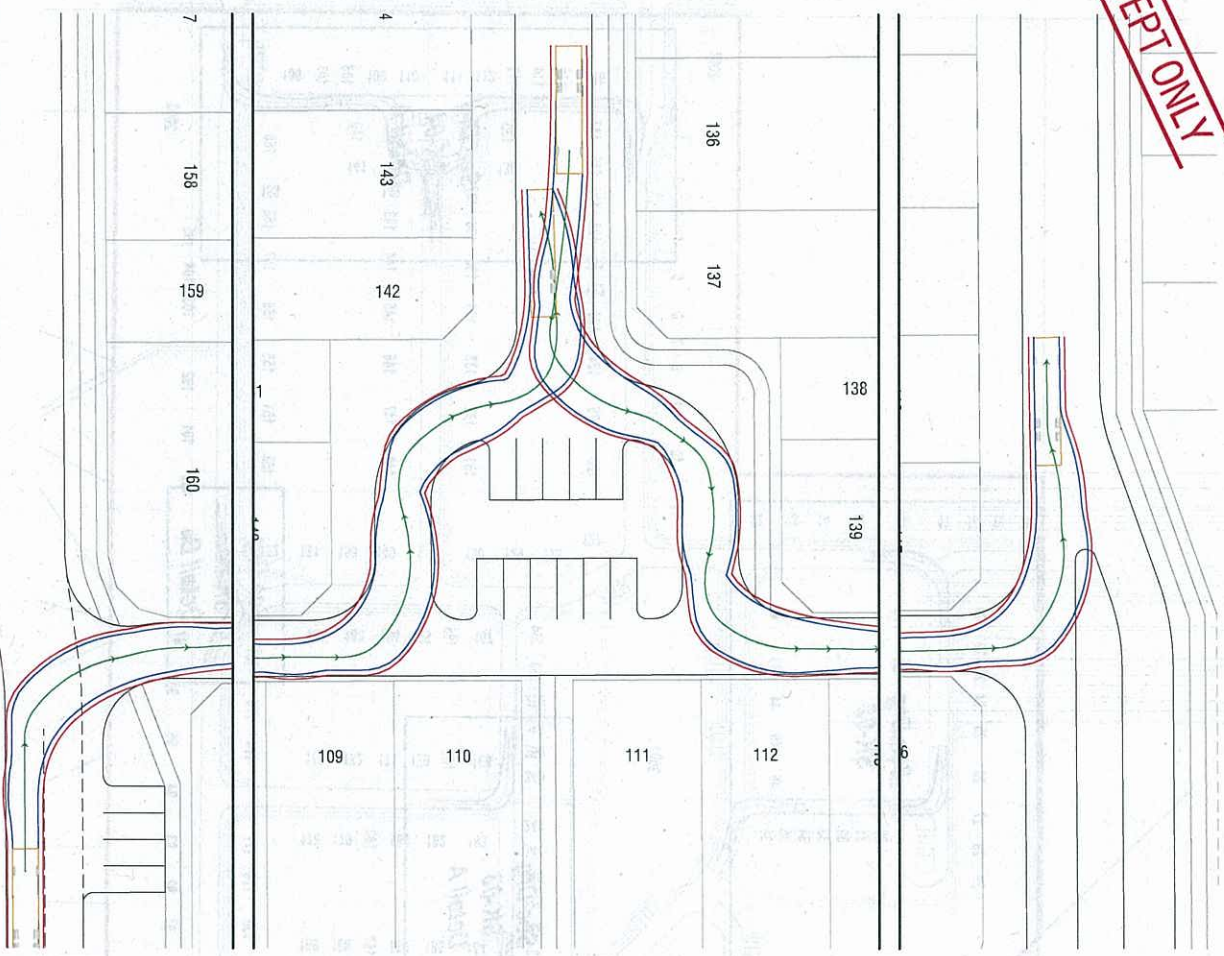


CONCEPT ONLY

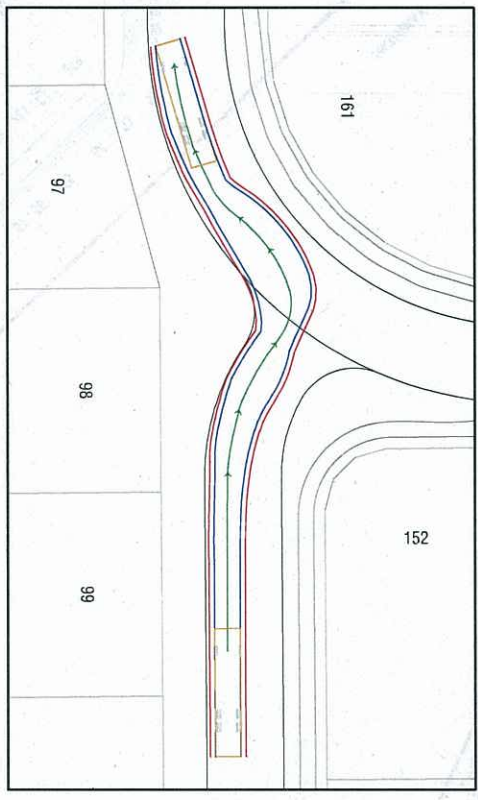




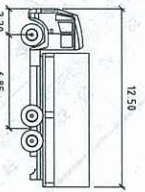
**CONCEPT ONLY**



**Detail A**



**Detail B**



- LEGEND**
- VEHICLE BODY
  - VEHICLE PATH
  - VEHICLE CLEARANCE (500mm)
  - VEHICLE

SCALE 1 : 500 @ A3

10 0 10 20 METRES

AUSTROADS 12.5M SERVICE VEHICLE  
(FOR COUNCIL RCV DESIGN PURPOSES)

Figure No: SK-04 | Project No: CEB06104 | Date: 9.07.10

