

A1 - 2026 PM BG (Existing Configuration) *: D1 - 2026 PM BG (Existing Configuration)*

9. Bronkhorstspuit Road (R104) / Class 3 Road (Access to Sammy Marks Extensions 28 to 42 Development)

(BACKGROUND TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|--------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C3-EXT (N) | 1 | 40 | 126 | 815 | 2050 | 100 | 0.58 | 0.13 | 0.44 | 1.86 | 0.00 | 1.86 |
| 06:00-07:00 | C3-EXT (S) | 1 | 1 | 6996 | 26 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | C3-EXT (W) | 1 | 9 | 874 | 379 | 4100 | 100 | 0.04 | 0.00 | 0.01 | 0.07 | 0.00 | 0.07 |
| 06:00-07:00 | CLASS3 (E)TL | 1 | 17 | 444 | 61 | 2050 | 17 | 35.66 | 1.44 | 2.25 | 8.58 | 0.64 | 9.22 |
| 06:00-07:00 | CLASS3 (E)L | 1 | 0 | Unrestricted | 0 | 2050 | 71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (E)R | 3 | 66 | 36 | 671 | 1408 | 71 | 10.22 | 10.34 | 89.29 | 27.05 | 4.43 | 31.48 |
| 06:00-07:00 | CLASS3 (E)T | 2 | 11 | 700 | 332 | 4100 | 71 | 4.36 | 2.77 | 8.80 | 5.71 | 1.20 | 6.91 |
| 06:00-07:00 | CLASS3 (N)L | 1 | 11 | 709 | 228 | 2050 | 100 | 0.11 | 0.01 | 0.05 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | CLASS3 (N)R | 2 | 20 | 353 | 47 | 1315 | 17 | 38.98 | 1.16 | 10.38 | 7.23 | 0.52 | 7.74 |
| 06:00-07:00 | CLASS3 (N)T | 1 | 7 | 1177 | 26 | 2050 | 17 | 34.44 | 0.60 | 5.39 | 3.53 | 0.27 | 3.80 |
| 06:00-07:00 | CLASS3 (S)R | 2 | 0 | -100 | 0 | 0 | 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)L | 1 | 7 | 1213 | 83 | 2050 | 58 | 6.50 | 0.75 | 1.29 | 2.12 | 0.33 | 2.45 |
| 06:00-07:00 | CLASS3 (W)R | 3 | 0 | -100 | 0 | 0 | 58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)T | 2 | 15 | 500 | 363 | 4100 | 58 | 6.76 | 3.49 | 3.01 | 9.67 | 1.49 | 11.16 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

1. Solomon Mahlangu Drive / Bronkhorstspuit Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) | |
|--------------|--------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|--------|
| 06:00-07:00 | K69K22 | (E)L | 1 | 75 | 20 | 1533 | 2050 | 100 | 3.22 | 23.94 | 54.44 | 19.46 | 5.60 | 25.05 |
| 06:00-07:00 | K69K22 | (E)R | 1 | 21 | 326 | 65 | 2050 | 14 | 36.79 | 1.66 | 4.78 | 9.43 | 0.74 | 10.17 |
| 06:00-07:00 | K69K22 | (E)T | 1 | 62 | 45 | 533 | 4100 | 20 | 33.41 | 13.78 | 19.73 | 70.24 | 6.12 | 76.36 |
| 06:00-07:00 | K69K22 | (N)L | 1 | 3 | 3475 | 16 | 2050 | 30 | 24.22 | 0.31 | 1.47 | 1.53 | 0.14 | 1.66 |
| 06:00-07:00 | K69K22 | (N)R | 1 | 50 | 80 | 266 | 4100 | 12 | 43.82 | 7.12 | 12.23 | 45.98 | 3.15 | 49.12 |
| 06:00-07:00 | K69K22 | (N)T | 1 | 80 | 12 | 1021 | 4100 | 30 | 37.37 | 27.42 | 35.69 | 150.52 | 12.18 | 162.70 |
| 06:00-07:00 | K69K22 | (S)L | 1 | 11 | 708 | 206 | 1853 | 100 | 0.12 | 0.01 | 0.02 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | K69K22 | (S)R | 1 | 82 | 10 | 437 | 4100 | 12 | 57.02 | 13.56 | 20.88 | 98.38 | 6.02 | 104.40 |
| 06:00-07:00 | K69K22 | (S)T | 1 | 49 | 85 | 619 | 4100 | 30 | 29.39 | 14.17 | 22.42 | 71.81 | 6.27 | 78.09 |
| 06:00-07:00 | K69K22 | (W)L | 1 | 56 | 59 | 243 | 2050 | 20 | 37.62 | 6.43 | 19.67 | 36.06 | 2.86 | 38.91 |
| 06:00-07:00 | K69K22 | (W)R | 1 | 110 | -18 | 678 | 4100 | 14 | 228.36 | 52.66 | 83.51 | 610.71 | 18.12 | 628.83 |
| 06:00-07:00 | K69K22 | (W)T | 1 | 30 | 199 | 259 | 4100 | 20 | 31.17 | 6.16 | 9.75 | 31.85 | 2.73 | 34.58 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

2. Solomon Mahlangu Drive / N4 (Northern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C1-N | 1 | 100 | -11 | 3169 | 3119 | 100 | 55.11 | 127.82 | 147.41 | 688.67 | 52.05 | 740.92 |
| 06:00-07:00 | C1-N (EXT) | 1 | 31 | 192 | 1263 | 4100 | 100 | 0.20 | 0.07 | 0.07 | 0.97 | 0.00 | 0.97 |
| 06:00-07:00 | C1-S | 1 | 39 | 126 | 1527 | 3870 | 100 | 0.30 | 0.13 | 0.06 | 1.83 | 0.00 | 1.83 |
| 06:00-07:00 | Ramp A | 1 | 15 | 493 | 311 | 2050 | 100 | 0.16 | 0.01 | 0.01 | 0.19 | 0.00 | 0.19 |
| 06:00-07:00 | Ramp B | 1 | 3 | 2745 | 65 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

3. Solomon Mahlangu Drive / N4 (Southern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)
Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C2-N | 1 | 110 | -18 | 4505 | 4100 | 100 | 170.24 | 214.33 | 103.41 | 3025.21 | 160.26 | 3185.47 |
| 06:00-07:00 | C2-N (EXT) | 1 | 46 | 94 | 1903 | 4100 | 100 | 0.38 | 0.20 | 0.21 | 2.65 | 0.00 | 2.85 |
| 06:00-07:00 | C2-S | 1 | 66 | 5 | 1751 | 2043 | 100 | 5.17 | 2.51 | 4.04 | 35.68 | 0.00 | 35.68 |
| 06:00-07:00 | Ramp-C | 1 | 92 | -2 | 138 | 150 | 100 | 82.95 | 3.18 | 1.88 | 45.15 | 0.00 | 45.15 |
| 06:00-07:00 | Ramp-D | 1 | 72 | 24 | 1304 | 1800 | 100 | 2.61 | 0.95 | 0.71 | 13.42 | 0.00 | 13.42 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

4. Bronkhorstspuit Road (R104) / Nellmapius Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | NEL_E (EXT) | 1 | 2 | 4513 | 40 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_E (EXT) | 2 | 36 | 151 | 735 | 2050 | 100 | 0.49 | 0.10 | 0.23 | 1.42 | 0.00 | 1.42 |
| 06:00-07:00 | NEL_E (R) | 1 | 4 | 2180 | 10 | 395 | 63 | 14.59 | 0.15 | 0.50 | 0.57 | 0.07 | 0.64 |
| 06:00-07:00 | NEL_E (T) | 1 | 50 | 78 | 1323 | 4100 | 63 | 7.93 | 16.38 | 28.26 | 41.38 | 7.04 | 48.42 |
| 06:00-07:00 | NEL_N (EXT) | 1 | 10 | 787 | 208 | 2050 | 100 | 0.10 | 0.01 | 0.02 | 0.08 | 0.00 | 0.08 |
| 06:00-07:00 | NEL_N (L) | 1 | 2 | 4513 | 40 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_N (R) | 1 | 63 | 42 | 675 | 4100 | 25 | 35.68 | 17.04 | 39.55 | 95.00 | 7.57 | 102.57 |
| 06:00-07:00 | NEL_W (EXT) | 1 | 49 | 85 | 1998 | 4100 | 100 | 0.42 | 0.23 | 0.27 | 3.29 | 0.00 | 3.29 |
| 06:00-07:00 | NEL_W (L) | 1 | 10 | 832 | 198 | 2050 | 100 | 0.09 | 0.01 | 0.03 | 0.07 | 0.00 | 0.07 |
| 06:00-07:00 | NEL_W (T) | 1 | 56 | 61 | 735 | 2050 | 63 | 11.84 | 11.79 | 59.94 | 34.34 | 5.09 | 39.43 |
| 06:00-07:00 | R-SLNK (E) | 1 | 20 | 343 | 833 | 4100 | 100 | 0.11 | 0.03 | 0.03 | 0.37 | 0.00 | 0.37 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

5. Bronkhorstspuit Road (R104) / Mbeki Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)
Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | M EXIT (N) | 1 | 0 | Unrestricted | 0 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | M EXIT (W) | 1 | 20 | 343 | 833 | 4100 | 100 | 0.11 | 0.03 | 0.03 | 0.37 | 0.00 | 0.37 |
| 06:00-07:00 | MBK_E (EXT) | 1 | 10 | 787 | 208 | 2050 | 100 | 0.10 | 0.01 | 0.07 | 0.08 | 0.00 | 0.08 |
| 06:00-07:00 | MBK_E (EXT) | 2 | 35 | 158 | 715 | 2050 | 100 | 0.47 | 0.09 | 0.24 | 1.33 | 0.00 | 1.33 |
| 06:00-07:00 | MBK_E (R) | 1 | 47 | 91 | 482 | 1800 | 56 | 5.42 | 3.24 | 31.07 | 10.31 | 1.25 | 11.56 |
| 06:00-07:00 | MBK_E (T) | 1 | 36 | 151 | 420 | 2050 | 56 | 4.50 | 2.49 | 28.59 | 7.45 | 0.99 | 8.44 |
| 06:00-07:00 | MBK_N (EXT) | 1 | 3 | 2905 | 61 | 2050 | 100 | 0.03 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_N (EXT) | 2 | 3 | 2905 | 61 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_N (L) | 1 | 10 | 787 | 208 | 2050 | 100 | 0.10 | 0.01 | 0.03 | 0.08 | 0.00 | 0.08 |
| 06:00-07:00 | MBK_N (R) | 1 | 73 | 23 | 494 | 2050 | 32 | 36.64 | 13.05 | 71.44 | 71.40 | 5.77 | 77.17 |
| 06:00-07:00 | MBK_W (EXT) | 1 | 33 | 177 | 667 | 2050 | 100 | 0.42 | 0.08 | 0.64 | 1.11 | 0.00 | 1.11 |
| 06:00-07:00 | MBK_W (EXT) | 2 | 33 | 177 | 667 | 2050 | 100 | 0.42 | 0.08 | 0.22 | 1.11 | 0.00 | 1.11 |
| 06:00-07:00 | MBK_W (L) | 1 | 3 | 2975 | 60 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_W (T) | 1 | 61 | 47 | 715 | 2050 | 56 | 8.38 | 10.89 | 32.67 | 23.63 | 4.29 | 27.92 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

6. Bronkhorstspuit Road (R104) / Lesedi Road / Access to N4 Gateway Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | BR_E(L) | 1 | 7 | 1271 | 135 | 2050 | 100 | 0.06 | 0.00 | 0.02 | 0.03 | 0.00 | 0.03 |
| 06:00-07:00 | BR_E(R) | 1 | 6 | 1426 | 65 | 1800 | 60 | 13.94 | 1.26 | 12.09 | 3.56 | 0.56 | 4.12 |
| 06:00-07:00 | BR_E(T) | 1 | 37 | 144 | 802 | 4100 | 52 | 6.80 | 9.84 | 8.79 | 21.50 | 4.10 | 25.60 |
| 06:00-07:00 | BR_W (EXT) | 1 | 22 | 309 | 902 | 4100 | 100 | 0.12 | 0.03 | 0.04 | 0.44 | 0.00 | 0.44 |
| 06:00-07:00 | BR_W (L) | 1 | 1 | 10753 | 17 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | BR_W (R) | 1 | 3 | 3080 | 27 | 1800 | 52 | 5.76 | 0.16 | 1.17 | 0.61 | 0.07 | 0.68 |
| 06:00-07:00 | BR_W (T) | 1 | 35 | 156 | 879 | 4100 | 60 | 5.92 | 5.44 | 8.61 | 20.54 | 2.41 | 22.95 |
| 06:00-07:00 | LR_N (EXT) | 1 | 4 | 2002 | 88 | 2050 | 100 | 0.04 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | LR_N(R) | 1 | 15 | 494 | 60 | 1800 | 21 | 32.31 | 1.35 | 12.91 | 7.65 | 0.60 | 8.25 |
| 06:00-07:00 | LR_N (TL) | 1 | 41 | 122 | 183 | 2050 | 21 | 36.13 | 4.46 | 34.72 | 26.08 | 1.98 | 26.06 |
| 06:00-07:00 | M EXIT (E) | 1 | 8 | 1044 | 323 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | N4_S (EXT) | 2 | 1 | 6262 | 29 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | N4_S(L) | 1 | 7 | 1238 | 40 | 2050 | 28 | 25.99 | 0.80 | 7.69 | 4.10 | 0.36 | 4.46 |
| 06:00-07:00 | N4_S(R) | 1 | 9 | 921 | 46 | 1800 | 28 | 26.22 | 0.92 | 4.82 | 4.76 | 0.41 | 5.17 |
| 06:00-07:00 | N4_S(T) | 1 | 1 | 8818 | 6 | 2050 | 28 | 25.59 | 0.12 | 0.63 | 0.61 | 0.05 | 0.66 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

7. Bronkhorstspuit Road (R104) / Access to Savannah Estate Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) | |
|--------------|--------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|-------|
| 06:00-07:00 | S EXIT | (N) | 1 | 45 | 99 | 927 | 2050 | 100 | 0.96 | 8.77 | 6.91 | 3.51 | 1.52 | 5.02 |
| 06:00-07:00 | S EXIT | (S)2 | 1 | 77 | 16 | 3169 | 4100 | 100 | 1.84 | 33.54 | 38.29 | 22.96 | 7.95 | 30.92 |
| 06:00-07:00 | S EXIT | (W)2 | 1 | 25 | 267 | 1005 | 4100 | 100 | 0.14 | 0.04 | 0.03 | 0.57 | 0.00 | 0.57 |
| 06:00-07:00 | SA | (E)L | 1 | 0 | 30650 | 6 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA | (E)T | 1 | 66 | 36 | 2034 | 4100 | 74 | 5.02 | 27.10 | 38.71 | 40.28 | 10.78 | 51.06 |
| 06:00-07:00 | SA | (S)L | 1 | 32 | 185 | 97 | 2050 | 14 | 40.62 | 2.47 | 10.86 | 15.54 | 1.10 | 16.64 |
| 06:00-07:00 | SA | (S)R | 1 | 5 | 1745 | 15 | 2050 | 14 | 36.85 | 0.36 | 1.62 | 2.18 | 0.16 | 2.34 |
| 06:00-07:00 | SA | (W)R | 1 | 35 | 157 | 58 | 272 | 60 | 7.84 | 0.41 | 0.98 | 1.80 | 0.14 | 1.94 |
| 06:00-07:00 | SA | (W)T | 1 | 26 | 244 | 654 | 4100 | 60 | 1.54 | 1.01 | 1.20 | 4.22 | 0.45 | 4.67 |
| 06:00-07:00 | SA EXT | (E) | 1 | 16 | 451 | 669 | 4100 | 100 | 0.09 | 0.02 | 0.02 | 0.23 | 0.00 | 0.23 |
| 06:00-07:00 | SA EXT | (S)2 | 1 | 0 | 30650 | 6 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA EXT | (S)2 | 2 | 3 | 3070 | 58 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | SA EXT | (W) | 1 | 52 | 73 | 2131 | 4100 | 100 | 0.47 | 0.28 | 0.32 | 3.99 | 0.00 | 3.99 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

8. Bronkhorstspuit Road (R104) / Access to River Walk Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | R-SLNK (E) | 1 | 20 | 343 | 833 | 4100 | 100 | 0.11 | 0.03 | 0.03 | 0.37 | 0.00 | 0.37 |
| 06:00-07:00 | R-SLNK (W) | 1 | 8 | 1044 | 323 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | RI EXT (E) | 1 | 8 | 1044 | 323 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | RI EXT (S)2 | 1 | 1 | 8266 | 22 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | RI EXT (S)2 | 2 | 20 | 348 | 412 | 2050 | 100 | 0.22 | 0.03 | 0.07 | 0.36 | 0.00 | 0.36 |
| 06:00-07:00 | RI EXT (W)2 | 1 | 50 | 81 | 2040 | 4100 | 100 | 0.43 | 0.25 | 0.38 | 3.50 | 0.00 | 3.50 |
| 06:00-07:00 | RIVER (S)L | 1 | 60 | 50 | 1229 | 2050 | 100 | 1.31 | 0.45 | 1.92 | 6.36 | 0.00 | 6.36 |
| 06:00-07:00 | RIVER (S)R | 1 | 11 | 752 | 65 | 2050 | 29 | 25.68 | 1.31 | 6.25 | 6.68 | 0.58 | 7.16 |
| 06:00-07:00 | RIVER (E)-L | 1 | 1 | 8266 | 22 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | RIVER (E)-T | 1 | 33 | 173 | 811 | 4100 | 59 | 9.32 | 9.69 | 16.62 | 29.80 | 4.25 | 34.04 |
| 06:00-07:00 | RIVER (W)-R | 1 | 89 | 1 | 412 | 980 | 46 | 36.77 | 13.45 | 41.65 | 59.70 | 5.29 | 64.99 |
| 06:00-07:00 | RIVER (W)-T | 1 | 13 | 573 | 258 | 4100 | 46 | 5.70 | 1.50 | 2.36 | 5.79 | 0.64 | 6.44 |

A1 - 2016 AM BG+DEV (Proposed Configuration) *:
D1 - 2016 AM BG+DEV (Proposed Configuration)*

9. Bronkhorstspuit Road (R104) / Class 3 Road (Access to Sammy Marks Extensions 28 to 42 Development)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|--------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | CS-EXT (W) | 1 | 20 | 343 | 833 | 4100 | 100 | 0.11 | 0.03 | 0.03 | 0.37 | 0.00 | 0.37 |
| 06:00-07:00 | CLASS3 (E)TL | 1 | 6 | 1410 | 22 | 2050 | 17 | 34.34 | 0.50 | 0.79 | 2.98 | 0.22 | 3.20 |
| 06:00-07:00 | CLASS3 (E)L | 1 | 0 | Unrestricted | 0 | 2050 | 71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (E)R | 3 | 23 | 297 | 240 | 1469 | 71 | 5.07 | 2.17 | 18.72 | 4.79 | 1.00 | 5.79 |
| 06:00-07:00 | CLASS3 (E)T | 2 | 24 | 272 | 714 | 4100 | 71 | 4.94 | 6.58 | 20.89 | 13.92 | 2.86 | 16.78 |
| 06:00-07:00 | CLASS3 (N)L | 1 | 35 | 157 | 719 | 2050 | 100 | 0.47 | 0.09 | 0.66 | 1.34 | 0.00 | 1.34 |
| 06:00-07:00 | CLASS3 (N)R | 2 | 44 | 103 | 119 | 1488 | 17 | 42.59 | 3.12 | 27.90 | 19.99 | 1.39 | 21.38 |
| 06:00-07:00 | CLASS3 (N)T | 1 | 18 | 411 | 65 | 2050 | 17 | 35.80 | 1.54 | 13.74 | 9.18 | 0.68 | 9.86 |
| 06:00-07:00 | CLASS3 (S)R | 2 | 0 | -100 | 0 | 0 | 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)L | 1 | 3 | 2584 | 41 | 2050 | 58 | 5.69 | 0.35 | 0.60 | 0.91 | 0.15 | 1.06 |
| 06:00-07:00 | CLASS3 (W)R | 3 | 0 | -100 | 0 | 0 | 58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)T | 2 | 12 | 672 | 282 | 4100 | 58 | 5.95 | 2.60 | 2.24 | 6.62 | 1.12 | 7.74 |

**A1 - 2016 PM BG+DEV (Proposed Configuration) *:
D1 - 2016 PM BG+DEV (Proposed Configuration)***

1. Solomon Mahlangu Drive / Bronkhorstspuit Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) | |
|--------------|--------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|---------|
| 06:00-07:00 | K6SK22 | (E)L | 1 | 24 | 273 | 495 | 2050 | 100 | 0.28 | 0.04 | 0.09 | 0.55 | 0.00 | 0.55 |
| 06:00-07:00 | K6SK22 | (E)R | 1 | 17 | 427 | 28 | 2050 | 7 | 38.24 | 0.72 | 2.07 | 4.22 | 0.32 | 4.54 |
| 06:00-07:00 | K6SK22 | (E)T | 1 | 32 | 185 | 272 | 4100 | 20 | 33.49 | 6.02 | 8.62 | 35.93 | 2.67 | 38.60 |
| 06:00-07:00 | K6SK22 | (N)L | 1 | 5 | 1582 | 34 | 2050 | 30 | 24.41 | 0.66 | 3.18 | 3.27 | 0.29 | 3.57 |
| 06:00-07:00 | K6SK22 | (N)R | 1 | 28 | 227 | 226 | 4100 | 19 | 34.72 | 5.33 | 9.15 | 30.95 | 2.37 | 33.32 |
| 06:00-07:00 | K6SK22 | (N)T | 1 | 62 | 46 | 784 | 4100 | 30 | 31.71 | 19.01 | 24.74 | 98.05 | 8.42 | 106.47 |
| 06:00-07:00 | K6SK22 | (S)L | 1 | 13 | 571 | 248 | 1853 | 100 | 0.15 | 0.01 | 0.03 | 0.15 | 0.00 | 0.15 |
| 06:00-07:00 | K6SK22 | (S)R | 1 | 129! | -30 | 1059 | 4100 | 19 | 443.31 | 143.77 | 221.26 | 1851.93 | 33.46 | 1885.38 |
| 06:00-07:00 | K6SK22 | (S)T | 1 | 119! | -25 | 1517 | 4100 | 30 | 327.10 | 160.56 | 254.05 | 1957.49 | 45.41 | 2002.90 |
| 06:00-07:00 | K6SK22 | (W)L | 1 | 128! | -30 | 552 | 2050 | 20 | 436.33 | 74.25 | 227.23 | 950.05 | 17.43 | 967.48 |
| 06:00-07:00 | K6SK22 | (W)R | 1 | 111! | -19 | 363 | 4100 | 7 | 245.73 | 30.20 | 47.90 | 353.27 | 10.03 | 363.30 |
| 06:00-07:00 | K6SK22 | (W)T | 1 | 62 | 45 | 534 | 4100 | 20 | 36.84 | 13.38 | 21.19 | 77.59 | 5.90 | 83.49 |

A1 - 2016 PM BG+DEV (Proposed Configuration) *:
D1 - 2016 PM BG+DEV (Proposed Configuration)*

3. Solomon Mahlangu Drive / N4 (Southern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C2-N | 1 | 83 | 8 | 3410 | 4100 | 100 | 2.35 | 38.58 | 18.62 | 31.55 | 5.44 | 37.00 |
| 06:00-07:00 | C2-N (EXT) | 1 | 45 | 100 | 1848 | 4100 | 100 | 0.36 | 0.18 | 0.19 | 2.62 | 0.00 | 2.62 |
| 06:00-07:00 | C2-S | 1 | 110! | -19 | 2265 | 2050 | 100 | 179.73 | 166.15 | 267.31 | 1605.74 | 70.09 | 1675.83 |
| 06:00-07:00 | Ramp-C | 1 | 141! | -36 | 269 | 191 | 100 | 549.02 | 45.57 | 26.96 | 582.54 | 8.60 | 591.14 |
| 06:00-07:00 | Ramp-D | 1 | 37 | 140 | 675 | 1800 | 100 | 0.60 | 0.11 | 0.08 | 1.59 | 0.00 | 1.59 |

**A1 - 2016 PM BG+DEV (Proposed Configuration) *:
D1 - 2016 PM BG+DEV (Proposed Configuration)***

4. Bronkhorstspuit Road (R104) / Nellmapius Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | NEL_E (EXT) | 1 | 2 | 5491 | 33 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_E (EXT) | 2 | 67 | 35 | 1367 | 2050 | 100 | 1.75 | 0.66 | 1.52 | 9.44 | 0.00 | 9.44 |
| 06:00-07:00 | NEL_E (R) | 1 | 60 | 50 | 23 | 51 | 74 | 91.89 | 0.95 | 3.18 | 8.25 | 0.39 | 8.64 |
| 06:00-07:00 | NEL_E (T) | 1 | 22 | 301 | 690 | 4100 | 74 | 2.77 | 4.08 | 7.04 | 7.55 | 1.73 | 9.28 |
| 06:00-07:00 | NEL_N (EXT) | 1 | 28 | 221 | 575 | 2050 | 100 | 0.34 | 0.05 | 0.16 | 0.78 | 0.00 | 0.78 |
| 06:00-07:00 | NEL_N (L) | 1 | 2 | 5491 | 33 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_N (R) | 1 | 82 | 10 | 504 | 4100 | 14 | 53.89 | 15.22 | 35.32 | 107.13 | 6.77 | 113.89 |
| 06:00-07:00 | NEL_W (EXT) | 1 | 29 | 209 | 1194 | 4100 | 100 | 0.16 | 0.06 | 0.07 | 0.85 | 0.00 | 0.85 |
| 06:00-07:00 | NEL_W (L) | 1 | 27 | 234 | 552 | 2050 | 100 | 0.32 | 0.05 | 0.26 | 0.70 | 0.00 | 0.70 |
| 06:00-07:00 | NEL_W (T) | 1 | 89 | 1 | 1367 | 2050 | 74 | 18.32 | 31.49 | 160.12 | 98.77 | 13.49 | 112.26 |

**A1 - 2016 PM BG+DEV (Proposed Configuration) *:
D1 - 2016 PM BG+DEV (Proposed Configuration)***

5. Bronkhorstspuit Road (R104) / Mbeki Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | M EXIT (N) | 1 | 0 | Unrestricted | 0 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | M EXIT (W) | 1 | 8 | 1086 | 311 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.04 |
| 06:00-07:00 | MBK_E (EXT) | 1 | 5 | 1608 | 108 | 2050 | 100 | 0.05 | 0.00 | 0.02 | 0.02 | 0.00 | 0.02 |
| 06:00-07:00 | MBK_E (EXT) | 2 | 60 | 50 | 1230 | 2050 | 100 | 1.31 | 0.45 | 1.13 | 6.37 | 0.00 | 6.37 |
| 06:00-07:00 | MBK_E (R) | 1 | 30 | 202 | 402 | 1800 | 74 | 2.69 | 2.09 | 20.00 | 4.27 | 0.89 | 5.15 |
| 06:00-07:00 | MBK_E (T) | 1 | 17 | 420 | 266 | 2050 | 74 | 2.25 | 1.27 | 14.63 | 2.37 | 0.55 | 2.91 |
| 06:00-07:00 | MBK_N (EXT) | 1 | 7 | 1105 | 153 | 2050 | 100 | 0.07 | 0.00 | 0.04 | 0.04 | 0.00 | 0.04 |
| 06:00-07:00 | MBK_N (EXT) | 2 | 7 | 1105 | 153 | 2050 | 100 | 0.07 | 0.00 | 0.02 | 0.04 | 0.00 | 0.04 |
| 06:00-07:00 | MBK_N (L) | 1 | 5 | 1608 | 108 | 2050 | 100 | 0.05 | 0.00 | 0.01 | 0.02 | 0.00 | 0.02 |
| 06:00-07:00 | MBK_N (R) | 1 | 59 | 54 | 180 | 2050 | 14 | 47.75 | 5.06 | 27.69 | 33.90 | 2.25 | 36.15 |
| 06:00-07:00 | MBK_W (EXT) | 1 | 17 | 418 | 356 | 2050 | 100 | 0.18 | 0.02 | 0.15 | 0.26 | 0.00 | 0.26 |
| 06:00-07:00 | MBK_W (EXT) | 2 | 17 | 418 | 356 | 2050 | 100 | 0.18 | 0.02 | 0.05 | 0.26 | 0.00 | 0.26 |
| 06:00-07:00 | MBK_W (L) | 1 | 8 | 965 | 170 | 2050 | 100 | 0.08 | 0.00 | 0.03 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | MBK_W (T) | 1 | 80 | 13 | 1230 | 2050 | 74 | 6.74 | 13.00 | 39.00 | 32.69 | 4.62 | 37.32 |

**A1 - 2016 PM BG+DEV (Proposed Configuration) *:
D1 - 2016 PM BG+DEV (Proposed Configuration)***

6. Bronkhorstspuit Road (R104) / Lesedi Road / Access to N4 Gateway Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | BR_E(L) | 1 | 2 | 3508 | 51 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | BR_E(R) | 1 | 12 | 634 | 135 | 1800 | 60 | 6.40 | 0.96 | 9.20 | 3.40 | 0.43 | 3.83 |
| 06:00-07:00 | BR_E(T) | 1 | 25 | 266 | 545 | 4100 | 53 | 17.54 | 10.68 | 9.55 | 37.68 | 4.75 | 42.43 |
| 06:00-07:00 | BR_W (EXT) | 1 | 16 | 452 | 669 | 4100 | 100 | 0.09 | 0.02 | 0.02 | 0.23 | 0.00 | 0.23 |
| 06:00-07:00 | BR_W (L) | 1 | 3 | 2925 | 61 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | BR_W (R) | 1 | 4 | 2330 | 36 | 1800 | 53 | 5.77 | 0.31 | 2.24 | 0.82 | 0.13 | 0.95 |
| 06:00-07:00 | BR_W (T) | 1 | 50 | 81 | 1241 | 4100 | 60 | 6.38 | 11.86 | 18.78 | 31.24 | 4.91 | 36.15 |
| 06:00-07:00 | LR_N (EXT) | 1 | 10 | 806 | 204 | 2050 | 100 | 0.10 | 0.01 | 0.02 | 0.08 | 0.00 | 0.08 |
| 06:00-07:00 | LR_N(R) | 1 | 10 | 838 | 38 | 1800 | 21 | 31.61 | 0.84 | 8.04 | 4.74 | 0.37 | 5.11 |
| 06:00-07:00 | LR_N (TL) | 1 | 12 | 666 | 53 | 2050 | 21 | 31.77 | 1.19 | 9.23 | 6.64 | 0.53 | 7.17 |
| 06:00-07:00 | N4_S (EXT) | 2 | 2 | 4755 | 38 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | N4_S(L) | 1 | 14 | 522 | 86 | 2050 | 28 | 26.83 | 1.78 | 17.06 | 9.10 | 0.79 | 9.89 |
| 06:00-07:00 | N4_S(R) | 1 | 19 | 370 | 100 | 1800 | 28 | 27.52 | 2.11 | 10.98 | 10.85 | 0.93 | 11.79 |
| 06:00-07:00 | N4_S(T) | 1 | 1 | 6588 | 8 | 2050 | 28 | 25.60 | 0.16 | 0.84 | 0.81 | 0.07 | 0.88 |

A1 - 2016 PM BG+DEV (Proposed Configuration) *:
D1 - 2016 PM BG+DEV (Proposed Configuration)*

7. Bronkhorstspuit Road (R104) / Access to Savannah Estate Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | S EXIT (W)2 | 1 | 18 | 394 | 746 | 4100 | 100 | 0.10 | 0.02 | 0.02 | 0.29 | 0.00 | 0.29 |
| 06:00-07:00 | SA (E)L | 1 | 0 | 46025 | 4 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA (E)T | 1 | 29 | 210 | 739 | 4100 | 61 | 6.19 | 6.18 | 8.83 | 18.06 | 2.70 | 20.76 |
| 06:00-07:00 | SA (S)L | 1 | 18 | 394 | 56 | 2050 | 14 | 38.48 | 1.37 | 6.04 | 8.50 | 0.61 | 9.11 |
| 06:00-07:00 | SA (S)R | 1 | 1 | 9125 | 3 | 2050 | 14 | 36.61 | 0.07 | 0.32 | 0.43 | 0.03 | 0.46 |
| 06:00-07:00 | SA (W)R | 1 | 8 | 959 | 68 | 1063 | 74 | 1.05 | 0.19 | 0.46 | 0.28 | 0.10 | 0.38 |
| 06:00-07:00 | SA (W)T | 1 | 43 | 110 | 1320 | 4100 | 74 | 0.95 | 1.32 | 1.56 | 4.97 | 0.58 | 5.55 |
| 06:00-07:00 | SA EXT (E) | 1 | 32 | 179 | 1323 | 4100 | 100 | 0.21 | 0.08 | 0.09 | 1.09 | 0.00 | 1.09 |
| 06:00-07:00 | SA EXT (S)2 | 1 | 0 | 46025 | 4 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA EXT (S)2 | 2 | 3 | 2623 | 68 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | SA EXT (W) | 1 | 19 | 364 | 795 | 4100 | 100 | 0.11 | 0.02 | 0.03 | 0.33 | 0.00 | 0.33 |

**A1 - 2016 PM BG+DEV (Proposed Configuration) *:
D1 - 2016 PM BG+DEV (Proposed Configuration)***

8. Bronkhorstspuit Road (R104) / Access to River Walk Development
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | R-SLNK (E) | 1 | 8 | 1086 | 311 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.04 |
| 06:00-07:00 | R-SLNK (W) | 1 | 10 | 819 | 402 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.08 | 0.00 | 0.08 |
| 06:00-07:00 | R1 EXT (E) | 1 | 10 | 819 | 402 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.08 | 0.00 | 0.08 |
| 06:00-07:00 | R1 EXT (S)2 | 1 | 3 | 2975 | 60 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | R1 EXT (S)2 | 2 | 46 | 95 | 948 | 2050 | 100 | 0.75 | 0.20 | 0.52 | 2.62 | 0.00 | 2.82 |
| 06:00-07:00 | R1 EXT (W)2 | 1 | 18 | 397 | 743 | 4100 | 100 | 0.10 | 0.02 | 0.03 | 0.28 | 0.00 | 0.28 |
| 06:00-07:00 | RIVER (S)L | 1 | 24 | 275 | 492 | 2050 | 100 | 0.28 | 0.04 | 0.16 | 0.54 | 0.00 | 0.54 |
| 06:00-07:00 | RIVER (S)R | 1 | 7 | 1177 | 26 | 2050 | 17 | 34.44 | 0.60 | 2.88 | 3.53 | 0.27 | 3.80 |
| 06:00-07:00 | RIVER (E)-L | 1 | 3 | 2975 | 60 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | RIVER (E)-T | 1 | 32 | 179 | 251 | 4100 | 18 | 34.77 | 6.15 | 10.54 | 34.42 | 2.74 | 37.16 |
| 06:00-07:00 | RIVER (W)-R | 1 | 82 | 10 | 948 | 1606 | 71 | 9.75 | 8.34 | 25.83 | 36.43 | 5.12 | 41.54 |
| 06:00-07:00 | RIVER (W)-T | 1 | 13 | 607 | 376 | 4100 | 71 | 1.60 | 0.86 | 1.35 | 2.37 | 0.38 | 2.74 |

A1 - 2016 PM BG+DEV (Proposed Configuration)*:
D1 - 2016 PM BG+DEV (Proposed Configuration)*

9. Bronkhorstspuit Road (R104) / Class 3 Road (Access to Sammy Marks Extensions 28 to 42 Development)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|--------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C3-EXT (N) | 1 | 40 | 124 | 825 | 2050 | 100 | 0.59 | 0.14 | 0.45 | 1.92 | 0.00 | 1.92 |
| 06:00-07:00 | C3-EXT (S) | 1 | 1 | 6996 | 26 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | C3-EXT (W) | 1 | 8 | 1086 | 311 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.04 |
| 06:00-07:00 | CLASS3 (E)TL | 1 | 17 | 444 | 61 | 2050 | 17 | 35.66 | 1.44 | 2.25 | 6.58 | 0.64 | 9.22 |
| 06:00-07:00 | CLASS3 (E)L | 1 | 0 | Unrestricted | 0 | 2050 | 71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (E)R | 3 | 64 | 40 | 671 | 1446 | 71 | 9.79 | 10.09 | 67.13 | 25.90 | 4.30 | 30.21 |
| 06:00-07:00 | CLASS3 (E)T | 2 | 9 | 906 | 264 | 4100 | 71 | 4.25 | 2.13 | 6.76 | 4.43 | 0.92 | 5.35 |
| 06:00-07:00 | CLASS3 (N)L | 1 | 11 | 709 | 228 | 2050 | 100 | 0.11 | 0.01 | 0.05 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | CLASS3 (N)R | 2 | 20 | 353 | 47 | 1315 | 17 | 38.98 | 1.16 | 10.38 | 7.23 | 0.52 | 7.74 |
| 06:00-07:00 | CLASS3 (N)T | 1 | 7 | 1177 | 26 | 2050 | 17 | 34.44 | 0.60 | 5.39 | 3.53 | 0.27 | 3.80 |
| 06:00-07:00 | CLASS3 (S)R | 2 | 0 | -100 | 0 | 0 | 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)L | 1 | 8 | 1076 | 93 | 2050 | 58 | 6.53 | 0.80 | 1.37 | 2.38 | 0.35 | 2.73 |
| 06:00-07:00 | CLASS3 (W)R | 3 | 0 | -100 | 0 | 0 | 58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)T | 2 | 13 | 604 | 309 | 4100 | 58 | 6.68 | 2.75 | 2.37 | 8.15 | 1.20 | 9.35 |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

1. Solomon Mahlangu Drive / Bronkhorstspuit Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | K69K22 (E)L | 1 | 76 | 15 | 1603 | 2050 | 100 | 4.74 | 27.79 | 63.21 | 29.99 | 8.73 | 38.72 |
| 06:00-07:00 | K69K22 (E)R | 1 | 26 | 220 | 75 | 2050 | 12 | 38.63 | 1.97 | 5.66 | 11.43 | 0.88 | 12.31 |
| 06:00-07:00 | K69K22 (E)T | 1 | 54 | 66 | 578 | 4100 | 25 | 27.12 | 13.57 | 19.43 | 61.83 | 5.96 | 67.79 |
| 06:00-07:00 | K69K22 (N)L | 1 | 4 | 1939 | 19 | 2050 | 20 | 31.79 | 0.42 | 2.00 | 2.38 | 0.19 | 2.57 |
| 06:00-07:00 | K69K22 (N)R | 1 | 35 | 154 | 290 | 4100 | 19 | 35.64 | 7.02 | 12.06 | 40.77 | 3.11 | 43.88 |
| 06:00-07:00 | K69K22 (N)T | 1 | 134! | -33 | 1152 | 4100 | 20 | 488.76 | 170.63 | 222.09 | 2220.91 | 36.78 | 2257.68 |
| 06:00-07:00 | K69K22 (S)L | 1 | 12 | 630 | 230 | 1865 | 100 | 0.14 | 0.01 | 0.02 | 0.12 | 0.00 | 0.12 |
| 06:00-07:00 | K69K22 (S)R | 1 | 55 | 63 | 452 | 4100 | 19 | 38.66 | 11.52 | 17.72 | 68.94 | 5.13 | 74.07 |
| 06:00-07:00 | K69K22 (S)T | 1 | 82 | 9 | 710 | 4100 | 20 | 47.20 | 20.59 | 32.58 | 132.12 | 9.15 | 141.26 |
| 06:00-07:00 | K69K22 (W)L | 1 | 52 | 74 | 275 | 2050 | 25 | 31.43 | 6.68 | 20.44 | 34.10 | 2.95 | 37.04 |
| 06:00-07:00 | K69K22 (W)R | 1 | 146! | -38 | 777 | 4100 | 12 | 599.10 | 137.75 | 218.47 | 1836.15 | 25.04 | 1861.19 |
| 06:00-07:00 | K69K22 (W)T | 1 | 26 | 241 | 281 | 4100 | 25 | 26.40 | 6.05 | 9.57 | 29.26 | 2.67 | 31.93 |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

2. Solomon Mahlangu Drive / N4 (Northern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C1-N | 1 | 102 | -12 | 2997 | 2941 | 100 | 60.21 | 123.58 | 142.51 | 711.74 | 50.40 | 762.14 |
| 06:00-07:00 | C1-N (EXT) | 1 | 34 | 165 | 1392 | 4100 | 100 | 0.23 | 0.09 | 0.09 | 1.24 | 0.00 | 1.24 |
| 06:00-07:00 | C1-S | 1 | 44 | 103 | 1716 | 3870 | 100 | 0.37 | 0.18 | 0.08 | 2.51 | 0.00 | 2.51 |
| 06:00-07:00 | Ramp A | 1 | 16 | 456 | 332 | 2050 | 100 | 0.17 | 0.02 | 0.01 | 0.22 | 0.00 | 0.22 |
| 06:00-07:00 | Ramp B | 1 | 3 | 2499 | 71 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

3. Solomon Mahlangu Drive / N4 (Southern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C2-N | 1 | 110% | -18 | 4507 | 4100 | 100 | 170.25 | 213.93 | 103.22 | 3026.42 | 159.86 | 3186.28 |
| 06:00-07:00 | C2-N (EXT) | 1 | 47 | 90 | 1940 | 4100 | 100 | 0.39 | 0.21 | 0.22 | 3.02 | 0.00 | 3.02 |
| 06:00-07:00 | C2-S | 1 | 94% | -5 | 1993 | 2110 | 100 | 12.81 | 7.09 | 11.41 | 100.68 | 0.00 | 100.68 |
| 06:00-07:00 | Ramp-C | 1 | 106% | -14 | 159 | 152 | 100 | 177.66 | 11.00 | 6.51 | 111.42 | 4.60 | 116.03 |
| 06:00-07:00 | Ramp-D | 1 | 73 | 23 | 1322 | 1800 | 100 | 2.75 | 1.01 | 0.76 | 14.33 | 0.00 | 14.33 |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

4. Bronkhorstspuit Road (R104) / Nellmapius Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | NEL_E (EXT) | 1 | 2 | 3911 | 46 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_E (EXT) | 2 | 40 | 124 | 825 | 2050 | 100 | 0.59 | 0.14 | 0.31 | 1.92 | 0.00 | 1.92 |
| 06:00-07:00 | NEL_E (R) | 1 | 7 | 1261 | 12 | 292 | 62 | 19.43 | 0.21 | 0.72 | 0.92 | 0.10 | 1.01 |
| 06:00-07:00 | NEL_E (T) | 1 | 57 | 58 | 1469 | 4100 | 62 | 9.32 | 20.20 | 34.84 | 54.02 | 8.76 | 62.78 |
| 06:00-07:00 | NEL_N (EXT) | 1 | 11 | 689 | 234 | 2050 | 100 | 0.11 | 0.01 | 0.02 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | NEL_N (L) | 1 | 2 | 3911 | 46 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_N (R) | 1 | 69 | 30 | 769 | 4100 | 26 | 36.47 | 19.79 | 45.94 | 110.61 | 8.80 | 119.42 |
| 06:00-07:00 | NEL_W (EXT) | 1 | 55 | 65 | 2238 | 4100 | 100 | 0.53 | 0.33 | 0.38 | 4.65 | 0.00 | 4.65 |
| 06:00-07:00 | NEL_W (L) | 1 | 11 | 731 | 222 | 2050 | 100 | 0.11 | 0.01 | 0.03 | 0.09 | 0.00 | 0.09 |
| 06:00-07:00 | NEL_W (T) | 1 | 64 | 41 | 825 | 2050 | 62 | 13.91 | 14.54 | 73.93 | 45.26 | 6.36 | 51.62 |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

5. Bronkhorstspuit Road (R104) / Mbeki Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | M EXIT (N) | 1 | 0 | Unrestricted | 0 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | M EXIT (W) | 1 | 23 | 293 | 940 | 4100 | 100 | 0.13 | 0.03 | 0.04 | 0.48 | 0.00 | 0.48 |
| 06:00-07:00 | MBK_E (EXT) | 1 | 11 | 695 | 232 | 2050 | 100 | 0.11 | 0.01 | 0.08 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | MBK_E (EXT) | 2 | 39 | 129 | 805 | 2050 | 100 | 0.57 | 0.13 | 0.32 | 1.80 | 0.00 | 1.80 |
| 06:00-07:00 | MBK_E (R) | 1 | 53 | 70 | 523 | 1800 | 54 | 6.15 | 3.43 | 32.90 | 12.69 | 1.41 | 14.09 |
| 06:00-07:00 | MBK_E (T) | 1 | 40 | 124 | 454 | 2050 | 54 | 4.93 | 2.60 | 29.86 | 8.82 | 1.08 | 9.90 |
| 06:00-07:00 | MBK_N (EXT) | 1 | 3 | 2618 | 68 | 2050 | 100 | 0.03 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_N (EXT) | 2 | 3 | 2618 | 68 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_N (L) | 1 | 11 | 695 | 232 | 2050 | 100 | 0.11 | 0.01 | 0.04 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | MBK_N (R) | 1 | 80 | 13 | 574 | 2050 | 34 | 39.06 | 15.90 | 87.07 | 88.44 | 7.02 | 95.45 |
| 06:00-07:00 | MBK_W (EXT) | 1 | 36 | 149 | 741 | 2050 | 100 | 0.50 | 0.10 | 0.84 | 1.45 | 0.00 | 1.45 |
| 06:00-07:00 | MBK_W (EXT) | 2 | 36 | 149 | 741 | 2050 | 100 | 0.50 | 0.10 | 0.26 | 1.45 | 0.00 | 1.45 |
| 06:00-07:00 | MBK_W (L) | 1 | 3 | 2695 | 66 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_W (T) | 1 | 71 | 26 | 805 | 2050 | 54 | 11.01 | 14.74 | 44.25 | 34.95 | 5.86 | 40.80 |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

6. Bronkhorstspuit Road (R104) / Lesedi Road / Access to N4 Gateway Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | BR_E(L) | 1 | 8 | 1079 | 156 | 2050 | 100 | 0.07 | 0.00 | 0.03 | 0.04 | 0.00 | 0.04 |
| 06:00-07:00 | BR_E(R) | 1 | 7 | 1222 | 75 | 1800 | 60 | 14.37 | 1.29 | 12.35 | 4.24 | 0.57 | 4.81 |
| 06:00-07:00 | BR_E(T) | 1 | 39 | 131 | 861 | 4100 | 53 | 11.34 | 16.40 | 14.66 | 38.50 | 7.03 | 45.54 |
| 06:00-07:00 | BR_W (EXT) | 1 | 24 | 278 | 977 | 4100 | 100 | 0.14 | 0.04 | 0.05 | 0.53 | 0.00 | 0.53 |
| 06:00-07:00 | BR_W (L) | 1 | 1 | 9611 | 19 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | BR_W (R) | 1 | 3 | 2722 | 31 | 1800 | 53 | 4.89 | 0.17 | 1.23 | 0.60 | 0.07 | 0.67 |
| 06:00-07:00 | BR_W (T) | 1 | 39 | 128 | 987 | 4100 | 60 | 5.61 | 5.86 | 9.29 | 21.83 | 2.55 | 24.38 |
| 06:00-07:00 | LR_N (EXT) | 1 | 5 | 1732 | 101 | 2050 | 100 | 0.05 | 0.00 | 0.00 | 0.02 | 0.00 | 0.02 |
| 06:00-07:00 | LR_N(R) | 1 | 18 | 409 | 70 | 1800 | 21 | 32.64 | 1.59 | 15.28 | 9.01 | 0.71 | 9.72 |
| 06:00-07:00 | LR_N (TL) | 1 | 47 | 91 | 213 | 2050 | 21 | 37.50 | 5.36 | 41.72 | 31.51 | 2.36 | 33.87 |
| 06:00-07:00 | N4_S (EXT) | 2 | 2 | 5326 | 34 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | N4_S(L) | 1 | 8 | 1063 | 46 | 2050 | 26 | 26.09 | 0.92 | 8.85 | 4.73 | 0.41 | 5.14 |
| 06:00-07:00 | N4_S(R) | 1 | 10 | 786 | 53 | 1800 | 26 | 26.38 | 1.08 | 5.63 | 5.52 | 0.48 | 5.99 |
| 06:00-07:00 | N4_S(T) | 1 | 1 | 7544 | 7 | 2050 | 28 | 25.60 | 0.14 | 0.74 | 0.71 | 0.06 | 0.77 |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

7. Bronkhorstspuit Road (R104) / Access to Savannah Estate Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) | |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|------|
| 06:00-07:00 | S EXIT | (W)2 | 1 | 27 | 236 | 1098 | 4100 | 100 | 0.16 | 0.05 | 0.04 | 0.70 | 0.00 | 0.70 |
| 06:00-07:00 | SA (E)L | 1 | 0 | 30650 | 6 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA (E)T | 1 | 70 | 29 | 2143 | 4100 | 74 | 11.72 | 39.93 | 57.04 | 99.08 | 17.52 | 116.60 | |
| 06:00-07:00 | SA (S)L | 1 | 37 | 145 | 113 | 2050 | 14 | 41.62 | 2.90 | 12.75 | 18.55 | 1.29 | 19.84 | |
| 06:00-07:00 | SA (S)R | 1 | 5 | 1630 | 16 | 2050 | 14 | 36.87 | 0.38 | 1.73 | 2.33 | 0.17 | 2.50 | |
| 06:00-07:00 | SA (W)R | 1 | 34 | 164 | 68 | 322 | 61 | 23.77 | 1.75 | 4.17 | 6.38 | 0.78 | 7.16 | |
| 06:00-07:00 | SA (W)T | 1 | 27 | 234 | 684 | 4100 | 61 | 4.64 | 8.64 | 10.47 | 12.51 | 3.77 | 16.28 | |
| 06:00-07:00 | SA EXT (E) | 1 | 17 | 427 | 700 | 4100 | 100 | 0.09 | 0.02 | 0.02 | 0.25 | 0.00 | 0.25 | |
| 06:00-07:00 | SA EXT (S)2 | 1 | 0 | 30650 | 6 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 06:00-07:00 | SA EXT (S)2 | 2 | 3 | 2609 | 68 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | |
| 06:00-07:00 | SA EXT (W) | 1 | 55 | 64 | 2256 | 4100 | 100 | 0.54 | 0.34 | 0.36 | 4.78 | 0.00 | 4.78 | |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

8. Bronkhorstspuit Road (R104) / Access to River Walk Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | R-SLNK (E) | 1 | 23 | 293 | 940 | 4100 | 100 | 0.13 | 0.03 | 0.03 | 0.48 | 0.00 | 0.48 |
| 06:00-07:00 | R-SLNK (W) | 1 | 9 | 936 | 356 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.06 | 0.00 | 0.06 |
| 06:00-07:00 | RI EXT (E) | 1 | 9 | 936 | 356 | 4100 | 100 | 0.04 | 0.00 | 0.01 | 0.06 | 0.00 | 0.06 |
| 06:00-07:00 | RI EXT (S)2 | 1 | 1 | 8286 | 22 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | RI EXT (S)2 | 2 | 20 | 351 | 409 | 2050 | 100 | 0.22 | 0.02 | 0.06 | 0.35 | 0.00 | 0.35 |
| 06:00-07:00 | RI EXT (W)2 | 1 | 52 | 72 | 2149 | 4100 | 100 | 0.50 | 7.16 | 11.07 | 4.21 | 0.33 | 4.54 |
| 06:00-07:00 | RIVER (S)L | 1 | 60 | 50 | 1231 | 2050 | 100 | 1.32 | 0.45 | 1.93 | 6.39 | 0.00 | 6.39 |
| 06:00-07:00 | RIVER (S)R | 1 | 12 | 666 | 65 | 2050 | 26 | 27.99 | 1.36 | 6.51 | 7.18 | 0.51 | 7.78 |
| 06:00-07:00 | RIVER (E)-L | 1 | 1 | 8286 | 22 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | RIVER (E)-T | 1 | 36 | 153 | 918 | 4100 | 62 | 8.25 | 12.11 | 20.76 | 29.86 | 5.25 | 35.11 |
| 06:00-07:00 | RIVER (W)-R | 1 | 83 | 8 | 409 | 981 | 49 | 32.95 | 6.23 | 19.30 | 53.14 | 3.55 | 56.69 |
| 06:00-07:00 | RIVER (W)-T | 1 | 14 | 533 | 291 | 4100 | 49 | 13.09 | 2.95 | 4.66 | 15.03 | 1.33 | 16.36 |

A1 - 2021 AM BG+DEV (Proposed Configuration) *:
D1 - 2021 AM BG+DEV (Proposed Configuration)*

9. Bronkhorstspuit Road (R104) / Class 3 Road (Access to Sammy Marks Extensions 28 to 42 Development)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|--------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C3-EXT (W) | 1 | 23 | 293 | 940 | 4100 | 100 | 0.13 | 0.03 | 0.04 | 0.48 | 0.00 | 0.48 |
| 06:00-07:00 | CLASS3 (E)TL | 1 | 6 | 1410 | 22 | 2050 | 17 | 34.34 | 0.50 | 0.79 | 2.98 | 0.22 | 3.20 |
| 06:00-07:00 | CLASS3 (E)L | 1 | 0 | Unrestricted | 0 | 2050 | 71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (E)R | 3 | 23 | 293 | 240 | 1454 | 71 | 5.13 | 2.17 | 18.72 | 4.86 | 1.04 | 5.89 |
| 06:00-07:00 | CLASS3 (E)T | 2 | 28 | 223 | 823 | 4100 | 71 | 5.14 | 8.06 | 25.56 | 16.69 | 3.41 | 20.09 |
| 06:00-07:00 | CLASS3 (N)L | 1 | 35 | 157 | 719 | 2050 | 100 | 0.47 | 0.09 | 0.66 | 1.34 | 0.00 | 1.34 |
| 06:00-07:00 | CLASS3 (N)R | 2 | 44 | 106 | 117 | 1488 | 17 | 42.38 | 3.06 | 27.38 | 19.56 | 1.36 | 20.92 |
| 06:00-07:00 | CLASS3 (N)T | 1 | 18 | 411 | 65 | 2050 | 17 | 35.80 | 1.54 | 13.74 | 9.18 | 0.68 | 9.86 |
| 06:00-07:00 | CLASS3 (S)R | 2 | 0 | -100 | 0 | 0 | 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)L | 1 | 3 | 2584 | 41 | 2050 | 58 | 10.21 | 0.48 | 0.82 | 1.63 | 0.21 | 1.85 |
| 06:00-07:00 | CLASS3 (W)R | 3 | 0 | -100 | 0 | 0 | 58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)T | 2 | 13 | 590 | 316 | 4100 | 58 | 10.89 | 3.97 | 3.42 | 13.57 | 1.76 | 15.32 |
| 06:00-07:00 | K6SK22 (E)L | 1 | 78 | 15 | 1603 | 2050 | 100 | 4.74 | 27.79 | 63.21 | 29.99 | 8.73 | 38.72 |

A1 - 2021 PM BG+DEV (Proposed Configuration) *:
D1 - 2021 PM BG+DEV (Proposed Configuration)*

1. Solomon Mahlangu Drive / Bronkhorstspuit Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)
Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | KSKK22 (E)L | 1 | 25 | 262 | 510 | 2050 | 100 | 0.29 | 0.04 | 0.09 | 0.58 | 0.00 | 0.58 |
| 06:00-07:00 | KSKK22 (E)R | 1 | 21 | 334 | 34 | 2050 | 7 | 39.33 | 0.88 | 2.54 | 5.27 | 0.39 | 5.67 |
| 06:00-07:00 | KSKK22 (E)T | 1 | 34 | 165 | 292 | 4100 | 20 | 33.38 | 6.19 | 8.87 | 38.45 | 2.73 | 41.17 |
| 06:00-07:00 | KSKK22 (N)L | 1 | 6 | 1414 | 39 | 2050 | 31 | 23.80 | 0.75 | 3.59 | 3.66 | 0.33 | 3.99 |
| 06:00-07:00 | KSKK22 (N)R | 1 | 33 | 175 | 255 | 4100 | 18 | 36.12 | 6.17 | 10.60 | 36.33 | 2.75 | 39.08 |
| 06:00-07:00 | KSKK22 (N)T | 1 | 68 | 31 | 898 | 4100 | 31 | 32.56 | 22.44 | 29.21 | 115.33 | 9.88 | 125.21 |
| 06:00-07:00 | KSKK22 (S)L | 1 | 14 | 551 | 256 | 1853 | 100 | 0.16 | 0.01 | 0.03 | 0.16 | 0.00 | 0.16 |
| 06:00-07:00 | KSKK22 (S)R | 1 | 128! | -30 | 999 | 4100 | 18 | 433.86 | 132.92 | 204.56 | 1708.82 | 31.45 | 1740.27 |
| 06:00-07:00 | KSKK22 (S)T | 1 | 121! | -26 | 1588 | 4100 | 31 | 346.55 | 176.55 | 279.35 | 2171.13 | 48.17 | 2219.30 |
| 06:00-07:00 | KSKK22 (W)L | 1 | 145! | -38 | 623 | 2050 | 20 | 588.76 | 109.15 | 334.02 | 1446.81 | 20.08 | 1466.89 |
| 06:00-07:00 | KSKK22 (W)R | 1 | 125! | -28 | 411 | 4100 | 7 | 412.30 | 52.35 | 83.02 | 668.41 | 12.88 | 681.29 |
| 06:00-07:00 | KSKK22 (W)T | 1 | 65 | 38 | 563 | 4100 | 20 | 38.33 | 14.37 | 22.75 | 85.12 | 6.28 | 91.40 |

A1 - 2021 PM BG+DEV (Proposed Configuration) *:
D1 - 2021 PM BG+DEV (Proposed Configuration)*

3. Solomon Mahlangu Drive / N4 (Southern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)
Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C2-N | 1 | 89 | 1 | 3656 | 4100 | 100 | 4.53 | 64.07 | 30.91 | 65.30 | 17.05 | 82.35 |
| 06:00-07:00 | C2-N (EXT) | 1 | 49 | 85 | 1991 | 4100 | 100 | 0.41 | 0.23 | 0.24 | 3.25 | 0.00 | 3.25 |
| 06:00-07:00 | C2-S | 1 | 132! | -32 | 2583 | 1950 | 100 | 444.20 | 368.98 | 593.63 | 4525.72 | 86.94 | 4612.66 |
| 06:00-07:00 | Ramp-C | 1 | 223! | -60 | 310 | 139 | 100 | 1002.81 | 89.62 | 53.02 | 1226.22 | 9.42 | 1235.64 |
| 06:00-07:00 | Ramp-D | 1 | 37 | 141 | 672 | 1800 | 100 | 0.60 | 0.11 | 0.08 | 1.58 | 0.00 | 1.58 |

A1 - 2021 PM BG+DEV (Proposed Configuration) *:
D1 - 2021 PM BG+DEV (Proposed Configuration)*

4. Bronkhorstspuit Road (R104) / Nellmapius Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)
Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | NEL_E (EXT) | 1 | 2 | 4513 | 40 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_E (EXT) | 2 | 73 | 23 | 1506 | 2050 | 100 | 2.42 | 1.01 | 2.32 | 14.35 | 0.00 | 14.35 |
| 06:00-07:00 | NEL_E (R) | 1 | 46! | -80 | 26 | 8 | 74 | 1435.46 | 11.37 | 38.20 | 160.07 | 0.79 | 160.86 |
| 06:00-07:00 | NEL_E (T) | 1 | 25 | 266 | 757 | 4100 | 74 | 3.16 | 4.94 | 8.52 | 9.44 | 2.09 | 11.53 |
| 06:00-07:00 | NEL_N (EXT) | 1 | 31 | 191 | 633 | 2050 | 100 | 0.39 | 0.07 | 0.20 | 0.96 | 0.00 | 0.98 |
| 06:00-07:00 | NEL_N (L) | 1 | 2 | 4513 | 40 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_N (R) | 1 | 94! | -4 | 577 | 4100 | 14 | 75.44 | 21.06 | 48.88 | 171.70 | 9.23 | 180.93 |
| 06:00-07:00 | NEL_W (EXT) | 1 | 33 | 177 | 1334 | 4100 | 100 | 0.21 | 0.08 | 0.09 | 1.11 | 0.00 | 1.11 |
| 06:00-07:00 | NEL_W (L) | 1 | 31 | 194 | 627 | 2050 | 100 | 0.39 | 0.07 | 0.35 | 0.96 | 0.00 | 0.96 |
| 06:00-07:00 | NEL_W (T) | 1 | 98! | -8 | 1506 | 2050 | 74 | 41.86 | 51.49 | 251.78 | 248.65 | 21.87 | 270.52 |

A1 - 2021 PM BG+DEV (Proposed Configuration) *:
D1 - 2021 PM BG+DEV (Proposed Configuration)*

5. Bronkhorstspuit Road (R104) / Mbeki Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)
Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | M EXIT (N) | 1 | 0 | Unrestricted | 0 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | M EXIT (W) | 1 | 8 | 976 | 343 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | MBK_E (EXT) | 1 | 6 | 1438 | 120 | 2050 | 100 | 0.05 | 0.00 | 0.02 | 0.03 | 0.00 | 0.03 |
| 06:00-07:00 | MBK_E (EXT) | 2 | 66 | 37 | 1348 | 2050 | 100 | 1.68 | 0.63 | 1.58 | 8.93 | 0.00 | 8.93 |
| 06:00-07:00 | MBK_E (R) | 1 | 32 | 179 | 435 | 1800 | 74 | 2.89 | 2.44 | 23.43 | 4.96 | 1.05 | 6.01 |
| 06:00-07:00 | MBK_E (T) | 1 | 19 | 379 | 289 | 2050 | 74 | 2.35 | 1.49 | 17.11 | 2.67 | 0.64 | 3.31 |
| 06:00-07:00 | MBK_N (EXT) | 1 | 8 | 970 | 172 | 2050 | 100 | 0.08 | 0.00 | 0.05 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | MBK_N (EXT) | 2 | 8 | 970 | 172 | 2050 | 100 | 0.08 | 0.00 | 0.03 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | MBK_N (L) | 1 | 6 | 1438 | 120 | 2050 | 100 | 0.05 | 0.00 | 0.01 | 0.03 | 0.00 | 0.03 |
| 06:00-07:00 | MBK_N (R) | 1 | 68 | 33 | 208 | 2050 | 14 | 52.13 | 6.12 | 33.51 | 42.77 | 2.72 | 45.49 |
| 06:00-07:00 | MBK_W (EXT) | 1 | 19 | 370 | 393 | 2050 | 100 | 0.21 | 0.02 | 0.19 | 0.32 | 0.00 | 0.32 |
| 06:00-07:00 | MBK_W (EXT) | 2 | 19 | 370 | 393 | 2050 | 100 | 0.21 | 0.02 | 0.06 | 0.32 | 0.00 | 0.32 |
| 06:00-07:00 | MBK_W (L) | 1 | 10 | 832 | 198 | 2050 | 100 | 0.09 | 0.01 | 0.04 | 0.07 | 0.00 | 0.07 |
| 06:00-07:00 | MBK_W (T) | 1 | 88 | 3 | 1348 | 2050 | 74 | 10.80 | 21.30 | 63.91 | 57.44 | 7.67 | 65.11 |

A1 - 2021 PM BG+DEV (Proposed Configuration) *:
D1 - 2021 PM BG+DEV (Proposed Configuration)*

6. Bronkhorstspuit Road (R104) / Lesedi Road / Access to N4 Gateway Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | BR_E(L) | 1 | 3 | 3113 | 57 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | BR_E(R) | 1 | 14 | 549 | 152 | 1800 | 60 | 5.70 | 0.97 | 9.30 | 3.42 | 0.43 | 3.85 |
| 06:00-07:00 | BR_E(T) | 1 | 26 | 246 | 576 | 4100 | 53 | 18.23 | 11.20 | 10.01 | 41.44 | 5.00 | 46.43 |
| 06:00-07:00 | BR_W (EXT) | 1 | 16 | 410 | 724 | 4100 | 100 | 0.09 | 0.02 | 0.02 | 0.27 | 0.00 | 0.27 |
| 06:00-07:00 | BR_W (L) | 1 | 3 | 2499 | 71 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | BR_W (R) | 1 | 4 | 2034 | 41 | 1800 | 53 | 5.63 | 0.37 | 2.65 | 0.91 | 0.16 | 1.07 |
| 06:00-07:00 | BR_W (T) | 1 | 54 | 66 | 1355 | 4100 | 60 | 6.40 | 14.29 | 22.64 | 34.25 | 5.93 | 40.18 |
| 06:00-07:00 | LR_N (EXT) | 1 | 11 | 695 | 232 | 2050 | 100 | 0.11 | 0.01 | 0.03 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | LR_N(R) | 1 | 12 | 675 | 46 | 1800 | 21 | 31.82 | 1.03 | 9.87 | 5.77 | 0.46 | 6.23 |
| 06:00-07:00 | LR_N (TL) | 1 | 14 | 555 | 62 | 2050 | 21 | 32.04 | 1.39 | 10.82 | 7.84 | 0.62 | 8.45 |
| 06:00-07:00 | N4_S (EXT) | 2 | 2 | 4093 | 44 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | N4_S(L) | 1 | 17 | 425 | 102 | 2050 | 28 | 27.17 | 2.11 | 20.26 | 10.93 | 0.94 | 11.87 |
| 06:00-07:00 | N4_S(R) | 1 | 22 | 305 | 116 | 1800 | 28 | 27.93 | 2.45 | 12.77 | 12.78 | 1.09 | 13.87 |
| 06:00-07:00 | N4_S(T) | 1 | 2 | 5845 | 9 | 2050 | 28 | 25.61 | 0.18 | 0.95 | 0.91 | 0.08 | 0.99 |

A1 - 2021 PM BG+DEV (Proposed Configuration) *:
D1 - 2021 PM BG+DEV (Proposed Configuration)*

7. Bronkhorstspuit Road (R104) / Access to Savannah Estate Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | S EXIT (W)2 | 1 | 20 | 360 | 803 | 4100 | 100 | 0.11 | 0.02 | 0.02 | 0.34 | 0.00 | 0.34 |
| 06:00-07:00 | SA (E)L | 1 | 0 | 30650 | 6 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA (E)T | 1 | 30 | 198 | 769 | 4100 | 61 | 5.84 | 6.10 | 8.71 | 17.73 | 2.66 | 20.39 |
| 06:00-07:00 | SA (S)L | 1 | 22 | 313 | 67 | 2050 | 14 | 38.99 | 1.65 | 7.25 | 10.30 | 0.73 | 11.04 |
| 06:00-07:00 | SA (S)R | 1 | 1 | 6819 | 4 | 2050 | 14 | 36.63 | 0.09 | 0.43 | 0.58 | 0.04 | 0.62 |
| 06:00-07:00 | SA (W)R | 1 | 10 | 839 | 73 | 1021 | 74 | 0.97 | 0.24 | 0.58 | 0.28 | 0.12 | 0.40 |
| 06:00-07:00 | SA (W)T | 1 | 43 | 112 | 1308 | 4100 | 74 | 0.84 | 2.63 | 3.12 | 4.34 | 0.90 | 5.24 |
| 06:00-07:00 | SA EXT (E) | 1 | 32 | 181 | 1312 | 4100 | 100 | 0.21 | 0.08 | 0.09 | 1.07 | 0.00 | 1.07 |
| 06:00-07:00 | SA EXT (S)2 | 1 | 0 | 30650 | 6 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA EXT (S)2 | 2 | 4 | 2413 | 73 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | SA EXT (W) | 1 | 20 | 341 | 836 | 4100 | 100 | 0.11 | 0.03 | 0.03 | 0.37 | 0.00 | 0.37 |

A1 - 2021 PM BG+DEV (Proposed Configuration) *:
D1 - 2021 PM BG+DEV (Proposed Configuration)*

8. Bronkhorstspuit Road (R104) / Access to River Walk Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | R-SLINK (E) | 1 | 8 | 976 | 343 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | R-SLINK (W) | 1 | 10 | 759 | 429 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.09 | 0.00 | 0.09 |
| 06:00-07:00 | RI EXT (E) | 1 | 10 | 759 | 429 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.09 | 0.00 | 0.09 |
| 06:00-07:00 | RI EXT (S)2 | 1 | 3 | 2975 | 60 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | RI EXT (S)2 | 2 | 44 | 103 | 908 | 2050 | 100 | 0.70 | 0.18 | 0.46 | 2.50 | 0.00 | 2.50 |
| 06:00-07:00 | RI EXT (W)2 | 1 | 19 | 376 | 775 | 4100 | 100 | 0.10 | 0.02 | 0.03 | 0.31 | 0.00 | 0.31 |
| 06:00-07:00 | RIVER (S)L | 1 | 24 | 275 | 492 | 2050 | 100 | 0.28 | 0.04 | 0.16 | 0.54 | 0.00 | 0.54 |
| 06:00-07:00 | RIVER (S)R | 1 | 7 | 1177 | 26 | 2050 | 17 | 34.44 | 0.60 | 2.88 | 3.53 | 0.27 | 3.80 |
| 06:00-07:00 | RIVER (E)-L | 1 | 3 | 2975 | 60 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | RIVER (E)-T | 1 | 19 | 369 | 283 | 4100 | 35 | 20.79 | 5.41 | 9.27 | 23.21 | 2.39 | 25.60 |
| 06:00-07:00 | RIVER (W)-R | 1 | 82 | 10 | 908 | 1544 | 71 | 9.33 | 9.34 | 28.91 | 33.41 | 5.55 | 38.96 |
| 06:00-07:00 | RIVER (W)-T | 1 | 14 | 558 | 403 | 4100 | 71 | 0.89 | 0.72 | 1.13 | 1.42 | 0.29 | 1.71 |

A1 - 2021 PM BG+DEV (Proposed Configuration) *:
D1 - 2021 PM BG+DEV (Proposed Configuration)*

9. Bronkhorstspuit Road (R104) / Class 3 Road (Access to Sammy Marks Extensions 28 to 42 Development)

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|--------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C3-EXT (N) | 1 | 40 | 125 | 820 | 2050 | 100 | 0.58 | 0.13 | 0.44 | 1.89 | 0.00 | 1.89 |
| 06:00-07:00 | C3-EXT (S) | 1 | 1 | 6996 | 26 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | C3-EXT (W) | 1 | 8 | 976 | 343 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | CLASS3 (E)TL | 1 | 17 | 444 | 61 | 2050 | 17 | 35.66 | 1.44 | 2.25 | 8.58 | 0.64 | 9.22 |
| 06:00-07:00 | CLASS3 (E)L | 1 | 0 | Unrestricted | 0 | 2050 | 71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (E)R | 3 | 65 | 38 | 671 | 1426 | 71 | 10.04 | 10.30 | 89.02 | 26.57 | 4.41 | 30.98 |
| 06:00-07:00 | CLASS3 (E)T | 2 | 10 | 801 | 295 | 4100 | 71 | 4.30 | 2.46 | 7.82 | 5.00 | 1.06 | 6.06 |
| 06:00-07:00 | CLASS3 (N)L | 1 | 11 | 709 | 228 | 2050 | 100 | 0.11 | 0.01 | 0.05 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | CLASS3 (N)R | 2 | 20 | 344 | 48 | 1315 | 17 | 39.06 | 1.19 | 10.61 | 7.39 | 0.53 | 7.92 |
| 06:00-07:00 | CLASS3 (N)T | 1 | 7 | 1177 | 26 | 2050 | 17 | 34.44 | 0.60 | 5.39 | 3.53 | 0.27 | 3.80 |
| 06:00-07:00 | CLASS3 (S)R | 2 | 0 | -100 | 0 | 0 | 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)L | 1 | 7 | 1138 | 88 | 2050 | 58 | 6.03 | 0.79 | 1.35 | 2.09 | 0.34 | 2.43 |
| 06:00-07:00 | CLASS3 (W)R | 3 | 0 | -100 | 0 | 0 | 58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)T | 2 | 14 | 537 | 342 | 4100 | 58 | 6.32 | 3.21 | 2.77 | 8.52 | 1.39 | 9.91 |

**A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)***

1. Solomon Mahlangu Drive / Bronkhorstspuit Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | KSK22 | (E)L | 82 | 9 | 1686 | 2050 | 100 | 5.18 | 32.70 | 74.37 | 34.45 | 9.18 | 43.63 |
| 06:00-07:00 | KSK22 | (E)R | 42 | 112 | 87 | 2050 | 9 | 50.00 | 2.50 | 7.17 | 17.16 | 1.12 | 18.27 |
| 06:00-07:00 | KSK22 | (E)T | 48 | 88 | 628 | 4100 | 31 | 24.43 | 14.25 | 20.40 | 60.52 | 6.31 | 66.83 |
| 06:00-07:00 | KSK22 | (N)L | 5 | 1745 | 22 | 2050 | 21 | 31.01 | 0.48 | 2.29 | 2.69 | 0.21 | 2.90 |
| 06:00-07:00 | KSK22 | (N)R | 48 | 86 | 317 | 4100 | 15 | 40.79 | 8.24 | 14.15 | 51.01 | 3.64 | 54.65 |
| 06:00-07:00 | KSK22 | (N)T | 149! | -38 | 1304 | 4100 | 21 | 584.95 | 226.92 | 295.35 | 3008.72 | 42.00 | 3050.72 |
| 06:00-07:00 | KSK22 | (S)L | 13 | 581 | 249 | 1880 | 100 | 0.15 | 0.01 | 0.03 | 0.14 | 0.00 | 0.14 |
| 06:00-07:00 | KSK22 | (S)R | 70 | 28 | 460 | 4100 | 15 | 46.12 | 12.82 | 19.73 | 83.69 | 5.71 | 89.40 |
| 06:00-07:00 | KSK22 | (S)T | 87 | 3 | 787 | 4100 | 21 | 50.54 | 23.80 | 37.66 | 156.91 | 10.56 | 167.47 |
| 06:00-07:00 | KSK22 | (W)L | 48 | 89 | 313 | 2050 | 31 | 30.43 | 6.85 | 20.95 | 37.56 | 3.04 | 40.60 |
| 06:00-07:00 | KSK22 | (W)R | 217! | -69 | 891 | 4100 | 9 | 992.58 | 252.18 | 399.94 | 3488.41 | 27.31 | 3515.73 |
| 06:00-07:00 | KSK22 | (W)T | 23 | 286 | 306 | 4100 | 31 | 26.00 | 5.98 | 9.47 | 31.39 | 2.65 | 34.04 |

**A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)***

2. Solomon Mahlangu Drive / N4 (Northern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C1-N | 1 | 107% | -16 | 2998 | 2811 | 100 | 130.08 | 177.26 | 204.42 | 1538.20 | 68.71 | 1606.91 |
| 06:00-07:00 | C1-N (EXT) | 1 | 36 | 147 | 1496 | 4100 | 100 | 0.25 | 0.10 | 0.11 | 1.49 | 0.00 | 1.49 |
| 06:00-07:00 | C1-S | 1 | 48 | 88 | 1853 | 3870 | 100 | 0.43 | 0.22 | 0.10 | 3.12 | 0.00 | 3.12 |
| 06:00-07:00 | Ramp A | 1 | 17 | 415 | 358 | 2050 | 100 | 0.19 | 0.02 | 0.01 | 0.26 | 0.00 | 0.26 |
| 06:00-07:00 | Ramp B | 1 | 4 | 2345 | 75 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |

A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)*

3. Solomon Mahlangu Drive / N4 (Southern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Am | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C2-N | 1 | 111% | -19 | 4554 | 4100 | 100 | 187.08 | 255.59 | 123.32 | 3360.83 | 161.15 | 3521.98 |
| 06:00-07:00 | C2-N (EXT) | 1 | 48 | 87 | 1970 | 4100 | 100 | 0.41 | 0.22 | 0.23 | 3.15 | 0.00 | 3.15 |
| 06:00-07:00 | C2-S | 1 | 106% | -15 | 2272 | 2154 | 100 | 106.03 | 115.28 | 185.47 | 950.21 | 64.59 | 1014.80 |
| 06:00-07:00 | Ramp-C | 1 | 124% | -28 | 187 | 150 | 100 | 387.73 | 23.43 | 13.86 | 285.99 | 6.32 | 292.31 |
| 06:00-07:00 | Ramp-D | 1 | 74 | 22 | 1324 | 1800 | 100 | 2.76 | 1.02 | 0.76 | 14.44 | 0.00 | 14.44 |

**A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)***

4. Bronkhorstspuit Road (R104) / Nellmapius Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)
Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | NEL_E (EXT) | 1 | 3 | 3381 | 53 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_E (EXT) | 2 | 45 | 98 | 930 | 2050 | 100 | 0.73 | 0.19 | 0.43 | 2.67 | 0.00 | 2.67 |
| 06:00-07:00 | NEL_E (R) | 1 | 11 | 723 | 13 | 191 | 61 | 25.46 | 0.26 | 0.87 | 1.30 | 0.12 | 1.41 |
| 06:00-07:00 | NEL_E (T) | 1 | 64 | 40 | 1631 | 4100 | 61 | 10.62 | 25.07 | 43.25 | 68.34 | 10.85 | 79.19 |
| 06:00-07:00 | NEL_N (EXT) | 1 | 13 | 599 | 264 | 2050 | 100 | 0.13 | 0.01 | 0.03 | 0.14 | 0.00 | 0.14 |
| 06:00-07:00 | NEL_N (L) | 1 | 3 | 3381 | 53 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_N (R) | 1 | 77 | 18 | 879 | 4100 | 27 | 38.05 | 23.45 | 54.43 | 131.91 | 10.42 | 142.33 |
| 06:00-07:00 | NEL_W (EXT) | 1 | 61 | 47 | 2510 | 4100 | 100 | 0.69 | 0.48 | 0.57 | 6.85 | 0.00 | 6.85 |
| 06:00-07:00 | NEL_W (L) | 1 | 12 | 635 | 251 | 2050 | 100 | 0.12 | 0.01 | 0.04 | 0.12 | 0.00 | 0.12 |
| 06:00-07:00 | NEL_W (T) | 1 | 73 | 23 | 930 | 2050 | 61 | 17.04 | 18.81 | 95.65 | 62.51 | 8.20 | 70.71 |

**A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)***

5. Bronkhorstspuit Road (R104) / Mbeki Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | M EXIT (N) | 1 | 0 | Unrestricted | 0 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | M EXIT (W) | 1 | 26 | 245 | 1070 | 4100 | 100 | 0.16 | 0.05 | 0.05 | 0.65 | 0.00 | 0.65 |
| 06:00-07:00 | MBK_E (EXT) | 1 | 13 | 607 | 261 | 2050 | 100 | 0.13 | 0.01 | 0.11 | 0.13 | 0.00 | 0.13 |
| 06:00-07:00 | MBK_E (EXT) | 2 | 44 | 103 | 911 | 2050 | 100 | 0.70 | 0.18 | 0.45 | 2.52 | 0.00 | 2.52 |
| 06:00-07:00 | MBK_E (R) | 1 | 59 | 52 | 564 | 1800 | 52 | 9.11 | 5.60 | 53.65 | 20.27 | 2.25 | 22.51 |
| 06:00-07:00 | MBK_E (T) | 1 | 45 | 100 | 490 | 2050 | 52 | 7.24 | 3.87 | 44.54 | 13.99 | 1.62 | 15.61 |
| 06:00-07:00 | MBK_N (EXT) | 1 | 4 | 2422 | 73 | 2050 | 100 | 0.03 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_N (EXT) | 2 | 4 | 2422 | 73 | 2050 | 100 | 0.03 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_N (L) | 1 | 13 | 607 | 261 | 2050 | 100 | 0.13 | 0.01 | 0.05 | 0.13 | 0.00 | 0.13 |
| 06:00-07:00 | MBK_N (R) | 1 | 88 | 3 | 664 | 2050 | 36 | 44.81 | 20.00 | 109.55 | 117.36 | 8.79 | 126.15 |
| 06:00-07:00 | MBK_W (EXT) | 1 | 40 | 124 | 822 | 2050 | 100 | 0.59 | 0.13 | 1.10 | 1.90 | 0.00 | 1.90 |
| 06:00-07:00 | MBK_W (EXT) | 2 | 40 | 124 | 822 | 2050 | 100 | 0.59 | 0.13 | 0.37 | 1.90 | 0.00 | 1.90 |
| 06:00-07:00 | MBK_W (L) | 1 | 4 | 2463 | 72 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | MBK_W (T) | 1 | 84 | 7 | 911 | 2050 | 52 | 17.07 | 21.08 | 63.26 | 61.33 | 8.41 | 69.73 |

**A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)***

6. Bronkhorstspuit Road (R104) / Lesedi Road / Access to N4 Gateway Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | BR_E(L) | 1 | 9 | 925 | 180 | 2050 | 100 | 0.08 | 0.00 | 0.03 | 0.06 | 0.00 | 0.06 |
| 06:00-07:00 | BR_E(R) | 1 | 8 | 1048 | 86 | 1800 | 60 | 5.63 | 0.53 | 5.05 | 1.91 | 0.23 | 2.14 |
| 06:00-07:00 | BR_E(T) | 1 | 42 | 116 | 922 | 4100 | 53 | 21.89 | 20.11 | 17.98 | 79.63 | 9.00 | 88.63 |
| 06:00-07:00 | BR_W (EXT) | 1 | 26 | 250 | 1054 | 4100 | 100 | 0.15 | 0.04 | 0.06 | 0.63 | 0.00 | 0.63 |
| 06:00-07:00 | BR_W (L) | 1 | 1 | 7922 | 23 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | BR_W (R) | 1 | 4 | 2264 | 37 | 1800 | 53 | 4.71 | 0.19 | 1.40 | 0.69 | 0.08 | 0.77 |
| 06:00-07:00 | BR_W (T) | 1 | 44 | 102 | 1112 | 4100 | 60 | 5.83 | 6.62 | 10.49 | 25.57 | 2.93 | 28.50 |
| 06:00-07:00 | LR_N (EXT) | 1 | 6 | 1476 | 117 | 2050 | 100 | 0.05 | 0.00 | 0.01 | 0.02 | 0.00 | 0.02 |
| 06:00-07:00 | LR_N(R) | 1 | 20 | 346 | 80 | 1800 | 21 | 33.01 | 1.83 | 17.49 | 10.42 | 0.81 | 11.23 |
| 06:00-07:00 | LR_N (TL) | 1 | 55 | 65 | 246 | 2050 | 21 | 39.33 | 6.34 | 49.36 | 38.16 | 2.82 | 40.98 |
| 06:00-07:00 | N4_S (EXT) | 2 | 2 | 4513 | 40 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | N4_S(L) | 1 | 9 | 929 | 52 | 2050 | 28 | 26.18 | 1.04 | 10.01 | 5.37 | 0.46 | 5.83 |
| 06:00-07:00 | N4_S(R) | 1 | 12 | 658 | 62 | 1800 | 28 | 26.60 | 1.27 | 6.60 | 6.51 | 0.56 | 7.07 |
| 06:00-07:00 | N4_S(T) | 1 | 1 | 6588 | 8 | 2050 | 28 | 25.60 | 0.16 | 0.84 | 0.81 | 0.07 | 0.88 |

A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)*

7. Bronkhorstspuit Road (R104) / Access to Savannah Estate Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | S EXT (W)2 | 1 | 29 | 209 | 1194 | 4100 | 100 | 0.18 | 0.06 | 0.05 | 0.85 | 0.00 | 0.85 |
| 06:00-07:00 | SA (E)L | 1 | 0 | 26257 | 7 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA (E)T | 1 | 74 | 22 | 2271 | 4100 | 74 | 6.37 | 31.98 | 45.70 | 57.09 | 13.01 | 70.11 |
| 06:00-07:00 | SA (S)L | 1 | 42 | 113 | 130 | 2050 | 14 | 42.84 | 3.40 | 14.96 | 21.97 | 1.52 | 23.49 |
| 06:00-07:00 | SA (S)R | 1 | 6 | 1357 | 19 | 2050 | 14 | 36.94 | 0.45 | 2.06 | 2.77 | 0.20 | 2.97 |
| 06:00-07:00 | SA (W)R | 1 | 74 | 21 | 77 | 216 | 47 | 51.19 | 2.61 | 6.21 | 15.47 | 1.04 | 16.51 |
| 06:00-07:00 | SA (W)T | 1 | 36 | 149 | 711 | 4100 | 47 | 4.92 | 6.04 | 7.16 | 13.81 | 2.28 | 16.09 |
| 06:00-07:00 | SA EXT (E) | 1 | 18 | 405 | 731 | 4100 | 100 | 0.10 | 0.02 | 0.02 | 0.27 | 0.00 | 0.27 |
| 06:00-07:00 | SA EXT (S)2 | 1 | 0 | 26257 | 7 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA EXT (S)2 | 2 | 4 | 2307 | 77 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | SA EXT (W) | 1 | 59 | 54 | 2401 | 4100 | 100 | 0.62 | 0.41 | 0.47 | 5.87 | 0.00 | 5.87 |

**A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)***

8. Bronkhorstspuit Road (R104) / Access to River Walk Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | R-SLINK (E) | 1 | 26 | 245 | 1070 | 4100 | 100 | 0.16 | 0.05 | 0.05 | 0.65 | 0.00 | 0.65 |
| 06:00-07:00 | R-SLINK (W) | 1 | 10 | 841 | 392 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.07 | 0.00 | 0.07 |
| 06:00-07:00 | RI EXT (E) | 1 | 10 | 841 | 392 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.07 | 0.00 | 0.07 |
| 06:00-07:00 | RI EXT (S)2 | 1 | 1 | 8286 | 22 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | RI EXT (S)2 | 2 | 20 | 357 | 404 | 2050 | 100 | 0.22 | 0.02 | 0.06 | 0.34 | 0.00 | 0.34 |
| 06:00-07:00 | RI EXT (W)2 | 1 | 56 | 62 | 2278 | 4100 | 100 | 0.55 | 0.35 | 0.54 | 4.93 | 0.00 | 4.93 |
| 06:00-07:00 | RIVER (S)L | 1 | 60 | 50 | 1230 | 2050 | 100 | 1.31 | 0.45 | 1.93 | 6.37 | 0.00 | 6.37 |
| 06:00-07:00 | RIVER (S)R | 1 | 18 | 411 | 65 | 2050 | 17 | 35.80 | 1.54 | 7.34 | 9.18 | 0.68 | 9.86 |
| 06:00-07:00 | RIVER (E)-L | 1 | 1 | 8286 | 22 | 2050 | 100 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | RIVER (E)-T | 1 | 36 | 154 | 1048 | 4100 | 71 | 5.27 | 9.65 | 16.55 | 21.79 | 4.20 | 25.99 |
| 06:00-07:00 | RIVER (W)-R | 1 | 85 | 6 | 404 | 808 | 58 | 22.65 | 12.18 | 37.72 | 36.08 | 4.21 | 40.28 |
| 06:00-07:00 | RIVER (W)-T | 1 | 14 | 566 | 327 | 4100 | 58 | 1.63 | 0.84 | 1.32 | 2.11 | 0.33 | 2.44 |

**A1 - 2026 AM BG+DEV (Proposed Configuration) *:
D1 - 2026 AM BG+DEV (Proposed Configuration)***

9. Bronkhorstspuit Road (R104) / Class 3 Road (Access to Sammy Marks Extensions 28 to 42 Development)

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|--------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C3-EXT (N) | 1 | 15 | 513 | 301 | 2050 | 100 | 0.15 | 0.01 | 0.04 | 0.18 | 0.00 | 0.18 |
| 06:00-07:00 | C3-EXT (S) | 1 | 3 | 2738 | 65 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | C3-EXT (W) | 1 | 26 | 245 | 1070 | 4100 | 100 | 0.16 | 0.05 | 0.05 | 0.65 | 0.00 | 0.65 |
| 06:00-07:00 | CLASS3 (E)TL | 1 | 6 | 1410 | 22 | 2050 | 17 | 34.34 | 0.50 | 0.79 | 2.98 | 0.22 | 3.20 |
| 06:00-07:00 | CLASS3 (E)L | 1 | 0 | Unrestricted | 0 | 2050 | 71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (E)R | 3 | 23 | 284 | 240 | 1422 | 71 | 5.16 | 2.17 | 18.74 | 4.89 | 1.04 | 5.92 |
| 06:00-07:00 | CLASS3 (E)T | 2 | 32 | 179 | 951 | 4100 | 71 | 5.40 | 9.59 | 30.41 | 20.25 | 4.13 | 24.38 |
| 06:00-07:00 | CLASS3 (N)L | 1 | 35 | 157 | 719 | 2050 | 100 | 0.47 | 0.09 | 0.66 | 1.34 | 0.00 | 1.34 |
| 06:00-07:00 | CLASS3 (N)R | 2 | 44 | 103 | 119 | 1488 | 17 | 42.59 | 3.12 | 27.90 | 19.99 | 1.39 | 21.38 |
| 06:00-07:00 | CLASS3 (N)T | 1 | 18 | 411 | 65 | 2050 | 17 | 35.80 | 1.54 | 13.74 | 9.18 | 0.68 | 9.86 |
| 06:00-07:00 | CLASS3 (S)R | 2 | 0 | -100 | 0 | 0 | 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)L | 1 | 3 | 2691 | 39 | 2050 | 58 | 6.68 | 0.40 | 0.69 | 1.03 | 0.17 | 1.20 |
| 06:00-07:00 | CLASS3 (W)R | 3 | 0 | -100 | 0 | 0 | 58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)T | 2 | 15 | 517 | 353 | 4100 | 58 | 7.29 | 4.04 | 3.48 | 10.15 | 1.75 | 11.90 |

**A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)***

1. Solomon Mahlangu Drive / Bronkhorstspuit Road
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | K6SK22 (E)L | 1 | 34 | 167 | 690 | 2050 | 100 | 0.45 | 0.09 | 0.09 | 1.21 | 0.00 | 1.21 |
| 06:00-07:00 | K6SK22 (E)R | 1 | 25 | 260 | 41 | 2050 | 7 | 38.95 | 1.07 | 3.06 | 6.30 | 0.47 | 6.77 |
| 06:00-07:00 | K6SK22 (E)T | 1 | 51 | 75 | 442 | 4100 | 20 | 35.58 | 10.00 | 14.27 | 62.03 | 4.37 | 66.40 |
| 06:00-07:00 | K6SK22 (N)L | 1 | 23 | 297 | 144 | 2050 | 30 | 26.44 | 2.99 | 14.34 | 15.02 | 1.33 | 16.35 |
| 06:00-07:00 | K6SK22 (N)R | 1 | 35 | 156 | 288 | 4100 | 19 | 35.61 | 6.97 | 11.98 | 40.45 | 3.08 | 43.53 |
| 06:00-07:00 | K6SK22 (N)T | 1 | 81 | 11 | 1026 | 4100 | 30 | 37.56 | 27.59 | 35.91 | 152.02 | 12.27 | 164.29 |
| 06:00-07:00 | K6SK22 (S)L | 1 | 14 | 559 | 253 | 1853 | 100 | 0.15 | 0.01 | 0.03 | 0.15 | 0.00 | 0.15 |
| 06:00-07:00 | K6SK22 (S)R | 1 | 128! | -30 | 1054 | 4100 | 19 | 436.06 | 141.02 | 217.03 | 1812.04 | 33.21 | 1845.25 |
| 06:00-07:00 | K6SK22 (S)T | 1 | 125! | -28 | 1595 | 4100 | 30 | 397.53 | 198.91 | 314.72 | 2501.08 | 49.65 | 2550.72 |
| 06:00-07:00 | K6SK22 (W)L | 1 | 130! | -31 | 562 | 2050 | 20 | 460.48 | 78.92 | 241.53 | 1020.00 | 17.84 | 1037.84 |
| 06:00-07:00 | K6SK22 (W)R | 1 | 114! | -21 | 373 | 4100 | 7 | 285.83 | 34.73 | 55.08 | 420.89 | 10.77 | 431.66 |
| 06:00-07:00 | K6SK22 (W)T | 1 | 69 | 30 | 598 | 4100 | 20 | 41.00 | 15.77 | 24.97 | 96.76 | 6.95 | 103.71 |

A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)*

3. Solomon Mahlangu Drive / N4 (Southern Terminal)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C2-N (EXT) | 1 | 55 | 65 | 2241 | 4100 | 100 | 0.53 | 0.33 | 0.34 | 4.68 | 0.00 | 4.68 |
| 06:00-07:00 | C2-S | 1 | 178! | -49 | 3067 | 1726 | 100 | 788.46 | 715.61 | 1151.31 | 9638.54 | 97.72 | 9636.27 |
| 06:00-07:00 | Ramp-C | 1 | 58! | -85 | 360 | 62 | 100 | 1491.16 | 150.47 | 89.02 | 2117.44 | 9.79 | 2127.23 |
| 06:00-07:00 | Ramp-D | 1 | 37 | 144 | 663 | 1800 | 100 | 0.58 | 0.11 | 0.08 | 1.53 | 0.00 | 1.53 |

**A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)***

4. Bronkhorstspuit Road (R104) / Nellmapius Road
(**BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES**)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | NEL_E (EXT) | 1 | 2 | 4000 | 45 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_E (EXT) | 2 | 65 | 38 | 1333 | 2050 | 100 | 1.62 | 0.60 | 1.38 | 8.54 | 0.00 | 8.54 |
| 06:00-07:00 | NEL_E (R) | 1 | 26 | 248 | 33 | 175 | 71 | 53.13 | 0.90 | 3.03 | 6.83 | 0.40 | 7.23 |
| 06:00-07:00 | NEL_E (T) | 1 | 31 | 194 | 902 | 4100 | 71 | 4.05 | 6.19 | 10.68 | 14.41 | 2.66 | 17.07 |
| 06:00-07:00 | NEL_N (EXT) | 1 | 36 | 147 | 747 | 2050 | 100 | 0.50 | 0.10 | 0.31 | 1.48 | 0.00 | 1.48 |
| 06:00-07:00 | NEL_N (L) | 1 | 2 | 4000 | 45 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | NEL_N (R) | 1 | 90 | 0 | 662 | 4100 | 17 | 59.14 | 21.34 | 49.52 | 154.43 | 9.45 | 163.88 |
| 06:00-07:00 | NEL_W (EXT) | 1 | 38 | 136 | 1565 | 4100 | 100 | 0.27 | 0.12 | 0.14 | 1.67 | 0.00 | 1.67 |
| 06:00-07:00 | NEL_W (L) | 1 | 35 | 158 | 714 | 2050 | 100 | 0.47 | 0.09 | 0.49 | 1.32 | 0.00 | 1.32 |
| 06:00-07:00 | NEL_W (T) | 1 | 135! | -33 | 1793 | 2050 | 64 | 478.18 | 268.33 | 1364.22 | 3381.86 | 57.28 | 3439.14 |

**A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)***

5. Bronkhorstspuit Road (R104) / Mbeki Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | M EXIT (E) | 1 | 13 | 596 | 530 | 4100 | 100 | 0.07 | 0.01 | 0.01 | 0.14 | 0.00 | 0.14 |
| 06:00-07:00 | M EXIT (N) | 1 | 0 | Unrestricted | 0 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | M EXIT (W) | 1 | 13 | 612 | 518 | 4100 | 100 | 0.06 | 0.01 | 0.01 | 0.13 | 0.00 | 0.13 |
| 06:00-07:00 | MBK_E (EXT) | 1 | 7 | 1130 | 150 | 2050 | 100 | 0.07 | 0.00 | 0.03 | 0.04 | 0.00 | 0.04 |
| 06:00-07:00 | MBK_E (EXT) | 2 | 59 | 53 | 1207 | 2050 | 100 | 1.25 | 0.42 | 1.06 | 5.96 | 0.00 | 5.96 |
| 06:00-07:00 | MBK_E (R) | 1 | 40 | 127 | 520 | 1800 | 72 | 3.78 | 3.02 | 28.95 | 7.76 | 1.33 | 9.09 |
| 06:00-07:00 | MBK_E (T) | 1 | 23 | 289 | 347 | 2050 | 72 | 3.08 | 1.86 | 21.42 | 4.21 | 0.82 | 5.03 |
| 06:00-07:00 | MBK_N (EXT) | 1 | 8 | 971 | 172 | 2050 | 100 | 0.08 | 0.00 | 0.05 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | MBK_N (EXT) | 2 | 8 | 971 | 172 | 2050 | 100 | 0.08 | 0.00 | 0.03 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | MBK_N (L) | 1 | 7 | 1130 | 150 | 2050 | 100 | 0.07 | 0.00 | 0.02 | 0.04 | 0.00 | 0.04 |
| 06:00-07:00 | MBK_N (R) | 1 | 69 | 30 | 242 | 2050 | 16 | 50.48 | 7.09 | 38.81 | 48.19 | 3.14 | 51.32 |
| 06:00-07:00 | MBK_W (EXT) | 1 | 23 | 295 | 468 | 2050 | 100 | 0.26 | 0.03 | 0.28 | 0.48 | 0.00 | 0.48 |
| 06:00-07:00 | MBK_W (EXT) | 2 | 23 | 295 | 468 | 2050 | 100 | 0.26 | 0.03 | 0.09 | 0.48 | 0.00 | 0.48 |
| 06:00-07:00 | MBK_W (L) | 1 | 8 | 979 | 171 | 2050 | 100 | 0.08 | 0.00 | 0.03 | 0.05 | 0.00 | 0.05 |
| 06:00-07:00 | MBK_W (T) | 1 | 81 | 12 | 1207 | 2050 | 72 | 6.68 | 10.31 | 30.93 | 31.78 | 3.81 | 35.59 |

**A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)***

6. Bronkhorstspuit Road (R104) / Lesedi Road / Access to N4 Gateway Street
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | BR_E (EXT) | 1 | 36 | 150 | 1473 | 4100 | 100 | 0.25 | 0.10 | 0.10 | 1.43 | 0.00 | 1.43 |
| 06:00-07:00 | BR_E(L) | 1 | 3 | 2739 | 65 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | BR_E(R) | 1 | 16 | 479 | 171 | 1900 | 60 | 5.79 | 1.07 | 10.29 | 3.90 | 0.48 | 4.38 |
| 06:00-07:00 | BR_E(T) | 1 | 31 | 187 | 694 | 4100 | 53 | 19.00 | 14.14 | 12.64 | 52.04 | 6.31 | 58.35 |
| 06:00-07:00 | BR_W (EXT) | 1 | 21 | 326 | 866 | 4100 | 100 | 0.12 | 0.03 | 0.04 | 0.40 | 0.00 | 0.40 |
| 06:00-07:00 | BR_W (L) | 1 | 3 | 2817 | 63 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | BR_W (R) | 1 | 4 | 2267 | 37 | 1800 | 53 | 6.10 | 0.28 | 2.04 | 0.89 | 0.12 | 1.01 |
| 06:00-07:00 | BR_W (T) | 1 | 50 | 79 | 1256 | 4100 | 60 | 7.29 | 11.03 | 17.47 | 36.12 | 4.72 | 40.83 |
| 06:00-07:00 | LR_N (EXT) | 1 | 12 | 653 | 245 | 2050 | 100 | 0.12 | 0.01 | 0.03 | 0.12 | 0.00 | 0.12 |
| 06:00-07:00 | LR_N(R) | 1 | 14 | 560 | 54 | 1800 | 21 | 32.12 | 1.21 | 11.60 | 6.84 | 0.54 | 7.38 |
| 06:00-07:00 | LR_N (TL) | 1 | 19 | 372 | 86 | 2050 | 21 | 32.72 | 1.96 | 15.24 | 11.10 | 0.87 | 11.97 |
| 06:00-07:00 | N4_S (EXT) | 2 | 2 | 4518 | 40 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | N4_S(L) | 1 | 20 | 363 | 118 | 2050 | 28 | 27.51 | 2.48 | 23.79 | 12.81 | 1.10 | 13.91 |
| 06:00-07:00 | N4_S(R) | 1 | 26 | 251 | 134 | 1800 | 28 | 28.43 | 2.87 | 14.98 | 15.03 | 1.28 | 16.31 |
| 06:00-07:00 | N4_S(T) | 1 | 2 | 4764 | 11 | 2050 | 28 | 25.62 | 0.22 | 1.16 | 1.11 | 0.10 | 1.21 |

**A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)***

7. Bronkhorstspuit Road (R104) / Access to Savannah Estate Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | S EXIT (W)2 | 1 | 21 | 327 | 865 | 4100 | 100 | 0.12 | 0.03 | 0.02 | 0.40 | 0.00 | 0.40 |
| 06:00-07:00 | SA (E)L | 1 | 0 | 30646 | 6 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA (E)T | 1 | 33 | 175 | 806 | 4100 | 59 | 7.60 | 7.38 | 10.55 | 24.17 | 3.25 | 27.42 |
| 06:00-07:00 | SA (S)L | 1 | 23 | 283 | 77 | 2050 | 15 | 38.36 | 1.90 | 8.34 | 11.65 | 0.84 | 12.50 |
| 06:00-07:00 | SA (S)R | 1 | 1 | 7280 | 4 | 2050 | 15 | 35.77 | 0.09 | 0.43 | 0.56 | 0.04 | 0.61 |
| 06:00-07:00 | SA (W)R | 1 | 11 | 729 | 81 | 1005 | 73 | 2.04 | 0.24 | 0.57 | 0.65 | 0.11 | 0.76 |
| 06:00-07:00 | SA (W)T | 1 | 41 | 117 | 1258 | 4100 | 73 | 2.27 | 3.92 | 4.64 | 11.26 | 1.74 | 13.00 |
| 06:00-07:00 | SA EXT (E) | 1 | 31 | 192 | 1262 | 4100 | 100 | 0.20 | 0.07 | 0.08 | 0.97 | 0.00 | 0.97 |
| 06:00-07:00 | SA EXT (S)2 | 1 | 0 | 30650 | 6 | 2050 | 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | SA EXT (S)2 | 2 | 4 | 2185 | 81 | 2050 | 100 | 0.04 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | SA EXT (W) | 1 | 22 | 318 | 883 | 4100 | 100 | 0.12 | 0.03 | 0.03 | 0.42 | 0.00 | 0.42 |

**A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)***

8. Bronkhorstspuit Road (R104) / Access to River Walk Development

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | R-SLNK (E) | 1 | 9 | 874 | 379 | 4100 | 100 | 0.04 | 0.00 | 0.00 | 0.07 | 0.00 | 0.07 |
| 06:00-07:00 | R-SLNK (W) | 1 | 11 | 728 | 446 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.09 | 0.00 | 0.09 |
| 06:00-07:00 | RI EXT (E) | 1 | 11 | 728 | 446 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.09 | 0.00 | 0.09 |
| 06:00-07:00 | RI EXT (S)2 | 1 | 3 | 2975 | 60 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | RI EXT (S)2 | 2 | 41 | 119 | 842 | 2050 | 100 | 0.61 | 0.14 | 0.37 | 2.03 | 0.00 | 2.03 |
| 06:00-07:00 | RI EXT (W)2 | 1 | 20 | 354 | 812 | 4100 | 100 | 0.11 | 0.02 | 0.04 | 0.35 | 0.00 | 0.35 |
| 06:00-07:00 | RIVER (S)L | 1 | 24 | 274 | 493 | 2050 | 100 | 0.28 | 0.04 | 0.16 | 0.54 | 0.00 | 0.54 |
| 06:00-07:00 | RIVER (S)R | 1 | 7 | 1177 | 26 | 2050 | 17 | 34.44 | 0.60 | 2.88 | 3.53 | 0.27 | 3.80 |
| 06:00-07:00 | RIVER (E)-L | 1 | 3 | 2975 | 60 | 2050 | 100 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 |
| 06:00-07:00 | RIVER (E)-T | 1 | 22 | 305 | 319 | 4100 | 34 | 21.35 | 6.19 | 10.61 | 26.86 | 2.73 | 29.59 |
| 06:00-07:00 | RIVER (W)-R | 1 | 77 | 17 | 842 | 1520 | 71 | 10.39 | 12.41 | 38.43 | 34.51 | 7.36 | 41.87 |
| 06:00-07:00 | RIVER (W)-T | 1 | 14 | 533 | 420 | 4100 | 71 | 1.78 | 1.49 | 2.35 | 2.94 | 0.65 | 3.59 |

**A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)***

9. Bronkhorstspuit Road (R104) / Class 3 Road (Access to Sammy Marks Extensions 28 to 42 Development)

(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s (per cycle)) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|--------------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | C3-EXT (E) | 2 | 10 | 773 | 423 | 4100 | 100 | 0.05 | 0.01 | 0.01 | 0.08 | 0.00 | 0.08 |
| 06:00-07:00 | C3-EXT (N) | 1 | 40 | 126 | 618 | 2050 | 100 | 0.58 | 0.13 | 0.44 | 1.88 | 0.00 | 1.88 |
| 06:00-07:00 | C3-EXT (S) | 1 | 2 | 3754 | 48 | 2050 | 100 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | C3-EXT (W) | 1 | 13 | 612 | 518 | 4100 | 100 | 0.06 | 0.01 | 0.01 | 0.13 | 0.00 | 0.13 |
| 06:00-07:00 | CLASS3 (E)TL | 1 | 34 | 164 | 126 | 2050 | 17 | 38.36 | 3.13 | 4.91 | 19.06 | 1.39 | 20.46 |
| 06:00-07:00 | CLASS3 (E)L | 1 | 0 | Unrestricted | 0 | 2050 | 71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (E)R | 3 | 66 | 32 | 671 | 1366 | 71 | 10.94 | 10.97 | 94.79 | 28.95 | 4.71 | 33.66 |
| 06:00-07:00 | CLASS3 (E)T | 2 | 14 | 554 | 406 | 4100 | 71 | 4.45 | 3.51 | 11.13 | 7.13 | 1.49 | 8.62 |
| 06:00-07:00 | CLASS3 (N)L | 1 | 11 | 709 | 228 | 2050 | 100 | 0.11 | 0.01 | 0.05 | 0.10 | 0.00 | 0.10 |
| 06:00-07:00 | CLASS3 (N)R | 2 | 25 | 256 | 47 | 1032 | 17 | 42.96 | 1.22 | 10.90 | 7.96 | 0.54 | 8.51 |
| 06:00-07:00 | CLASS3 (N)T | 1 | 7 | 1177 | 26 | 2050 | 17 | 34.44 | 0.60 | 5.39 | 3.53 | 0.27 | 3.80 |
| 06:00-07:00 | CLASS3 (S)R | 2 | 0 | -100 | 0 | 0 | 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 06:00-07:00 | CLASS3 (W)L | 1 | 7 | 1170 | 86 | 2050 | 58 | 8.64 | 0.96 | 1.65 | 2.92 | 0.42 | 3.34 |
| 06:00-07:00 | CLASS3 (W)R | 3 | 2 | 4269 | 22 | 1800 | 58 | 8.34 | 0.24 | 0.42 | 0.72 | 0.11 | 0.83 |
| 06:00-07:00 | CLASS3 (W)T | 2 | 17 | 415 | 423 | 4100 | 58 | 9.23 | 5.09 | 4.38 | 15.39 | 2.24 | 17.63 |

**A1 - 2026 PM BG+DEV (Proposed Configuration) *:
D1 - 2026 PM BG+DEV (Proposed Configuration)***

10. Class 3 Road (Access to River Walk Development)
(BACKGROUND AND DEVELOPMENT TRAFFIC VOLUMES)

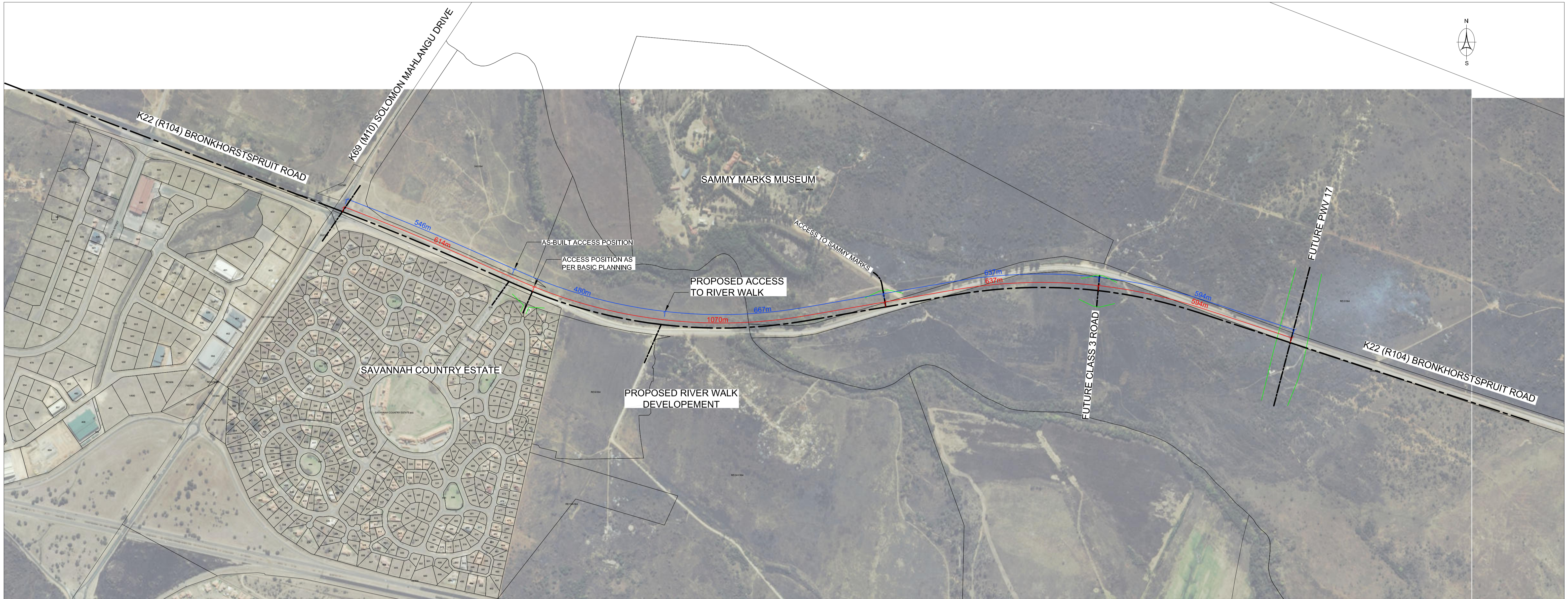
Traffic Stream Results

Traffic Stream Results: Vehicle Summary

| Time Segment | Arm | Traffic Stream | Degree Of Saturation (%) | Practical Reserve Capacity (%) | Calculated Flow Entering (PCU/hr) | Calculated Sat Flow (PCU/hr) | Actual Green (s per cycle) | Mean Delay Per Veh (s) | Mean Max Queue (PCU) | Utilised Storage (%) | Weighted Cost Of Delay (£ per hr) | Weighted Cost Of Stops (£ per hr) | Performance Index (£ per hr) |
|--------------|-----------|----------------|--------------------------|--------------------------------|-----------------------------------|------------------------------|----------------------------|------------------------|----------------------|----------------------|-----------------------------------|-----------------------------------|------------------------------|
| 06:00-07:00 | N-N (EXT) | 1 | 6 | 1364 | 126 | 2050 | 100 | 0.06 | 0.00 | 0.00 | 0.03 | 0.00 | 0.03 |
| 06:00-07:00 | N-N(T) | 1 | 5 | 1831 | 48 | 1027 | 100 | 0.09 | 0.00 | 0.00 | 0.02 | 0.00 | 0.02 |
| 06:00-07:00 | N-S (EXT) | 1 | 21 | 333 | 426 | 2050 | 100 | 0.23 | 0.03 | 0.09 | 0.39 | 0.00 | 0.39 |
| 06:00-07:00 | N-S(L) | 1 | 38 | 135 | 784 | 2050 | 100 | 0.54 | 0.12 | 1.13 | 1.68 | 0.00 | 1.68 |
| 06:00-07:00 | N-S(T) | 1 | 11 | 744 | 126 | 1181 | 100 | 0.18 | 0.01 | 0.03 | 0.09 | 0.00 | 0.09 |
| 06:00-07:00 | N-W (EXT) | 1 | 38 | 135 | 784 | 2050 | 100 | 0.54 | 0.12 | 0.30 | 1.68 | 0.00 | 1.68 |
| 06:00-07:00 | N-W(T) | 1 | 22 | 314 | 378 | 1741 | 100 | 0.29 | 0.03 | 0.12 | 0.43 | 0.00 | 0.43 |

ANNEXURE G

ACCESS SPACING LAYOUT PLAN



LEGEND:
- XXXm - SPACING AS PER BASIC PLANNING (ORIGINAL)
- XXXm - SPACING PROPOSED (CIVIL CONCEPTS)

**RIVER WALK DEVELOPEMENT
PROPOSED NEW ACCESS ON K22 BRONKHORSTSPRUIT ROAD**



DATE
2016/01/27
SCALE
NTS

ANNEXURE H

LETTER FROM SANRAL: AN APPROVAL FOR THE TRAFFIC ASPECTS STUDY

Northern Region
38 Ida Street, Menlo Park, Pretoria
Private Bag X17, Lynnwood Ridge, South Africa, 0040
Tel +27 (0) 12 426 6200 Fax +27 (0) 12 348 1680 / 1512 / 0883
Head Office Tel + 27 (0) 12 426-6000 Fax + 27 (0) 12 362 2101 / 2116 / 2117

Reference: N11/2/3-R104/1-3 **Fax Number:** +27 (0) 12 348-1512
Date: 13 April 2016 **Direct Line:** +27 (0) 12 426-6213
Contact Person: Izak van der Linde **Website:** www.nra.co.za
Email: vdlindei@nra.co.za

Creating
wealth through
infrastructure

Civil Concepts
Consulting Civil and Structural Engineers
PO Box 36148
Menlo Park
0102

Attention: MM Gounden

**PROPOSED MIXED USE DEVELOPMENT ON PORTION OF THE FARM
ZWARTKOPPIES 364JR (RIVER WALK): TRAFFIC ASPECTS STUDY**

Your letter C2142/01TAS dated 11 February 2016 together with the Traffic Aspects Study dated February 2016 refers.

The South African National Roads Agency SOC Limited (SANRAL) hereby, in principle, agrees with the contents and recommendation of the mentioned report subject to the following:

- A detailed traffic impact assessment (TIA) analyzing background-, development-, as well as latent right trips must be submitted to SANRAL for consideration and approval. Such traffic study should also make proposals on road upgrades required to mitigate the full impact of estimated traffic to be generated by the proposed development.
- Alignment with the City of Tshwane roads master plan must be ensured and proof thereof must be submitted together with the mentioned TIA.
- The approval of the Gauteng Department of Roads and Transport must also be obtained in terms of proposed K22 which falls under its jurisdiction and which preliminary design will have to be amended in order to accommodate the requested access.

Yours sincerely



For THE REGIONAL MANAGER: NORTHERN REGION

ANNEXURE I

N4 INTERCHANGE IMPROVEMENT

PLAN



LEGEND:

— REVISED ALIGNMENT

— ORIGINAL ALIGNMENT

| No. | DATE | REVISION | CONSULT. ENG. |
|-----|------|----------|---------------|
| | | | |
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SSI
A DHV COMPANY

Linking People
Promoting Growth

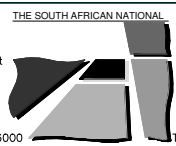
Fountain Square
78 Kalkoen Street
Monument Park Ext 2
Email : pretoria@ssi.co.za

P O Box 25302
Monument Park, 0105
Tel : 012-367 5800
Fax : 012-367 5890

| DESIGNED BY | | APPROVED | |
|----------------|--------------|-----------------------------|----------|
| NAME | C NHLANGOTHE | Name: | V MSIPA |
| Prof. Reg. No. | | Prof. Reg. No.: | 20000086 |
| CHECKED BY | | CONSTRUCTION RECORD DRAWING | |
| NAME | V MSIPA | Name: | |
| Prof. Reg. No. | 20000086 | Prof. Reg. No.: | |
| | | Date: | |

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NORTHERN REGION
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Lynnwood Ridge
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ACCEPTANCE
THIS ACCEPTANCE IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OR LIABILITY OF ANY KIND FROM WHATEVER CAUSE OR HOWSOEVER ARISING

For CEO: SA NATIONAL ROADS AGENCY LTD
Date:

HANS STRUDOM (M10) AND N4/1 INTERSECTION

PROPOSED INTERCHANGE LAYOUT
SCHEME 2: RAMP F & RAMP H

SCALE : SHEET OF

| PROJECT NUMBER | START | | END | |
|------------------------|---------------|--|----------------|---------|
| | ROUTE SECTION | | | |
| DRAWING km DISTANCE | | | | |
| DRAWING TYPE | | | | |
| BRIDGE/STRUCTURE No. | | | | |
| CONSULTANT DRAWING No. | | | JNB358/N4.L002 | VER 0.0 |
| SANRAL DOC | | | | |

Appendix 5: Construction Method Statement



Date: 10 August 2016

RIVERWALK DEVELOPMENT
METHOD STATEMENT: ELECTRICAL WORKS DESCRIPTION FOR WULA

1. **INTRODUCTION**

- 1.1 This statement is a preliminary electrical method statement and entails current information available for the provision of electrical engineering services for the abovementioned development.
- 1.2 This statement is based on information of standards and existing services as received from City of Tshwane Energy & Electricity Department.

2. **LOCATION**

The site is situated on a part of the Remainder of portion 6, of the farm Zwartkoppies 364-JR.

3. **EXTENT OF DEVELOPMENT**

The abovementioned development first phase shall consist of:

- 1360 x Residential Units,
- Clubhouse
- Gatehouse

4. **AVAILABILITY OF BULK ELECTRICAL SUPPLY**

The City of Tshwane Energy & Electricity Department has confirmed that capacity can be made available for the abovementioned development.

5. **EXISTING INFRASTRUCTURE**

There are existing overhead 11kV lines on the property. The existing electrical overhead lines shall be relocated or removed as construction of the development progresses.

6. **ELECTRICAL INFRASTRUCTURE**

There is an existing 11kV network in the vicinity of the Riverwalk development supplying Savannah estate.

The Riverwalk Development will be supplied with a new 11kV network and will be cut in from the existing 11kV network at the Savannah estate 11kV 4-Way Switch (T4) to the Riverwalk Development within a registered servitude provided for the external services.

Construction for the electrical cable will entail 1.0m x 0.8m cable trenching that will be back-filled as per Tshwane specification from Savannah estate 11kV 4-Way Switch (T4) to the Riverwalk Development.

2 x 70mm² or 150mm² 11kV armoured 3-Core, PILC, stranded copper cable as per Tshwane specification will be cut in from the Savannah estate T4 to the Riverwalk Development. The 11kV cables will be terminated within an 11kV SF6 type 3-Way Switch (T3) complete with enclosure and all accessories as per Tshwane specification situated on the Erf boundary for the first phase.

A 11kV SF6 type Metering RMU for a Bulk Electrical supply will be provided on the Erf boundary next to the 3-Way Switch within a registered servitude allocated for electrical services.

Miniature substations will be installed inside the development to transfer the voltage from 11kV to 400V, and will supply the kiosks at the units. Miniature substations will be placed within the development as per the electrical design.


12.2m Street light poles with a 1m single overhang and with luminaries at 10.5 mounting height will be installed alongside new constructed roads and existing roads where lighting standards are not met.

7. **DESIGN STANDARDS AND SPECIFICATIONS**

The following Tshwane Energy and Electricity's specifications are relevant:

| Number | Description |
|---------------|---|
| ESSS0013 | Specification for the secondary power distribution system: General |
| ESSS0006 | Specification for the secondary power distribution system for the installation of mini-substations |
| ESSS0007 | Specification for the secondary power distribution system for excavations, installation of sleeves, laying of cables and backfilling of cable trenches |
| ESSS0008 | Specification for the secondary power distribution system for the jointing and connection of cables |
| ESSS0009 | Specification for the secondary power distribution system for the installation of low tension meter- and distribution boxes |
| ESSS0010 | Specification for the secondary power distribution system for the installation of streetlight poles, streetlight fittings, photo cells and the connection of streetlight cables |
| ESSS0011 | Specification for the secondary power distribution system for inspection and testing |
| ESSS0014 | Specification for the secondary power distribution system for the installation of an 11kV ring main unit for outdoor use(T3/T4) |
| ESSS0015 | Specification for the secondary power distribution system for the installation of an 11kV satellite substation. |
| ESSS0016 | Specification for the secondary power distribution system for the installation of an earthing installation |
| ESSS0017 | Specification for the Erection of an 11kV overhead line |

Regards,



DJJC CONSULTING ENGINEERS



RIVERWALK - WULA
RIVERWALK BOULEVARD ROAD
BRIDGE
METHOD STATEMENT
C2142/WRA/001
MAY 2016



CIVIL CONCEPTS CONSULTING ENGINEERS, Civil Concepts (Pty) Ltd, 50 15th Street, Menlo Park, Pretoria, PO Box 36148, Menlo Park, Pretoria, 0102 Tel: 012 460 0008, Fax 012 460 0005, Email: Mail@civilconcepts.co.za

CIVILS

RIVERWALK BOULEVARD BRIDGE - DESCRIPTION OF WORKS FOR WULA

1. PROPOSED NEW CULVERT BRIDGE

The components of the activities include for:

- Temporary deviation of water course;
- Preparation of embankment footprints and bedding for culvert construction and other hydraulic structures;
- Option 1: Construction of 7/ 4000 x 1500mm Precast Rectangular Portal Frame Culverts, or
- Option 2: Construction of 27/1500 mm dia Precast Pipe Culverts;
- Imported filling;
- Embankment protection;
- Erosion control and protection;
- Rehabilitation and reinstatement to original state, and
- An existing temporary crossing will be utilised for transportation and traffic to cross the natural water course.

1.1 Temporary deviation of water course

The natural water course is a non - perennial water course with a fairly large flow volume, thus temporary deviation thereof will be required during construction to allow a workable construction area and prevent unnecessary environmental damage to the surrounding area. All work will be done during the dry season to facilitate water management.

Temporary deviation will entail:

- Construction of a structure diverting the flow to the eastern side of the water course using sandbags;
- The water will be diverted, to allow a workable area on the western side;
- No excavation will be done on the diverting channel but this will be formed using sandbags or other geo-fabric or material, and
- All temporary construction materials will be removed from site once construction is completed, the site backfilled, topsoiled and grassed including non-degradable fabric such as MatMacR or similar.

1.2 Preparation of footprints and bedding

According to geotechnical information available in-situ conditions are poor and it is not advisable to use in-situ conditions as is for construction purposes. Preparation therefor entails:

- Clearing and grubbing of topsoil and vegetation to a depth of 150mm, for a width of 50m wide, over a length of approximately 100m. The total affected area will be approximately 5 000m²;
- Topsoil will be conserved for use during rehabilitation and on embankment slopes;
- Excavation of the footing by means of a backhoe excavator, and spoiling material to designated spoil site. Footing width plus 500mm for working space;
- Trench bottom will be compacted to 90% MDD before construction of rockfill layer;
- Rockfill layer of imported dump rock to be construction to a minimum thickness of 600mm in accordance with SABS 1200 D;
- Construction of bedding material compacted to 90% MDD, bedding and blanket material will be imported, and

- Final layer stability to be approved by engineer to ensure no displacement of material if loaded.

1.3 Option 1: Construction of Rectangular Culverts; or

Option 1 includes for installation of rectangular culverts, and will be done after deviation of the water course. It will entail the following:

- Construction and casting of a 300mm thick concrete invert slab, Class 30/19 MPa concrete, on a 50mm concrete blinding layer. Including all construction, saw cut and other jointing;
- Installation of 7/ 4000 x 1500mm Precast Rectangular Portal Frame Culverts consisting of 20 units each, adding up to 140 units in total;
- Sealing of joints with bituminous product or similar approved;
- Culverts to be backfilled with soil cement mixture on sides and as indicated in detailed drawings;
- Layer works will continue for road building purposes;
- Culverts will be Class 75S, complying with the requirements of SABS 986:1994;
- Construction of inlet and outlet structures from reinforced concrete, with rip-rap boulder placement downstream. Including all construction, saw cut and other jointing;
- Construction done according to City of Tshwane Metropolitan Municipality specifications and SABS 1200, and
- Refer to Drawings C2142-M910-294, C2142-M910-296 and C2142-M910-298 for more details.

1.4 Option 2: Construction of Pipe Culverts

Option 2 includes for installation of pipe culverts, and will be done after deviation of the water course. It will entail the following:

- Construction of 200mm thick, Class C Bedding with approved granular bedding material;
- Installation of 27/ 1500mm Precast Pipe Culverts consisting of 10 units each, adding up to 270 units in total;
- Sealing of joints with bituminous product or similar approved;
- Culverts to be backfilled with soil cement mixture on sides and as indicated in detailed drawings;
- Layer works will continue for road building purposes;
- Culverts will be Class 50D, complying with the requirements of SANS 677;
- Construction of inlet and outlet structures from reinforced concrete with rip-rap boulder placement downstream. Including all construction, saw cut and other jointing;
- Construction done according to City of Tshwane Metropolitan Municipality specifications and SABS 1200, and
- Refer to Drawings C2142-M910-295, C2142-M910-297 and C2142-M910-299 for more details.

1.5 Imported filling

After confirmation of rock fill layer stability and construction of the culverts, the remainder of the embankment filling will be constructed by imported fill material, minimum G7, compacted to 90% MDD. In accordance with SABS 1200 D specifications.

The final bulk earthworks will suffice for the planned road construction to be done afterwards. Road layer works will be done as specified in Drawing C2142-M910-295.

1.6 Embankment Protection

Side slopes to be constructed:

- At 1:2 to 1:3 side slopes;
- Topsoiled with material from site stockpile and/or commercial sources;
- Hydroseeded to environmental consultant specifications, and
- Additional erosion control will also be implemented as required in the form of non-degradable erosion protection on side slopes.

1.7 Erosion control and protection

Culverts will function under inlet control to protect upstream side of the bridge. At the downstream side of the bridge a hydraulic stilling basin will be constructed by introducing a step with concrete toe and invert slab as well as rip-rap boulder placement. The outlet structure will be 10m long in total with a 10m concrete outlet and rip-rap protection thereafter. Expected velocity at the outlet will be 5.9 m/s with a Froude Number of 2.8, after the stilling basing the expected velocity will be 2.4 m/s with a Froude Number of 0.5.

Construction will entail excavation of the footing, rockfill or compaction of in-situ material to 90% MDD, casting of concrete invert slabs with Class 25/19 MPa concrete.

Downstream of the gabion structure the stream will daylight to natural water course. Additional erosion protection will be implemented by means of rip-rap which has proven very successful on similar projects. Also refer to Section 1.8 Rehabilitation and Reinstatement.

1.8 Rehabilitation and Reinstatement

After completion of construction as specified above the site will be reinstated in accordance with the EMP. All disturbed areas will be rehabilitated and construction material removed from site.

2. CONSTRUCTION ACCESS

An existing low water bridge stream crossing exists along a gravel roadway. The existing stream crossing will be utilised to allow construction vehicles to cross. This crossing will be utilised during the construction of the road bridge.

Please refer to photos below of the existing conditions of the low water bridge.



3. RIVERWALK BOULEVARD ROAD CONSTRUCTION

After completion of the bulk earthworks and construction of the culvert bridge a new municipal Class 4a roadway will be constructed over the earth embankment. The roadway will consist of two 7.4m wide carriageways in a 32m wide road reserve with a crossfall of 3%.

Construction of layer works will be done as follows:

- 30mm Continuously graded Medium grade Asphalt
- 150mm Imported graded Crushed stone Base (G1) – Compacted to 88% Apparent Density
- 150mm Imported Sub-base (G5) stabilised with 3% cement to C4 – Compacted to 95% MDD
- 150mm In-situ selected upper Sub-grade (G7) – Compacted to 95% MDD
- 150mm In-situ selected Sub-grade (G7) – Compacted to 93% MDD
- 300mm Rockfill, process and compact as and when required to 90% MDD.
- 150mm In-situ Roadbed (G9) – Rip and Recompacted to 90% MDD

The bridge crossing will be constructed according to City of Tshwane Metropolitan Municipality specifications including all kerbs, danger and warning signs and balustrades. For more information on the roadway to be constructed refer to Drawings G2142-M910-295 and G2142-M910-296.

4. POSITIONING OF NEW BRIDGE

The new culvert bridge to be constructed will be located at the following coordinates:

Y – Coordinate = 61 505.570

X – Coordinate = 2 850 727.220

We trust the above will be favorably considered.

Yours Faithfully



Werner Stander
PrEng (20060017)
For Civil Concepts (Pty) Ltd



Hannes Welman
Civil Engineer
For Civil Concepts (Pty) Ltd



RIVERWALK - WULA
SEWERS INSIDE FLOODLINES
PROJECT DESCRIPTION
C2142/WRA/003
MAY 2016



CIVIL CONCEPTS CONSULTING ENGINEERS, Civil Concepts (Pty) Ltd, 50 15th Street, Menlo Park, Pretoria, PO Box 36148, Menlo Park, Pretoria, 0102 Tel: 012 460 0008, Fax 012 460 0005, Email: Mail@civilconcepts.co.za

CIVILS

PROJECT OVERVIEW

River Walk, entails a new development consisting of 6000 Res 3 units, a Retail Park with a floor space of 1.3 ha and a school with a floor space of 1.847 ha.

An existing municipal outfall sewer needs to be upgraded to a 675 mm Class 50D spigot and socket concrete pipe with a sacrificial layer to the requirements of SANS 677. The new pipe will be installed parallel to the existing pipe in the same servitude.

This municipal outfall sewer is part of the Baviaanspoort drainage area and forms part of the City of Tshwane's Master Plan.

The new sewer network servicing the proposed development will connect to the existing bulk sewer line inside of the floodline at some points, it will also connect to the upgraded section at some points as indicated in drawing C2142-000-004 attached to this document.

Refer to Plan C2142-WULA-001 for conceptual layout.

1. PROPOSED NEW RIVER WALK OUTFALL SEWER

The sewer pipes will be constructed as follows:

- The construction of a 940 m long 675 mm \varnothing outfall sewer pipeline and will have a total of 40 manholes. The sewer line and manholes will be positioned outside the 1:100 year flood line. For the majority it will follow, except for four crossings, the wetland boundary.
- The outfall sewer pipeline will be Class 50D spigot and socket concrete pipe with a sacrificial layer.
- The sewer connections will be solid uPVC wall Class 400, and have water tight seals at joints.
- The pipe will be back filled with in situ material and every 50 m will be provided with a 1.0 m section of 19.0 mm stone to allow subsurface water flow towards the wetland.
- An 8 m strip clearing will be done where construction activity will take place.
- At the construction stage, topsoil to a depth of 150mm will be removed and stockpiled at the designated areas and reinstated after the pipeline is installed.
- Excavation of trenches will be done with a backhoe excavator and material will be stockpiled at designated areas where it does not impact the flow of the watercourse.
- Bedding and blanket material will be imported from commercial sources.
- Backfill material will be from trench excavations which has been temporarily stockpiled. Excess material (spoil) will be carted off site to suitable dumping sites.
- Special filling and blanket will be required in clayey area to absorb any movement due to clay conditions. In addition concrete anchor blocks will be provided at 10 m intervals to avoid any flotation of pipes.
- The work will be in accordance with City of Tshwane Standards.
- Watertight manholes will be used in the floodline for the outfall sewer as well as all connections.

Also refer to detail on Plan C2142-WULA-001.

We trust the above will be favorably considered.

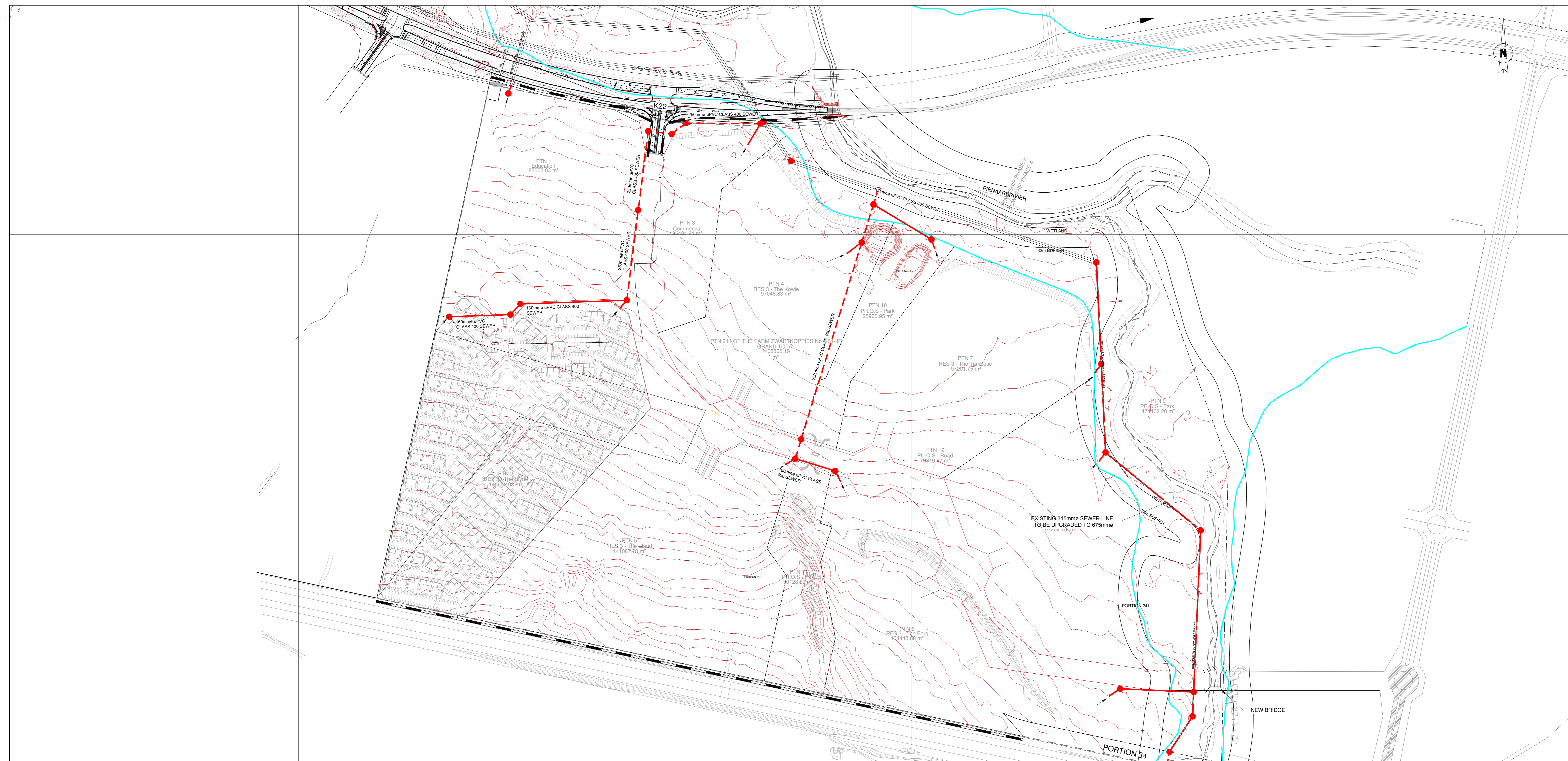
Yours Faithfully



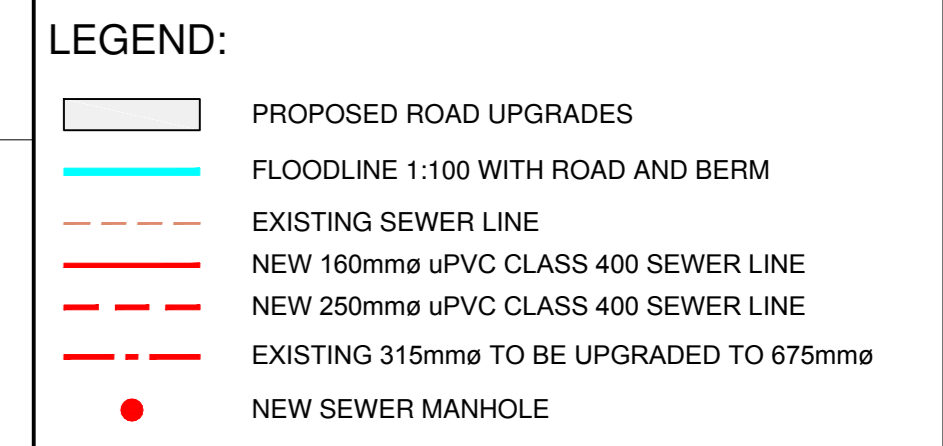
Werner Stander
PrEng (20060017)
For Civil Concepts (Pty) Ltd



Jean Botes
For Civil Concepts (Pty) Ltd



- ### NOTES AND SPECIFICATIONS
- ALL BELLMOUTH RADI TO BE 10m UNLESS OTHERWISE SHOWN.
 - ALL ROADS TO BE PROVIDED WITH KERB EDGING ACCORDING TO TYPICAL DETAILS AND LEGEND BELOW.
 - P.I. CO-ORDINATES AND RADI INDICATED ARE ON THE CENTERLINE OF THE ROAD
 - ROAD CLASSIFICATION:
 7.4m ROAD: ROAD CLASS 4, CATEGORY UC, CLASSIFICATION E1
 5.8m ROAD: ROAD CLASS 5B, CATEGORY UC, CLASSIFICATION E2
 4.5m ROAD: ROAD CLASS 5B, CATEGORY UC, CLASSIFICATION E3
 - ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS SPECIFICATION.
 - ALL DIMENSIONS ARE IN METERS. (UNLESS OTHERWISE SPECIFIED)
 - DO NOT SCALE FROM THESE DRAWINGS.
 - ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
 - ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD CTM DETAIL DRAWINGS.
 - THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS. (IF APPLICABLE)
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
 - THE SIGNATURE OR INITIALS ON THIS DRAWING, OF ANY MANAGER OF THE TRANSPORT AND ROADS DEPARTMENT, IN NO WAY RELEASES ANY RESPONSIBILITY WORKING FROM THE CONSULTANT.
 - THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE TRANSPORT AND ROADS DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
 - ALL LEVELS OF EXISTING SERVICES ARE TO BE CHECKED AND VERIFIED ON SITE AND IS SUBMITTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF THE CONSTRUCTION.



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| DEVELOPER DETAIL Balwin PROPERTIES | ARCHITECTS DETAIL VTC Architecture www.vtcgroup.biz |
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| NO. | DATE | APPROVED | DESCRIPTION | PAK. |
|-----|------|----------|-------------|------|
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|---------------------------------|---|
| DESIGNED BY W. STANDER | DRAWN BY R. WILMERS |
| DESIGN CHECKED BY W. STANDER | INFRASTRUCTURE TECHNICAL INFORMATION MANAGER D.J. CHALMERS |

PROJECT STATUS

| | | | |
|---------|--------|--------------|-------------|
| CONCEPT | DESIGN | CONSTRUCTION | OPERATIONAL |
| ● | ○ | ○ | ○ |

PROJECT ENGINEER (CONSULTANT):
 DETAILS AND SIGNATURE: _____ SIGNATURE AND P. No. _____ DATE _____
 SUPERVISOR OF WORKS (CITY OF TSHWANE):
 DETAILS AND SIGNATURE: _____ SIGNATURE AND P. No. _____ DATE _____

CONSULTANT DETAIL

CIVIL CONCEPTS
 CONSULTING CIVIL AND STRUCTURAL ENGINEERS
 P.O. BOX 36148 Menlo Park 0102
 Tel: (012) 460-0008
 Fax: (012) 460-0005
 E-Mail: mail@civilconcepts.co.za

CITY OF TSHWANE TRANSPORT DEPARTMENT

M. P. Lefebvre
STRATEGIC EXECUTIVE DIRECTOR
P.O. BOX 409
PRETORIA 0001

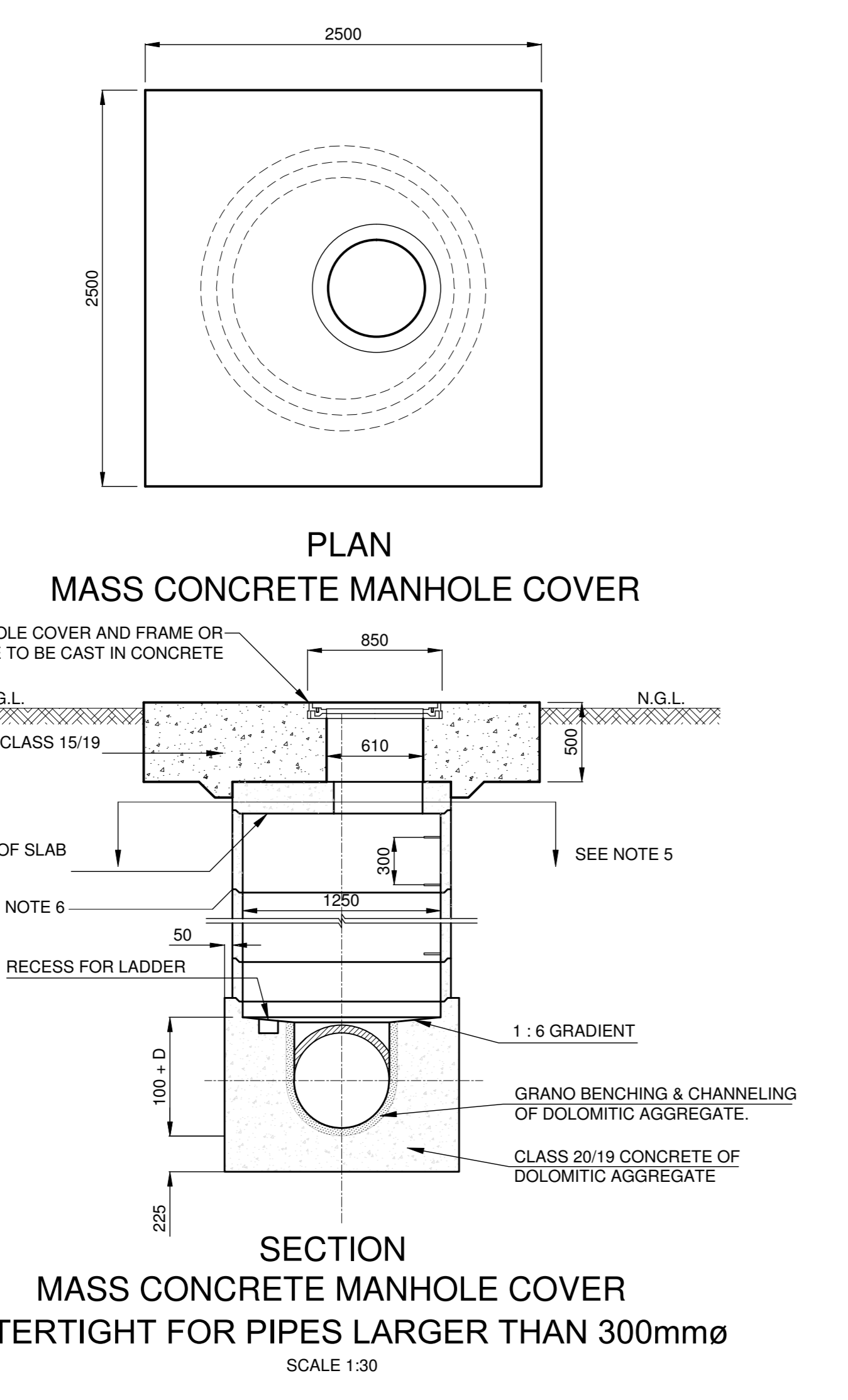
M. L. V. Kgogole
EXECUTIVE DIRECTOR
P.O. BOX 1409
PRETORIA 0001

DRAWING APPROVED BY EXECUTIVE DIRECTOR
M. L. V. Kgogole (P/N)

LOCATION OF PROJECT
RIVERWALK PORTION 241 OF THE FARM ZWARTKOPPIES No. 364-JR

DESCRIPTION OF PROJECT
SEWER LAYOUT

| | |
|------------------|----------------|
| CONTRACT No.: | PROJECT No.: |
| DATE: APRIL_2016 | SCALE: 1:10000 |
| DRAWING NO.: | SHEET NO.: |
| C2142-WULA-001 | A0 |





RIVERWALK - WULA
STORMWATER OUTLETS
PROJECT DESCRIPTION
C2142/WRA/004
MAY 2016



CIVIL CONCEPTS CONSULTING ENGINEERS, Civil Concepts (Pty) Ltd, 50 15th Street, Menlo Park, Pretoria, PO Box 36148, Menlo Park, Pretoria, 0102 Tel: 012 460 0008, Fax 012 460 0005, Email: Mail@civilconcepts.co.za

CIVILS

PROJECT OVERVIEW

River Walk, entails a new development consisting of 6000 Res 3 units, a Retail Park with a floor space of 1.3 ha and a school with a floor space of 1.847 ha.

A new stormwater network needs to be constructed in order to route the post development stormwater runoff of the development to the flood line on the Northern boundary of the development. There will be multiple outlet structures daylighting where necessary for each phase of the development with energy dissipation measures at each outlet to the natural stream.

Outlets from upstream developments discharging onto the proposed development also needs to be collected with new stormwater pipes that will discharge into the flood line of the Pienaars River.

The entire stormwater network will be handed over to City of Tshwane of which maintenance becomes their responsibility. Service agreements have been reached with the city and are available on request. This confirms the approval and availability of services.

Refer to Plan C2142-WULA-002 for conceptual layout.

RIVER WALK - DESCRIPTION OF WORKS FOR THE WULA

1. PROPOSED NEW OUTLET STRUCTURES

The outlet structure will be constructed as follows:

- Excavate for outlet structure;
- Rockfill or compaction of in-situ material to 90% MOD AASHTO density;
- Cast in-situ concrete base with Class 25/19 concrete;
- Side walls to be constructed with gabion walls with geomembrane;
- 300 mm gabion mattress downstream to be constructed flush with ground, anchored with 1.0 m y-standard spaced at 1.0 m c/c.

We trust the above will be favorably considered.

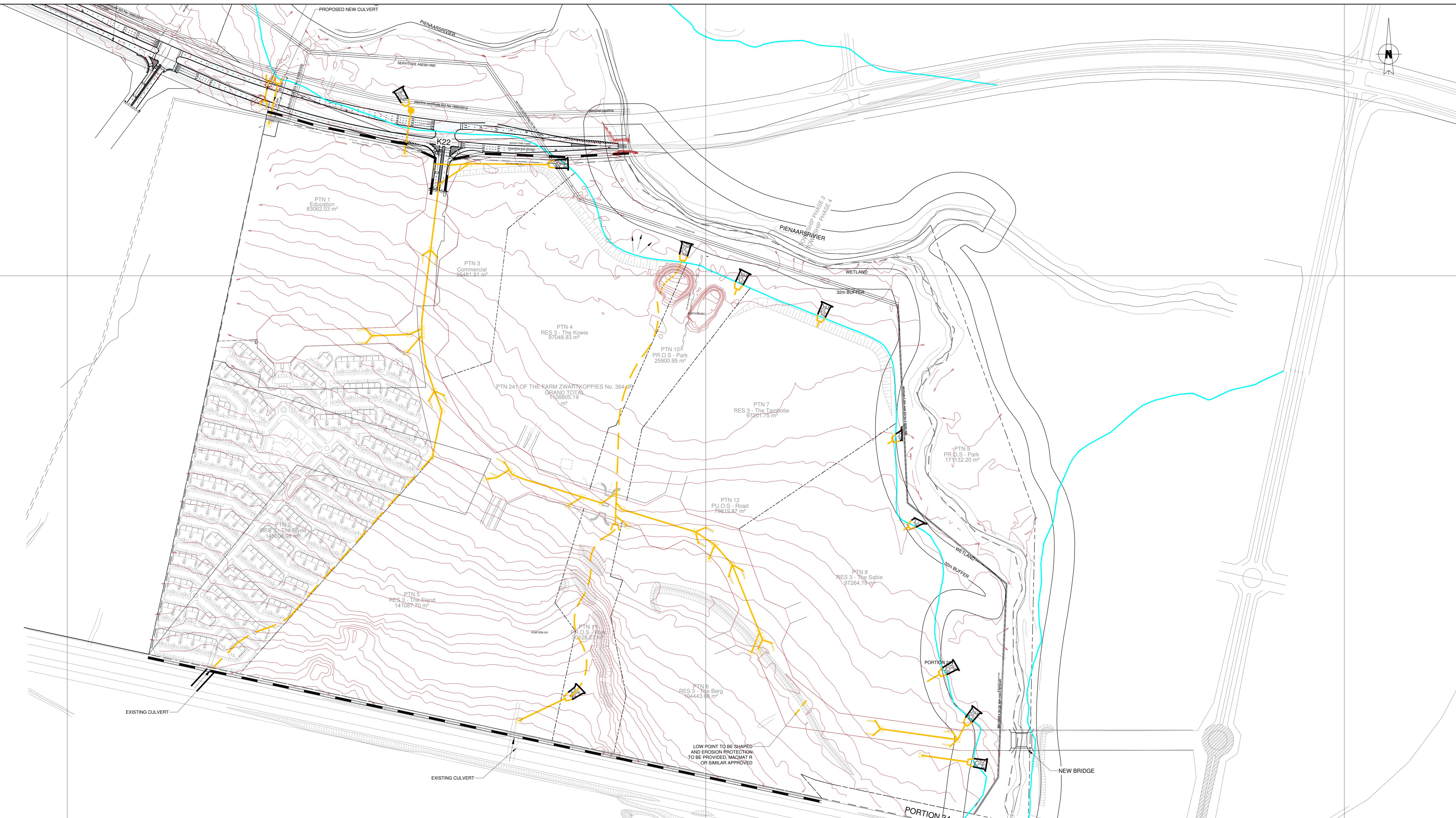
Yours Faithfully



Werner Stander
PrEng (20060017)
For Civil Concepts (Pty) Ltd

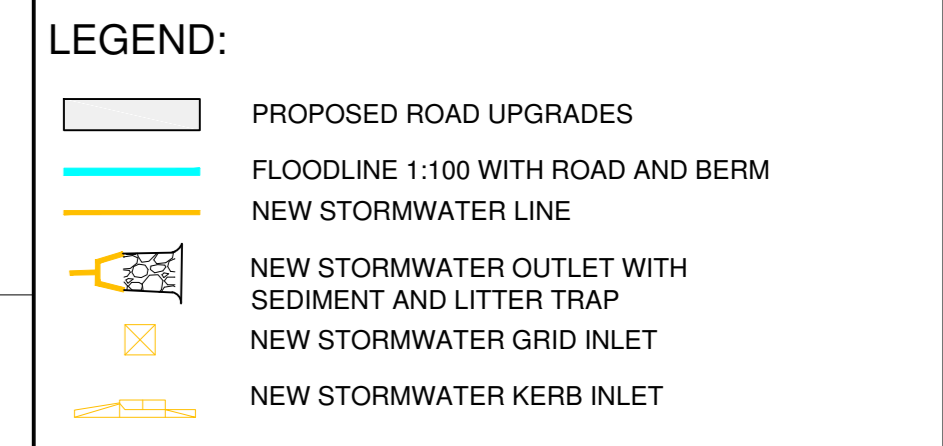


Jean Botes
For Civil Concepts (Pty) Ltd



NOTES AND SPECIFICATIONS

1. ALL BELLMOUTH RADII TO BE 10m UNLESS OTHERWISE SHOWN.
2. ALL ROADS TO BE PROVIDED WITH KERBING/EDGING ACCORDING TO TYPICAL DETAILS AND LEGEND BELOW.
3. P.I. CO-ORDINATES AND RADII INDICATED ARE ON THE CENTERLINE OF THE ROAD.
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 7.4m ROAD: ROAD CLASS 4, CATEGORY UC, CLASSIFICATION E1
 5.9m ROAD: ROAD CLASS 5B, CATEGORY UC, CLASSIFICATION E2
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14. ALL LEVELS OF EXISTING SERVICES ARE TO BE CHECKED AND VERIFIED ON SITE AND IS SUBMITTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF THE CONSTRUCTION.



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| DEVELOPER DETAIL | ARCHITECTS DETAIL VTC Architecture www.vtcgroup.biz |
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| NO. | DATE | APPROVED | DESCRIPTION | PREP. |
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| DESIGNED BY W. STANDER | DRAWN BY R. WILMERS |
| DESIGN CHECKED BY W. STANDER | INFRASTRUCTURE TECHNICAL INFORMATION MANAGER D.J. CHALMERS |

PROJECT STATUS

PROJECT ENGINEER (CONSULTANT):

DETAILS AND SIGNATURE: _____ DATE: _____

DETAILS AND SIGNATURE: _____ DATE: _____

CONSULTANT DETAIL

CONSULTING CIVIL AND STRUCTURAL ENGINEERS
P.O. BOX 36148 Menlo Park 0102
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CITY OF TSHWANE TRANSPORT DEPARTMENT

M. P. Lefebvre STRATEGIC EXECUTIVE DIRECTOR
P.O. BOX 409 PRETORIA 0001

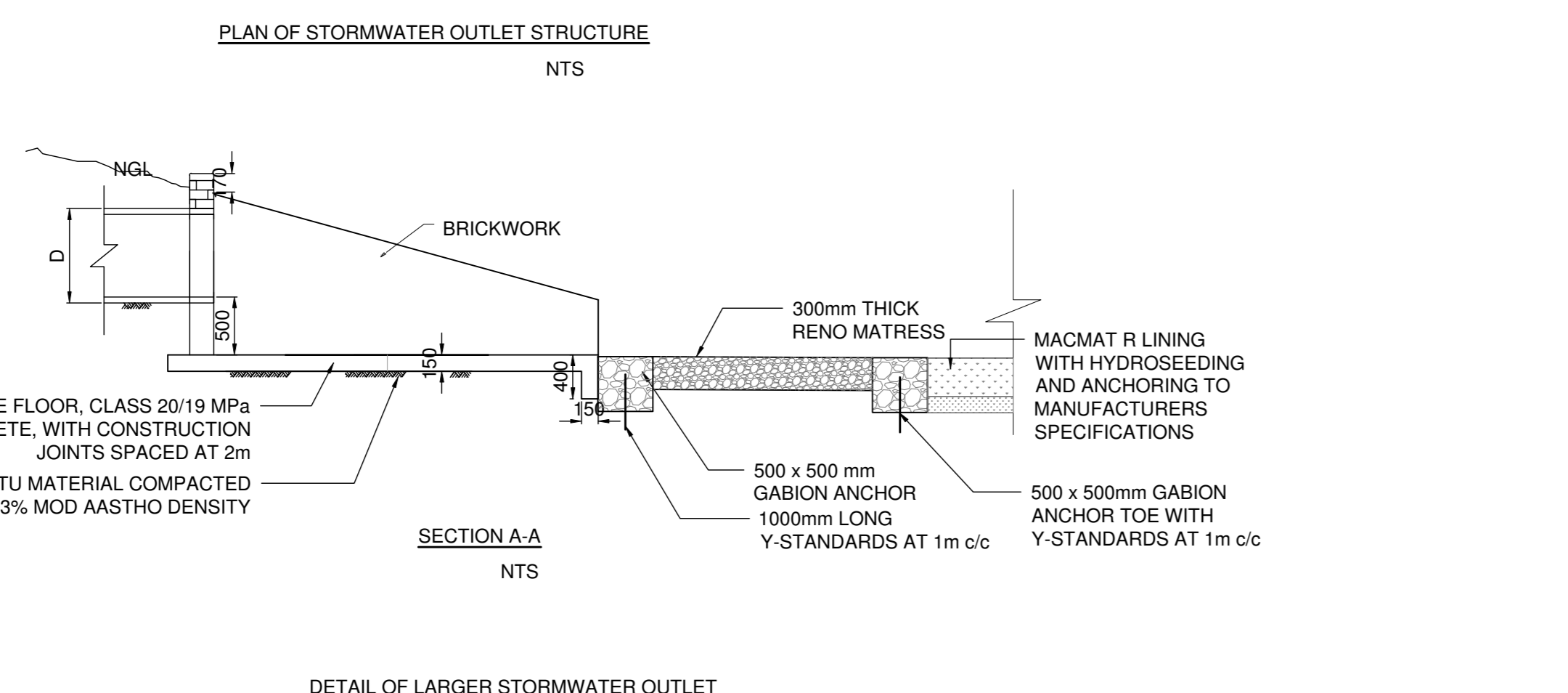
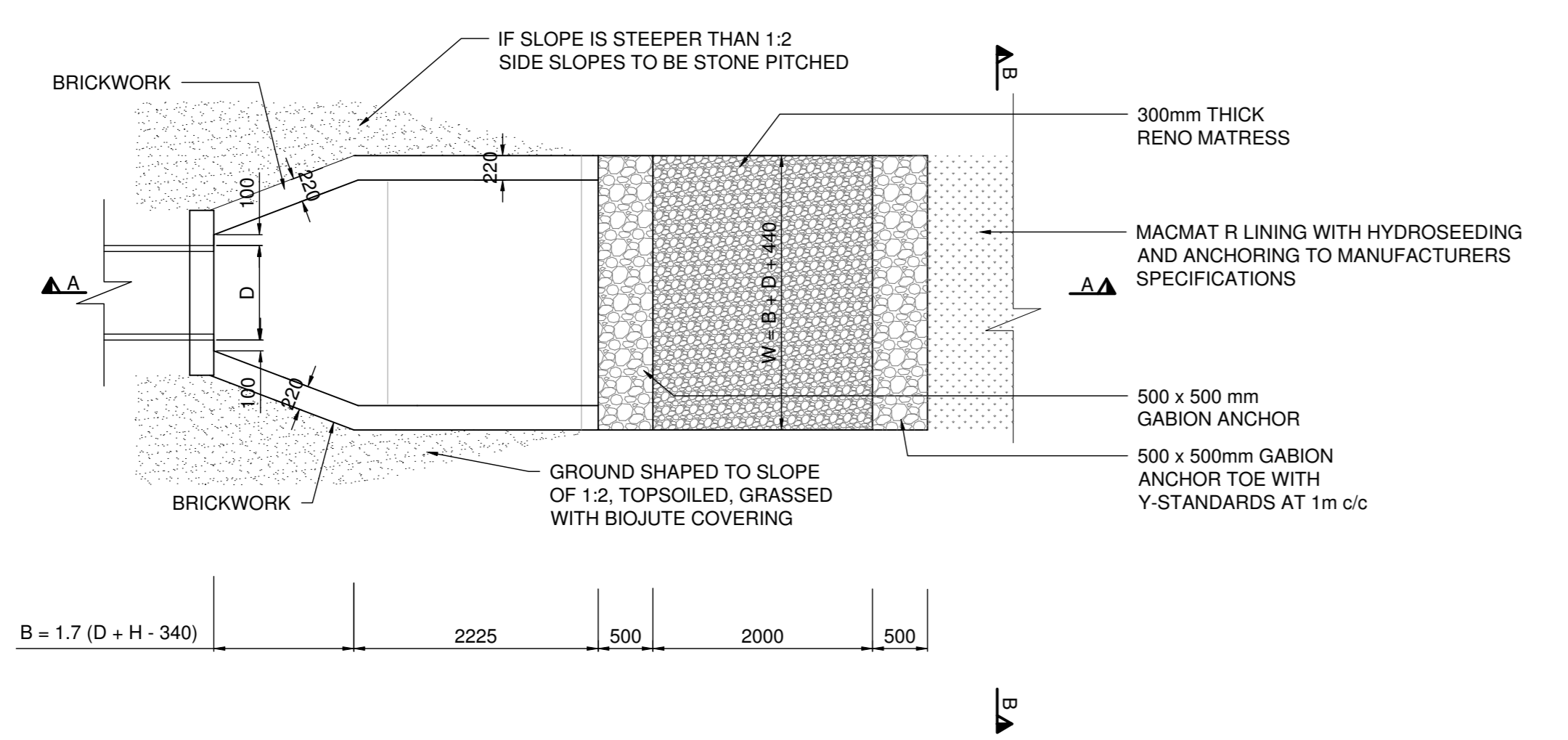
M. L. V. Rogelime P.H. EXECUTIVE DIRECTOR
P.O. BOX 1409 PRETORIA 0001

DRAWING APPROVED BY EXECUTIVE DIRECTOR
M. L. V. Rogelime P.H.

RIVERWALK PORTION 241 OF THE FARM ZWARTKOPPIES No. 364-JR

DESCRIPTION OF PROJECT
STORMWATER LAYOUT

| | |
|-----------------------------|-------------------------|
| CONTRACT NO.: _____ | PROJECT NO.: C2142 |
| DATE: APRIL_2016 | SCALE: 1:10000 |
| DRAWING NO.: C2142-WULA-002 | ORIGINAL PAPER SIZE: A0 |
| SHEET NO. _____ | REVISION _____ |



SHEQ Policy

Safety, Health, Environment, Quality

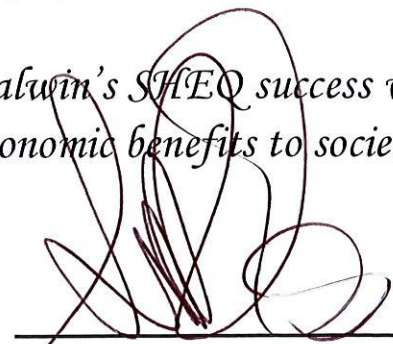
Balwin Properties Limited is committed to providing a workplace that protects the health and safety of its employees, contractors and interested and affected parties that may be exposed to potential risks during the course of its construction and other workplace activities.

Balwin Properties Limited strives to protect the environment from process activities, that may result in negative environmental impacts and comply with all legal and other requirements that relate to Occupational Health, Safety and Environmental aspects.

In order to achieve this commitment Balwin Properties Limited has set a number of objectives:

- Implement and maintain certified SHEQ management systems which conform to best practice standards*
- Ensure that the SHEQ Management System enables all employees or any other person working under its control to do the right things right, first time and every time.*
- Comply with the relevant National, Provincial and Municipal Environmental and Occupational Health & Safety Legislation and Regulations as well as other legal requirements as defined in the Legal Registers.*
- To continually improve the effectiveness of the SHEQ management systems so as to ensure that Balwin continues to meet expectations of not only its employees but also its valued customers with regard to satisfaction.*
- Educate and train the Balwin employees to enhance continuous improvement in business services, environmental responsibilities and occupational health and safety standards.*
- Regularly review and report publicly Balwin's progress in relation to SHEQ and ensure that this policy remains relevant to the standards of its shareholders, employees, host communities and environment.*

Balwin's SHEQ success will be realised when incidents are eliminated, when Balwin is valued by its host communities and lasting social, environmental and economic benefits to society are provided.

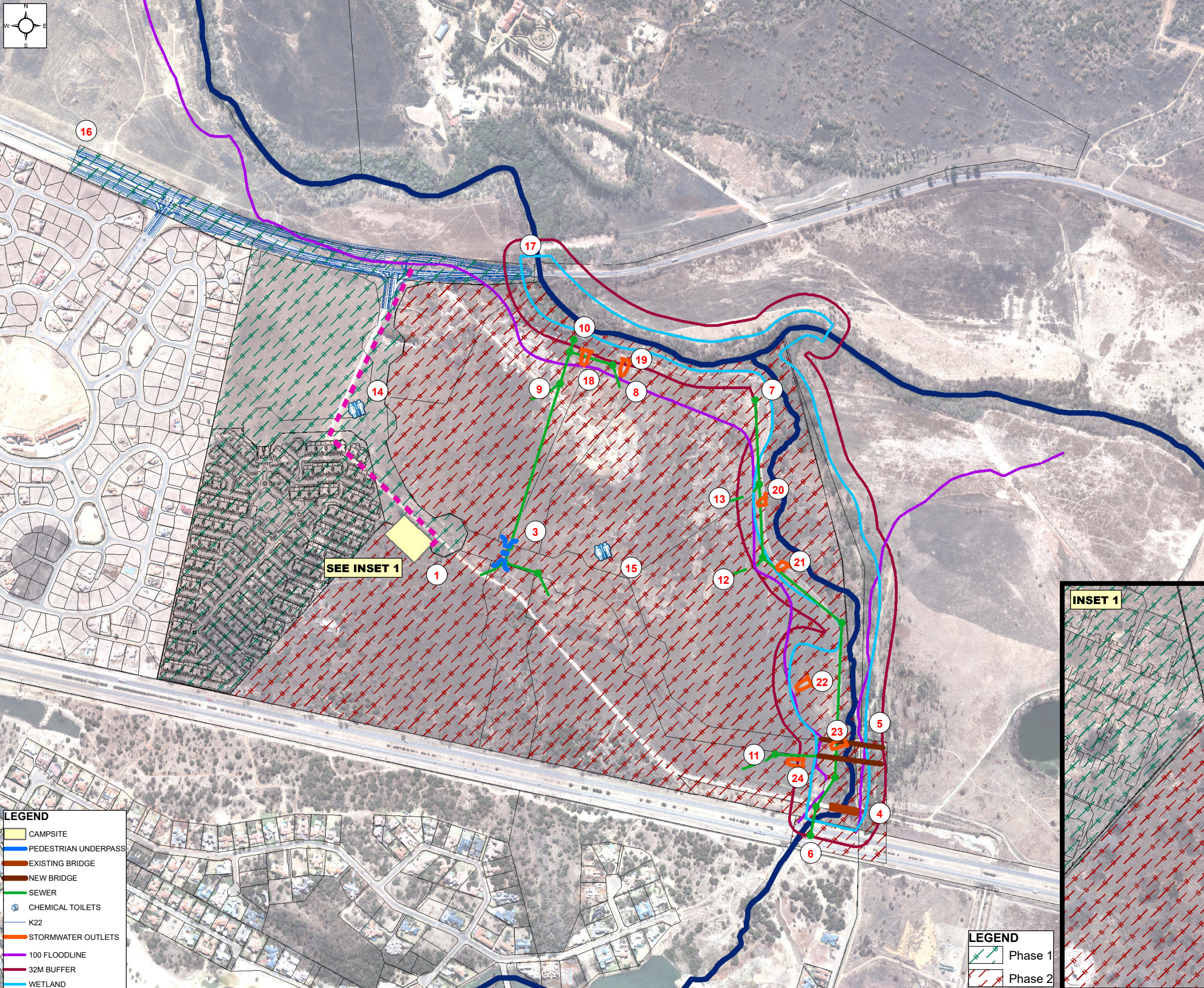


*Stephen Volker Brookes
Chief Executive Officer
June 2016*



Balwin
PROPERTIES

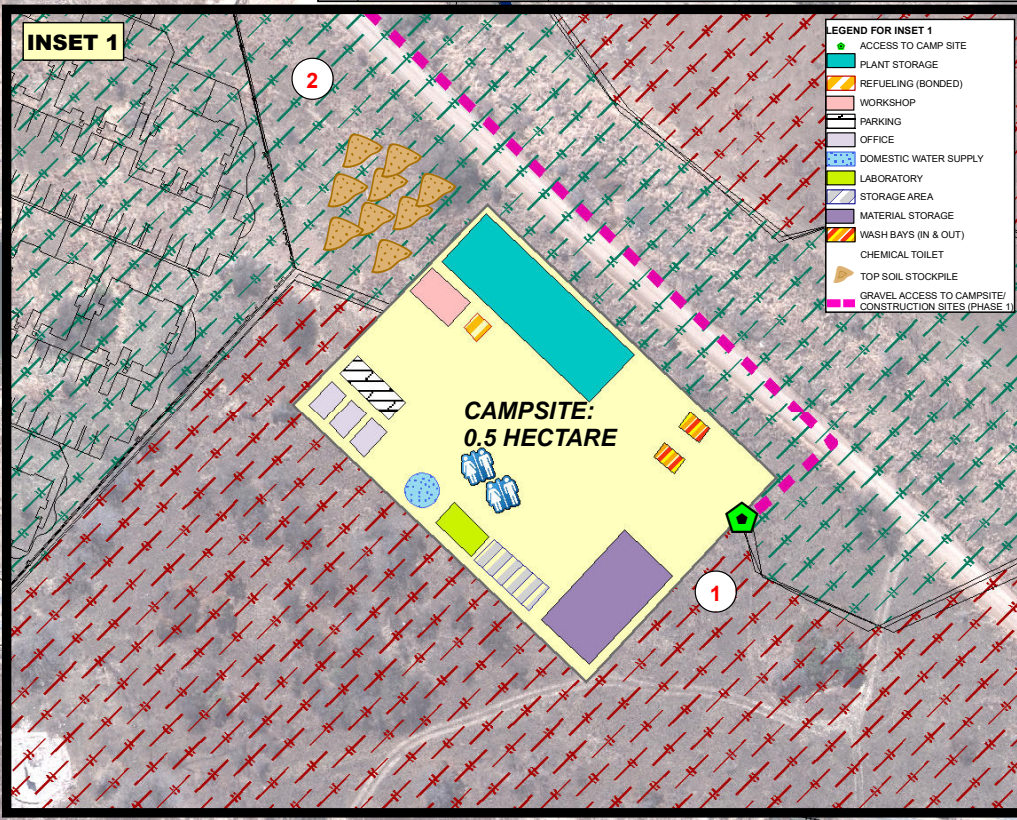
Appendix 6: Facility Illustrations and Maps



| ACTIVITY CO-ORDINATES | | | |
|-----------------------|---------------|---------------|--------------------------------|
| | X CO-ORDINATE | Y CO-ORDINATE | ACTIVITY |
| 1 | -2850315.702 | -62373.713 | CAMPSITE |
| 2 | -2850270.521 | -62405.605 | TEMPORARY STOCKPILE |
| 3 | -2850350.143 | -62189.521 | FUTURE PEDESTRIAN UNDERPASS |
| 4 | -2850844.584 | -61529.893 | EXISTING BRIDGE |
| 5 | -2850731.632 | -61517.933 | NEW RIVERWALK BOULEVARD BRIDGE |
| 6 | -2850904.242 | -61590.301 | START OF SEWER UPGRADE |
| 7 | -2850049.053 | -61694.246 | END OF SEWER UPGRADE |
| 8 | -2850020.704 | -61963.560 | NEW SEWER CONNECTION |
| 9 | -2850015.979 | -62079.318 | START NEW SEWER |
| 10 | -2849933.295 | -62055.694 | END NEW SEWER |
| 11 | -2850743.598 | -61656.448 | NEW SEWER CONNECTION |
| 12 | -2850391.601 | -61743.857 | NEW SEWER CONNECTION |
| 13 | -2850242.770 | -61743.857 | NEW SEWER CONNECTION |
| 14 | -2850067.115 | -62481.694 | CHEMICAL TOILET (PHASE 1) |
| 15 | -2850343.259 | -62001.451 | CHEMICAL TOILET (PHASE 2) |
| 16 | -2849572.306 | -63033.422 | START OF K22 UPGRADE |
| 17 | -2849799.096 | -62140.435 | END OF K22 UPGRADE |
| 18 | -2849961.420 | -62034.053 | STORMWATER OUTLET 1 |
| 19 | -2849978.417 | -61956.980 | STORMWATER OUTLET 2 |
| 20 | -2850244.187 | -61684.566 | STORMWATER OUTLET 3 |
| 21 | -2850370.428 | -61643.371 | STORMWATER OUTLET 4 |
| 22 | -2850601.648 | -61591.546 | STORMWATER OUTLET 5 |
| 23 | -2850717.258 | -61534.406 | STORMWATER OUTLET 6 |
| 24 | -2850757.123 | -61611.479 | STORMWATER OUTLET 7 |

- LEGEND**
- CAMPSITE
 - PEDESTRIAN UNDERPASS
 - EXISTING BRIDGE
 - NEW BRIDGE
 - SEWER
 - CHEMICAL TOILETS
 - K22
 - STORMWATER OUTLETS
 - 100 FLOODLINE
 - 32M BUFFER
 - WETLAND

- LEGEND**
- Phase 1
 - Phase 2



RIVERWALK (PHASE 1 & 2) - MASTER LAYOUT PLAN CONSTRUCTION & CAMP SITE



PLAN SIZE : A3

SCALE:
AS SHOWN