**Bobbing Intercepts**

| **Arm A: A249 (NE)** | Original | | | Sep-18 | | |
|---|---|---|---|---|---|---|
| | **AM18** | **AM28+C** | **AM28+C+D** | **AM18** | **AM28+C** | **AM28+C+D** |
| Full Standard Intercept | 2193 | 2193 | 2193 | 2193 | 2193 | 2193 |
| Busy Lane Intercept (offside) | 1198 | 1198 | 1198 | 1198 | 1198 | 1198 |
| Busy Lane Flow | 366 | 414 | 414 | 366 | 407 | 407 |
| Total Flow | 589 | 672 | 689 | 589 | 661 | 678 |
| Intercept Correction | 1928 | 1945 | 1994 | 1928 | 1946 | 1996 |
| Capacity Adjustment | **87.91%** | **88.67%** | **90.92%** | **87.91%** | **88.72%** | **91.00%** |

| **Arm C: A249 (SW)** | Original | | | Sep-18 | | |
|---|---|---|---|---|---|---|
| | **AM18** | **AM28+C** | **AM28+C+D** | **AM18** | **AM28+C** | **AM28+C+D** |
| Full Standard Intercept | 2277 | 2277 | 2277 | 2277 | 2277 | 2277 |
| Busy Lane Intercept (offside) | 1238 | 1238 | 1238 | 1238 | 1238 | 1238 |
| Busy Lane Flow | 443 | 545 | 646 | 443 | 536 | 637 |
| Total Flow | 540 | 655 | 756 | 540 | 644 | 745 |
| Intercept Correction | 1509 | 1488 | 1449 | 1509 | 1487 | 1448 |
| Capacity Adjustment | **66.27%** | **65.34%** | **63.63%** | **66.27%** | **65.32%** | **63.59%** |

**Bobbing**

Original

| AM Peak | Existing | | | | | |
|---|---|---|---|---|---|---|
| A249 | 2018 | | 2028+C | | 2028+C+D | |
| | RFC | Queue | RFC | Queue | RFC | Queue |
| A249 (NE) | 0.40 | 0.7 | 0.49 | 1.0 | 0.53 | 1.1 |
| B2006 | 0.34 | 0.6 | 0.44 | 0.9 | 0.49 | 1.1 |
| A249 (SW) | 0.48 | 1.0 | 0.63 | 1.9 | 0.76 | 3.3 |
| Sheppey Way | 0.32 | 0.5 | 0.38 | 0.7 | 0.41 | 0.7 |
| Average Delay/pcu (s) | 3.72 | | 5.04 | | 6.72 | |
| File | Bobbing Existing.j9 | | | | | |

Sep-18

| AM Peak | Existing | | | | | |
|---|---|---|---|---|---|---|
| A249 | 2018 | | 2028+C | | 2028+C+D | |
| | RFC | Queue | RFC | Queue | RFC | Queue |
| A249 (NE) | 0.40 | 0.7 | 0.48 | 0.9 | 0.51 | 1.1 |
| B2006 | 0.34 | 0.6 | 0.43 | 0.9 | 0.48 | 1.0 |
| A249 (SW) | 0.48 | 1.0 | 0.62 | 1.7 | 0.74 | 3.0 |
| Sheppey Way | 0.32 | 0.5 | 0.37 | 0.6 | 0.40 | 0.7 |
| Average Delay/pcu (s) | 3.72 | | 4.86 | | 6.38 | |
| File | Bobbing Existing.j9 | | | | | |

Capacity Corrections applied to both A249 entries due to unequal lane usage. The first step in this process was to determine the change in Intercept using advice in "An ARCADY Health Warning" by Barabara Chard. The capacity correction was then calculated as the % of this intercept in compariosn to the full arm Intercept. The calculations are shown in Worksheet "Bobbing Intercepts".

The queue survey recorded some values of 15+ on the A249 (SW) during the AM peak hour. DHA confirmed that, as suspected, queues were only intermittent whilst conducting a site visit in September 2018. Queues rarely extend beyond 3-4 vehicles. Therefore it would not be possible to make any site based calibration to the model as this would require an arm to be overloaded for continuous periods.

**M2 Junction 5**

Original

| M2 Junction 5 AM Peak | 2018 | | 2028+C | | 2028+C+D | |
|---|---|---|---|---|---|---|
| | DoS | MMQ (pcus) | DoS | MMQ (pcus) | DoS | MMQ (pcus) |
| A249 (N) | 96.0% | 42.2 | 122.0% | 188.9 | 129.7% | 237.3 |
| North Circ | 52.1% | 6.5 | 58.7% | 7.6 | 57.2% | 7.7 |
| Maidstone Rd | 63.3% | 6.5 | 91.7% | 11.3 | 89.2% | 10.6 |
| M2 (E) | 96.0% | 20.1 | 119.4% | 83.2 | 125.8% | 102.3 |
| East Circ | 55.4% | 6.1 | 58.7% | 7.8 | 61.4% | 7.9 |
| A249 (S) | 74.3% | 3.6 | 90.3% | 13.7 | 93.4% | 19.9 |
| M2 (W) | 27.2% | 0.4 | 35.9% | 1.0 | 37.0% | 1.2 |
| PRC | -6.6% | | -35.5% | | -44.1% | |
| Avg Delay | 35.4 | | 182.6 | | 225.2 | |
| Cycle Time | 112 | | | | | |
| File | M2 J5 Existing.lsg3x | | | | | |

Sep-18

| M2 Junction 5 AM Peak | Observed Timings | | | | | | Optimised Timings | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2018 | | 2028+C | | 2028+C+D | | 2028+C | | 2028+C+D | |
| | DoS | MMQ (pcus) | DoS | MMQ (pcus) | DoS | MMQ (pcus) | DoS | MMQ (pcus) | DoS | MMQ (pcus) |
| A249 (N) | 126.2% | 244.7 | 152.0% | 435.9 | 156.0% | 466.3 | 147.3% | 396.6 | 151.1% | 426.1 |
| North Circ | 56.5% | 9.5 | 62.4% | 10.9 | 62.6% | 10.9 | 69.5% | 9.6 | 69.7% | 9.6 |
| Maidstone Rd | 106.2% | 20.4 | 269.2% | 95.6 | 269.9% | 95.7 | 120.6% | 32.4 | 120.5% | 32.4 |
| M2 (E) | 99.1% | 28.5 | 119.7% | 87.7 | 129.1% | 113.9 | 141.4% | 118.7 | 150.4% | 154.0 |
| East Circ | 58.3% | 9.3 | 58.6% | 10.1 | 57.8% | 10.2 | 58.0% | 8.3 | 57.4% | 8.6 |
| A249 (S) | 74.8% | 3.6 | 87.3% | 13.5 | 89.9% | 16.2 | 87.1% | 10.4 | 89.4% | 12.4 |
| M2 (W) | 27.2% | 0.4 | 33.7% | 0.8 | 34.6% | 1.0 | 33.0% | 0.8 | 33.6% | 1.0 |
| PRC | -40.3% | | -199.2% | | -199.9% | | -63.6% | | -67.9% | |
| Avg Delay | 175.1 | | 390.5 | | 420.9 | | 365.7 | | 396.0 | |
| Cycle Time | 145 | | | | | | 120 | | | |
| File | M2 J5 Existing.lsg3x | | | | | | | | | |

| M2 Junction 5 AM Peak - Queues | Model | Survey |
|---|---|---|
| A249 (N) | 244.7 | Too long to measure |
| Maidstone Rd | 20.4 | 22.6+ |
| M2 (E) | 28.5 | 10.0 |
| A249 (S) | 3.6 | 1.8 |
| M2 (W) | 0.4 | 3.8 |

**Model Notes:**

Timings from every cycle within peak hour during traffic survey recorded using provided video. These shown in Worksheet "M2 J5 Site Data".

Average cycle time was 145 seconds. Timings were relatively consistent from cycle to cycle.

Junction contains three stages, but was observed that only Stages 1 and 2 run (as modelled previously)

Significant queues build up on Maidstone Rd, despite the flows being modestly high. A key reason for this, as observed, was that traffic moving ahead from Maidstone Rd cannot proceed in the circulating queue downstream exceeds 5 pcus in either lane. This will also block left-turning traffic, although it was also observed that some left-turning traffic could sometimes squeeze past queuing ahead traffic despite the approach only being one lane. LinSig cannot directly model this blocking back, so to try and replicate this dummy signals were added to the model and attached to Maidstone Rd. When the downstream queue exceeded 5.5 pcus in a lane, the dummy signals were set to stop traffic from leaving Maidstone Rd. Once this queue disappeared, traffic was given a dummy green signal to proceed. When under dummy green, LinSig would use the give-way parameters to determine capacity (i.e. capacity will still depend on the Max Flow and opposing traffic passing on the circulating carriageway). Note, this is a crude method in accounting for blocking back, but cannot take into account the impact of driver behaviour of individual drivers, left-turners squeezing past queuing traffic on Maidstone Rd or cyclic variations of queue build up on the circulating carriageway. A simpler method of evaluating this would be to ignore the impacts of this blocking in the model, but to evaluate the output queues on the circulating carriageway and determine whether these may have any further significant impact on blocking traffic on Maidstone Rd.

The video showed around 29% of traffic from the M2 (W) to the A249 (S) used the offside lane once on the circulating carriagway. Although locking flows to this level of accuracy is not normally required (or recommended), the route flow was locked in each scenario to represent this. The reason was that this had an impact on the rate at which the queue increased on the eastern circulating carriageway, which had an impact on the setting of the dummy signals as described above.

An added complication in blocking was that there were several occasions where the eastern exit to the M2 was blocked, which lasted several minutes at a time. This was observed 4 times between 07:59 to 08:36 on the survey video, although was not observed on the September site visit.

Results:
The 2018 results more closely replicate the queue survey, compared to the initial modelling, primarily due to the addition of extra traffic on the northern arm and dummy signals on Maidstone Rd. The model shows a higher queue on M2(E). However, the modelled queue of 28.5 pcus is a MMQ, whereas the modelled end of red queue would be 13.1 pcus. It is common for a surveyed queue to be recorded at the start of green (or end of red) at signals.

The existing timings were run for all scenarios, but the future year scenarios were also optimised. The optimised scenarios assumed reduced cyclle times, as this reduced the impact of circulating queues blocking Maidstone Rd.

**M2 Junction 5 Site Data**

**Timings**

| Start | Phase B End | Duration | Cycle Time |
|---|---|---|---|
| 08:01:49 | 08:03:24 | 00:01:35 | |
| 08:04:16 | 08:05:51 | 00:01:35 | 00:02:27 |
| | | | |
| 08:11:37 | 08:13:12 | 00:01:35 | |
| 08:14:03 | 08:15:38 | 00:01:35 | 00:02:26 |
| 08:16:19 | 08:17:54 | 00:01:35 | 00:02:16 |
| 08:18:45 | 08:20:20 | 00:01:35 | 00:02:26 |
| 08:21:12 | 08:22:47 | 00:01:35 | 00:02:27 |
| 08:23:39 | 08:25:14 | 00:01:35 | 00:02:27 |
| 08:26:06 | 08:27:41 | 00:01:35 | 00:02:27 |
| 08:28:33 | 08:30:08 | 00:01:35 | 00:02:27 |
| 08:31:00 | 08:32:35 | 00:01:35 | 00:02:27 |
| 08:33:23 | 08:34:58 | 00:01:35 | 00:02:23 |
| 08:35:51 | 08:37:26 | 00:01:35 | 00:02:28 |
| 08:38:17 | 08:39:50 | 00:01:33 | 00:02:26 |
| 08:40:42 | 08:42:17 | 00:01:35 | 00:02:25 |
| 08:43:09 | 08:44:44 | 00:01:35 | 00:02:27 |
| 08:45:36 | 08:47:11 | 00:01:35 | 00:02:27 |
| 08:48:03 | 08:49:37 | 00:01:34 | 00:02:27 |
| 08:50:30 | 08:52:05 | 00:01:35 | 00:02:27 |
| 08:52:57 | 08:54:32 | 00:01:35 | 00:02:27 |
| 08:55:24 | 08:56:59 | 00:01:35 | 00:02:27 |
| 08:57:40 | 08:59:15 | 00:01:35 | 00:02:16 |
| | | | |
| **AVERAGES** | | 00:01:35 | 00:02:25 |
| **Typical Max** | | 00:01:35 | 00:02:27 |

**Usage of offside flare on northern circ**

| | |
|---|---|
| 5 | |
| 3 | |
| 0 | |
| 3 | |
| 4 | |
| 3 | |
| 1 | |
| 4 | |
| 1 | |
| 4 | |
| 3 | |
| 2 | |
| 0 | |
| 1 | |
| 3 | |
| 3 | |
| 4 | |
| 0 | |
| 1 | |
| 2 | |
| 1 | |
| 3 | |
| 0 | |
| 5 | |
| | |
| 2.3 | average |

**M2 Junction 7**

Original

| M2 Junction 7 AM Peak | 2018 | | 2028+C | | 2028+C+D | |
|---|---|---|---|---|---|---|
| | DoS | MMQ (pcus) | DoS | MMQ (pcus) | DoS | MMQ (pcus) |
| A299 | 72.5% | 12.7 | 91.5% | 17.9 | 94.7% | 19.7 |
| North Circ | 71.7% | 8.2 | 89.0% | 16.5 | 89.0% | 16.5 |
| A2 (E) | 67.7% | 4.0 | 83.3% | 12.2 | 85.7% | 14.8 |
| Brenley Ln | 32.0% | 0.7 | 83.5% | 4.2 | 88.2% | 4.9 |
| M2 (S) | 65.9% | 13.2 | 85.3% | 18.7 | 85.2% | 19.2 |
| South Circ | 65.9% | 9.4 | 83.7% | 14.0 | 84.9% | 14.4 |
| A2 (W) | 41.8% | 3.0 | 70.5% | 10.3 | 71.2% | 10.5 |
| Homestall Ln | 0.4% | 1.3 | 0.5% | 1.8 | 0.6% | 1.9 |
| PRC | 24.1% | | -1.6% | | -5.3% | |
| Avg Delay | 27.3 | | 41.2 | | 60.7 | |
| Cycle Time | 120 | | | | | |
| File | M2 J7 Existing.lsg3x | | | | | |

27.3 41.2 60.7

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| M2 Junction 7 AM Peak | Observed Timings | | | | | | Improved Timings | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2018 | | 2028+C | | 2028+C+D | | 2028+C | | 2028+C+D | |
| | DoS | MMQ (pcus) | DoS | MMQ (pcus) | DoS | MMQ (pcus) | DoS | MMQ (pcus) | DoS | MMQ (pcus) |
| A299 | 112.6% | 36.3 | 123.0% | 54.4 | 123.0% | 54.4 | 95.1% | 17.0 | 95.1% | 17.0 |
| North Circ | 64.0% | 12.5 | 82.5% | 22.0 | 82.5% | 22.0 | 89.0% | 13.8 | 89.0% | 13.8 |
| A2 (E) | 67.7% | 3.5 | 81.2% | 8.5 | 83.6% | 10.2 | 82.0% | 9.2 | 84.4% | 10.9 |
| Brenley Ln | 31.4% | 0.6 | 68.2% | 2.4 | 73.3% | 2.8 | 72.1% | 2.7 | 77.8% | 3.2 |
| M2 (S) | 86.0% | 14.1 | 99.4% | 27.8 | 99.4% | 27.8 | 88.2% | 16.3 | 88.2% | 16.3 |
| South Circ | 59.4% | 11.8 | 76.3% | 18.6 | 76.3% | 18.6 | 83.7% | 13.9 | 83.7% | 13.9 |
| A2 (W) | 41.8% | 0.4 | 69.3% | 1.1 | 69.3% | 1.1 | 69.3% | 8.2 | 69.3% | 8.2 |
| Homestall Ln | 0.4% | 0.0 | 1.2% | 0.0 | 1.2% | 0.0 | 0.5% | 1.4 | 0.5% | 1.4 |
| PRC | -25.2% | | -36.7% | | -36.7% | | -5.6% | | -5.6% | |
| Avg Delay | 53.6 | | 89.7 | | 89.6 | | 39.1 | | 39.5 | |
| Cycle Time | 96 (North), 97 (South) | | | | | | 96 | | | |
| File | M2 J7 Existing with Calibration.lsg3x | | | | | | | | | |

| M2 Junction 7 AM Peak - Queues | Model | Survey |
|---|---|---|
| A299 | 36.3 | 23.4+ |
| A2 (E) | 3.5 | 9.5 |
| Brenley Ln | 0.6 | 1.2 |
| M2 (S) | 14.1 | 30+ |
| A2 (W) | 0.4 | 4.0 |
| Homestall Ln | 0.0 | 0.5 |

**Model Notes:**

Timings from every cycle within peak hour during traffic survey recorded using provided video. These shown in Worksheet "M2 J7 Site Data".

Average cycle time for both north and south controllers was 96 seconds. These were variable. There was no observed co-ordination between the controllers. However, if the same cycle time was assumed in the LinSig model then it would automatically model platoons of traffic leaving one stopline and arriving at the next, thus linking the signals (regardless if the timings were set to provide good co-ordination). Therefore, the cycle time on the south controller was increased by 1 second in the model to avoid this issue (when evaluating the existing timings).

The observed timings were set up within the model and run for all scenarios It should be noted that these represent the average timings, which were observed to fluctuate significantly. These observations indicated that entry lanes receive less green than required, resulting in over-capacity and a build up of queues. Once these queues reach a certain level, the signals will then provide significantly more green to the entry to clear out the queue, before reverting back to the previous timings. For example, on the northern entry to the roundabout, for the first 10 cycles in the hour the green time was 10-20 seconds each cycle, although usually between 10-14 seconds. The green then lasted 76 seconds in the following cycle with a significant increase to the cycle time (162 seconds).

The model was also run with improved signal timings, assuming the same cycle time, for the future year scenarios. These timings also assumed linking between both controllers.

Results:
The 2018 results show a high degree of saturation of 112.6% in the nearside lane (82.3% in the offside lane). One would expect this to be closer to 100% (if over-capacity) as this represent the traffic flow that was counted through the junction. However, on review of the video, this can be explained in that many drivers turning left from the A299 elected to use the offside lane and then take the offside lane on the A2 Boughton Bypass exit. The roundabout is not marked to permit this (marking shows that all left-turners should use the nearside lane). Although weaving connectors could be applied to LinSig to allow non-permitted movements, in this case it would be more robust to represent permitted movements.

The surveyed queues on the M2 (S) are higher than the model. However, it is likely that this is the case because the signals provide inadequate green for the majority of cycles, resulting in a build up in queues from cycle to cycle. This green time is then significantly increased for one cycle to try and reduce this queue length. LinSig represents the average green times for every cycle within the modelled period. The sensitivity of the green time on capacity can be illustrated when tweaking the timings on the south. For example, if the green time was reduced to 10 seconds on the entry (the lowest recorded during observations) the DoS was 203.3%.

Regardless of whether timings remained the same, or where optimised for the future year, the development has no significant impact. Development traffic is only added to the Zone B to D movement (A2 East to M2 South). The A2 (E) is a less critical arm whilst this traffic does not add to any circulating queues.

The results show that improved timings and co-ordination, in comparison to the existing timings, should increase capacity and reduce circulating queues.

**M2 Junction 7 Site Data**

**Timings**

| Phase B (North Entry) | | | Cycle Time |
|---|---|---|---|
| **Start** | **End** | **Duration** | |
| 08:01:20 | 08:01:30 | 00:00:10 | |
| 08:02:57 | 08:03:07 | 00:00:10 | 00:01:37 |
| 08:04:33 | 08:04:43 | 00:00:10 | 00:01:36 |
| 08:06:09 | 08:06:21 | 00:00:12 | 00:01:36 |
| 08:07:44 | 08:07:58 | 00:00:14 | 00:01:35 |
| 08:09:21 | 08:09:35 | 00:00:14 | 00:01:37 |
| 08:10:56 | 08:11:13 | 00:00:17 | 00:01:35 |
| 08:12:31 | 08:12:49 | 00:00:18 | 00:01:35 |
| 08:14:12 | 08:14:26 | 00:00:14 | 00:01:41 |
| 08:15:53 | 08:16:03 | 00:00:10 | 00:01:41 |
| 08:16:23 | 08:17:39 | 00:01:16 | 00:00:30 |
| 08:19:05 | 08:19:19 | 00:00:14 | 00:02:42 |
| 08:20:46 | 08:20:56 | 00:00:10 | 00:01:41 |
| 08:22:21 | 08:22:33 | 00:00:12 | 00:01:35 |
| 08:24:00 | 08:24:10 | 00:00:10 | 00:01:39 |
| 08:25:36 | 08:25:47 | 00:00:11 | 00:01:36 |
| 08:27:14 | 08:27:24 | 00:00:10 | 00:01:38 |
| 08:28:49 | 08:29:01 | 00:00:12 | 00:01:35 |
| 08:30:24 | 08:30:38 | 00:00:14 | 00:01:35 |
| 08:31:59 | 08:32:15 | 00:00:16 | 00:01:35 |
| 08:33:34 | 08:33:52 | 00:00:18 | 00:01:35 |
| 08:35:09 | 08:35:29 | 00:00:20 | 00:01:35 |
| 08:36:44 | 08:37:06 | 00:00:22 | 00:01:35 |
| 08:38:22 | 08:38:43 | 00:00:21 | 00:01:38 |
| 08:40:01 | 08:40:20 | 00:00:19 | 00:01:39 |
| 08:41:36 | 08:41:57 | 00:00:21 | 00:01:35 |
| 08:43:24 | 08:43:34 | 00:00:10 | 00:01:48 |
| 08:45:01 | 08:45:11 | 00:00:10 | 00:01:37 |
| 08:46:36 | 08:46:48 | 00:00:12 | 00:01:35 |
| 08:48:15 | 08:48:25 | 00:00:10 | 00:01:39 |
| 08:49:52 | 08:50:02 | 00:00:10 | 00:01:37 |
| 08:51:29 | 08:51:43 | 00:00:14 | 00:01:37 |
| 08:53:10 | 08:53:21 | 00:00:11 | 00:01:41 |
| 08:54:47 | 08:54:58 | 00:00:11 | 00:01:37 |
| 08:56:14 | 08:56:35 | 00:00:21 | 00:01:27 |
| 08:58:01 | 08:58:12 | 00:00:11 | 00:01:47 |
| 08:59:09 | 08:59:48 | 00:00:39 | 00:01:08 |
| **AVERAGES** | | 00:00:16 | 00:01:36 |
| **Typical Max** | | 00:00:14 | 00:01:41 |

| Phase A (South Circ) | | | Cycle Time |
|---|---|---|---|
| **Start** | **End** | **Duration** | |
| 08:01:21 | 08:01:46 | 00:00:25 | |
| 08:02:59 | 08:04:13 | 00:01:14 | 00:01:38 |
| 08:04:36 | 08:04:43 | 00:00:07 | 00:01:37 |
| 08:05:49 | 08:07:04 | 00:01:15 | 00:01:13 |
| 08:07:42 | 08:08:57 | 00:01:15 | 00:01:53 |
| 08:09:19 | 08:10:34 | 00:01:15 | 00:01:37 |
| 08:10:56 | 08:12:11 | 00:01:15 | 00:01:37 |
| 08:12:37 | 08:13:52 | 00:01:15 | 00:01:41 |
| 08:14:14 | 08:14:21 | 00:00:07 | 00:01:37 |
| 08:15:14 | 08:16:29 | 00:01:15 | 00:01:00 |
| 08:17:21 | 08:18:36 | 00:01:15 | 00:02:07 |
| 08:18:58 | 08:20:13 | 00:01:15 | 00:01:37 |
| 08:20:39 | 08:21:54 | 00:01:15 | 00:01:41 |
| 08:22:16 | 08:23:31 | 00:01:15 | 00:01:37 |
| 08:23:53 | 08:25:06 | 00:01:13 | 00:01:37 |
| 08:25:29 | 08:26:45 | 00:01:16 | 00:01:36 |
| 08:27:06 | 08:27:52 | 00:00:46 | 00:01:37 |
| 08:28:43 | 08:29:59 | 00:01:16 | 00:01:37 |
| 08:30:21 | 08:30:28 | 00:00:07 | 00:01:38 |
| 08:31:25 | 08:32:40 | 00:01:15 | 00:01:04 |
| 08:33:27 | 08:34:43 | 00:01:16 | 00:02:02 |
| 08:35:04 | 08:35:21 | 00:00:17 | 00:01:37 |
| 08:36:27 | 08:37:42 | 00:01:15 | 00:01:23 |
| 08:38:11 | 08:38:18 | 00:00:07 | 00:01:44 |
| 08:39:44 | 08:40:59 | 00:01:15 | 00:01:33 |
| 08:41:22 | 08:42:31 | 00:01:09 | 00:01:38 |
| 08:42:58 | 08:44:06 | 00:01:08 | 00:01:36 |
| 08:44:35 | 08:45:50 | 00:01:15 | 00:01:37 |
| 08:46:12 | 08:46:19 | 00:00:07 | 00:01:37 |
| 08:47:27 | 08:48:42 | 00:01:15 | 00:01:15 |
| 08:49:21 | 08:50:36 | 00:01:15 | 00:01:54 |
| 08:50:58 | 08:52:13 | 00:01:15 | 00:01:37 |
| 08:52:35 | 08:53:51 | 00:01:16 | 00:01:37 |
| 08:54:12 | 08:55:27 | 00:01:15 | 00:01:37 |
| 08:55:50 | 08:55:58 | 00:00:08 | 00:01:38 |
| 08:57:16 | 08:58:32 | 00:01:16 | 00:01:26 |
| 08:58:56 | | | |
| **AVERAGES** | | 00:01:00 | 00:01:36 |
| **Typical Max** | | 00:01:15 | 00:01:37 |

Notes

North Signals tend to provide relatively short greens to entry, from 10-14 seconds. However, this sometimes crept up to around 20-22 seconds. Once cycle a large green of 76 seconds was given to entry most likely to clear a queue, while the final cycle it lasted 39 seconds.

Controllers not co-ordinated, so in base different controller sets used, with south controller cycle time increased by 1 second so that linking can be removed

Significant number of drivers use the offside lane from the north to turn left, despite lane marking.