
# Gatwick Airport Northern Runway Project

## Transport Assessment Annex E – Highway Junction Review - Tracked Version

**Book 7**

**VERSION: 2.0**

**DATE: APRIL 2024**

**Application Document Ref: 7.4**

**PINS Reference Number: TR020005**

**APFP Regulations 5(2)(q)** **Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009**

# Introduction

- This document provides a review of all nodes in the strategic model which have been identified to have ‘medium’ or ‘high’ magnitude of impact (see Table 1). This is based on Volume to Capacity (V/C) ratio.
- This review includes the location of each node and the traffic flows (total and airport traffic) for all peak periods.
- It should be noted that not all nodes are reflecting a junction. Some have been identified as a node for modelling purposes and does not reflect a real junction.

**Table 1: Magnitude of Impact Matrix for Nodes**

| Criteria | Magnitude of impacts | | | |
|---|---|---|---|---|
| | **Negligible** | **Minor** | **Moderate** | **Major** |
| **V/C ratio with Project** | **80-85%** | **85 -90%** | **90 - 95%** | **95% or more** |
| <2 percentage point change in V/C ratio | Negligible | Negligible | Negligible | Negligible |
| 2-5 percentage point change in V/C ratio | Low | Low | Low | Medium |
| Between 5-10 percentage point change in V/C ratio | Low | Low | Medium | High |
| >10 percentage point change in V/C ratio | Low | Medium | High | High |

# Model noise

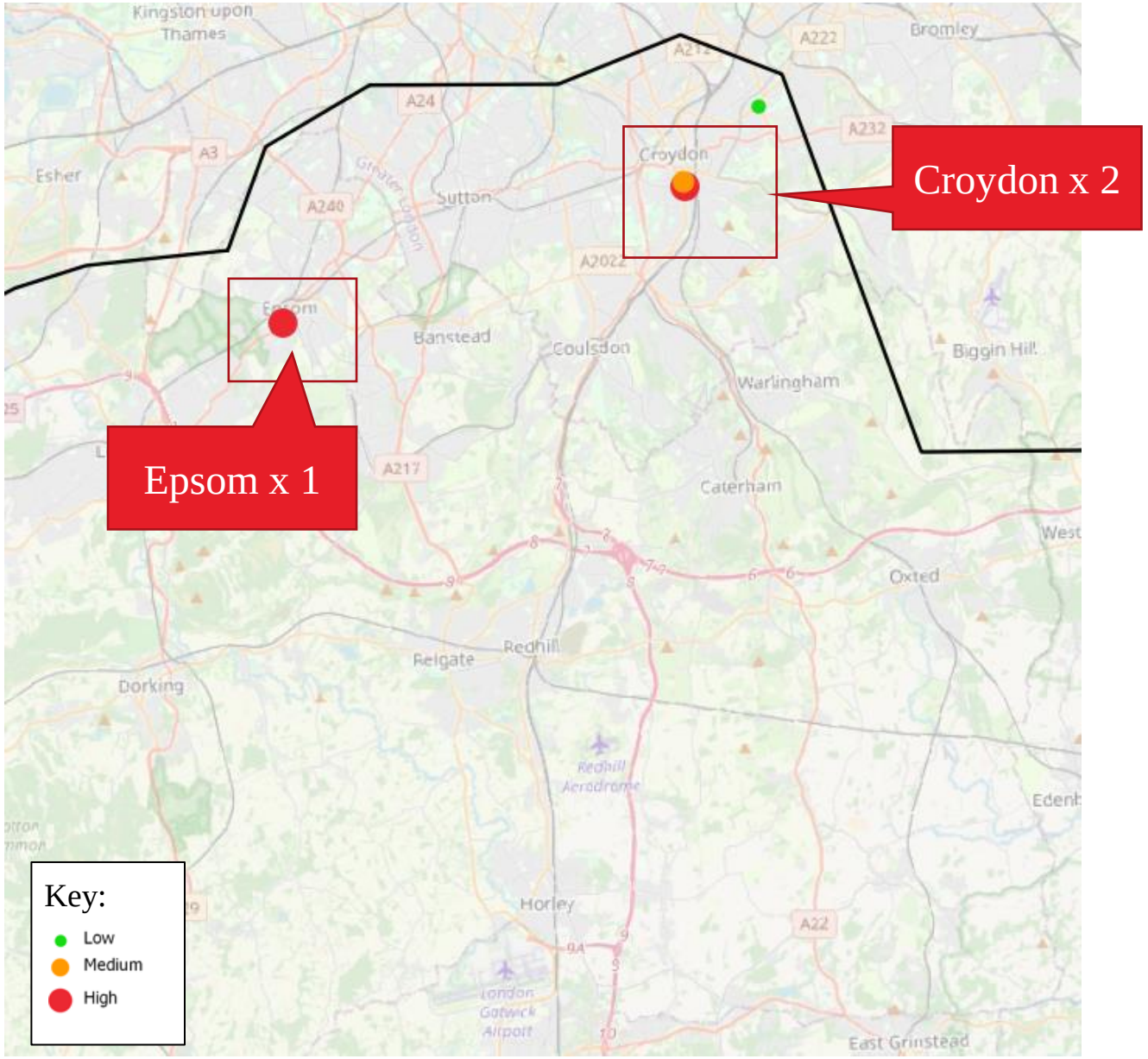
- In developing the strategic model, every effort has been made to ensure the model networks reflect the expected future network state, with the coding of junctions being appropriate and traffic loading from zones being reasonable. However, where high levels of congestion are predicted within such models, a localised effect known as ‘model noise’ can occur. This results in traffic demand switching between routes in successive iterations (of a model run), and when compared against a corresponding scenario, may indicate effects that do not appear logical in the context of the test. This can indicate lower levels of model convergence in specific localised areas, which can make the model results subject to higher levels of uncertainty.
- Within the Gatwick model, some localised model noise has been identified in two particular areas – Croydon and Steyning. These locations have been reviewed in detail and it is clear that airport traffic represents a very small proportion of traffic in these areas (less than 1%). The large changes in traffic flows between future baseline and with Project scenarios in these areas, and the associated impacts, are due to background traffic switching between routes with very similar journey times within the model. In practice this is unlikely to happen, for instance because the alternative route is unsuitable or is not the signed route on the ground, and in such cases the assessment includes professional judgement on the likelihood of such impacts actually occurring.
- For some junctions, the impact is due to model noise and the associated reassignment of background traffic. Model noise is identified by reviewing changes in traffic volumes and the amount of airport related traffic at each node location. Where the additional trips are identified as the result of an unexpected large reassignment of background traffic on the network (rather than additional airport trips), particularly if this does not occur consistently or is at some distance from the Airport, the impacts are considered to be due to model noise.

ARUP

# 2029 Airfield Construction

Future baseline 2029 vs future baseline 2029 with Airfield Construction

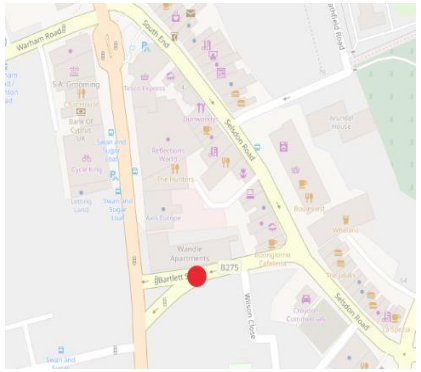
ARUP




**3 Junctions**
(Medium & High impacts)

# Croydon

## South Croydon / Bartlett Street (Node: 55025)



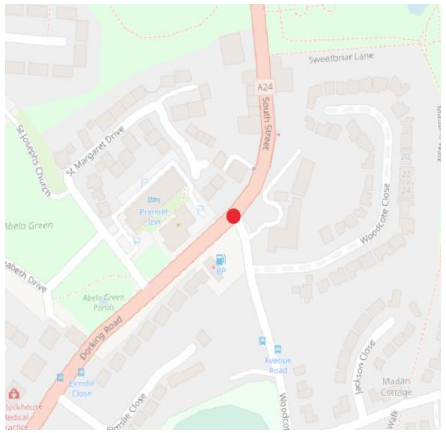

https://goo.gl/maps/Dx79RAU5xAFB6B9u7

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating well within capacity in the future baseline in all time periods. This impact is identified in the AM2 peak where there is a reduction in traffic (-118 vehicles) but an increase in V/C ratio (from 17% to 109%). From reviewing the model, this appears to be the result of model noise and localised reassignment of background traffic from the adjacent junction to the west (V/C ratio increases from 61% to 76%), which results in queuing that affects the operation of this junction. The proportion of airport traffic at this junction is very small (1%) and the number of additional airport trips as a result of the Project is negligible (no change to -2 vehicles across the peak periods). For the other peak periods the junction operates with ample capacity (V/C ratio around 17% with Project). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Airfield Construction | Difference | Future baseline | With Airfield Construction | Difference | Future baseline | With Airfield Construction | Difference |
| **AM1** | Negligible | 497 | 563 | **+67** | 4 | 3 | **-1** | 14.7 | 17.8 | **+3** |
| **AM2** | High | 579 | 461 | **-118** | 8 | 6 | **-2** | 17.0 | 109.3 | **+92** |
| **IP** | Flow Filtered | 479 | 480 | **+1** | 2 | 2 | **0** | 14.7 | 14.8 | **+0** |
| **PM** | Flow Filtered | 510 | 509 | **-0** | 3 | 2 | **-1** | 14.8 | 14.8 | **-0** |

# Epsom

## South Street / Woodcote Road / Dorking Road (Node: 53192)





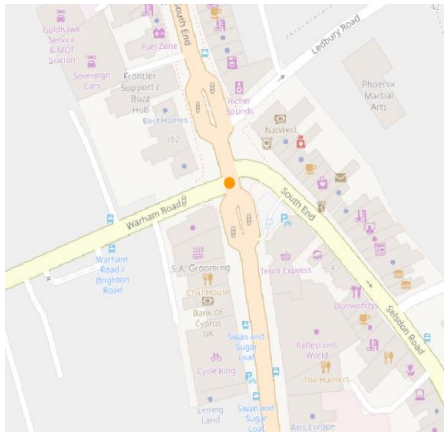
https://goo.gl/maps/Cxek9G61zzAduaQu7

| Assessment | Mitigation |
|---|---|
| This junction is identified as operating close to capacity in the morning and evening peak periods in the future baseline, with V/C ratios of between 91% and 99%. The impact from the Project is identified in the AM1 peak where there is an increase in traffic, although given that similar increases are not seen in other time periods, this is considered to be due to model noise and reassignment of background traffic. The proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible (no change to +1 across the peak periods). The junction would continue to operate close to capacity with the Project, with V/C ratio in the AM1 peak 97% being lower than V/C ratios experienced in other time periods. | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Airfield Construction | Difference | Future baseline | With Airfield Construction | Difference | Future baseline | With Airfield Construction | Difference |
| **AM1** | High | 2139 | 2298 | **+159** | 6 | 7 | **+1** | 91.2 | 97.2 | **+6** |
| **AM2** | Flow Filtered | 2270 | 2269 | **-1** | 13 | 13 | **0** | 95.7 | 95.8 | **+0** |
| **IP** | Flow Filtered | 2044 | 2043 | **-1** | 5 | 5 | **0** | 85.7 | 85.9 | **+0** |
| **PM** | Flow Filtered | 2409 | 2412 | **+2** | 14 | 15 | **0** | 99.4 | 99.5 | **+0** |

# Croydon

## Brighton Road / Warham Road / South End (Node: 55022)





| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating well within capacity in the future baseline in all time periods. The impact from the Project is identified in the AM1 peak where there is an increase in traffic which is considered to be due to model noise and reassignment of background traffic. The proportion of airport traffic at this junction is very small (around 1%) and the number of additional airport trips as a result of the Project is negligible (-6 to +1 vehicles across the peak periods). The junction would continue to operate within capacity with the Project (V/C ratio up to 85%). | No mitigation is required. |

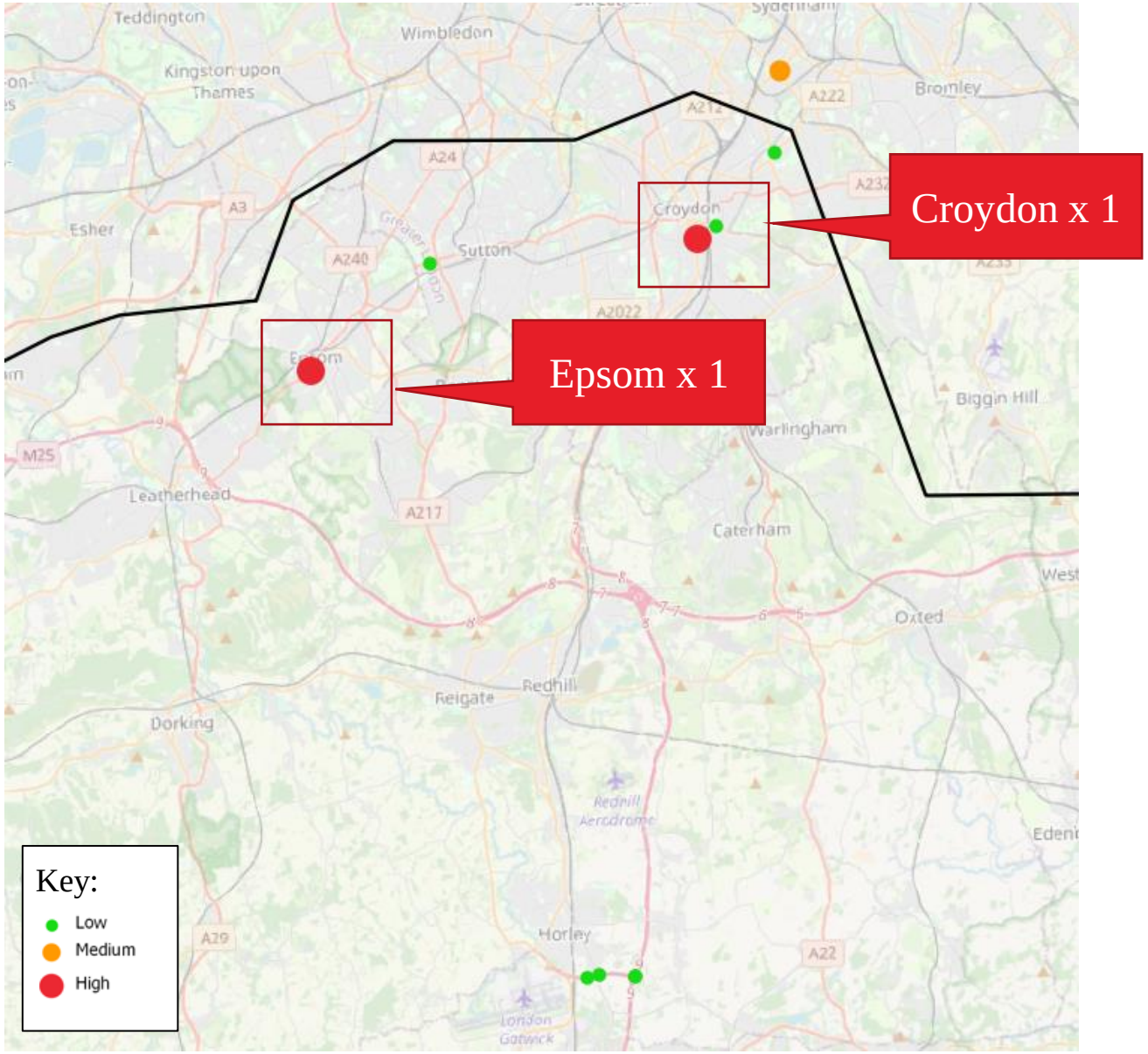
https://goo.gl/maps/Uf3RGL5zmtDBpzVJ6

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Airfield Construction | Difference | Future baseline | With Airfield Construction | Difference | Future baseline | With Airfield Construction | Difference |
| **AM1** | Medium | 2092 | 2302 | **+209** | 26 | 21 | **-5** | 61.1 | 85.0 | **+24** |
| **AM2** | Negligible | 2296 | 2026 | **-270** | 35 | 29 | **-6** | 69.6 | 84.7 | **+15** |
| **IP** | Flow Filtered | 1925 | 1912 | **-13** | 15 | 15 | **0** | 55.1 | 54.8 | **0** |
| **PM** | Flow Filtered | 2452 | 2449 | **-4** | 27 | 28 | **+1** | 62.2 | 62.2 | **0** |

# 2029

Future baseline 2029 vs future baseline 2029 with Project

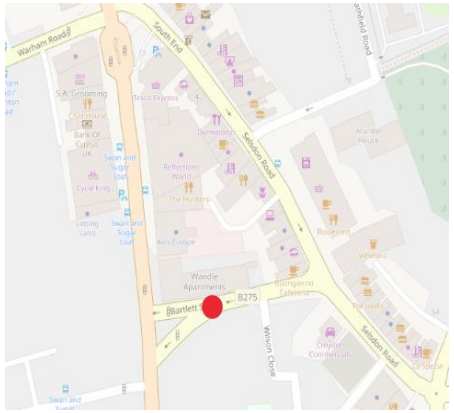
ARUP




**2 Junctions**
(Medium & High impacts)

# Croydon

## South Croydon / Bartlett Street (Node: 55025)



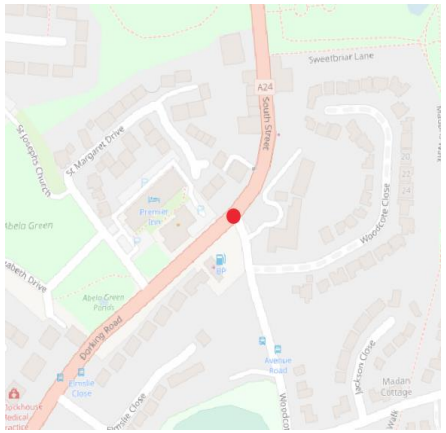

https://goo.gl/maps/Dx79RAU5xAFB6B9u7

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating well within capacity in the future baseline. The impact from the Project is identified in the AM2 peak where there is a reduction in traffic (-96 vehicles) but an increase in V/C ratio (from 17% to 109%). From reviewing the model, this appears to be due to model noise and localised reassignment of background traffic from the adjacent junction to the west (V/C ratio increases from 61% in future baseline to 76% with the Project at that junction), which results in queuing that affects the operation of this junction. The proportion of airport traffic at this junction is very small (around 1%) and the number of additional airport trips at this junction as a result of the Project is negligible (-3 to +2 vehicles across the peak periods). For the other peak periods the junction operates with ample capacity (V/C ratio around 15% with Project). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Negligible | 497 | 515 | **+18** | 4 | 6 | **+2** | 14.7 | 15.2 | **+1** |
| **AM2** | High | 579 | 483 | **-96** | 8 | 5 | **-3** | 17.0 | 108.8 | **+92** |
| **IP** | Flow Filtered | 479 | 482 | **+3** | 2 | 2 | **0** | 14.7 | 14.8 | **0** |
| **PM** | Flow Filtered | 510 | 514 | **+4** | 3 | 2 | **0** | 14.8 | 14.9 | **0** |

# Epsom

## South Street / Woodcote Road / Dorking Road (Node: 53192)





https://goo.gl/maps/Cxek9G61zzAduaQu7

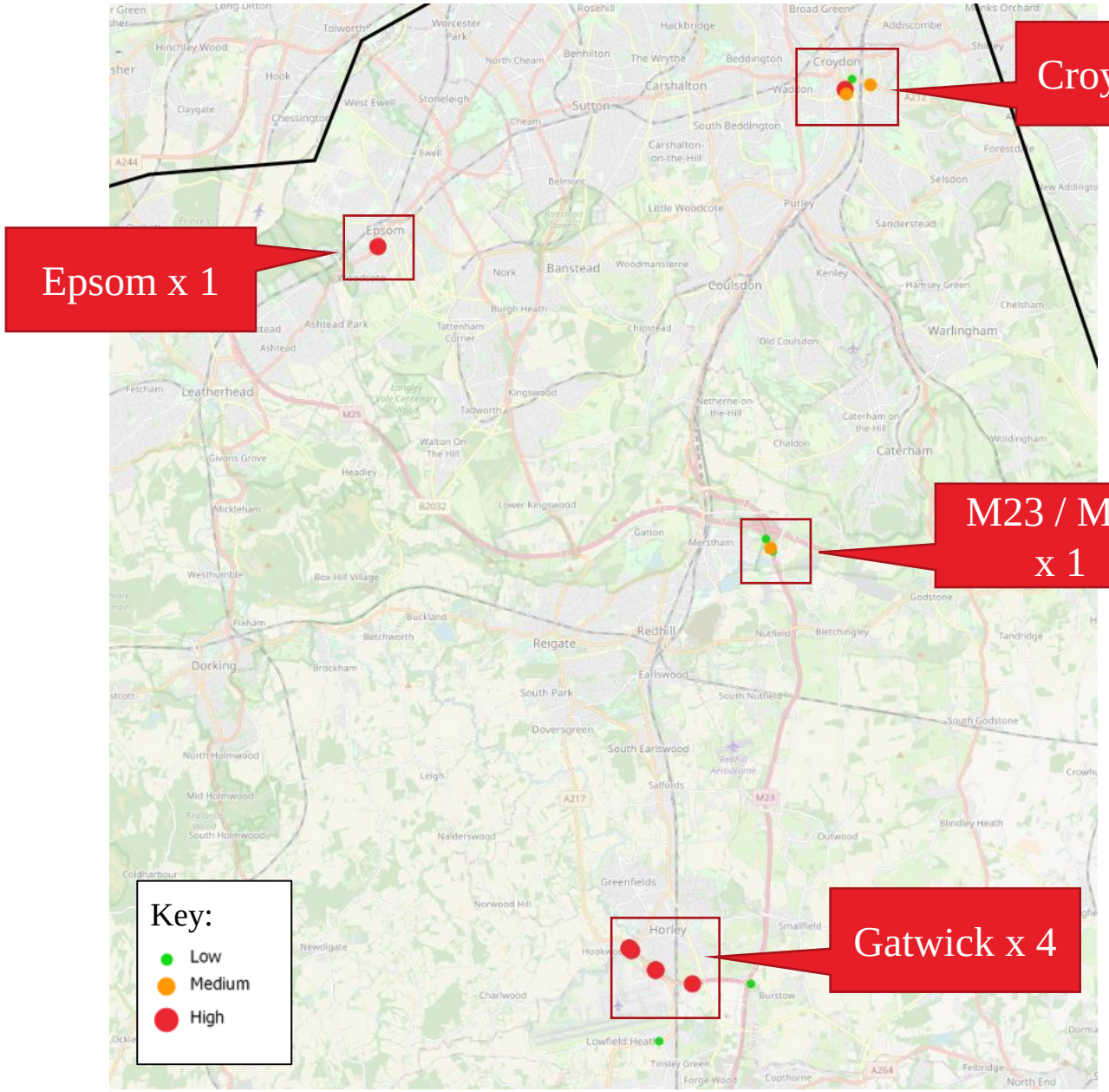
| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating close to capacity in the future baseline, in the morning and evening peak periods (V/C ratio ranging from 91% to 99%). The impact from the Project is identified in the AM1 peak where there is an increase in traffic of 159 vehicles. This is due to model noise and reassignment of background traffic, and there is no similar increase in the other time periods. The junction is operating near to capacity with the Project, with V/C ratio at AM1 peak with Project (97%). This is lower than PM peak for the future baseline without Project (99%). The proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible (-3 to +2 vehicles across the peak periods). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | High | 2139 | 2297 | **+159** | 4 | 6 | **+2** | 91.2 | 97.2 | **+6** |
| **AM2** | Flow Filtered | 2270 | 2270 | **0** | 8 | 5 | **-3** | 95.7 | 95.8 | **+0** |
| **IP** | Flow Filtered | 2044 | 2045 | **+1** | 2 | 2 | **0** | 85.7 | 85.7 | **+0** |
| **PM** | Flow Filtered | 2409 | 2406 | **-3** | 3 | 2 | **0** | 99.4 | 99.3 | **+0** |

# 2029 Highway Construction

Future baseline 2029 vs future baseline 2029 with Project and Highway Construction (HCON)

ARUP




**9 Junctions**
(Medium & High impacts)

# Croydon

## Coombe Rd / South Park Hill Rd (Node: 54710)

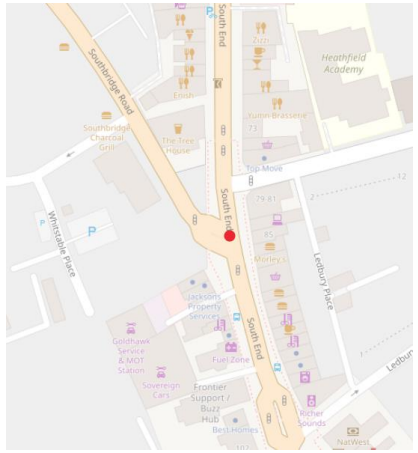

https://goo.gl/maps/SsKZmgyFWicK598JA

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating close to capacity in the morning peak periods and within capacity at other time periods in the future baseline (maximum V/C ratios of 99% in the AM1 period). With the Project and highway construction activity the model shows increases in traffic in the AM2 period, which are not reflected in other time periods. This is considered to be due to model noise and reassignment of background traffic. The proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the highway construction works is negligible (-1 to +1 vehicle across the peak periods). With the Project and highway construction activity the junction would continue to operate within or close to capacity, with a maximum V/C ratio of 98% in the AM1 time period. | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | Reduction | 2446 | 2407 | **-39** | 8 | 8 | **-1** | 98.9 | 98.1 | **-1** |
| **AM2** | Medium | 2325 | 2401 | **+76** | 13 | 13 | **0** | 93.7 | 96.7 | **+3** |
| **IP** | Flow Filtered | 2213 | 2211 | **-2** | 18 | 18 | **0** | 87.1 | 87.0 | **-0** |
| **PM** | Flow Filtered | 2280 | 2325 | **+45** | 10 | 11 | **1** | 86.2 | 88.3 | **+2** |

# Croydon

## Southbridge Road / South End (Node: 55021)





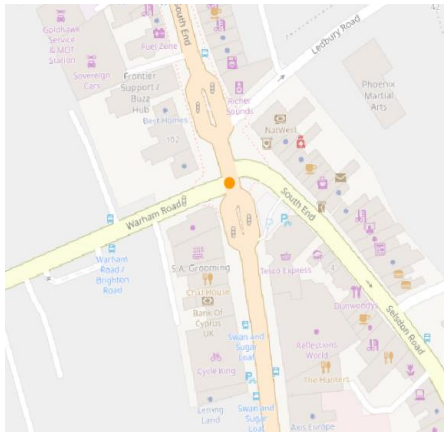
https://goo.gl/maps/bXghe68MdzNxxCLk6

| Assessment | Mitigation |
|---|---|
| This impact is identified in the AM1 peak where there is an increase in traffic of around 250 vehicles, but without a similar increase in the following AM2 period despite a similar total volume of traffic passing through the junction. This is considered to be due to model noise and reassignment of background traffic. The proportion of airport traffic at this junction is very small (around 1%) and the change in airport-related trips as a result of the Project is negligible (reducing by up to 6 vehicles across the peak periods). The junction continues to operate within capacity (V/C of 91% in the AM1 period with the Project and highway construction). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | High | 1461 | 1715 | **+255** | 25 | 19 | **-6** | 64.9 | 91.0 | **+26** |
| **AM2** | Reduction | 1629 | 1438 | **-191** | 32 | 32 | **-1** | 71.2 | 66.3 | **-5** |
| **IP** | Flow Filtered | 1422 | 1421 | **-1** | 4 | 4 | **0** | 68.5 | 68.5 | **-0** |
| **PM** | Flow Filtered | 1822 | 1822 | **+0** | 26 | 26 | **0** | 83.4 | 83.4 | **+0** |

# Croydon

## Brighton Road / Warham Road / South End (Node: 55022)





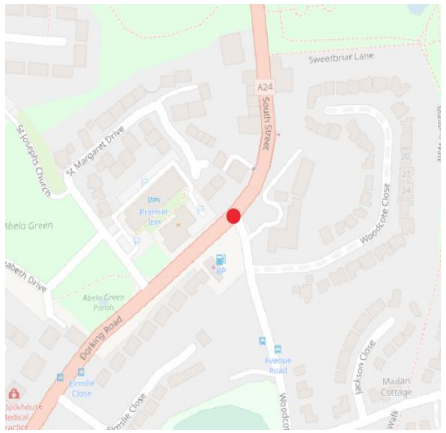
https://goo.gl/maps/Uf3RGL5zmtDBpzVJ6

| Assessment | Mitigation |
|---|---|
| This impact is identified in the AM1 peak where there is an increase in traffic of around 240 vehicles but without similar increases in other peak periods, despite a similar total volume of traffic passing through the junction. This is considered to be due to model noise and reassignment of background traffic. The proportion of airport traffic at this junction is very small (around 1%) and the change in airport-related trips as a result of the Project is negligible (a reduction of up to 7 vehicles across the peak periods). The junction continues to operate within capacity (V/C ratio up to 85.4% with the Project and highway construction). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | Medium | 2092 | 2336 | **+243** | 26 | 19 | **-7** | 61.1 | 85.4 | **+24** |
| **AM2** | Reduction | 2296 | 2284 | **-12** | 35 | 36 | **0** | 69.6 | 69.4 | **-0** |
| **IP** | Flow Filtered | 1925 | 1924 | **-1** | 15 | 16 | **0** | 55.1 | 55.1 | **-0** |
| **PM** | Flow Filtered | 2452 | 2456 | **+3** | 27 | 27 | **0** | 62.2 | 62.3 | **+0** |

# Epsom

## South Street / Woodcote Road / Dorking Road (Node: 53192)





https://goo.gl/maps/Cxek9G61zzAduaQu7

| Assessment | Mitigation |
|---|---|
| This impact is identified in the AM1 peak where there is an increase in traffic of around 160 vehicles, but without similar increases in other periods despite similar total volumes of traffic passing through the junction. This is considered to be due to model noise and reassignment of background traffic. There is no change in airport-related traffic associated with the Project and highway construction. The junction is operating at capacity ( V/C ratio of 97% in the AM1 peak with Project and highway construction). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | High | 2139 | 2298 | **+159** | 6 | 6 | **0** | 91.2 | 97.2 | **+6** |
| **AM2** | Flow filtered | 2270 | 2274 | **+4** | 13 | 14 | **+1** | 95.7 | 96.0 | **+0** |
| **IP** | Flow Filtered | 2044 | 2044 | **+0** | 5 | 5 | **0** | 85.7 | 85.6 | **-0** |
| **PM** | Flow Filtered | 2409 | 2400 | **-9** | 14 | 14 | **0** | 99.4 | 99.1 | **-0** |

# M23 / M25

## Southern diverge (Node: 19607)



| Assessment | Mitigation |
|---|---|
| The impact is identified in the AM1 peak, where the V/C increases by 2% from 93.7% to 95.8%. The node continues to operate within capacity. | No mitigation is required. |

https://goo.gl/maps/11fX9zCpK7BoFr7AA

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | Medium | 5285 | 5404 | **+119** | 1278 | 1376 | **+98** | 93.7 | 95.8 | **+2** |
| **AM2** | Flow filtered | 4778 | 4759 | **-20** | 1521 | 1547 | **+26** | 87.4 | 87.1 | **-0** |
| **IP** | Negligible | 3897 | 3940 | **+43** | 1185 | 1263 | **+79** | 72.6 | 73.4 | **+1** |
| **PM** | Flow Filtered | 5122 | 5119 | **-3** | 1199 | 1217 | **+18** | 89.8 | 89.7 | **-0** |

# Gatwick

## South Terminal - Airport Way Roundabout East / A23 (Node: 15084)



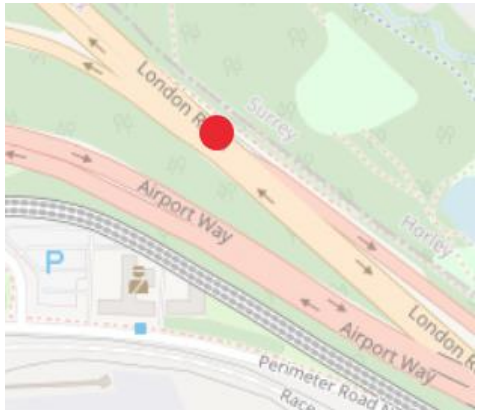
https://goo.gl/maps/KUwyNkJUhqpbG5q86

| Assessment | Mitigation |
|---|---|
| This junction is indicated to be operating within capacity in the future baseline. It is part of the South Terminal Roundabout, which would be affected by the traffic management required for the highway construction works and would also experience some increase in traffic while the works are being undertaken. The impacts from the Project are identified in the AM1 and AM2 peak periods. AM1 is shown with a reduction of overall traffic (-7 vehicles) in the and an increase in Project airport traffic (+159 vehicles). AM2 is shown with an overall increase in vehicles (+99 vehicles) and an increase in Project airport traffic (+11 vehicles). The model nevertheless indicates that the junction would continue to operate with V/C ratios of less than 100% in all time periods, and the impact of the Project shown by the modelling would would be temporary (lasting around six months, based on the indicative programme) while the highway works are being undertaken. | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | High | 3431 | 3424 | **-7** | 2624 | 2783 | **159** | 82.7 | 97.8 | **+15** |
| **AM2** | High | 3233 | 3331 | **+99** | 2480 | 2492 | **11** | 83.3 | 95.3 | **+12** |
| **IP** | Negligible | 2748 | 2769 | **+22** | 2117 | 2169 | **52** | 64.2 | 81.5 | **+17** |
| **PM** | Flow Filtered | 2726 | 2788 | **+63** | 2010 | 2075 | **65** | 61.6 | 79.6 | **+18** |

# Gatwick

## London Rd / Airport Way (Node: 15083)





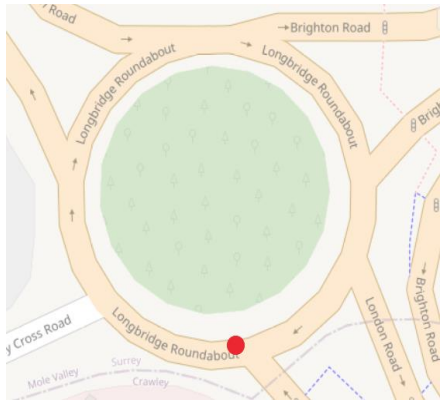
| Assessment | Mitigation |
|---|---|
| The model generally indicates that this location would operate within capacity in the future baseline, but during highway construction they would be affected by the traffic management required for the highway construction, leading to a reduction in the number of lanes (and associated saturation flows) This would result in higher V/C ratios, approaching 100%, for a temporary period (lasting around six months, based on the indicative programme) while the highway works are being undertaken. | No mitigation is required. |

https://goo.gl/maps/AkEE7xiEyF25ekZL9

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | High | 1992 | 1761 | **-231** | 331 | 233 | **-99** | 57.0 | 93.9 | **+37** |
| **AM2** | High | 2244 | 1887 | **-357** | 319 | 191 | **-129** | 62.8 | 100.6 | **+38** |
| **IP** | Negligible | 1725 | 1498 | **-227** | 255 | 173 | **-82** | 49.9 | 81.0 | **+31** |
| **PM** | High | 2108 | 1767 | **-341** | 432 | 171 | **-261** | 58.6 | 93.0 | **+34** |

# Gatwick

## Longbridge Roundabout (Node: 14801)



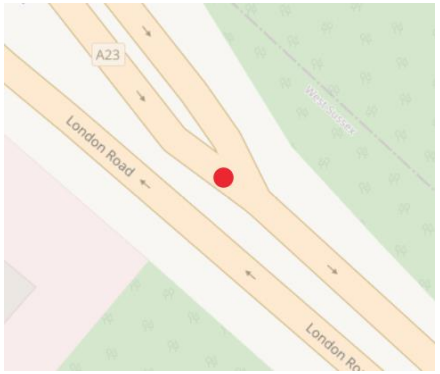

| Assessment | Mitigation |
|---|---|
| The model generally indicates that this location would operate within capacity in the future baseline, but during highway construction they would be affected by the traffic management required for the highway construction, leading to a reduction in the number of lanes (and associated saturation flows) This would result in higher V/C ratios, approaching 100%, for a temporary period (lasting around six months, based on the indicative programme) while the highway works are being undertaken. | No mitigation is required. |

https://goo.gl/maps/CUTSxVS7X2pnQFm39

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | High | 2188 | 1847 | **-341** | 576 | 456 | **-120** | 54.2 | 91.6 | **+37** |
| **AM2** | High | 2108 | 1896 | **-212** | 413 | 309 | **-104** | 52.2 | 93.7 | **+41** |
| **IP** | High | 2193 | 1806 | **-387** | 410 | 293 | **-117** | 55.5 | 92.2 | **+37** |
| **PM** | High | 2805 | 2172 | **-633** | 597 | 318 | **-280** | 67.8 | 98.7 | **+31** |

# Gatwick

## London Rd / A23 (Node: 16768)




| Assessment | Mitigation |
|---|---|
| The model generally indicates that this location would operate within capacity in the future baseline, but during highway construction they would be affected by the traffic management required for the highway construction, leading to a reduction in the number of lanes (and associated saturation flows) This would result in higher V/C ratios, approaching 100%, for a temporary period (lasting around six months, based on the indicative programme) while the highway works are being undertaken. | No mitigation is required. |

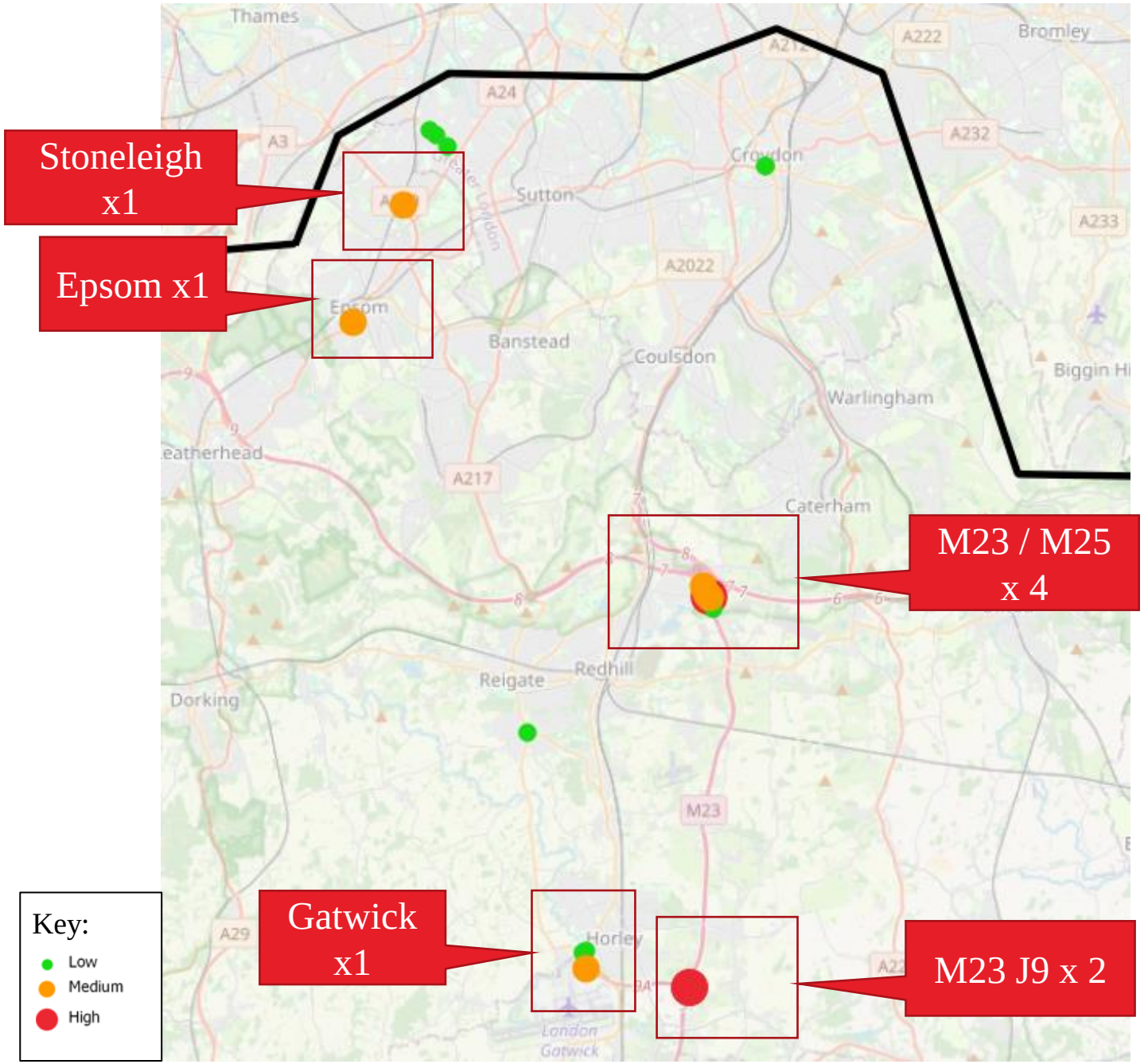
https://goo.gl/maps/1eKxxKMUmhVNK8Bx5

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference | Future baseline | With Project and Highway Construction | Difference |
| **AM1** | Negligible | 1992 | 1761 | **-231** | 331 | 233 | **-98** | 53.6 | 82.7 | **+29** |
| **AM2** | High | 2243 | 1887 | **-357** | 322 | 191 | **-131** | 59.8 | 92.5 | **+33** |
| **IP** | Negligible | 1726 | 1498 | **-227** | 255 | 173 | **-82** | 47.0 | 65.3 | **+18** |
| **PM** | Negligible | 2109 | 1768 | **-341** | 426 | 168 | **-258** | 55.2 | 84.2 | **+29** |

# 2032

Future baseline 2032 vs future baseline 2032 with Project

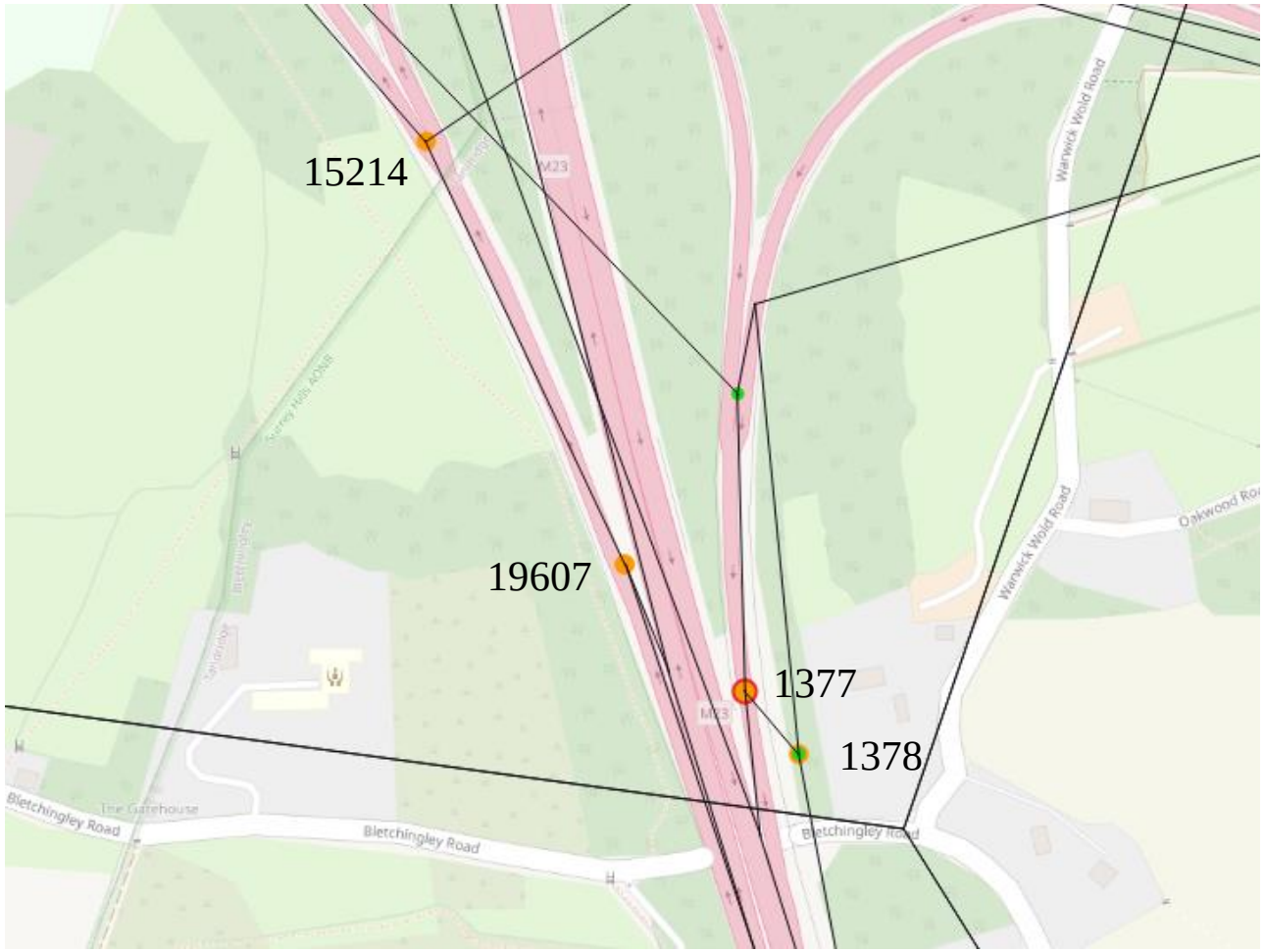
ARUP




9 **Junctions** (Medium & High impacts)

# M23 / M25

## Southern merge and diverges (Nodes: 15214, 19607, 1377 & 1378)




| Assessment | Mitigation |
|---|---|
| This complex of merges and diverges is shown to be operating within capacity in the future baseline, with V/C ratios varying from 63% in the inter-peak period to 100% in the AM1 time period. A separate more detailed review of the whole junction has been undertaken against DMRB criteria, to consider the performance of the merges and diverges at this junction. No capacity issues are expected in the with Project scenario, which shows V/C ratios increasing by just two to three percentage points. Further consideration for this junction is undertaken under the 2047 assessment year. | No mitigation is required. |

*Note: The black lines illustrate the SATURN model links*

# M23 / M25

**Node: 15214**

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 5457 | 5644 | **+188** | 1338 | 1701 | **363** | 94.1 | 97.2 | **+3** |
| **AM2** | Low | 4985 | 5115 | **+130** | 1589 | 1860 | **271** | 88.7 | 90.8 | **+2** |
| **IP** | Negligible | 4063 | 4198 | **+134** | 1202 | 1398 | **197** | 73.5 | 75.9 | **+2** |
| **PM** | Low | 5285 | 5459 | **+174** | 1204 | 1438 | **234** | 89.9 | 92.9 | **+3** |

**Node: 19607**

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 5457 | 5656 | **+199** | 1338 | 1704 | **+366** | 96.8 | 100.2 | **+3** |
| **AM2** | Low | 4985 | 5103 | **+119** | 1588 | 1856 | **+267** | 91.3 | 93.4 | **+2** |
| **IP** | Negligible | 4063 | 4198 | **+134** | 1202 | 1398 | **+197** | 75.6 | 78.0 | **+2** |
| **PM** | Medium | 5285 | 5459 | **+174** | 1204 | 1438 | **+234** | 92.6 | 95.7 | **+3** |

# M23 / M25

**Node: 1377**

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 3216 | 3460 | **+245** | 1146 | 1403 | **+257** | 83.6 | 90.3 | **+7** |
| **AM2** | High | 3476 | 3701 | **+225** | 1237 | 1454 | **+217** | 90.1 | 96.5 | **+6** |
| **IP** | Negligible | 2321 | 2488 | **+166** | 735 | 841 | **+105** | 63.4 | 67.7 | **+4** |
| **PM** | Low | 3214 | 3321 | **+107** | 649 | 769 | **+120** | 82.8 | 85.7 | **+3** |

**Node: 1378**

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Low | 3143 | 3328 | **+186** | 1033 | 1257 | **+225** | 87.3 | 91.8 | **+4** |
| **AM2** | Medium | 3358 | 3568 | **+210** | 1075 | 1249 | **+174** | 91.7 | 96.7 | **+5** |
| **IP** | Negligible | 2668 | 2736 | **+68** | 737 | 842 | **+106** | 76.4 | 78.6 | **+2** |
| **PM** | Negligible | 3198 | 3262 | **+63** | 627 | 739 | **+112** | 86.9 | 88.5 | **+2** |

# Perimeter Road North

## Longbridge Way / Perimeter Road North (Node: 73465)



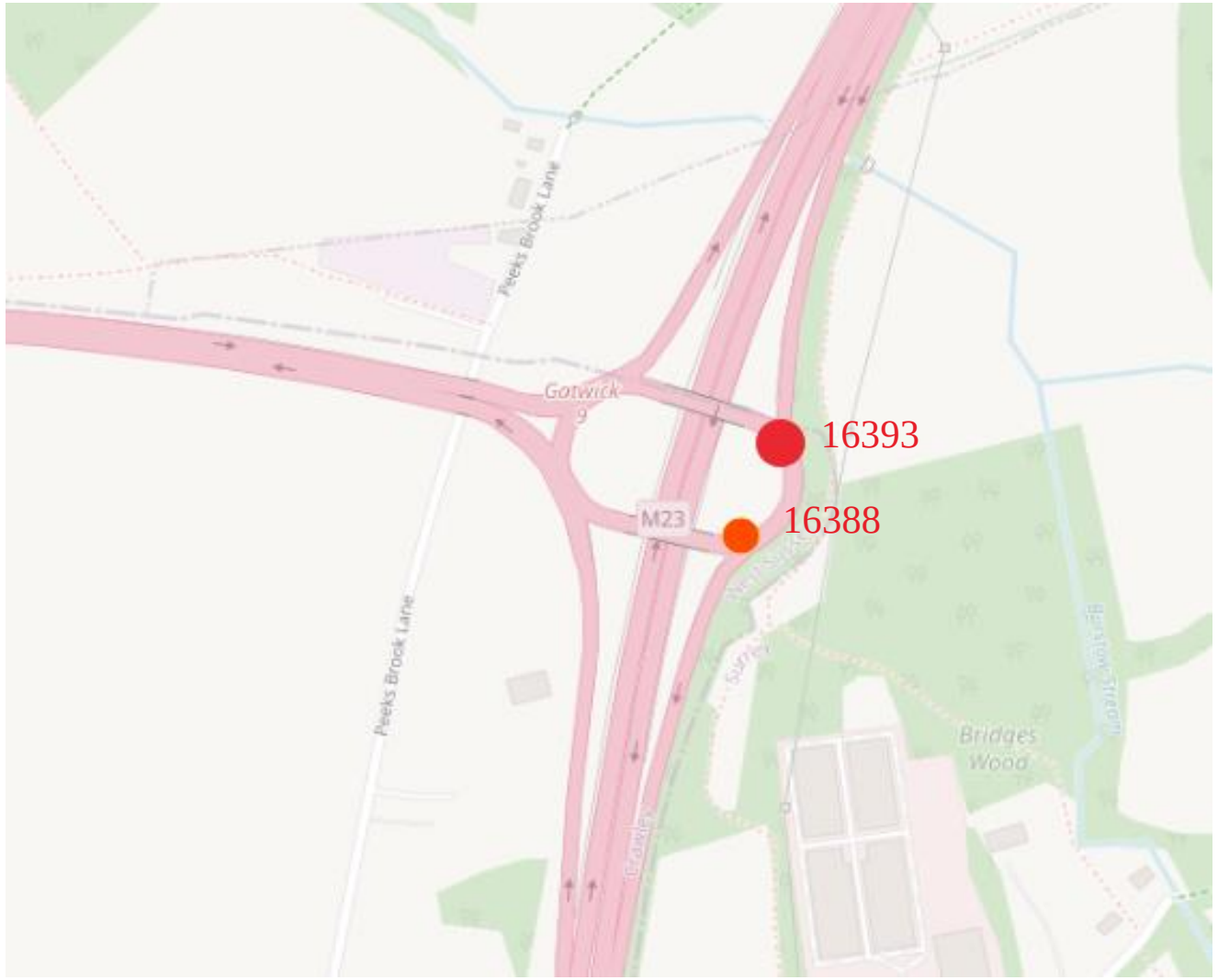
https://goo.gl/maps/ssUwRNW4XS9AkKfZ7

| Assessment | Mitigation |
|---|---|
| This is an internal junction within the GAL road network, which is shown to be operating within capacity in the future baseline. The junction is expected to experience an increase in traffic with the Project. The medium impact from the Project is identified for the AM1 peak where the junction would still be operating within capacity with the Project (V/C ratio of 86%). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 744 | 871 | **+127** | 726 | 853 | **+127** | 71.5 | 85.7 | **+14** |
| **AM2** | Negligible | 606 | 694 | **+88** | 587 | 674 | **+87** | 57.8 | 68.3 | **+10** |
| **IP** | Negligible | 616 | 721 | **+106** | 604 | 710 | **+106** | 63.1 | 75.9 | **+13** |
| **PM** | Negligible | 378 | 431 | **+53** | 366 | 419 | **+53** | 34.6 | 40.4 | **+6** |

# Gatwick M23 Junction 9

## Gatwick Interchange / M23 (Nodes: 16393 & 16388)




| Assessment | Mitigation |
|---|---|
| This junction is within the VISSIM microsimulation model and its operation has been considered in more detail through the use of that model. This shows some reductions in speeds with the Project, compared to the future baseline, but no significant capacity issues have been identified (see next slides). | No mitigation is required. |

# Gatwick M23

## Gatwick/Interchange/M23

### Node: 16393

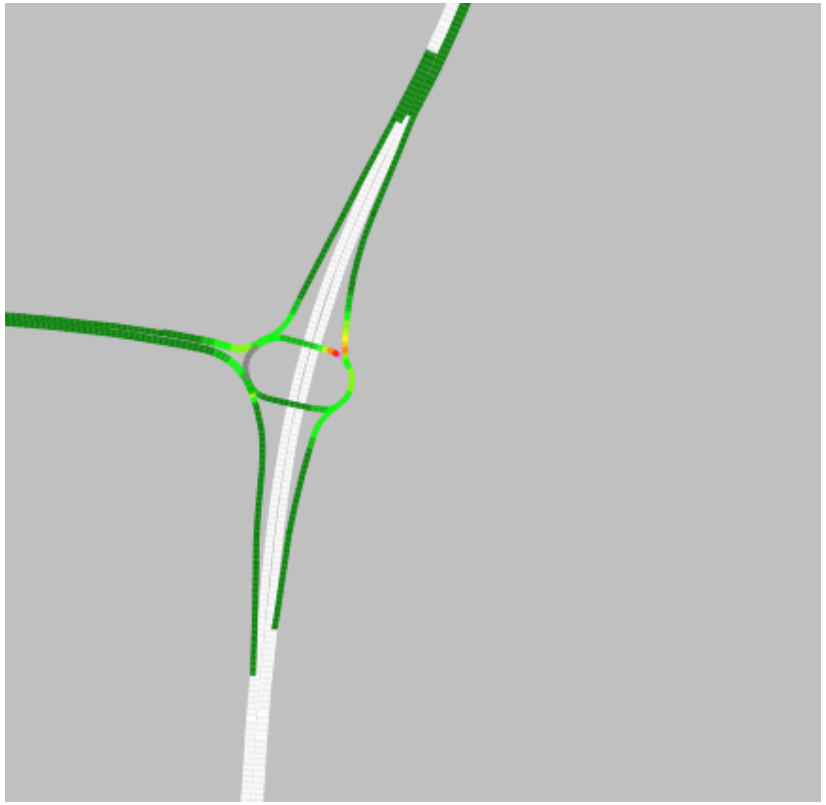
| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| AM1 | High | 2727 | 3245 | **+517** | 2080 | 2494 | **+414** | 83.8 | 99.8 | **+16** |
| AM2 | High | 2779 | 3339 | **+561** | 2127 | 2483 | **+356** | 85.4 | 102.6 | **+17** |
| IP | Negligible | 2075 | 2345 | **+271** | 1598 | 1836 | **+238** | 64.8 | 73.2 | **+8** |
| PM | Negligible | 2042 | 2326 | **+284** | 1413 | 1717 | **+304** | 61.5 | 70.1 | **+9** |

### Node: 16388

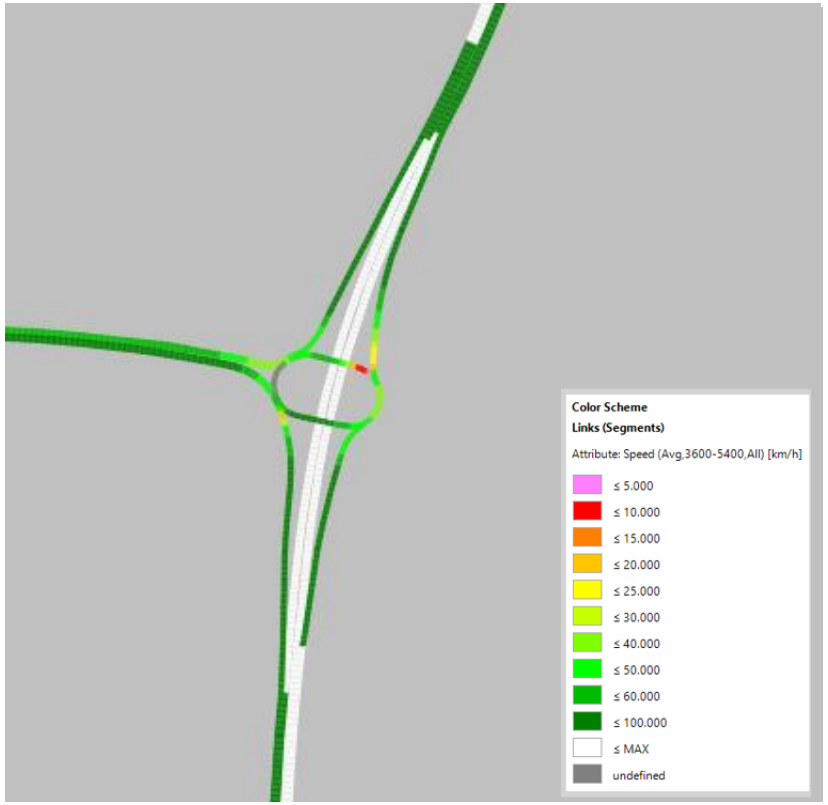
| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| AM1 | Medium | 2727 | 3256 | **+528** | 2080 | 2494 | **+414** | 74.5 | 88.6 | **+14** |
| AM2 | Medium | 2778 | 3256 | **+478** | 2127 | 2483 | **+356** | 76.0 | 88.9 | **+13** |
| IP | Negligible | 2076 | 2339 | **+263** | 1598 | 1836 | **+238** | 57.8 | 65.0 | **+7** |
| PM | Negligible | 1987 | 2247 | **+260** | 1413 | 1717 | **+304** | 53.4 | 60.4 | **+7** |

# M23 Junction 9

## Gatwick Interchange / M23



Future baseline 2032




With Project 2032

This junction is part of the more detailed assessment undertaken in VISSIM (as set out in the **Transport Assessment** (Doc Ref: 7.4)).

With adaptive signal control on the M23 southbound slip and the Smart Motorways configuration implemented on the slip approaches, this junction operates consistently in all scenarios.

In the future baseline configuration, the westbound M23 Spur sees slower traffic speeds in the AM and PM peaks than in the with Project configuration. This does not impede the operation of Junction 9 in any of the modelled scenarios.

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# Epsom

## South Street / Woodcote Road / Dorking Road, Epsom (Node: 53192)



https://maps.app.goo.gl/QcbJy35mLEoThrfW6

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating close to capacity in the future baseline, in the morning and evening peak periods (V/C ratio ranging from 93% to 100%). The impact from the Project is identified in the AM1 peak where there is an increase in traffic of 123 vehicles. This is due to model noise and reassignment of background traffic, and there is no similar increase in the other time periods. The junction is operating near to capacity with the Project, with V/C ratio at AM1 peak with Project (98%). This is lower than PM peak for the future baseline without Project (100%). The proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible (no change to +3 vehicles across the peak periods). | No mitigation is required. |

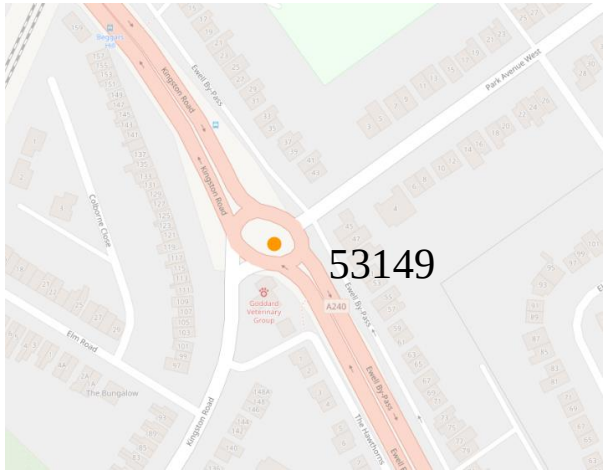
| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 2182 | 2306 | **+123** | 6 | 8 | **+2** | 93 | 98 | **+5** |
| **AM2** | Flow filtered | 2275 | 2272 | **-2** | 14 | 16 | **+3** | 96 | 96 | **-0** |
| **IP** | Flow Filtered | 2064 | 2069 | **+5** | 5 | 5 | **+0** | 87 | 87 | **+0** |
| **PM** | Flow Filtered | 2426 | 2428 | **+2** | 15 | 17 | **+3** | 100 | 100 | **+0** |

New page inserted

ARUP

# Stoneleigh

## Kingston Road / Park Avenue West, Stoneleigh (Node: 53149)



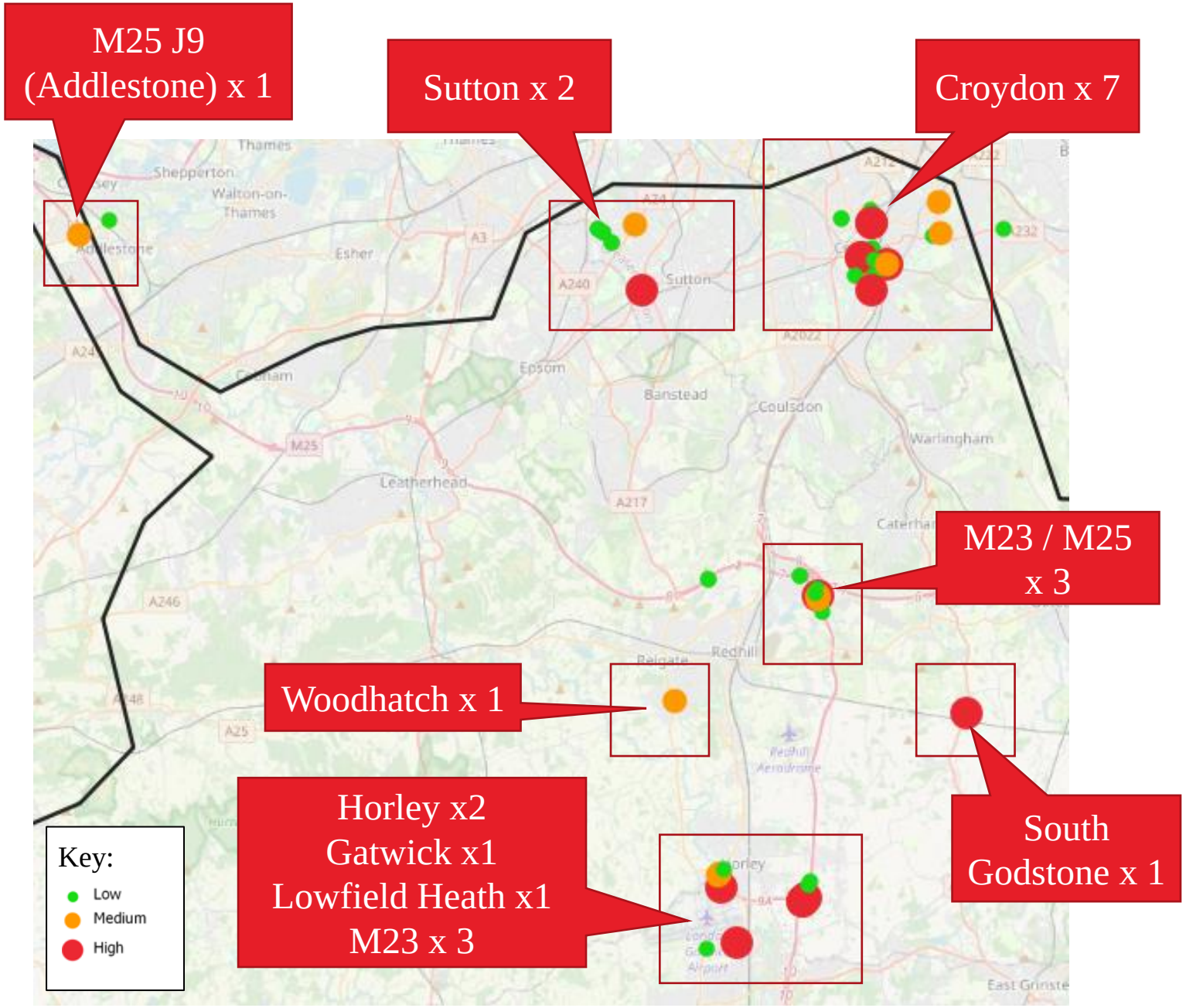

https://maps.app.goo.gl/kMeeUseJJGTSbjom6

| Assessment | Mitigation |
|---|---|
| This junction is shown to be exceeding capacity in the AM1 peak and close to capacity in the other peak hours.<br>The impact from the Project is identified in the AM1 peak where there is an increase in traffic (+49 vehicles) which increases V/C ratio from 102% to 104%). From reviewing the model, this appears to be due to model noise and localised reassignment of background. The proportion of airport traffic at this junction is very small (around 1%) and the number of additional airport trips at this junction as a result of the Project is small (up to +17 vehicles) | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 3247 | 3297 | **+49** | 94 | 111 | **+17** | 102 | 104 | **+2** |
| **AM2** | Flow filtered | 3046 | 3021 | **-25** | 86 | 102 | **+16** | 98 | 98 | **+1** |
| **IP** | Flow Filtered | 3025 | 3032 | **+7** | 17 | 21 | **+4** | 91 | 91 | **+0** |
| **PM** | Flow Filtered | 3438 | 3440 | **+2** | 50 | 56 | **+6** | 88 | 89 | **+0** |

# 2047

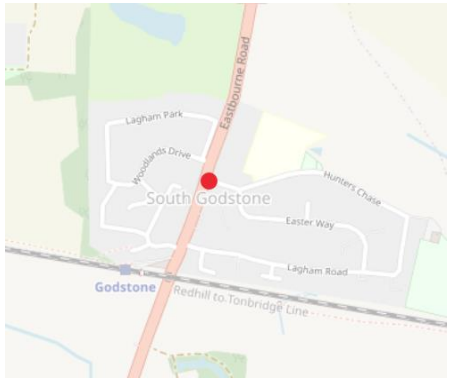
Future baseline 2047 vs future baseline 2047 with Project




**22 Junctions**
(Medium & High impacts)

# South Godstone

## A22 / Harcourt Way (Node: 10137)



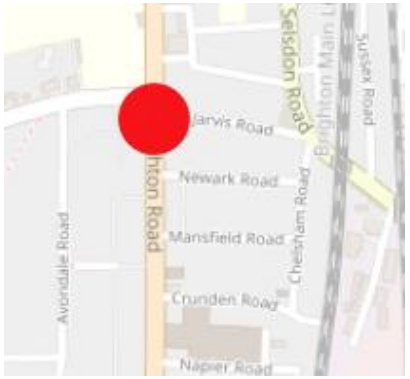

| Assessment | Mitigation |
|---|---|
| This node in the model does not represent an actual junction, but is a zone connector, which is a location at which all the traffic from the existing residential area is assumed to be loaded onto the network in one location. In practice, this traffic would use a number of junctions which have not been included given the strategic nature of the model. | No mitigation is required. |

https://goo.gl/maps/5cP9zyX5ygPQNUSE8

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Negligible | 2495 | 2532 | **+37** | 30 | 33 | **2** | 100.1 | 101.8 | **+2** |
| **AM2** | High | 2791 | 2869 | **+78** | 24 | 31 | **7** | 123.4 | 128.8 | **+5** |
| **IP** | Flow Filtered | 1894 | 1907 | **+13** | 25 | 25 | **0** | 66.2 | 66.6 | **+0** |
| **PM** | Flow Filtered | 2266 | 2276 | **+11** | 21 | 21 | **0** | 79.5 | 79.7 | **+0** |

# Croydon

## Brighton Road / Jarvis Road (Node: 55049)



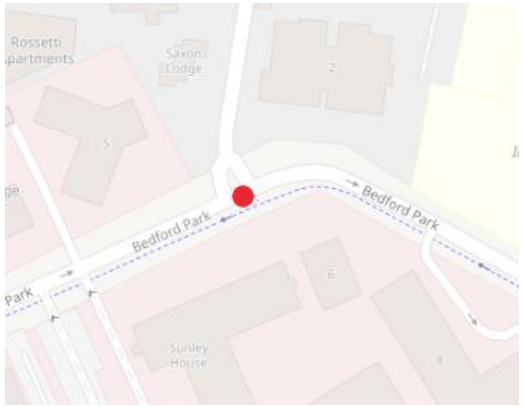

https://goo.gl/maps/ALmYzLrXrstNBmi19

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating close to capacity in the morning and evening peak periods in the future baseline, with V/C ratios of between 88% and 96%. The impact from the Project is identified in the AM2 peak where there is an increase in traffic of around 200 trips, which appears to be due to model noise and reassignment of background traffic as a similar increase does not appear in other time periods. The proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible (up to 6 vehicles an hour). The junction would continue to operate at capacity with the Project, with the V/C ration in the AM2 peak with the Project (96.7%) being very similar to performance in the AM1 peak in future baseline (96.2%). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Negligible | 2617 | 2576 | **-40** | 43 | 46 | **+4** | 96.2 | 98.2 | **+2** |
| **AM2** | High | 2355 | 2559 | **+204** | 43 | 48 | **+6** | 88.4 | 96.7 | **+8** |
| **IP** | Flow Filtered | 2334 | 2328 | **-5** | 32 | 37 | **+5** | 90.0 | 89.7 | **-0** |
| **PM** | Flow Filtered | 2504 | 2503 | **-2** | 44 | 46 | **+2** | 92.8 | 92.7 | **-0** |

# Croydon

## Bedford Park / Tavistock Road (Node: 54438)





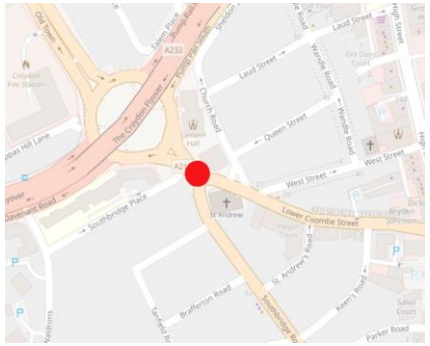
https://goo.gl/maps/vHDPcYwNRiNKLdpU9

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating within capacity in all time periods in the future baseline, with V/C ratios of between 63% and 88%. The models show an increase in traffic with the Project in the AM1 and AM2 periods, which appears to be due to model noise and reassignment of background traffic. The consequence of the increase in traffic with the Project is that the model indicates it would operate over capacity in the AM1 and AM2 peak periods with the Project (V/C increases from around 86% to 105%). The proportion of airport traffic at this junction is very small (around 0.5% which can be considered to be within daily variation in traffic) and the number of additional airport trips as a result of the Project is negligible (up to 3 vehicles an hour). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | High | 648 | 771 | **+123** | 0 | 4 | **+3** | 88.2 | 105.2 | **+17** |
| **AM2** | High | 635 | 740 | **+105** | 0 | 1 | **+1** | 86.1 | 105.5 | **+19** |
| **IP** | Flow Filtered | 459 | 463 | **+ 5** | 1 | 1 | **0** | 62.7 | 63.4 | **+ 1** |
| **PM** | Flow Filtered | 614 | 615 | **+ 1** | 0 | 0 | **0** | 82.8 | 82.8 | **+ 0** |

# Croydon

## Lower Coombe Street / Southbridge Road (Node: 54708)



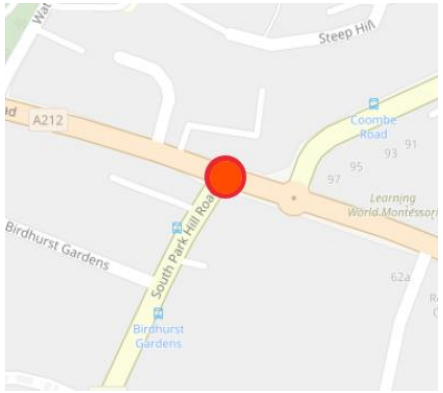
https://goo.gl/maps/XV6a75GZqaeEXgwt7

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating within capacity in all time periods in the future baseline. An increase in traffic is shown in the AM1 and AM2 time periods with the Project, amounting to between 542 and 813 trips. However, this is considered to be the result of model noise and reassignment of background traffic, given that the proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible (up to 10 vehicles an hour). With the Project, the model indicates that the junction would still operate within capacity (V/C ratio of 95%). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | High | 2153 | 2695 | **+542** | 14 | 19 | **+ 5** | 68.0 | 94.5 | **+26** |
| **AM2** | High | 1929 | 2742 | **+813** | 7 | 17 | **+ 10** | 59.7 | 94.3 | **+35** |
| **IP** | Flow Filtered | 2677 | 2694 | **+ 17** | 4 | 5 | **+ 1** | 88.1 | 88.9 | **+ 1** |
| **PM** | Flow Filtered | 2725 | 2715 | **- 10** | 32 | 27 | **- 5** | 87.7 | 86.9 | **- 1** |

# Croydon

## Coombe Road / South Park Hill Road (Node: 54710)





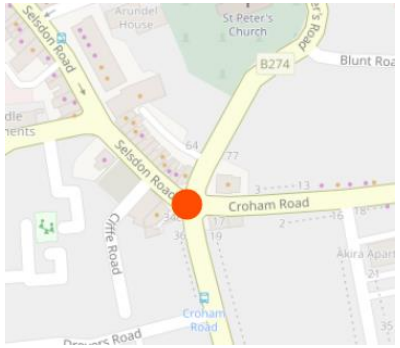
https://goo.gl/maps/HXGMxBdAT4X6Z6Fz6

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating within capacity in the morning peak period and close to capacity in the interpeak and evening peak period in the future baseline. The model shows increases in traffic in the morning time periods with the Project which appear to be due to model noise and reassignment of background traffic, given that the proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible (up to 8 vehicles an hour). The junction would continue to operate within but close to capacity with the Project (maximum V/C ratio of 98.5% in any time period). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 2153 | 2257 | **+104** | 12 | 16 | **+ 4** | 81.7 | 91.2 | **+9** |
| **AM2** | High | 2036 | 2424 | **+389** | 9 | 17 | **+ 8** | 75.3 | 98.5 | **+23** |
| **IP** | Negligible | 2321 | 2350 | **+ 30** | 17 | 19 | **+ 2** | 91.9 | 93.5 | **+ 2** |
| **PM** | Medium | 2384 | 2420 | **+ 37** | 11 | 14 | **+ 3** | 92.8 | 95.4 | **+ 3** |

# Croydon

## Selsdon Road / St Peter's Road / Croham Road (Node: 54778)





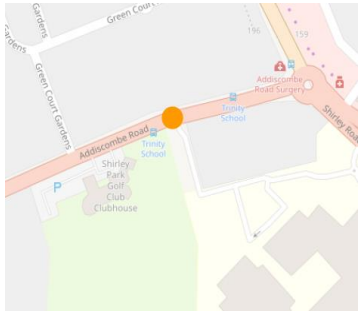
https://goo.gl/maps/U4uP9A7pjRnLP5J86

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating within capacity in the morning and interpeak time periods, and at capacity in the evening time period (V/C of 99%) in the future baseline. The impact from the Project is identified in the AM1 peak where there is a small increase in traffic (+59 trips). The proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible (up to 4 vehicles an hour). With the Project, the junction would operate closer to capacity in the AM1 peak (V/C of 91%) than it would in the future baseline, but the performance in the evening peak period would not be affected (V/C of 98% with Project compared to 99% in the future baseline) | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 2214 | 2273 | **+59** | 15 | 19 | **+ 4** | 84.7 | 90.6 | **+6** |
| **AM2** | Low | 2151 | 2182 | **+31** | 11 | 14 | **+ 3** | 81.9 | 85.1 | **+3** |
| **IP** | Flow Filtered | 1835 | 1822 | **- 12** | 25 | 27 | **+ 2** | 70.1 | 69.5 | **- 1** |
| **PM** | Flow Filtered | 2383 | 2376 | **- 7** | 9 | 11 | **+ 2** | 98.6 | 98.2 | **0** |

# Croydon

## Addiscombe Road / Trinity School Access (Node: 54135)





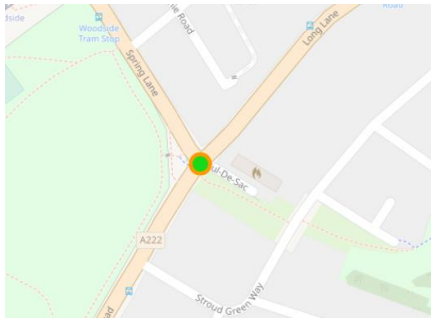
https://goo.gl/maps/pbUvjTnSDvMTXRPUA

| Assessment | Mitigation |
|---|---|
| This node is a pedestrian crossing and is shown to be operating within capacity in the future baseline in the morning and interpeak periods, and close to capacity (V/C ratio of 97%) in the evening peak period. The impact from the Project is identified in the AM1 peak where an increase of around 110 trips is considered to be due to model noise and reassignment of background traffic. The proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible ( -1 to +2 vehicles across the peak periods). With the Project the junction would operate close to capacity in the AM1 peak (V/C of 94%), although that would be slightly better than equivalent performance in the PM peak in the future baseline (V/C of 97%). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 1315 | 1426 | **+111** | 4 | 6 | **+ 2** | 87.1 | 93.8 | **+7** |
| **AM2** | Reduction | 1320 | 1292 | **- 29** | 4 | 3 | **- 1** | 87.1 | 85.6 | **- 2** |
| **IP** | Flow Filtered | 1328 | 1315 | **- 13** | 6 | 5 | **- 1** | 89.1 | 88.3 | **- 1** |
| **PM** | Flow Filtered | 1632 | 1641 | **+ 9** | 3 | 4 | **+ 1** | 97.2 | 97.7 | **+ 1** |

# Croydon

## Lower Addiscombe Road / Spring Lane (Node: 54840)



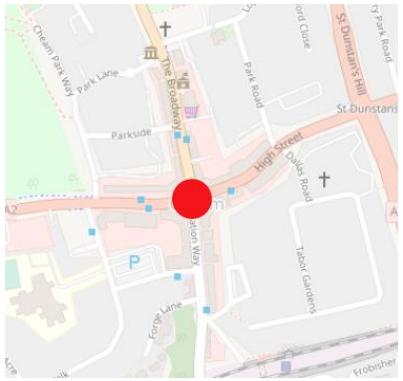

https://goo.gl/maps/TXkhp7g85k5vM6tM8

| Assessment | Mitigation |
|---|---|
| This junction is identified as operating within capacity in the future baseline, with V/C ratio of 86% or less. The impact is identified in the AM2 peak. With the Project there is a reduction in traffic but an increase in V/C, which is due to differences in the flows approaching the junction from different directions. The proportion of airport traffic at this junction is very small (less than 1%) and the number of additional airport trips as a result of the Project is negligible (up to +2 vehicles an hour) The junction would continue to operate within capacity with the Project (maximum V/C of 91%). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Low | 2075 | 2099 | **+24** | 4 | 7 | **+ 2** | 85.6 | 90.3 | **+5** |
| **AM2** | Medium | 1963 | 1886 | **-78** | 5 | 6 | **+ 1** | 82.4 | 90.5 | **+8** |
| **IP** | Flow Filtered | 2054 | 2055 | **+0** | 6 | 7 | **+ 1** | 80.7 | 81.5 | **+1** |
| **PM** | Negligible | 2073 | 2099 | **+25** | 5 | 5 | **+ 1** | 72.8 | 73.2 | **+0** |

# Cheam

## Ewell Road / High Street / The Broadway / Station Way (Node: 53948)



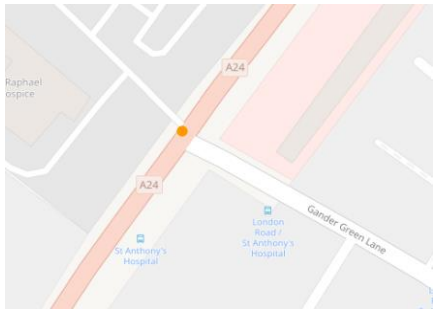

https://goo.gl/maps/EEhwYimMtcvE8PKN8

| Assessment | Mitigation |
|---|---|
| This junction is shown to be operating above capacity in the AM1 and PM time periods in the future baseline (V/C ratios of 104% to 105%) and close to capacity in the AM2 period (V/C of 96%). The impact from the Project is identified in the AM2 peak where there is an increase in traffic that appears to be due to model noise and reassignment of background traffic. With the Project, the junction is showing as operating over capacity in the AM2 peak (V/C increases from 96% to 102%) but also to experience slightly improved conditions in the AM1 peak (V/C reduces from 104% to 100%) as a result of an unexpected decrease in traffic, which tends to support the conclusion that changes shown in this location are the result of model noise. The proportion of airport traffic at this junction is very small (less than 0.5%) and the number of additional airport trips as a result of the Project is negligible (up to +2 vehicles an hour). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Reduction | 2535 | 2264 | **- 271** | 6 | 7 | **+ 1** | 104.3 | 99.5 | **-5** |
| **AM2** | High | 2162 | 2361 | **+ 199** | 5 | 7 | **+ 2** | 95.5 | 102.1 | **+7** |
| **IP** | Flow Filtered | 2037 | 2045 | **+ 8** | 7 | 8 | **+ 1** | 73.4 | 73.8 | **+0** |
| **PM** | Flow Filtered | 2441 | 2458 | **+ 16** | 4 | 5 | **0** | 104.9 | 105.0 | **+0** |

# Sutton

## London Road / Gander Green Lane / Spire St Anthony's Hospital Access (node: 53906)





https://goo.gl/maps/D2HyqqeL3U9bvnCv5

| Assessment | Mitigation |
|---|---|
| This junction is shown as operating close to capacity in the morning time periods in the future baseline (V/C ratios of 97%) in the future baseline. The impact from the Project is identified in the AM1 peak, where there is a very small increase in trips (+41 vehicles) but the V/C ratio changes by more than two percentage points. The proportion of airport traffic at this junction is very small (less than 0.5%) and the number of additional airport trips as a result of the Project is negligible (up to +2 vehicles an hour). The junction would continue to operate close to capacity with the Project (V/C of 99%). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 2221 | 2262 | **+41** | 7 | 8 | **+ 2** | 96.5 | 98.8 | **+2** |
| **AM2** | Reduction | 2224 | 2187 | **-37** | 7 | 10 | **+ 2** | 97.2 | 96.9 | **0** |
| **IP** | Flow Filtered | 2075 | 2068 | **-7** | 4 | 4 | **+ 1** | 67.6 | 67.4 | **0** |
| **PM** | Flow Filtered | 2535 | 2546 | **+11** | 6 | 7 | **+ 1** | 84.5 | 84.8 | **0** |

# M25 J9

## M25 J9 (Addlestone) (Node: 12722)



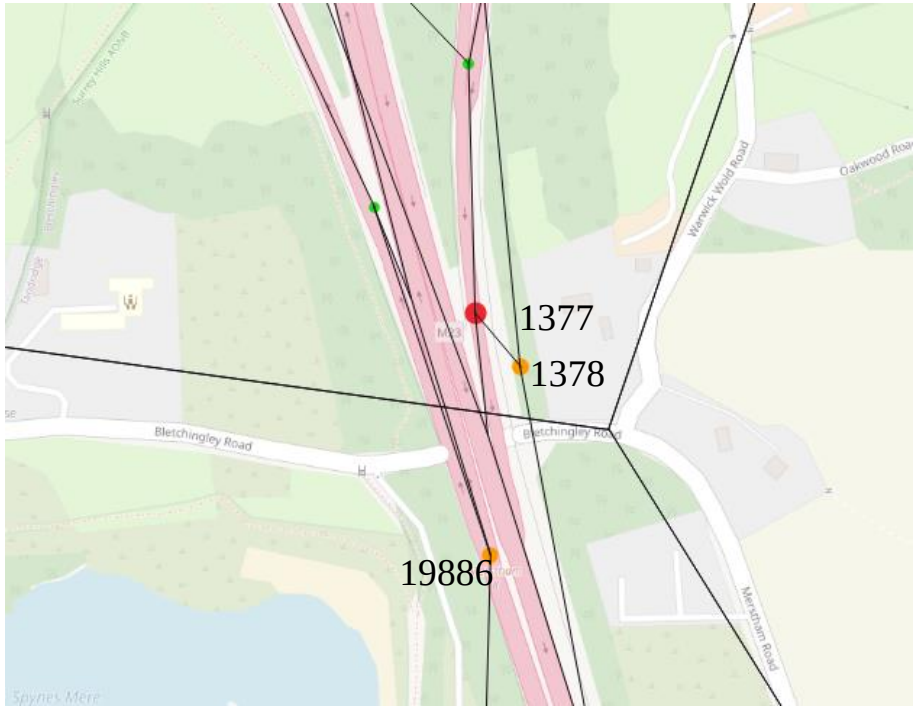
https://goo.gl/maps/fhQ8YCLAoiQvxJht8

| Assessment | Mitigation |
|---|---|
| In the future baseline this junction, which is one entry to a signalised roundabout, is shown to operate close to capacity in the morning time periods (V/C ratios of between 96% and 98%) and at capacity in the PM peak period (V/C of 101%). The impact from the Project is identified for the AM1 peak where there is a small increase in traffic (+32 vehicles, of which +21 is the result of the Project) leading to more than a two percentage point increase in V/C ratio. The proportion of airport traffic at this junction is very small (less than 1% which can be considered to be within daily variation in traffic). With the Project the junction would continue to operate close to capacity in the morning peak periods (V/C ratios of 96% to 98%) and at capacity in the evening peak period (V/C of 101%, unchanged from the future baseline). The junction is operating close to capacity and there is very low airport traffic at this junction. | No mitigation is required |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 2069 | 2101 | **+32** | 104 | 125 | **+ 21** | 95.7 | 97.8 | **+2** |
| **AM2** | Reduction | 2131 | 2084 | **-48** | 108 | 124 | **+ 16** | 97.6 | 95.6 | **-2** |
| **IP** | Flow Filtered | 1619 | 1603 | **-16** | 58 | 71 | **+ 12** | 79.2 | 78.5 | **-1** |
| **PM** | Flow Filtered | 2231 | 2226 | **-5** | 51 | 57 | **+ 6** | 101.0 | 100.7 | **-0** |

# M23 / M25

## Southern merge and diverges (Nodes: 1377, 1378, 19886)




*Note: The black lines illustrate the SATURN model links*

| Assessment | Mitigation |
|---|---|
| This complex of merges and diverges is shown to be operating within capacity in the future baseline, with V/C ratios varying from 70% in the inter-peak period to 98% in the AM1 time period. The with Project scenario shows V/C ratios increasing by up to six percentage points, reaching maximum values of 104% in certain locations. However, a separate more detailed review of the whole junction has been undertaken against DMRB criteria, to consider the performance of the merges and diverges at this junction, which suggests that although the merge / diverge complex will perform close to capacity, no additional issues are expected compared to the future baseline.<br><br>The merges and diverges are expected to be operating increasingly close to capacity over time in the future baseline, and conditions would worsen slightly with the Project. Each location would operate at capacity in only one of the modelled time periods. In practice, the Project will not result in a material change in performance. This is illustrated by the journey time assessments for the M23 (northbound and eastbound) and M25 (eastbound and westbound) routes (see next page). These show that for 2047, the Project results in either no change or one minute increase on each of the four routes, when considering the four time periods assessed.<br><br>Merge and diverge capacity can only be increased in steps, rather than in small increments, and the degree of impact at the location resulting from the Project does not merit a large step-change in capacity and the associated scale of highway works. The impact of this junction has been presented to National Highways and they recognise that "*it would appear disproportionate to expect the developer of Gatwick NRP to redesign the entire interchange to cope with a relatively small increase in traffic figures over those which would naturally occur*". Further consultation with National Highways is ongoing. | No mitigation is proposed. |

# M23 / M25

ARUP

**Node: 1377**

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | High | 3492 | 3691 | **+200** | 1216 | 1451 | **+ 235** | 91.2 | 96.4 | **+5** |
| **AM2** | Medium | 3747 | 3863 | **+116** | 1283 | 1502 | **+ 219** | 97.7 | 100.6 | **+3** |
| **IP** | Negligible | 2672 | 2858 | **+186** | 813 | 943 | **+ 130** | 72.7 | 76.9 | **+4** |
| **PM** | Flow Filtered | 3561 | 3586 | **+25** | 706 | 794 | **+ 87** | 91.9 | 92.6 | **+1** |

**Node: 1378**

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Medium | 3340 | 3504 | **+164** | 1100 | 1292 | **+ 192** | 92.4 | 96.4 | **+4** |
| **AM2** | Medium | 3594 | 3702 | **+109** | 1123 | 1311 | **+ 188** | 97.5 | 100.4 | **+3** |
| **IP** | Negligible | 2810 | 2898 | **+88** | 779 | 901 | **+ 122** | 81.2 | 83.4 | **+2** |
| **PM** | Negligible | 3440 | 3476 | **+35** | 663 | 755 | **+ 92** | 92.8 | 93.6 | **+1** |

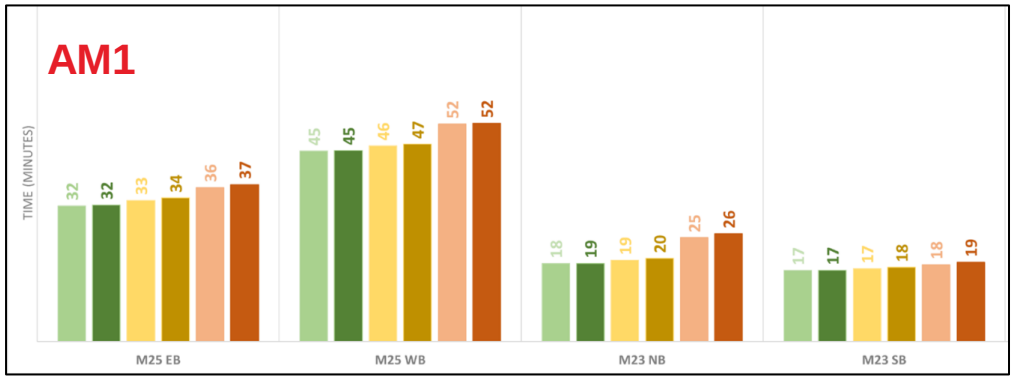
**Node: 19886**

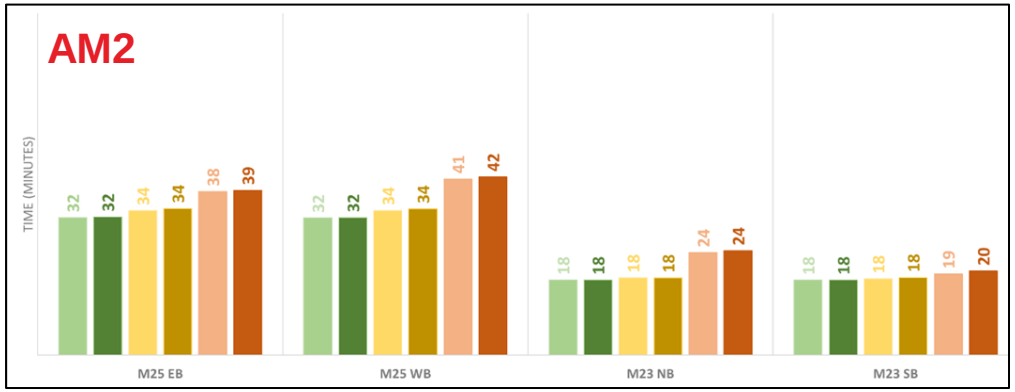
| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Flow filtered | 6716 | 6779 | **+63** | 1555 | 2007 | **+ 451** | 97.7 | 103.6 | **+6** |
| **AM2** | Medium | 6196 | 6095 | **-101** | 1764 | 2115 | **+ 351** | 92.7 | 97.4 | **+5** |
| **IP** | Negligible | 5304 | 5503 | **+199** | 1436 | 1714 | **+ 278** | 70.1 | 72.6 | **+3** |
| **PM** | Negligible | 6582 | 6791 | **+208** | 1518 | 1725 | **+ 207** | 81.9 | 84.6 | **+3** |

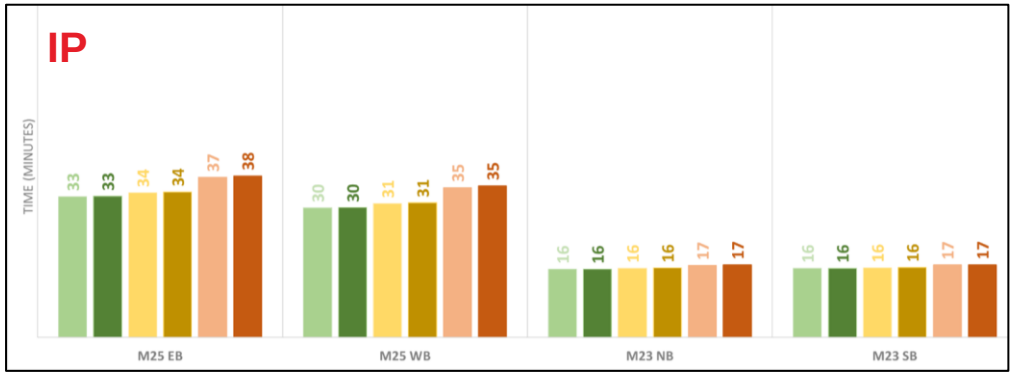
# M23 / M25

ARUP

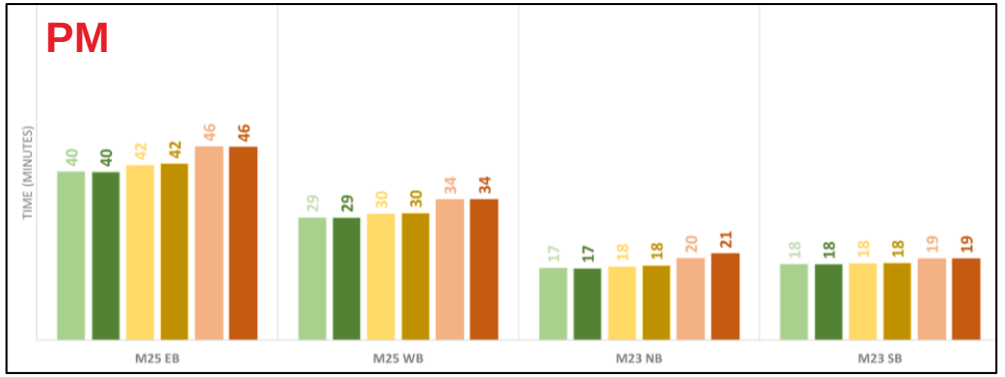
**Journey time assessment**



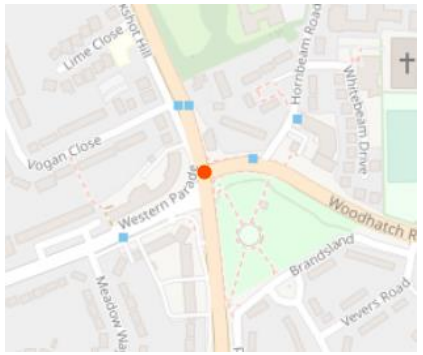





2029 Future Baseline | 2029 With Project | 2032 Future Baseline | 2032 With Project | 2047 Future Baseline | 2047 With Project

# Woodhatch

## Woodhatch Road / Dovers Green Road / Cockshot Hill (Node: 14812)




https://goo.gl/maps/wh9MFpaYTVy7cZCj7

| Assessment | Mitigation |
|---|---|
| This junction is shown as operating close to capacity in the AM1 and PM periods (V/C ratios of 96% to 99%) and at capacity in the AM2 time period (V/C ratio of 106%). The impact from the Project is identified in the PM peak, where the increase in vehicles is 96. The proportion of airport traffic at this junction is very small (less than 1% which can be considered to be within daily variation in traffic) and the number of additional airport trips as a result of the Project is negligible (up to +11 vehicles an hour). The change in V/C ratio in the PM peak would be around four percentage points, reaching a ratio of 100%, but with reduced V/C ratios occurring in other time periods with the Project. | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Reduction | 2350 | 2300 | **-50** | 183 | 154 | **- 29** | 98.9 | 97.2 | **-2** |
| **AM2** | Reduction | 2464 | 2436 | **-28** | 75 | 82 | **+ 7** | 106.1 | 104.7 | **-1** |
| **IP** | Flow Filtered | 1979 | 1961 | **-19** | 100 | 84 | **- 16** | 81.2 | 80.3 | **-1** |
| **PM** | Medium | 2221 | 2317 | **+96** | 58 | 69 | **+ 11** | 95.9 | 99.7 | **+4** |

# Horley

## Woodroyd Avenue / Brighton Road (Node: 76209)


https://goo.gl/maps/MEQDW7BFs9RbHoqE9

| Assessment | Mitigation |
|---|---|
| This junction is indicated as operating within or approaching capacity in the future baseline (maximum V/C ratio of 91% in the PM peak). The traffic flows and operation of this junction are affected by the highway improvement scheme which forms part of the Project. With the Project, the junction would continue to operate within capacity (maximum V/C of 93% with Project). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Negligible | 2740 | 2899 | **+159** | 332 | 395 | **+63** | 78.2 | 82.3 | **+4** |
| **AM2** | Medium | 2977 | 3189 | **+212** | 290 | 322 | **+32** | 84.9 | 91.2 | **+6** |
| **IP** | Reduction | 2993 | 2906 | **-87** | 251 | 246 | **- 5** | 86.0 | 83.9 | **-2** |
| **PM** | Negligible | 3242 | 3313 | **+70** | 294 | 300 | **+6** | 91.1 | 93.1 | **+2** |

# Longbridge Roundabout

## Brighton Road / London Road (Node: 16769)



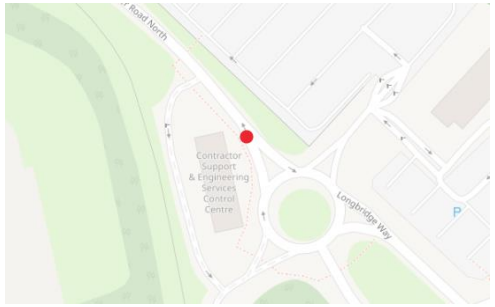
https://goo.gl/maps/xU9Ujk5hrRjQEx6SA

| Assessment | Mitigation |
|---|---|
| This junction is identified as operating within capacity in the future baseline (maximum V/C ratio of 90% in the PM peak). The traffic flows and operation of this junction are affected by the highway improvement scheme which forms part of the Project. With the Project, the junction would continue to operate within capacity (maximum V/C of 92% with Project). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Negligible | 2740 | 2899 | **+159** | 332 | 395 | **+ 63** | 77.8 | 82.0 | **+4** |
| **AM2** | Medium | 2977 | 3189 | **+212** | 290 | 322 | **+ 32** | 84.6 | 90.8 | **+6** |
| **IP** | Reduction | 2993 | 2906 | **-87** | 251 | 246 | **- 5** | 85.6 | 83.5 | **-2** |
| **PM** | Negligible | 3240 | 3310 | **+70** | 294 | 300 | **+ 6** | 90.5 | 92.4 | **+2** |

# Gatwick

## Perimeter Road North / Longbridge Way / Northgate Road (Node: 73465)




| Assessment | Mitigation |
|---|---|
| This node in the model does not represent an actual junction, but is a zone connector, which is a location at which all the traffic from the surrounding area is assumed to be loaded onto the network in one location. | No mitigation is required. |

https://goo.gl/maps/yhr2q4T5ftXz4qV7A

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | High | 835 | 931 | **+96** | 818 | 913 | **+95** | 81.5 | 92.6 | **+11** |
| **AM2** | Negligible | 689 | 740 | **+51** | 669 | 720 | **+51** | 67.1 | 73.8 | **+7** |
| **IP** | Negligible | 708 | 785 | **+76** | 697 | 773 | **+76** | 73.5 | 83.4 | **+10** |
| **PM** | Negligible | 410 | 456 | **+46** | 398 | 444 | **+46** | 38.0 | 43.2 | **+5** |

# M23 Junction 9

## Gatwick Interchange / M23 (Nodes: 16388, 16393 & 1380)



https://goo.gl/maps/YEKp3zTa29BDm78F7

*Note: The black lines illustrate the SATURN model links*

| Assessment | Mitigation |
|---|---|
| This junction is within the VISSIM micro-simulation model and its operation has been considered in more detail through the use of that model. This shows some reductions in speeds with the Project, compared to the future baseline, but no significant capacity issues have been identified (see next slides). | No mitigation is required. |

# M23 Junction 9

ARUP

Node: 16388

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| AM1 | Medium | 2808 | 3265 | +457 | 2171 | 2524 | +354 | 77.1 | 88.8 | +12 |
| AM2 | Medium | 2765 | 3246 | +481 | 2176 | 2446 | +271 | 76.3 | 88.8 | +13 |
| IP | Negligible | 2145 | 2468 | +323 | 1679 | 1918 | +239 | 60.0 | 68.5 | +9 |
| PM | Negligible | 2075 | 2293 | +219 | 1425 | 1683 | +258 | 55.9 | 61.8 | +6 |

Node: 16393

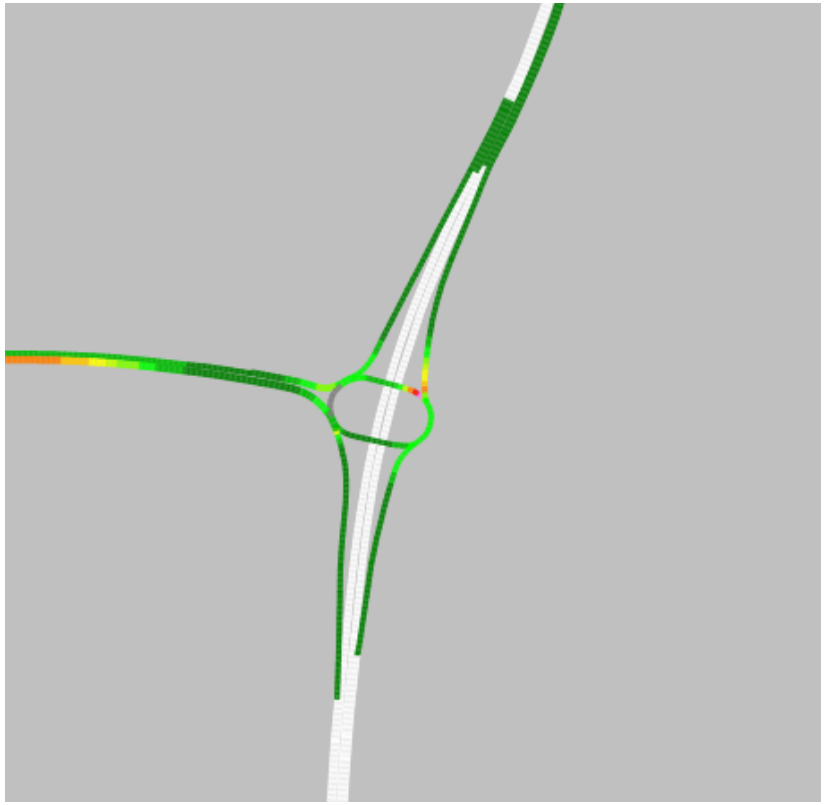
| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| AM1 | High | 2804 | 3320 | +516 | 2159 | 2553 | +394 | 86.8 | 102.6 | +16 |
| AM2 | High | 2775 | 3255 | +480 | 2180 | 2450 | +270 | 86.1 | 102.9 | +17 |
| IP | Negligible | 2155 | 2497 | +343 | 1676 | 1934 | +257 | 67.6 | 77.9 | +10 |
| PM | Negligible | 2138 | 2390 | +253 | 1463 | 1748 | +285 | 64.6 | 77.2 | +8 |

Node: 1380

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| AM1 | High | 2249 | 2756 | +507 | 1876 | 2221 | +345 | 61.6 | 75.3 | +14 |
| AM2 | High | 2207 | 2786 | +578 | 1891 | 2199 | +309 | 60.7 | 103.0 | +42 |
| IP | Negligible | 1596 | 1908 | +312 | 1365 | 1546 | +181 | 44.3 | 52.9 | +9 |
| PM | Negligible | 1487 | 1703 | +217 | 1154 | 1298 | +144 | 40.2 | 46.1 | +6 |

# M23 Junction 9

## Gatwick Interchange / M23



Future baseline 2047


With Project 2047

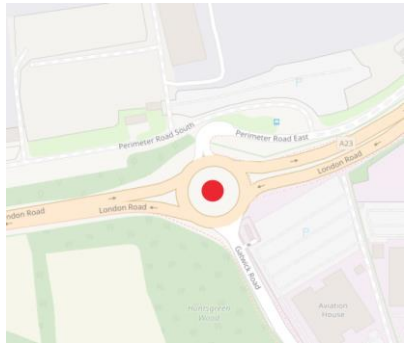
This junction is part of the more detailed assessment undertaken in VISSIM (assessment contained in the TA).

With adaptive signal control on the M23 southbound slip and the Smart Motorways configuration implemented on the slip approaches, this junction operates consistently in all scenarios.

In the future baseline configuration, the westbound M23 Spur sees slower traffic speeds in the AM and PM peaks than in the with Project configuration. This does not impede the operation of Junction 9 in any of the modelled scenarios.

# Lowfield Heath

## A23 / Gatwick Road / Perimeter Road East (Node: 15080)





https://goo.gl/maps/DLeBPETyvHRpK79Q9

| Assessment | Mitigation |
|---|---|
| This junction is shown as operating close to capacity in the future baseline, with V/C ratios of around 98% in all time periods. The impact from the Project is identified for the PM peak, where the increase in traffic results in the junction operating over capacity (V/C changing from 97% in the future baseline to 103% with the Project). This junction is part of the VISSIM model and performance has been assessed using that model. VISSIM provides more detail on network performance and average speed plots are used to indicate congestion. This shows some reduction in average speeds with the Project, compared to the future baseline, but no significant capacity issues (see next slide). | No mitigation is required. |

| Time | Impact | Junction Approach Flows | | | Airport Flows | | | Volume over Capacity (V/C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Future baseline | With Project | Difference | Future baseline | With Project | Difference | Future baseline | With Project | Difference |
| **AM1** | Reduction | 3564 | 3468 | **-96** | 1352 | 1404 | **+ 52** | 98.7 | 88.8 | **-10** |
| **AM2** | Reduction | 3563 | 3434 | **-129** | 1077 | 1162 | **+ 85** | 97.8 | 87.2 | **-11** |
| **IP** | Reduction | 3583 | 3420 | **-163** | 1190 | 1339 | **+ 148** | 98.6 | 93.6 | **-5** |
| **PM** | High | 3849 | 3993 | **+144** | 953 | 1020 | **+ 67** | 97.2 | 102.9 | **+6** |

# Lowfield Heath – Further Assessment

## A23 / Gatwick Road / Perimeter Road East

Future baseline 2047


With Project 2047

This junction is part of the more detailed assessment undertaken in VISSIM (assessment contained in the TA).

The junction itself continues to operate as in the earlier scenarios. Increases in PM peak traffic volumes merging on the A23 northbound carriageway to the north of the junction with Beehive Ring Road result in much slower moving traffic back through the Gatwick Road roundabout, at times extending to Lowfield Heath roundabout.

In the “With Project” scenario, this is much reduced, with higher average speeds and traffic not reaching Lowfield Heath roundabout.