

**MK East Local Stakeholder Group
Briefing Note 29/01/19
Transport Modelling**

Topics and Background

1. Existing transport network constraints
2. Traffic modelling undertaken and Summary of Network Performance in the 2031 Reference Case and the 2031 MKE with no new infrastructure
3. Options considered for addressing constraints and enabling development at MKE
4. Summary of New Bridge and Willen Road Bridge Widening schemes
5. Summary of Network performance – comparison of New Bridge and Willen Road bridge widening
6. Conclusion

1. Existing transport network constraints

Summary of Key Transport Network Constraints



1. Three main crossings of the M1
2. Delays at key junctions
3. High traffic demand across the M1
4. No “fast” public transport routes



2. Traffic Modelling

Traffic Modelling Undertaken

- Previously:
 - Modelling reported in September 2018
 - Work since then updates this modelling
- New:
 - Recent M1 J14 Smart Motorway plans included in all future scenarios
 - Tested various scenarios associated with MKE development:
 - ‘Minimal Infrastructure’
 - ‘Willen Road Widening’
 - ‘New Bridge’
 - These have all been tested against the 2031 forecast ‘Reference Case’ that excludes MKE development. **The Reference Case is a ‘baseline’ of expected conditions against which other scenarios are compared**

Reference Case 2031 Committed Development

Development included in Reference Case:

Location	Dwellings	Jobs
All MK	22,228	28,997

Of which local to MKE:

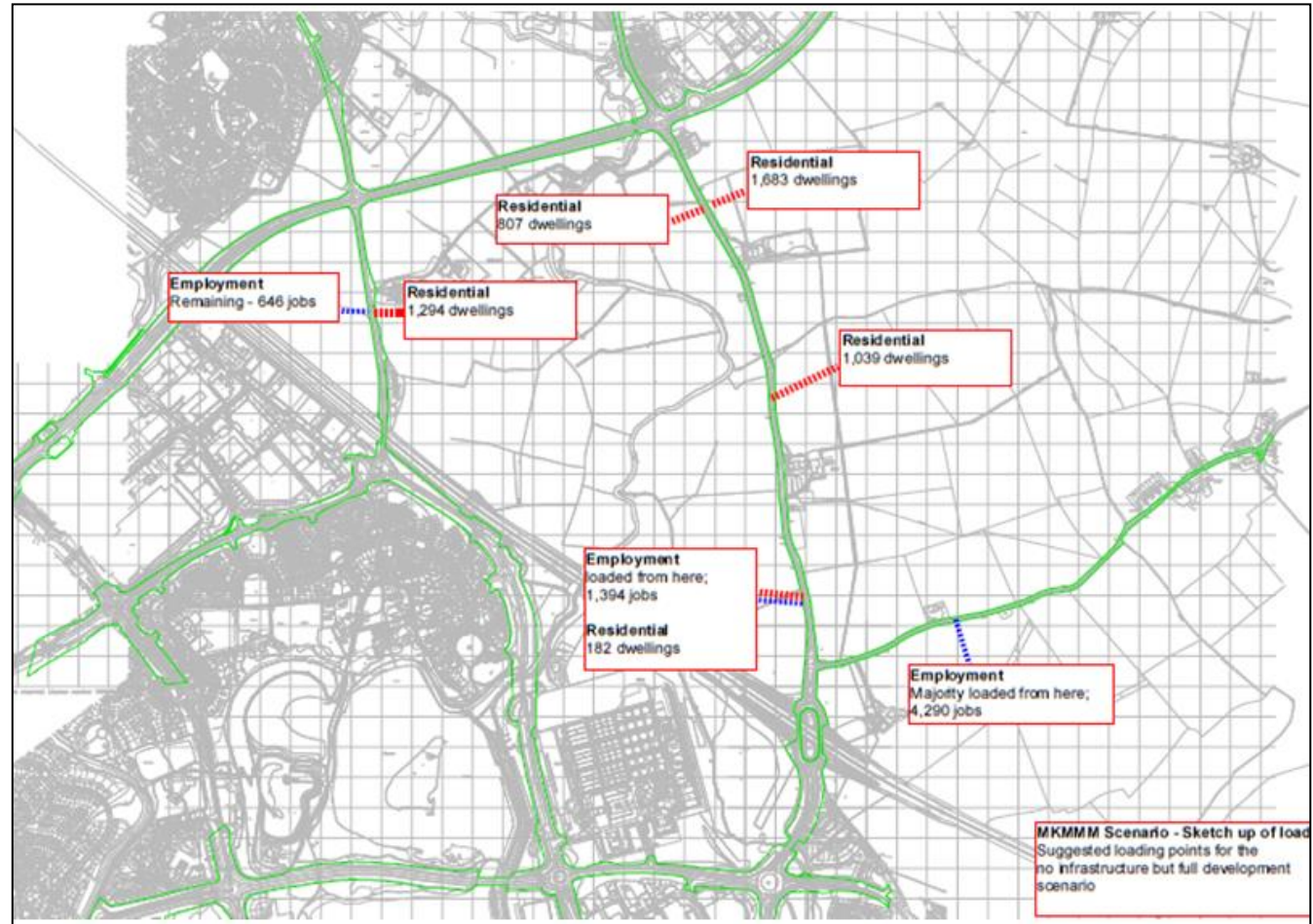
Location	Dwellings	Jobs
Newport Pagnell	1,373	
Olney	380	
Sherington	36	
Pineham		959
Central MK	2,351	18,667

Scope of Presentation

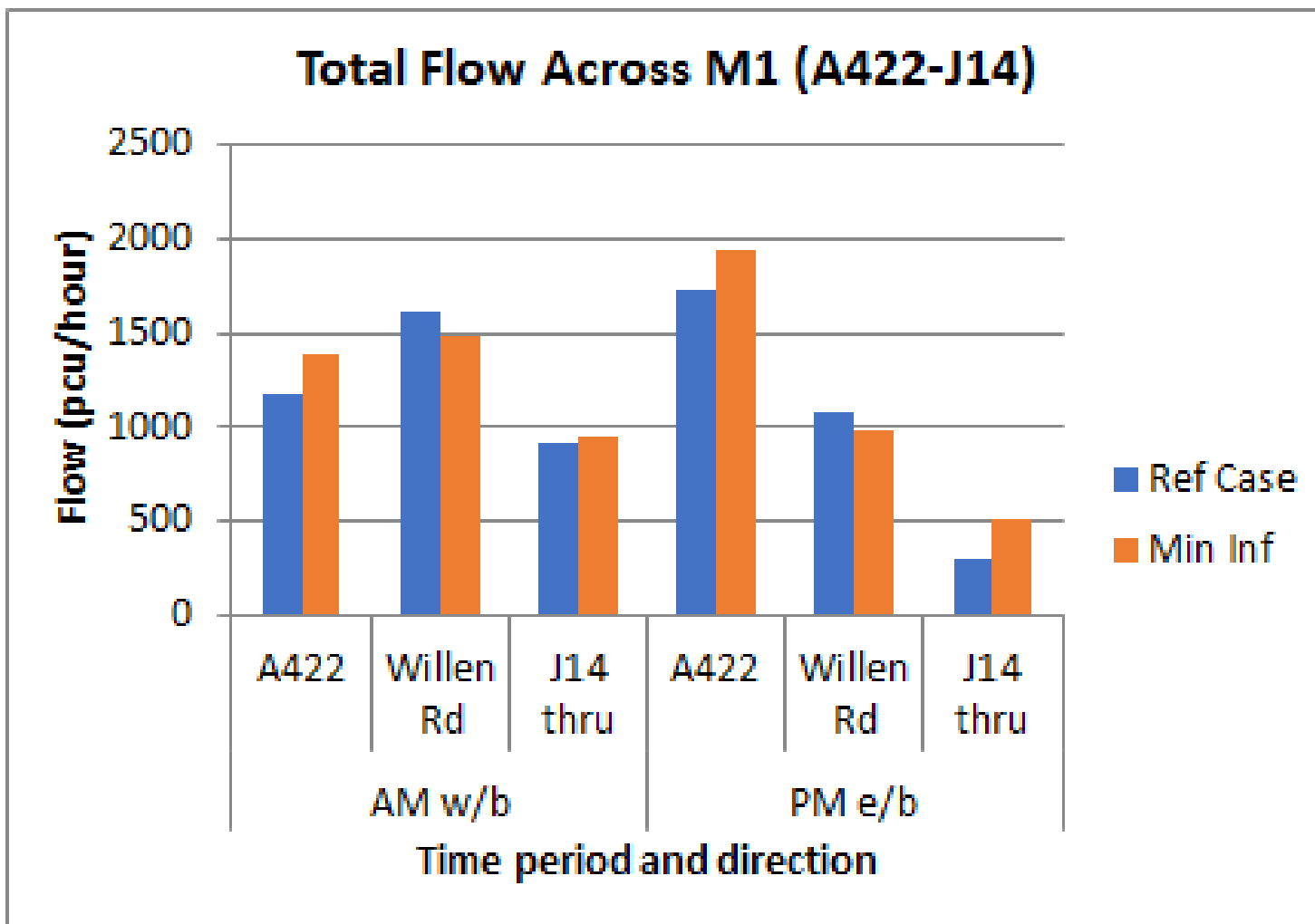
- Modelling evidence exists for:
 - 2016 'Base year' traffic conditions
 - 2031 'Reference Case' traffic conditions
 - These are not going to be re-visited in detail
- Aim today:
 - To show how the new 2031 scenarios compare with the Reference Case
- Context:
 - Plan:MK recognises that the existing highway network is not (and will not) be sufficient to accommodate MKE without new strategic road infrastructure investment

2031 MKE with 'Minimal Infrastructure'

Access assumptions for 'Minimal Infrastructure' scenario

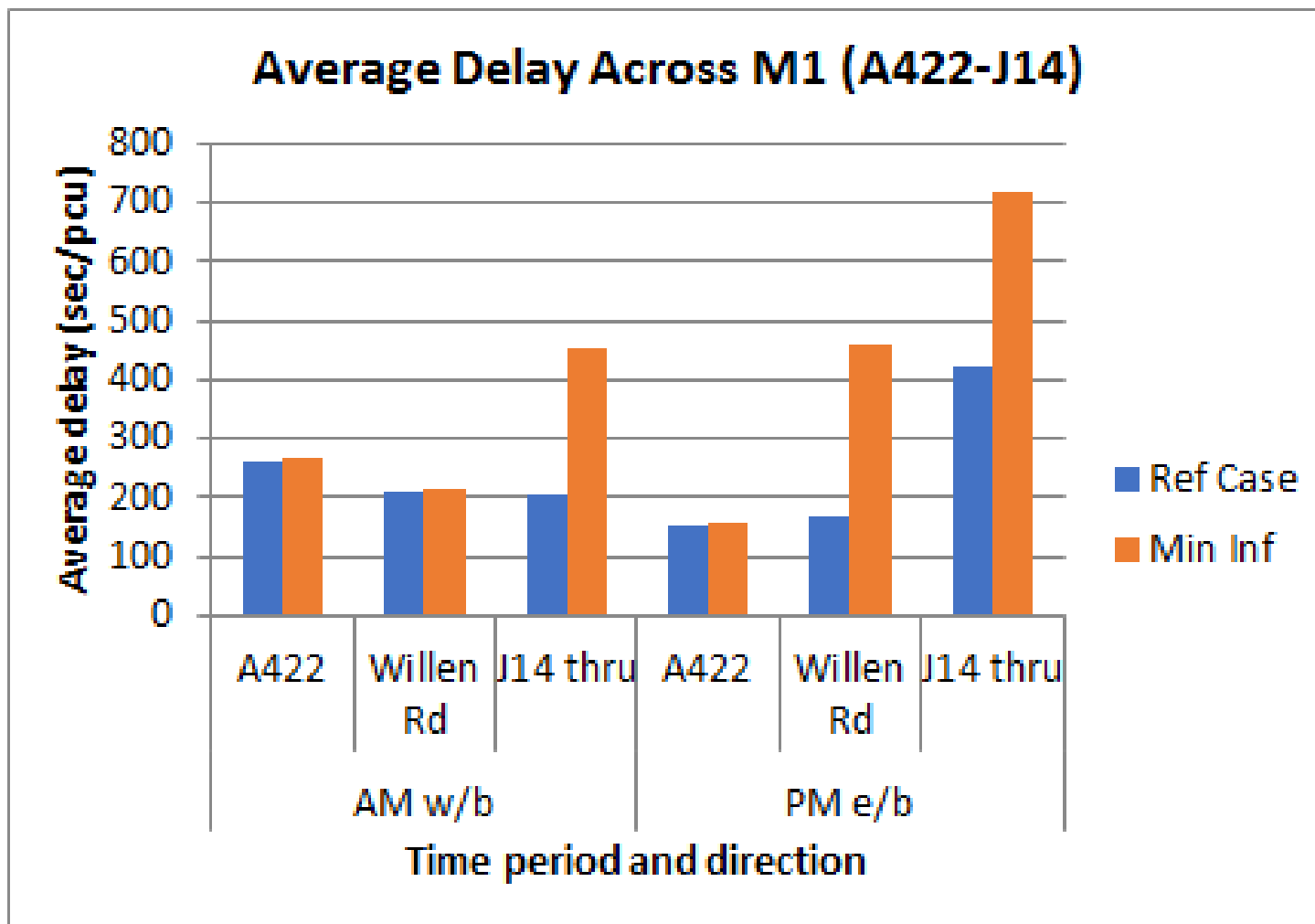


Summary of Network Performance 2031 MKE with 'Minimal Infrastructure'



Minimal increase in flows due to capacity constraints on bridge crossings

Summary of Network Performance 2031 MKE with 'Minimal Infrastructure'



3. Additional M1 Crossing Capacity Options

Transport Capacity Solution - Aspirations

1. Reduce long term impacts at J14, by reducing number of north-south movements across the junction
2. Provide an intuitive alternative route to / from CMK
3. Deliver a solution within available land
4. Reduce overall delay for movements across the M1 corridor
5. Facilitate infrastructure needed for MKE
6. Provide opportunity for faster public transport connectivity to / from CMK
7. Align with the Development Framework for MKE

Transport Capacity Options Considered

1. Improvements at Junction 14
2. Enhanced capacity through A422 corridor
3. Widening of the Willen Road corridor and bridge over the M1
4. A new bridge over the M1

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Improvements at M1 Junction 14

1. Existing junction extremely constrained limiting the extent of improvements which can be made;
2. Re-building J14 is not within HE's current programme of network improvements;
3. Re-building J14 has several constraints, inc:
 - requires third party land;
 - provides no new infrastructure for MKE;
 - strategic (M1) and MK traffic still uses J14;
 - Significant disruption during construction; and
 - does not provide any resilience in the network.



Transport Capacity Options Considered

1. Improvements at Junction 14
2. Enhanced capacity through A422 corridor
3. Widening of the Willen Road corridor and bridge over the M1
4. A new bridge over the M1

Increased Capacity Through A422 Corridor

1. Is unlikely to reduce key traffic movements at M1 J14; i.e. does not address routing of traffic into CMK;
2. Already dualled – not suitable location for dual 3 lane highway;
3. Even if suitable for dual 3, requires third party land;
4. Provides no new infrastructure for MKE; and
5. Does not provide any resilience in the network.



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Widening of the Willen Road Corridor



1. Would deliver improvements over the Reference Case;
2. Use made of existing infrastructure;
3. Not the most intuitive route for accessing parts of CMK, south and SE MK from the NE;
4. Benefits at J14 unlikely to be as good as a new bridge;
5. Does not provide resilience in the road network and does not future proof longer term capacity; and
6. Does not align with the emerging Development Framework for the site

- New two lane bridge adjacent to existing
- Reconfiguration of Tongwell Street Roundabout

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New Bridge over M1



1. Number of options considered - all but one ruled out because of key constraints inc:
 - delivering a solution within the transport corridor;
 - avoiding third party land;
 - avoiding the sewage treatment works;
 - avoiding strategic Anglian Water sewer;
 - cognisant of the location of J14 and not compromising the ability for its upgrade in the future;
 - ensuring efficient connectivity to the existing highway network;
 - a solution which provides a tangible alternative for MK traffic not to use J14; i.e. separating out strategic and local movements.

New Bridge over M1



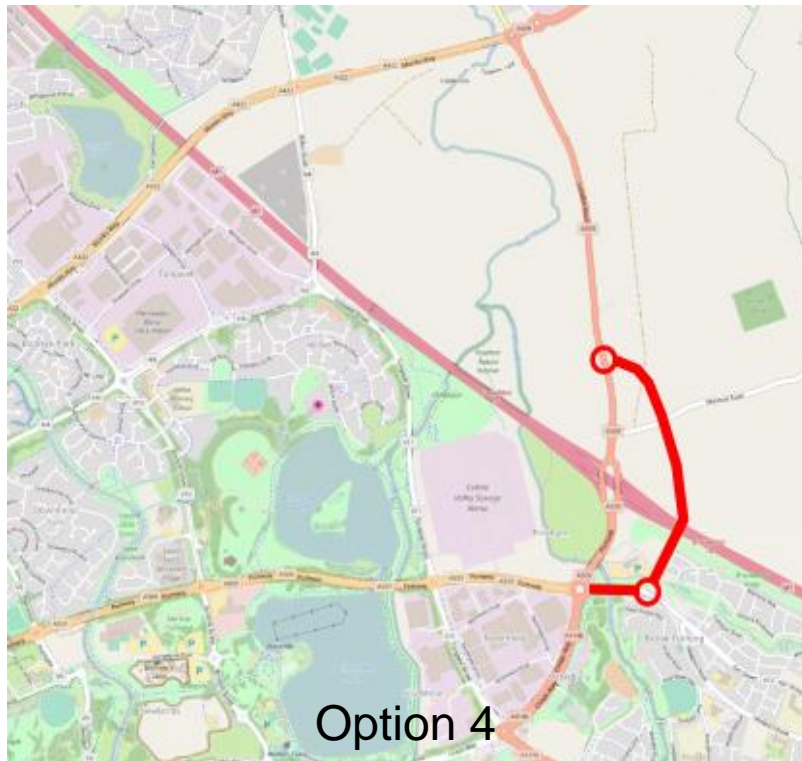
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New Bridge over M1



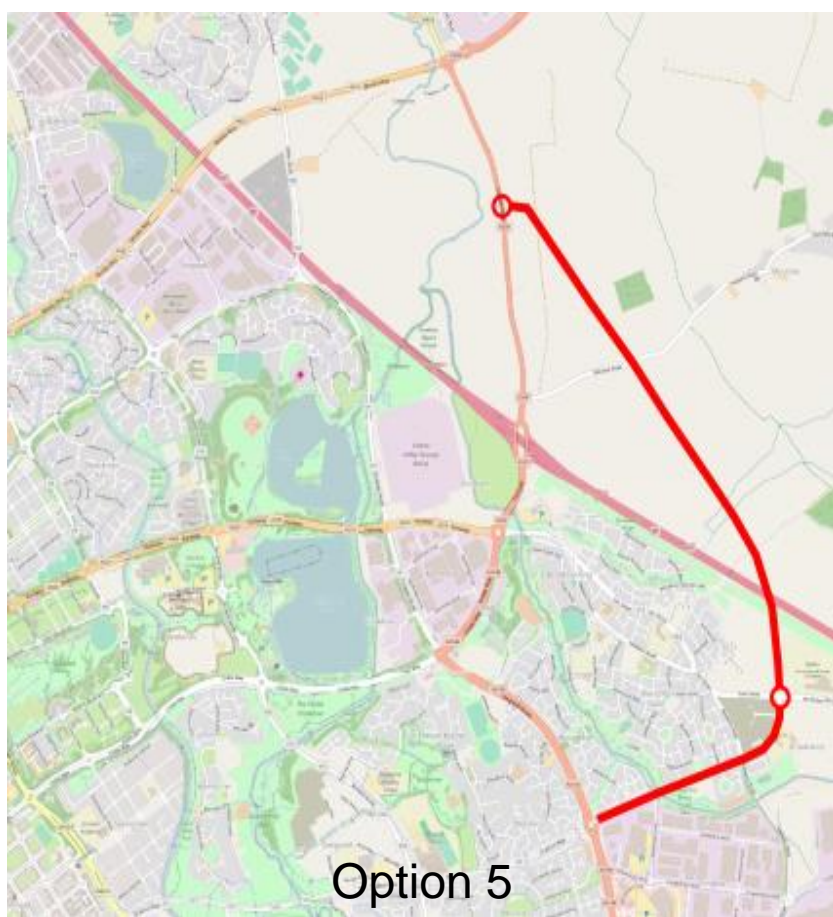
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New Bridge over M1



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New Bridge over M1



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New Bridge over M1

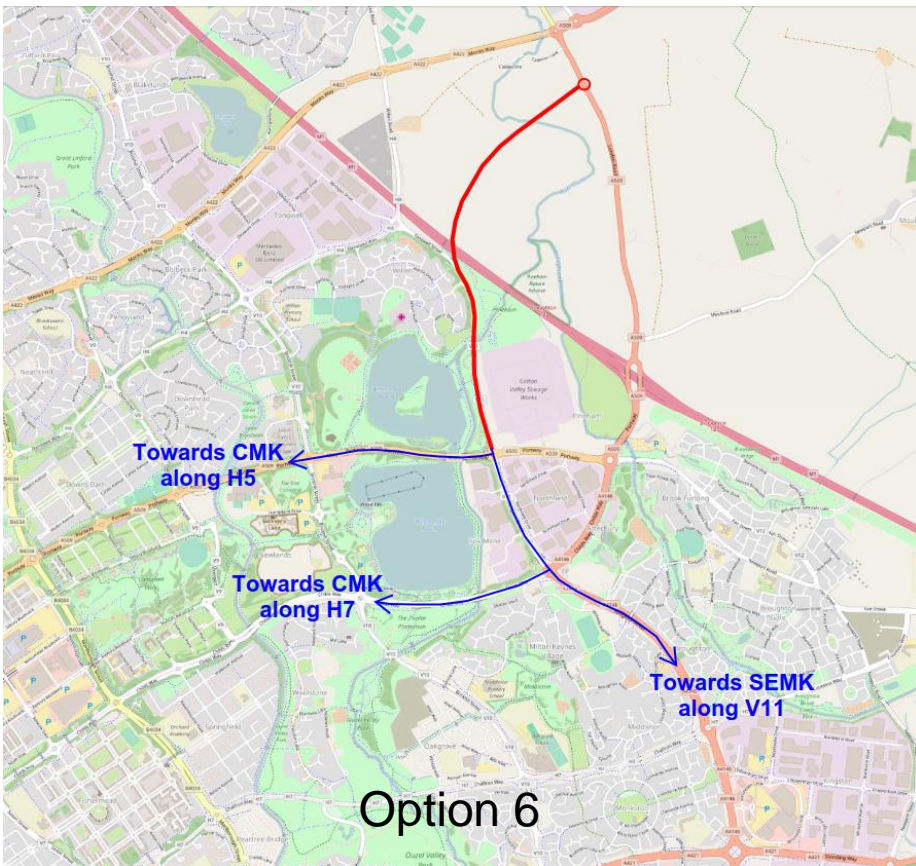
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New Bridge over M1

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- cognisant of the location of J14 and not compromising the ability for its upgrade in the future;
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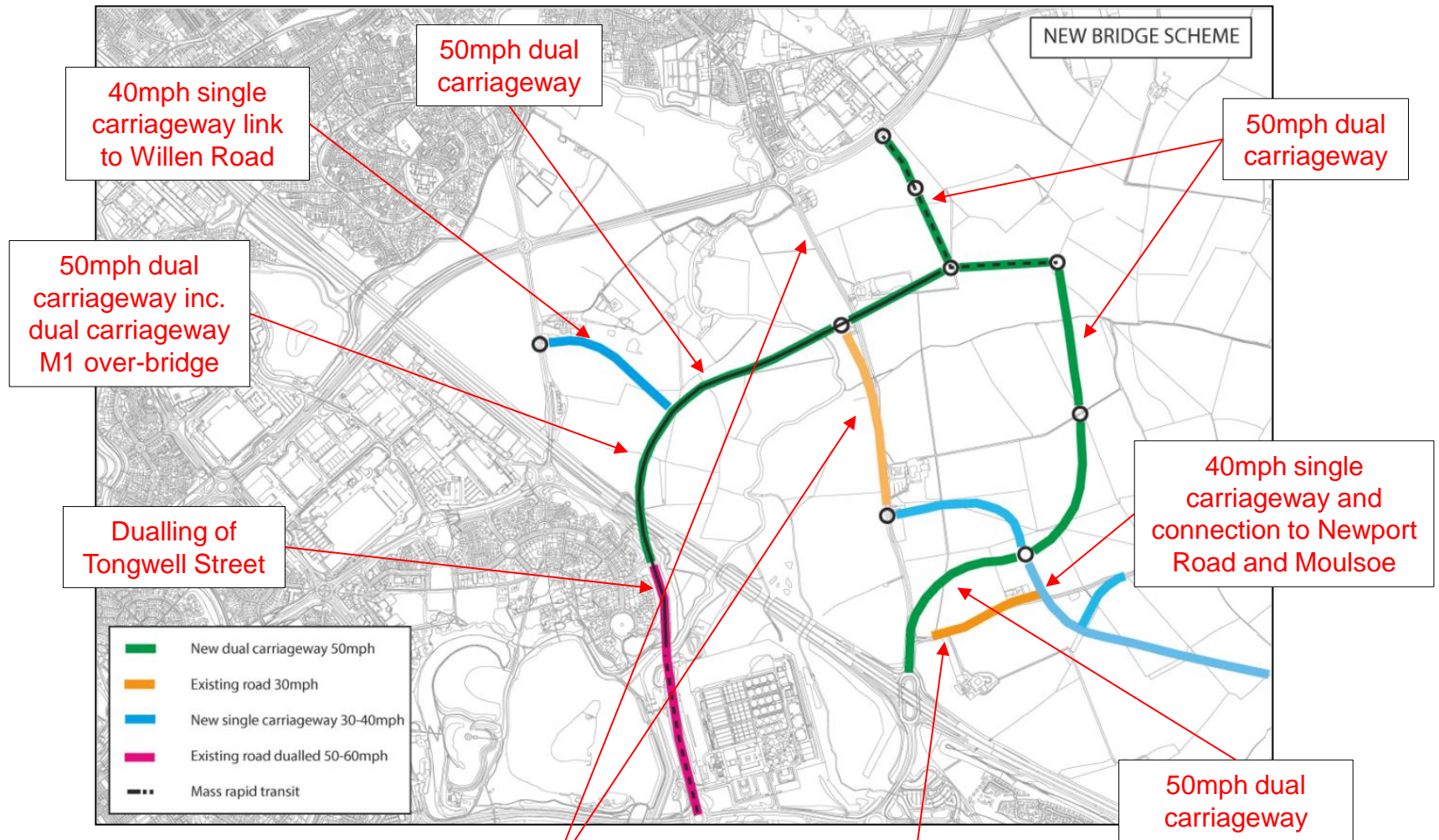


4. New M1 Overbridge and Willen Road Bridge Widening Options

Transport Capacity Options Considered

1. A new bridge over the M1
2. Widening of the Willen Road corridor and bridge over the M1

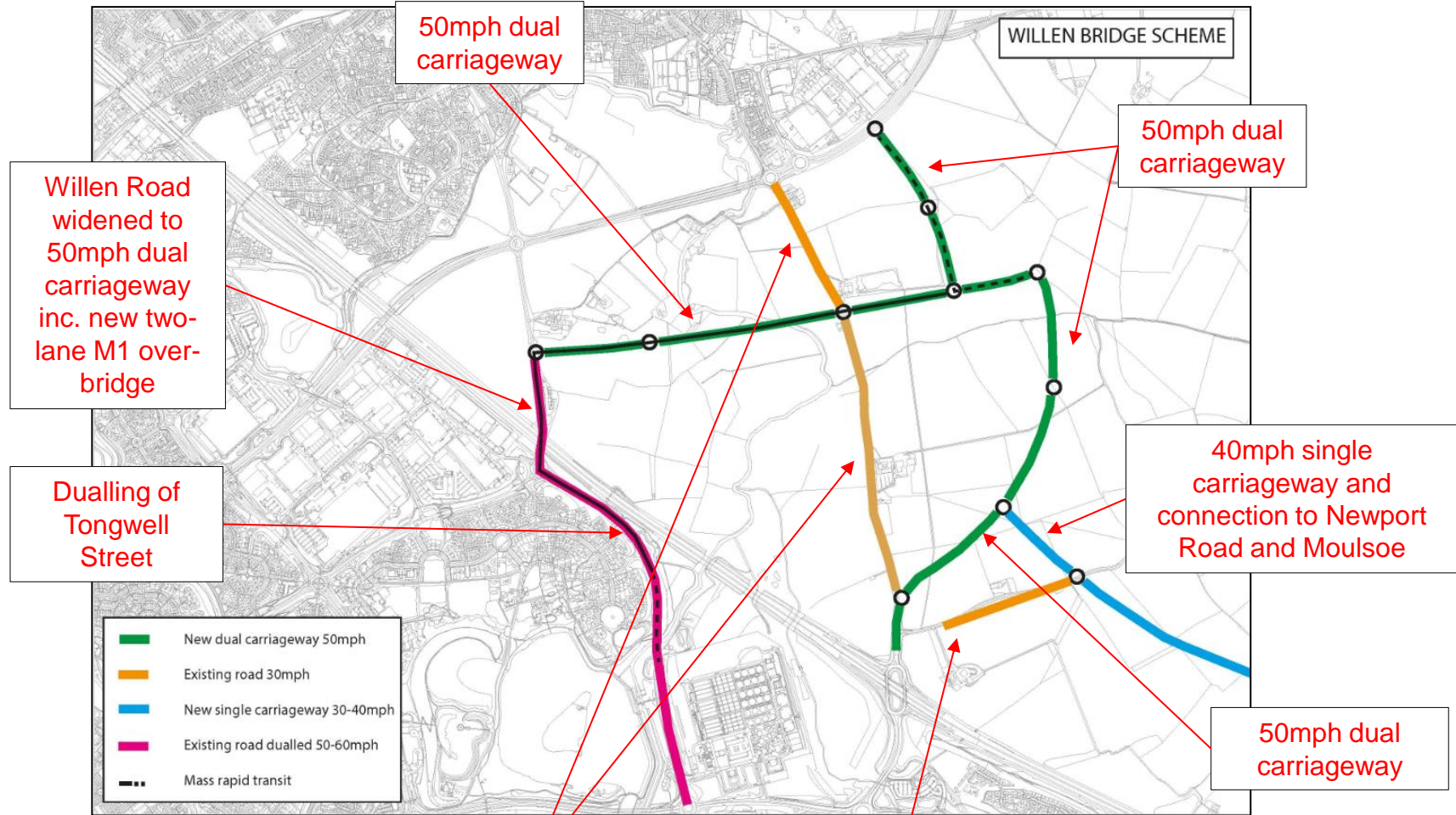
'New Bridge' Scheme Assumptions



Transport Capacity Options Considered

1. A new bridge over the M1;and
2. Widening of the Willen Road corridor and bridge over the M1

'Willen Road Widening' Scheme Assumptions



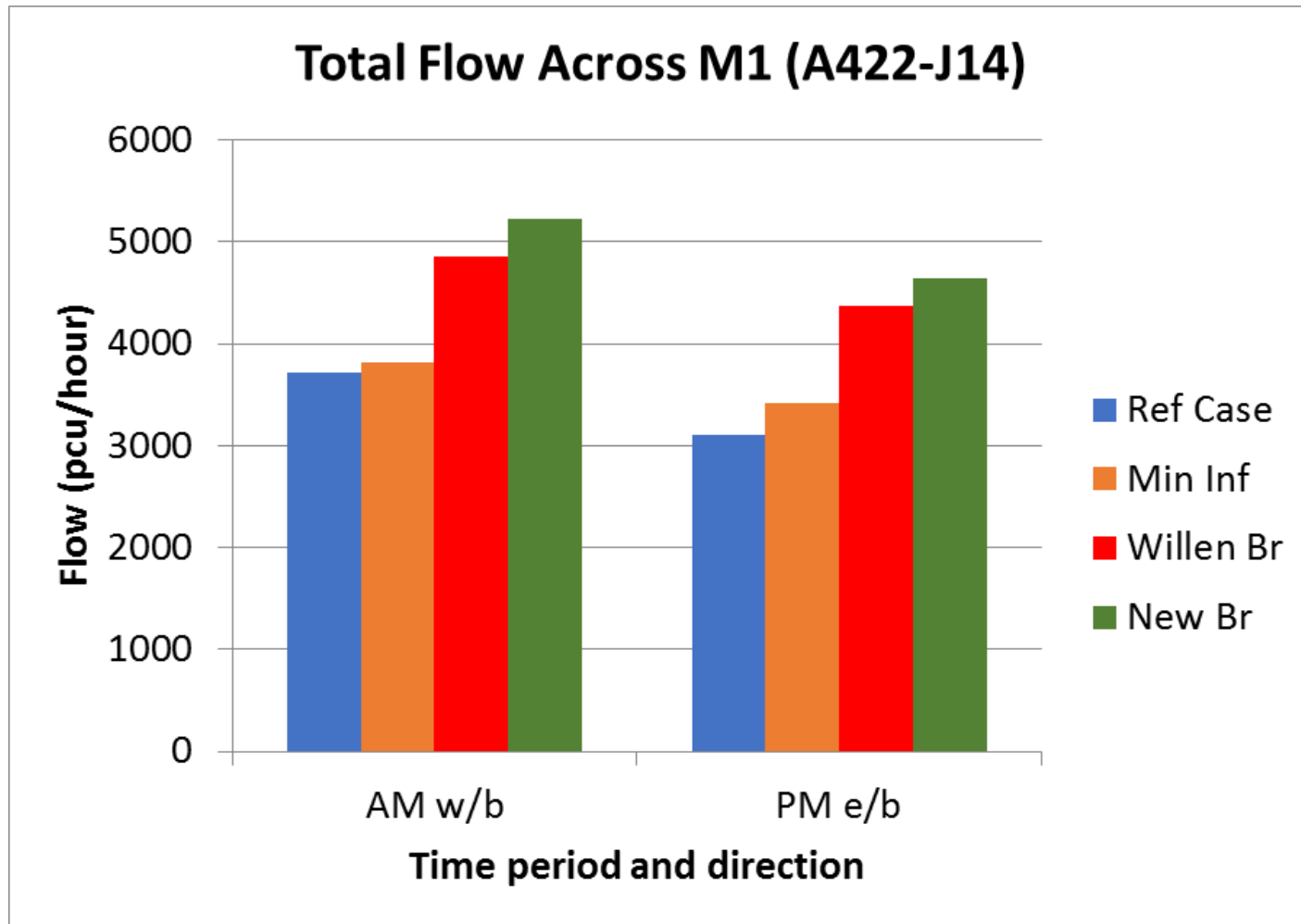
Existing A509
downgraded / closed

Newport Road link to
A509 removed

5. Transport Network Performance – Comparison of Options

Summary of Network Performance

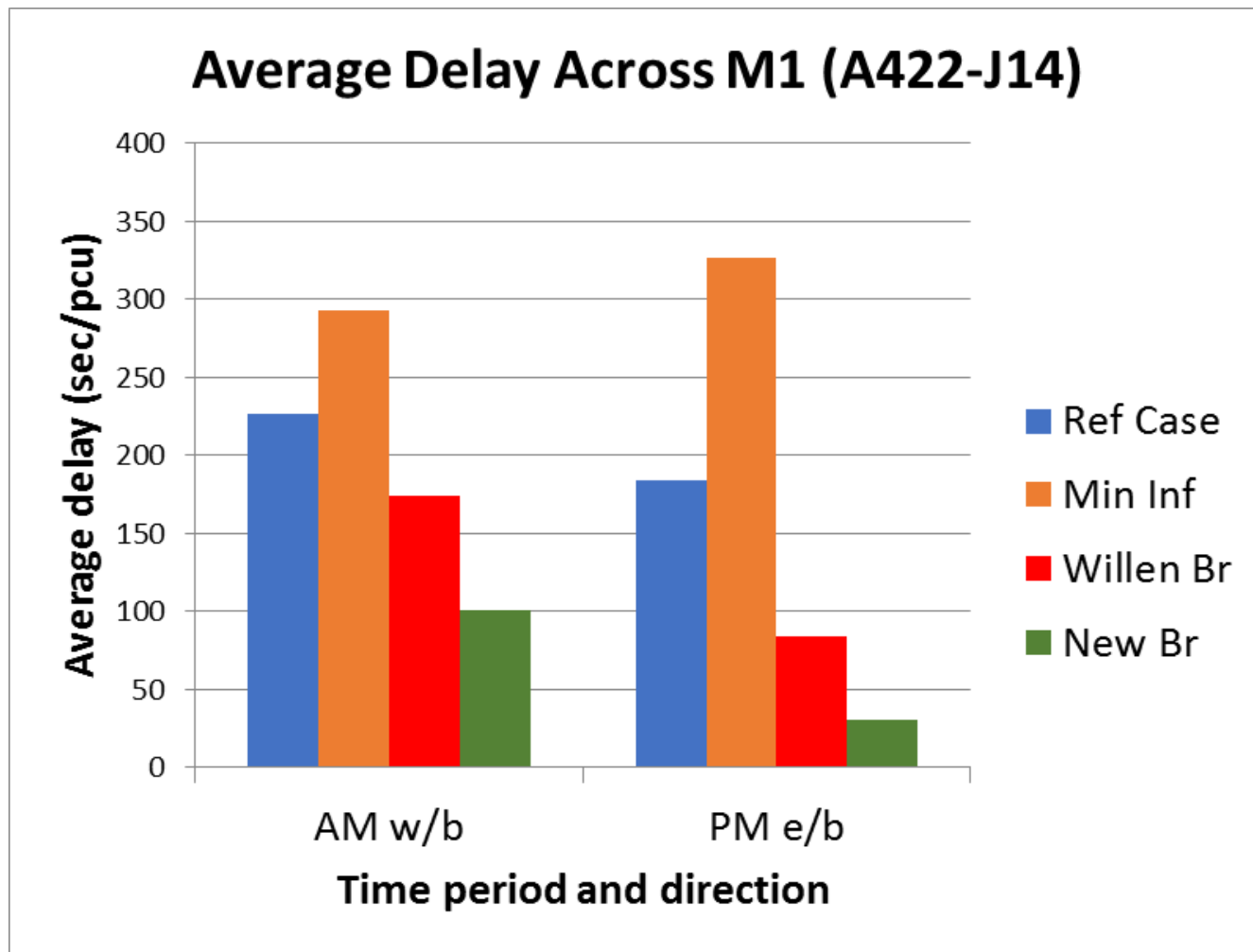
Total Traffic Crossing M1: Peak Directions



Provision of additional capacity enables more traffic to cross M1

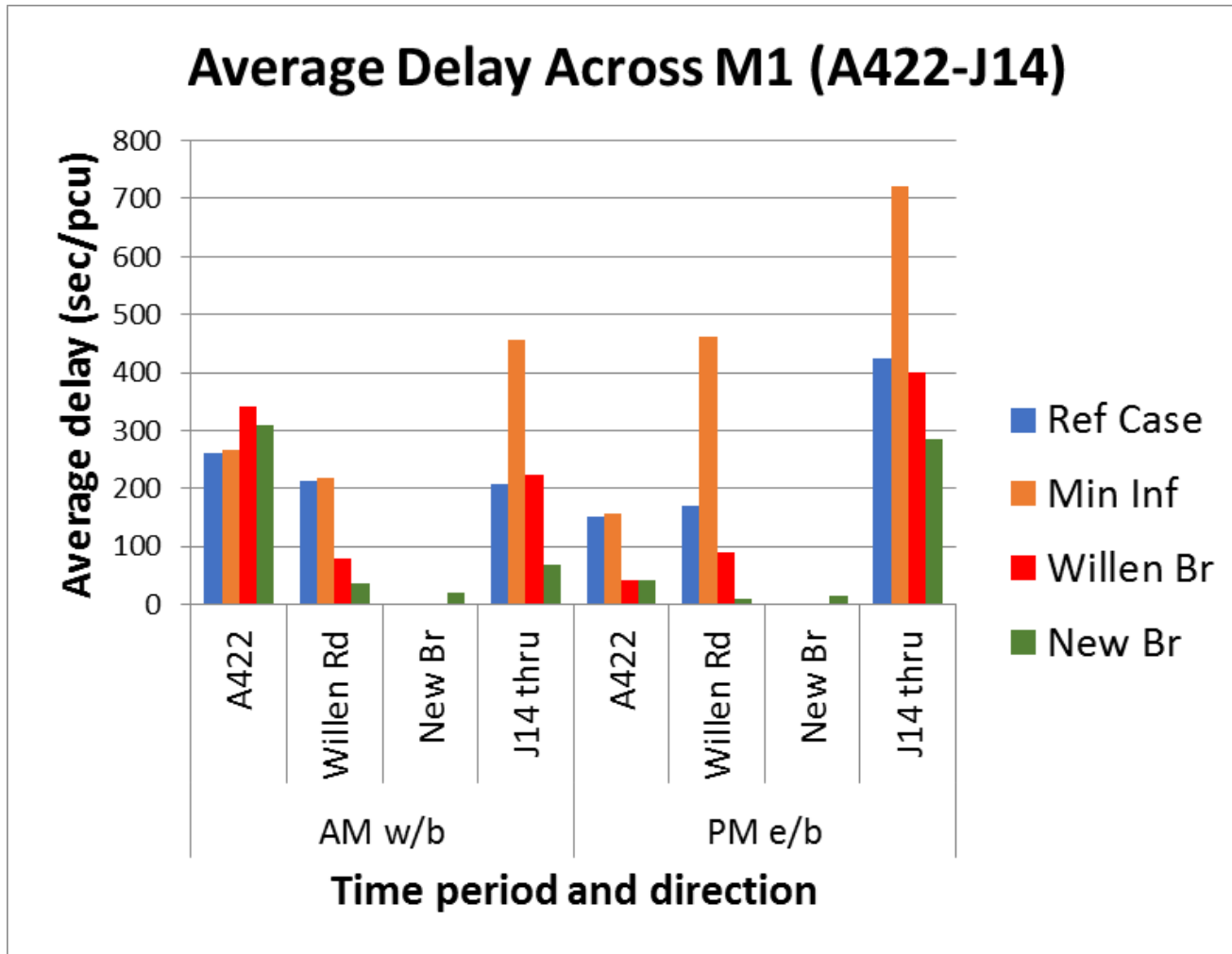
Summary of Network Performance

Delay to Total Traffic Crossing M1: Peak Directions



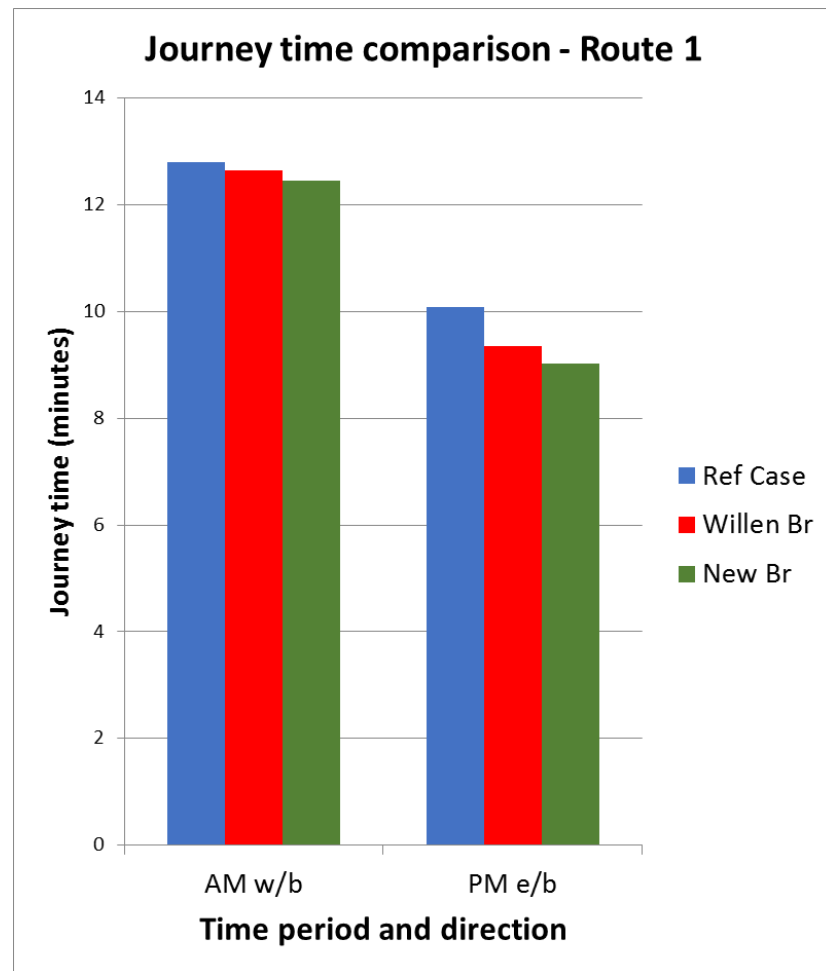
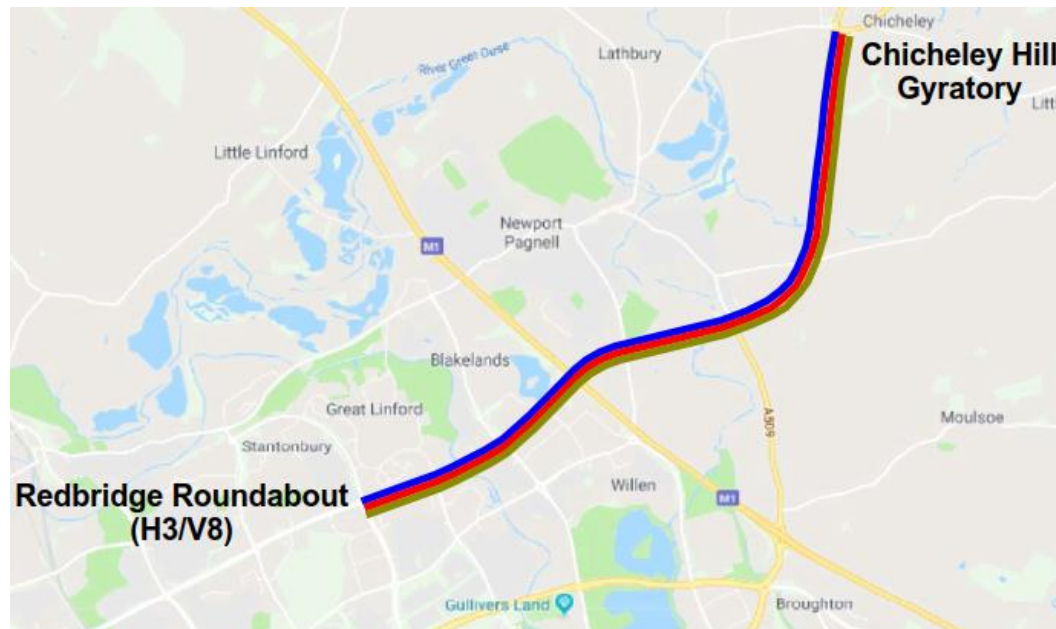
Summary of Network Performance

Delay to Traffic Crossing M1 by Location: Peak Directions



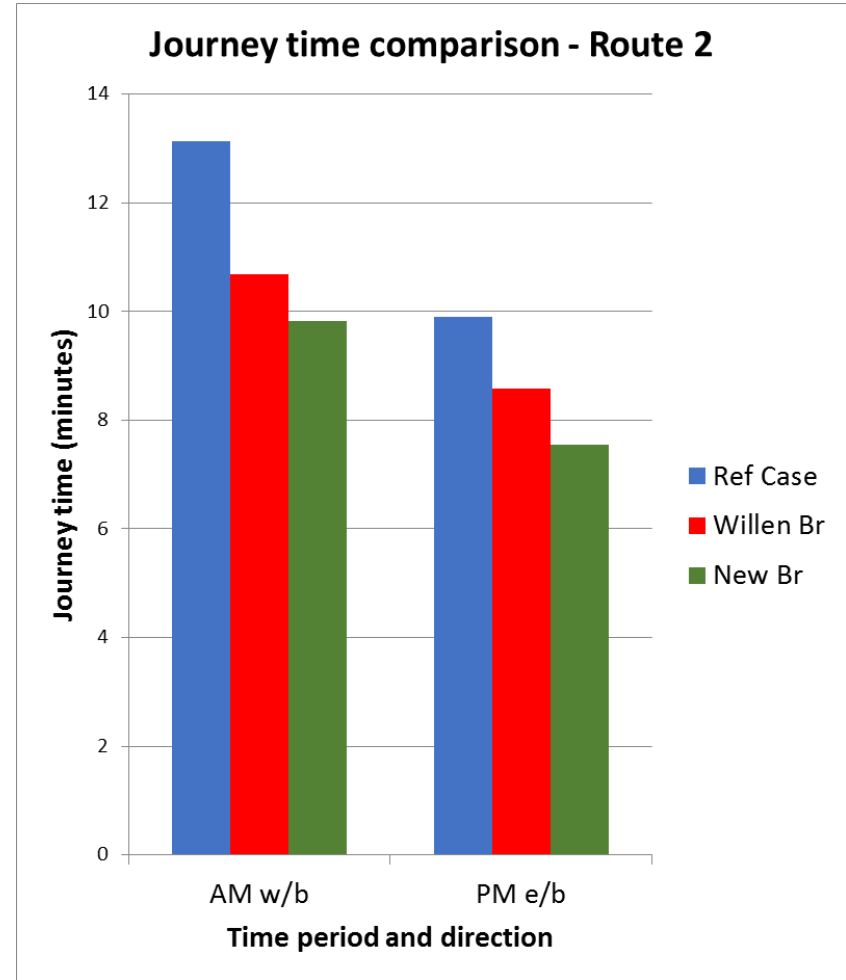
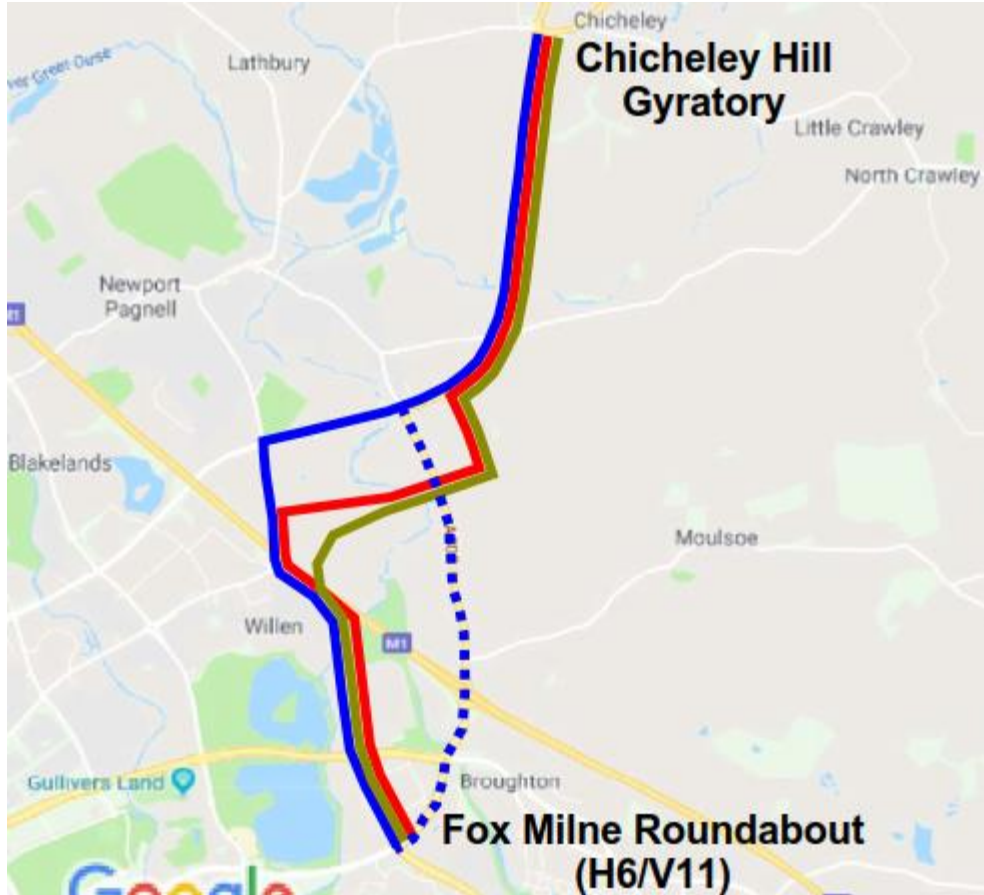
Summary of Network Performance

2031 Journey Time Comparison – Route 1



Summary of Network Performance

2031 Journey Time Comparison – Route 2



Newport Pagnell:

- Small AM and PM increases in traffic on Marsh End Road, High Street / Wolverton Road and B526 in Willen Road Widening scenario
- Slightly lower increases in New Bridge scenario
- Minor impacts on delays akin to daily variations

Summary of Network Performance 2031 – Local Areas

Olney:

- In all scenarios, additional capacity schemes lead to tidal flow increases through Olney on the A509
- Southbound AM and northbound PM increases approx 5% in each case
- Impact on Olney not influenced by provision of strategic infrastructure

Summary of Network Performance 2031 – Local Areas

Willen

As a result of the new MKE development, the modelling suggests that flows on Danstead Way north of Willen and on Tongwell Street east of Willen will increase compared to the levels predicted in 2031 without the development. However, delays at Tongwell Roundabout and Pineham Roundabout are not expected to increase, due to the associated improvements to Tongwell Street and Pineham Roundabout, and due to the reduction in overall traffic through Tongwell Roundabout as traffic diverts from Willen Road to the new bridge. **Therefore the net effect of the MKE development plus this mitigation is that queues and delays around Willen would not change significantly. These 2031 delays are predicted to be slightly higher than current conditions, but these are likely to occur *with or without MKE*.**

More detailed description: 2016 – 2031

A comparison of flows and delays between the Base Case (2016) and the Reference Case (2031, committed development plus elements of Plan:MK) shows increases in flows on Danstead Way N. of Willen and Tongwell St E. of Willen, with slight increases in delays at Tongwell Roundabout. This is what would be likely to happen without the MKE development and without the associated highways infrastructure.

More detailed description: 2031 without MKE – 2031 with MKE

Next comparing the Reference Case (2031 committed development plus elements of Plan:MK) with the MKE Scheme Scenario (2031 Reference Case plus MKE scheme):

- There are increases in traffic volumes on Tongwell Street south of the new junction with the new bridge road of some 1,500 vehicles per hour in both directions combined, during each peak hour. However, dualling along Tongwell Street and improvements to Pineham Roundabout largely mitigate the effects of the additional traffic here, with the modelling showing the main change in delay to be an increase of around half a minute (average delay per vehicle) on the southbound approach to Pineham Roundabout in the PM peak. Other delays are similar to those of the Reference Case.
- There are increases in combined-direction traffic volumes on Danstead Way of some 350 vehicles per hour in the AM peak, and 450 vehicles per hour in the PM peak. However the associated delays at Tongwell Roundabout are generally no worse than those of the Reference Case, because much of the Willen Road traffic transfers to the new road and bridge, avoiding the roundabout. The main change in delay is a slight increase of around half a minute per vehicle on the eastbound approach to Tongwell Roundabout in the PM peak. Other delays are similar to those of the Reference Case.

Summary of Network Performance 2031 Journey Time Comparison

Summary:

- New Bridge and Willen Road Widening Scenarios quicker than Reference Case or similar, while also accommodating MKE loading
- New Bridge Scenario generally slightly quicker than Willen Road Widening
- Provides betterment to existing as well as new MKE traffic
- Reflects higher capacity

6. Conclusions

It is considered that a new bridge:

- **provides higher capacity** and a **greater reduction in delay** across the M1 than the other options;
- is more **effective at removing through-traffic from M1 J14**;
- provides **greater resilience in the road network**; i.e. 4 bridge crossings instead of 3;
- is better **aligned with the Development Framework** and aspirations for **fast public transport routes** into CMK;
- will have **less impact** on traffic movements **during construction**

Questions