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Client	St William / St James / MKC		
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Subject	Appraisal of the Need and Location for a New M1 Bridge Crossing		
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1.1 Introduction and Context

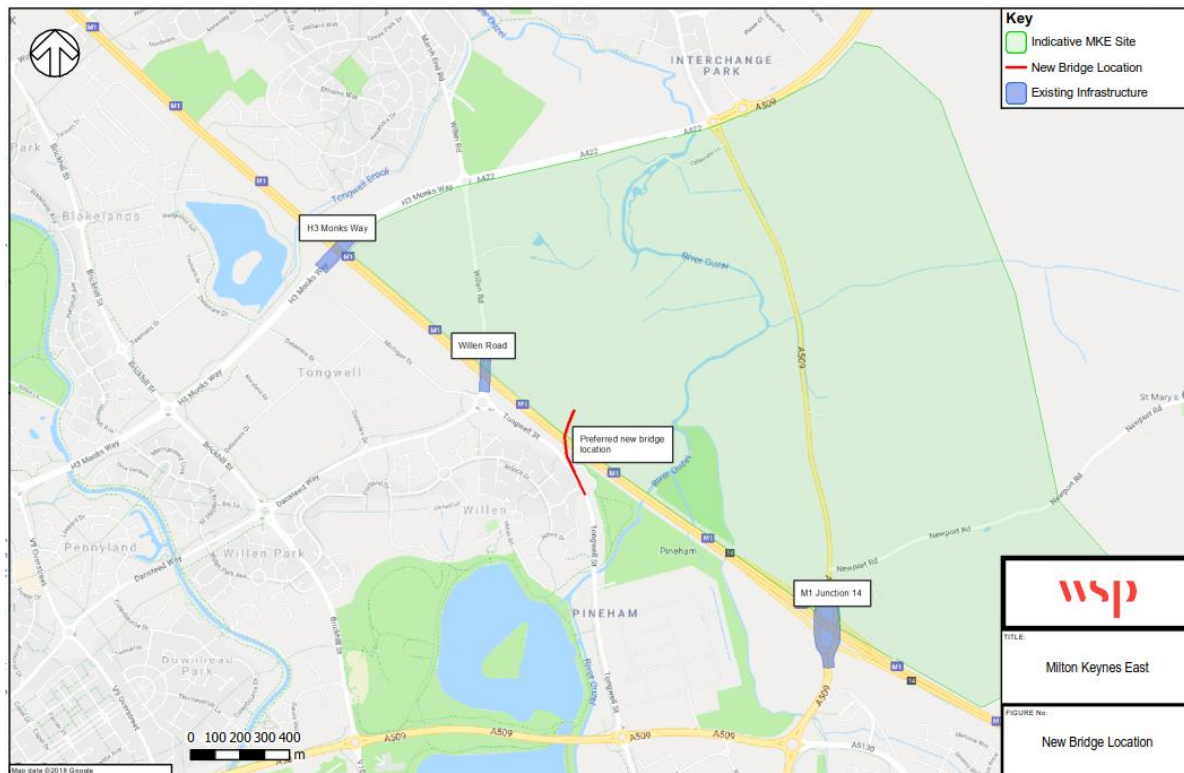
- 1.1.1 In order for housing and employment development at Milton Keynes East (MKE) to come forward there is a need for new infrastructure (predominantly roads) to be provided as set out within Plan:MK, which was subject to inspection during the Summer of 2018. This infrastructure needs to be cognisant of the MK 2050 Futures vision and in particular aspirations for providing rapid transit into central MK from the north.
- 1.1.2 Milton Keynes Council (MKC), in coordination with the Berkeley Group who are the promoters of the land at MKE, are currently in the process of bidding for Housing Infrastructure Funding (HIF) from central government. The bid is currently in the co-development phase with Homes England following MKC being successful with their original Expression of Interest in September 2017.
- 1.1.3 An infrastructure scheme pursued through the HIF will need to be deliverable within the timescales associated with the HIF window and deliver sufficient benefits which can be demonstrated through a business case which supports the HIF submission.
- 1.1.4 Therefore, the bid for HIF will include a number of new roads which are required to both enable development to be delivered, free up capacity at M1 Junction 14 and aim to reduce delays across the M1 corridor.
- 1.1.5 Currently the infrastructure within the HIF bid includes a new bridge crossing over the M1, as was included within the original HIF Expression of Interest submitted by MKC in September 2017. It is understood that further information on the proposed location of the bridge, and indeed why a new bridge is needed, is required following consultation with key stakeholders. This technical note therefore focuses on the technical reasons behind this.
- 1.1.6 Figure 1 below shows the section of M1 being considered, the nearby existing highway infrastructure and the preferred location of the new bridge, which is discussed in more depth throughout this report.

MILTON KEYNES EAST

Transport Technical Note 4 – Options for Providing Highway Capacity Across the M1



Figure 1 Proposed bridge location and existing highway infrastructure



1.2 Why is a New Bridge Needed?

- 1.2.1 Currently there are three crossings of the M1 within the vicinity of Land at MKE; M1 Junction 14, Willen Road and the A422 Monks Way as shown on Figure 1 above. M1 Junction 14, in particular, currently experiences high demand and one of the underlying reasons behind this is that it currently caters for a lot of traffic travelling over the motorway into and out of Milton Keynes; i.e. traffic which does not use the M1 at all.
- 1.2.2 Development at MKE would contribute towards movements both across the M1 and with the M1 itself and without any intervention either at M1 Junction 14 or measures to reduce traffic flows across J14 it would not be possible for housing and employment to come forwards at MKE in line with Plan:MK.
- 1.2.3 As a result, any development coming forward east of the M1 would seek to maintain the performance of the motorway junction where practicably possible, which is a key element in delivering ongoing economic growth for Milton Keynes. The key to achieving this therefore is how one addresses the capacity needed for motorists travelling over the M1 which does not need to access the M1 itself such that much of this traffic is removed from the junction.
- 1.2.4 Theoretically this additional capacity could be provided in one of four ways, namely:
 - An upgrade to J14 of the M1; and / or
 - Increased capacity of the Willen Road link and its crossing of the M1; and / or
 - Increased capacity on the A422 Monks Way and its crossing of the M1; and / or
 - A new bridge link over the M1.

1.2.5 The below provides some commentary over the suitability of each of these, with Section 1.6 of this note setting out the options considered for where a new bridge could cross the M1.

1.3 Upgrade M1 Junction 14

1.3.1 Junction 14 is extremely constrained by virtue of its geometry, insofar as the distance between the two bridges over the motorway is relatively short. As a result, the amount of space which is available for traffic to wait at the traffic signals as they are circulating the northern and southern sides of the junction is very limited.

1.3.2 As a result, improvements which can be made to the existing junction are limited to refinements in the traffic signal timings and any improvements which can be made on the approaches to the junction; e.g. widening. However, these would not deliver the increase in capacity required to cater for MKE and accommodate the long-term growth aspirations of the City.

1.3.3 In considering what improvements could be made to J14 a number of discussions have been held with Highways England over their capital investment programme for improving their network. This has concluded that they do not currently have any plans to upgrade Junction 14 of the M1, other than improvements which are needed to facilitate the SMART Motorways programme which is being implemented between Junctions 13 and 16 of the M1.

1.3.4 Consequently, in order for Junction 14 to be improved to a level whereby significant additional capacity is provided, a full reconstruction of the junction would, in all likelihood, be required. Consideration has been given to this but there are a number of issues associated with pursuing this as a solution through the HIF mechanism, namely:

- Not all of the land which would be required to deliver a new junction is within the control of the Council or its development partners;
- The timescales associated with delivering a new junction in the context of the ongoing SMART motorways scheme and the associated approvals processes (not to mention the land ownership constraints identified above) would prohibit the works from being able to be delivered within the funding window associated with the HIF;
- Motorists wishing to travel north-south over the M1 who currently use J14 would continue to do so, mixing with traffic from the M1;
- An upgrade of M1 J14 does not in itself provide any infrastructure which facilitates access to new housing or employment parcels within MKE; and
- Upgrading J14 does not provide for any additional resilience in the highway network in that motorists wishing to travel over the M1 would still be restricted to the same number of crossing points as they are currently.

1.3.5 As a result, it is considered that the reconstruction of M1 J14 is not a viable option on which to base the HIF application, albeit its upgrade may be needed in the longer-term.

1.4 Upgrade Willen Road

1.4.1 Willen Road is currently one lane in either direction, including where it crosses the M1, with a roundabout connection at either end. It would be possible to widen Willen Road to a dual carriageway and build a new bridge over the M1 alongside the existing bridge such that there are two lanes provided in either direction.

- 1.4.2 The roundabouts at either end of Willen Road would also then need to be upgraded to suit and Tongwell Street could be widened to a dual carriageway between Tongwell Roundabout and Pineham Roundabout if, as expected, this would be required.
- 1.4.3 Prior to undertaking any traffic modelling it was considered that increasing capacity along Willen Road is unlikely to achieve the benefits needed in reducing delays across the M1 corridor and at M1 J14 to enable development at MKE to come forward or indeed support wider growth east of the M1. The reason for this is fourfold:
- Use of the Willen Road link for motorists wishing to travel across the M1 between the north-east and Central MK is unlikely to be as attractive as continuing to use M1 J14, and is therefore unlikely to free up the capacity or reduce delays in the way in which a new bridge could. This is because the overall travel distance and likely journey times are likely to be less favourable;
 - Psychologically, Willen Road does not present itself as the obvious route choice into and out of South, parts of Central and SE MK for motorists travelling to / from the north-east;
 - Because Willen Road is at the western edge of the MKE masterplan it may not cater for much of the traffic from the MKE development wishing to access south, parts of central and SE MK, with that traffic instead trying to use M1 J14;
 - The Willen Road corridor does not follow the aspirations for the MK 2050 Futures rapid transit corridor; and
 - It does not provide any additional resilience in the network insofar as there would still be three bridge crossings of the M1 (J14, Willen Road and the A422) instead of four with the inclusion of a new bridge.
- 1.4.4 Despite these potential drawbacks the option of widening Willen Road and its bridge over the M1 is being assessed through the Milton Keynes traffic model, in order to understand how it performs relative to a new bridge over the M1.

1.5 Upgrade the H3 Monks Way

- 1.5.1 Monks Way is already duelled over the M1 and the ability to widen it further is constrained by available land and other constraints upstream and downstream of it (i.e. junctions and road links).
- 1.5.2 Monks Way does not provide as direct a route towards Central MK as the other routes described above and the dis-benefits of it are as described for Willen Road above, albeit to an even greater extent, and it is therefore considered that reliance on the H3 Monks Way for capacity is not appropriate.

1.6 Introduce a New Bridge Crossing over the M1

- 1.6.1 Given the commentary provided above it is considered that a new bridge crossing over the M1 has the ability to cater for both development traffic at MKE and also intercept many of the existing motorists travelling across the M1 between MK and the north-east. In terms of where the bridge crosses the M1 a number of locations were considered but discounted before a preferred crossing point was identified, which is now the subject of the HIF bid. These options, and the reason behind them being discounted, are set out below.

M1 BRIDGE CROSSING – OPTION 1

1.6.2 Figure 2 below shows the first option considered for a new bridge crossing of the M1.

Figure 2 M1 Bridge Crossing – Option 1



1.6.3 Option 1 involves a new bridge crossing which connects the A509 London Road with V11 Tongwell Street and crosses the M1 at a point approximately midway between the existing crossings at M1 J14 and Willen Road.

1.6.4 This option provides the benefits sought in terms of attracting motorists wishing to travel across the M1 away from M1 J14 and in serving the development at MKE. However, it is considered that it has two key drawbacks as follows:

- It requires third party land from the southern side of the M1 between Tongwell Street and the M1 itself which is outside the control of MKC or its development partners. This would lead to prolongation to the delivery programme which would add risk to meeting the remit of the HIF delivery timescales; and
- The landing points of the new bridge are understood to be very close to the existing strategic north-south sewer which crosses the motorway. Whilst this in itself does not preclude this option it will add a level of complexity and cost to the way in which the bridge needs to be founded.

1.6.5 As a result, whilst Option 1 is considered to deliver the transport capacity required it is unlikely to be viable through the HIF process because of the land ownership constraints.

M1 BRIDGE CROSSING – OPTION 2

1.6.6 Figure 3 below shows the second option considered for a new bridge crossing of the M1.

Figure 3 M1 Bridge Crossing – Option 2



1.6.7 Option 2 involves a new bridge crossing which connects the A509 London Road with the A509 Portway.

1.6.8 This option does provide some of the benefits sought in terms of attracting motorists wishing to travel across the M1 away from M1 J14 and in serving the development at MKE but does have two key drawbacks:

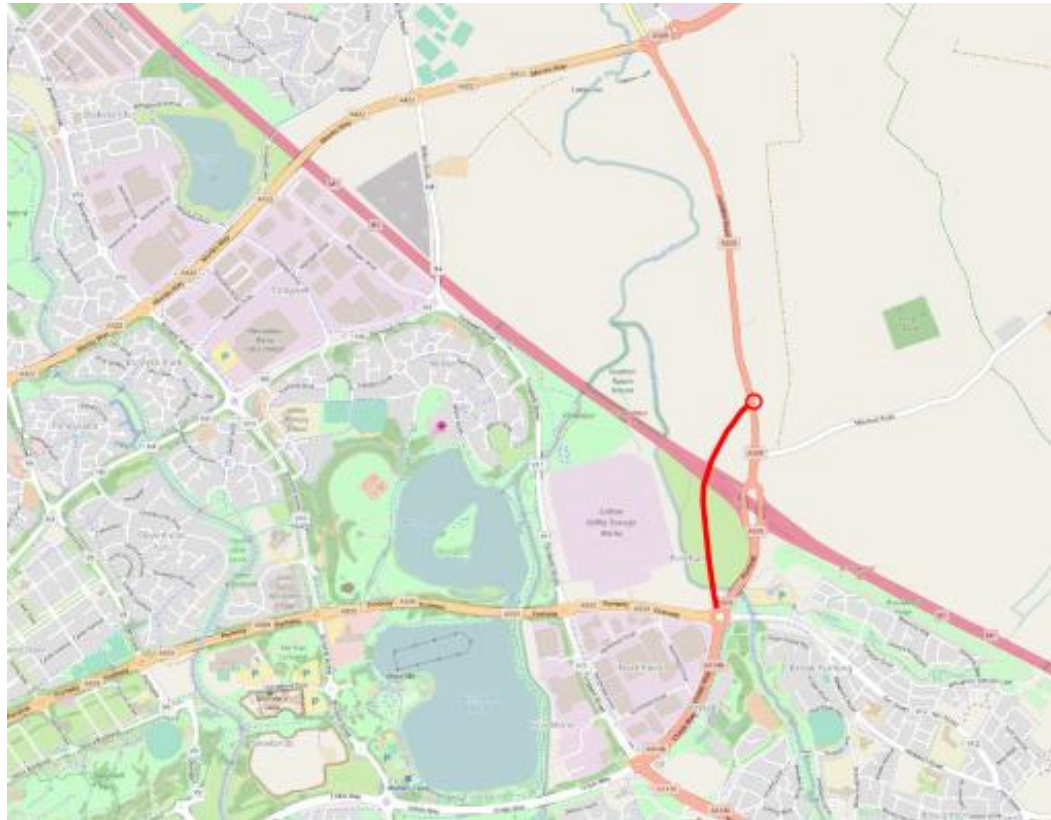
- It does not provide as efficient connection into the existing highway network south of the M1 with a new junction needing to be formed on the A509 Portway; and
- More critically this option clashes with the existing sewage treatment works and it is not considered feasible or cost effective to reconfigure the sewage treatment works to suit. Not only that but the associated land with this is outside of the control of MKC or its development partners.

1.6.9 As a result, Option 2 is not considered to be viable.

M1 BRIDGE CROSSING – OPTION 3

1.6.10 Figure 4 below shows the third option considered for a new bridge crossing of the M1.

Figure 4 M1 Bridge Crossing – Option 3



1.6.11 Option 3 involves a new bridge crossing which connects the A509 London Road with Northfields Roundabout just south of M1 J14.

1.6.12 It is considered that whilst this option may provide some of the benefits sought in terms of attracting motorists wishing to travel across the M1 away from M1 J14 itself it has four key drawbacks:

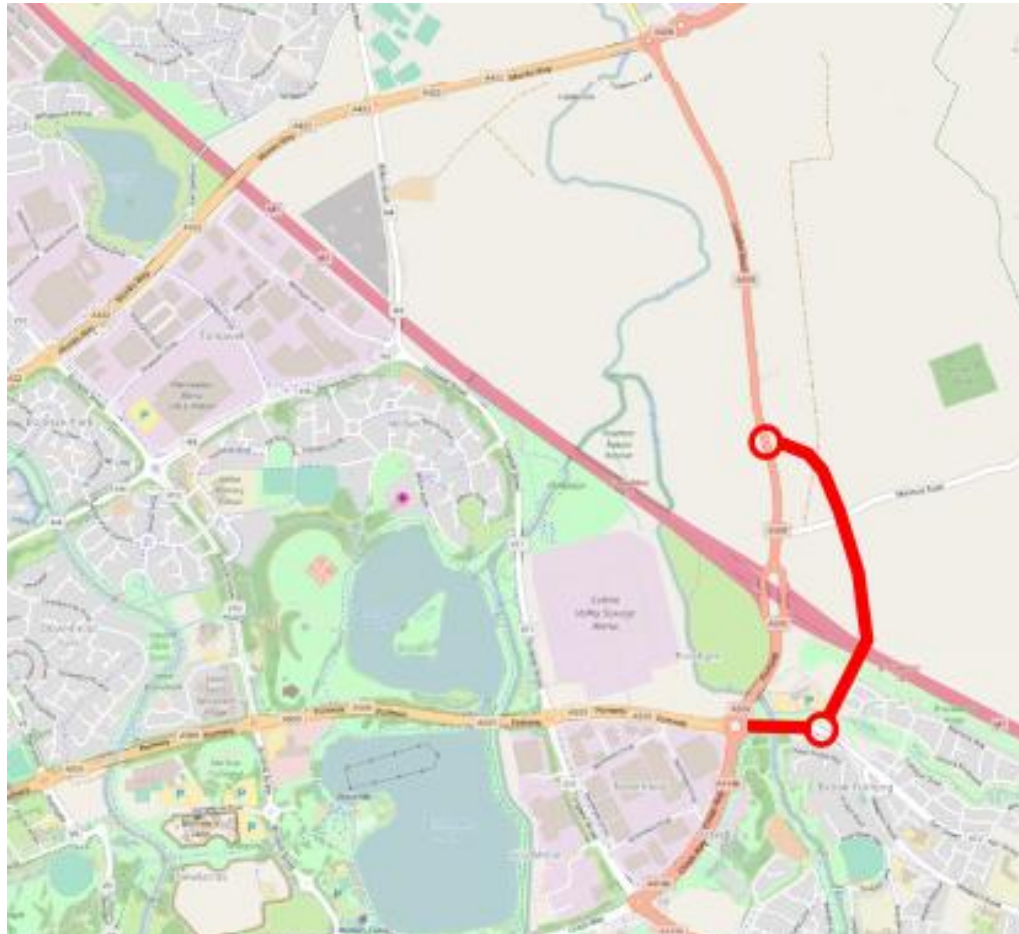
- There is still a reliance on the A509 to cater for all M1, north-south and development traffic along most of its length;
- It relies upon a new connection into Northfields Roundabout which is a known existing constraint and whilst improvements could be made to that junction to enhance its capacity it is considered that the introduction of a fifth arm would be extremely challenging to accommodate;
- A new bridge in this location is too close to Junction 14 and could compromise the reconfiguration of that junction in the future by Highways England; and
- A new bridge in this location would require third party land which is outside of the control of MKC and their development partners.

1.6.13 As a result, Option 3 is not considered to be viable.

M1 BRIDGE CROSSING – OPTION 4

1.6.14 Figure 5 below shows the fourth option considered for a new bridge crossing of the M1.

Figure 5 M1 Bridge Crossing – Option 4



1.6.15 Option 4 involves a new bridge crossing to the east of M1 J14 which connects the A509 London Road with the A5130 Fen Street.

1.6.16 It is considered that whilst this option may provide some of the benefits sought in terms of attracting motorists wishing to travel across the M1 away from M1 J14 itself it has four key drawbacks. These are:

- There is still a reliance on the A509 to cater for all M1, north-south and development traffic along most of its length;
- In the same way as Option 3, a new bridge in this location may be too close to Junction 14 and could compromise the reconfiguration of that junction in the future by Highways England;
- A new bridge in this location would require third party land which is outside of the control of MKC and their development partners; and
- This new link would have a significant impact on existing properties in the recently completed housing development south-east of M1 J14.

1.6.17 As a result, Option 4 is not considered to be viable.

M1 BRIDGE CROSSING – OPTION 5

1.6.18 Figure 6 below shows the fifth option considered for a new bridge crossing of the M1.

Figure 6 M1 Bridge Crossing – Option 5



1.6.19 Option 5 involves a new bridge crossing further east of M1 J14 which connects the A509 London Road with the existing junction of Fen Street with Countess Way.

1.6.20 It is considered that this option would provide limited benefit in terms of attracting motorists wishing to travel across the M1 away from M1 J14 itself and has three key drawbacks. These are:

- This link takes motorists into the south-east of MK and whilst some motorists may wish to access this area from the north-east and MKE itself, the link does not function as an efficient, strategic or attractive route for those who wish to access the city centre resulting in those motorists continuing to use J14; and
- A new bridge in this location would require third party land which is outside of the control of MKC and their development partners.

1.6.21 As a result, Option 5 is not considered to be viable.

M1 BRIDGE CROSSING – OPTION 6

1.6.22 Figure 7 below shows the sixth option considered for a new bridge crossing of the M1.

Figure 7 M1 Bridge Crossing – Option 6



1.6.23 Option 6 is almost identical to Option 1 in that it involves a new bridge crossing to the west of M1 J14 which connects the A509 London Road with the V11 Tongwell Street.

1.6.24 It is considered that this option provides the benefits sought in terms of attracting motorists wishing to travel across the M1 away from M1 J14 itself and providing a strategic link into MK both for that traffic and the development at MKE.

1.6.25 The drawback with Option 1 was in relation to third party land requirements whereas this option is considered to avoid the requirement to acquire any third-party land and be delivered within the transport corridor. Similarly, Option 6 is further away from where the strategic sewer is located and is therefore unlikely to present a constraint to the delivery of Option 6.

1.6.26 It cannot be moved any further west as it would otherwise conflict with the existing farm track bridge over the M1 and again fall foul of third party land ownership constraints.

1.6.27 Furthermore, Option 6 is consistent with the MK 2050 Futures vision in terms of a route for providing rapid transit and the route over the M1 and connecting with Tongwell Street follows the existing transport corridor as far as possible.

1.6.28 As a result, it is considered that Option 6 is the most viable option for providing additional capacity across the M1 whilst serving development at MKE.

M1 BRIDGE CROSSING – SUMMARY

1.6.29 It can be seen from the appraisal of options above that there is a narrow window where the new bridge can be positioned given the various constraints which exist and indeed the location of the bridge is constrained to within a few meters.

1.6.30 It is therefore considered that Option 6 is the most appropriate location for a new crossing point of the M1 and, subject to an assessment of widening Willen Road, will be the option pursued through the HIF process to support growth at MKE.