



SWMK Consortium

SOUTH WEST MILTON KEYNES

Technical Note 18: Review of Transport Modelling





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WSP

**2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN**

Phone: +44 148 352 8400

WSP.com

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Prepared by	Steph Howard			
Signature				
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Signature				
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1 INTRODUCTION AND CONTEXT

- 1.1.1. In January 2015 duplicate planning applications were submitted to Aylesbury Vale District Council (AVDC) and Milton Keynes Council (MKC) for a residential led development at South West Milton Keynes (SWMK) (hereinafter referred to as the site). The applications were accompanied by a comprehensive Environmental Statement and other relevant supporting documents. Following the submission of the applications and subsequent discussions with the highway authorities Buckinghamshire County Council (BCC) and MKC, a revised Transport Assessment (TA) was prepared by Mouchel (now WSP) on behalf of the Applicants in August 2016 to support the 'Regulation 22' Addendum Environmental Statement (ES). The TA set out the impact of the proposed development on the local highway network and identified appropriate mitigation to ensure that the impact of the proposed development at SWMK would not be severe, in the context of paragraph 32 of the National Planning Policy Framework (NPPF) of 2012¹.
- 1.1.2. Following further discussions with highways officers from both BCC and MKC, it was agreed that the residual cumulative impact of the development would not be severe and that there were no sustainable transport and highways reasons to refuse the planning application, subject to appropriate planning conditions and the implementation of the agreed mitigation package which is detailed later in this Technical Note.
- 1.1.3. The traffic assessments within the TA were based on the Milton Keynes Traffic Model (MKTM) which had a base year of 2009 and supported the Milton Keynes Local Plan to 2026.
- 1.1.4. Subsequent to the above responses to the submitted Regulation 22 ES and revised TA, MKC and their consultants AECOM created a new strategic traffic model with a base year of 2016 and a future year of 2031 to support the Local Plan (Plan:MK). BCC and their consultants Jacobs also created a new traffic model with a base year of 2013 and a future year of 2033 to support the Aylesbury Vale District Council (AVDC) Local Plan (draft VALP).
- 1.1.5. As the SWMK planning application is still to receive planning consent within MKC², it is appropriate to provide an update to MKC to clarify and confirm that the traffic modelling and mitigation package contained within the TA of August 2016 remains appropriate and suitable in light of the new strategic traffic models that have been developed by MKC and BCC to support Plan:MK and the draft VALP respectively.
- 1.1.6. This Technical Note (TN) therefore provides a 'high level' review of both the MKC and BCC strategic traffic models and compares the outputs and impacts of the proposed development with the calculated impact contained within the revised TA of August 2016.

¹ NPPF, 2019, paragraph 2019

² AVDC has agreed a resolution to grant planning permission subject to the Applicant signing up to a suitable Section 106 mitigation package.

2 DEVELOPMENT IMPACT WITHIN THE TA

2.1 TRAFFIC MODELLING

- 2.1.1. Following discussions with BCC and MKC in 2015/16, a bespoke methodology was derived to determine the impact of the development on the local highway network in both authority areas.
- 2.1.2. The methodology involved using the MKTM which was calibrated and validated to a base year of 2009 and was considered by MKC and BCC to be an acceptable basis for modelling the traffic impact of SWMK.
- 2.1.3. The traffic flows and distribution from for the base scenario in 2026 were extracted from the MKTM. The base scenario in 2026 included a number of strategic mitigation measures expected to be completed at that time, including: M1 J10-13 widening, A421 Bedford to M1, M1-A5 link road, HS2 and East West Rail (western section). Local junction improvement schemes were also included, but none were in proximity to the site.
- 2.1.4. The trip generation for the development was also taken from the MKTM but was manually applied to calculate the forecast traffic flows for 2026 and to preclude the benefit of the dynamic reassignment within the model. In addition, no further reduction was made in vehicle trip generation to account for the potential mode shift that would result from the implementation of proposed travel planning measures, that comprise new bus services and comprehensive walking/cycling routes.
- 2.1.5. The impact of the development on roads within the MKC boundary, as described in the TA is minor, with the majority of the identified junctions assessed to operate with an RFC³ below 1.0 in all scenarios, indicating that junction improvements are not required. Three junctions along A421 require some minor mitigation to ensure that the residual cumulative impact of development is not severe in the context of NPPF; these include, Emerson roundabout, Elfield Park roundabout, and Bleak Hall roundabout.
- 2.1.6. The impact on Bletchley was also assessed at the request of MKC in response to queries from West Bletchley Parish Council and whilst there is likely to be an increase in traffic through the area, no mitigation is required as the impact of the additional traffic is not considered to be severe in the context of the NPPF.
- 2.1.7. It was recognised that within Buckinghamshire, the 2026 base and 2026 'with development' scenarios would impact on A421 during both travel peaks. Some queuing would occur along A421, but also on the minor arms of these junctions, where the additional traffic on A421 prevents vehicles joining the main road.
- 2.1.8. Appropriate mitigation at these junctions was agreed to ensure that the residual cumulative impact would be acceptable to BCC as the local highway authority. The mitigation was developed on a *nil detriment*⁴ basis, which goes beyond the requirements of NPPF 2012, and also paragraph 109 of the revised NPPF 2019. BCC and MKC also requested that the benefit of implementing a comprehensive site wide Travel Plan⁵ should be excluded from junction modelling and for the purpose of determining appropriate mitigation.

³ RFC - Ratio of Flow to Capacity

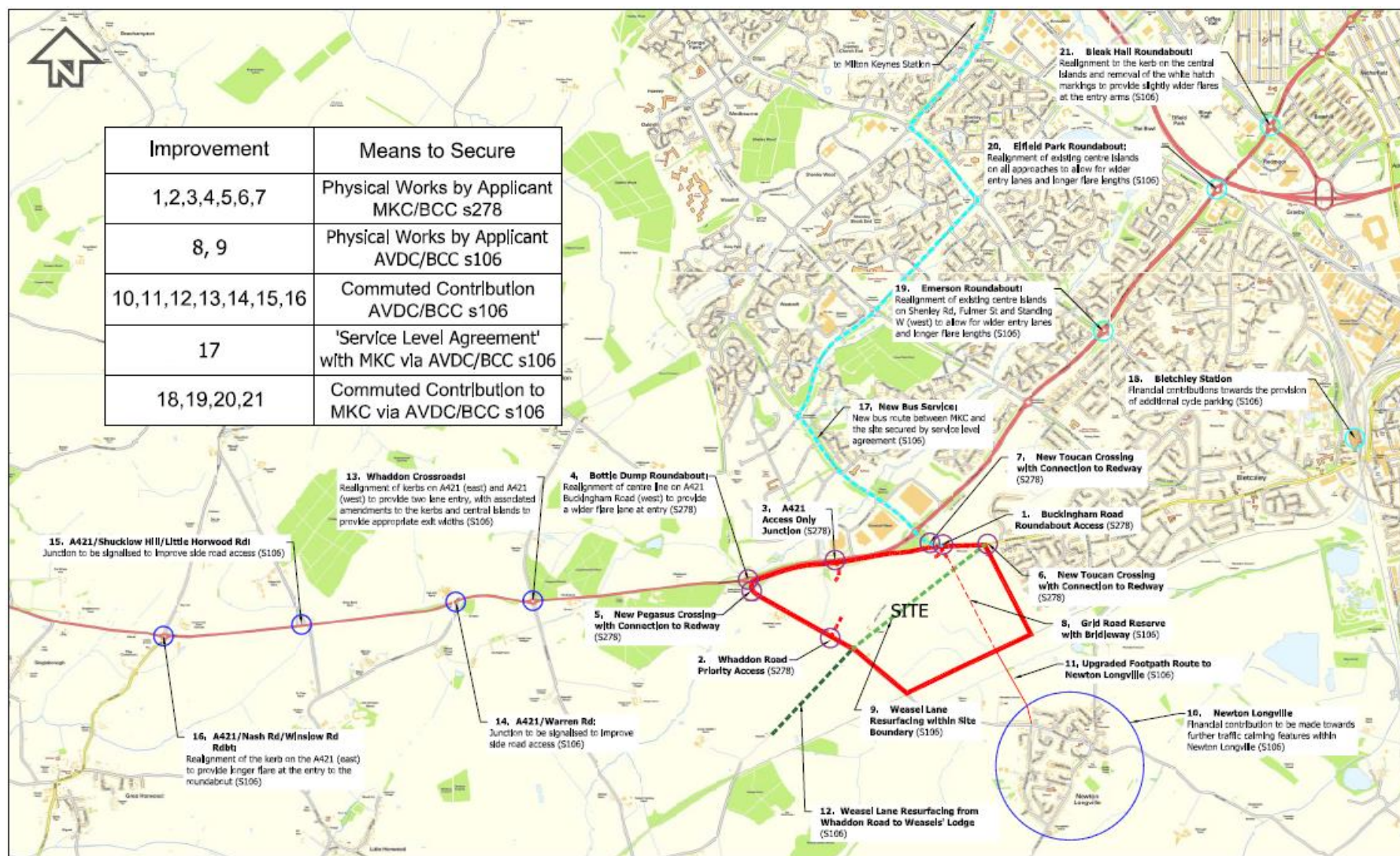
⁴ Nil detriment – to leave the network no worse off in the forecast year 2026

⁵ Note – a comprehensive Framework Travel Plan has been agreed with BCC and MKC

2.2 AGREED MITIGATION

- 2.2.1. The agreed highway and transport mitigation package is extensive. One of the more significant issues that arose during discussions with MKC and BCC/AVDC related to the limiting capacity of A421. The solution finally agreed with BCC and MKC assumed that a number of junctions along A421 would be improved assuming a *nil detriment* solution in the future forecast year 2026.
- 2.2.2. A mitigation scheme was prepared to reflect the level of improvement required for each junction and the construction cost commuted to a single contribution to be secured as a s106 obligation. This was the preferred approach of both BCC and MKC given the uncertainty over a number of strategic highway schemes that could ultimately influence the future traffic demand along the corridor of A421; these schemes include: East – West Rail (EWR) and the Oxford to Cambridge Expressway. At the time of preparing this TN it is understood that further announcements will be made by Government on the preferred route for both schemes towards the end of 2019
- 2.2.3. The transport and highway mitigation package is contained within the agreed section 106 agreement and illustrated by Figure 2.1 below:
- A421 corridor improvements; this is by way of a contribution of £1,445,440, which is based on achieving a *nil detriment* solution to the impact of traffic on key junctions within Buckinghamshire. In addition, a further contribution of £209,517 has been agreed again based on a *nil detriment* solution for the highways works within MKC's jurisdiction. The intention is then for BCC and MKC to use these contributions to implement more comprehensive improvements along A421 as opposed to a series of minor junction improvements that would be required to meet the developments own impact;
 - Traffic calming to Newton Longville, south of the Site; this is by way of a contribution of circa £280k;
 - Enhanced bus service(s); the Consortium agreed to enter a service agreement with a bus operator and will fund services between the Site and Central Milton Keynes (CMK) up to £2m;
 - Travel Plan – a Framework Travel Plan has been agreed with BCC and MKC. The Consortium is committed to the implementation of the Plan and annual monitoring;
 - Public Rights of Way – the Consortium will contribute some £42k to the improvement of local footpaths that will link the Site to Newton Longville to the south;
 - Whaddon Village – there is a concern over potential 'rat running' and a contribution of some £22k has been agreed;
 - Cycling – new cycle parking will be provided at Bletchley station and will be funded by way of a contribution;
 - Provision of a corridor within the Site to accommodate a new Grid Road;
 - Highway works have been agreed and will be secured via s278 agreement:
 - Bottle Dump roundabout, including a new equestrian/pedestrian/cycle crossing;
 - Whaddon Road roundabout widening; and
 - Site access arrangements via Whaddon Road and Buckingham Road.

Figure 2-1 - Highway Improvements Masterplan



3 MKC LOCAL PLAN - PLAN:MK

3.1 STATUS

- 3.1.1. The new Local Plan for Milton Keynes, Plan:MK, was adopted by MKC at its meeting on the 20 March 2019. Plan:MK now forms part of MKC's Development Plan and replaces both the Core Strategy (2013) and saved policies of the Local Plan (2005).

3.2 STRATEGIC MODELLING

- 3.2.1. The Milton Keynes Multi-Modal Model (MKMMM) Traffic Forecasting Report⁶ (and Impacts of Plan:MK Report⁷) detail the strategic traffic modelling methodology and impacts associated with the proposed development within Plan MK.

METHODOLOGY

- 3.2.2. The base year of the model is 2016 with a future forecasting year of 2031 to match the end of the current Local Plan period.
- 3.2.3. The site at SWMK is included within the 'reference case' scenario – i.e. it is assumed that this development will proceed and is therefore assessed within each of the Plan:MK development scenarios. The site is included for 1,855 homes and 895 jobs within the reference case.
- 3.2.4. The reference case includes improvements to the strategic and local highway networks as set out the Traffic Forecasting Report⁸. It is noted that improvements are not proposed to the corridor of A421 in proximity to SWMK to incorporate the agreed mitigation package as noted above in paragraph 2.2.3. As such, the impact of the proposed development at SWMK is not mitigated within the MKMMM.

⁶ AECOM Milton Keynes Multi Modal Model Traffic Forecasting Report (November 2017)

⁷ AECOM Milton Keynes Multi Modal Model Impacts of Plan:MK (November 2017)

⁸ Figure 12, AECOM Milton Keynes Multi Modal Model Traffic Forecasting Report (November 2017)

RESULTS

- 3.2.5. In the 2031 reference case, there is an increase in flow along A421 towards Milton Keynes in both peaks, with some minor delays at Bottle Dump and Whaddon Crossroads when compared to the 2016 base scenarios. The increase in flows and delays is likely to be attributed to both background traffic growth and to the development at SWMK.
- 3.2.6. In the 2031 reference case in the AM peak⁹, the A421 link towards Bottle Dump eastbound is forecast to operate just over capacity. The approach to Whaddon Crossroads northbound and the link towards the Stoke Road/Bletchley Road crossroads will operate just under capacity. Within Milton Keynes, there will be some congestion on the links along A421 from the site eastbound as in the 2016 base scenario.
- 3.2.7. In the 2031 reference case in the PM peak¹⁰, A421 towards Whaddon Crossroads westbound will operate at capacity and eastbound at just under capacity. Similarly, A421 towards Bottle Dump eastbound and Stoke Road/Bletchley Road crossroads will operate just under capacity. Within Milton Keynes, there is also forecast to be congestion on the approaches to Emerson roundabout, Elfield Park roundabout and Bleak Hall roundabout.
- 3.2.8. All of the junction locations described within this Section are included with the 2016 TA and have comprehensive mitigation proposed as part of SWMK s106 package, either as part of a wider A421 corridor improvement (i.e.: within the jurisdiction of both BCC and MKC), or to be implemented as s278 improvements under the Highways Act 1980. **As detailed previously, these improvements are not included within the MKMMM, and therefore the benefit of the agreed improvements is not shown within these model results and outputs.**

⁹ Figure 30, AECOM MKMMM Impacts of Plan:MK (November 2017)

¹⁰ Figure 32, AECOM MKMMM Impacts of Plan:MK (November 2017)

4 VALE OF AYLESBURY LOCAL PLAN (VALP)

4.1 STATUS

- 4.1.1. The draft VALP was submitted to Government and underwent an Examination in Public in July 2018. The Inspector's Interim Findings were released in December 2018 with AVDC currently finalising their onward timetable including when the proposed Main Modifications to the Plan will be published for public consultation. Subsequently, the draft VALP will be adopted to become the Development Plan for AVDC.

4.2 STRATEGIC MODELLING

- 4.2.1. The Jacobs Countywide Local Plan Modelling 'Forecast Modelling Report'¹¹ and Countywide Local Plan Modelling 'Phase 3 Technical Report'¹² details the strategic traffic modelling methodology and impacts associated with the development within the draft VALP.

METHODOLOGY

- 4.2.2. The base year of the model is 2013 with a future forecasting year of 2033 to match the end of the emerging Local Plan period.
- 4.2.3. The site at SWMK is included within the '2033 Do Something' (DS) scenario which includes the projected planning completions and local plan allocations to 2033 – i.e. it is assumed that this development will proceed and is therefore assessed within each of the 'Do Something' (DS) development scenarios. The site is included within a model zone for '>1500' homes and '>1,500' jobs, which represents the development size of 1,855 homes and employment opportunities.
- 4.2.4. The DS scenario includes improvements to the strategic and local highway networks including Crossrail and East West Rail and M4 Smart Motorway. The planned Oxford to Cambridge Expressway has been excluded as the implementation is likely to extend beyond the Plan period to 2033.
- 4.2.5. There are two mitigation 'runs', with a corridor improvement to dual A421 between Buckingham and Milton Keynes included in 'run 2' but not in 'run 1'; and the Bletchley Bypass included in 'run 1' but not in 'run 2'. Both 'run 1' and 'run 2' include a new grid road in Milton Keynes adjacent to V1,
- 4.2.6. It is noted that there are no specific junction improvements to the corridor of A421 around SWMK to reflect the agreed mitigation package for the proposed development as identified above in paragraph 2.2.3. As such, the specific impacts of the development at SWMK are not be fully mitigated within the model.

¹¹ Jacobs Countywide Local Plan Modelling - Forecast Modelling Report (July 2016)

¹² Jacobs Countywide Local Plan Modelling - Phase 3 Technical Report (August 2017)

RESULTS

- 4.2.7. The Phase 3 Technical Note Appendices¹³ provide congestion ratios along the major links around the development site. The congestion ratio is a measure of congested travel time compared to free flow travel time on each modelled link which allows for the impact of congestion on downstream links to be considered¹⁴. The 2033 DS AM and PM peak scenario (without mitigation) congestion ratios¹⁵ show that the A421 between Whaddon Crossroads and Bottle Dump is congested in both directions. Towards Milton Keynes, A421 between Bottle Dump and Emerson roundabouts is not heavily congested in comparison to other parts of the local network. Between Emerson, Elfield Park and Bleak Hall roundabouts, the link becomes congested during the both peaks.
- 4.2.8. The links within the SWMK study area of the 2016 TA and described within this section of the TN include the agreed mitigation as part of SWMK s106 package, either as part of a wider A421 corridor improvement within the jurisdiction of BCC/MKC, or to be implemented as s278 improvements under the Highways Act 1980.
- 4.2.9. The Countywide Model mitigation scenarios, 'run 1' and 'run 2', exclude the agreed mitigation represented by the s106 package as proposed for the development at SWMK. As a consequence, the congestion ratio results of the DS mitigation scenarios included within the model do not reflect the benefit of the mitigation agreed for SWMK.

¹³ Jacobs Countywide Local Plan Modelling - Phase 3 Technical Report (August 2017)

¹⁴ Jacobs Countywide Local Plan Modelling - Phase 3 Technical Report (August 2017), Table 5A

¹⁵ Jacobs Countywide Local Plan Modelling - Phase 3 Technical Report (August 2017), Appendix A

5 COMPARISON OF EVIDENCE

- 5.1.1. The 2016 TA, MKC MKMMM and the BCC Countywide Model all suggest that in the future scenarios of 2026, 2031 and 2033 respectively, that A421 between Whaddon Crossroads in Buckinghamshire and Bleak Hall roundabout in Milton Keynes will be under pressure without mitigation, with certain junctions more congested than others as summarised in Table 5.1 and Table 5.2 below. The results from the MKMMM and Countywide strategic models do in fact demonstrate that in some cases, key junctions would achieve a lower level of congestion in 2031 and 2033 compared with the forecasts for 2026 as contained within the 2016 TA. On this basis, WSP are of the opinion that the agreed junction improvements as detailed in Section 2 of this Note, therefore provide a robust level of mitigation for the SWMK site.
- 5.1.2. For avoidance of doubt, the summary tables below exclude any proposed mitigation and attempt to draw broad correlation of the test results across the different modelling platforms. Clearly the MKC MKMMM and the BCC Countywide model include the benefit of implementing various strategic transport schemes that are likely to be implemented through to 2033.

Table 5-1 – AM Peak Comparison of Evidence for Key Links/Junctions (without mitigation)

Link/Junction	TA (August 2016) – 2026 'With Development'	MKC MKMMM 2031 Reference Case (includes SWMK)	BCC Countywide Model 2033 DS (includes SWMK)
Whaddon Crossroads	Over capacity	Approaching capacity	Over capacity
Bottle Dump Roundabout	Over capacity	Over capacity	Approaching capacity
Emerson Roundabout	Over capacity	Approaching capacity	Approaching capacity
Elfield Park Roundabout	Over capacity	Approaching capacity	Over capacity
Bleak Hall Roundabout	Over capacity	Over capacity	Over capacity

Table 5-2 – PM Peak Comparison of Evidence for Key Links/Junctions (without mitigation)

Link/Junction	TA (August 2016) – 2026 'With Development'	MKC MKMMM 2031 Reference Case (includes SWMK)	BCC Countywide Model 2033 DS (includes SWMK)
Whaddon Crossroads	Over Capacity	Over Capacity	Over Capacity
Bottle Dump Roundabout	Approaching capacity	Approaching capacity	Over Capacity
Emerson Roundabout	Over Capacity	Approaching capacity	Over Capacity
Elfield Park Roundabout	Over Capacity	Approaching capacity	Over Capacity
Bleak Hall Roundabout	Over Capacity	Over Capacity	Approaching capacity

- 5.1.3. Notwithstanding the different future years, the forecast results from the junction models within the TA, the MKMMM and the BCC Countywide Model correlate reasonably well and indicate that Whaddon Crossroads and Bottle Dump roundabouts in Buckinghamshire and Emerson, Elfield Park

and Bleak Hall roundabouts in Milton Keynes require mitigation to reduce congestion and delays in the future year.

- 5.1.4. It is therefore considered that the junction assessments within the TA for a future year of 2026 remain a robust representation of the impact of the development on the local highway network when compared with the more recent strategic models to support Plan:MK and the draft VALP. In this regard, WSP consider that the 2016 TA actually presents a more onerous case in 2026 compared with the Local Plan evidence base and therefore still represents a robust approach for establishing appropriate mitigation for the proposed development at SWMK.

5.2 SUITABILITY OF SWMK PROPOSED MITIGATION

- 5.2.1. The agreed mitigation package proposed as part of the development at SWMK include S278 works or financial contributions as previously indicated in paragraph 2.2.3 and on Figure 2.1, to enable the implementation of corridor improvements along A421. The agreed works/contributions are predicated on achieving a *nil detriment* in the forecast year 2026 at the worst performing junctions and comprise:
- Whaddon Crossroads
 - Bottle Dump roundabout
 - Emerson roundabout
 - Elfield Park roundabout
 - Bleak Hall roundabout
- 5.2.2. The NPPF published in 2012¹⁶ and 2019¹⁷ require that the residual cumulative impact of development is not severe. By providing a *nil detriment* solution, the proposed development would effectively ensure that the future year impact would be fully mitigated without any remaining residual impact. This exceeds the requirements of the national guidance which has been previously acknowledged by Officers at MKC and BCC.
- 5.2.3. Considering the complete package of mitigation measures as set out in Section 2 (i.e. with improvements to sustainable transport modes also) it was agreed with both BCC and MKC that the residual cumulative impact of the development would not be severe in the context of the NPPF.
- 5.2.4. The results of the analysis and comparison of the model outputs contained in this TN demonstrate that the package of agreed improvements and contributions still remain appropriate to mitigate the impact of the proposed development at SWMK. In this regard, WSP consider that the residual cumulative impact of the development would not be severe, in accordance with the NPPF 2019, as previously agreed with BCC and MKC.

¹⁶ Paragraph 32, NPPF 2012

¹⁷ Paragraph 109, NPPF 2019

6 CONCLUSIONS

- 6.1.1. This TN compares the different strategic traffic modelling evidence made available by MKC and BCC following the submission of the Regulation 22 Addendum ES and the revised TA in August 2016.
- 6.1.2. The strategic modelling shows that the corridor of A421 will be congested in the base case/reference cases in 2031 and 2033, with congestion recorded on key links and junctions. The highlighted areas of congestion correlate well with those identified within the 2016 TA for the development at SWMK which also includes a comprehensive mitigation package based on achieving a *nil detriment* solution in the forecast future year 2026.
- 6.1.3. WSP therefore consider that the assessments within the TA are robust and represent the impact of SWMK in 2026 and that the mitigation package as previously agreed with MKC and BCC remains appropriate. As such, it is considered that no further assessments are required to enable MKC to determine the current planning application.



2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

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