

Mid Sussex Sites DPD Review of Transport Aspects of Proposed Folders Lane Allocation

Folders Lane, Burgess Hill, West Sussex



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1 Background

- 1.1 The Mid Sussex Transport Study (MSTS) supported the Mid Sussex District Plan (MSDP) which was adopted, after Examination in Public, in March 2018. The Mid Sussex Strategic Highway Model (MSSHM) is an updated MSTS with a 2017 base year.
- 1.2 All modelling (MSTS and MSSHM) is highway only. There is no mode choice modelling, and no variable demand modelling (i.e. changes in demand related to the availability of transport capacity).
- 1.3 MSSHM has been used in consideration of the Reference Case (RC) and several different development Scenarios (No.s 1-8) for the 2031 end-of-plan-period future year. Most recently, it has been used in the assessment of the Sites DPD Scenario. The Sites DPD Scenario represents a refined Scenario (drawing on the overall assessments of the previous Scenarios 1-8) as part of the council's plan making process, including sustainability appraisal.

2 MSSHM Model Review

- 2.1 MSSHM model validation is stated in the Local Model Validation Report (LMVR) to be acceptable against standard WebTAG guidance. The LMVR includes some details of the new travel data used in the model update and concludes that the updated trip data model base is acceptable. This appears to have been accepted by WSCC as highway authority.
- 2.2 Model trip validation has two component levels: cordon/screenline validation (ensuring broad directional movements are correct in aggregate across multiple roads/links, i.e. a check of the trip origin / destination modelled matrices against actual cordon/screenline flows at generally sector level) and individual link validation (comparing modelled and actual flows on a link basis, i.e. a check that the assignment of trips to the network is reasonable).
- 2.3 Different levels of acceptability apply in the modelled against actual comparisons for the two levels. The LMVR gives the comparisons for the selected cordons and screenlines. The comparisons shown are acceptable generally, and specifically for the District cordon and the Burgess Hill cordon, both of which include sites within the vicinity of Folders Lane. The comparison on a link basis is shown in Appendix B of the LMVR. The comparison for road links in the vicinity of Folders Lane appears acceptable.
- 2.4 In forecast use of the model, new development trip generations are calculated using trip rates derived from TRICS. The same trip rates are used for both committed and other development included in the RC and for additional development in any other Scenario tests. The rates are all 85%ile instead of the usually used average. We consider them robust – if anything somewhat high in practice because of the use of 85%ile values.
- 2.5 Trip distributions for new sites (i.e. where generated trips would go to, and attracted trips come from), including for any sites off Folders Lane, are based on the established distributions in the model for nearby similar zones & Census journey to work data. This is a conventional and acceptable approach and should properly represent the trip making characteristics of new development in any given location.
- 2.6 The highway network represented in the model appears reasonable in coverage. The LMVR states that a range of attributes have been used to determine the cruise speed for highway links and that is usual. However, the process adopted to combine those attributes has not been explained. One such attribute is the speed limit on the link. Figure 6 in the LMVR shows the speed limits assumed for each highway link. There appear to be two discrepancies that could have an impact on the assignment of base year and forecast year traffic to the network:

- The B2112 from Folders Lane roundabout north to Janes Lane is shown as having a 30mph speed limit – in reality most is 60mph;
- The B2112 on the approach to Ditchling from the Folder Lane direction is shown partly as 60mph (correct) but 40mph on the entire stretch approaching Ditchling crossroads – in reality the final section approaching Ditchling crossroads is not only 30mph but has traffic calming in place that would reduce cruise speed substantially below that.

2.7 Without knowing the way in which those descriptions have been translated into the network as included in the SATURN highway model, it is not possible to determine their influence, but the links in question would be important in the model's determination of route shares for north/south traffic generally, and specifically for new traffic generated by any new development served from Folders Lane.

3 Traffic Modelling Supporting the Sites DPD

- 3.1 The RC is defined in the Sites DPD Scenario modelling report (para 1.5.2) as being: *The Reference Case represents the road network in 2031, and includes any committed highway infrastructure, development in the district and background growth to this date.* The RC Scenario therefore includes a number of currently committed highway improvements, planned development between 2017-2031 in all other local authority areas, and new committed dwellings from 2017 to 2031 in Mid Sussex. The Mid Sussex commitments figure included in the Sites DPD modelling is stated as 10802 dwelling units, including windfalls, in the Sites DPD Scenario Modelling Report Table 2. The MSDP itself quotes, under Policy DP4, 2410 new dwellings built from 2014-2017 and 7091 “commitments within the planning process”; a total of 9501, quoted in the MSDP as “leaves sites for a minimum of 3389 dwellings to be delivered through further site allocations or windfalls”.
- 3.2 The highways impacts of the Sites DPD compared to the RC and the 2017 base year are reported in the Sites DPD Scenario Modelling Report. Total new housing from 2017-2031 is 12646, an increase on the RC Scenario of 1844 (data from the Sites DPD Scenario Modelling Report Table 2). In addition to the RC developments, the Sites DPD Scenario includes a further 21 housing development sites and 8 additional employment development sites. Of those, Sites 827 (43 units) and 976 (300 units) are served from Folders Lane.
- 3.3 Differences between the actual numbers quoted in the MSDP and the Sites DPD Scenario Modelling Report are understood to result from continuous updating of completions and commitments over time.
- 3.4 The RC therefore already includes a significant amount of new development within Mid Sussex from 2017 up to 2031. The additional development included in the Sites DPD is a relatively small additional increase.
- 3.5 Although the RC contains some already committed highway schemes, no further improvements are proposed to satisfactorily accommodate the increased highway demands of the substantial development accounted for between 2017-2031 in the RC both within and outside Mid Sussex. The end result is that many junctions within the district are forecast in the Sites DPD Scenario Modelling Report to experience a ‘Severe’ impact.
- 3.6 ‘Severe’ as an impacts measure derives from its use in the National Planning Policy Framework (NPPF). First published in March 2012, the term in this context appears in paragraph 32:

Paragraph 32: All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and

decisions should take account of whether:

- *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
- *safe and suitable access to the site can be achieved for all people; and*
- *improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.*

3.7 Most recently updated in February 2019, the relevant paras are now:

108. In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- b) safe and suitable access to the site can be achieved for all users; and*
- c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.*

109. Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

3.8 It is interesting to note the changes between the last bullet point of NPPF 2012 para 32 and its replacement NPPF 2019 para 109. The most fundamental is the inclusion in para 109 of 'unacceptable impact on highway safety'. In the Sites DPD Scenario Modelling Report, as in preceding modelling reports, the RC has been used to establish a base line against which any additional highway network impacts of a development scenario can be judged. But the identification of impacts has been solely on the basis of severity of traffic operational impacts on the highway network, with no regard given to any specific impacts on highway safety or their acceptability. It has to be acknowledged however that this is not unique to the modelling and presentation of results for Mid Sussex. To its credit, that modelling has attempted to define 'severe' or at least to set out a set of, albeit arbitrary, operational criteria that is agreed by WSCC. Whilst we consider that the adopted criteria are not unreasonable, we do have concerns over the way they have been applied.

3.9 Those concerns centre on the implied consequences of the criteria adopted to define 'severe' (and of 'significant' which is a lower level of impact used in the MSSHM reporting). These criteria are set out in the Sites DPD Scenario modelling report as:

SEVERE	An increase in RFC of 10% or more to 95% or more, or An increase in Delay of 1 minute or more to 2 minutes or more.
SIGNIFICANT	An increase in RFC of 5% or more to 85% or more.

3.10 The concerns are twofold:

- All severity assessments using these criteria are relative. A junction with clear capacity problems in a Scenario, including base year (e.g. excessive RFCs, queues and delays) would not be identified as being an issue in the network if it had those problems in another comparison Scenario but the incremental change did not comply with the criteria;
- In reality, if the prior situation is a severe impact, ANY additional traffic from additional development would increase that severity. In our view, the RC and ALL additional development scenarios should be judged against the base year. We do not agree with the incremental approach used in MSSHM reporting, i.e. the RC is judged against the base year, but other scenarios are judged solely against the RC.

3.11 Nonetheless, even using the incremental approach, of the junctions within the district selected for impacts summarisation in the Sites DPD Scenario Modelling Report ¹. 22 are forecast to experience a 'Severe' impact in terms of changes from the 2017 base to the 2031 RC Scenario, 11 of which are in the south of the district including Burgess Hill. The DPD Scenario modelling report further identifies that in the Sites DPD Scenario, 9 junctions in total (of which 7 are in the south of the district) would experience an incremental 'severe' impact between the RC and Sites DPD Scenarios, 3 of which would experience the 'double whammy' of severe incremental impacts in both RC and Sites DPD Scenarios.

3.12 A further 2 junctions, not experiencing a severe impact between 2017 and RC Scenario, would be 'severely' impacted by the Sites DPD Scenario compared to the RC. A further 8 junctions would experience a 'significant' impact as a result of the Sites DPD Scenario compared to the RC, 4 of which would also experience a Severe impact between 2017 and 2031 RC Scenario.

¹ Un-numbered Table at end of report, titled 'Mid Sussex Transport Study: Scenario DPD Results Summary'. The junctions selected for inclusion in the table are defined as 'Junctions identified in previous Scenarios or in the previous Mid Sussex Transport Study which, for consistency, are retained in the list even if no significant or severe impacts are identified in the Sites DPD Scenario.'

- 3.13 All this demonstrates that the district's highway network is forecast to experience widespread severe highways operational impacts on at least major routes by 2031 with the substantial amount of committed development in the RC alone, with the prospect of significant additional severe impacts just from the addition of a further 1844 dwellings on the Sites DPD sites (Sites DPD Scenario Modelling Report Table 2). It is questionable, in those terms, that such a small number of extra dwellings is justifiable given the scale of their extra impacts on the operation of an already stressed highway network.
- 3.14 In an attempt to address that, an additional DPD Scenario, 'with mitigation', includes (para 1.5.4 of the modelling report) *"Where junctions are assessed to be adversely impacted by the developments, a set of appropriate sustainable measures and highway mitigation schemes are proposed and tested. These mitigations aim to remove the 'severe' impacts"*.
- 3.15 On the face of it, the mitigations proposed are a success in dealing with the extra impacts of the Sites DPD development compared to the RC. The modelling report shows that the inclusion of the identified mitigations would reduce or offset the bulk of the additional impacts of the Sites DPD sites. In fact, the results suggest that the mitigations proposed can help to partially offset the scale/severity of impacts of the RC itself compared to the 2017 base year. A remarkable consequence that demands some consideration and explanation.
- 3.16 The mitigations proposed are twofold: measures to enhance sustainable transport use, and additional highways improvements. Testing of the two components individually has not been reported as having been carried out, but they are likely to have very different effects.
- 3.17 The 'sustainable measures' mitigations proposed are, in the main, pretty low key, being the type of measure (RTI summary display on site) that would be expected to be provided as a standard conventional part of any Travel Plan for any of the 21 DPD sites (and indeed any other major site). Some more ambitious sustainable proposals are also put forward, including bus priority on A22 in the north of the district and improved public transport interchange facilities at Burgess Hill. The latter is put forward as the sole relevant 'proposed sustainable mitigation improvements' relating to many DPD sites in Burgess Hill (Table 7 of the Sites DPD Scenario modelling report) even though its extent, location and funding is not yet determined. Generally, Table 7 shows the anticipated effects of the conventional sustainable measures to be a 1.5% reduction in car trips – to all intents and purposes, although worthy in intent, immaterial in terms of consequential reductions in traffic, and impacts, at nearby junctions.
- 3.18 Highways mitigation identified is focussed on the A23 and its junction with A2300 and these measures, rather than the sustainable mitigations, would clearly have the only real impacts on

network performance in the south of the district, not simply by providing better for traffic generally but also because, following implementation, traffic would re-route from other junctions potentially reducing impacts at those junctions to acceptable levels.

- 3.19 It seems very clear from the above assessment of the results of modelling different Scenarios for the 2031 end-of-plan-period forecast year, that the package of highway improvements already committed and included in the RC Scenario is not sufficient on its own to enable the level of development included in the RC alone to be delivered without widespread highway network 'severe' impacts.
- 3.20 It is also clear that the contribution of sustainable transport initiatives to resolving the additional impacts of additional Sites DPD sites would be marginal at best.
- 3.21 It is also clear that the Sites DPD additional highway mitigation, focussed on the A23 and its junction with A2300, is not only important to mitigate the additional traffic demands of the Sites DPD sites, but is also essential to enable the impacts of the RC itself (i.e. without any additional Sites DPD sites) to be potentially considered tolerable.

4 Folders Lane Allocations in the Sites DPD

- 4.1 The Sites DPD includes two sites served, in part of whole, using Folders Lane: Sites 827 (43 units, served directly from Folders Lane) and 976 (300 units likely served directly from Keymer Road). Applying the trip rates used in the MSSHM modelling the two sites would be expected to generate the following 2-way vehicle trips in the peak hours.

Table 3.1

Site	AM Peak (08:00-09:00)	PM Peak (17:00-18:00)
Site 827	25	27
Site 976	176	189

- 4.2 The effects of sustainable transport mitigation measures for these two sites have been estimated as a 1.5% reduction (Sites DPD Scenario modelling report Table 7). This would very slightly reduce the above to:

Table 3.2

Site	AM Peak (08:00-09:00)	PM Peak (17:00-18:00)
Site 827	25	27
Site 976	173	186
Total	198	213

- 4.3 Assuming that traffic to/from both sites distributes 25% each to Keymer Road south, Keymer Road north, Kings Way, and via the B2112 junction (Folders Lane roundabout) at the eastern end of Folders Lane, this could add 142 vehicles in the AM peak, and 153 in the PM peak, to traffic flows entering the roundabout at the western end of Folders Lane, and between 50 (AM) and 53 (PM) to traffic flows entering the Folders Lane roundabout at its eastern end.
- 4.4 From the un-numbered results table towards the end of the Sites DPD Scenario modelling report, flows on Folders Lane appear pretty consistent at under 600 vehs/hour in the main direction in both peak hours in base year and forecast years for non-DPD Scenarios. This would equate to about 1000 vehs/hour 2-way in each peak hour. Link capacity of a road such as Folders Lane would be about 1500 vehs/hour 2-way according to DMRB TA79/99. The increase of 142-153 vehicles at the western end of Folders Lane arising from the Folders Lane sites would be about +15% but would

- not compromise the ability of Folders Lane itself, in link capacity terms, to safely and operationally accommodate the forecast levels of traffic on it, even accounting for the two DPD sites.
- 4.5 Impacts on junctions themselves are more difficult to ascertain. The Sites DPD Scenario modelling report only includes the results for the western junction of Folders Lane with B2113 Keymer Road (for the first time; it was not included in any previous DPD Scenario testing modelling reports). That junction is given the number S27 in the Sites DPD Scenario modelling report.
 - 4.6 Junction S27 is assessed in Table 7 as not experiencing a severe or significant impact in the RC (compared to the base year) and experiencing only a 'significant' impact in the Sites DPD Scenario (compared to the RC) but only in the 'with Mitigation' Scenario.
 - 4.7 We have considered the results as presented in the Sites DPD Scenario modelling report. We also use the junction daily at many different times and appreciate the way it works in practice. We would agree that the junction generally operates at present without excessive queues or delays, other than, in our experience, some issues related to lack of exit capacity on the northern exit at some times of the day, partly due to the schools but largely due to blocking back from the roundabout junction of Keymer Road with Station Road, Junction Road and Silverdale Road (junction S6 in the Sites DPD Scenario reporting).
 - 4.8 Junction S6 is assessed as having a severe impact comparing RC and base year, and a severe incremental impact in the 2031 Sites DPD Scenario compared to the RC. But the impact at Junction S6 is assessed as neither severe nor significant in the Sites DPD + Mitigation Scenario, despite the relevant values being barely different from the without mitigation case but with the two falling marginally either side of the criteria values.
 - 4.9 The actual consequence in junction operation would be indistinguishable. In practice in all 2031 Scenarios junction S6 would operate at well over capacity with excessive RFCs, queues and delays, in all Scenarios greater than in the base year. The operation of the Folders Lane/ Keymer Road junction (junction S27) would increasingly be impacted by the inadequacies of Junction S6 and this could only be exacerbated by new traffic generated by the Folders Lane allocation in the Sites DPD.
 - 4.10 No results are published for the junctions of Folders Lane with Kings Way, and with B2112 at Folders Lane roundabout, so it is not possible to comment on their performance under different Scenarios. At Ditchling crossroads, the impact of the RC compared to the 2017 base year is shown to be Severe, with an additional incremental significant impact in the Sites DPD Scenario (which is offset in the 'with mitigation' Scenario). No information is provided for the B2112 / Janes Lane junction to the north of Folders Lane roundabout although it would be considered unusual if there was not an impact of note at least in the RC case, as we understand that traffic signals were agreed at that

junction as part of the mitigation necessary for the large, approved Kings Way development. Both junctions would be affected in unquantifiable ways by the link description anomalies identified in the MSSHM Model Review section above.

5 Summary and Conclusions

- 5.1 The Mid Sussex Transport Study (MSTS) supported the Mid Sussex District Plan (MSDP) which was adopted, after Examination in Public, in March 2018. The Mid Sussex Strategic Highway Model (MSSHM) is an updated MSTS with a 2017 base year. MSSHM has been used in consideration of the Reference Case (RC) and several different development Scenarios for the 2031 end-of-plan-period future year. Most recently, it has been used in the assessment of the Sites DPD Scenario.
- 5.2 Model validation appears reasonable and the comparison of observed and modelled flows for road links in the vicinity of Folders Lane appears acceptable.
- 5.3 There may be an issue with the way in which the B2112 from Janes Lane to Ditchling crossroads is described in the assignment model. Without knowing the way in which those descriptions have been translated into the network as included in the SATURN highway model, it is not possible to determine their influence, but the links in question would be important in the model's determination of route shares for north/south traffic generally, and specifically for new traffic generated by any new development served from Folders Lane.
- 5.4 The network impacts of various Scenarios is assessed in the study reports by reference to their severity, but we have concerns about the criteria adopted to define 'severe' and 'significant' (which is a lower level of impact used in the MSSHM reporting).
- 5.5 We have assessed that Folders Lane currently has traffic flows that are well within its capacity in link terms. Traffic generated by the Sites DPD allocations for sites served from Folders Lane would not compromise that.
- 5.6 At the western junction of Folders Lane with Keymer Road (Junction S27), the Sites DPD assessment suggests that there would be no impact (Severe or significant) in the RC, and only a significant impact in the Sites DPD 'with mitigation' Scenario. We believe that this misrepresents the way that the junction works in conjunction with the much more heavily impacted junction (Junction S6) of Keymer Road / Station Road / Junction Road / Silverdale Road to the north. The study report concludes that Junction S6 would experience a severe impact comparing RC and base year, and a severe incremental impact in the 2031 Sites DPD Scenario compared to the RC. But the impact at Junction S6 is assessed as neither severe nor significant in the Sites DPD + Mitigation Scenario, despite the relevant values being barely different from the without mitigation case but with the two falling marginally either side of the criteria values.

- 5.7 We believe that the actual consequence in junction operation would be indistinguishable. In practice in all 2031 Scenarios junction S6 would operate at well over capacity with excessive RFCs, queues and delays, in all Scenarios greater than in the base year. The operation of the Folders Lane/ Keymer Road junction (junction S27) would increasingly be impacted by the inadequacies of Junction S6 and this could only be exacerbated by new traffic generated by the Folders Lane allocation in the Sites DPD.
- 5.8 The reports present no information for the junctions of B2112 with Folders Lane or with Janes Lane to the north. Information is given for the junction of B2112 and B2116 at Ditchling crossroads. All three junctions would be affected in unquantifiable ways by the apparent B2112 link description anomalies we have identified. It is not possible to determine the level of influence, but the links in question would be important in the model's determination of route shares for north/south traffic generally, and specifically for new traffic generated by any new development served from Folders Lane.
- 5.9 It seems very clear from our assessment of the available results of modelling different Scenarios for the 2031 end-of-plan-period forecast year, that the package of highway improvements already committed and included in the RC Scenario is not sufficient on its own to enable the level of development included in the RC alone to be delivered without widespread highway network 'severe' impacts.
- 5.10 It is also clear that the contribution of sustainable transport initiatives to resolving the additional impacts of additional Sites DPD sites would be marginal at best.
- 5.11 It is also clear that the Sites DPD additional highway mitigation, focussed on the A23 and its junction with A2300, is not only important to mitigate the additional traffic demands of the Sites DPD sites, but is also essential to enable the impacts of the RC itself (i.e. without any additional Sites DPD sites) to be potentially considered tolerable.

-End of Report -



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