Lancaster Emerging Local Plan

Technical Note 4: Consideration of Comments Received on Local Plan Transport Assessment

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Appendices

1.0 Introduction

1.1.1 WYG was commissioned by Lancaster City Council, the Local Planning Authority (LPA) to develop a transport evidence base by preparing a Transport Assessment (TA), to assess the likely impact on the existing local highway network of committed development and proposed emerging Local Plan (LP) development sites in the district. The TA also considered junction mitigation measures, where appropriate.

1.1.2 The TA was split into two parts, Part 1 - Initial Assessment and Part 2 - Identification and Assessment of Mitigation Measures, both of which were dated 21st December 2018. The reports were formally submitted in support of the emerging LP.

1.1.3 Part 1 - Initial Assessment, details the assessment of the capacity of the existing highway network in high level terms to accommodate future traffic flows expected to be generated by the proposed emerging LP development sites on key parts of the highway network within the Lancaster District. Part 2 – Identification and Assessment of Mitigation Measures, considered further the need for mitigation and where appropriate developed a series of localised improvement schemes at junctions identified as requiring improvement to accommodate future forecast traffic flows.

1.1.4 Since the submission of the TA, a number of comments have been received on the TA, most notably from Highway England (HE) and the Local Highway Authority (LHA), Lancashire County Council. A number of comments have also been received from third-parties.

1.1.5 The purpose of this Technical Note (TN) is to provide a response to these comments.

2.0 Highways England Comments

2.1 Introduction

2.1.1 The following provides a detailed response to the comments made by HE in their letter dated 14th February 2019 and associated Technical Note (also dated 14th February) prepared by their consultant. Both are attached in **Appendix A**.

2.2 Suitability of Transport Assessment Modelling Methodology

2.2.1 Whilst HE is of the view that '*a strategic traffic model should have been used to understand the implication of major infrastructure schemes',* we consider that the modelling methodology adopted (i.e. without a Strategic Model) is of sufficient robustness and is proportionate for the LP. The approach taken is backed by the LHA who state in their response to the TA that '*Due to the significant costs and resources involved in developing such models, the County Council would not ordinarily expect a strategic transport model to accompany a local plan-making exercise'.*

2.2.2 Furthermore, National Planning Practice Guidance (NPPG) does not specifically require the use of a Strategic Model for preparing transport evidence for a LP.

2.2.3 Nevertheless, we understand that the LPA are committed to undertaking an early review of the LP using a Strategic Transport Model (STM) once the LP is adopted.

2.2.4 The following are our responses to specific questions/comments made by HE and their consultants in their technical note attached in **Appendix A**.

2.3 Traffic Data

Survey Data

2.3.1 We confirm that the PCU conversion factors set out in the WebTAG guidance as summarised in HE's Technical Note have been used to derive base year flows, albeit motorcyclists and pedal cyclists have been excluded from the flows. This will lead to a very low difference in the derived total PCU flows but to an extent which will not materially impact on the modelling undertaken.

Journey Time Data

2.3.2 The trafficmaster data was used to assist in identifying areas of the highway network that needed to be included within the study and was cross referenced with Google maps traffic, and

local knowledge to ensure that realistic results were derived. The data was also used in the Network Analyst software to assist in assigning the committed and LP traffic to the network.

2.3.3 For the nature of the work undertaken using the Trafficmaster data, the use of data that is slightly different from the actual peak hour will not impact on the modelling results. Importantly, in the junction modelling traffic flows from the true peak hour for that section of highway have been used and therefore the modelling is entirely appropriate.

Traffic Growth

2.3.4 We consider that the methodology used to growth traffic flows up to the assessment year (2023 and 2033) is appropriate to minimise 'double counting'. The LHA, see Section 4, have confirmed that the methodology employed is acceptable for the purpose of the report.

Trip Rates and Trip Generation

2.3.5 The LHA has confirmed that the trip rates used '*are not unreasonable for local plan purposes*'.

Trip Assignment

2.3.6 As described above, the methodology used to assign development traffic onto the highway network is considered to have a sufficient robustness and is a proportionate approach for the purpose of the LP transport evidence. This is supported by the LHA.

2.4 Junction Modelling

2.4.1 HE has queried the extent of junction validation undertaken in the TA. Section 7.1 and Table 7.1 of the TA (Part 1) sets out the validation undertaken to validate the existing junction models used in the TA. This is further evidenced by tables showing the difference between the observed queue lengths against the modelled queue lengths on approaches to junctions which are shown in the junction capacity assessment results tables attached in Appendix F of the TA (Part 1). We therefore do not agree that there is '*little evidence of base model validation'.* It is also noted that the LHA have not raised any issues with the validation carried out in the TA.

2.4.2 We consider that the junction models do provide a realistic representation of existing conditions within the limitations of daily variations in traffic flows and other random influences.

2.4.3 It should be acknowledged that in line with NPPF policy, whether a junction requires mitigation is not dependent solely on RFC/DoS thresholds as HE appear to be suggesting. Increases in delays, queues and the safety of the junction should also be considered alongside RFC/DoS

values when considering if mitigation is necessary. This is the broad approach that was adopted in the TA.

2.4.4 To this end, the junction modelling results in the following sections refer to increases in delays and queues as well as RFC/DoS where appropriate.

Junction 1 – A6/Preston Road Roundabout

2.4.5 In their Technical Note, HE suggest that the approach road half-widths modelled are too wide and that the entry radii on a number of approaches appear to be too small. HE go on to say that '…..*if the approach road half widths are corrected on the northern and southern arms to exclude the flare, the northern arm will operate at 0.90 RFC in the 2023 DS PM and 1.09 RFC in the 2033 DS PM and therefore improvement options may need to be considered'*.

2.4.6 We broadly agree with HE on a number of their suggested geometric parameters (but not all), and these have been changed in the revised junction assessment model. However, we disagree with the results that HE has reported in their response. Any changes to the half width also means that the flare length needs recalculating, something that does not appear to have been undertaken in the results reported by HE.

2.4.7 Running the junction assessment model with the revised half widths, entry radii, and corrected flare lengths, provides almost identical results to those previously reported in the TA. The revised modelling results are shown in **Appendix B.**

2.4.8 HE also state that '*the model does not include intercept adjustments. An intercept adjustment may need to be applied to the northern and southern arms to account for unequal lane usage. It is suggested that the eastern arm could also be tested with an intercept, although the lane usage is much more equal on this arm'.*

2.4.9 Whilst we remain of the view that the way we have modelled the junction provides a representative model based on the validation undertaken, reference to the ARCADY manual states that '*where there is significant unequal lane usage, Lane Simulation mode may prove a useful tool'.*

2.4.10 We have therefore undertaken revised junction modelling using the 'Lane Simulation' mode to account for any possible unequal lane usage and incorporated the amended geometric parameters that have resulted from HE's comments.

2.4.11 The ARCADY Manual states that '*the movements that you set up on each lane may be based on lane markings, or directional signs, or simply based on the expected behaviour of traffic at the junction. In fact, the expected behaviour takes precedence over any physical markings/signs; i.e. you should set up lanes in the way you think they will actually be used by traffic.'*

2.4.12 A Lane Simulation Model using the existing road markings to define the movements allowed from each lane has been run as well as a 'Lane Simulation Model' based on what is likely to occur in reality, i.e. allowing ahead movements in both lane on both the A6 (N) and A6 (S).

2.4.13 The results which are attached in **Appendix B** show that in 2023, the roundabout is forecast to operate with a maximum RFCs of 0.75 and 0.84 in the AM and PM peaks respectively. The results also show that the increase in delay and queue at the junction in 2023 as a result of the local plan is negligible, with the maximum increase in delay on an arm being only 2 seconds per pcu and 7 seconds per pcu in the AM and PM peak respectively.

2.4.14 During the assessment year 2033, the results show that the roundabout is still expected to operate at below its capacity in both the AM and PM peak periods, with maximum RFCs of 0.99 in both the peak periods. The results show that the maximum increase in delay on an arm (the A6 northern arm) is 111 seconds and 78 seconds in the AM and PM peaks respectively, which are not considered to be excessive.

2.4.15 Given that the roundabout is still expected to operate at just below its capacity in 2033, some 14 years into the future, it is considered that mitigation at the junction does not need to be proposed at this stage.

2.4.16 Nevertheless, the junction operation and the need for mitigation in the future will be reviewed using a strategic model in the future once it has been developed.

<u>Junction 2 – A6 Main Road/Stoney Lane/Salford Road (Signal Junction)</u>

2.4.17 HE question the potential junction improvement measures set out in the TA for their deliverability and safety. They indicate that the potential improvement options set out in the TA (Part 2) provide narrow additional right turn lanes/storage pockets which are only 2m wide on the southern A6 approach and only 2.5m wide on the northern A6 approach and that this may result in safety implications at the junction. They also comment that two vehicles can not sit side by side due to the narrow lanes and turning radii and that the alignment of the through lanes appear to be unsuitable and may cause safety concerns.

2.4.18 In terms of lane widths, Manual for Streets 2 at 8.6.5 states that '*…… at a traffic signal stop line, where HGV's and buses make up only a small proportion of traffic flow, 2 – 2.5m wide lanes would be sufficient for most vehicles, and would reduce overall carriageway width requirements, making it much easier for pedestrians to cross the carriageway. Lanes wider than 3m are not necessary in most urban areas carrying mixed traffic*'. In this respect, reference to the traffic counts show that there are minimal large vehicles turning at the junction. The count undertaken at the junction in October 2018 showed that there were no OGV2s (articulated vehicles) and buses turning at the junction during the surveyed periods and minimal OGV1s (rigid) turning.

2.4.19 It is therefore considered that in the great majority of cases, two vehicles (i.e. two cars or an HGV and a turning car, will be able to sit side by side to each other at the mitigated junction.

2.4.20 It should also be noted that the junction currently has a very good safety record. Reference to Crashmaps indicates that there have been no recorded personnel injury accident at the junction over the last 5 years. The introduction of proposed narrow lanes will reduce speeds by providing an element of traffic calming and hence improve highway safety at the junction.

2.4.21 If the potential mitigation schemes were brought forward, place making treatments could also be implemented at the junction to further reduce vehicle speeds and to make drivers more aware of more vulnerable road users such as pedestrians and cyclists.

2.4.22 It should also be noted that as part of the committed Lancaster University Innovation campus scheme (ref 12/00626/RENU), modifications are proposed just to the north of the junction which are intended to improve through flow at the junction. The committed improvement scheme which is attached in **Appendix C** proposes a bus layby and a parking layby along the A6 immediately to the north of the junction which is intended to take parked vehicles off the main carriageway so that they do not block/hold up traffic travelling straight ahead. These committed improvements will increase the through put at the junction which in turn will reduce queueing and delays at the junction.

2.4.23 However, the committed improvement scheme requires land outside the adopted highway boundary. Accordingly, at present, there is no certainty that the scheme will be delivered and therefore these improvements have not been modelled in the TA.

2.4.24 In summary, we consider that the improvement schemes brought forward in the TA as part of this LP process, subject to refinement at detailed design stage, are deliverable and safe. Furthermore, the improvements will provide a level of betterment on the existing layout in the

short term before a more comprehensive scheme is brought forward as part of the HIF bid detailed in **Section 3.**

Junctions 10 & 29 – Caton Road/M6 J34 & A683/M6 J 34 (Signals)

2.4.25 Whilst we do not necessarily agree with all the comments made by HE, we have remodelled the junction incorporating HE's comments where appropriate and have further 'refined' the green times and off-sets and optimisation to further maximise efficiency at the junction. A summary of the changes/adjustments made is attached in **Appendix D**.

2.4.26 The results in **Appendix D** show the following:

Existing Layout

2023 Assessments

- That both junctions either side of the motorway operate at below their capacity in 2023 with a maximum DoS of 89% and 92% in the AM and PM peak periods respectively with the addition of the LP traffic at the western junction (junction 10) and a maximum RFC of 76% and 80% in the AM and PM peak periods respectively at the eastern junction (junction 29).

- At the western junction (junction 10), the maximum increase in delay due to the LP on any arm is only 23 seconds per pcu and only 39 seconds per pcu during the AM and PM peak periods respectively with the maximum increase in queue on any arm being 12 pcu's and 6pcu's respectively.

- At the eastern junction (junction 29), increases in delay and queues due to the LP are negligible.

- Queuing does not extend back to the M6 mainline in any scenario, in 2023.

2033 Assessments

- In 2033, the results show that both the western and eastern junctions are forecast to operate at below their capacity in both the AM and PM peaks in the DM (without the LP) scenario with maximum DoS at the western junction of 91% and 93% during the AM and PM peaks respectively. At the eastern junction, the maximum DoS are 77% and 85% respectively.

- With the LP, the maximum DoS's increase to 101% and 106% at the western junction during the AM and PM peak periods respectively and 82% and 114% at the eastern junction.

- In the AM peak scenario, the queueing does not extend back to the motorway mainline in either the DM or DS scenario. However, at one link at the western junction (junction 10), the LP traffic will result in an increase in delay of 116 seconds per pcu and at another results in an increase in queuing of 39 pcu's. However, in terms of NPPF, these increases are not considered to be significant.

- At the eastern junction (junction 10) during the 2033 AM peak period, the addition of the LP traffic only results in negligible increases in delay and queues.

- In the 2033 PM peak scenario, there are four approaches/ links which experience more significant impacts;

  — (Western Junction 10) - A6 J34 Northbound off slip road (straight ahead lane) where the delay increases by 325 secs and 64 pcu queue increase, this is less than the previous results in the TA due to further optimisation and refinement.

  — (Western Junction 10) - Westbound link road between western and eastern junctions where the delay increases by 77 secs and 46 pcu queue increase.

  — (Eastern Junction 29) - The M6 J34 southbound off slip road (left turn) where the delay increases by 392 secs and a 113 pcu queue increase which extends back to the motorway mainline.

  — (Eastern Junction 29) - The A683 Lancaster Road (straight on) where the delay increases by 138 secs and a 28 queue increase.

Modified Layout

2.4.27 To mitigate for the impact of potential queuing onto the motorway mainline from the southbound off slip road (left turn), the TA set out a potential junction improvement scheme which involved the provision of a second left turn lane from the M6 southbound off-slip onto the A6 Caton Road/Lancaster Road with the second lane continuing as far as possible along the A6 westwards towards the motorway bridge. The TRANSYT model has been run with the second left turn lane in 2033 and the results are attached in **Appendix D**.

2.4.28 The results show the following:

2033 Assessments AM Peak with LP

- At the western Junction 10, the maximum DoS increases slightly (to 102% from 101%) over the 'without mitigation' layout with the average delay and queue length increasing on this link (A6 to Heysham Roundabout) to 124 seconds per pcu and to 13 pcu's respectively. However, the delays and queue lengths on other links reduce.
- The eastern junction 29 operates at below its capacity with no queueing back onto the Motorway.

2033 Assessments PM Peak with LP

- At the western Junction 10, the maximum DoS increases slightly (to 111% from 106%) over the 'without mitigation' layout with the average delay and queue length increasing on this link (Northbound Off-Slip) to 404 seconds per pcu and to 74 pcu's respectively. However, the queue length does not extend back onto the Motorway.
- The eastern junction 29 operates at below its capacity (maximum DoS of 96%) with no queueing back onto the Motorway.

Summary

2.4.29 It should be noted that the above results are based, in some cases by manually adjusting green splits and off-sets to maximise efficiency at the junctions. These can be adjusted to provide better results on certain links at the detriment of others. i.e. adjusted to reduce the likelihood of queuing onto the motorway mainline to the detriment of other links.

2.4.30 The results show that the junction is forecast to operate below its capacity in 2023 with negligible increases in delays and queues with no queuing back to the motorway mainline. It is therefore considered that no mitigation/improvement to the junctions are required in 2023 to accommodate the LP.

2.4.31 In 2033, although the existing junctions are expected to operate at slightly above their capacity with the LP in place, queues are only forecast to extend back onto the motorway mainline during the PM peak period. Therefore, the queuing impact on to the motorway is limited.

2.4.32 A potential mitigation scheme was identified in the TA to reduce the likelihood of queuing onto the motorway junction which involved the provision of a second left turn lane on the southbound off-slip.

2.4.33 However, the impact of potential queueing in terms of safety could also be mitigated for by the provision of an active variable message system (VMS) on approaches to the motorway slip roads warning drivers of queueing on the slip road.

2.4.34 Furthermore, by 2033 it is highly likely that J33 reconfiguration works would have been implemented which may take some traffic from the motorway and junction 34.

2.4.35 It should also be acknowledged that congestion at the junction will act as a constraint and traffic may choose to use other routes once congestion hits a certain level and therefore the forecast results may not materialise.

2.4.36 Nevertheless, the LPA, the LHA and HE will need to consider and undertake a separate feasibility study in the future to develop a preferred solution, if one is needed in 2033. Furthermore, as already reported, the junction operation and the need for mitigation in the future will be reviewed once a Strategic Model is available.

Junction 17 – Kellet Road/Back Lane (Priority T Junction)

2.4.37 Aside from their general comments, HE state that they had not identified any additional issues with the model.

2.4.38 However, they go on to say that '*The identified improvement option reduces the highest RFC to 0.97 in the DS 2033 AM scenario, which mitigates the impact of the LP and decreases the RFC below theoretical capacity. However, it should be noted that the practical capacity of this junction is 0.75 due to the speed of the road and therefore alternative options may need to be considered'.*

2.4.39 We do not agree with the assertion that '*alternative [mitigation] options may need to be considered'*. The results shown in the TA (Part 2), which have been reproduced in **Appendix E** to this note, show that the mitigated junction is forecast to operate significantly below its capacity in 2023 in both peak periods and in 2033 during the PM peak, with all RFCs being significantly below the 0.75 threshold quoted by HE. Even in the critical AM peak period, in 2033 the maximum RFCs are still below 1.0 with a maximum queue of 9 vehicles on the Back Lane (right turn lane) arm of the junction. The results show that the LP traffic increases delay on the Back Lane (left turn lane) by 122 seconds and by 82 seconds on the Back Lane (right turn lane).

2.4.40 Given that this is only in one peak period in 2033, some 14 years in the future, and the increase in delay suggests that the impact is not significant. Therefore, it is not considered that further mitigation measures need to be identified at this stage.

Junction 18 – Kellet Road/A601M (Priority T Junction)

2.4.41 The TA forecast that the existing junction was expected to operate at over its capacity in 2033 with the implementation of the LP and two possible mitigation options were set out in the TA (Part 2). Option A involved changing the priority at the junction while Option B involved signalising the junction. Both options resulted in the junction operating with significant spare capacity in both peak periods in 2033.

2.4.42 In their response, HE has suggested a number of changes to the geometric and modelling parameters used to model the signal-controlled junction option, which improve the operation of the mitigated junction.

2.4.43 The results of the modelling with the revised geometric parameters, which are attached in **Appendix F**, show that the operational performance of the signal junction mitigation options is improved from that detailed within the TA, with maximum DoS of 59.5% and 61.2% in the 2033 AM and PM peaks respectively with the LP in place.

Junction 19 – A6/A601/Pine Lake (Roundabout)

2.4.44 We maintain that the junction has been modelled appropriately in the TA. However, given HE's comment on unequal lane usage, we have undertaken revised modelling based on using the 'Lane Simulation' mode to account for any possible unequal lane usage.

2.4.45 The results of the revised modelling are attached in **Appendix G.**

2.4.46 As was the case with the modelling undertaken in the TA, the revised modelling shows that the junction is forecast to operate at significantly below its capacity in both peak periods in 2033. The revised modelling shows that the junction is forecast to operate with a maximum RFC of 0.380 in both the AM and PM peak periods in 2033. The results also show that no queues are forecast at the junction in either peak period in 2033.

Junction 27 – Shefferlands (A683/M6 on slip) (Priority Junction)

2.4.47 The junction model has been amended to take into account HE's suggested amendments to the geometric parameters used in the model.

2.4.48 Whilst we are of the view that the model contained within the TA provides representative results, we have undertaken revised modelling using the 'Lane Simulation' mode to account for any possible unequal lane usage.

2.4.49 The results which are attached in **Appendix H** show that the junction is forecast to operate at below its capacity in 2033 with a maximum RFC of 0.870 and 0.760 in the AM and PM peak periods respectively. Maximum increases in delay at the junction due to the LP in 2033 are forecast to be just 3 seconds per vehicle and 1 second per vehicle during the AM and PM peak periods respectively.

2.4.50 Therefore, the results confirm that no mitigation is required, as per the findings of the TA.

Junction 30 – M6 Junction 35

2.4.51 The junction model has been amended to take into account HE's suggested amendments to the geometric parameters used in the model.

2.4.52 In their Technical Note, HE suggest that the approach road half-widths modelled are too wide and that the conflict angles on an approach is too low. HE go on to say that '*when the approach road half widths are corrected, the A601 (E) arm operates over practical capacity with an RFC of 0.96 in the DS 2033 AM scenario and therefore mitigation options may need to be considered'.*

2.4.53 Whilst we agree with HE on a number of their suggested parameters (but not all), and these have been changed in the model, we disagree with the results that they have reported in their response. Any changes to the half width also mean that the flare length needs recalculating, something that does not appear to have been undertaken in the results reported by HE.

2.4.54 Although we are of the view that the model contained within the TA provides representative results, we have undertaken revised modelling based on using the 'Lane Simulation' mode to account for any possible unequal lane usage.

2.4.55 The results which are attached in **Appendix I** show that the junction is forecast to operate at below its capacity in 2033 with a maximum RFC of 0.55 and 0.46 in the AM and PM peaks respectively.

2.4.56 It is therefore considered that the roundabout works well within its capacity in the assessment year 2033 and that mitigation options do not need to be considered, as per the findings in the TA.

3.0 HIF Bid

3.1.1 The Highways and Transport Masterplan (H&TM) is the evidence base on which major transport projects have been identified, the Housing Infrastructure Fund (HIF) is a tool for which these projects may be funded.

3.1.2 The HIF bid is to be submitted to Government by Lancashire County Council in March 2019. A decision is expected during summer 2019. The timescale for spending HIF was originally 2021 but this has now been extended to March 2023 with the Government allowing certain schemes to be extended into 2024. It is understood that this may be further extended should it be required.

3.1.3 The LPA in collaboration with the LHA, will continue to explore funding mechanisms to deliver major projects identified in the Highways and Transport Masterplan which support development beyond the first five years of the plan. The projects identified within the H&TMP are critical to ensuring a move towards modal shift in line with the National Planning Policy Framework.

4.0 The Local Highway Authority's Comments

4.1.1 The LHA's letter (dated 15th February 2019 and attached in **Appendix A**) on the supporting evidence and information regarding the emerging local plan refers to a number of transport policies within the Local Plan and within the Development Management DPD. These include Policy SP10 (Transport Connectivity), Policy T1 (Lancaster Park and Ride), Policy T2 (Cycling and Walking Network), Policy T3 (Lancaster Canal), Policy T4 (Public Transport Corridors) and DM63 (Lancaster District Highways and Transport Masterplan.

4.1.2 The LHA also state that they consider *'the policies referred to above in relation to transport aspects of the Local Plan mitigate the impacts of proposed developments as effectively as possible'.*

4.1.3 The LHA's letter also contains a specific section on the LP TA prepared by WYG, aspects of which are mentioned below.

4.1.4 In relation to the modelling methodology used, the LHA state that whilst not ideal, the approach taken '*does provide some certainty for some development whilst the strategic model is prepared and subsequently used to assess major infrastructure requirements*'.

4.1.5 They go on to state that '*The basic assessment is considered a proportionate approach to local plan delivery and supporting evidence base.*

4.1.6 In terms of the junction modelling undertaken, the LHA's letter refers to some modelling 'anomalies' without being specific. However, they go on to state that the modelling '*does indicate that key junctions can be improved'* and that the anomalies '*do not change the position that in principle, the changes release additional capacity*'.

4.1.7 The work undertaken in response to HE's comments, which has addressed the anomalies identified (See Section 2), show that at the junctions where HE has commented, the conclusions of the TA remain valid.

4.1.8 In addition to the above, the LHA's letter also makes specific reference to Traffic Growth, Trip Rates and Trip Generation, Trip Assignment and Mitigation Measures.

4.1.9 In terms of traffic growth, we understand that the LHA consider the traffic growth methodology used to be appropriate for the study, particularly in relation to the DS (with Local Plan) scenario.

4.1.10 It is welcome to note that the LHA consider the trip rates and trip generation to be acceptable for local plan purposes and that the trip assignment is '*proportionate to local plan delivery'*.

4.1.11 In terms of the mitigation measures proposed, the LHA indicate '*the work does clearly highlight benefits can be provided in the short term'.* However, we would go further than this and say that, in most cases, the improvements proposed are forecast to mitigate for the LP in the longer term up to 2033 and beyond, as demonstrated in the junction capacity assessment results.

5.0 Third Party Comments

5.1.1 We are aware that there have been a number of other third-party responses to the TA prepared for the LP. Common themes contained within these are set out in bold below with our response provided underneath.

a) **By not using a Strategic Transport Model (STM) which takes into account the effects of major highway infrastructure schemes, the TA is therefore modelling a worst-case scenario which on parts of the highway network (i.e. the A6) restrains the level of housing that the TA shows can be brought forward.**

Although the schemes put forward in the Infrastructure Development Plan are part of the LPA's transport strategy for the future, at this stage there is no firm guarantee that the schemes, to which third party respondents point to when saying that a STM is required, will come forward in full. Furthermore, there is also no certainty over when they will come forward.

It is therefore considered that the methodology used in the TA, which does not use a STM, provides an element of robustness to take account of uncertainty with regard to the impact of future traffic levels on the highway network. This view is supported by the LHA.

It should also be noted that HE do not consider that the impact of the TA presents a 'worst case scenario'.

b) **The use of traffic growth to the level predicted within the TA is considered onerous given that there has been limited traffic growth in Lancaster over the past few years, particularly along the A6.**

It is acknowledged that there will be parts of the highway network that will have experienced different levels of traffic growth over the past few years. The TA has used a standard approach of applying Tempro growth factors but has made some adjustments to account for potential double counting. It is therefore considered that the approach taken provides for a proportionate robustness without being too robust.

c) **The existing Galgate and Hala Road junction models underestimate the current operational performance of the junction given that queues shown in the model exceed those observed.**

As set out in the TA, there are numerous factors affecting capacity along the highway network around the Galgate and Hala Road junctions, not just the capacity of the junctions themselves. These factors make it difficult to provide a true representation of the operation of the junctions as their performance fluctuates, particularly at the Galgate junction due to factors such as right turning vehicles waiting in the centre of the junction blocking straight ahead vehicles and buses waiting at bus stops restricting through traffic (see the TA for further details).

It is therefore our view that the TA models the Galgate and Hala junction operation proportionately to allow for these capacity affecting factors to be taken into account.

d) **The TA has adopted an overly cautious approach with the assumptions adopted, namely in relation to the application of background traffic growth, calibration of traffic models, and not including committed development improvement schemes at the Galgate and Hala junction, therefore restraining the level of housing that the TA shows can be brought forward in the short term.**

The issues of traffic growth and calibration of traffic models are dealt with in the previous responses. In terms of not including committed development improvements schemes at the Galgate and Hala junctions along the A6, these have not been included because there is no certainty that the schemes will be delivered. Planning permission for the schemes was obtained in 2009 and so far they have not been implemented. Furthermore, the improvement schemes at both junctions require land outside the adopted highway boundary which is not within the LPA or LHA's gift to deliver.

Therefore, to provide for an element of robustness, the committed improvement schemes have been excluded.

e) **It is incumbent on the Council to rely on a sufficiently robust evidence base to assess the level of housing it requires; The TA as drafted does not appear to aim to achieve such a robust assessment. It is considered presumptuous to restrict housing supply on the basis of inaccurate assessment of likely highways impacts or the likely effectiveness of mitigation.**

As set out above in our responses to the other issues raised by third party respondents, it is considered that the TA provides sufficient robustness to make some allowance for

future uncertainty with regard to the impact of future traffic levels on the highway network and the implications of the LP.

NPPG does not require a LP transport evidence base to utilise a STM and it is therefore considered that the methodology employed does provide a sufficiently robust assessment of likely highways impacts and likely effectiveness of mitigation.

f) **It is not clear why 2033 has been used as a future year assessment when the Local Plan runs up to 2031.**

Policy SP6: The Delivery of New Homes concerns housing delivery between 2011/2012 and 2033/34. The LPTA looks at the point to 2033, whilst accepted that the local plan extends beyond this by several months it is considered that the impacts are negligible.

g) **The TA overinflates the amount of development that is due to come forward at the assessment years due to assuming that all the sites will be built out by 2033 providing a too robust position.**

The build out rates used in the TA are based on best projections at the time of the preparation of the TA, which were provided by the LPA. The build out rates used will be reviewed at the time of the LP review.

6.0 Sustainable Transport Assessment

6.1.1 The LP TA focuses on highway capacity matters. However, a considerable amount of work has been undertaken in respect of sustainable transport assessment by the LPA/LHA and their external consultants. **Appendix J** provides a summary of the work already undertaken to date and further on-going work which is in progress.

7.0 Conclusions

7.1.1 We consider that the modelling methodology adopted (i.e. without a Strategic Model) is of sufficient robustness and is proportionate for LP purposes. The approach taken is backed by the LHA and is broadly in line with National Planning Practice Guidance (NPPG) which does not specifically require the use of a Strategic Model for preparing transport evidence for a LP.

7.1.2 Nevertheless, we understand that the LPA are committed to undertaking an early review of the LP using a Strategic Transport Model (STM) once the LP is adopted.

7.1.3 We consider that the modelling parameters used in the TA provide a proportionate robustness to remove future uncertainty with regard to the impact of future traffic levels on the highway network and the implications of the LP without being overly excessive.

7.1.4 The revised modelling contained within this report in response to queries raised by HE, demonstrate that the conclusions of the TA in terms of junction operation and required mitigation are still appropriate and valid.

Appendices

Appendix A – Highway England & Local Highway Authority Comments

Appendix B – Junction 1: A6/Preston Road Junction Capacity Assessment Results

Appendix C – Junction 2: Committed Improvement Scheme

Appendix D – Junctions 10 & 29: Caton Rd/M6 J34 & A683/M6 J34 Junction Capacity Assessment Results

Appendix E – Junction 17: Kellet Rd/Back Lane Junction Capacity Assessment Results

Appendix F – Junction 18 – Kellet Rd/A601M Junction Capacity Assessment Results

Appendix G – Junction 19: A6/A601/Pine Lake Junction Capacity Assessment Results

Appendix H – Junction 27: Shefferlands (A683/M6 On-Slip) Junction Capacity Assessment Results

Appendix I – Junction 30: M6 J35 Junction Capacity Assessment Results

Appendix J – Sustainable Transport