



# Hampshire County Council

## **REBUTTAL FROM JONATHAN MUNDY IN RESPECT OF HIGHWAYS AND TRANSPORTATION**

IN RELATION TO THE

Outline Planning Permission For The Demolition Of Existing Buildings And Development Of Up To 75 Dwellings, Open Space, Vehicular Access Point From Newgate Lane And Associated And Ancillary Infrastructure, With All Matters Except Access To Be Reserved. Land At Newgate Lane (North) Fareham.

PLANNING REFERENCE P/18/1118/OA

APPEAL REFERENCE APP/A1720/W/20/3252180

AND

Outline Planning Permission For The Demolition Of Existing Buildings And Development Of Up To 115 Dwellings, Open Space, Vehicular Access Point From Newgate Lane And Associated And Ancillary Infrastructure, With All Matters Except Access To Be Reserved. Land At Newgate Lane (South) Fareham.

PLANNING REFERENCE P/19/0460/OA

APPEAL REFERENCE APP/A1720/W/20/3252185

NOVEMBER 2020

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Priority and Signal Controlled Junctions**

**JM3 - Vehicle speed survey data (7<sup>th</sup> to 10<sup>th</sup> November 2020)**

## **I. Qualifications and Experience and Scope of Evidence**

I.1 My qualifications and experience are set out at page 2 of my Proof of Evidence (Appeal Ref APP/A1720/W/20/3252185)

I.2 My evidence considers the transport related matters which are the subject of this Inquiry.

I.3 My rebuttal considers the Proof of Evidence (FL&BH 3.1, item 14a) of Ms Hoskins of Red Wilson Associates and Mr Jones of Pegasus Group (FL&BH 2.1, item 14a).

I.4 In order to better understand the vehicle speeds on the northbound approach to old Newgate Lane/ Newgate Lane East, an additional speed survey was undertaken.

I.5 Based on the above, my rebuttal considers the following issues:

- Interpretation of guidance (Traffic Signs Manual Chapter 6 and DMRB CD123).
- Updated speed survey
- Rebuttal of reasons to not fully signalise the right turn
- Right turning driver's visibility of on-coming traffic
- Right turn clearance duration
- Traffic distribution on Newgate Lane East northbound

## 2. Interpretation of Guidance

2.1 Section 8.4 of Traffic Signs Manual Chapter 6 Traffic Control (attached to the rebuttal as Appendix JM1) states the following

*“Separately signalled right turns should be considered in circumstances where opposed right turns may be unsafe, for example on roads where the 85th percentile speed is above 45 mph on the relevant approaches.”*

2.2 Section 7.16.2 of DMRB - Geometric design of at-grade priority and signal-controlled junctions CD123, August 2020 (attached to the rebuttal as Appendix JM2) states the following:

*“7.16.2 Where the 85th percentile approach speed is greater than 72 kph (45 mph), right-turns should be separately signalled.*

*NOTE Where the 85th percentile approach speed is greater than 72 kph (45 mph), there is an increased risk of accidents between right-turning vehicles seeking gaps and on-coming vehicles travelling at speed.”*

2.3 Guidance from DMRB CD123 is of particular note as it clearly states where approach speeds are greater than 45mph, right-turns should be separately signalled. Ms Hoskins’ evidence specifically refers to this guidance stating the follow at paragraph 5.16:

*“As the 24 hour 85th percentile design speeds are below 45mph and appear to be reasonably consistent in speed travelling past Old Newgate Lane, it is not a requirement to have a separately signalled right turn at this junction. This factor combined with the fact that anyone waiting to turn right in the centre of the junction will be afforded with excellent forward visibility of on-coming traffic means that it is my professional opinion that, it is appropriate for the junction to be designed with an indicative right turn arrow.”*

2.4 Neither Traffic Signs Manual Chapter 6 Traffic Control nor DMRB CD123 make no reference to 24 hour 85<sup>th</sup> percentile speeds and I believe Ms Hoskins’ statement above does not accord with the guidance. I interpret the guidance as referring to any 85<sup>th</sup> percentile speeds over 45mph. This appears to be supported by the Independent Safety Auditor (APPENDIX AHJ/M:), who made a clear recommendation that the right-turn movement should be separately signalled. There are 85th percentile recorded speeds in the appellant’s speeds surveys (Ms Hoskins’ evidence, Appendix D) of over 45mph as shown below:

- Midnight – 1am: 47.9mph
- 1am – 2am: 47.9mph

- 2am – 3am: 47.9mph
- 3am – 4am: 47.9mph
- 4am – 5am: 46.6mph
- 5am – 6am: 45.4mph
- 11pm – midnight: 46.6mph

2.5 Ms Hoskins' evidence places particular relevance on Traffic Signs Manual Chapter 6 Traffic Control and DMRB CD 123 in relation to the measured speeds. Given the speed surveys are two years old (site 2, northbound approach to the junction) carried out 27th September 2018 – 3rd October 2018 and that this was shortly after opening of Newgate Lane East, and given the reliance Ms Hoskins places on the fact that only certain hours have an 85<sup>th</sup> percentile speed in excess of 45mph, upon receipt of her evidence I commissioned repeat speed surveys to ascertain if speeds had changed in the interim. The details of this are set out in section 3 below.

### **3. Updated Speed Survey**

3.1 A speed measurement survey was conducted between on Newgate Lane East northbound approach to the junction between 7<sup>th</sup> November and 10<sup>th</sup> November 2020. The survey data is attached in the Appendix JM3.

3.2 The results show that the average 85<sup>th</sup> percentile speeds exceeded 45mph for the following time periods

- Midnight to 1am: 51.0mph
- 1am to 2am: 50.1mph
- 2am to 3am: 51.7mph
- 3am to 4am: 53.8mph
- 4am to 5am: 51.8mph
- 5am to 6am: 49.1mph
- 7pm to 8pm: 46.6mph
- 8pm to 9pm: 48.2mph
- 9pm to 10pm: 48.7mph
- 10pm to 11pm: 49.0mph
- 11pm to midnight: 49.4mph

3.3 The results indicate an increased number of hours where the 85<sup>th</sup> percentile speeds now exceed 45mph. Average speeds above 45 mph now occur from 7pm which is 4 hours earlier than the Appellant's survey data. Indeed for 11 of the 24 hours the Newgate Lane East northbound 85<sup>th</sup> percentile speeds now exceed 45mph.

3.4 These higher 85<sup>th</sup> percentile speeds serve to emphasise that an even greater safety risk would be present to those turning right under the Appellant's proposed indicative arrow signal arrangement with drivers gap seeking across 2 lanes of on-coming traffic. It is concluded that the Appellant's arrangement would be unsafe and should not be implemented in this manner. The updated speed data reinforces my view that the right turn movement must be fully signalled to eliminate a proven safety hazard which has occurred at other similar traffic signal junctions.

## **4. Rebuttal of Reasons to Not Fully Signalise the Right Turn Movement**

4.1 Ms Hoskins evidence states for the first time the following at paragraph 5.16:

*“The table demonstrates that although the 24 hour 85th percentile design speeds are below 45mph, overnight they exceed this. It is my view however that it is still not necessary to separately signal the right turn movement for the following reasons;*

- *The speed of the road will be naturally reduced with the introduction of traffic signals as vehicles will approach them more cautiously;*
- *In the absence of any demands overnight, the signals will revert to an all-red stage which will further slow the speeds of vehicles.”*

4.2 I do not agree that either of the points above negates the need for a separately signalised right-turn. I will explain why dealing with each point in turn.

4.3 First, no evidence has been provided that vehicle speeds could be expected to reduce with the introduction of traffic signals particularly given the lengthy periods when the northbound approach is at green. The green time for Newgate Lane East is modelled at 88 seconds for both AM and PM peak hours. With a green time of nearly 1 ½ minutes this will allow drivers to approach the junction at free flow speeds during the middle to later stages of this time. Those drivers using the flared offside lane would be overtaking vehicles in the nearside lane and therefore travel at greater speed. As drivers become familiar with the operation of the traffic signals they will expect long green times for the Newgate Lane East northbound approach. There will be an expectation that they will continue through without being stopped and drivers will be less inclined to reduce speed. I do not agree that vehicle speeds can be expected to be reduced during the long periods when the northbound approach is at green. It should be emphasised that it is during these long periods of green time that drivers will be attempting to turn right across the 2 lanes of on-coming traffic.

4.4 The use of a revert to all-red stage is not used at multi-arm traffic signal junctions in Hampshire. There are several reasons for this operation.

4.5 Where the traffic flow along a particular road is dominant, for example a main road, it is more efficient for that movement to rest on green in the absence of traffic. This reduces the

requirement for the majority of vehicles to have to slow or stop on the approach. It reduces the need for unnecessary stopping and noise generated from vehicle braking. At this junction Newgate Lane East is the highly dominant traffic movement and the use of a revert to all-red stage would not be appropriate.

4.6 Under a revert to all-red stage arrangement, with no other vehicles present, the signals would change to green as a vehicle approached the junction at a distance of 40 metres away. Overnight drivers would become familiar with the signals changing to green as they approached. However in the event that the signals were on green to Old Newgate Lane the signals would not change immediately as the vehicle approached on Newgate Lane East. In this situation a driver familiar with the junction approaching on Newgate Lane East would expect the signals to change to green and not be preparing to stop. The potential is for the vehicle to continue through the red signal conflicting with a vehicle turning through the junction from Old Newgate Lane. This would lead to a safety hazard and would not be an acceptable form of operation at this junction.

4.7 The use of revert to all-red stages are used in Hampshire at shuttle working traffic located at single lane sections at bridges and tunnels. The Newgate Lane East junction with Old Newgate Lane does not accord with this form of layout.

4.8 It is not considered that vehicle speeds on Newgate Lane East northbound would reduce overnight with the introduction of traffic signals at the junction.

4.9 In Ms Hoskins evidence (5.28 table 5-2) the traffic model for the indicative arrow arrangement provides a prediction of the number of vehicles which would gap seek when turning right. In the AM peak the model results in table 5-2 show that all right turning vehicles would be expected to turn during the interstage period and that none would turn in gaps. However the arrangement would not preclude drivers from seeking to turn if they considered that an opportunity existed. It would be the individual driver's misjudgement of a suitable and safe gap across 2 lanes of ahead traffic that would potentially result in a collision. The lack of predicted opportunity to turn in gaps in the AM peak indicates that any driver doing so would be increasing their risk of a collision in carrying out the movement during this part of the cycle. This supports the requirement that drivers should not be permitted to gap seek when turning right as the Appellant proposes but should only be permitted to do so under a fully signalled movement.

## **5 Right Turning Driver's Visibility of On-coming Vehicles**

5.1 In Ms Hoskins evidence (5.16 and 5.23) it is stated that drivers waiting to turn right will have excellent visibility of on-coming traffic.

*“5.16 As the 24 hour 85th percentile design speeds are below 45mph and appear to be reasonably consistent in speed travelling past Old Newgate Lane, it is not a requirement to have a separately signalled right turn at this junction. This factor combined with the fact that anyone waiting to turn right in the centre of the junction will be afforded with excellent forward visibility of on-coming traffic means that it is my professional opinion that, it is appropriate for the junction to be designed with an indicative right turn arrow.”*

*“5.23 In terms of forward visibility vehicles who would wait to turn right at the proposed junction would be afforded a good opportunity to see oncoming vehicles. The junction sits on a very slight bend”.*

5.2 Ms Hoskins (5.24) also considers that right turning driver's visibility would be unobscured

*5.24. The forward visibility of vehicles waiting to turn right would be un-obscured, as there would be no right turners turning in the opposite direction due to the fact it is a T junction.*

5.3 It is my opinion that the visibility of right turning drivers of on-coming traffic will frequently be obscured by vehicles using the flared lane. Their presence nearest to the right turning drivers will partially block visibility to those vehicles in the adjacent nearside lane. This degree of obscurement is magnified where it is a 2 wheeled vehicle which is obscured. The position of the junction on a slight bend does not change my view that the indicative arrow arrangement would be unsafe.

## 6 Right Turn Clearance Duration

6.1 In Ms Hoskins evidence (5.26) relating to the duration and number of vehicles that can turn during the interstage time it states

*“This equates to seven seconds in the model providing enough time for three vehicles to clear before the side road (stage 3) receives a green signal.”*

6.2 From the traffic signal Linsig model produced for the indicative option for each of the differing traffic distributions (FL&BH 3.2 Appendix F pages 87, 133, 179, 225 and 271) the 7 second duration stated above is incorrect. The duration is 5 seconds.

6.3 The model has intergreen times which are 7 seconds between phase A (Newgate Lane East northbound) and phase C (Old Newgate Lane) and 5 seconds between phase B (Newgate Lane East southbound) and phase C (Old Newgate Lane). The interstage period is 7 seconds (determined by longest phase intergreen). However the model includes a 2 second phase delay at the end of phase B (Newgate Lane East southbound) on a change from stage 1 (Newgate Lane East) to stage 3 (Old Newgate Lane). Figure 1 below shows these parameters.

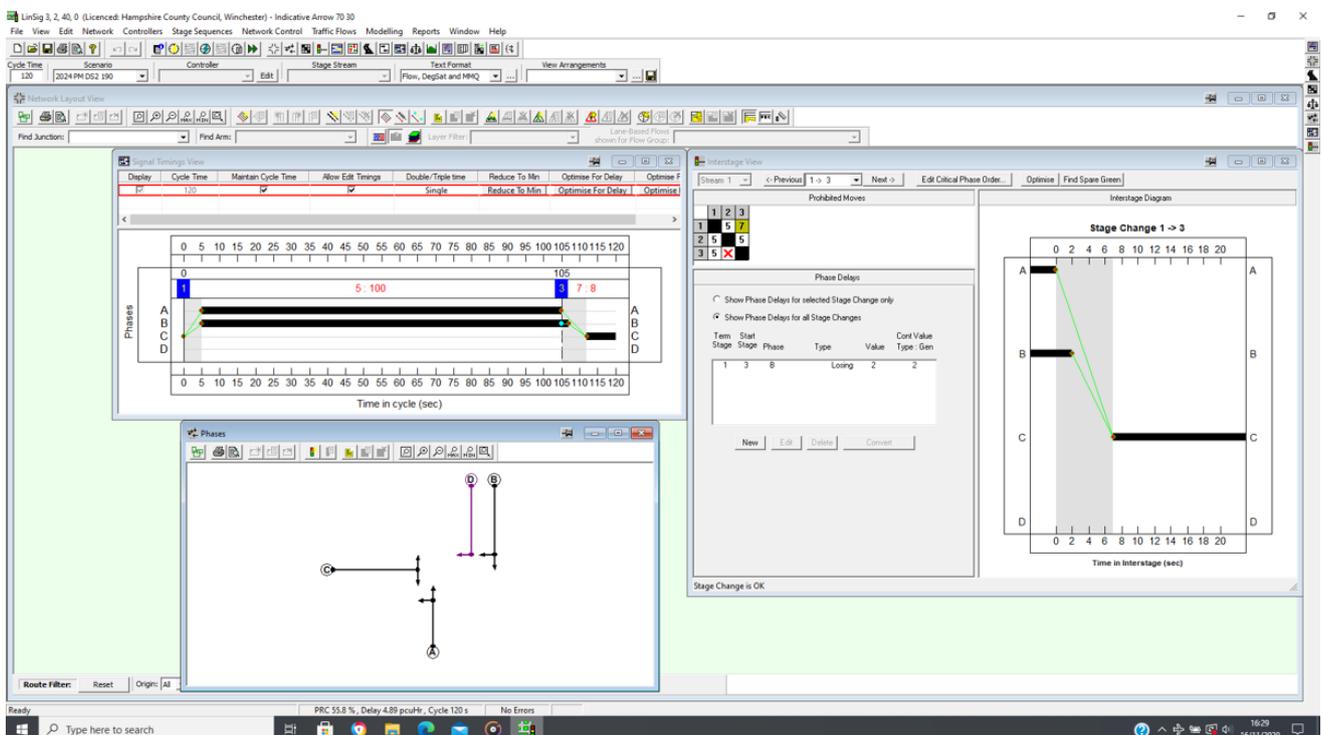


Figure 1 – Linsig extract for indicative arrow model

6.4 The phase delay extends the appearance of the phase B green signal by a further 2 seconds beyond that of the phase A green signal. Drivers waiting in the centre of the junction to turn right in the intergreen period would seek confirmation from the secondary signal positioned in front of them. When this turns to red they would be assured that on-coming traffic would also be stopped and would start to turn when this changes to red. Effectively this provides 5 seconds in which to turn and not 7 seconds as stated.

6.5 Ms Hoskins evidence (5.26) also states that 3 vehicles could clear during the interstage period before the side road receives a green signal. The corrected 5 second intergreen period would comprise of 3 seconds leaving amber signal and 2 seconds starting red and amber signals. These are mandatory signal timings used throughout the country set in accordance with Department for Transport standards. Based on the correct 5 second intergreen period this would result in the signals being at red to all traffic for 0 seconds when changing from stage 1 (Newgate Lane East) to stage 3 (Old Newgate Lane). It is concluded that fewer than the 3 vehicles stated by Ms Hoskins could turn during this period.

6.6 Mr Jones evidence (6.15) also relates to the duration and number of vehicles that could turn right during the interstage period. In Mr Jones' evidence it is stated

*“Vehicles wishing to turn right will likely turn in the interstage period and therefore not trigger the detectors to call the indicative arrow stage. The interstage is 6 seconds which is considered sufficient to allow 2 to 3 vehicles to turn and clear the northbound Newgate Lane before the Newgate Lane stage recommences.”*

6.7 It should be noted that the 6 seconds period quoted by Mr Jones (6.15) differs from that quoted by Ms Hoskins (5.26).

6.8 As detailed in 6.3 and 6.4 of this rebuttal the stated 6 seconds period in Mr Jones' evidence (6.15) is incorrect. The time should be 5 seconds.

6.9 As detailed in 6.5 of this rebuttal Mr Jones' evidence states that 2-3 vehicles could clear before the side road receives a green. Based on the correct 5 second intergreen period it is concluded that the 3 vehicles as stated by Mr Jones would not be able to turn during this period.

## **7 Traffic Distribution on Newgate Lane East Northbound**

7.1 Ms Hoskins evidence in 5.33 states that a 70:30 split of traffic on Newgate Lane East northbound has been used. The results of this traffic distribution are outlined in tables 5-3, 5-4 and 5-5.

*“It is my view that during the AM peak the flare lane will be fully utilised and as such the split of traffic will be closer to 70:30.”*

7.2 In 5.35 of her evidence Ms Hoskins refers to a study by Green Signals Consulting Limited in 2015 ‘Merging Traffic at Signalled Junctions’. The study details the traffic distribution and an extract from 5.36 of Ms Hoskins evidence states

*“The study states that traffic flow in the nearside lane can be reasonably predicted as 0.735 of the total flow.”*

7.3 The 70:30 traffic split used in the Appellant’s evidence is contradictory to that stated in the study which is a 73.5:26.5 split. The findings of the referenced study have been based on site observations and collected data. The Appellant does not provide any evidence to support the use of a 70:30 traffic split. It is concluded that the traffic distribution used in the model is incorrect and that the AM peak results for Newgate Lane East northbound as presented in tables 5-3 5-4 and 5-5 are inaccurate.

7.4 The evidence provided by Ms Hoskins in 5.34 states

*“It is my view that vehicles will likely queue equally on the approach to the junction”*

7.5 Based on either the 70:30 or 73.5:26.5 traffic splits these do not represent equal queuing across the approach lanes. The above statement is contradictory to the use of the 70:30 traffic distribution used in the evidence.

## **8 Summary**

8.1 My rebuttal considers the transport related matters which are the subject of this Inquiry. I have been instructed by Fareham Borough Council to provide expert witness services for the Inquiry. My rebuttal considers the following:

- Interpretation of guidance (DMRB CD123 and Traffic Signs Manual Chapter 6).
- Updated speed survey
- Rebuttal of reasons to not fully signalise the right turn
- Right turning driver's visibility of on-coming traffic
- Right turn clearance duration
- Traffic distribution on Newgate Lane East northbound

8.2 I consider the interpretation of the guidance for the use the 85<sup>th</sup> percentile speeds. In Ms Hoskins evidence the use of 24 hour 85<sup>th</sup> percentile speeds are referenced. The information contained in both Traffic Signs Manual Chapter 6 Traffic Control and DMRB CD123 make no reference to 24 hour 85<sup>th</sup> percentile speeds and I believe Ms Hoskins' statement above does not accord with the guidance. I interpret the guidance as referring to any 85<sup>th</sup> percentile speeds over 45mph. The evidence provided by Ms Hoskins indicates 85<sup>th</sup> percentile speeds which exceed 45mph between 23:00 and 05:00.

8.3 It is noted that the speed survey data contained in Ms Hoskins evidence is over 2 years old. Newgate Lane East had only recently been opened to traffic at that time. Traffic patterns and driver behaviour would be settling at the time of that survey and it is concluded that the speed data is now out of date.

8.4 An updated speed survey was commissioned in November 2020. The results from the November 2020 survey indicate that the range of time periods where the 85<sup>th</sup> percentile speed on Newgate Lane East northbound exceeds 45mph has increased since the 2018 survey. The time period from which the 85<sup>th</sup> percentile speeds on Newgate Lane East northbound exceeds 45mph now starts at 7pm which is four hours earlier than previously recorded. The 85<sup>th</sup> percentile hourly speeds remain above 45mph until 6am which is one hour longer than previously. It is concluded that the 45mph 85<sup>th</sup> percentile speed is now exceeded for 11 hourly time periods each day. This data represents current vehicle speeds on Newgate Lane East and should supersede the earlier 2018 data.

8.5 The reasons provided in the evidence against the need to fully signalise the right turn movement are disputed. No supporting evidence has been provided that vehicle approach speeds would reduce with the introduction of traffic signals at the junction. Indeed the use of the flared lane would lead to vehicles overtaking those in the nearside lane and therefore increase the speed of vehicles in the flared lane. With long green times of around 1 ½ minutes on Newgate Lane East northbound it is asserted that driver's expectation that the signals would change to red as they approached would be low. This would not result in drivers approaching more cautiously and at a lower speed when the signals were at green as stated in the evidence.

8.6 The use of an all-red stage to traffic in the absence of any vehicles is not considered to be appropriate or safe at this location. For efficiency the standard method of control would be for the signals to rest on green for the dominant traffic movements (Newgate Lane East) in the absence of any vehicles. Additionally the use of an all-red to traffic stage particularly overnight would lead to Newgate Lane East drivers, who would be familiar with their operation, anticipating the signals changing to green as they approached. In the event that they did not change, for example a vehicle was emerging from Old Newgate Lane, it would lead to late vehicle braking or drivers passing through the red signal with a risk of vehicle collision.

8.7 The evidence purports that right turning drivers would have good visibility of on-coming traffic. This is disputed as in my opinion the visibility of right turning drivers of on-coming traffic will frequently be obscured by vehicles using the closer flared lane. Their presence nearest to the right turning drivers will partially block visibility to those vehicles in the adjacent nearside lane. This degree of obscurement is magnified where it is a 2 wheeled vehicle which is obscured. It is considered that the risk of poor visibility will lead to an inherent safety risk at the junction which can be avoided with a fully signalled right turn.

8.8 The evidence of Ms Hoskins states that the duration drivers would have to turn right when the Newgate Lane East turns to red would be seven seconds. The evidence of Mr Jones states the same period as being six seconds. This presents contradictory information between the evidence. An investigation of the Linsig traffic model indicates that only five seconds would be available. The Appellant places great emphasise on vehicles making use of this time to turn right. It is concluded that this reduced duration would not be sufficient to allow up to 3 vehicles to complete the manoeuvre.

8.9 In relation to the traffic distribution across the 2 lanes on Newgate Lane East northbound the proportions referenced by the study have not been applied to their traffic model. It is concluded that the results are inaccurate.

## **9 Conclusions**

- 9.1 It is concluded that the 85<sup>th</sup> percentile speed on Newgate Lane East northbound exceeds 45mph and that in accordance with the design guidance stated in Traffic Signs Manual Chapter 6 and DMRB CD123 the right turn must be fully signalled.
  
- 9.2 The Appellant's proposed use of an indicative arrow arrangement with gap seeking right turn movements across 2 lanes of ahead traffic at the traffic signal junction would introduce a serious safety hazard. It is a hazard that would be unacceptable and can be eliminated with the use of a fully signalled right turn movement.
  
- 9.3 In my opinion, the unacceptable impact on highway safety justifies FBC's decision to refuse the application in accordance with paragraph 109 of the NPPF.