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Keinton Mandeville Traffic Study – Addendum to Scoping Report

Introduction

This report has been prepared at the request of Keinton Mandeville Parish Council as part of a package of reports to assess traffic issues within the village of Keinton Mandeville. This report incorporates an extra survey on Queen Street in addition to the series of traffic surveys which provided data for analysis in the original scoping report. This report is intended to be read in conjunction with report MNY23-01-1a.

Local Highway Network

The overall highway network is briefly described in MNY23-01-1a, however given the focus of this report it is worth repeating the description of Queen Street.

Queen Street

Queen Street leads south from the B3153 for a total of around 1km to a junction with Common Lane and Church Street. There is residential frontage throughout save for one small agricultural frontage some 100m south of the junction with Castle Street B3153. Immediately south of the junction Queen Street is too narrow for two-way traffic and thus traffic turning in from the B3153 conflicts with traffic trying to turn out. Footways are also very restricted along this length. Whilst the carriageway and footways are generally wider further south, they are still only just adequate for two-way traffic and pedestrian safety, and any level of on street parking reduces the road to single way working.

The junction with Common Lane and Church Street is a priority junction where Queen Street is the stem of the T and yet is also the main road (with Common Lane) through the junction. This creates issues which are discussed later in this report.

Traffic Data

MNY commissioned automated traffic counts (ATC) on behalf of Keinton Mandeville Parish Council. These were undertaken by AutoSurveys between Monday 21st and Monday 27th February 2023 providing a full one week's data. These surveys gave details of traffic volume, vehicle class and speed by direction and by hour, allowing identification of peak hour flows, proportion of HGV traffic and mean/85%ile speeds at each location. The ATC counters were placed at the following locations.

Site 1 – B3153 west of Keinton Mandeville village
Site 2 – B3153 east of Keinton Mandeville village
Site 3 – Barton Road north of Keinton Mandeville village
Site 4 – Common Lane east of junction with Queen Street
Site 5 – Chistles Lane east of Keinton Mandeville Primary School
Site 6 – Church Street west of Church Lane

In addition an ATC survey was later commissioned on Queen Street between the B3153 and Chistles Lane. This is now referred to as site 7

The traffic data collected is summarised in Table 1 below:

Table 1 – Summary ATC data

Location	AM 2-way	PM 2-way	12 hour 2-way	Mean speed	85%ile	Speed limit
Site 1	481	455	4227	38.5	45.1	30
Site 2	466	435	4113	41.4	48.3	60
Site 3	133	144	1069	31.8	37.2	30
Site 4	97	103	805	17.9	20.4	30
Site 5	154	121	983	18.4	21.7	30
Site 6	22	29	210	22.7	29.0	30
Site 7	273	233	1892	24.2	29.7	30

There are several factors to note here, even before we begin to discuss the impact of the level of traffic at site 7 on Queen Street. The total traffic at site 7 is broadly similar to the total of sites 4,5 and 6 which demonstrates the veracity of the counts even though they were some months apart, as there isn't a great deal of scope for trips along Queen Street that don't then travel through one of the other count sites. The actual total values are given below.

Location	AM 2-way	PM 2-way	12 hour 2-way
Site 4	97	103	805
Site 5	154	121	983
Site 6	22	29	210
Total 4-6	**273**	**253**	**1998**
Site 7	273	231	1892

In the previous report we commented that "*It is likely to be very little traffic between Sites 4,5 and 6 all of which are served by Queen Street, and thus the sum total of these surveys will approximate to the total of traffic on Queen Street at its junction with the B3153."* This is borne out by these results.

It should be noted that there are several individual properties between count 7 and the other three counters and that there are other ways out of this area of the village, thus a vehicle passing over counter seven may not pass over any other counters and vice versa, but there are no major traffic generators between the four counters that would produce a large flow of traffic. The biggest percentage difference if in the PM peak where the cordon counts (4-6) are 8% higher than site 7, however as these counts were taken several months apart and the actual value is only twenty vehicles this within expected the day-to-day variation of traffic, indeed in the week surveyed at site 7 the PM peak varied from 195 (Monday) to 231 (Friday) a difference of 36. This demonstrates that these counts are all accurate within the limits of such surveys.

One key thing to note is the pronounced peak in this area. From table 1 we can see that the peak on the B3153 is round 11% of the 12-hour total, whereas on Queen Street the AM peak is around 14% of the total. This reflects that there is less through traffic in the background and the impact of the school on peak flows (where the morning commuter peak is at the same time as the school peak) – the PM peak is typically between 3pm and 4pm which again is indicative of the impact of the school on traffic flows. Typical flows between the peaks are around 120 vehicles to 130 vehicles, or around 50% of the peak hour flow.

As noted in the previous report, and now reinforced by the survey at site 7 the total flow on Queen Street is between 45% and 60% of the total traffic on the B3153 during the Peak, and over a 12-hour day the flow on Queen Street is around 44% of the total flow on the B3153. Given the survey for site 7 is on Queen Street with very few properties between the survey and the B3153 it is apparent that traffic on Queen Street forms a significant proportion of total traffic on the B3153 – B3153 traffic is by no means all "through traffic".

It is also notable that the flow on Chistles Lane is over 50% of that recorded on Queen Street. Unlike count sites 4 and 6, Chistles Lane is a dead end and has a school, and thus traffic on Christle's Lane is most certainly NOT through traffic from outside the village.

It is also notable that the 85%ile speed at site 7 is 29.7mph, which is astonishing when one considers the poor standard of the length of Queen Street where the counter was placed. From a speed enforcement viewpoint this is below the speed limit, although it does raise the question as to whether the speed limit is appropriate at this location.

Video surveys and impact of traffic on Queen Street.

The second ATC was accompanied by a video survey at the junction of the B3153 with Queen Street. This entailed four cameras, one for each arm of the crossroads. This survey lasted for 12 hours and resulted in 48 hours of video.

This video survey was commissioned as bare figures alone cannot tell the full story of traffic on a road such as Queen Street. Where a road can comfortably handle two-way traffic assessing whether it is over capacity is largely a matter of numbers, comparing the known traffic flow with other variables such as the carriageway width, typical speed, presence of parked cars and side roads and the accident record, but when a road is not wide enough for two-way traffic it is much more difficult. For example such a road can carry more traffic if the flow is predominantly or entirely in one direction, and the capacity is much reduced if there is a significant counter flow. Further, any capacity issue may be the result of a short spike in traffic such as that caused by a venue that generates most traffic in a very short space of time – the start and end of the school day is an example of such generation.

The video evidence shows that there are brief periods when Queen Street cannot handle the level of traffic asked of it. There is an existing length near the junction with the B3513 that is not wide enough for two-way traffic, and this is exacerbated as some vehicles park or wait on highway near Chistles Lane. The effect of this is that vehicles turning in off the B3153 cannot enter Queen Street, they may get one car-length in at which point another vehicle can come out with difficulty, and after this vehicles are queuing in both directions.

It should be noted that, when this situation occurs, Queen Street can carry LESS traffic than usual as vehicles are caught in a logjam. This is not uncommon in congested situations and has the effect that, at the very moment when demand for movement through Queen Street is at it's highest, the capacity of Queen Street to handle this is at it's lowest.

Vehicles queueing to turn into Queen Street must wait on the B3153, which at best introduces delays here and at worst creates a hazard for traffic on the main road. Vehicles waiting to turn in are blocked by vehicles in the narrow section of Queen Street and must wait for the entire queue to clear, and whilst they are waiting more vehicles join the back of that queue. Generally a driver joining the back of the queue to leave Queen Street cannot see that there is a problem at the junction. This situation prevails until there are no more vehicles to join the back of the queue and the queue clears.

The issue particularly arises around the start of the school day but is never far from the surface, this occurs for several reasons, one is that the system is already close to capacity, especially for parking and dropping off, another is that while traffic figures are per hour, most of this extra traffic actually occurs in a period of less than 20 minutes. It should also be noted that some of the school traffic doesn't appear on Chistles Lane at all with cars parking on Queen Street.

Whilst the original report cited 33 vehicle trips as the possible cause of the congestion, we do not yet know how few trips would tip the balance. The figure of 33 is based on the difference between the flows on Chistles Lane in the AM and PM peak, and the observation that the AM peak is the worst, but the difference may be down to other factors such as a more concentrated peak in school traffic in the AM period, and it could be that a lower number of trips concentrated in a short period would have the same effect.

The issues resulting from this are complex and nuanced. These relates to the width of Queen Street as two vehicles cannot pass each other and as a result a vehicle turning into Queen Street is quickly blocked by ones waiting to come out. At school drop off time (and possibly at other times) this leads to a queue back to the B3153 and vehicles waiting on the main road to turn into Queen Street, in addition vehicles were observed to mount the kerb in an effort to make progress along Queen Street, presenting a hazard to pedestrians.

Solutions to the present situation are likely to involve nuanced adjustments to the road layout and possibly demand management for school traffic as the extra trips generated at the start of the day make a major contribution to the problems here.

However, that only deals with existing traffic – what is clear from this analysis is that the capacity of Queen Street to take any further traffic is extremely limited. Additional traffic would have two impacts:

The existing situation would be made worse with longer queues and taking longer to clear. This isn't just a matter of queue length but also the potential that vehicles would not be able to leave Chistles Lane due to the queue on Queen Street.

The congestion described at the start and end of the school day would start to occur at other times too.

In terms of any increase in traffic attributable to a development then the critical point would be the impact on the highway network – the NPPF refers to the test being "severe impact" – it is difficult to see how a worsening of the existing situation could be considered anything other than "severe"