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THE DATA COLLECTION SPECIALISTS

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**Traffic and Speed Survey
Analysis**

April 2022



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1. Data Quality Assurance:

Data Revision: Rev. 1

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Date: 30 Mar 2022

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Checked by: Joe Maclaren

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Approved by: Joe Maclaren

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2. Methodology Background:

The formal Department for Transport overarching advice on collection and understanding of speed information was formerly based on the Design Manual for Roads and Bridges, Volume 5, Section 1, TA 22/81. This covered measures of instantaneous speed either collected by inductive loops or radar speed meters.

This was superseded in November 2019 by CA 185 Revision 0 – Vehicle Speed Measurement. This is confirmed in the Highways England DMRB Briefing Note dated 29th July 2020. The principal change was removal of the concept of wet weather journey speeds mainly as that concept was not included in any other DMRB document.

When design parameters for anything other than speed limits and traffic signal installations are to be determined based on speed measurement, journey speeds of all motor vehicle types shall be used. Speed measurements shall be taken on the approaches to the scheme extents. They shall also be in free flow conditions unless they are taken in connection with changes to an existing feature that naturally impacts the free flow of traffic. They should not be used for alignment revisions. Where there is persistent parking this can be taken as a feature that naturally impacts the free flow of traffic. Measurements should be taken in dry weather conditions.

The 85th percentile dry weather spot speed value is the speed only exceeded by 15% of the vehicles within the sample. If the sample is partially or entirely in wet weather conditions, 8kph should be added for dual carriageways and 4kph for single carriageways. (CA 185 para 3.1.1). This is because people tend to drive more slowly to account for reduced adhesion in wet weather, a fact confirmed by research.

Manual for Streets 2 (MFS2) Chapter 10 discusses calculation of stopping sight distances (SSD's). The formula to calculate SSD is:

$$Vt + v^2/2 (d+0.1a)$$

Where

V= speed m/s

t= driver perception reaction time (seconds)

d=deceleration m/s²

a=longitudinal gradient (+ for upgrades and – for downgrades)

MfS values are t=1.5 and d=0.45g (4.41 m/s) (0.375g for hgv and bus).

However, where average speeds exceed 60kph (37.5 mph), MFS2 para 10.1.13 requires the reaction time, t used to be 2.0 seconds and deceleration rates based on 0.375g (3.68 m/s) to allow for the different traffic conditions that apply.

Para 10.1.8 guides that bus/hgv SSD should not need to be assessed when the combined proportion of bus and hgv is less than 5% of traffic flow but subject to consideration of local circumstances. If speeds are over 37.5 mph there is no requirement to check regarding hgv levels since all calculations use the more pessimistic deceleration rates in any event.

3. Survey Details:

Classified volume and speed data was collected via an ATC unit positioned on the B6478 west of the current and proposed access point for the development. The practical location identified for the counter was just west of the proposed access.

This location was considered to be the most appropriate and secure place for undertaking the speed survey. Data was collected from **Wednesday 23rd March 2022 until just after 18:00 on Monday 28th March 2022**. Data is shown in **hourly intervals** and by direction. The aim was to collect a full week of data but the installation was damaged at 18:00 on the Monday evening and it was determined that completion of the full week of information would not be practicable.

The Vehicle Classifications used in this survey numbered in the data are as follows:

1. Pedal Cycles
2. Motorcycles
3. Passenger cars with or without trailers
4. LGVs with or without trailers
5. 2 axles rigid HGV
6. 3 axles rigid HGV
7. 4 axles rigid HGV
8. 3 axles articulated HGV
9. 4 axles articulated HGV
10. 5 or more axles articulated HGV
11. Buses and coaches

Vehicle speeds were gathered in 5mph bins for each hour, with a mean average, a standard deviation and the 85th percentile speeds calculated for each hour and for various agglomerations of hours.

4. Incidents Encountered During Surveys:

The counter was damaged around 18:00 on Monday 28th March, reducing the data set by just over one day. The change in clocks also meant there is no information between 00:00 and 01:00 on Sunday 27th March 2022.

5. Weather Conditions:

Weather conditions were fair without any significant periods of rain.

6. Map of Survey Location:

Appendix 1 provides a record of the location of the ATC tube.

Appendix 2 provides a record of the vehicle types counted in pictogram format.

Appendix 3 provides the detailed traffic and speed results by day and hour.

7. ATC Speed Survey Results:

The table below provides a summary of the observed and estimated 85th percentile speed survey results providing the range of speeds identified through each day, the all-day average and an average for the full week.

Following standard advice (CA 185 para 3.1.1) the dry 85th percentile speeds have been used – there was no evidence that the surveys had been affected by wet weather.

The table below presents a summary of the data received and the results of the analysis undertaken using the industry standard software evaluation package provided with the equipment. The count quotes 85th percentile values given that most hours have sufficient levels of traffic to enable this value to be calculated by hour.

Access Point Survey	North East bound			South West bound		
	Min	Max	24 hr av 85 th %ile	Min	Max	24 hr av 85 th %ile
Monday	26.6	31.3	28.4	27.5	35.1	32
Tuesday	n/a	n/a	n/a	n/a	n/a	n/a
Wednesday	29.5	35.8	32.9	27.7	34.2	32.4
Thursday	25.1	33.8	30.9	27.7	35.3	33.6
Friday	27.3	34	31.1	30.4	34.4	33.3
Saturday	26.6	30.9	29.8	28.2	33.8	31.3
Sunday	25.7	30.6	29.1	27.7	34.4	30.9
Average, 5-day	27.1	33.7	30.8	28.3	34.8	32.8
Average, 7-day	26.8	32.7	30.4	28.2	34.5	32.3
Average, two-way, 85th percentile	28.9					

The resulting two-way 85th percentile average speed at the point of access is 28.9 mph. This is around what might be expected given the nature of the road. The variation between directions sees south-west bound faster at 31.3 mph (accelerating out of the sharp bend) and north-west bound lower at 26.5 mph (slowing for the sharp bend).

Given average speeds are below 37.5mph, there is need to consider hgV proportions, but the higher reaction time of two seconds otherwise needed can be

reduced to 1.5 seconds. The impact of the hgv proportion being over 5% provides longer required visibility splays, but usually shorter than the level were just the speed limit values used (which allow for an element of uncertainty re speeding traffic).

8. Implications for Visibility Splay Requirements:

For this site, the observed average speeds in any hour are less than 37.5 mph which following guidance suggests the standards in MfS2 for higher speed roads do not need to be used.

The required SSD at the site access are therefore values of 48m to the north and 37m to the south, which are therefore the maximum that can be required. Both are much less than the speed limit related distance of 214m for a road with the national speed limit of 60mph.

It is normal to require that the full length of the visibility splay is within either highway land or that under the control (not necessarily direct ownership) of the developer / land owner. However, some councils are aware that implying planning blight by adhering strictly to visibility splay requirements can be hard for a council to defend at Appeal.

Given there is no footway, guidance suggests the x distance could be set to 0.5m in from the kerb. There is vegetation close to both sides of the road that also suggests few vehicles will be close to the edge of the carriageway.

There is a marked centre line and it could be assumed the left splay can be taken to the centre line as it is very unlikely that vehicles would be towards the wrong side of the road given the local geometry.

The estimated visibility required is 48m to the north and 37m to the south.

Further detail of the application of these splays will be provided on the developing access diagrams for the proposed development.