

Charlbury traffic count – August/September 2021

Methodology

On one weekday in August and one in September 2021, volunteers noted traffic at five locations around Charlbury:

- Enstone Road crossroads
- Five Ways
- Thames Street/Nine Acres Lane junction
- Railway station mini-roundabout
- Bull Corner

Three two-hour counts took place on each day: 07.00–09.00, 12.00–14.00, and 16.30–18.30.

The volunteers were asked to note down vehicle registration (three-letter component only), turn origin and turn destination. This might be recorded (say) as XWG 9-B, indicating that a vehicle with registration XWG was turning from Nine Acres Close to Banbury Hill.

The typed-up records were then normalised and loaded into a Postgres database for analysis. This was carried out by a combination of SQL queries and in-memory Ruby processing.

Varying abilities of the volunteers meant that the counts were of varying completeness, in some extremes not taking down any turn origin/destination data. Transcription errors (e.g. L vs I confusion) also limits matching across the survey points. Despite these issues, by looking across the six survey sessions, several conclusions can be drawn.

The principal analysis so far is:

- turn counts at each location
- traffic flows along major axes
- reconstructing vehicle journeys by matching registrations

The turn counts are generally reliable though with some missing data. The vehicle journeys give good comparative data though are less reliable for absolute figures.

Modelling flow along the Slade

Morning – westbound

1. Approx. 450-500 vehicles enter Charlbury at Five Ways: 85% from Witney, only 15% from Woodstock
2. At the Enstone Road crossroads, 55% leave for Enstone, 30% continue on Nine Acres Lane, 15% enter the town centre via Enstone Road
3. Of those continuing on Nine Acres Lane, 60% leave via Spelsbury, 40% leave via Forest Road

Morning – eastbound

1. Approx. 250 vehicles enter Charlbury from Forest Road
2. At the bottom of Nine Acres Lane, these are joined by c. 110 from Spelsbury
3. At Enstone Road crossroads, some of these leave for Enstone (figures are inconclusive) but more join
4. Along the Slade, traffic is swollen by Charlbury-originating vehicles
5. Of the approx. 500 vehicles leaving at Five Ways, 60% leave for Witney, 40% for Woodstock

Evening – westbound

1. Westbound entries at Five Ways are lower than in the morning but with similar proportions (15% from Woodstock, 85% from Witney)
2. There is a significantly higher number of turns onto Park Street in the evening than the morning (see town centre section below)
3. Again, the largest flow at Enstone Road crossroads is to Enstone (50%), with 30% to Nine Acres Lane and 20% entering the town centre on Enstone Road
4. Of those continuing on Nine Acres Lane, again, 60% leave via Spelsbury, 40% via Forest Road

Evening – eastbound

1. Approx. 175 vehicles enter Charlbury from Forest Road
2. These are joined by significant traffic from Market Street (see town centre section below)
3. Approx. 240 vehicles head up Nine Acres Lane from Thames Street, 160 from Pound Hill
4. At Enstone Road crossroads, traffic is almost doubled with entrants from Enstone: a small number from Nine Acres Lane leave for Enstone
5. At Five Ways, 80% leave for Witney, 20% for Woodstock

Conclusions

- The stand-out flow is Witney<-->Enstone
- This is moderately tidal (Witney-->Enstone am, Enstone-->Witney pm) but heavy all day
- The flow to/from Spelsbury (i.e. Witney<-->CN) is the second largest flow
- There is a tidal flow to Woodstock (out am, in pm) which is likely to be significantly Charlbury-originating

Modelling flow through the town centre

As would be expected, town centre traffic levels are lower than on the Slade.

Consistently through the day, 10% of turns at Five Ways are into the town centre via Park Street or Hixet Wood; and 15%-20% of turns at the Enstone Road crossroads are into the town centre via Enstone Road.

The one-way system serves to funnel traffic through Market Street. For example, in the morning, approx. 50 vehicles enter Park Street from Witney and 30 from Woodstock. At Bull Corner, these 80 are joined by 100 from Browns Lane. We can calculate that approx. 80% of this Market Street traffic then leaves Charlbury via Dyers Hill: however, the great majority does *not* turn into the station.

At the bottom of Nine Acres Lane, meanwhile, the major movement is from Thames Street onto Nine Acres Lane. This is mostly traffic originating from Dyers Hill. This suggests a significant flow from the Burford area to the Enstone and Woodstock roads.

How much traffic is Charlbury-originating?

Incomplete or erratic data has made it challenging to analyse how much traffic is through traffic and how much originates or terminates in Charlbury. Analyses with missing data will tend to underestimate the number of through journeys, and overestimate the number of Charlbury-originating ones. Nonetheless, we can extract some conclusions.

Registration matching on the 07.00 September session shows that, of approx. 200 vehicles turning from the Slade onto Banbury Hill at the Enstone Road crossroads, 80% had been recorded entering Charlbury on Fowler Road. 20% had not been previously recorded.

Conversely, a majority of traffic leaving Five Ways for both Witney and Woodstock in the morning had not been previously recorded. This suggests these flows are significantly Charlbury-originating.

Future work could make allowances for the faulty data to give a fuller picture. Algorithms could include using a fuzzy, soundex-type match for registrations; and building a confidence score based on whole-dataset analysis which could then be applied to individual samples. There may also be some possible duplicate data where there were multiple counters at a location.

The effect of the railway station

Both registration analysis and raw count data suggest that the railway station is not a particularly significant contributor to Charlbury traffic. Registration matching did not result in any high-ranking flows which included both the station itself and the Slade or the town centre.

In both morning and evening peaks, a majority of station traffic turned to/from Forest Road (i.e. not via Charlbury) rather than Dyers Hill. At lunchtime, however, the Dyers Hill flow was slightly greater than Forest Road.

Conclusions and next steps

The following flows appear to be most significant:

1. Witney<-->Enstone via the Slade (all day, with some bias towards Witney->Enstone am, Enstone->Witney pm)
2. Witney<-->Chipping Norton via the Slade
3. Burford<-->Enstone or Woodstock, via Nine Acres Lane or the town centre
4. Charlbury->Witney (out am, back pm)
5. Charlbury->Woodstock (out am, back pm)

Of traffic originating outside Charlbury which uses the town centre (Park Street or Browns Lane, then Market Street) for a through journey, most is heading for Dyers Hill but does not appear to be using the station. Traffic to Chipping Norton appears to mostly use the Slade route.

This paper is analysis rather than policy so it does not seek to recommend particular actions. However, one inescapable conclusion is that to reduce the *volume* of traffic, it may be effective to consider traffic calming on the approach roads (particularly Fowler Road and Banbury Hill) – such as reduced speed limits and physical features. This could divert traffic to alternative routes, such as Witney-originating traffic using the A4095 instead.

Within Charlbury, traffic-calming works on the Slade itself would be effective for the single largest flow, Witney–Enstone. There is no feasible alternative route within Charlbury for this flow.

However, Witney–Chipping Norton is also a significant flow, and the amount of traffic using the town centre as a route to Dyers Hill suggests that calming on the Slade would risk diverting westbound Chipping Norton traffic through the town centre. Any works on the Slade would therefore need to be accompanied by an equivalent in the town centre, such as a one-way restriction on Park Street (outbound only) or physical features on Market Street.

Further work could be carried out on the data to compensate for incomplete or ambiguous counts.

Richard Fairhurst, June 2022