
Subject	Suitability of data to update Wyre Forest Transport Model-	Project Name	Wyre Forest EiP
Attention	"Karen Hanchett"	Project No.	B2367209 A.PN.OE.TA.53
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1. Introduction

Worcestershire County Council (WCC) has commissioned Jacobs to review the potential for undertaking a Present Year Validation (PYV) of the Wyre Forest Transport Model (WFTM) using traffic count data collected by WCC in the recent years as well as other available data sources to support the local plan Examination in Public (EiP).

The prevailing guidance on transport analysis advises that as models get older, the data that helped inform them can be outdated. WCC have provided reports containing information on the Wyre Forest Five-year Housing land, Housing Needs Study and Employment Land Review to provide evidence on changes in Wyre Forest that would provide information on the growth in housing and employment that has occurred in Wyre Forest.

The objective of this note is two-fold:

- To assess the suitability of undertaking a Present Year Validation based on the data available from WCC and other sources; and
- To assess the scale of change in traffic growth, its significance and suitability of WFTM.

This Technical Note discusses the availability of data, extent of growth in traffic, suitability for using the data in strategic models and potential to inform any PYV of the WFTM.

1.1 Background

The Wyre Forest District Council (WFDC) are in the process of updating their Local Plan. As the Highway Authority, at the request of the Local Planning Authority WCC agreed to assess the impact of Local Plan changes on the highway network. The WFTM is a strategic transport model that was developed in 2011 in accordance with the Department for Transport's (DfT) Transport Analysis Guidance (TAG) prevailing at the time. The WFTM model has been successfully used to secure funding from the GBSLEP for different transport infrastructure investments in Wyre Forest such as the Hoobrook link road in 2013 and the Churchfields business case in 2017. The Hoobrook link road was completed and opened in 2016 and the schemes associated with the Churchfield business case are built or near completion.

Since 2018, Jacobs have been commissioned by WCC to assess Local Plan allocation scenarios using the WFTM. The WFTM is now 9 years old and its continued usage for analysis needs confirmation. Under normal circumstances, a base year re-validation exercise would have been undertaken using data from a more current traffic data collection exercise. WCC had a programme of data collection scheduled in early 2020 however, the national challenges presented by the COVID-19 outbreak, and the consequential and significant changes to normal travel behaviour would result in an invalid data collection exercise.

1.2 Relevant Guidance

1.2.1 Transport Analysis Guidance – prevailing guidance until May 2020

The UK Department for Transport (DfT) publishes Transport Analysis Guidance (TAG) for model development to support scheme appraisal. Updates to guidance are provided every year, typically in the month of May. As per the TAG, as models get older, the data that helped inform their development gets outdated. Guidance for 'Technical Project Manager' (Section C.1.3) suggests any models that are over 5 years old require a present year validation. TAG guidance (Unit 3.1, section 8.1.1) until May 2020 suggested that the matrices used to inform the model should be no more than 6 years old.

1.2.2 Transport evidence bases in plan making and decision taking

Government guidance to help local planning authorities to assess and reflect strategic transport needs in local plan making is given under <https://www.gov.uk/guidance/transport-evidence-bases-in-plan-making-and-decision-taking>. On the use of the WebTAG approach in transport assessment of the local plan, the guidance states, "An assessment should adopt the principles of WebTAG by assessing the potential impacts of development within the framework of WebTAG objectives. For most Local Plan assessments the full methodology recommended will not be appropriate."

The principles of a TAG assessment have been adopted as part of the evidence case for the Local Plan based upon which has been recently used to secure GBSLEP funding.

1.2.3 Current TAG guidance – from May 2020

In updates to the TAG guidance on 29th May 2020, the 'no more than 6 years old' limitation from previous guidance has been removed. The current guidance (TAG unit M2.2, section 4.4.4) states "*Practitioners should establish evidence on scale of changes to land use and demographic characteristics, transport networks, and travel patterns, with more attention given to the key movements in the model internal area, and use this evidence to assess the validity of 'old' data sources and their suitability for the intended use(s) of the model to judge their suitability for those use(s). Former guidance (withdrawn sections of the Design Manual for Roads and Bridges) indicated that models should not be used without justification where the source data is more than five years old when used for detailed scheme appraisal because there might be significant changes to the travel patterns and traffic level. This simple threshold should not be used, as there can be significant changes that would make the use of more recent data inappropriate or there may have been little change and older data may be acceptable. Changes such as the closure or opening of a major retail centre or major transport infrastructure such as a new bypass would be expected to result in the need to collect and use more recent data*".

Following DfT guidance, this Technical Note considers scale of change of 'old' data sources and their suitability for the intended use of the model and an evidence base to judge its suitability.

The Guidance for 'Technical Project Manager' (Section C.1.3) suggests any models that are over 5 years old require a present year validation still remains.

1.3 Present Year Validation

As recently as 2017, Jacobs used the WFTM to support the Churchfields business case scheme appraisal. The business case sponsor (Greater Birmingham and Solihull Local Enterprise Partnership) had advised a PYV was undertaken as the model was over 5-years old.

In February 2020, WCC commissioned Jacobs to procure surveys to collect data that could be used to undertake a present year validation of the wider WFTM. The national challenges presented by the COVID-19

outbreak, and the consequential and significant changes to normal travel behaviour would result in an invalid data collection exercise.

2. Traffic Data

A survey procurement report was submitted to WCC in March 2020 that identified as a minimum, 42 locations (shown in Figure 1) where data was required to be collected to inform a PYV. This was in comparison to over 200 locations with data that was used in the development of the WFTM in 2011. The data type identified for collection included 2-week Automatic Traffic Counts (ATCs) and 12-hour Junction Turn Counts (JTC).

Traffic surveys can only be undertaken in 'neutral'¹ months (typically term time from March to November, with exclusions around weeks with a bank holiday). The challenges presented by the COVID-19 outbreak and the impact this has on data collection has been outline above.

Relevant changes to DfT guidance are also set out in the previous section.

As a result, making best use of available data, WCC provided Jacobs with a summary of locations of link flow data held in their database for the Wyre Forest network for the years 2016-2020. Jacobs reviewed the location data and requested the traffic dataset for sixteen sites that comprised twenty-five datasets (some locations had multiple datasets) to assess their suitability to undertake a PYV exercise for the WFTM. In addition, traffic data was also sourced from the DfT's Traffic count database.

¹ DfT, TAG UNIT M1.2, Data Sources. 3.3.7, May 2020

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938807/tag-m1-2-data-sources-and-surveys.pdf

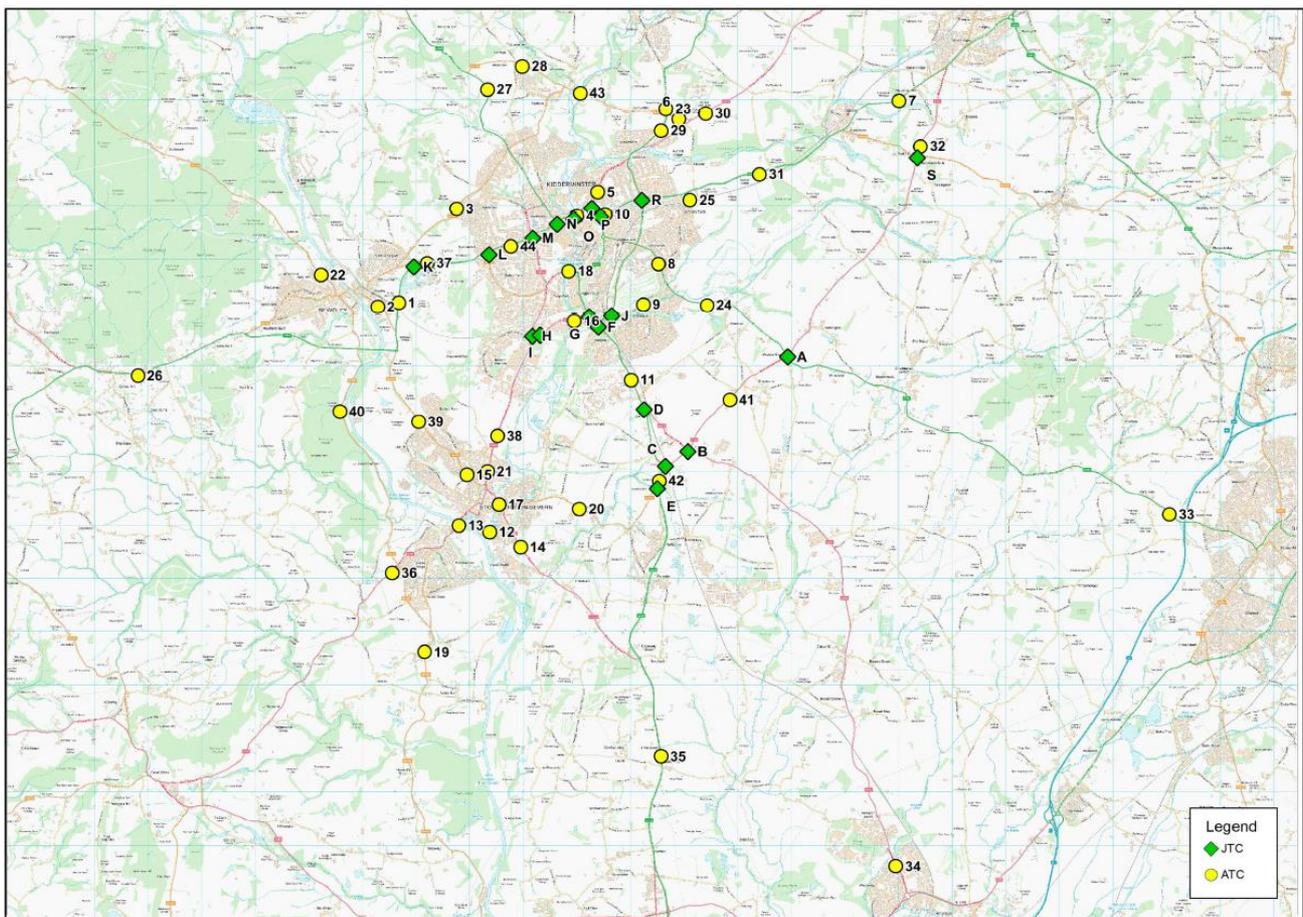


Figure 1: Proposed survey locations to inform PYV

2.1 Available Data

The survey datasets were firstly categorised based on whether the data was collected in neutral or non-neutral periods. Surveys undertaken in non-neutral months or during school holiday periods were excluded at this stage as they are not reflective of typical traffic. Where surveys contained more than one month of data, the months of October and June were given preference over other neutral periods for comparison. The average vehicle counts were calculated and tabulated for the remaining sites for the following time periods on weekdays: AM (8:00-09:00) and PM (17:00-18:00) that correspond to the peak hours of the day.

Where possible, October 2017 was selected as a reference point for comparison of data as it was the most frequent period across the available dataset. This corresponded well with the 2011 data that was also collected in October. Where possible, data from other months were normalised to Oct 2017 data based on seasonality factors derived using long term data that was available on the A456, as well as data available for multiple months in a year. For other sites where no data was available to normalise the values, the neutral month data was used.

A point shapefile of the received survey datasets was used in GIS to locate the sites and input their calculated average vehicle counts. The sites were then compared with a shapefile of road links which contained vehicle count data from 2011 surveys as shown in Figure 2. Orange dots represent the survey data from non-neutral months and green dots represent the nine sites with data collected in neutral months.

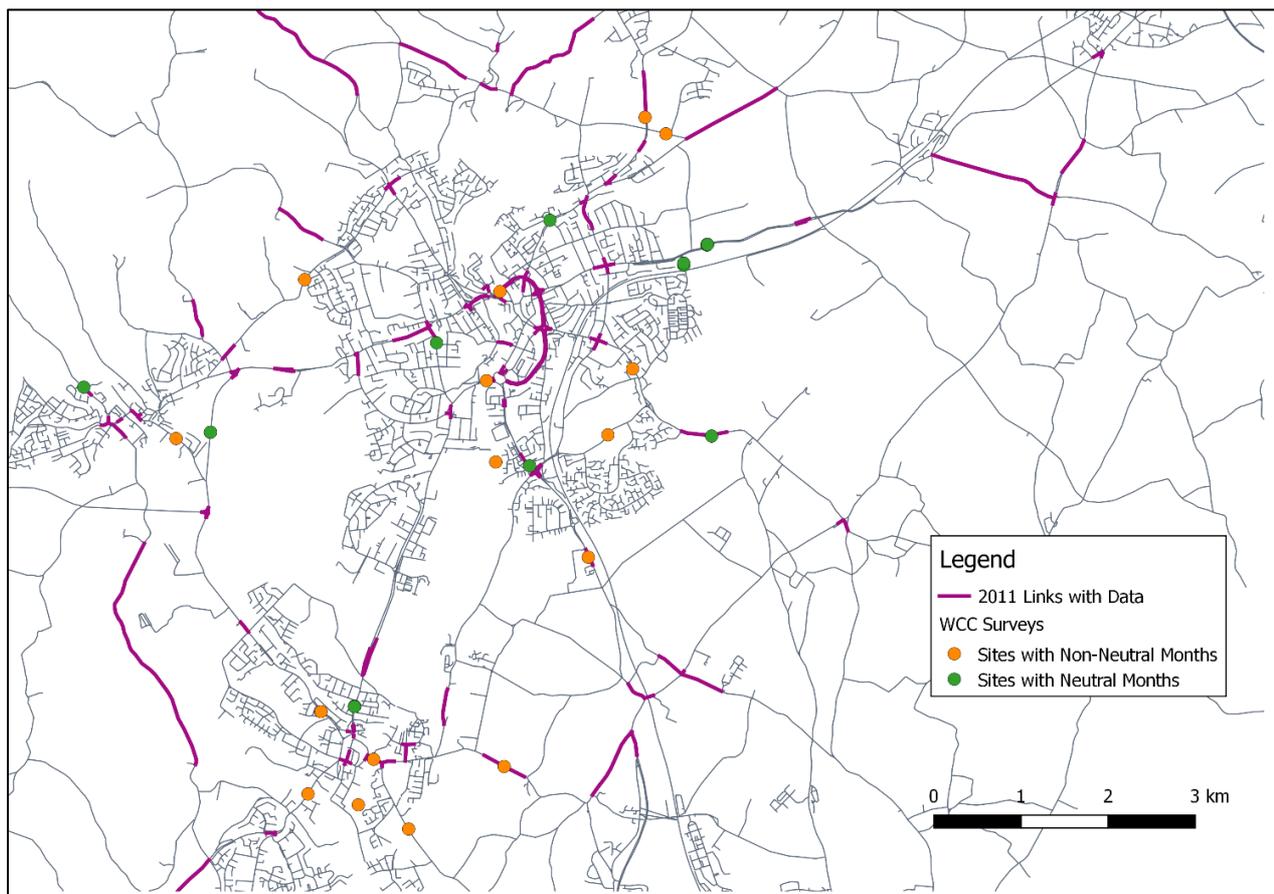


Figure 2: Map of new surveys and 2011 surveys

There are 9 sites with data collected in neutral months therefore there this is insufficient to undertake a present year validation of the WFTM.

Amongst the 9 sites, data at Wilden Lane roundabout was excluded as there was only one day of count data from 2019 which is not comparable to the other sites. Hussum Way was also excluded at this stage as there was no 2011 data available for comparison resulting in 7 remaining sites.

In addition to the above data, DfT raw vehicle counts for Worcestershire were downloaded from the DfT Road Traffic Statistics, Local Authorities webpage. The data was filtered to obtain actual counts for Wyre Forest in 2011, 2017 and 2018 during the AM (8:00) and PM (17:00) peaks. The data was then imported to GIS and mapped to see the spatial spread of the sites, as displayed in Figure 3. There were 13 sites at which data from both 2011 and 2017/2018 were available. There were also 7 other sites where DfT 2017/2018 count data corresponded to sites data was collected in 2011 to inform the WFTM.

Three additional locations were included in the analysis at a later date following the receipt of data from WCC. The sites are the A450/A448 roundabout in Mustow Green (4 arms), the A456/A491 roundabout in Hagley (3 out of 5 arms compared), and the A450/A456 junction in Hagley (T-junction). This results in a total of 37 sites with 74 individual flow comparisons.

DfT counts are manual counts collected for a 12-hour period in a neutral month. Therefore, there is a possibility of the data not representing typical traffic conditions and would be less reliable than the average weekday flow calculated from the Automatic traffic count (ATC) data that are typically collected 7-14 days.

Data for model validation requires ATC data collected over 2-weeks based on TAG to ensure their robustness. Therefore, the use of counts from DfT traffic count database does not provide the level of accuracy required to inform a present year validation. The WCC database that is based on ATC data is available only for 7 sites.

On this basis, whilst it can be concluded that there is not a suitable range of data to inform a Present Year Validation of the WFTM from the above datasets, this data is of a sufficient quality and on key links within the District to test the suitability of the 2011 base model to understand the scale of change based upon observed data collection making best use of available resources.

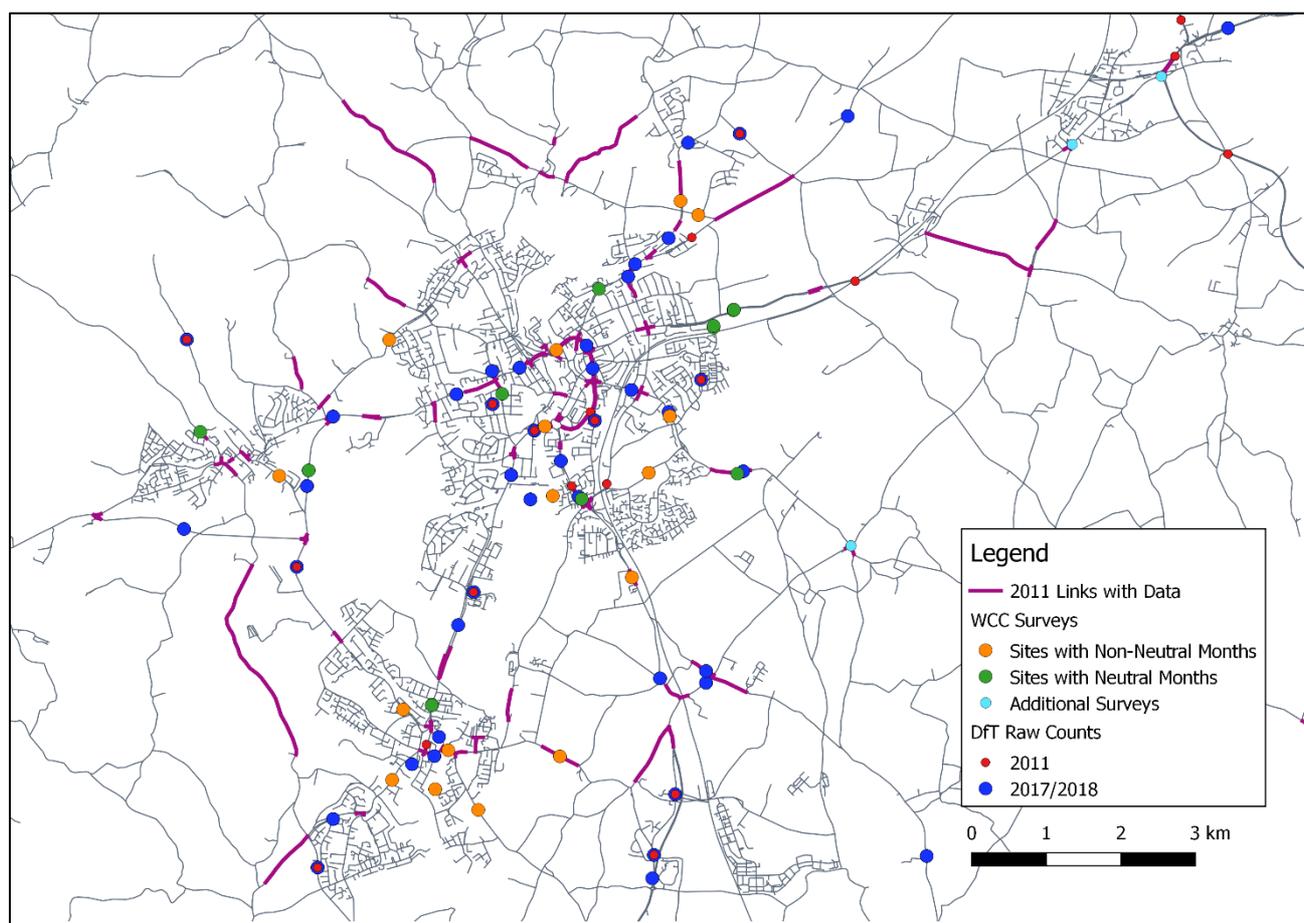


Figure 3: Map of 2011 links with data, WCC surveys, and DfT counts

2.2 Data analysis results

A comparison of WCC survey data (2016-2019) and 2011 data is summarised in Table 1. Table 2 provides a summary of the comparison between the data from 2011 and 2017/2018 DfT count sites, and comparison of the 2011 data used in the WFTM and 2017 DfT count data is summarised in Table 3. The data sets were compared using the GEH statistic which has the following formula:

$$GEH = \sqrt{2 \frac{(M - C)^2}{M + C}}$$

Where M is the traffic count from the new data set (or a traffic model) and C is the old data set (or real observation). A GEH value of less than 5.00 is considered a good match between the data sets (such as comparing an observed flow to a modelled flow), indicating differences in flows are within acceptable limits

according to TAG Unit M3.1 – Highway Assignment Modelling Section 3.3. In addition, the absolute change and percentage change in flows were also compared based on the following criteria:

- Individual flows within 100 veh/h of counts for flows less than 700 veh/h; and
- Individual flows within 15% of counts for flows from 700 to 2,700 veh/h

Table 1 to Table 3 provide a summary of the analysis for each set of sites stated in the above section. The cells shaded in red represent scenarios where: the GEH statistic is greater than 5.00, the absolute difference is greater than 100 vehicles, and the percentage difference is greater than 15%.

Further, a scoring system was implemented to evaluate each data set, where:

- A score of 1 represents a scenario where the GEH statistic is <5.00 or the absolute difference is <100 vehicles or the percentage change is less than 15% for link flows between 700 and 2700 vehicles/hr – these variations are acceptable;
- A score of 2 represents either the GEH statistic is between 5.00 and 7.50, or the absolute difference is between 100 and 150 vehicles or the percentage change between 15% to 20% for link flows between 700 and 2700 vehicles/hr - these variations would require further justification to demonstrate their acceptability;
- A score of 3 represents a GEH statistic of >7.50 or an absolute difference of >150 vehicles or the percentage change is above 20% for link flows between 700 and 2700 vehicles/hr – these are significant differences to be will need further consideration to be deemed acceptable

There is a total of 74 individual comparisons of flows – 37 sites with 2 directions of traffic for each AM and PM peak hours. These are split into 3 tables based on links and data sources.

As demonstrated in Table 1 below, the vast majority of datasets show the flows have not changed significantly between 2011 and recent counts (2016-2019). The A451 Minster Road, Dowels Road, Mustow Green Roundabout (all arms), Kidderminster Road (North) in Hagley and A450 Worcester Road in Hagley have very similar levels of flow in both directions for both time periods between the two directions. The A456 Bewdley Bypass, Sutton Road, the A448 Stone Hill, A491 Stourbridge Road, A456 Kidderminster Road (South) and A456 Worcester Road similarly demonstrate flows haven't changed significantly for all time periods in the southbound direction, but not so in the northbound direction. A456 Kidderminster Road (South) northbound has the highest GEH value of 7.91 in the AM peak.

Similarly, the differences in flows are below a hundred vehicles for most counts and therefore the percentage difference in flows are lower than 15% as well. However, there are few data sites that have changes over 20% and differences over 100 vehicles.

Overall, in the AM peak, 28 (82%) of the 34 counts have a score of 1; 5 (15%) have a score of 2 and 1 (3%) has a score of 3.

In the PM peak, 29 (85%) of the 34 counts have a score of 1; 4 (12%) have a score of 1 and 1 (3%) have a score of 3.

Table 1 Key for survey years

2016
2017
2018
2019

Table 1: Comparison of observed flow variation between 2011 and 2016-19

Location		2011		2016-19		GEH: 2011 vs 2016-19		2016-19 - 2011		% Difference		Scoring	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
A456 Bewdley Bypass	SB	666	837	689	863	0.88	0.88	23	26	3%	3%	1	1
	NB	1033	639	858	634	5.70	0.18	-175	-5	-17%	-1%	2	1
A451 Minster Road	NB	737	615	849	644	3.98	1.17	112	29	15%	5%	1	1
	SB	567	920	619	1011	2.12	2.93	52	91	9%	10%	1	1
A456 E of Kidderminster	EB	604	702	687	846	3.28	5.16	83	144	14%	20%	1	2
	WB	770	561	680	701	3.33	5.59	-90	140	-12%	25%	1	2
A451 NE of Kidderminster	EB	518	568	655	509	5.66	2.54	137	-59	26%	-10%	2	1
	WB	457	661	468	712	0.50	1.95	11	51	2%	8%	1	1
Dowles Road, Bewdley	EB	279	149	274	130	0.30	1.61	-5	-19	-2%	-13%	1	1
	WB	106	261	125	263	1.77	0.12	19	2	18%	1%	1	1
A448 Stone Hill	NB	495	733	438	913	2.64	6.27	-57	180	-12%	25%	1	2
	SB	762	417	665	444	3.63	1.30	-97	27	-13%	6%	1	1
Sutton Rd, Kidderminster	NB	473	381	599	542	5.44	7.51	126	161	27%	42%	2	3
	SB	346	449	404	501	3.01	2.39	58	52	17%	12%	1	1
Mustow Green Roundabout, A448 Bromsgrove Rd NW	NWB	456	714	391	742	3.16	1.04	-65	28	-14%	4%	1	1
	SEB	691	436	715	455	0.91	0.90	24	19	3%	4%	1	1
Mustow Green Roundabout, A450 Worcester Rd NE	NEB	477	600	485	696	0.36	3.77	8	96	2%	16%	1	1
	SWB	512	554	513	580	0.04	1.09	1	26	0%	5%	1	1
Mustow Green Roundabout, A448 Bromsgrove Rd SE	NWB	562	757	602	823	1.66	2.35	40	66	7%	9%	1	1
	SEB	836	482	859	492	0.79	0.45	23	10	3%	2%	1	1
Mustow Green Roundabout, A450 Worcester Rd SW	NEB	502	513	468	531	1.54	0.79	-34	18	-7%	4%	1	1
	SWB	498	464	563	459	2.82	0.23	65	-5	13%	-1%	1	1
A456/A491 Roundabout, Kidderminster Rd N, Hagley	NB	1671	1709	1553	1809	2.94	2.38	-118	100	-7%	6%	1	1
	SB	1554	1480	1533	1399	0.53	2.13	-21	-81	-1%	-5%	1	1
A456/A491 Roundabout, Stourbridge Rd S, Hagley	NB	1028	1056	961	1302	2.12	7.16	-67	246	-7%	23%	1	2
	SB	1165	815	1130	899	1.03	2.87	-35	84	-3%	10%	1	1
A456/A491 Roundabout, Kidderminster Rd W, Hagley	EB	979	864	794	829	6.21	1.20	-185	-35	-19%	-4%	2	1
	WB	898	815	839	836	2.00	0.73	-59	21	-7%	3%	1	1
A450/A456 Junction, A450 Worcester Road, Hagley	NB	430	566	433	485	0.14	3.53	3	-81	1%	-14%	1	1
	SB	444	420	447	402	0.14	0.89	3	-18	1%	-4%	1	1
A450/A456 Junction, Kidderminster Rd S, Hagley	NB	824	666	612	616	7.91	1.97	-212	-50	-26%	-8%	3	1
	SB	694	859	667	856	1.04	0.10	-27	-3	-4%	0%	1	1
A450/A456 Junction, A456 Worcester Rd, Hagley	NB	1230	1201	1034	1092	5.83	3.22	-196	-109	-16%	-9%	2	1
	SB	1114	1248	1023	1086	2.78	4.74	-91	-162	-8%	-13%	1	1

Table 2 shows that B4194 Pearl Lane, Pound Green, Northwood Lane, Waterlaide Road, Axborough Lane, Worcester Road and Cloughton Street all have similar traffic flow levels in both directions, with a GEH value of < 5.00 in both peaks. A451 Stourport Road also has similar traffic flows in the eastbound direction for both peaks, however, the westbound direction has experienced a decrease in flows in both peaks. Tennyson Way and B4195 Bewdley Road have both had an increase in flows for the northbound direction in the PM peak but have similar flows in the southbound PM peak and both directions in the AM peak. Similarly, Oldington Lane has decreased flows in the AM peak of the eastbound direction, but the other flows are similar. Hoo Road northbound has the highest GEH value of 13.72 in the PM peak.

Overall, most of the sites have similar flows between the two years for the AM and PM peaks in both directions. Half of the sites have low flows (under 100 vehicles), which means their percentage change in flows is much higher. For this table, comparing the GEH values and absolute difference in vehicles is a more accurate representation. In the AM peak, only 4 out of 26 data sets have a GEH value >5.00 and three sites have an absolute difference of >100 vehicles. In the PM peak, 7 out of 26 data sets have a GEH value of >5.00 and 8 data sets have an absolute difference of >100 vehicles.

Overall, in the AM peak, 23 (88%) of the 26 counts have a score of 1; 3 (12%) have a score of 2 and 0 have a score of 3.

In the PM peak, 19 (73%) of the 26 counts have a score of 1; 3 (12%) have a score of 2 and 4(15%) have a score of 3.

Table 2: Comparison of DfT Counts from 2011 and 2017/2018

Location		2011		2017/2018		GEH: 2011 vs 2017/2018		2017/2018 - 2011		% Difference		Scoring	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
A451 Stourport Road	EB	1280	1021	1209	909	2.01	3.61	-71	-112	-6%	-11%	1	1
	WB	1116	1334	938	1087	5.55	7.10	-178	-247	-16%	-19%	2	2
B4194 Pearl Lane	NB	153	173	170	170	1.34	0.23	17	-3	11%	-2%	1	1
	SB	137	121	139	144	0.17	2.00	2	23	1%	19%	1	1
B4195 Bewdley Road	NB	505	531	454	653	2.33	5.01	-51	122	-10%	23%	1	2
	SB	544	459	624	408	3.31	2.45	80	-51	15%	-11%	1	1
Pound Green, Bewdley	NB	19	33	23	37	0.87	0.68	4	4	21%	12%	1	1
	SB	32	20	33	27	0.18	1.44	1	7	3%	35%	1	1
Tennyson Way, Kidderminster	NB	261	333	269	529	0.49	9.44	8	196	3%	59%	1	3
	SB	303	133	321	193	1.02	4.70	18	60	6%	45%	1	1
Hoo Road, Kidderminster	NB	187	111	216	310	2.04	13.72	29	199	16%	179%	1	3
	SB	128	93	131	199	0.26	8.77	3	106	2%	114%	1	2
Northwood Lane, Bewdley	NB	16	38	16	45	0.00	1.09	0	7	0%	18%	1	1
	SB	33	14	43	21	1.62	1.67	10	7	30%	50%	1	1
Waterlaide Road, Hartlebury	EB	25	8	16	6	1.99	0.76	-9	-2	-36%	-25%	1	1
	WB	7	20	9	14	0.71	1.46	2	-6	29%	-30%	1	1
Axborough Lane, Cookley	EB	52	11	73	26	2.66	3.49	21	15	40%	136%	1	1
	WB	20	71	16	117	0.94	4.74	-4	46	-20%	65%	1	1
Worcester Road, Hartlebury	NB	32	15	21	10	2.14	1.41	-11	-5	-34%	-33%	1	1
	SB	23	22	10	22	3.20	0.00	-13	0	-57%	0%	1	1
Oldington Lane, Kidderminster	WB	61	101	47	81	1.91	2.10	-14	-20	-23%	-20%	1	1
	EB	157	23	89	16	6.13	1.59	-68	-7	-43%	-30%	1	1
Wilden Lane Roundabout	NB	977	845	1144	1283	5.13	13.43	167	438	17%	52%	2	3
	SB	1089	914	1274	1204	5.38	8.91	185	290	17%	32%	2	3
Claughton Street, Kidderminster	SB	24	19	19	32	1.08	2.57	-5	13	-21%	68%	1	1
	NB	29	17	25	30	0.77	2.68	-4	13	-14%	76%	1	1

The comparison of 2011 data collected for the WFTM model and 2017 DfT counts in Table 3 has a high proportion of data sets with a GEH value greater than 5.00, difference of greater than 100 vehicles, and flow change of greater than 15%.

The A442 Droitwich Road, A449, and A456 Kidderminster Road have similar traffic flows in 2011 and 2017/2018 for both peaks in each direction. B4195 Bewdley Road has similar flows for both directions in the AM peak and in the southbound direction for the PM peak. The other sites have significant differences in traffic flows, particularly A456 Bewdley Hill which has the highest GEH value of 19.48 in the westbound direction during the AM peak, and a GEH value of 17.55 in the eastbound direction during the PM peak.

Overall, 4 out of 18 data sets have a GEH value of >5.00 in the AM peak, and 6 in the PM peak. The number of data sets with absolute difference of vehicles >100 is 5 out of 14 in the AM peak and 7 in the PM peak. Five data sets have a change in flows of >15% in both the AM peak and PM peak.

Overall, in the AM peak, 10 (71%) of the 14 counts have a score of 1; 2 (14%) have a score of 2 and 2(14%) have a score of 3.

In the PM peak, similar to the AM peak, 10 (71%) of the 14 counts have a score of 1; 2 (14%) have a score of 2 and 2(14%) have a score of 3.

Table 3: Comparison of 2011 link data and 2017/2018 DfT Traffic Counts

Location		2011		2017/2018		GEH: 2011 vs 2017/2018		2017/2018 - 2011		% Difference		Scoring	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
A449 NE of Kidderminster	NB	559	650	559	671	0.00	0.82	0	21	0%	3%	1	1
	SB	681	574	574	519	4.27	2.35	-107	-55	-16%	-10%	1	1
A448 E of Kidderminster	EB	526	661	404	576	5.66	3.42	-122	-85	-23%	-13%	2	1
	WB	774	741	535	525	9.34	8.59	-239	-216	-31%	-29%	3	3
A451 Worcester Cross Ringway	NB	1110	1523	1071	1315	1.18	5.52	-39	-208	-4%	-14%	1	2
	SB	1127	1038	1152	875	0.74	5.27	25	-163	2%	-16%	1	2
A456 St George's Ringway	NB	995	1496	1018	1290	0.72	5.52	23	-206	2%	-14%	1	2
	SB	1251	1166	1194	943	1.63	6.87	-57	-223	-5%	-19%	1	2
A456 Bewdley Hill	EB	453	796	569	372	5.13	17.55	116	-424	26%	-53%	2	3
	WB	747	557	301	591	19.48	1.42	-446	34	-60%	6%	3	1
A442 Droitwich Road	EB	280	170	314	187	1.97	1.27	34	17	12%	10%	1	1
	WB	211	239	212	311	0.07	4.34	1	72	0%	30%	1	1
A456 Kidderminster Road	EB	933	595	973	649	1.30	2.17	40	54	4%	9%	1	1
	WB	637	987	606	844	1.24	4.73	-31	-143	-5%	-14%	1	1

2.3 Summary of flow comparison

Table 4 shows the summary of the scoring across all comparisons undertaken. These are based on 37 sites with each direction of flow thereby accounting for 74 link flow datasets. A score of 1 indicates the differences in flows between 2011 and 2017/18 are acceptable, a score of 2 indicates the difference in flows may be acceptable with some justification and a score of 3 indicates significant differences.

The table shows in the AM peak, 82% of count datasets have a score of 1 whilst in the PM peak, 76% have a score of 1. 14% of datasets have a score of 2 in the AM peak and 15% in the PM peak. Only 4% of datasets have a score of 3 in the AM peak and 9% in the PM peak.

Table 4: Summary of scores

Scoring across all datasets	AM		PM	
	count	%	count	%
Score 1	61	82%	56	76%
Score 2	10	14%	11	15%
Score 3	3	4%	7	9%
Total	74	100%	74	100%

Therefore, based on the above, it can be seen 96% of count data in the AM and 91% of count data in the PM have not changed significantly between 2011 and 2017/18. There is no evidence on the potential change in traffic flow patterns due to the data type available limited to traffic flow counts only.

Figure 4 shows the locations of the proposed local plan development sites in Wyre Forest with more than 50 dwellings and the analysed traffic count data from all sources, plotted by their assigned score as mentioned above.

A noteworthy site is Lea Castle, the large development to the north east, with a proposal for 1,400 dwellings. There is DfT count data with a score of 1 for the AM and PM peaks in both directions on Axborough Lane, which is on the north east side of the development boundary. Another site is Stone Hill North, to the east of Kidderminster, which is a mixed-use development including 1,100 dwellings. This site has 2011 link data and WCC survey data on A448 Stone Hill, which has a score of 1 in the AM peak for both direction. In the PM peak, it has a score of 1 in the northbound direction and a score of 2 in the southbound direction.

Across count sites between these two major development sites and Kidderminster town centre, the scoring is mixed with count sites either having a score of 1 or 2.

The counts at Wilden roundabout have changed the most with a score of 3. This is due to a new link road (Hoobrook link road) opened to traffic on 2016 and developments at the former British Sugar site going ahead.

Therefore, it can be concluded that the traffic flows on the key links between the major development sites identified in the Local Plan and the Kidderminster town centre have not changed significantly between 2011 and recent counts (2016-2019). No evidence is available to conclude if the traffic flow patterns have changed between 2011 and 2016-19.

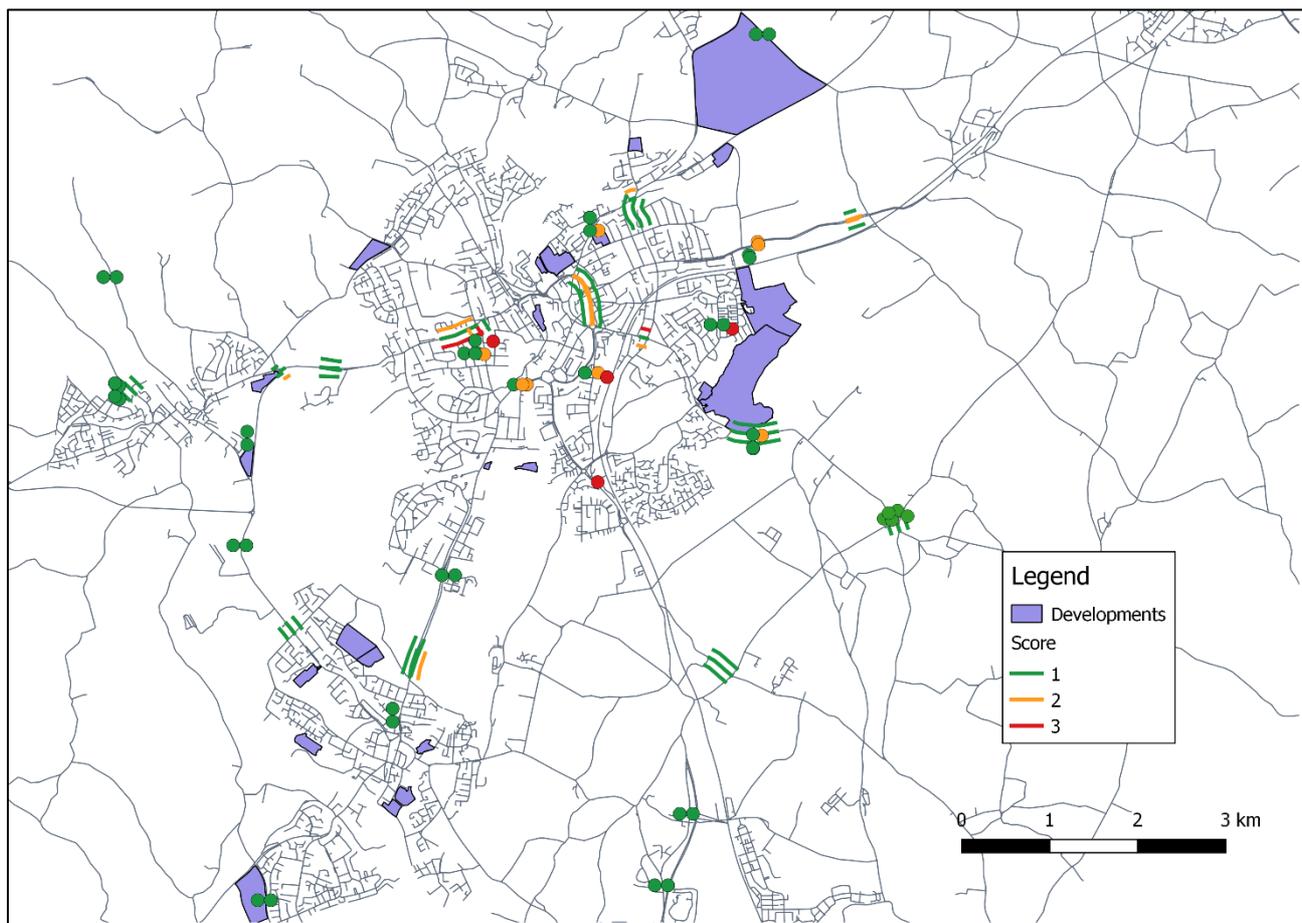


Figure 4: Wyre Forest Local Plan Sites and Traffic Counts by Score

3. Planning Data

Population and employments are two key variables that influence travel demand growth. The traffic flow analysis discussed in earlier sections demonstrated insignificant change in traffic volumes between 2011 and 2017. This section looks at the planning data to provide corroborative evidence.

The population of Wyre Forest in 2011 was 97,975 according to the Census undertaken in that year. By 2017 the population was estimated to be 100,715, an increase of approximately 2,700 residents (ONS Mid Population Estimate 2017). A population growth of approximately 2.8% over seven years is unlikely to have a large impact on the transport network. In the same time period, there has been a total of 1,911 new dwellings in Wyre Forest, shown in Table 5 (Wyre Forest Housing Need Study 2018) from 42,985 households based on 2011 census. This represents a 4.4% increase in number of households. The full spatial distribution of these completed dwellings is not known; however the former British Sugar site is the largest development with access to the Hoobrook link road that leads to Wilden lane roundabout that had the largest difference in flow.

The low growth in population in the district could therefore explain the insignificant change in traffic flows between 2011 and 2017.

Table 5: Number of dwelling completions between 2011/12 – 2017/18²

Year	Total Dwelling Completions
2011/12	185
2012/13	222
2013/14	379
2014/15	458
2015/16	227
2016/17	271
2017/18	169
Total	1,911

The number of people working in the Wyre Forest district in 2011 was 33,197 (2011 Business Register and Employment Survey). This number increased by approximately 200 in 2017 to 33,400 in employment, a growth of 0.6% (2017 Business Register and Employment Survey). Furthermore, the net development of employment land between the period of 2010/11-2017/18 was 0.83 ha, as shown in

Figure 5 (Wyre Forest Employment Land Review Update 2018). A growth of this size is unlikely to have an effect on the traffic growth.

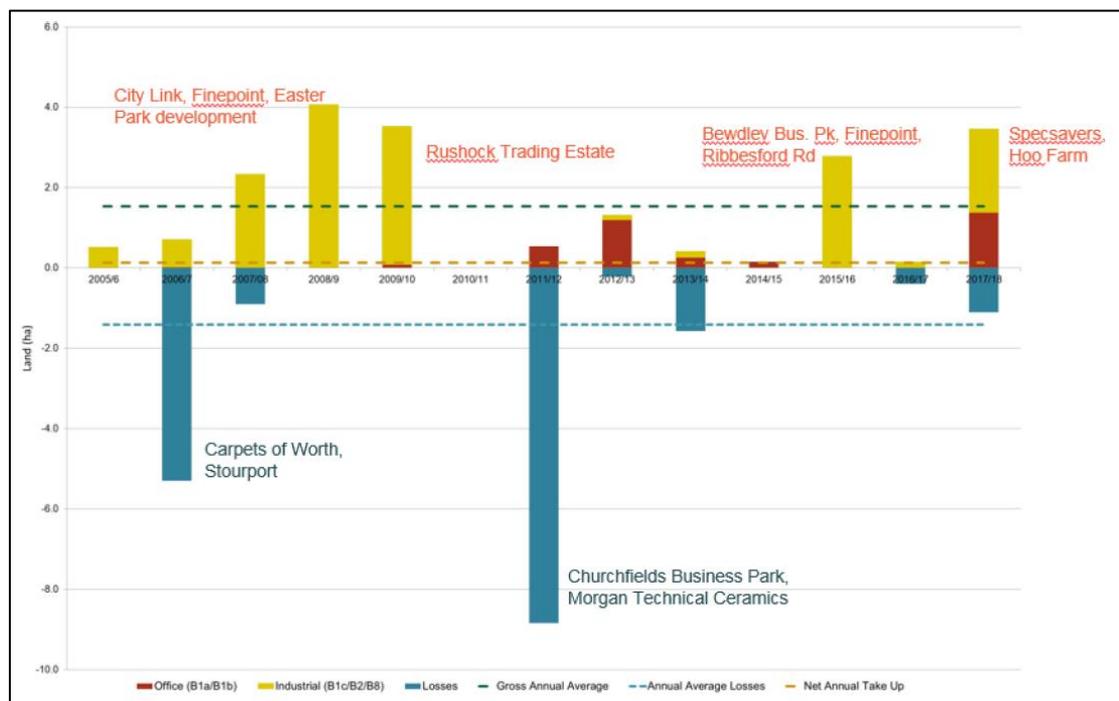


Figure 5: Net development rates for B type employment in Wyre Forest 2005/06 – 2017/18³

² *Wyre Forest Housing Need Study 2018

³ Wyre Forest Employment Land Review Update 2018

The low increase in population and marginal change in employment in Wyre Forest district between 2011 and 2017/18 further reinforces that growth in Wyre Forest district has been minimal to affect traffic flows, reinforcing the conclusions that the traffic flows between 2011 and 2017 are not significant.

4. Conclusions

The objective of this Technical Note is two-fold:

- To assess the suitability of undertaking a Present Year Validation based on the data available from WCC and other sources; and
- To assess scale of change in traffic growth, its significance and suitability of WFTM.

This was required as surveys that were planned to be procured had to be put on hold due to the COVID-19 pandemic.

Link flow data provided by WCC and data from the DfT database were reviewed for suitability to undertake a present year validation. In total, there were data for 37 sites, 7 of which were from the WCC database. Data for model validation requires ATC data collected over 2-weeks based on TAG to ensure their robustness. Therefore, the use of counts from the DfT traffic count database that were undertaken for 12-hrs in a single day does not provide the level of accuracy required to inform a present year validation. The WCC database that is based on ATC is available only for 7 sites.

On this basis, whilst it can be concluded that there is not a suitable range of data to inform a Present Year Validation of the WFTM from the above datasets, this data is of a sufficient quality and on key links within the District to test the suitability of the 2011 base model to understand the scale of change based upon observed data collection making best use of available resources.

The link flow data instead was compared for changes between 2011 and 2017/18. The analysis revealed that 96% of count data in the AM and 91% of count data in the PM have not changed significantly between 2011 and 2017/18. Further, the traffic flow on the key links between the major development sites identified in the local plan and Kidderminster town centre have not changed significantly between 2011 and 2017. There is however no evidence on the potential change in traffic flow patterns due to the data type available limited to traffic flow counts only.

Review of the planning data between 2011 and 2017 on increase in population, households and employment reveals a 2.8% in population, 4.4% increase in number of households and 0.6% increase in employment. This shows there has been very little growth to impact the traffic conditions in Wyre Forest.

The principles of a TAG assessment have been adopted as part of the evidence case for the Local Plan based upon a traffic model which has been recently used to secure GBSLEP funding. Following TAG guidance, this Technical Note considers scale of change of 'old' data sources and their suitability for the intended use of the model and an evidence base to judge its suitability. Using the WFTM model outputs for the local plan assessments can be considered a proportionate approach based on the evidence in this note that shows key links across Wyre Forest have not experienced significant changes in traffic volume as well as any appreciable changes in planning data.



Memorandum

NONE

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