Halcrow Group Limited
1 The Square Temple Quay Bristol BS1 6DG
Tel +44 (0)117 910 2580 Fax +44 (0)117 910 2581
www.halcrow.com

Technical note 19

Project	Worcester MMTM MSBC	**Date**	11 November 2009
Note	Matrix Development - Demand Growth	**Ref**	CTWAKV123
Author	Katherine Williams		

1. Introduction

1.1 This technical note assesses the overall impact of future year population and employment growth within Worcestershire, in terms of trip generation in the Worcester Demand Model.

2. Data

2.1 Development assumptions have been identified through consultation with WCC and local authority planning staff for horizon years of 2016 and 2026, in line with WebTAG guidance. For further details refer to Technical Note 18.

2.2 The population and employment growth in this note is based on the 'Core' scenario, where development is either 'near certain' or 'more than likely'.

3. Methodology

Demand

3.1 The method for appending new developments to the calibrated base year population and employment is as follows:

- Number of dwellings are converted into Total Population, Working Population (16 to 64) and Student Population using TEMPRO future year populations per household (household occupancy), shown in Table 3.1;
- Commercial development specified in hectares are converted into Gross Floor Area (GFA) square metres (sqm) using 1Ha = 4170 sqm GFA[1];
- GFA is converted into jobs using a ratio of 1 employee per 37sqm[2];
- Each development site is matched to an existing model zone; and

[1] Based on the South Worcestershire Joint Employment Land Review, provided by local planning staff

[2] From a relevant selection of sites from the TRICS database

- The new population and employee numbers for the new zones are added to the base year population and employee numbers to create future year demand growth for 2016 and 2026.

Table 3.1: Population / Household from TEMPRO v5.4

Year	Pop Tot/HH	Pop (u16 / 16+ students)/HH	Pop (16-65)/HH
2008	2.28	0.43	1.50
2016	2.21	0.4	1.42
2026	2.11	0.37	1.32
2031	2.06	0.35	1.26

3.2 The 'Core' scenario was then constrained to TEMPRO at county level. Note, constraint to TEMPRO has not been applied at the district level for Worcester as many of the future year developments for Worcester City cross the TEMPRO Worcester City boundary into the outlying districts, therefore constraining developments according to the district boundaries will lead to a distortion in trip generation. Zones outside Worcestershire were also factored to TEMPRO using UK-wide growth.

3.3 Beyond 2026 the location of future developments is unknown, therefore for 2031; further growth will be applied to the 2026 development assumptions using TEMPRO.

3.4 Table 3.2 shows the growth factors used from TEMPRO for Worcestershire and the UK.

Table 3.2: TEMPRO v5.4 Population Growth Factors from 2008

Year	Area	Pop Tot	Pop (u16 / 16+ students)	Pop (16-65)	Jobs
2008	Worcestershire	1	1	1	1
2016		1.048	1.0105	0.9964	1.0329
2026		1.1045	1.0354	1.0017	1.0527
2031		1.13	1.0199	0.9924	1.0716
2008	UK	1	1	1	1
2016		1.0587	1.0582	1.0283	1.0594
2026		1.1248	1.1137	1.0584	1.1181
2031		1.1543	1.1102	1.067	1.1637

Car Availability

3.5 TEMPRO forecasts for change in car availability (no car, part car and full car) were applied to the base year car availability percentage split. Table 3.3 shows the change from 2008 for each of the three car availability groups in terms of factors applied.

Table 3.3: TEMPRO v5.4 Car Availability Factors from 2008

Year	Area	No Car Available (NCA)	Part Car Available (PCA)	Full Car Available (FCA)
2008	Worcestershire	1	1	1
2016		0.90	0.97	1.03
2026		0.88	0.92	1.06
2031		0.88	0.90	1.07
2008	UK	1	1	1
2016		0.88	0.96	1.06
2026		0.81	0.90	1.12
2031		0.79	0.87	1.15

4. Results

4.1 Table 4.1 provides trip generation totals for the Worcester Area (including proposed developments immediately surrounding Worcester) and Worcestershire, both before and after being adjusted to TEMPRO. A percentage difference is also shown to indicate the scale of the adjustment required to match the TEMPRO forecast growth.

Table 4.1: Trip Generation Summary

Year	Trips	Purpose	Unadjusted		TEMPRO adjusted		% Difference TEMPRO-Unadjusted	
			Worcester Area	Worcester -shire	Worcester Area	Worcester-shire	Worcester Area	Worcester-shire
2016	Production	HBW	79813	128081	76267	122391	-4%	-4%
		HBEB	9159	18694	8752	17863	-4%	-4%
		HBED	36371	49081	35367	47726	-3%	-3%
		HBS	87184	126798	87654	127481	1%	1%
		HBO	99434	147694	99970	148490	1%	1%
	Attraction	HBW	103595	142069	102879	141088	-1%	-1%
		HBED	58454	65686	58454	65686	0%	0%
2026	Production	HBW	85948	135293	80490	126702	-6%	-6%
		HBEB	10163	19850	9518	18589	-6%	-6%
		HBED	39300	52052	38249	50660	-3%	-3%
		HBS	94408	134290	97466	138640	3%	3%
		HBO	109593	158482	113143	163615	3%	3%
	Attraction	HBW	104766	143906	104991	144216	0%	0%
		HBED	62840	70072	62840	70072	0%	0%
2031	Production	HBW	N/A	N/A	84099	132384	N/A	N/A
		HBEB	N/A	N/A	9960	19449	N/A	N/A
		HBED	N/A	N/A	37661	49882	N/A	N/A
		HBS	N/A	N/A	99600	141678	N/A	N/A
		HBO	N/A	N/A	115773	167420	N/A	N/A
	Attraction	HBW	N/A	N/A	106870	146798	N/A	N/A
		HBED	N/A	N/A	62840	70072	N/A	N/A

4.2 Appendix A shows the impact of trip generation and attraction for new development, without TEMPRO adjustment, by ward. This is presented in terms of the number of home-based production trips by journey purpose and car availability, and number of employment and education trips attracted to each zone for the double constraint applied to home based work and education trips. The 'core' scenario trips generated are different the growth predicted for 2016 and 2026. Therefore Appendix B shows the TEMPRO adjusted trip generation and attraction for 2016, 2026 and 2031 by ward.

4.3 For other trips the rateable values calculated for the calibrated base model will remain the same as they only act as a weighting not in absolute terms and without information about changes in the future this is a reasonable assumption.