



West Winch Housing Access Road Transport Assessment TA: Appendix 4

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1 Hopkins TA Trip Rates

- 1.1.1 This appendix contains an extract from the Hopkins Homes Transport Assessment dated 2017 in respect of Outline Planning Application Reference 13/01615/OM. The section of the Hopkins TA contained includes the Trip generation rates used to calculate how many trips would be generated by the proposed Hopkins development of 1100 homes. The same trip rates have been used consistently for all sites within the WWGA and are included in the strategic and Paramics modelling that has informed the Transport Assessment for the Proposed Scheme and Environmental Assessment.

5. Trip Generation and Distribution

This section of the report details the number of person and vehicular trips predicted to be generated by the development which have been assessed using the TRICS V6.9.2 database. Analysis of 2011 Census Travel to Work Origin and Destination data for King's Lynn has also been used to predict the distribution of the generated vehicle trips. This approach and the subsequent trip generation rates were agreed with NCC and Highways England at the scoping stage in 2012 and confirmed with NCC at the scoping stage in 2016.

5.1. Vehicle Trip Generation

5.1.1. Residential Trip Generation

The predicted vehicle trip generation of the proposed development has been assessed with reference to the TRICS database. The TRICS V6.9.2 database has been interrogated to select residential sites with similar characteristics. The TRICS sites have been filtered using the following criteria:

- **Category – Houses Privately Owned.** This category provides the largest survey set and provides a robust set of vehicle trip rates as this category excludes sites with flats and affordable housing which generate lower trip rates than privately owned house. In reality the site will not just include for privately owned houses and will therefore generate fewer trips than calculated here;
- **Vehicle Trip Rates:** Vehicle only survey sites have been selected to maximise the sample of sites;
- **Regions:** Sites in Scotland, Wales, Ireland and London have been excluded;
- **Survey Day:** All weekend surveys have been excluded;
- **Development Size:** All sites with more than 100 dwellings have been included (TRICS has a very low number of sites with 500+ homes due to the difficulty of surveying such sites);
- **Development Location:** Only edge of town sites have been included;
- **Survey date:** Sites with counts undertaken prior to 2004 have been excluded;
- **Manual removal:** Site LC_03-A_09 has been manually removed due to its proximity to a college; and
- **Sample Size:** The above filtering has left 7 sites to be analysed.

The selection criteria is considered to provide a robust set of vehicle trip rates, taking into consideration the location, accessibility and scale of the proposed development. Whilst the proposed development site would contain an element of affordable homes the selection criteria, based on 100% houses privately owned, will provide the most robust assessment in terms of vehicle trips. The selected sites have been audited to ensure that weighting factors have not skewed the predicted vehicle trip rates.

Furthermore, to validate these trip rates, Atkins commissioned a survey of trips in and out of a housing development located on the edge of King's Lynn – the Languard and Elvington estate which includes 361 dwellings accessed from one access off Gayton Road. The characteristics of this development are similar to those of the proposed Hardwick Green site. The survey was undertaken on Thursday 12th July 2012. The results of this survey produced trip rates slightly lower than those derived from TRICS, and hence support the robustness and therefore the use of the proposed TRICS trip rates. The raw survey data and associated trip rates are provided in Appendix G.

The predicted vehicle trip rates derived from TRICS, as agreed with NCC, are provided in Table 5-1. The TRICS output files are provided in Appendix H.

Table 5-1 Proposed Residential Vehicle Trip Rates

	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)			12 Hour (07:00-19:00)		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
Vehicle trip rate per private dwelling	0.152	0.450	0.602	0.424	0.242	0.666	2.669	2.794	5.493
Vehicle Trips 1,110 homes	169	500	668	471	269	739	2,963	3,101	6,097

Table 5-1 indicates that on an average weekday the housing within the Hardwick Green site is predicted to generate a total of 6,097 vehicle trips onto the surrounding highway network. During the AM peak hour the site is predicted to generate a total of 668 vehicular trips, whilst during the PM peak hour the site is predicted to generate a total of 739 vehicular trips.

5.1.2. Primary School

A 1.5 FE primary school is proposed to be located within the Hardwick Green site. It is proposed that the catchment for this school would largely include the residential dwellings located on the Hardwick Green site and the future growth area, as a school is already available within West Winch. Therefore a large proportion of the trips generated are likely to be internal trips only. Sites were selected from the TRICS database in accordance with the following selection criteria:

- **Development Region** – Sites in Scotland, Wales, Ireland and London have been excluded;
- **Survey date** – Sites with counts undertaken prior to 2004 have been excluded;
- **Development Location** – Town centre sites have been excluded; and
- **Sample Size** – The above filtering has left 10 sites to be analysed.

The proposed trip rates and the resulting trips based on 315 students are shown in Table 5-2 and the TRICS output files are provided in Appendix H. The table also presents the predicted number of *external* trips likely to be generated, taking account of the expected catchment area. It is assumed that up to 50% of trips will derive from the Hardwick Green site and the future growth area.

Table 5-2 Proposed School Vehicle Trip Rates Per Pupil

	AM Peak Hour (08:00-09:00)			PM Peak Hour (15:00-16:00)			12 Hour (07:00-19:00)		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
Vehicle trip rate per pupil	0.315	0.218	0.533	0.017	0.034	0.051	0.762	0.745	1.507
Vehicle Trips	99	69	168	5	11	16	240	235	475
Vehicle trips external to site	50	34	84	3	5	8	120	118	238

Table 5-2 indicates that around 168 total vehicle trips are predicted to be generated by the school during the AM peak hour. The large majority of these will be parents dropping off children at the school, whilst around 30 could be attributed to staff arriving and parking at the school (based on 99 vehicles arriving during the AM peak hour but only 69 departing). It is intended that staff trips by car will be reduced through implementation of a School Travel Plan. Therefore, these number are considered robust.

Given that the school catchment will be largely based upon the Hardwick Green site and the future growth area, it is expected that the majority of vehicular trips generated by the school would either be from parents dropping off children on the way to work (with the workplace located outside the development), or from parents within the site driving their child to school. Parents dropping off pupils on the way to work are already considered within the residential trip generation outlined in Section 5.1.1 above (linked trips), whilst those driving within the site to drop off a child at school would not give rise to trips on the local transport network, as they are already on the local highway network.

On this basis, it is proposed to adjust the school trip generation forecast by 50% to prevent double counting of trips on the local transport network. These are also shown within Table 5-2 as vehicle trips external to the site. This approach will provide a worst-case scenario, in reality as many as 80-90% of vehicular trips generated by the school may be linked trips or internal to the site, with the remainder of trips being accounted for by staff arriving at and leaving the school from outside the development site.

All potential vehicular trips to the proposed local centre, are assumed to be 100% internal, or linked trips. Therefore, no vehicular trips have been added to the assessment of the external road network.

The resulting total trip generation from the residential element of the development and the school is shown in Table 5-3.

Table 5-3 Total Site Trip Generation: Vehicles

	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
	Arrive	Depart	Total	Arrive	Depart	Total
Residential Trip Generation	169	500	668	471	269	739
Primary School Trip Generation	50	34	84	3	5	8
Total Trip Generation	219	534	752	474	274	747

The total site trip generation shown in Table 5-3 has been used in all junction modelling, detailed in Section 6 of this report.

5.2. Other Modes Trip Generation

In order to estimate the trip generation of modes other than the private car, the 2011 Census travel to work data has been reviewed for the Kings Lynn and West Norfolk MSOA 014. The mode split of trips to work from this ward is as follows:

- Car driver – 67%;
- Car passenger – 4%;
- Motorcycle – 1%;
- Cycle – 9%;
- Pedestrian – 15%;
- Train – 1%; and
- Bus – 2%.

The total person trips and trips by each mode have been extrapolated from the predicted vehicle trips to the site presented in Table 5-3 based on these percentages. The resulting trips by all modes are shown in Table 5-4 below.

Table 5-4 Proposed Trip Generation by all modes

Trips by Mode	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)			12 Hour (07:00-19:00)		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
Car driver	218	534	752	473	274	747	3083	3219	6335
Car passenger	14	35	49	31	18	48	200	209	411
Motorcycle	2	6	8	5	3	8	33	34	68
Bicycle	30	74	105	66	38	104	429	448	882
Pedestrian	49	119	168	106	61	167	690	720	1418
Train	4	9	12	8	4	12	50	52	103
Bus	5	13	19	12	7	19	77	80	157
Other	1	2	3	2	1	3	11	11	22
Total person trips (excluding working at home)	325	794	1119	704	408	1112	4588	4790	9428