Title: Hawkwell Village, Bicester

Strategic Road Network Junction Impact Assessment

Technical Note 12 v4

Date: February 2023

1.0 Introduction

1.1.1 Jubb has been commissioned by Hallam Land Management Ltd (HLM) to provide highways and transportation advice in relation to a proposal for a residential-led mixed use development on land north-east of the railway line in North West Bicester - 'Hawkwell Village'.

1.1.2 A planning application (Ref: 21/04275/OUT) was submitted in December 2021 for a residential led mixed use development for up to 3,100 dwellings.

1.1.3 A previous application (14/01384/OUT), comprising of a residential led mixed use development of up to 2,600 dwellings, received the benefit of a resolution to grant planning permission; however, no section 106 was agreed.

1.1.4 The main thrust of the submitted Transport Assessment to support the new application is that whilst permission is being sought for 500 dwellings more than in 2014, total trip generation would be similar, due to a general lowering of trip generation per dwelling between 2014 and 2019, the effect of the Covid-19 pandemic on working practices, the internalisation of trips due to the provision of other land uses, the marketing of a robust Travel Plan and the provision of mobility hubs, a public transport contribution and off-site active travel route improvements.

1.1.5 Oxfordshire County Council (OCC) requested the use of the updated Bicester Transport Model (BTM), managed by Tetra Tech on behalf of OCC, to inform the traffic assessment of the Hawkwell Village (HV) development. Correspondence with National Highways (NH) has agreed the BTM as a suitable tool to assess the impact of the traffic generation of the development on the Strategic Road Network (SRN).

1.1.6 This Technical Note (TN) provides the turning movement outputs from the BTM and the assessment of the percentage impact at the junctions within the SRN along with commentary as to the need to undertake individual junction capacity modelling.

1.1.7 It should be noted that this revised TN uses the revised turning movements provided by Tetra Tech (26th January 2023). It is understood that an issue was identified requiring the demand model to be altered which led to the 2026 and 2031 'with development' scenarios to be rerun.

2.0 Bicester Transport Model Turning Movement Data

2.1.1 The BTM model runs included the following scenarios:

- 2031 Base;
- 2031 Base + Committed;
- 2031 Base + Committed + Development 1a (BTM traffic generation); and
- 2031 Base + Committed + Development 1b (Agreed 'Decide & Provide' (D&P) trip generation).

2.1.2 **Figure 2.1** visually represents the junctions for which turning movements from the BTM were extracted.

2.1.3 The extracted turning movements are attached at **Appendix A**.

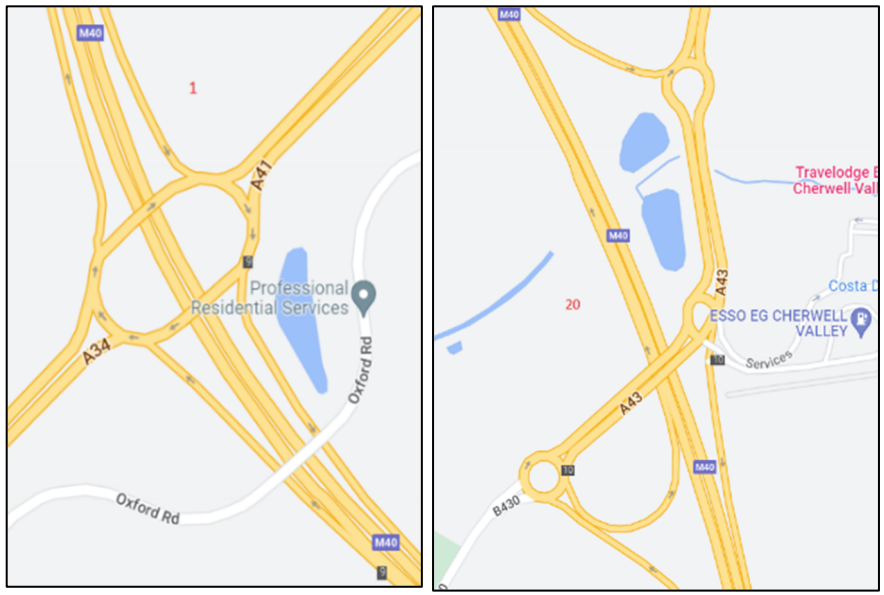

Figure 2.1 – Junction Locations and Reference Numbers

2.1.4 Correspondence from NH on the 'D&P' trip rate calculation agreed base trip rates and the majority of reductions for the 'D&P' scenario with the exception of homeworking and sustainable travel behaviour. Therefore, this assessment, whilst reporting the 'D&P' and BTM outputs, concentrates on the BTM trip generation percentage impact.

3.0 Junction Percentage Impact Assessment

3.1.1 **Table 3.1** sets out the calculated percentage impact assessment of the Proposed Development on individual junctions and each arm of the junction along with commentary as to the need to undertake individual junction capacity testing. The assessment compares the percentage impact of Developments 1a and 1b against the Base + Committed scenario.

Ref	Junction	Arm	2031 + Dev 1a		Year 2031 + Dev 1b		Comments
			AM	PM	AM	PM	
1	M40 Junction 9	M40 (N)	0%	0%	0%	0%	Total vehicle movements through the junction and the majority of arms is predicted to be static in both peak hours. Vehicle movements on the A41 arm are predicted to reduce in the PM peak hour. Junction capacity assessment not required.
		A41	0%	-2%	0%	-1%	
		M40 (S)	0%	0%	0%	0%	
		A34	0%	0%	0%	0%	
		Total	0%	0%	0%	0%	
20a	M40 Junction 10 (Padbury signal junction)	M40 SB Off Slip	0%	2%	0%	1%	Total vehicle movements through the junction are predicted to be static in the AM peak hour and to increase by 1% in the PM peak hour. The vehicles movements are predicted to increase by 2% in the PM peak hour on the M40 southbound off-slip. There is a predicted vehicle movement of 1% on the A43(N) in both the AM and PM peak hours. There is a predicted decrease (1%) in vehicle movements on the A43(S)
		A43 (N)	1%	1%	1%	0%	
		A43 (S)	-1%	0%	0%	0%	

Ref	Junction	Arm	2031 + Dev 1a		Year 2031 + Dev 1b		Comments
			AM	PM	AM	PM	
		Total	0%	1%	0%	0%	in the AM peak whilst vehicle movements are predicted to be static in the PM peak hour. The percentage impact is minimal i.e. below 5% and well within expected daily traffic fluctuations (10%). Junction capacity assessment not required.
20b	M40 J10 (Cherwell signal junction)	A43 (N)	1%	1%	0%	1%	Total vehicle movements through the junction are predicted to be static in the AM peak hour and to increase by 1% in the PM peak hour. On the A43(N) arm the vehicle movements are predicted to increase by 1% in both peak hours. On the A43(W) arm the vehicle movements are predicted to decrease (1%) in the AM peak hour and remain static in the PM peak hour. The percentage impact is minimal i.e. below 5% and well within expected daily traffic fluctuations (10%). Junction capacity assessment not required.
		Services	0%	0%	0%	0%	
		A43 (W)	-1%	0%	0%	0%	
		Total	0%	1%	0%	0%	
20c	M40 J10 (Ardley roundabout)	A43 (E)	1%	1%	0%	0%	Total vehicle movements through the junction and on the M40 northbound slip road are predicted to be static in both peak hours. On the A43(E) arm vehicle movements are predicted to increase by 1% in both peak hours. Vehicle movements on the B430 are predicted to decrease (2%) in the AM peak hour and increase (2%) in the PM peak hour. The percentage impact is minimal i.e. below 5% and well within expected daily traffic fluctuations (10%). Junction capacity assessment not required.
		M40 NB Off Slip	0%	0%	0%	0%	
		B430	-2%	2%	-1%	1%	
		Total	0%	0%	0%	0%	

Table 3.1: Percentage Impact of Traffic Generated by Hawkwell Village at Junctions on the Strategic Road Network

4.0 Summary

4.1.1 **Table 3.1** has summarised the data output from the BTM showing a percentage impact of both the BTM and the D&P vehicle flows through the junction as a whole and on each individual arm. Commentary on the need to undertake individual junction capacity assessment is provided and HE are invited to provide a response to the assessment.

North West Bicester – Hawkwell Village

20300

Appendix A BTM Output

PCU Summary

Ref	Junction	Arm	Year 2031 Base			Year 2031 Base + Committed			Year 2031 + Dev 1a			Year 2031 + Dev 1b			Year 2031 + Dev 1a % Change on Base + Committed		Year 2031 + Dev 1b % Change on Base + Committed	
			AM	Inter	PM	AM	Inter	PM	AM	Inter	PM	AM	Inter	PM	AM	PM	AM	PM
1	M40 Junction 9	M40 (N)	2037	1900	2361	2045	1902	2366	2049	1898	2370	2044	1898	2370	0%	0%	0%	0%
		A41	1435	1104	1305	1441	1124	1311	1443	1117	1291	1443	1117	1293	0%	-2%	0%	-1%
		M40 (S)	521	450	960	524	444	963	523	438	964	523	438	965	0%	0%	0%	0%
		A34	3789	3189	3676	3790	3195	3672	3789	3192	3659	3789	3192	3660	0%	0%	0%	0%
		Total	7783	6644	8302	7800	6664	8312	7804	6645	8284	7798	6645	8288	0%	0%	0%	0%
2	A41 Oxford Road / Vendee Drive roundabout	A41 (N)	1088	945	1407	1103	946	1422	1085	928	1444	1085	928	1431	-2%	2%	-2%	1%
		Unlabelled Rd	411	322	478	414	324	483	429	327	488	427	327	487	4%	1%	3%	1%
		A41 (S)	1353	1179	1358	1357	1179	1361	1355	1167	1353	1354	1167	1354	0%	-1%	0%	-1%
		Park & Ride	11	2	8	11	2	8	11	2	8	11	2	8	0%	-1%	0%	-1%
		Vendee Drive	960	466	663	996	489	673	1034	501	687	1028	501	685	4%	2%	3%	2%
		Total	3823	2912	3914	3880	2939	3948	3913	2924	3981	3904	2924	3965	1%	1%	1%	0%
3	A41 / B4030 Oxford Road signalised roundabout	Oxford Rd	1426	1036	1151	1443	1051	1528	1449	1047	1511	1439	1047	1509	0%	-1%	0%	-1%
		A41 (E)	1326	905	1108	1334	912	1283	1336	901	1291	1329	901	1285	0%	1%	0%	0%
		A41 (S)	1669	1300	1835	1669	1305	1916	1665	1298	1917	1666	1298	1915	0%	0%	0%	0%
		Unlabelled Rd (W)	110	108	48	110	108	89	110	108	89	110	108	89	0%	0%	0%	0%
		Total	4532	3349	4142	4556	3377	4816	4560	3354	4808	4544	3354	4798	0%	0%	0%	0%
4	A41 Oxford Road / Pingle Drive signal junction	B4030 Oxford Road (N)	1501	921	1173	1512	936	1188	1567	954	1227	1555	954	1224	4%	3%	3%	3%
		Pingle Drive (E)	145	413	498	148	417	501	148	417	502	150	417	501	0%	0%	1%	0%
		A41 Oxford Road (S)	1081	933	1505	1095	945	1531	1103	938	1561	1096	938	1556	1%	2%	0%	2%
		Total	2727	2268	3177	2755	2297	3220	2818	2310	3290	2801	2310	3281	2%	2%	2%	2%
5	Middleton Stoney Road / Kings End mini roundabout	Kings End (N)	1179	872	1075	1142	881	1092	1181	899	1145	1185	899	1141	3%	5%	4%	5%
		Oxford Road (S)	1013	901	1421	1032	913	1448	1041	913	1476	1035	913	1471	1%	2%	0%	2%
		Middleton Stoney Road (W)	935	607	725	1005	631	737	1025	624	736	999	624	729	2%	0%	-1%	-1%
		Total	3128	2379	3221	3179	2424	3277	3247	2436	3357	3220	2436	3341	2%	2%	1%	2%
6	Field Street / Bucknell Road priority junction	Field Street (N)	918	789	920	883	801	927	876	821	897	871	821	893	-1%	-3%	-1%	-4%
		Field Street (S)	778	755	1090	827	755	1099	840	778	1151	834	778	1143	2%	5%	1%	4%
		Bucknell Road (W)	135	87	90	143	89	90	127	89	97	137	89	96	-11%	8%	-4%	7%
		Total	1831	1630	2100	1853	1644	2116	1843	1687	2145	1842	1687	2133	-1%	1%	-1%	1%
7	Queens Avenue / St John's Street mini roundabout	Field Street (N)	951	775	909	915	786	923	966	804	939	957	804	933	6%	2%	5%	1%
		St John's Street (E)	650	651	630	666	646	636	683	671	747	673	671	740	3%	17%	1%	16%
		Queens Avenue (S)	842	694	1032	880	708	1043	881	713	1046	883	713	1043	0%	0%	0%	0%
		Total	2443	2120	2572	2461	2140	2602	2531	2188	2732	2513	2188	2716	3%	5%	2%	4%
8	Banbury Road / Field Street mini roundabout	Buckingham Road (N)	509	536	696	504	540	699	515	422	623	498	538	664	2%	-11%	-1%	-5%
		Field Street (S)	747	660	1003	804	662	1008	728	618	998	811	687	1057	-9%	-1%	1%	5%
		Banbury Road (W)	411	256	230	382	264	234	404	279	263	384	287	235	6%	12%	0%	1%
		Total	1667	1452	1929	1690	1466	1941	1647	1319	1884	1693	1511	1957	-3%	-3%	0%	1%
9	A41 / A4421 / B4100 / Gravenhill Road roundabout	B4100 London Rd	246	198	496	249	199	508	246	213	508	247	213	502	-1%	0%	-1%	-1%
		A4421	615	330	474	626	334	482	632	318	487	627	318	484	1%	1%	0%	0%
		A41 (SE)	783	565	940	782	568	945	786	560	937	780	560	937	1%	-1%	0%	-1%
		Gravenhill Road	322	209	259	333	212	260	334	212	262	331	212	260	0%	1%	-1%	0%
		A41 (NW)	1343	954	1369	1362	964	1373	1358	960	1370	1358	960	1368	0%	0%	0%	0%
		Total	3062	2057	3042	3104	2078	3060	3110	2050	3056	3095	2050	3049	0%	0%	0%	0%
10	A4421 / Peregrine Way roundabout	Peregrine Way (N)	494	155	230	503	157	232	503	157	234	501	157	232	0%	1%	0%	0%
		A4421 (E)	336	270	367	347	275	375	356	262	384	351	262	380	3%	3%	1%	1%
		A4421 (W)	446	461	824	473	468	830	479	474	833	476	474	830	1%	0%	1%	0%
		Total	1276	887	1421	1324	900	1437	1338	894	1451	1328	894	1443	1%	1%	0%	0%
11	Wretchwick Way / Charbridge Lane / Gavray Drive roundabout	Charbridge Lane (N)	1076	608	1028	1103	626	1040	1148	644	1058	1136	644	1045	4%	2%	3%	1%
		SE Bicester Access Road	428	319	688	462	323	696	459	329	722	461	329	717	-1%	4%	0%	3%
		Wretchwick Way	606	427	554	644	435	560	652	446	563	647	446	560	1%	1%	0%	0%
		Gavray Drive (W)	130	82	108	137	83	108	138	70	124	136	70	122	1%	14%	0%	13%
		Total	2241	1437	2378	2346	1467	2403	2397	1489	2468	2380	1489	2443	2%	3%	1%	2%
12	A4421 / Bicester Road roundabout	Bicester Road (E)	443	256	342	461	257	339	461	257	346	457	257	342	0%	2%	-1%	1%
		Charbridge Lane (S)	915	696	1209	987	709	1220	998	736	1270	995	736	1257	1%	4%	1%	3%
		A4421 (W)	1329	765	1279	1351	791	1292	1404	821	1313	1389	821	1295	4%	2%	3%	0%
		Total	2687	1717	2830	2799	1757	2850	2863	1815	2929	2841	1815	2894	2%	3%	1%	2%
13	A4421 / Launton Road / Skimmingish Lane roundabout	Skimmingdish Lane (N)	1383	631	1064	1390	664	1091	1419	728	1152	1408	728	1122	2%	6%	1%	3%
		Wyndham Hall (E)	15	13	27	15	13	27	15	13	27	15	13	27	0%	0%	0%	0%
		A4421 (S)	1194	812	1403	1281	826	1409	1283	856	1467	1279	856	1450	0%	4%	0%	3%
		Launton Road (W)	693	636	1096	706	655	1101	708	676	1075	698	676	1081	0%	-2%	-1%	-2%
		Total	3285	2091	3589	3392	2157	3628	3425	2273	3721	3399	2273	3680	1%	3%	0%	1%
14	A4421 / Skimmingdish Lane / Buckingham Road / A4095 roundabout	A4421 (N)	1346	574	1031	1358	576	1040	1356	598	1050	1356	598	1040	0%	1%	0%	0%
		Skimmingdish Lane (E)	782	626	1474	878	656	1499	890	713	1561	877	713	1545	1%	4%	0%	3%
		Buckingham Road (S)	451	285	375	455	281	373	453	275	377	451	275	381	0%	1%	-1%	2%
		A4095 (W)	1154	617	997	1164	661	1034	1241	736	1066	1215	736	1052	7%	3%	4%	2%
		Total	3734	2102	3878	3855	2174	3946	3940	2322	4053	3900	2322	4018	2%	3%	1%	2%
15	B4100 Banbury Road / A4095 Lords Lane roundabout	B4100 (N)	1237	530	857	1239	618	924	1209	813	1026	1222	813	1025	-2%	11%	-1%	11%
		A4095 (E)	1121	688	1309	1246	715	1337	1221	793	1393	1215	793	1388	-2%	4%	-3%	4%
		Banbury Road (S)	311	238	399	425	254	423	457	314	547	445	314	511	7%	29%	5%	21%
		A4095 (W)	527	363	648	540	361	658	695	305	627	627	305	592	29%	-5%	16%	-10%
		Total	3196	1819	3213	3451	1947	3342	3582	2225	3593	3508	2225	3516	4%	8%	2%	5%
16	B4100 / Caversfield priority junction	B4100 (N)	1059	483	784	1164	512	826	1194	547	906	1188	547	897	3%	10%	2%	9%
		Aunt Elms Lane (E)	127	29	61	160	32	66	171	37	110	166	37	111	7%	67%	3%	69%
		B4100 (S)	629	388	878	641	443	931	727	477	935	690	477	918	13%	0%	8%	-1%
		Total	1815	900	1723	1965	987	1823	2092	1061	1951	2044	1061	1926	6%	7%	4%	6%
17	A4095 Lords Lane / Bucknell Road roundabout	Bucknell Road (N)	12	12	12	12	12	12	12	12	12	12	12	12	0%	1%	0%	1%
		A4095 (E)	236	150	280	250	157	289	306	160	290	274	160	284	22%	0%	10%	-2%
		Bucknell Road (S)	170	121	273	183	124	278	181	121	280	177	121	278	-1%	1%	-3%	0%
		Total	417	283	565	445	293	579	498	293	583	464	293	574	12%	1%	4%	-1%
18	Howes Lane / Bucknell Road prioity junction	Bucknell Road (N)	248	162	292	262	169	301	318	172	302	286	172	296	21%	0%	9%	-2%
		Bucknell Road (S)	86	75	123	94	77	125	97	74	127	93	74	125	3%	2%	-1%	0%
		Howes Lane (W)	128	107	258	134	109	262	122	104	256	123	104	260	-9%	-3%	-8%	-1%
		Total	462	344	674	491	355	688	537	350	685	502	350	680	9%	0%	2%	-1%
19	Howes Lane / Middleton Stoney Road / Vendee Road roundabout	Howes Lane (N)	788	305	459	783	340	482	872	394	525	861	394	505	11%	9%	10%	5%
		Middleton Stoney Road (E)	722	400	550	772	425	598	796	431	631	789	431	624	3%	5%	2%	4%
		Vendee Drive (S)	586	482	1095	622	491	1116	621	508	1163	603	508	1150	0%	4%	-3%	3%
		B4030 (W)	650	439	572	793	490	629	791	487	641	782	487	635	0%	2%	-1%	1%
		Total	2746	1627	2676	2970	1747	2824	3079	1821	2960	3035	1821	2914	4%	5%	2%	3%
20a	M40 J10 (Padbury signal junction)	M40 SB Off Slip	928	443	728	929	444	738	927	447	751	927	447	747	0%	2%	0%	1%
		A43 (N)	1947	1269	1455	1971	1281	1462	1990	1284	1470	1984	1284	1468	1%	1%	1%	0%
		A43 (S)	1405	1290	2006	1409	1300	2016	1402	1303	2018	1407	1303	2012	-1%	0%	0%	0%
		Total	4280	3002	4188	4310	3026	4216	4318	3033	4240	4318	3033	4228	0%	1%	0%	0%
20b	M40 J10 (Cherwell signal junction)	A43 (N)	2487	1546	1879	2536	1559	1889	2550	1565	1914	2538	1565	1908	1%	1%	0%	1%
		Services	586	412	610	586	412	610	586	412	610	586	412	610	0%	0%	0%	0%
		A43 (W)	1593	1431	2175	1597	1443	2185	1586	1442	2187	1591	1442	2181	-1%	0%	0%	0%
		Total	4666	3389	4663	4720	3414	4683	4722	3419	4711	4715	3419	4699	0%	1%	0%	0%
20c	M40 J10 (Ardley roundabout)	A43 (E)	1319	496	1162	1354	508	1173	1366	515	1184	1357	515	1179	1%	1%	0%	0%
		M40 NB Off Slip	1328	1203	1829	1328	1210	1828	1328	1219	1824	1328	1219	1822	0%	0%	0%	0%
		B430	511	444	587	509	449	597	501	442	606	503	442	600	-2%	2%	-1%	1%
		Total	3158	2142	3578	3191	2168	3598	3195	2176	3615	3188	2176	3601	0%	0%	0%	0%
21	Middleton Road / Bainton Road priority junction	Ardley Road (N)	331	92	178	397	96	203	419	130	257	395	130	239	5%	27%	0%	18%
		Bainton Road (E)	72	16	27	82	18	30	140	27	37	109	27	37	71%	25%	33%	25%
		Bicester Road (S)	176	106	88	170	116	98	144	141	128	160	141	110	-15%	30%	-6%	12%
		Middleton Road (W)	85	28	221	116	30	232	124	32	274	116	32	262	7%	18%	0%	13%
		Total	664	243	514	764	261	562	827	330	695	780	330	648	8%	24%	2%	15%
23	Site Access (Eastern)	Site Access (N)	0	0	0	0	0	0	295	31	88	200	31	35				
		A4095 (E)	0	0	0	0	0	0	669	392	704	679	392	713				
		Germander Way (S)	0	0	0	0	0	0	38	21	22	37	21	21				
		A4095 (W)	0	0	0	0	0	0	473	301	580	472	301	588				
		Total	0	0	0	0	0	0	1475	745	1394	1387	745	1357				
24	Site Access (Western)	Site Acces (N)	0	0	0	0	0	0	303	147	199	270	147	142				
		A4095 (E)	0	0	0	0	0	0	579	260	395	582	260	403				
		A4095 (W)	0	0	0	0	0	0	452	312	629	415	312	601				
		Total	0	0	0	0	0	0	1334	719	1223	1267	719	1146				