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B2177 B3354 A334 CORRIDOR CUMULATIVE TRAFFIC IMPACTS – FINAL

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Winchester City Council

SYSTRA

LOCAL PLAN PART 2 – TRANSPORT EVIDENCE BASE

B2177 B3354 A334 CORRIDOR CUMULATIVE TRAFFIC IMPACTS – FINAL

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1. INTRODUCTION

1.1 Context

1.1.1 The B2177 / B3354 / A334 corridor forms an important link for market towns and rural areas in the south west of Winchester District. The corridor will be impacted both directly and indirectly by allocated sites within the Local Plan Part 2 (LPP2) and those in neighbouring local authority areas. The strategic transport impacts of cumulative developments across the District, including sites in neighbouring authorities, was assessed in the Stage 2 Framework Transport Assessment (2009), undertaken as part of the Local Plan Part 1 evidence base. That study provided a district wide strategic transport impact assessment covering the proposed development strategy for the whole of the Winchester District including the larger named settlements, identified for growth.

1.1.2 Following representations received during the LPP2 consultation stage, which raise detailed matters in relation to the allocation of specific sites and the cumulative impact of the development of planned sites along or in close proximity to the B2177/B3354 / A334 corridor, there is a need for further work.

1.2 Purpose of this Study

1.2.1 Therefore, this study examines the expected performance of the B2177/B3354/A334 corridor in 2031, between Twyford and Wickham, allowing for future land allocations and background traffic growth. The study uses outputs from the current Sub Regional Traffic Model (SRTM) for south Hampshire. This is a strategic multi-modal transport model jointly owned by Hampshire County, Southampton and Portsmouth City Councils under the name of Solent Transport. This study identifies the locations of potential highway capacity 'hotspots' on the B2177/B3354/A334 corridor and considers the impacts of the proposed land allocations. It is not the purpose of this study to identify detailed mitigation measures; it will be for Hampshire County Council as Highway Authority and Winchester City Council as Planning Authority to establish a planned response in conjunction with the individual development proposals as planning applications are submitted.

1.3 Approach

1.3.1 The SRTM was built in 2010 and incorporates a number of assumptions regarding future housing and employment growth across Hampshire, including Winchester District and adjoining Boroughs, that were current at that time. The first stage of this study has included a review of the development assumptions for the District and adjoining areas to confirm that the general scale and distribution of growth assumed in 2010 remains reasonable for current assessment purposes.

1.3.2 The second stage of this study involves the extraction and comparison of a range of performance metrics for the B2177/B3354/A334 corridor for a reference year of 2014 and a forecast year of 2031. The parameters examined comprise link and junction traffic flows, vehicle delays and volume/capacity ratios for both AM and PM peak hours. Based on these outputs the implications and significance of traffic growth has been assessed and recommendations are made as to any measures necessary to accommodate this.

2. REVIEW OF LAND USE ASSUMPTIONS

2.1 SRTM Comparison with LPP2

2.1.1 The present version of the SRTM was prepared in 2010 and included growth assumptions current at that time. For the key growth areas affecting the B2177/B3354/A334 corridor, Table 1 below provides a comparison of the assumed housing numbers against current planned levels of growth and forecasts for LPP2 and adjacent Boroughs.

Table 1. Comparison of Land Allocations (Dwellings)

LOCATION	BOROUGH / DISTRICT	SRTM	LPP2
Welborne	Fareham	7,120	6,000
Wickham	Winchester	476	250
Waltham Chase	Winchester	328	250
Swanmore	Winchester	468	250
Bishops Waltham	Winchester	753	500
Fair Oak / Horton Heath / Botley / Hedge End	Eastleigh	3,279	3,830
Colden Common	Winchester	411	250
	Totals	12,835	11,330

2.1.2 The overall scale and distribution of development affecting the corridor is similar but generally higher in the 2010 SRTM compared with current local authority forecasts. The higher forecasts in the model also provide some headroom for any incremental growth beyond current planned growth forecasts, including windfall sites. It is therefore considered that the SRTM outputs are suitable for use in this study as a basis for determining cumulative impacts along the B2177/B3354/A334 corridor.

3. REVIEW OF MODEL OUTPUTS

3.1 Review

3.1.1 Data has been extracted for 17 locations along the corridor, from Twyford to Wickham, including the following 13 junctions and 4 links. A location plan is included in Appendix 1.

- **Junction 1** - B3335 / M3 Junction 11
- **Junction 2** – B3335 High Street / Hazeley Road: Twyford
- **Link 1** – B3335 between Tywford and Colden Common
- **Junction 3** – B3354 Main Road / Church Lane; Colden Common
- **Junction 4** – B3354 Winchester Road / B2177 Portsmouth Road; Fishers Pond
- **Link 2** – B2177 between Fishers Pond and Lower Upham
- **Junction 5** – B2177 Winchester Road / Mortimers Lane; Lower Upham
- **Junction 6** – B2177 Winchester Road / Winters Hill; Bishops Waltham
- **Junction 7** - Winchester Road / B3035; Old Station Roundabout; Bishops Waltham
- **Junction 8** – Winchester Road / Botley Road roundabout; Bishops Waltham
- **Link 4** – B2177 between Bishops Waltham and Waltham Chase
- **Junction 9** – Winchester Road / Forest Road / Curdridge Lane; Waltham Chase
- **Junction 10** – Winchester Road / High Street; Shedfield
- **Junction 11** – Winchester Road / A334 Kitnocks Hill; Shedfield
- **Junction 12** – A334 Winchester Road / Titchfield Lane; Wickham
- **Link 4** – A334 between Shedfield and Wickham
- **Junction 13** – A334 / A32 School Road / A32 Hoads Hill; Wickham

3.1.2 Performance statistics for each location are summarised in Tables 2 and 3 overleaf for the AM and PM peak periods respectively. For junctions; the values reported are for the turning movement with the highest volume to capacity (V/C) ratio. For links; the values shown are for the heaviest direction of travel. Full details of network statistics, including data for each turning movement are included in Appendix B.

3.1.3 The data includes the flow in PCU's (Passenger Car Units), the delay per vehicle in seconds and the volume to capacity ratio (V/C). The volume to capacity ratio provides a good guide as to how a junction or link is performing; a value of 100% indicates that all available capacity

has been consumed. Within the Tables a Red, Amber, Green notation has been used for V/C to give an instant indication of areas where capacity is under pressure. Red is used for values of V/C greater than 90%; Amber for V/C between 80% and 90%; and Green for all values below 80%.

Table 2. Performance Statistics AM

LOCATION	AM PEAK HOUR					
	Flow (pcu's)		Delay (sec/veh)		V/C (%)	
	2014	2031	2014	2031	2014	2031
Junction 1	1204	674	83	402	103	120
Junction 2	1002	907	2	2	51	50
Link 1	1041	1046	2	2	53	55
Junction 3	710	609	172	228	109	112
Junction 4	992	989	15	17	75	81
Link 2	373	478	2	3	25	34
Junction 5	145	176	5	6	22	29
Junction 6	478	629	2	2	29	41
Junction 7	567	633	5	5	37	45
Junction 8	531	584	5	5	35	38
Link 3	525	669	15	17	50	60
Junction 9	166	180	23	24	53	63
Junction 10	518	678	2	2	29	37
Junction 11	300	417	14	46	68	97
Junction 12	181	186	33	56	76	95
Link 4	876	983	10	13	50	66
Junction 13	692	730	5	5	50	59

Table 3. Performance Statistics PM

LOCATION	PM PEAK HOUR					
	Flow (pcu's)		Delay (sec/veh)		V/C (%)	
	2014	2031	2014	2031	2014	2031
Junction 1	793	822	3	3	68	72
Junction 2	680	744	8	11	42	47
Link 1	801	927	2	3	50	60
Junction 3	489	607	6	62	78	103
Junction 4	700	881	19	28	68	86
Link 2	354	418	1	1	19	25
Junction 5	152	198	5	6	24	34
Junction 6	579	653	2	2	33	40
Junction 7	728	619	5	5	47	44
Junction 8	666	566	5	5	44	38
Link 3	634	743	13	17	43	65
Junction 9	305	496	12	16	40	70
Junction 10	677	765	2	2	39	41
Junction 11	221	403	11	61	51	100
Junction 12	129	151	36	58	60	92
Link 4	895	982	13	14	62	68
Junction 13	523	821	5	5	39	62

Capacity Hot Spots

3.1.4 The data indicates that all of the links and most of the junctions will operate within capacity in 2031. However, two of the junctions, Junctions 1 and 3, are shown to be operating over capacity based on 2014 baseline traffic flows. A third junction, Junction 11, is expected to

reach 100% capacity by 2031 and a fourth, Junction 12, is predicted to reach 95% capacity in 2031.

3.1.5 Junction 1, between the B3335 and the M3, is already over capacity in the AM peak. The highest V/C ratio of 103%, occurs on the northbound-on slip road and, without intervention, the congestion at this location is forecast to worsen over the Local Plan period with a V/C of 120% in 2031. It is noted that this junction falls within the buffer of the SRTM, i.e. outside the core area, and therefore is not modelled to the same level of detail as the other junctions in this study. The results obtained from the buffer of the model are less refined and must therefore be regarded as high level estimates of performance. It is also noted that this section of the M3 is identified for improvements as part of the Department for Transport Smart Motorways programme, which will operate between M3 Junctions 9 to 14. Other planned upgrades include major improvements to M3 Junction 9 and improved slip roads at M3 Junctions 10 to 11 and 12 to 14. It is expected that these improvements will mitigate the capacity problems identified; although localised improvements where the slip roads connect to the local highway network may also be required.

3.1.6 Junction 3 at Church Lane, Colden Common is also shown to be over capacity in the AM peak both in 2014 and 2031. In addition, capacity in the PM peak is forecast to be reached by 2031. The highest V/C's and delays occur on the Main Road arms of the junction indicating that growth along the B3354 corridor, rather than turning flows from the side roads, is the main contributory factor. This may necessitate localised widening of the Main Road approaches to increase capacity.

3.1.7 Junction 11, between the A334/B2177 Winchester Road and A334 Kitnocks Hill, is forecast to reach capacity by 2031 with V/C's of 97% AM and 100% PM. The highest V/C values are predicted to occur on the minor arm of the junction and reflect the increased delays that will be encountered as traffic on Kitnocks Hill (A334) seeks gaps in the main line traffic flow on Winchester Road (A334/B2177).

3.1.8 Junction 12, between the A334, Titchfield Lane and Blind Lane, is also forecast to be approaching capacity by 2031 with V/C ratios reaching 95% and 92% in the AM and PM peaks respectively. These values occur on the right-turn movement on the northern arm of the crossroads, indicating that some optimisation of the traffic signal settings may be required.

3.1.9 Junction 4, between the B2177 and B3354 at Fishers Pond, is predicted to remain within capacity but with V/C ratios above 80% by 2031. This indicates that the capacity of this junction is likely to require further examination in the period beyond 2031, or if there are significant variations to the growth projections for this area of the highway network.

Mitigation Measures

3.1.10 As the 2031 traffic forecasts used in this study include growth from a large number of land allocations in multiple Local Plan districts, in addition to background traffic growth over a wide area, it is not possible to precisely determine the contribution of individual LPP2 sites to overall traffic growth on the network or to the predicted impacts at key junctions. However, although there are no very large LPP2 sites in close proximity to any of the junction capacity hot spots identified in this study, it is evident that all of the proposed land allocations along and adjoining the B2177/ B335/A334 corridor will cumulatively contribute towards the need for mitigation and will be expected to contribute on a proportionate basis.

3.1.11 In keeping with national transport policy, Hampshire County Council as Highway Authority and Winchester City Council as Planning Authority, jointly support a balanced approach to managing and mitigating traffic growth. This will incorporate a wide range of interventions including highway capacity improvements alongside traffic demand management measures and enhancements to public transport, walking and cycling. As planning applications for individual land allocations come forward, along with their associated transport assessment reports, it will be possible to determine the level of individual impacts and the extent of mitigation required. Planning obligations will be used where necessary to secure contributions, either in the form of pooled financial contributions towards identified mitigation schemes, or for the delivery of specific infrastructure improvements.

3.2 Conclusions

3.2.1 The assessment has identified that the B2177/B3354/A334 corridor generally has sufficient capacity to accommodate forecast growth up to 2031, although there are four junctions where capacity is predicted to be reached or exceeded and where mitigation measures are likely to be required. The need for mitigation at these locations results from cumulative impacts as well as individual site-specific impacts.

3.2.2 The precise extent to which individual LPP2 site allocations impact on these junctions will be determined through more detailed transport assessment studies as planning applications for these (and other) sites come forward. These developments will be expected to contribute on a proportionate basis to improvements along the B2177/B3354/A334 corridor required to accommodate or mitigate the impact (individual or cumulative) of development. Planning obligations will be used where necessary to secure contributions, either in the form of pooled financial contributions towards identified mitigation schemes, or for the delivery of specific infrastructure improvements.

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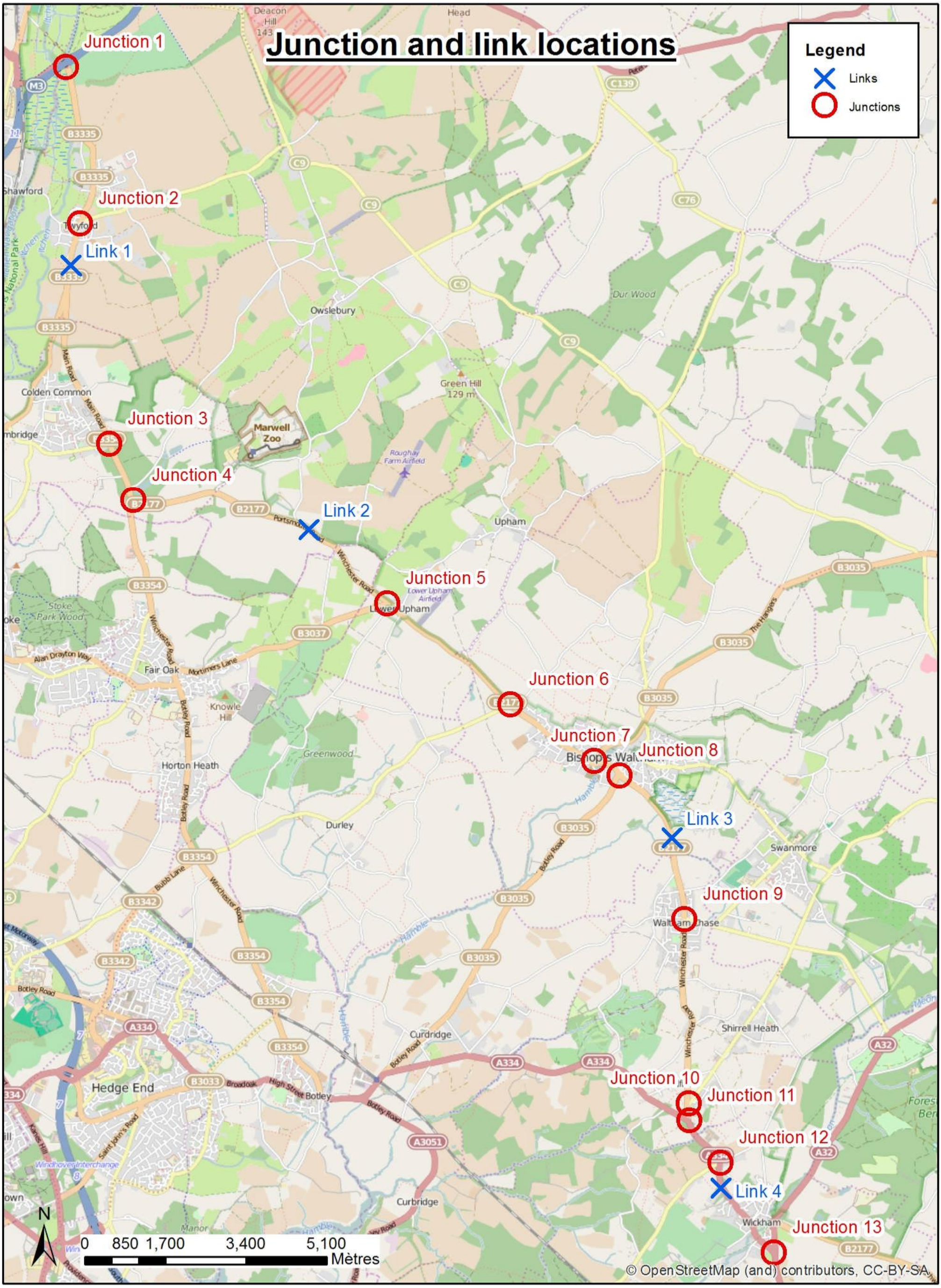
Appendix A

LINK AND JUNCTION LOCATIONS

Junction and link locations



Appendix B

SRTM OUTPUTS

Key

Red	V/C >90
Amber	V/C 80 -90
Green	V/C <80

SRTM Performance Statistics for B2177 / B3354 Corridor

		AM Peak 2014			AM Peak 2031			PM Peak 2014			PM Peak 2031		
Node/ Link No	Name	Actual/ Exit Flow (pcu)	Delay (seconds per veh)	V/C (%)	Actual/ Exit Flow (pcu)	Delay (seconds per veh)	V/C (%)	Actual/ Exit Flow (pcu)	Delay (seconds/ veh)	V/C (%)	Actual/ Exit Flow (pcu)	Delay (seconds per veh)	V/C (%)
Junction 1	M3 J11 Northbound - on	1204	83	103	674	402	120	660	4	38	813	4	52
	M3 J11 Southbound - off	487	3	41	547	3	47	793	3	68	822	3	72
	B3335 North	31	1	2	53	1	3	68	1	3	104	1	5
	B3335 South	1139	0	57	1032	0	52	528	0	26	710	0	35
Junction 2	B3335 High Street North Ahead	426	2	25	508	2	29	680	2	42	744	3	47
	B3335 High Street North Left	1	2	0	3	2	0	0	2	0	0	3	0
	B3335 High Street North Right	91	6	17	90	6	18	181	4	29	182	5	34
	Finches Lane Ahead	7	8	1	13	9	3	8	7	1	13	11	4
	Finches Lane Left	100	8	23	103	7	23	53	5	10	55	7	15
	Finches Lane Right	37	10	12	58	10	19	117	8	27	166	11	46
	B3335 High Street South Ahead	1002	2	51	907	2	50	470	1	24	648	1	33
	B3335 High Street South Left	38	2	5	118	2	14	36	1	3	52	1	5
	B3335 High Street South Right	1	4	0	21	4	5	1	4	0	0	5	0
	Hazeley Road Ahead	40	7	7	67	7	11	15	5	2	18	6	3
	Hazeley Road Left	11	4	2	46	5	8	4	5	1	17	5	3
	Hazeley Road Right	36	6	10	22	6	7	5	7	1	7	9	2
Link 1	B3335 South of Twyford	1041	2	53	1046	2	55	801	3	50	927	3	60
Junction 3	B3354 Main Road North Ahead	446	5	53	513	6	67	728	7	89	774	21	99
	B3354 Main Road North Right	148	5	27	180	6	42	169	8	65	116	22	95
	Church Lane Left	106	6	20	122	6	27	91	5	15	105	7	31
	Church Lane Right	299	7	42	405	7	55	299	6	36	525	8	69
	B3354 Main Road South Ahead	710	172	109	609	228	112	489	6	78	607	62	103
	B3354 Main Road South Left	338	171	109	427	228	112	410	5	74	454	62	103
Junction 4	B3354 Winchester Road North Ahead	441	10	36	534	10	44	700	19	68	881	28	86
	B3354 Winchester Road North Left	281	9	23	360	9	30	310	13	31	399	14	39
	B2177 Portsmouth Road Right	226	45	66	261	52	76	321	33	61	379	38	72
	B2177 Portsmouth Road Left	0	45	0	0	52	0	0	33	0	0	38	0
	B3354 Winchester Road South Ahead	922	15	75	989	17	81	566	16	55	712	18	69
	B3354 Winchester Road South Right	0	24	0	0	28	0	0	25	0	0	34	0
Link 2	B2177 Winchester Road Between Lower Upham and Colden Common	373	2	25	478	3	34	354	1	19	418	1	25
Junction 5	B2177 Winchester Road North Ahead	295	1	15	376	1	19	340	1	17	473	1	24
	B2177 Winchester Road North Right	7	4	1	8	4	1	6	4	1	10	4	1
	B3037 Mortimer's Lane Right	145	5	22	176	6	29	152	5	24	198	6	34
	B3037 Mortimer's Lane Left	10	3	1	19	3	2	5	3	0	8	3	1
	B2177 Winchester Road South Ahead	344	1	19	432	1	25	335	1	20	402	2	24
	B2177 Winchester Road South Left	145	1	11	198	1	15	246	1	18	252	2	19
Junction 6	B2177 Winchester Road North Ahead	426	1	21	537	1	27	476	1	24	651	1	33
	B2177 Winchester Road North Right	0	4	0	0	5	0	0	4	0	0	5	0
	Winters Hill Left	0	4	0	0	4	0	0	4	0	0	4	0
	Winters Hill Right	110	6	19	164	8	33	137	7	26	195	9	43
	B2177 Winchester Road South Ahead	478	2	29	629	2	41	579	2	33	653	2	40
	B2177 Winchester Road South Left	299	2	24	383	2	34	210	2	18	297	2	27
Junction 7	B2177 Winchester Road North Ahead	394	6	19	458	6	36	311	6	23	387	6	32
	B2177 Winchester Road North Left	239	4	28	328	4	28	262	4	20	410	4	33
	B3035 Left	113	6	8	46	5	21	49	5	4	60	5	6
	B3035 Right	38	5	3	285	6	4	115	6	8	359	6	26
	B2177 Winchester Road South Ahead	567	4	37	633	5	45	728	5	47	619	5	44
	B2177 Winchester Road South Right	47	6	5	70	6	8	25	6	3	29	6	4

Key	
Red	V/C >90
Amber	V/C 80 -90
Green	V/C <80

SRTM Performance Statistics for B2177 / B3354 Corridor (continued)

		AM Peak 2014			AM Peak 2031			PM Peak 2014			PM Peak 2031		
Junction 8	B2177 Winchester Road North Ahead	334	4	22	406	4	27	260	4	17	342	4	23
	B2177 Winchester Road North Right	101	5	8	101	5	8	103	5	8	108	6	8
	B3035 Botley Road Left	87	5	7	122	5	10	90	5	8	85	5	7
	B3035 Botley Road Right	95	6	8	109	6	9	86	6	7	79	6	5
	B2177 Winchester Road South Ahead	531	5	35	584	5	38	666	5	44	566	5	38
	B2177 Winchester Road South Left	61	4	6	75	4	7	83	4	9	99	4	10
Link 3	B2177 Winchester Road Between Waltham Chase and Bishop's Waltham	525	15	50	669	17	60	634	13	43	743	17	65
Junction 9	B2177 Winchester Road North Ahead	392	14	48	479	16	62	305	12	40	496	16	70
	B2177 Winchester Road North Right	31	18	7	37	23	12	66	20	18	108	27	45
	B2177 Winchester Road North Left	102	14	20	113	16	32	86	12	21	108	16	70
	Curdridge Lane Right	132	31	58	148	32	61	67	29	32	87	30	42
	Curdridge Lane Ahead	166	23	53	180	24	63	166	23	44	155	23	49
	Curdridge Lane Left	62	23	53	78	24	61	47	23	30	56	23	44
	Forest Road Right	87	28	41	119	21	51	129	31	55	156	32	47
	Forest Road Ahead	228	21	47	171	21	44	167	23	46	159	25	47
	Forest Road Left	3	21	7	3	29	30	6	23	44	6	25	66
	B2177 Winchester Road South Right	6	17	1	69	20	2	12	17	53	12	21	6
	B2177 Winchester Road South Ahead	352	13	40	472	15	55	458	14	3	532	15	64
	B2177 Winchester Road South Left	53	13	10	69	15	17	130	14	25	146	15	35
Junction 10	B2177 Winchester Road North Ahead	569	1	28	577	1	29	453	1	23	630	1	32
	B2177 Winchester Road North Right	0	1	0	0	1	0	0	1	0	0	1	0
	High Street Left	0	7	0	0	7	0	0	7	0	0	8	0
	High Street Right	155	4	17	53	4	6	121	4	13	23	4	3
	B2177 Winchester Road South Ahead	518	2	29	678	2	37	677	2	39	765	2	41
	B2177 Winchester Road South Left	97	4	14	77	4	13	127	4	20	63	4	12
Junction 11	B2177 Winchester Road North Ahead	724	1	36	630	1	32	575	1	29	653	1	33
	B2177 Winchester Road North Right	0	5	0	0	0	0	0	5	0	0	6	0
	A334 Kitnocks Hill Left	0	3	0	0	3	0	0	3	0	0	64	89
	A334 Kitnocks Hill Right	300	14	68	417	46	97	221	11	51	403	61	100
	B2177 Winchester Road South Ahead	615	2	36	755	2	49	804	2	46	828	3	53
	B2177 Winchester Road South Left	229	2	20	388	2	38	219	2	22	357	3	37
Junction 12	A334 Winchester Road North Ahead	842	17	79	862	30	90	667	14	65	906	30	90
	A334 Winchester Road North Left	0	64	0	0	30	90	0	57	0	0	58	0
	A334 Winchester Road North Right	181	33	76	186	56	95	129	36	60	151	58	92
	Tichfield Lane Ahead	19	54	12	21	59	20	21	54	13	23	60	27
	Tichfield Lane Left	140	54	49	197	59	69	157	54	52	237	60	77
	Tichfield Lane Right	34	55	15	38	61	23	33	54	15	43	63	28
	A334 Winchester Road South Ahead	704	10	51	946	13	68	866	13	64	948	14	70
	A334 Winchester Road South Left	31	10	4	36	13	8	29	13	6	34	14	8
	A334 Winchester Road South Right	0	14	0	0	22	0	0	20	0	0	24	0
	Blind Lane Ahead	24	46	7	44	47	13	20	44	5	53	45	14
	Blind Lane Left	0	46	0	0	48	0	0	44	0	0	46	0
	Blind Lane Right	0	46	0	0	48	0	0	44	0	0	45	0
Link 4	B2177 Winchester Road Between Shedfield and Wickham	876	10	50	983	13	66	895	13	62	982	14	68
Junction 13	A334 Winchester Road North Right	692	5	50	730	5	59	523	5	39	821	5	62
	A334 Winchester Road North Left	187	4	21	259	4	33	180	4	18	210	4	28
	A32 School Road Left	240	5	24	238	5	28	207	4	19	277	6	42
	A32 School Road Right	253	5	25	383	6	38	275	5	24	527	7	58
	A32 Hoads Hill South Right	158	5	10	263	5	20	210	5	15	209	5	15
	A32 Hoads Hill South Left	482	4	26	600	4	36	620	4	35	454	4	28