

Appendix J

Network Summary Statistics

Table J.1 Network Summary Statistics – Core Scenario – AM Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	18,460	20,885	19,075	20,885	19,175	24,806	21,454	24,806	21,687
<i>% Change from base</i>		13.1%	3.3%	13.1%	3.9%	34.4%	16.2%	34.4%	17.5%
LGVs	2,605	3,085	3,085	3,085	3,085	4,234	4,234	4,234	4,234
<i>% Change from base</i>		18.5%	18.5%	18.5%	18.5%	62.6%	62.6%	62.6%	62.6%
HGVs	1,513	1,590	1,590	1,590	1,590	1,794	1,794	1,794	1,794
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.5%	18.5%	18.5%	18.5%
Total (veh)	22,578	25,561	23,750	25,561	23,850	30,834	27,482	30,834	27,715
<i>% Change from base</i>		13.2%	5.2%	13.2%	5.6%	36.6%	21.7%	36.6%	22.8%
Simulation Network									
Transient queued time (pcu.hrs)	426.8	537.9	467.0	523.6	482.6	785.1	618.2	754.4	627.7
<i>Change from Do-Minimum</i>				-2.7%	3.3%			-3.9%	1.5%
Over-capacity queued time (pcu.hrs)	77.6	95.6	55.4	19.1	17.9	877.6	317.7	141.4	77.6
<i>Change from Do-Minimum</i>				-80.0%	-67.7%			-83.9%	-75.6%
Link cruise time (pcu.hrs)	5,393	6,288	5,787	5,939	5,593	7,644	6,930	7,415	6,803
<i>Change from Do-Minimum</i>				-5.5%	-3.4%			-3.0%	-1.8%
Total Travel Time (pcu.hrs)	5,897	6,921	6,309	6,482	6,093	9,307	7,866	8,311	7,509
<i>Change from Do-Minimum</i>				-6.3%	-3.4%			-10.7%	-4.5%
Total Travel Distance (pcu.kms)	393,937	440,242	414,270	444,184	423,126	508,727	478,858	527,471	498,446
<i>Change from Do-Minimum</i>				0.9%	2.1%			3.7%	4.1%
Average Speed (kph)	66.8	63.6	65.7	68.5	69.4	54.7	60.9	63.5	66.4
<i>Change from Do-Minimum</i>				7.7%	5.6%			16.1%	9.0%
Convergence									
Number of iteration	15	20	15	13	12	23	20	19	14
Delta function (%)	0.028	0.036	0.034	0.022	0.020	0.108	0.050	0.035	0.036
% Links Flows differing by < 5%	99.4	99.3	99.2	99.2	99.5	99.2	99.3	99.3	98.9
Convergence GAP (%)	0.024	0.029	0.025	0.023	0.021	0.099	0.034	0.033	0.035

Table J.2 Network Summary Statistics – Core Scenario – Inter Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	16,412	18,831	17,181	18,831	17,248	22,683	19,640	22,683	19,762
<i>% Change from base</i>		14.7%	4.7%	14.7%	5.1%	38.2%	19.7%	38.2%	20.4%
LGVs	2,266	2,684	2,684	2,684	2,684	3,683	3,683	3,683	3,683
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.5%	62.5%	62.5%	62.5%
HGVs	1,775	1,865	1,865	1,865	1,865	2,105	2,105	2,105	2,105
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.6%	18.6%	18.6%	18.6%
Total (veh)	20,453	23,380	21,729	23,380	21,797	28,470	25,427	28,470	25,550
<i>% Change from base</i>		14.3%	6.2%	14.3%	6.6%	39.2%	24.3%	39.2%	24.9%
Simulation Network									
Transient queued time (pcu.hrs)	358.7	439.3	385.7	441.9	406.0	631.0	500.3	610.5	523.9
<i>Change from Do-Minimum</i>				0.6%	5.3%			-3.2%	4.7%
Over-capacity queued time (pcu.hrs)	63.5	110.1	57.7	48.1	28.5	379.6	162.6	229.7	98.3
<i>Change from Do-Minimum</i>				-56.3%	-50.6%			-39.5%	-39.5%
Link cruise time (pcu.hrs)	4,887	5,672	5,251	5,491	5,167	7,131	6,418	6,817	6,302
<i>Change from Do-Minimum</i>				-3.2%	-1.6%			-4.4%	-1.8%
Total Travel Time (pcu.hrs)	5,309	6,221	5,694	5,981	5,601	8,141	7,081	7,658	6,924
<i>Change from Do-Minimum</i>				-3.9%	-1.6%			-5.9%	-2.2%
Total Travel Distance (pcu.kms)	382,302	427,157	403,376	429,807	408,987	505,762	474,740	510,082	484,661
<i>Change from Do-Minimum</i>				0.6%	1.4%			0.9%	2.1%
Average Speed (kph)	72.0	68.7	70.8	71.9	73.0	62.1	67.0	66.6	70.0
<i>Change from Do-Minimum</i>				4.7%	3.1%			7.2%	4.5%
Convergence									
Number of iteration	11	11	11	9	11	18	12	12	11
Delta function (%)	0.006	0.039	0.034	0.012	0.011	0.041	0.018	0.026	0.012
% Links Flows differing by < 5%	99.4	99.5	99.5	99.4	99.6	99.3	99.3	99.3	99.3
Convergence GAP (%)	0.017	0.025	0.011	0.009	0.014	0.048	0.022	0.024	0.012

Table J.3 Network Summary Statistics – Core Scenario – PM Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	22,282	25,278	23,128	25,278	23,272	30,074	26,090	30,074	26,361
<i>% Change from base</i>		13.4%	3.8%	13.4%	4.4%	35.0%	17.1%	35.0%	18.3%
LGVs	2,361	2,796	2,796	2,796	2,796	3,838	3,838	3,838	3,838
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.6%	62.6%	62.6%	62.6%
HGVs	846	889	889	889	889	1,003	1,003	1,003	1,003
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.5%	18.5%	18.5%	18.5%
Total (veh)	25,489	28,964	26,813	28,964	26,957	34,915	30,930	34,915	31,201
<i>% Change from base</i>		13.6%	5.2%	13.6%	5.8%	37.0%	21.3%	37.0%	22.4%
Simulation Network									
Transient queued time (pcu.hrs)	481.5	573.2	503.2	562.7	517.8	780.6	644.1	803.4	678.3
<i>Change from Do-Minimum</i>				-1.8%	2.9%			2.9%	5.3%
Over-capacity queued time (pcu.hrs)	200.6	241.2	118.9	75.5	55.1	1,107.9	415.1	328.4	133.1
<i>Change from Do-Minimum</i>				-68.7%	-53.7%			-70.4%	-67.9%
Link cruise time (pcu.hrs)	5,773	6,774	6,212	6,485	6,034	8,294	7,496	8,174	7,405
<i>Change from Do-Minimum</i>				-4.3%	-2.9%			-1.4%	-1.2%
Total Travel Time (pcu.hrs)	6,455	7,588	6,834	7,123	6,607	10,182	8,556	9,306	8,216
<i>Change from Do-Minimum</i>				-6.1%	-3.3%			-8.6%	-4.0%
Total Travel Distance (pcu.kms)	427,572	479,934	448,647	483,321	454,325	558,533	522,674	575,601	537,476
<i>Change from Do-Minimum</i>				0.7%	1.3%			3.1%	2.8%
Average Speed (kph)	66.2	63.2	65.7	67.9	68.8	54.9	61.1	61.9	65.4
<i>Change from Do-Minimum</i>				7.4%	4.7%			12.8%	7.0%
Convergence									
Number of iteration	16	15	13	13	11	20	20	16	16
Delta function (%)	0.028	0.036	0.027	0.019	0.022	0.061	0.039	0.065	0.041
% Links Flows differing by < 5%	99.2	99.0	99.3	99.4	99.7	99.0	99.2	98.8	99.2
Convergence GAP (%)	0.026	0.140	0.093	0.020	0.012	0.136	0.233	0.080	0.037

Table J.4 Network Summary Statistics – Core Scenario – 12-Hour Totals

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	207,293	236,291	215,808	236,291	216,867	282,683	244,837	282,683	246,915
<i>% Change from base</i>		14.0%	4.1%	14.0%	4.6%	36.4%	18.1%	36.4%	19.1%
LGVs	26,814	31,757	31,757	31,757	31,757	43,583	43,583	43,583	43,583
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.5%	62.5%	62.5%	62.5%
HGVs	16,894	17,754	17,754	17,754	17,754	20,031	20,031	20,031	20,031
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.6%	18.6%	18.6%	18.6%
Total (veh)	251,001	285,802	265,319	285,802	266,378	346,297	308,451	346,297	310,530
<i>% Change from base</i>		13.9%	5.7%	13.9%	6.1%	38.0%	22.9%	38.0%	23.7%
Simulation Network									
Transient queued time (pcu.hrs)	4,576.3	5,599.1	4,902.1	5,548.9	5,104.3	7,958.3	6,367.5	7,817.6	6,627.1
<i>Change from Do-Minimum</i>				-0.9%	4.1%			-1.8%	4.1%
Over-capacity queued time (pcu.hrs)	1,130.2	1,567.3	814.7	544.3	367.9	7,583.5	2,934.6	2,642.0	1,154.8
<i>Change from Do-Minimum</i>				-65.3%	-54.8%			-65.2%	-60.6%
Link cruise time (pcu.hrs)	59,101	68,872	63,507	66,089	62,012	85,301	76,993	82,498	75,714
<i>Change from Do-Minimum</i>				-4.0%	-2.4%			-3.3%	-1.7%
Total Travel Time (pcu.hrs)	64,808	76,038	69,223	72,183	67,484	100,842	86,295	92,956	83,496
<i>Change from Do-Minimum</i>				-5.1%	-2.5%			-7.8%	-3.2%
Total Travel Distance (pcu.kms)	4,485,251	5,017,710	4,722,094	5,053,106	4,794,293	5,881,956	5,520,280	6,003,206	5,671,155
<i>Change from Do-Minimum</i>				0.7%	1.5%			2.1%	2.7%
Average Speed (kph)	69.3	66.1	68.3	70.1	71.1	58.5	64.0	64.7	68.0
<i>Change from Do-Minimum</i>				6.1%	4.1%			10.6%	6.2%

Table J.5 Network Summary Statistics – Pessimistic Scenario – AM Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	18,460	20,885	19,077	20,885	19,177	24,806	21,455	24,806	21,695
<i>% Change from base</i>		13.1%	3.3%	13.1%	3.9%	34.4%	16.2%	34.4%	17.5%
LGVs	2,605	3,085	3,085	3,085	3,085	4,234	4,234	4,234	4,234
<i>% Change from base</i>		18.5%	18.5%	18.5%	18.5%	62.6%	62.6%	62.6%	62.6%
HGVs	1,513	1,590	1,590	1,590	1,590	1,794	1,794	1,794	1,794
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.5%	18.5%	18.5%	18.5%
Total (veh)	22,578	25,561	23,752	25,561	23,852	30,834	27,483	30,834	27,723
<i>% Change from base</i>		13.2%	5.2%	13.2%	5.6%	36.6%	21.7%	36.6%	22.8%
Simulation Network									
Transient queued time (pcu.hrs)	426.8	540.6	466.1	523.3	481.7	780.4	614.1	743.3	622.2
<i>Change from Do-Minimum</i>				-3.2%	3.3%			-4.8%	1.3%
Over-capacity queued time (pcu.hrs)	77.6	103.2	52.3	19.5	17.8	892.1	327.3	134.2	71.4
<i>Change from Do-Minimum</i>				-81.1%	-66.0%			-85.0%	-78.2%
Link cruise time (pcu.hrs)	5,393	6,298	5,788	5,937	5,590	7,648	6,933	7,414	6,812
<i>Change from Do-Minimum</i>				-5.7%	-3.4%			-3.1%	-1.7%
Total Travel Time (pcu.hrs)	5,897	6,942	6,306	6,480	6,089	9,320	7,875	8,291	7,506
<i>Change from Do-Minimum</i>				-6.7%	-3.4%			-11.0%	-4.7%
Total Travel Distance (pcu.kms)	393,937	440,499	414,416	444,131	423,008	508,921	479,118	527,967	499,353
<i>Change from Do-Minimum</i>				0.8%	2.1%			3.7%	4.2%
Average Speed (kph)	66.8	63.5	65.7	68.5	69.5	54.6	60.8	63.7	66.5
<i>Change from Do-Minimum</i>				7.9%	5.8%			16.7%	9.4%
Convergence									
Number of iteration	15	19	14	13	13	20	20	17	14
Delta function (%)	0.028	0.028	0.036	0.018	0.022	0.062	0.051	0.020	0.051
% Links Flows differing by < 5%	99.4	99.0	99.0	99.2	99.5	99.0	99.2	99.0	99.2
Convergence GAP (%)	0.024	0.046	0.033	0.025	0.019	0.117	0.044	0.038	0.036

Table J.6 Network Summary Statistics – Pessimistic Scenario – Inter Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	16,412	18,831	17,180	18,831	17,248	22,683	19,649	22,683	19,776
<i>% Change from base</i>		14.7%	4.7%	14.7%	5.1%	38.2%	19.7%	38.2%	20.5%
LGVs	2,266	2,684	2,684	2,684	2,684	3,683	3,683	3,683	3,683
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.5%	62.5%	62.5%	62.5%
HGVs	1,775	1,865	1,865	1,865	1,865	2,105	2,105	2,105	2,105
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.6%	18.6%	18.6%	18.6%
Total (veh)	20,453	23,380	21,729	23,380	21,797	28,470	25,436	28,470	25,563
<i>% Change from base</i>		14.3%	6.2%	14.3%	6.6%	39.2%	24.4%	39.2%	25.0%
Simulation Network									
Transient queued time (pcu.hrs)	358.7	438.9	386.3	441.6	405.5	626.9	494.7	602.8	522.0
<i>Change from Do-Minimum</i>				0.6%	5.0%			-3.8%	5.5%
Over-capacity queued time (pcu.hrs)	63.5	110.5	59.6	51.8	29.0	372.5	168.1	224.8	93.9
<i>Change from Do-Minimum</i>				-53.1%	-51.3%			-39.7%	-44.1%
Link cruise time (pcu.hrs)	4,887	5,671	5,252	5,488	5,164	7,140	6,419	6,809	6,303
<i>Change from Do-Minimum</i>				-3.2%	-1.7%			-4.6%	-1.8%
Total Travel Time (pcu.hrs)	5,309	6,220	5,698	5,981	5,599	8,139	7,082	7,637	6,919
<i>Change from Do-Minimum</i>				-3.8%	-1.7%			-6.2%	-2.3%
Total Travel Distance (pcu.kms)	382,302	427,107	403,466	429,668	409,010	506,560	475,226	510,653	485,476
<i>Change from Do-Minimum</i>				0.6%	1.4%			0.8%	2.2%
Average Speed (kph)	72.0	68.7	70.8	71.8	73.1	62.2	67.1	66.9	70.2
<i>Change from Do-Minimum</i>				4.5%	3.2%			7.6%	4.6%
Convergence									
Number of iteration	11	11	11	10	10	16	11	12	10
Delta function (%)	0.006	0.059	0.024	0.010	0.006	0.044	0.022	0.010	0.010
% Links Flows differing by < 5%	99.4	99.3	99.5	99.5	99.7	99.1	99.0	99.4	99.6
Convergence GAP (%)	0.017	0.020	0.016	0.008	0.006	0.069	0.054	0.026	0.015

Table J.7 Network Summary Statistics – Pessimistic Scenario – PM Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	22,282	25,279	23,126	25,279	23,272	30,074	26,083	30,074	26,382
<i>% Change from base</i>		13.4%	3.8%	13.4%	4.4%	35.0%	17.1%	35.0%	18.4%
LGVs	2,361	2,796	2,796	2,796	2,796	3,838	3,838	3,838	3,838
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.6%	62.6%	62.6%	62.6%
HGVs	846	889	889	889	889	1,003	1,003	1,003	1,003
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.5%	18.5%	18.5%	18.5%
Total (veh)	25,489	28,964	26,811	28,964	26,958	34,914	30,923	34,914	31,222
<i>% Change from base</i>		13.6%	5.2%	13.6%	5.8%	37.0%	21.3%	37.0%	22.5%
Simulation Network									
Transient queued time (pcu.hrs)	481.5	574.6	504.5	561.4	517.1	774.4	636.1	793.3	667.5
<i>Change from Do-Minimum</i>				-2.3%	2.5%			2.4%	4.9%
Over-capacity queued time (pcu.hrs)	200.6	242.3	120.7	73.5	54.5	1,112.9	403.1	293.6	132.7
<i>Change from Do-Minimum</i>				-69.7%	-54.8%			-73.6%	-67.1%
Link cruise time (pcu.hrs)	5,773	6,771	6,206	6,481	6,031	8,305	7,488	8,177	7,405
<i>Change from Do-Minimum</i>				-4.3%	-2.8%			-1.5%	-1.1%
Total Travel Time (pcu.hrs)	6,455	7,588	6,832	7,116	6,602	10,193	8,528	9,264	8,205
<i>Change from Do-Minimum</i>				-6.2%	-3.4%			-9.1%	-3.8%
Total Travel Distance (pcu.kms)	427,572	479,789	448,529	483,141	454,176	559,356	523,291	576,619	538,313
<i>Change from Do-Minimum</i>				0.7%	1.3%			3.1%	2.9%
Average Speed (kph)	66.2	63.2	65.7	67.9	68.8	54.9	61.4	62.2	65.6
<i>Change from Do-Minimum</i>				7.4%	4.7%			13.3%	6.8%
Convergence									
Number of iteration	16	15	12	11	11	22	18	15	13
Delta function (%)	0.028	0.032	0.036	0.020	0.015	0.061	0.050	0.049	0.027
% Links Flows differing by < 5%	99.2	99.3	99.2	99.0	99.7	99.2	99.0	99.0	99.4
Convergence GAP (%)	0.026	0.041	0.029	0.041	0.015	0.263	0.068	0.074	0.037

Table J.8 Network Summary Statistics – Pessimistic Scenario – 12-Hour Totals

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	207,293	236,291	215,806	236,291	216,873	282,682	244,873	282,682	247,075
<i>% Change from base</i>		14.0%	4.1%	14.0%	4.6%	36.4%	18.1%	36.4%	19.2%
LGVs	26,814	31,757	31,757	31,757	31,757	43,583	43,583	43,583	43,583
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.5%	62.5%	62.5%	62.5%
HGVs	16,894	17,754	17,754	17,754	17,754	20,031	20,031	20,031	20,031
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.6%	18.6%	18.6%	18.6%
Total (veh)	251,001	285,802	265,317	285,802	266,384	346,297	308,488	346,297	310,690
<i>% Change from base</i>		13.9%	5.7%	13.9%	6.1%	38.0%	22.9%	38.0%	23.8%
Simulation Network									
Transient queued time (pcu.hrs)	4,576.3	5,607.6	4,906.9	5,542.7	5,097.0	7,904.6	6,301.4	7,715.0	6,571.9
<i>Change from Do-Minimum</i>				-1.2%	3.9%			-2.4%	4.3%
Over-capacity queued time (pcu.hrs)	1,130.2	1,592.5	823.0	562.0	369.0	7,592.2	2,959.9	2,498.9	1,111.2
<i>Change from Do-Minimum</i>				-64.7%	-55.2%			-67.1%	-62.5%
Link cruise time (pcu.hrs)	59,101	68,884	63,502	66,055	61,982	85,394	76,985	82,452	75,743
<i>Change from Do-Minimum</i>				-4.1%	-2.4%			-3.4%	-1.6%
Total Travel Time (pcu.hrs)	64,808	76,083	69,232	72,161	67,448	100,891	86,246	92,665	83,426
<i>Change from Do-Minimum</i>				-5.2%	-2.6%			-8.2%	-3.3%
Total Travel Distance (pcu.kms)	4,485,251	5,017,687	4,722,696	5,051,647	4,793,715	5,889,498	5,525,560	6,010,704	5,680,694
<i>Change from Do-Minimum</i>				0.7%	1.5%			2.1%	2.8%
Average Speed (kph)	69.3	66.0	68.3	70.0	71.1	58.5	64.1	64.9	68.1
<i>Change from Do-Minimum</i>				6.0%	4.2%			11.0%	6.3%

Table J.9 Network Summary Statistics – Optimistic Scenario – AM Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	18,460	20,885	19,074	20,885	19,176	24,806	21,458	24,806	21,700
<i>% Change from base</i>		13.1%	3.3%	13.1%	3.9%	34.4%	16.2%	34.4%	17.6%
LGVs	2,605	3,085	3,085	3,085	3,085	4,234	4,234	4,234	4,234
<i>% Change from base</i>		18.5%	18.5%	18.5%	18.5%	62.6%	62.6%	62.6%	62.6%
HGVs	1,513	1,590	1,590	1,590	1,590	1,794	1,794	1,794	1,794
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.5%	18.5%	18.5%	18.5%
Total (veh)	22,578	25,561	23,750	25,561	23,851	30,834	27,486	30,834	27,728
<i>% Change from base</i>		13.2%	5.2%	13.2%	5.6%	36.6%	21.7%	36.6%	22.8%
Simulation Network									
Transient queued time (pcu.hrs)	426.8	538.2	466.3	524.6	484.5	790.2	625.2	750.9	626.4
<i>Change from Do-Minimum</i>				-2.5%	3.9%			-5.0%	0.2%
Over-capacity queued time (pcu.hrs)	77.6	95.6	54.8	23.5	18.4	865.7	330.5	130.0	74.3
<i>Change from Do-Minimum</i>				-75.4%	-66.4%			-85.0%	-77.5%
Link cruise time (pcu.hrs)	5,393	6,290	5,787	5,939	5,593	7,649	6,921	7,382	6,767
<i>Change from Do-Minimum</i>				-5.6%	-3.3%			-3.5%	-2.2%
Total Travel Time (pcu.hrs)	5,897	6,924	6,308	6,487	6,096	9,305	7,877	8,263	7,467
<i>Change from Do-Minimum</i>				-6.3%	-3.4%			-11.2%	-5.2%
Total Travel Distance (pcu.kms)	393,937	440,361	414,337	444,278	423,201	509,196	478,233	527,045	497,271
<i>Change from Do-Minimum</i>				0.9%	2.1%			3.5%	4.0%
Average Speed (kph)	66.8	63.6	65.7	68.5	69.4	54.7	60.7	63.8	66.6
<i>Change from Do-Minimum</i>				7.7%	5.6%			16.6%	9.7%
Convergence									
Number of iteration	15	19	15	14	12	19	16	16	15
Delta function (%)	0.028	0.030	0.021	0.024	0.027	0.068	0.051	0.015	0.022
% Links Flows differing by < 5%	99.4	99.0	99.3	99.5	99.4	98.9	98.9	99.7	99.6
Convergence GAP (%)	0.024	0.038	0.027	0.025	0.024	0.054	0.052	0.032	0.011

Table J.10 Network Summary Statistics – Optimistic Scenario – Inter Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	16,412	18,831	17,181	18,831	17,249	22,683	19,651	22,683	19,781
<i>% Change from base</i>		14.7%	4.7%	14.7%	5.1%	38.2%	19.7%	38.2%	20.5%
LGVs	2,266	2,684	2,684	2,684	2,684	3,683	3,683	3,683	3,683
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.5%	62.5%	62.5%	62.5%
HGVs	1,775	1,865	1,865	1,865	1,865	2,105	2,105	2,105	2,105
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.6%	18.6%	18.6%	18.6%
Total (veh)	20,453	23,380	21,729	23,380	21,798	28,470	25,438	28,470	25,568
<i>% Change from base</i>		14.3%	6.2%	14.3%	6.6%	39.2%	24.4%	39.2%	25.0%
Simulation Network									
Transient queued time (pcu.hrs)	358.7	440.2	386.4	443.0	405.6	636.9	515.4	605.8	522.8
<i>Change from Do-Minimum</i>				0.6%	5.0%			-4.9%	1.4%
Over-capacity queued time (pcu.hrs)	63.5	99.8	57.8	45.7	29.7	359.5	151.0	187.1	86.9
<i>Change from Do-Minimum</i>				-54.2%	-48.6%			-48.0%	-42.5%
Link cruise time (pcu.hrs)	4,887	5,675	5,253	5,492	5,164	7,127	6,418	6,803	6,279
<i>Change from Do-Minimum</i>				-3.2%	-1.7%			-4.5%	-2.2%
Total Travel Time (pcu.hrs)	5,309	6,215	5,697	5,981	5,599	8,123	7,084	7,596	6,889
<i>Change from Do-Minimum</i>				-3.8%	-1.7%			-6.5%	-2.8%
Total Travel Distance (pcu.kms)	382,302	427,308	403,495	429,921	408,971	505,977	474,313	509,728	483,418
<i>Change from Do-Minimum</i>				0.6%	1.4%			0.7%	1.9%
Average Speed (kph)	72.0	68.8	70.8	71.9	73.0	62.3	67.0	67.1	70.2
<i>Change from Do-Minimum</i>				4.5%	3.1%			7.7%	4.8%
Convergence									
Number of iteration	11	11	10	9	10	14	13	12	10
Delta function (%)	0.006	0.025	0.017	0.008	0.005	0.053	0.023	0.013	0.010
% Links Flows differing by < 5%	99.4	99.6	99.3	99.5	99.5	99.0	99.4	99.3	99.0
Convergence GAP (%)	0.017	0.050	0.025	0.012	0.005	0.047	0.026	0.018	0.014

Table J.11 Network Summary Statistics – Optimistic Scenario – PM Peak

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	22,282	25,279	23,126	25,279	23,272	30,074	26,085	30,074	26,375
<i>% Change from base</i>		13.4%	3.8%	13.4%	4.4%	35.0%	17.1%	35.0%	18.4%
LGVs	2,361	2,796	2,796	2,796	2,796	3,838	3,838	3,838	3,838
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.6%	62.6%	62.6%	62.6%
HGVs	846	889	889	889	889	1,003	1,003	1,003	1,003
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.5%	18.5%	18.5%	18.5%
Total (veh)	25,489	28,964	26,812	28,964	26,957	34,914	30,925	34,914	31,215
<i>% Change from base</i>		13.6%	5.2%	13.6%	5.8%	37.0%	21.3%	37.0%	22.5%
Simulation Network									
Transient queued time (pcu.hrs)	481.5	574.6	505.5	563.8	518.6	796.5	654.0	803.9	684.8
<i>Change from Do-Minimum</i>				-1.9%	2.6%			0.9%	4.7%
Over-capacity queued time (pcu.hrs)	200.6	243.8	113.7	76.7	53.1	1,040.9	393.8	297.3	130.9
<i>Change from Do-Minimum</i>				-68.5%	-53.3%			-71.4%	-66.8%
Link cruise time (pcu.hrs)	5,773	6,777	6,212	6,485	6,034	8,342	7,480	8,159	7,374
<i>Change from Do-Minimum</i>				-4.3%	-2.9%			-2.2%	-1.4%
Total Travel Time (pcu.hrs)	6,455	7,595	6,831	7,126	6,606	10,180	8,528	9,261	8,190
<i>Change from Do-Minimum</i>				-6.2%	-3.3%			-9.0%	-4.0%
Total Travel Distance (pcu.kms)	427,572	480,056	448,712	483,369	454,495	560,153	521,863	574,552	535,094
<i>Change from Do-Minimum</i>				0.7%	1.3%			2.6%	2.5%
Average Speed (kph)	66.2	63.2	65.7	67.8	68.8	55.0	61.2	62.0	65.3
<i>Change from Do-Minimum</i>				7.3%	4.7%			12.7%	6.7%
Convergence									
Number of iteration	16	16	13	13	12	20	14	15	13
Delta function (%)	0.028	0.059	0.039	0.020	0.012	0.059	0.060	0.038	0.032
% Links Flows differing by < 5%	99.2	98.9	99.1	99.6	99.6	98.8	99.2	99.0	99.2
Convergence GAP (%)	0.026	0.130	0.036	0.023	0.024	0.257	0.068	0.047	0.025

Table J.12 Network Summary Statistics – Optimistic Scenario – 12-Hour Totals

Statistics	2008 Base	2014				2029			
		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Matrix Size (veh)									
Car	207,293	236,291	215,803	236,291	216,874	282,683	244,899	282,683	247,097
<i>% Change from base</i>		14.0%	4.1%	14.0%	4.6%	36.4%	18.1%	36.4%	19.2%
LGVs	26,814	31,757	31,757	31,757	31,757	43,583	43,583	43,583	43,583
<i>% Change from base</i>		18.4%	18.4%	18.4%	18.4%	62.5%	62.5%	62.5%	62.5%
HGVs	16,894	17,754	17,754	17,754	17,754	20,031	20,031	20,031	20,031
<i>% Change from base</i>		5.1%	5.1%	5.1%	5.1%	18.6%	18.6%	18.6%	18.6%
Total (veh)	251,001	285,802	265,314	285,802	266,385	346,298	308,514	346,298	310,711
<i>% Change from base</i>		13.9%	5.7%	13.9%	6.1%	38.0%	22.9%	38.0%	23.8%
Simulation Network									
Transient queued time (pcu.hrs)	4,576.3	5,609.1	4,910.7	5,561.1	5,109.0	8,050.4	6,503.3	7,781.7	6,634.8
<i>Change from Do-Minimum</i>				-0.9%	4.0%			-3.3%	2.0%
Over-capacity queued time (pcu.hrs)	1,130.2	1,512.6	799.6	544.6	370.9	7,249.1	2,840.2	2,271.9	1,071.8
<i>Change from Do-Minimum</i>				-64.0%	-53.6%			-68.7%	-62.3%
Link cruise time (pcu.hrs)	59,101	68,904	63,521	66,098	61,999	85,422	76,920	82,284	75,396
<i>Change from Do-Minimum</i>				-4.1%	-2.4%			-3.7%	-2.0%
Total Travel Time (pcu.hrs)	64,808	76,026	69,231	72,204	67,479	100,721	86,264	92,338	83,103
<i>Change from Do-Minimum</i>				-5.0%	-2.5%			-8.3%	-3.7%
Total Travel Distance (pcu.kms)	4,485,251	5,019,261	4,723,164	5,054,170	4,794,856	5,888,887	5,513,885	5,997,114	5,654,145
<i>Change from Do-Minimum</i>				0.7%	1.5%			1.8%	2.5%
Average Speed (kph)	69.3	66.1	68.3	70.0	71.1	58.6	64.0	65.0	68.1
<i>Change from Do-Minimum</i>				5.9%	4.1%			11.0%	6.4%