A63 Castle Street Improvements, Hull
Environmental Statement

Volume 3 Appendix 6.1

AIR QUALITY - SATURN TRAFFIC DATA

TR010016/APP/6.3
HE514508-MMSJV-EAQ-S0-RP-LA-000002
6 September 2018

A63 Castle Street Improvements, Hull

Environmental Statement

Appendix 6.1 SATURN traffic data

Revision Record						
Rev No	**Date**	**Originator**	**Checker**	**Approver**	**Status**	**Suitability**
P01.1	24.04.18	J Burnell	C Mills	J McKenna	S0	For review
P01	31.07.18	J Burnell	C Mills	J McKenna	Shared	S4
P02	06.09.18	J Burnell	C Mills	J McKenna	Shared	S4

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Table 1.1: Traffic data for the affected road network

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
1	1231_1109	0	0	24	HC	HC	HC	1	0	24	HC	HC	HC	0	0	24	HC	HC	HC
2	2875_1465	1498	121	38	LC	LC	LC	1563	140	38	LC	LC	LC	1489	110	38	LC	LC	LC
3	2874_1466	20	19	28	LC	LC	HC	28	20	28	LC	LC	HC	74	20	28	LC	LC	HC
4	1204_1526	6295	784	33	LC	HC	LC	6257	769	33	LC	HC	LC	7185	844	33	LC	HC	LC
5	4272_1136	293	288	31	LC	LC	HC	295	288	31	LC	LC	HC	291	288	31	LC	LC	HC
6	1418_1150	1333	21	34	LC	LC	LC	1652	29	34	LC	LC	LC	1033	27	34	LC	LC	LC
7	1542_8720	5182	466	40	LC	LC	LC	7378	491	41	LC	LC	LC	6386	434	41	LC	LC	LC
8	2583_4350	9105	295	38	LC	LC	LC	9728	287	38	LC	LC	LC	9380	288	38	LC	LC	LC
9	4272_1830	2108	322	32	LC	HC	LC	2738	330	32	LC	HC	LC	2073	322	32	LC	HC	LC
10	8887_1845	884	8	55	LC	FF	FF	988	9	55	LC	FF	FF	1013	9	54	LC	FF	FF
11	4131_1853	0	0	26	LC	LC	HC	0	0	25	HC	HC	HC	0	0	26	HC	HC	HC
12	1603_1865	21188	3334	48	LC	LC	LC	24451	3354	47	LC	HC	LC	0	0	0	-	-	-

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
13	1526_1866	5802	746	33	LC	HC	LC	5659	729	33	LC	HC	LC	6662	816	33	LC	HC	LC
14	2550_1866	3805	305	19	HC	HC	HC	4446	371	18	HC	HC	HC	4147	378	18	HC	HC	HC
15	4140_1866	5327	685	31	LC	HC	LC	3286	539	31	LC	HC	LC	3301	530	31	LC	HC	LC
16	2683_2686	9216	461	42	LC	LC	LC	10964	488	42	LC	LC	LC	11719	517	42	LC	LC	LC
17	2549_1901	1032	43	46	FF	FF	FF	2257	49	46	FF	FF	FF	1870	57	46	FF	FF	FF
18	1903_1905	290	27	41	LC	LC	LC	253	27	41	LC	LC	LC	292	31	41	LC	LC	LC
19	1903_1917	1279	67	43	LC	LC	LC	1937	73	43	LC	LC	LC	1864	73	43	LC	LC	LC
20	2588_2218	3882	158	33	LC	LC	LC	3216	170	33	LC	LC	LC	3074	170	33	LC	LC	LC
21	2550_2549	781	30	40	LC	LC	LC	1821	37	40	LC	LC	LC	1435	45	40	LC	LC	LC
22	1901_2549	4243	197	44	LC	FF	LC	4835	259	44	LC	FF	LC	4441	264	44	LC	FF	LC
23	1866_2550	944	22	30	LC	LC	LC	1810	28	30	LC	LC	LC	1494	36	30	LC	LC	LC
24	2568_2557	4075	235	41	LC	HC	LC	4878	241	41	LC	HC	LC	4385	238	41	LC	HC	LC
25	2560_2557	6169	315	20	HC	HC	HC	5253	398	21	HC	HC	HC	3315	292	22	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
26	1232_4427	585	93	39	LC	LC	LC	555	80	39	LC	LC	LC	300	66	39	LC	LC	LC
27	2557_2568	5979	325	44	LC	LC	LC	8596	605	44	LC	LC	LC	8679	574	44	LC	LC	LC
28	2218_2588	2677	85	33	LC	LC	LC	2892	91	33	LC	LC	LC	2835	91	33	LC	LC	LC
29	8780_2589	1097	3	32	LC	LC	LC	2349	8	32	LC	LC	LC	2575	13	32	LC	LC	LC
30	3430_2596	4797	686	28	LC	LC	LC	4620	687	27	LC	LC	LC	4941	682	27	LC	LC	LC
31	1863_2627	8844	444	50	FF	LC	FF	9856	692	47	LC	LC	FF	9651	626	47	LC	LC	FF
32	2641_2640	1689	29	32	LC	LC	LC	1650	26	32	LC	LC	LC	2074	33	32	LC	LC	LC
33	8936_2649	4288	133	25	LC	HC	HC	4965	119	25	HC	HC	HC	5477	131	25	HC	HC	HC
34	2649_8936	0	0	25	HC	HC	HC	0	0	25	HC	HC	HC	0	0	25	HC	HC	HC
35	2684_2683	7685	353	42	LC	LC	LC	9260	370	42	LC	LC	LC	9081	359	42	LC	LC	LC
36	1376_2683	7886	344	54	FF	LC	FF	8301	373	53	FF	LC	LC	9267	413	51	FF	LC	LC
37	4019_2878	752	45	27	LC	LC	HC	736	40	26	LC	LC	HC	829	42	26	LC	LC	HC
38	2878_2879	765	57	24	HC	HC	LC	824	47	24	HC	HC	HC	990	62	24	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
39	1224_2879	1198	69	30	LC	LC	LC	1251	96	30	LC	LC	LC	1074	54	30	LC	LC	LC
40	1205_2887	4724	360	36	LC	LC	LC	5235	370	36	LC	LC	LC	5793	378	36	LC	LC	LC
41	1204_2895	5275	742	34	LC	LC	LC	5193	736	34	LC	LC	LC	5637	767	34	LC	LC	LC
42	1204_2896	2447	300	41	LC	LC	LC	2483	305	41	LC	LC	LC	2803	305	41	LC	LC	LC
43	2895_2896	461	0	23	HC	HC	HC	676	0	23	HC	HC	HC	591	0	23	HC	HC	HC
44	8522_2931	5486	295	43	LC	LC	LC	7359	431	43	LC	LC	LC	6607	419	43	LC	LC	LC
45	2996_2995	3912	11	25	LC	HC	HC	3598	83	25	LC	HC	HC	3054	51	26	LC	HC	LC
46	2995_2996	4250	25	21	HC	HC	HC	4035	283	19	HC	HC	HC	3406	207	21	HC	HC	HC
47	1415_3002	0	0	28	LC	LC	LC	0	0	28	LC	LC	LC	0	0	28	LC	LC	LC
48	2995_3007	892	27	29	LC	LC	LC	1047	3	29	LC	LC	LC	1163	3	29	LC	LC	LC
49	3002_3007	0	0	26	LC	LC	HC	0	0	26	LC	LC	HC	0	0	26	LC	LC	HC
50	2996_3026	6633	369	32	LC	LC	LC	8034	364	32	LC	HC	LC	7094	345	32	LC	HC	LC
51	8841_8562	2350	74	40	LC	LC	LC	2243	73	40	LC	LC	LC	2322	74	40	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
52	1371_3146	27222	2992	78	FF	FF	FF	30231	3190	75	FF	FF	FF	32526	3290	71	FF	FF	FF
53	1205_3159	7915	465	35	LC	LC	LC	9472	529	35	LC	LC	LC	8595	471	35	LC	LC	LC
54	1205_3160	4732	720	30	LC	HC	LC	5125	745	30	LC	HC	LC	6135	795	30	LC	HC	LC
55	4019_3161	1535	42	44	FF	FF	LC	1722	50	44	FF	FF	LC	1997	49	44	FF	FF	LC
56	1206_3161	6026	622	40	LC	LC	LC	5892	617	40	LC	LC	LC	6628	680	40	LC	LC	LC
57	1466_3162	0	0	24	HC	LC	HC	0	0	24	HC	LC	HC	0	0	24	HC	LC	HC
58	2596_3430	3998	379	29	LC	LC	LC	4740	386	29	LC	LC	LC	4065	377	29	LC	LC	LC
59	1211_1210	3010	381	33	LC	LC	LC	2921	330	34	LC	LC	LC	3893	426	32	HC	LC	LC
60	1221_1210	2444	175	29	LC	LC	LC	2557	179	29	LC	LC	LC	2530	180	29	LC	LC	LC
61	1236_3434	761	7	31	LC	LC	LC	791	6	31	LC	LC	LC	768	6	31	LC	LC	LC
62	3142_8521	19493	2169	66	FF	FF	FF	20933	2301	65	FF	FF	FF	22774	2346	64	FF	FF	FF
63	1232_4003	8607	394	27	HC	HC	HC	9754	370	27	HC	HC	HC	0	0	0	-	-	-
64	1365_4005	18832	2646	46	LC	LC	LC	19932	2716	42	LC	LC	LC	0	0	0	-	-	-

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
65	8538_4005	3598	104	25	HC	HC	HC	4162	125	25	HC	HC	HC	0	0	0	-	-	-
66	3161_4019	2193	279	46	LC	FF	FF	1893	248	46	LC	FF	FF	2599	313	46	LC	FF	FF
67	2878_4019	0	0	31	LC	LC	HC	0	0	31	LC	LC	HC	0	0	31	LC	LC	HC
68	1203_4131	6737	398	37	LC	LC	LC	7331	408	37	LC	LC	LC	7128	412	37	LC	LC	LC
69	1853_4131	75	0	23	HC	HC	HC	241	0	23	HC	HC	HC	123	1	23	HC	HC	HC
70	4248_4131	2583	329	36	LC	LC	LC	2981	356	36	LC	LC	LC	4548	389	36	LC	LC	LC
71	4271_4143	1962	62	31	LC	LC	LC	2106	61	31	LC	LC	LC	2728	123	30	LC	LC	LC
72	1418_4143	4898	591	34	LC	LC	LC	4678	581	34	LC	LC	LC	7638	667	33	HC	LC	LC
73	1212_4247	1794	365	35	LC	LC	LC	1511	314	35	LC	LC	LC	2661	408	34	LC	LC	LC
74	1212_4248	2509	327	36	LC	LC	LC	2929	355	36	LC	LC	LC	4498	388	36	LC	LC	LC
75	4131_4248	6811	399	27	HC	HC	HC	7428	409	26	HC	HC	HC	7211	412	26	HC	HC	HC
76	4328_4255	23383	2876	58	FF	FF	FF	26126	2968	56	FF	FF	FF	0	0	0	-	-	-
77	3160_2895	4732	720	36	LC	LC	LC	5125	745	36	LC	LC	LC	6135	795	36	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
78	3420_1242	577	12	22	HC	HC	HC	1525	25	22	HC	HC	HC	673	21	22	HC	HC	HC
79	1242_3420	717	67	33	LC	LC	LC	1620	92	33	LC	LC	LC	1102	96	33	LC	LC	LC
80	4258_4255	22	0	22	HC	HC	HC	62	0	21	HC	HC	HC	0	0	0	-	-	-
81	1243_4356	11477	371	30	HC	HC	LC	12931	386	30	HC	HC	LC	12109	392	30	HC	HC	LC
82	3901_4356	5429	323	29	LC	HC	HC	6421	324	28	LC	HC	HC	6213	311	28	LC	HC	HC
83	4329_1247	5468	499	39	LC	LC	LC	7013	499	39	LC	LC	LC	5270	383	39	LC	LC	LC
84	8720_1542	5514	360	28	HC	HC	HC	5544	641	29	HC	HC	HC	6260	569	28	HC	HC	HC
85	1003_4264	5441	435	33	LC	HC	LC	5015	411	33	LC	HC	LC	5237	418	33	LC	HC	LC
86	1003_4329	5468	499	39	LC	LC	LC	7013	499	38	LC	LC	LC	5270	383	39	LC	LC	LC
87	2990_1244	9185	287	32	HC	LC	LC	9812	287	31	HC	HC	LC	9466	288	31	HC	HC	LC
88	2990_4350	9604	353	37	LC	LC	LC	10887	348	35	LC	LC	LC	10557	325	36	LC	LC	LC
89	1144_1586	3552	545	36	LC	LC	LC	3609	534	36	LC	LC	LC	6115	667	36	LC	LC	LC
90	1394_1602	26571	3653	93	FF	HS	HS	29782	3938	90	FF	HS	HS	30851	3948	89	LC	HS	HS

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
91	1397_1606	23209	2834	96	HS	HS	HS	28358	2967	87	HS	LC	HS	29022	3013	86	HS	LC	HS
92	4124_1248	8913	585	27	HC	HC	HC	11699	666	26	HC	HC	HC	10498	606	26	HC	HC	HC
93	1393_1396	2799	133	30	HC	HC	HC	3219	150	29	HC	HC	HC	3189	150	29	HC	HC	HC
94	1465_2875	5259	151	32	HC	LC	LC	5744	174	32	HC	LC	LC	5180	161	32	HC	LC	LC
95	2879_2875	1498	121	24	HC	HC	HC	1548	140	23	HC	HC	HC	1463	110	24	HC	HC	HC
96	8535_4327	4481	356	43	LC	HC	LC	5705	353	42	LC	HC	LC	8364	416	42	LC	HC	LC
97	1242_4349	5188	319	35	LC	HC	LC	6271	321	34	LC	HC	LC	5973	306	34	LC	HC	LC
98	1248_4353	9491	0	37	LC	LC	LC	11163	0	36	LC	LC	LC	10497	0	36	LC	LC	LC
99	2597_4353	7385	0	33	HC	HC	LC	6664	0	33	HC	HC	LC	6046	0	33	HC	HC	LC
100	8868_8541	18433	3087	45	LC	LC	LC	20254	3205	43	LC	LC	LC	0	0	0	-	-	-
101	3142_8846	3594	393	45	LC	LC	LC	3750	410	44	HC	LC	LC	4787	437	44	HC	LC	LC
102	8844_8845	3898	262	36	LC	LC	LC	4728	286	35	HC	LC	LC	4605	276	35	LC	LC	LC
103	1206_4276	9076	447	39	LC	LC	LC	10293	489	39	LC	LC	LC	9505	426	39	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
104	4276_1208	9076	447	39	LC	LC	LC	10293	489	39	LC	LC	LC	9505	426	39	LC	LC	LC
105	1905_8978	126	18	33	LC	LC	HC	146	18	33	LC	LC	HC	146	18	33	LC	LC	HC
106	8978_1015	141	30	33	LC	LC	LC	159	33	33	HC	LC	LC	159	33	33	HC	LC	LC
107	1015_8978	86	23	35	LC	LC	LC	102	26	35	LC	LC	LC	102	26	35	LC	LC	LC
108	8992_4007	4186	108	26	HC	HC	HC	4421	117	26	HC	HC	HC	0	0	0	-	-	-
109	8976_1903	1279	67	47	FF	FF	LC	1925	73	47	FF	FF	LC	1853	73	47	FF	FF	LC
110	1903_8976	1904	53	46	LC	LC	LC	2162	118	46	LC	FF	LC	2274	120	46	LC	FF	LC
111	3146_4422	27222	2992	78	FF	FF	FF	30231	3190	77	FF	FF	FF	32526	3290	76	FF	FF	FF
112	1246_1107	10383	417	37	LC	LC	LC	11185	383	37	LC	LC	LC	10655	366	37	LC	LC	LC
113	1150_1586	1333	21	37	LC	LC	LC	1652	29	37	LC	LC	LC	1033	27	37	LC	LC	LC
114	1853_1203	741	2	24	HC	HC	HC	768	2	23	HC	HC	HC	721	3	23	HC	HC	HC
115	1422_1505	2548	49	35	LC	HC	LC	2731	54	35	LC	HC	LC	3283	53	35	LC	HC	LC
116	1446_1109	4418	149	25	HC	HC	HC	4163	149	25	HC	HC	HC	6372	195	25	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
117	1109_1231	239	1	24	HC	HC	HC	230	1	24	HC	HC	HC	0	0	26	HC	HC	LC
118	1201_1001	716	37	25	HC	HC	HC	928	43	25	HC	HC	HC	959	47	25	HC	HC	HC
119	4143_1001	3601	135	26	LC	HC	LC	3591	134	26	LC	HC	LC	4728	154	26	LC	HC	LC
120	4327_1369	4481	356	43	LC	HC	LC	5705	353	42	LC	HC	LC	8364	416	41	LC	HC	LC
121	8837_8838	2046	65	41	LC	LC	LC	1997	64	41	LC	LC	LC	2114	64	41	LC	LC	LC
122	8844_8837	81	15	40	LC	LC	LC	224	17	40	LC	LC	LC	216	17	40	LC	LC	LC
123	8845_8846	12954	748	41	LC	LC	LC	15126	870	39	HC	LC	LC	14268	844	39	HC	LC	LC
124	8846_8850	9593	853	40	LC	LC	LC	10640	897	40	LC	LC	LC	11461	920	40	LC	LC	LC
125	8853_8855	6529	382	44	LC	LC	LC	8047	415	44	LC	LC	LC	8473	422	44	LC	LC	LC
126	8855_8837	3951	361	39	LC	LC	LC	6322	409	39	LC	LC	LC	6831	427	39	LC	LC	LC
127	8874_8528	8136	483	32	LC	LC	LC	8056	483	32	LC	LC	LC	8736	498	32	LC	LC	LC
128	1482_2931	3110	413	44	LC	LC	LC	3036	429	44	LC	LC	LC	2691	421	44	LC	LC	LC
129	2931_1482	5639	303	43	LC	LC	LC	7620	440	43	LC	LC	LC	6883	428	43	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
130	4354_4348	6034	361	39	LC	LC	LC	6539	431	39	LC	LC	LC	5963	398	39	LC	LC	LC
131	2995_3420	3908	8	28	LC	HC	LC	3595	81	27	LC	HC	LC	3051	49	28	LC	HC	LC
132	3420_2995	5139	49	31	LC	LC	LC	5079	284	31	LC	LC	LC	4566	208	31	LC	LC	LC
133	2652_2650	1926	37	27	HC	LC	LC	2299	43	26	HC	LC	LC	2676	46	27	HC	LC	LC
134	2650_2652	1883	12	27	LC	LC	LC	1846	26	26	LC	HC	HC	1798	20	26	LC	HC	HC
135	1446_1201	1417	40	37	LC	LC	LC	1770	45	37	LC	LC	LC	1768	50	37	LC	LC	LC
136	8936_2650	251	5	26	LC	HC	LC	313	6	26	LC	HC	HC	288	6	26	LC	HC	HC
137	8937_2641	1982	353	32	LC	LC	LC	2383	376	32	LC	HC	LC	2801	413	32	LC	HC	LC
138	1374_8937	2357	358	31	HC	LC	LC	2848	381	31	HC	LC	LC	3275	418	31	HC	LC	LC
139	4129_1203	2247	64	26	HC	HC	LC	2821	53	25	HC	HC	LC	2209	85	25	HC	HC	LC
140	1526_1204	8037	810	26	HC	HC	HC	7246	770	27	HC	HC	HC	6747	768	26	HC	HC	HC
141	2895_1204	4732	720	25	HC	HC	HC	5125	745	25	HC	HC	HC	6135	795	25	HC	HC	HC
142	3159_1205	7796	446	26	HC	HC	HC	9133	511	26	HC	HC	HC	8023	487	26	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
143	2887_1205	7630	832	34	LC	LC	LC	8008	857	34	LC	LC	LC	8639	881	33	LC	LC	LC
144	3159_1206	11981	802	39	LC	LC	LC	13084	859	38	LC	LC	LC	12073	799	38	LC	LC	LC
145	4422_1376	27222	2992	78	FF	FF	FF	30231	3190	76	FF	FF	FF	32526	3290	75	FF	FF	FF
146	3434_4424	1887	96	20	HC	HC	HC	2700	118	20	HC	HC	HC	2880	86	20	HC	HC	HC
147	4428_4122	4527	77	42	LC	LC	LC	2317	41	23	HC	HC	HC	2160	41	23	HC	HC	HC
148	4428_4427	2982	106	43	LC	LC	LC	1990	121	24	HC	HC	HC	2552	118	23	HC	HC	HC
149	4427_4428	4439	225	44	LC	LC	LC	3928	222	25	HC	HC	HC	3359	209	25	HC	HC	HC
150	3028_1901	4214	198	44	LC	FF	LC	4957	260	44	LC	FF	LC	4416	264	44	LC	FF	LC
151	4439_8720	5284	369	43	LC	LC	LC	5923	697	43	LC	LC	LC	5619	622	43	LC	LC	LC
152	8838_8843	2512	377	40	LC	LC	LC	4806	432	40	LC	LC	LC	5306	447	40	LC	LC	LC
153	6007_3142	0	0	0	-	-	-	24683	2711	51	LC	LC	LC	27561	2783	50	LC	LC	LC
154	6142_6010	0	0	0	-	-	-	18958	1678	53	LC	LC	LC	20995	1737	52	LC	LC	LC
155	8843_6141	1692	209	50	HC	LC	FF	3282	247	49	HC	LC	FF	3932	273	48	HC	LC	FF

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
156	3434_1236	1230	1010	28	LC	LC	LC	1164	1012	28	LC	LC	LC	1411	1011	27	LC	LC	LC
157	2641_8528	2061	353	30	HC	HC	LC	2525	376	30	HC	HC	LC	2804	413	30	HC	HC	LC
158	4326_8529	379	13	41	LC	LC	LC	405	12	41	LC	LC	LC	481	14	41	LC	LC	LC
159	8531_8530	8175	508	39	LC	LC	LC	8005	494	39	LC	LC	LC	9722	545	39	LC	LC	LC
160	8529_8531	379	13	31	HC	HC	HC	405	12	31	HC	HC	HC	481	14	30	HC	HC	HC
161	8535_8532	12339	649	40	LC	LC	LC	12534	745	39	LC	LC	LC	9584	634	40	LC	LC	LC
162	8875_8533	16240	959	38	LC	LC	LC	18426	1206	38	LC	LC	LC	20390	1230	38	LC	LC	LC
163	8527_8534	9706	547	29	HC	HC	HC	9680	637	29	HC	HC	HC	7247	527	29	HC	HC	HC
164	4007_8538	4186	108	26	HC	HC	HC	4421	117	26	HC	HC	HC	0	0	0	-	-	-
165	4005_8539	18832	2646	50	FF	FF	FF	19932	2716	49	FF	FF	FF	0	0	0	-	-	-
166	1865_8540	21188	3334	45	LC	LC	LC	24451	3354	44	LC	HC	LC	0	0	0	-	-	-
167	8541_1230	25723	3354	46	LC	LC	LC	27688	3450	45	LC	LC	LC	0	0	0	-	-	-
168	8728_3420	3250	34	22	HC	HC	HC	4040	44	21	HC	HC	HC	4046	46	21	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
169	3420_8728	2930	10	29	LC	LC	LC	2670	31	28	LC	LC	LC	2012	28	28	LC	LC	LC
170	1223_1222	3761	42	30	LC	LC	LC	3793	78	30	LC	LC	LC	3595	18	30	LC	LC	LC
171	2589_8780	1291	29	35	LC	LC	LC	1244	26	35	LC	LC	LC	1496	33	35	LC	LC	LC
172	2588_8780	2677	85	32	LC	LC	LC	2892	91	32	LC	LC	HC	2835	91	32	LC	LC	HC
173	8840_8838	2816	386	33	LC	LC	LC	5052	441	33	LC	LC	LC	5513	457	32	LC	LC	LC
174	8838_8841	2350	74	41	LC	LC	LC	2243	73	41	LC	LC	LC	2322	74	41	LC	LC	LC
175	8841_8843	3159	109	36	LC	LC	LC	3428	119	35	HC	LC	LC	3448	119	34	HC	LC	LC
176	1214_8865	21369	2766	45	LC	LC	LC	22655	2873	44	LC	LC	LC	0	0	0	-	-	-
177	8872_8868	18433	3087	42	LC	LC	LC	20254	3205	40	LC	HC	LC	0	0	0	-	-	-
178	4003_8868	3715	233	26	HC	HC	HC	5008	228	26	HC	HC	HC	0	0	0	-	-	-
179	8542_1161	3486	42	32	HC	LC	HC	4369	81	31	HC	HC	HC	0	0	0	-	-	-
180	8874_8875	9891	473	38	LC	LC	LC	10936	712	38	LC	LC	LC	12109	687	38	LC	LC	LC
181	2649_8875	6349	486	24	HC	HC	HC	7490	494	23	HC	HC	HC	8280	544	22	HC	HC	HC

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		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
182	8896_8897	22455	2693	40	LC	LC	LC	24443	2802	39	LC	LC	LC	0	0	0	-	-	-
183	9382_1420	3273	159	30	HC	LC	HC	4709	170	30	HC	HC	HC	4708	170	30	HC	HC	HC
184	1233_1232	6156	286	28	LC	HC	HC	7520	274	27	LC	HC	HC	9801	354	27	LC	HC	HC
185	1232_1233	5537	250	23	HC	HC	HC	7402	144	23	HC	HC	HC	7097	145	23	HC	HC	HC
186	1244_1243	11099	370	33	LC	LC	LC	12012	386	33	LC	LC	LC	11651	392	33	LC	LC	LC
187	1243_1244	13145	352	24	HC	HC	HC	14869	358	23	HC	HC	HC	14381	339	24	HC	HC	HC
188	1247_1542	7516	499	38	LC	LC	LC	9181	655	37	LC	LC	LC	6492	503	39	LC	LC	LC
189	1245_1574	10945	365	31	HC	HC	LC	12370	356	31	HC	HC	HC	11824	321	31	HC	HC	HC
190	1215_1197	215	28	25	HC	HC	LC	213	30	25	HC	HC	LC	348	32	25	HC	HC	LC
191	4129_1208	516	17	24	HC	LC	HC	566	26	24	HC	LC	HC	332	7	24	HC	LC	HC
192	8542_1365	18832	2646	35	LC	LC	HC	19932	2716	34	HC	HC	HC	0	0	0	-	-	-
193	1586_1150	3552	545	38	LC	LC	LC	3609	534	38	LC	LC	LC	6115	667	37	LC	LC	LC
194	8865_6001	0	0	0	-	-	-	24304	2904	52	LC	LC	LC	0	0	0	-	-	-

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
195	1827_1830	0	0	23	HC	HC	HC	0	0	22	HC	HC	HC	1	0	23	HC	HC	HC
196	1211_1871	1721	53	29	HC	HC	LC	1760	44	29	HC	HC	LC	1716	49	29	HC	HC	LC
197	1209_1210	2523	295	24	HC	HC	HC	2688	293	24	HC	HC	HC	2666	298	24	HC	HC	HC
198	1864_8532	6224	310	49	LC	LC	LC	6137	281	48	LC	LC	LC	8195	376	45	LC	LC	LC
199	1866_1526	8037	810	30	LC	HC	LC	7246	770	30	LC	HC	LC	6747	768	31	LC	HC	LC
200	1871_1827	0	0	22	HC	HC	HC	0	0	22	HC	HC	HC	0	0	22	HC	HC	HC
201	3147_1863	25551	3423	60	FF	LC	FF	28601	3694	59	LC	LC	FF	30032	3707	57	LC	LC	FF
202	2799_2178	6116	197	30	HC	HC	HC	6070	206	29	HC	HC	HC	6174	208	29	HC	HC	HC
203	4131_1203	2583	329	39	LC	LC	LC	3126	356	39	LC	LC	LC	4589	389	39	LC	LC	LC
204	1109_1148	4179	149	19	HC	HC	HC	3934	147	19	HC	HC	HC	6372	195	18	HC	HC	HC
205	1001_1201	5092	195	26	LC	HC	LC	5098	198	26	LC	HC	HC	6182	222	24	HC	HC	HC
206	1239_3435	1255	11	22	HC	HC	HC	1380	12	21	HC	HC	HC	1301	9	21	HC	HC	HC
207	2583_4351	9375	357	35	LC	LC	LC	10720	355	34	LC	LC	LC	10359	330	35	LC	LC	LC

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		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
208	4350_2583	9604	353	37	LC	LC	LC	10887	348	37	LC	LC	LC	10557	325	37	LC	LC	LC
209	2568_1248	5979	325	31	HC	HC	HC	8596	605	29	HC	HC	HC	8679	574	30	HC	HC	HC
210	8710_1248	9755	282	29	HC	HC	HC	9695	333	29	HC	HC	HC	9522	325	29	HC	HC	HC
211	4353_1248	7385	0	25	HC	HC	HC	6664	0	24	HC	HC	HC	6046	0	24	HC	HC	HC
212	2685_2684	1989	79	43	LC	LC	LC	2073	88	43	LC	LC	LC	2091	88	43	LC	LC	LC
213	2878_1466	19	19	32	LC	LC	LC	19	19	32	LC	LC	LC	24	21	32	LC	LC	LC
214	1412_1419	642	642	31	HC	HC	HC	642	642	31	HC	HC	HC	642	642	31	HC	HC	HC
215	1379_2685	4628	295	54	FF	FF	FF	5315	316	52	FF	LC	LC	5224	313	51	FF	LC	LC
216	2178_2799	8135	357	37	LC	LC	LC	8501	392	37	LC	LC	LC	8552	370	37	LC	LC	LC
217	1466_2874	19	19	28	LC	LC	LC	19	19	27	LC	LC	HC	24	21	28	LC	LC	LC
218	1466_2875	0	0	27	HC	LC	LC	15	0	27	HC	LC	LC	25	0	27	HC	LC	LC
219	3026_2996	5533	313	27	HC	HC	HC	7515	303	27	HC	HC	HC	5826	303	27	HC	HC	HC
220	1206_3159	8713	556	33	LC	HC	LC	10174	643	33	HC	HC	LC	8990	601	33	HC	HC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
221	8536_4003	2398	105	37	LC	LC	LC	2839	113	37	LC	LC	LC	0	0	0	-	-	-
222	1871_4247	1721	53	23	HC	HC	HC	1760	44	23	HC	HC	HC	1716	49	23	HC	HC	HC
223	1422_4259	855	2	34	LC	LC	LC	866	3	34	LC	LC	LC	184	1	34	LC	LC	LC
224	1233_4264	6840	504	36	LC	LC	LC	8389	505	35	LC	LC	LC	6317	388	36	LC	LC	LC
225	4143_4271	3324	530	32	LC	LC	LC	3326	521	32	LC	LC	LC	5803	653	30	HC	LC	LC
226	8529_4326	10767	464	44	LC	LC	LC	11071	544	44	LC	LC	LC	8534	478	46	LC	LC	LC
227	1372_4326	379	13	41	LC	LC	LC	405	12	41	LC	LC	LC	481	14	41	LC	LC	LC
228	2557_8527	9706	547	36	LC	HC	LC	9680	637	36	LC	HC	LC	7247	527	36	LC	HC	LC
229	4003_1160	7290	267	27	HC	HC	HC	7585	255	27	HC	HC	HC	0	0	0	-	-	-
230	4005_8872	3598	104	35	LC	LC	LC	4162	125	34	LC	HC	HC	0	0	0	-	-	-
231	8532_8873	18563	959	41	LC	LC	LC	18672	1026	40	LC	LC	LC	17776	1009	43	LC	LC	LC
232	8530_8874	18027	955	38	LC	LC	LC	18992	1195	38	LC	LC	LC	20845	1184	38	LC	LC	LC
233	4353_2597	9491	0	40	LC	LC	LC	11163	0	38	LC	LC	LC	10497	0	38	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
234	1240_3435	3189	118	28	LC	LC	LC	3843	140	28	LC	LC	LC	4577	105	28	LC	LC	LC
235	1208_4129	933	11	27	LC	LC	LC	1411	2	27	LC	LC	LC	544	16	27	LC	LC	LC
236	3380_1574	9880	410	31	HC	HC	LC	10706	378	31	HC	HC	HC	10100	360	31	HC	HC	HC
237	1241_4275	9446	286	40	LC	LC	LC	11412	390	40	LC	LC	LC	9293	295	40	LC	LC	LC
238	4275_1240	9446	286	41	LC	LC	LC	11412	390	41	LC	LC	LC	9293	295	41	LC	LC	LC
239	1240_1224	8040	266	36	LC	LC	LC	9992	371	36	LC	LC	LC	7265	280	37	LC	LC	LC
240	1223_1224	4354	160	34	LC	LC	LC	5604	173	34	HC	LC	LC	4730	144	34	LC	LC	LC
241	1223_1209	7291	260	42	LC	LC	LC	9204	342	42	LC	LC	LC	6743	293	42	LC	LC	LC
242	1208_4276	9509	723	39	LC	LC	LC	10559	778	39	LC	LC	LC	10074	797	39	LC	LC	LC
243	4122_1542	4541	70	27	LC	LC	LC	1785	23	37	FF	LC	LC	1692	23	38	FF	LC	LC
244	1542_4122	6407	98	29	LC	LC	LC	4714	190	29	LC	LC	LC	4047	100	29	LC	LC	LC
245	1212_1135	6811	153	33	LC	LC	LC	7262	154	32	LC	LC	LC	7240	210	32	LC	HC	LC
246	3435_1239	1084	22	29	LC	LC	LC	1008	22	29	LC	LC	LC	1299	19	29	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
247	1107_1246	11694	302	30	HC	HC	HC	12914	308	28	HC	HC	HC	12634	297	29	HC	HC	HC
248	1375_1601	25551	3423	68	FF	LC	FF	28601	3694	67	LC	LC	FF	30032	3707	65	LC	LC	FF
249	8868_1365	3715	233	35	LC	LC	LC	5008	228	34	LC	LC	HC	0	0	0	-	-	-
250	1863_1369	16706	2979	50	LC	HC	FF	18745	3002	48	LC	HC	FF	20381	3081	47	LC	HC	LC
251	1864_1371	17181	2567	62	FF	FF	FF	20052	2687	60	FF	FF	FF	25650	2856	58	FF	FF	FF
252	1372_1371	10042	425	48	FF	LC	FF	10182	501	47	FF	LC	FF	6876	433	49	FF	LC	FF
253	4326_1372	10767	464	44	LC	LC	LC	11071	544	44	LC	LC	LC	8534	478	45	LC	LC	LC
254	1379_1375	21943	3358	84	FF	FF	HS	24467	3621	83	FF	FF	HS	25627	3634	82	FF	FF	HS
255	2684_1375	3607	64	63	FF	FF	FF	4134	73	62	FF	FF	FF	4404	73	62	FF	FF	FF
256	2686_1378	7190	352	62	FF	FF	FF	8874	368	60	FF	FF	FF	8718	363	60	FF	FF	FF
257	1398_1393	2713	106	39	LC	HC	LC	2890	113	39	LC	HC	LC	2773	113	39	LC	HC	LC
258	1393_1394	6542	314	58	FF	FF	FF	6599	338	57	FF	FF	FF	6714	316	57	FF	FF	FF
259	1395_1396	6100	298	36	HC	HC	HC	6145	371	36	HC	HC	HC	6519	379	35	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
260	1395_1397	20423	2701	101	HS	HS	HS	24654	2817	99	HS	HS	HS	25454	2864	98	HS	HS	HS
261	1419_1412	290	290	31	LC	HC	HC	290	290	31	LC	HC	HC	290	290	31	LC	HC	HC
262	3002_1413	892	27	20	HC	HC	HC	1047	3	20	HC	HC	HC	1163	3	20	HC	HC	HC
263	1151_1418	1381	46	23	HC	HC	HC	1347	48	23	HC	HC	HC	1559	0	23	HC	HC	HC
264	4143_1418	1299	21	33	LC	LC	LC	1377	27	33	LC	LC	LC	998	27	33	LC	LC	LC
265	1420_1419	561	72	24	HC	HC	HC	942	102	24	HC	HC	HC	773	67	24	HC	HC	HC
266	1232_1420	617	67	33	HC	LC	HC	1098	72	33	HC	LC	HC	624	62	33	HC	LC	HC
267	1419_1420	524	83	21	HC	HC	HC	980	81	21	HC	HC	HC	946	81	21	HC	HC	HC
268	2896_1204	2399	297	33	HC	HC	LC	2164	287	33	HC	HC	LC	2334	286	33	HC	HC	LC
269	1248_8710	11605	588	42	LC	LC	LC	13672	667	42	LC	LC	LC	13265	647	42	LC	LC	LC
270	8887_6141	15160	1429	55	LC	LC	FF	15675	1431	55	HC	LC	FF	17062	1464	55	HC	LC	FF
271	8870_8538	3650	224	33	LC	HC	HC	5743	257	33	LC	HC	HC	0	0	0	-	-	-
272	1365_8869	3715	233	37	LC	LC	LC	5008	228	37	LC	LC	LC	0	0	0	-	-	-

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
273	8869_8870	7201	274	40	LC	LC	LC	9377	309	40	LC	LC	LC	0	0	0	-	-	-
274	8540_1162	2755	247	30	HC	HC	HC	3926	113	30	HC	HC	HC	0	0	0	-	-	-
275	8992_1505	2801	27	37	LC	LC	LC	2858	27	37	LC	LC	LC	2891	25	37	LC	LC	LC
276	1205_4437	4390	365	41	LC	LC	LC	5148	406	41	LC	LC	LC	4469	389	41	LC	LC	LC
277	1574_3380	10945	365	31	HC	HC	LC	12370	356	31	HC	HC	HC	11824	321	31	HC	HC	HC
278	4122_4428	5790	97	44	LC	LC	LC	4147	199	23	HC	HC	HC	3451	109	23	HC	HC	HC
279	1237_1236	2472	703	29	LC	LC	LC	3131	744	29	LC	LC	LC	2251	679	29	LC	LC	LC
280	4259_4258	0	0	28	LC	LC	HC	0	0	28	LC	LC	HC	0	0	27	LC	HC	HC
281	8873_8531	7796	495	41	LC	LC	LC	7600	482	41	LC	LC	LC	9241	531	41	LC	LC	LC
282	1107_3380	10788	428	32	HC	HC	LC	11635	396	32	HC	HC	LC	11093	378	32	HC	HC	LC
283	1245_4351	8572	281	37	LC	LC	LC	9219	273	37	LC	LC	LC	8864	274	37	LC	LC	LC
284	4276_1206	9509	723	39	LC	LC	LC	10559	778	39	LC	LC	LC	10074	797	39	LC	LC	LC
285	8855_8845	9055	487	43	LC	LC	LC	10398	584	42	LC	LC	LC	9663	568	43	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
286	8848_3028	6954	288	38	LC	LC	LC	8225	383	36	LC	LC	LC	7585	361	36	LC	LC	LC
287	3161_1206	2325	100	31	HC	HC	HC	2716	112	30	HC	HC	HC	2976	110	29	HC	HC	HC
288	8533_8527	9126	501	37	LC	LC	LC	9867	744	37	LC	LC	LC	9689	708	37	LC	LC	LC
289	3028_8848	1996	121	36	LC	HC	LC	3355	147	36	LC	HC	LC	2722	151	36	LC	HC	LC
290	1398_1394	20029	3340	96	FF	HS	HS	23182	3600	95	FF	HS	HS	24136	3633	94	FF	HS	HS
291	1845_8840	2816	386	46	LC	FF	FF	5052	441	46	LC	FF	FF	5513	457	46	LC	FF	FF
292	1586_1145	1333	21	26	HC	HC	HC	1652	29	26	HC	HC	HC	1033	27	26	HC	HC	HC
293	1566_8895	21336	2672	40	LC	LC	LC	23293	2780	39	LC	HC	LC	0	0	0	-	-	-
294	4348_4354	7543	430	38	LC	LC	LC	8353	464	37	LC	LC	LC	8566	466	37	LC	LC	LC
295	8978_1905	134	8	32	HC	HC	HC	168	9	32	HC	HC	HC	167	9	32	HC	HC	HC
296	4247_1212	1647	51	23	HC	HC	HC	1708	44	23	HC	HC	HC	1666	48	23	HC	HC	HC
297	4010_1215	24927	3340	45	LC	LC	LC	26476	3437	44	LC	LC	LC	0	0	0	-	-	-
298	1197_1215	59	0	24	HC	HC	HC	0	0	23	HC	HC	HC	0	0	0	-	-	-

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
299	1222_1221	1283	0	23	HC	HC	HC	1396	0	23	HC	HC	HC	1431	0	23	HC	HC	HC
300	1210_1221	2024	261	33	LC	LC	LC	2300	267	33	LC	LC	LC	2156	268	33	LC	LC	LC
301	3430_1222	1283	0	28	HC	HC	LC	1396	0	28	HC	HC	LC	1431	0	28	HC	HC	LC
302	1209_1223	8146	234	44	LC	LC	LC	9503	278	43	LC	LC	LC	8509	203	44	LC	LC	LC
303	1222_3430	3761	42	33	LC	LC	LC	3793	78	33	LC	LC	LC	3595	18	33	LC	LC	LC
304	1231_8896	1120	20	24	HC	HC	HC	1163	22	21	HC	HC	HC	0	0	0	-	-	-
305	1420_1232	2910	207	28	HC	HC	HC	3975	187	27	HC	HC	HC	4111	221	27	HC	HC	HC
306	8536_1232	3955	245	31	LC	LC	LC	5250	126	33	LC	LC	LC	0	0	0	-	-	-
307	1419_1233	1085	597	25	HC	HC	HC	1464	627	25	HC	HC	HC	1296	592	25	HC	HC	HC
308	4264_1233	5441	435	26	HC	HC	HC	5016	411	26	HC	HC	HC	5237	418	26	HC	HC	HC
309	1236_1235	1981	746	21	HC	HC	HC	2526	788	21	HC	HC	HC	1934	723	21	HC	HC	HC
310	1236_1237	961	961	26	LC	LC	HC	979	962	26	LC	HC	HC	961	961	26	LC	LC	HC
311	1239_1238	0	0	21	HC	HC	HC	0	0	20	HC	HC	HC	0	0	21	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
312	3430_1239	3431	418	31	LC	LC	LC	4214	460	31	LC	LC	LC	3256	391	31	LC	LC	LC
313	3435_1240	1255	11	19	HC	HC	HC	1379	12	19	HC	HC	HC	1301	9	19	HC	HC	HC
314	1240_4275	9118	185	41	LC	LC	LC	10393	196	41	LC	LC	LC	8784	183	41	LC	LC	LC
315	4248_1212	5599	381	23	HC	HC	HC	6022	390	23	HC	HC	HC	5981	393	23	HC	HC	HC
316	2879_1224	5295	112	21	HC	HC	HC	5835	131	20	HC	HC	HC	5303	120	21	HC	HC	HC
317	8527_2557	9126	501	43	LC	LC	LC	9867	744	45	LC	LC	LC	9689	708	46	LC	LC	LC
318	8780_2588	3882	158	34	LC	LC	LC	3216	170	34	LC	LC	LC	3074	170	34	LC	LC	LC
319	2557_2560	3685	178	23	HC	HC	HC	1722	141	23	HC	HC	HC	1464	136	23	HC	HC	HC
320	1830_4272	293	288	31	LC	LC	HC	295	288	31	LC	LC	HC	291	288	31	LC	LC	HC
321	2895_3160	5563	761	26	HC	HC	HC	5467	759	26	HC	HC	HC	6151	786	26	HC	HC	HC
322	1165_1167	0	0	29	LC	LC	HC	0	0	29	LC	LC	HC	0	0	0	-	-	-
323	1001_4143	1362	34	25	HC	HC	HC	1509	41	25	HC	HC	HC	1164	44	24	HC	HC	HC
324	1135_4271	1962	62	31	LC	LC	LC	2106	61	31	LC	LC	LC	2728	123	30	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
325	4271_1135	3324	530	32	LC	LC	LC	3326	521	32	LC	LC	LC	5803	653	31	LC	LC	LC
326	1871_1211	3010	381	37	LC	LC	LC	2921	330	37	LC	LC	LC	3894	426	37	LC	LC	LC
327	8937_1374	4420	348	31	HC	LC	LC	4389	348	30	HC	LC	LC	4528	352	30	HC	LC	LC
328	1415_3434	1010	1010	26	LC	LC	LC	1028	1011	26	LC	LC	LC	1010	1010	26	LC	LC	LC
329	2560_4428	3318	160	42	LC	LC	LC	1198	121	22	HC	HC	HC	891	116	22	HC	HC	HC
330	4424_8791	1887	96	20	HC	HC	HC	2700	118	19	HC	HC	HC	2880	86	19	HC	HC	HC
331	8534_8535	16820	1005	40	LC	LC	LC	18239	1098	39	LC	LC	LC	17947	1050	38	LC	LC	LC
332	1248_2568	4075	235	42	LC	LC	LC	4878	241	42	LC	LC	LC	4385	238	42	LC	LC	LC
333	1378_2672	26525	3000	95	HS	FF	HS	30800	3188	89	HS	LC	HS	31973	3243	88	HS	LC	HS
334	3160_3159	4243	484	27	HC	HC	HC	3789	476	26	HC	HC	HC	3741	494	27	HC	HC	HC
335	8870_4007	3551	50	42	LC	LC	LC	3634	52	42	LC	LC	LC	0	0	0	-	-	-
336	1248_4124	6833	369	34	LC	LC	LC	6936	696	34	LC	LC	LC	6597	621	34	LC	LC	LC
337	4350_2990	9105	295	38	LC	LC	LC	9728	287	37	LC	LC	LC	9380	288	38	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
338	1223_2878	32	31	32	LC	LC	LC	106	26	32	LC	LC	LC	184	41	32	LC	LC	LC
339	4255_4258	0	0	28	LC	HC	LC	0	0	28	LC	HC	LC	0	0	0	-	-	-
340	1136_1212	2010	313	25	HC	HC	HC	2223	307	25	HC	HC	HC	2775	357	25	HC	HC	HC
341	1136_4272	2108	322	32	LC	HC	LC	2738	330	32	LC	HC	LC	2073	322	32	LC	HC	LC
342	1212_1136	467	303	34	LC	LC	LC	502	304	34	LC	LC	LC	550	303	34	LC	LC	LC
343	1906_1015	351	42	35	LC	LC	LC	517	47	35	LC	LC	LC	511	47	35	LC	LC	LC
344	8539_1140	23069	2875	59	FF	FF	FF	25929	2967	58	FF	FF	FF	0	0	0	-	-	-
345	1140_4328	23384	2876	60	FF	FF	FF	26126	2968	58	FF	FF	FF	0	0	0	-	-	-
346	8864_1144	3552	545	36	LC	LC	LC	3609	534	36	LC	LC	LC	0	0	0	-	-	-
347	1145_8865	1333	21	26	HC	HC	HC	1652	29	25	HC	HC	HC	0	0	0	-	-	-
348	1150_1418	3552	545	37	LC	LC	LC	3609	534	37	LC	LC	LC	6115	667	36	LC	LC	LC
349	1197_1151	1529	46	24	HC	HC	HC	1347	48	24	HC	HC	HC	1559	0	24	HC	HC	HC
350	1151_1152	149	0	26	HC	LC	HC	0	0	26	HC	LC	HC	0	0	27	LC	LC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
351	1160_8541	7290	267	25	HC	HC	HC	7585	255	24	HC	HC	HC	0	0	0	-	-	-
352	1161_8869	3486	42	32	HC	LC	HC	4369	81	31	HC	HC	HC	0	0	0	-	-	-
353	1163_8539	4238	228	27	HC	HC	HC	6001	249	26	HC	HC	HC	0	0	0	-	-	-
354	1196_1164	24772	3312	44	LC	LC	LC	26263	3407	43	LC	LC	LC	0	0	0	-	-	-
355	1152_1151	0	0	22	HC	HC	HC	0	0	22	HC	HC	HC	0	0	22	HC	HC	HC
356	4124_4404	6833	369	32	LC	LC	HC	6936	696	32	HC	LC	HC	6597	621	32	LC	LC	HC
357	1215_1196	24772	3312	44	LC	LC	LC	26263	3407	43	LC	LC	LC	0	0	0	-	-	-
358	1239_3430	1746	682	30	LC	LC	LC	1689	683	30	LC	LC	LC	1961	679	30	LC	LC	LC
359	1142_8542	22318	2688	40	LC	LC	LC	24304	2797	39	LC	LC	LC	0	0	0	-	-	-
360	4355_4349	7085	344	37	LC	LC	LC	8965	365	37	LC	LC	LC	8077	371	37	LC	LC	LC
361	1247_4329	2794	364	36	LC	HC	LC	2425	335	36	LC	HC	LC	2360	334	36	LC	HC	LC
362	4355_3901	5858	329	28	LC	HC	HC	7028	330	28	LC	HC	HC	6721	315	28	LC	HC	HC
363	4356_3901	11477	371	30	LC	LC	LC	12931	386	31	LC	LC	LC	12109	392	31	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
364	4349_4355	5858	329	32	LC	HC	LC	7028	330	32	LC	HC	LC	6721	315	32	LC	HC	LC
365	3901_4355	7085	344	31	LC	HC	LC	8965	365	30	LC	HC	HC	8077	371	31	LC	HC	HC
366	4360_1146	17156	2524	37	HC	HC	LC	19405	2637	36	HC	HC	LC	0	0	0	-	-	-
367	1167_1165	0	0	28	LC	HC	LC	0	0	27	LC	HC	LC	0	0	0	-	-	-
368	1152_1167	0	0	22	HC	LC	HC	0	0	22	HC	LC	HC	0	0	27	LC	LC	HC
369	1167_1152	0	0	22	HC	LC	HC	0	0	22	HC	LC	HC	0	0	27	LC	LC	HC
370	1168_1167	0	0	22	HC	LC	HC	0	0	22	HC	LC	HC	0	0	23	HC	LC	HC
371	1135_1212	2323	403	34	LC	LC	LC	2249	386	34	LC	LC	LC	4527	512	33	LC	LC	LC
372	1015_1906	485	45	36	LC	LC	LC	526	49	36	LC	LC	LC	552	49	36	LC	LC	LC
373	1162_8867	2755	247	30	HC	HC	HC	3926	113	30	HC	HC	HC	0	0	0	-	-	-
374	9321_1923	1197	63	45	LC	FF	LC	1836	68	45	LC	LC	LC	1765	68	45	LC	LC	LC
375	1923_9321	2227	109	42	LC	LC	LC	2445	175	42	LC	LC	LC	2599	181	42	LC	LC	LC
376	3276_1398	22742	3446	94	FF	HS	HS	26072	3714	93	FF	HS	HS	26909	3746	92	FF	HS	HS

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
377	1606_1823	23209	2834	95	HS	FF	HS	28358	2967	92	HS	FF	HS	29022	3013	92	FF	FF	HS
378	1923_1396	1193	63	42	HC	HC	LC	1310	68	42	HC	HC	LC	1344	68	42	HC	HC	LC
379	1393_2799	6612	291	36	LC	LC	LC	6647	306	36	LC	LC	LC	6751	308	36	LC	LC	LC
380	2799_1393	8159	378	34	LC	HC	LC	8526	416	34	LC	HC	LC	8579	393	34	LC	HC	LC
381	2672_1395	26523	3000	95	HS	FF	HS	30799	3188	93	HS	FF	HS	31973	3243	93	HS	FF	HS
382	4258_1422	0	0	31	LC	LC	LC	0	0	31	LC	LC	LC	0	0	31	LC	LC	LC
383	1422_4258	22	0	31	LC	LC	LC	62	0	31	LC	LC	LC	0	0	31	LC	LC	LC
384	4440_4441	0	0	32	LC	HC	LC	0	0	32	LC	HC	HC	0	0	31	LC	HC	HC
385	9382_4440	438	15	36	LC	LC	LC	1344	16	36	LC	LC	LC	1367	16	36	LC	LC	LC
386	4440_9382	1008	50	33	HC	LC	LC	1964	54	33	HC	LC	LC	1964	54	33	HC	LC	LC
387	1532_4404	6427	493	31	LC	HC	HC	8553	565	35	LC	LC	LC	7387	506	35	LC	LC	LC
388	4404_1532	6833	369	32	LC	LC	HC	6936	696	32	HC	LC	HC	6597	621	32	LC	LC	HC
389	1532_4439	5284	369	44	LC	LC	LC	5923	697	44	LC	LC	LC	5619	622	44	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
390	4439_1532	6805	506	31	LC	HC	HC	9413	581	31	LC	HC	HC	8195	522	31	LC	HC	HC
391	6117_8710	9170	277	36	LC	LC	LC	9054	324	36	LC	LC	LC	8914	316	36	LC	LC	LC
392	6117_4330	10754	523	43	LC	LC	LC	12682	590	42	LC	LC	LC	12308	574	42	LC	LC	LC
393	4330_6117	11847	285	39	LC	LC	LC	11914	331	39	LC	LC	LC	11754	323	39	LC	LC	LC
394	2652_4330	11847	285	36	LC	LC	LC	11914	331	36	LC	LC	LC	11754	323	36	LC	LC	LC
395	4360_1149	744	27	32	LC	LC	LC	889	31	31	LC	LC	LC	0	0	0	-	-	-
396	2875_1466	0	0	24	HC	HC	HC	0	0	24	HC	HC	HC	0	0	24	HC	HC	HC
397	1109_1446	744	27	27	LC	LC	HC	889	31	27	LC	LC	HC	1011	37	27	LC	LC	HC
398	4255_1864	23405	2876	61	FF	FF	FF	26188	2968	59	FF	FF	FF	0	0	0	-	-	-
399	4247_1871	3010	381	34	LC	LC	LC	2921	330	34	LC	LC	LC	3894	426	33	LC	LC	LC
400	4259_1422	0	0	36	LC	LC	LC	1	0	36	LC	LC	LC	1	0	36	LC	LC	LC
401	3162_1466	0	0	22	HC	HC	HC	15	0	21	HC	HC	HC	25	0	21	HC	HC	HC
402	8528_2641	8136	483	33	LC	LC	LC	8056	483	33	LC	LC	LC	8736	498	33	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
403	2875_2879	5259	151	32	LC	LC	LC	5744	174	32	LC	LC	LC	5180	161	32	LC	LC	LC
404	2896_2895	745	21	28	LC	LC	LC	947	25	28	LC	LC	LC	1100	22	27	LC	LC	LC
405	3007_3002	892	27	26	LC	LC	LC	1047	3	26	LC	HC	LC	1163	3	26	LC	HC	LC
406	4349_1242	6338	335	26	HC	HC	HC	8101	356	26	HC	HC	HC	7215	362	26	HC	HC	HC
407	1601_3147	25551	3423	68	FF	LC	FF	28601	3694	68	LC	LC	FF	30032	3707	67	LC	LC	FF
408	3434_3435	0	0	28	HC	LC	LC	0	0	28	HC	LC	LC	0	0	28	HC	LC	LC
409	4248_4247	1212	18	21	HC	HC	HC	1405	19	21	HC	HC	HC	1229	19	21	HC	HC	HC
410	2686_2685	8464	376	42	LC	LC	LC	8945	407	41	LC	LC	LC	9857	441	41	LC	LC	LC
411	3380_1107	12010	314	35	LC	HC	LC	13258	321	35	LC	HC	LC	12959	308	35	LC	HC	LC
412	1244_2990	9536	341	34	LC	LC	LC	10756	344	33	LC	LC	LC	10441	321	34	LC	LC	LC
413	1369_1603	21188	3334	48	LC	LC	LC	24451	3354	47	LC	HC	LC	28745	3496	50	HC	LC	FF
414	8873_8529	10767	464	40	LC	LC	LC	11071	544	40	LC	LC	LC	8534	478	40	LC	LC	LC
415	4007_8992	3551	50	40	LC	LC	LC	3634	52	40	LC	LC	LC	0	0	0	-	-	-

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
416	8850_8853	2868	451	42	LC	LC	LC	4043	501	42	LC	LC	LC	3943	509	42	LC	LC	LC
417	4258_4259	0	0	28	LC	LC	LC	0	0	28	LC	LC	LC	0	0	28	LC	LC	LC
418	8720_4439	6805	506	36	LC	LC	LC	9412	581	36	LC	LC	LC	8194	522	36	LC	LC	LC
419	8867_8536	6353	351	42	LC	LC	LC	8088	238	41	LC	LC	LC	0	0	0	-	-	-
420	8843_8844	3979	277	42	LC	LC	LC	4952	303	42	LC	LC	LC	4821	293	42	LC	LC	LC
421	2640_2641	80	0	28	LC	HC	HC	142	0	27	HC	HC	HC	3	0	27	HC	HC	HC
422	1574_1245	9880	410	28	HC	HC	HC	10706	378	28	HC	HC	HC	10100	360	28	HC	HC	HC
423	1917_9321	1157	50	44	LC	LC	LC	1790	54	44	LC	LC	LC	1717	54	44	LC	LC	LC
424	1396_1393	5081	253	34	LC	LC	LC	5050	265	34	HC	LC	LC	5304	268	34	HC	LC	LC
425	6016_4360	0	0	0	-	-	-	20295	2668	47	LC	LC	LC	0	0	0	-	-	-
426	1901_3028	949	30	43	LC	LC	LC	2172	38	43	LC	LC	LC	1782	46	43	LC	LC	LC
427	2650_8936	2929	107	26	HC	LC	LC	3423	92	26	HC	HC	LC	3895	103	26	HC	HC	LC
428	1224_1240	9647	273	37	LC	LC	LC	11438	305	37	LC	LC	LC	10032	265	37	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
429	3160_1205	1320	277	26	HC	HC	HC	1678	283	26	HC	HC	HC	2410	292	26	HC	HC	HC
430	1210_1211	1721	53	35	LC	LC	LC	1760	44	34	LC	LC	LC	1716	49	35	LC	LC	LC
431	4247_4248	74	2	21	HC	HC	HC	52	0	21	HC	HC	HC	50	1	20	HC	HC	HC
432	1152_1164	149	0	19	HC	HC	HC	0	0	19	HC	HC	HC	0	0	0	-	-	-
433	1396_1923	5010	241	54	LC	LC	LC	5624	324	53	LC	LC	LC	5747	330	53	LC	LC	LC
434	8710_6117	11975	594	41	LC	LC	LC	13892	666	40	LC	LC	LC	13620	651	40	LC	LC	LC
435	1242_3026	5896	268	29	HC	HC	HC	7904	272	29	HC	HC	HC	6131	270	29	HC	HC	HC
436	3026_1242	4887	307	32	LC	HC	LC	6169	303	32	LC	HC	LC	5318	288	32	LC	HC	LC
437	2996_1241	9629	335	24	HC	HC	HC	11417	573	24	HC	HC	HC	9080	496	24	HC	HC	HC
438	1241_4354	6034	361	38	LC	LC	LC	6539	431	38	LC	LC	LC	5963	398	38	LC	LC	LC
439	4354_1241	7543	430	27	HC	HC	HC	8354	464	26	HC	HC	HC	8566	466	27	HC	HC	HC
440	1241_1415	3017	491	28	HC	HC	HC	3663	408	28	HC	HC	HC	3554	459	28	HC	HC	HC
441	1415_1241	2595	566	24	HC	HC	HC	2949	430	24	HC	HC	HC	2374	389	25	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
442	1413_1415	2542	1268	25	HC	HC	HC	2866	1133	25	HC	HC	HC	2314	1093	25	HC	HC	HC
443	1415_1413	2716	190	34	LC	LC	LC	3344	106	34	LC	LC	LC	3253	158	34	LC	LC	LC
444	1413_8791	3609	218	35	LC	LC	LC	4391	110	34	LC	HC	LC	4416	161	34	LC	HC	LC
445	1235_8791	2542	1268	34	LC	LC	LC	2866	1133	34	LC	LC	LC	2314	1093	34	LC	LC	LC
446	8791_1235	5495	314	28	HC	HC	HC	7090	227	28	HC	HC	HC	7296	247	28	HC	HC	HC
447	1164_1165	24920	3312	49	LC	LC	LC	26263	3407	48	LC	LC	LC	0	0	0	-	-	-
448	1165_1166	24920	3312	48	LC	LC	LC	26263	3407	47	LC	LC	LC	0	0	0	-	-	-
449	1166_8864	24920	3312	45	LC	LC	LC	26263	3407	44	LC	LC	LC	0	0	0	-	-	-
450	1168_1166	0	0	26	LC	HC	LC	0	0	25	HC	HC	HC	0	0	0	-	-	-
451	8840_1845	1986	312	42	LC	LC	LC	4549	362	41	LC	LC	LC	4933	380	41	LC	LC	LC
452	2549_2550	2708	185	31	HC	HC	LC	3247	245	31	HC	HC	LC	2872	250	31	HC	HC	LC
453	3007_2995	0	0	30	LC	LC	LC	0	0	31	LC	LC	LC	0	0	30	LC	LC	LC
454	3435_3434	2105	96	25	LC	HC	HC	2835	118	25	LC	HC	HC	3279	86	25	LC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
455	1210_1209	4232	536	26	HC	HC	HC	4107	491	26	HC	HC	HC	5216	586	25	HC	HC	HC
456	4264_1003	6840	504	38	LC	LC	LC	8389	505	38	LC	LC	LC	6317	388	39	LC	LC	LC
457	1233_1419	697	256	35	LC	LC	LC	1153	254	34	LC	LC	LC	1118	254	34	LC	LC	LC
458	1505_8992	2548	49	32	LC	HC	LC	2731	54	32	LC	HC	LC	3283	53	32	LC	HC	LC
459	9321_1917	2125	74	44	LC	LC	LC	2330	137	44	LC	LC	LC	2482	143	43	LC	LC	LC
460	8538_1163	4238	228	27	HC	HC	HC	6001	249	27	HC	HC	HC	0	0	0	-	-	-
461	2641_8937	6447	453	33	LC	LC	LC	6406	457	32	LC	LC	LC	6662	465	32	LC	LC	LC
462	4437_1205	5020	352	32	HC	LC	LC	6167	396	32	HC	LC	HC	5923	370	32	HC	LC	HC
463	8533_8534	7114	458	40	LC	LC	LC	8559	462	40	LC	LC	LC	10701	523	39	LC	LC	LC
464	4356_1243	5429	323	27	HC	HC	HC	6421	324	26	HC	HC	HC	6213	311	26	HC	HC	HC
465	1905_1903	0	0	38	HC	LC	LC	12	0	38	HC	LC	LC	11	0	38	HC	LC	LC
466	1917_1903	2194	81	42	LC	LC	LC	2415	145	42	LC	LC	LC	2566	151	42	LC	LC	LC
467	2931_8522	3110	413	36	LC	HC	LC	3036	429	36	LC	HC	LC	2742	447	36	LC	HC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
468	1224_1223	6842	197	45	LC	LC	LC	8741	275	44	LC	LC	LC	6191	226	45	LC	LC	FF
469	1376_1378	19335	2648	91	HS	FF	HS	21930	2818	90	HS	FF	HS	23259	2877	89	HS	FF	HS
470	1466_2878	20	19	25	HC	LC	HC	28	20	25	HC	LC	HC	74	20	25	HC	LC	HC
471	1866_4140	5953	900	30	LC	HC	LC	4344	829	30	LC	HC	LC	5867	917	29	LC	HC	HC
472	1420_9382	1738	44	37	HC	LC	LC	3081	47	37	LC	LC	LC	3150	47	37	LC	LC	LC
473	2878_1223	449	63	33	LC	LC	LC	464	67	32	LC	LC	LC	552	67	33	LC	LC	LC
474	4275_1241	9118	185	28	HC	HC	HC	10393	196	28	HC	HC	HC	8784	183	28	HC	HC	HC
475	3434_1415	761	7	25	LC	HC	HC	791	6	25	HC	HC	HC	768	6	25	HC	HC	HC
476	1204_1203	5692	352	36	LC	LC	LC	6234	366	36	LC	LC	LC	5871	351	36	LC	LC	LC
477	4404_4124	6427	493	31	LC	HC	HC	8553	565	38	LC	LC	LC	7387	506	38	LC	LC	LC
478	4351_1245	9375	357	27	HC	HC	HC	10720	355	27	HC	HC	HC	10359	330	27	HC	HC	HC
479	1602_1379	26571	3653	93	FF	HS	HS	29782	3938	92	FF	HS	HS	30851	3948	92	FF	HS	HS
480	4330_2652	10755	523	44	LC	LC	LC	12682	590	44	LC	LC	LC	12308	574	44	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
481	1230_4010	24927	3340	45	LC	LC	LC	26476	3437	44	LC	LC	LC	0	0	0	-	-	-
482	4441_1420	796	14	29	HC	HC	HC	1212	13	29	HC	HC	HC	1757	22	28	HC	HC	HC
483	8897_1142	22455	2693	40	LC	LC	LC	24443	2802	39	LC	LC	LC	0	0	0	-	-	-
484	2879_2878	429	44	31	LC	LC	LC	436	47	31	LC	LC	LC	477	47	31	LC	LC	LC
485	8895_8896	21336	2672	40	LC	LC	LC	23293	2780	38	HC	HC	LC	0	0	0	-	-	-
486	1209_1208	10314	733	40	LC	LC	LC	11865	780	39	LC	LC	LC	10615	813	40	LC	LC	LC
487	1201_1446	4977	195	34	LC	LC	LC	4931	197	34	LC	LC	LC	6147	222	31	HC	HC	LC
488	1203_1204	4526	350	32	LC	HC	LC	5618	368	32	LC	HC	LC	6263	415	34	LC	LC	LC
489	4428_2560	6040	299	44	LC	LC	LC	4968	380	23	HC	HC	HC	2988	274	23	HC	HC	HC
490	6141_6142	16852	1638	46	HC	HC	FF	18958	1678	46	HC	HC	FF	20995	1737	46	HC	HC	FF
491	2627_8530	9853	447	34	LC	HC	LC	10987	700	34	LC	HC	LC	11123	639	33	HC	HC	LC
492	8872_8867	3598	104	38	LC	LC	LC	4162	125	38	LC	LC	LC	0	0	0	-	-	-
493	1542_1247	5981	364	27	HC	HC	HC	4418	637	27	HC	HC	HC	4011	561	27	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
494	1148_1566	4179	149	19	HC	HC	HC	3934	147	18	HC	HC	HC	0	0	0	-	-	-
495	8540_8872	18433	3087	33	HC	HC	HC	20524	3241	30	HC	HC	HC	0	0	0	-	-	-
496	1208_1209	9462	463	33	HC	LC	LC	10753	515	33	HC	LC	LC	9834	433	33	HC	LC	LC
497	4329_1003	2794	364	36	LC	HC	LC	2425	335	36	LC	HC	LC	2360	334	36	LC	HC	LC
498	8562_8841	3159	109	43	LC	LC	LC	3428	119	43	LC	LC	LC	3448	119	43	LC	LC	LC
499	8520_8887	16044	1437	63	FF	FF	FF	16663	1440	62	FF	FF	FF	18075	1473	62	FF	FF	FF
500	8837_8840	1986	312	42	LC	FF	FF	4549	362	42	LC	FF	FF	4933	380	42	LC	FF	FF
501	8864_1214	21369	2766	45	LC	LC	LC	22655	2873	44	LC	LC	LC	0	0	0	-	-	-
502	4427_1232	2324	67	29	HC	HC	HC	2065	79	30	HC	HC	HC	2942	76	29	HC	HC	HC
503	8528_2649	2061	353	27	HC	HC	LC	2525	376	27	HC	HC	LC	2804	413	27	HC	HC	LC
504	1146_1566	17156	2524	37	HC	HC	LC	19405	2637	35	HC	HC	HC	0	0	0	-	-	-
505	4351_2583	8572	281	38	LC	LC	LC	9219	273	38	LC	LC	LC	8864	274	38	LC	LC	LC
506	1150_1168	0	0	25	LC	LC	HC	0	0	25	LC	LC	HC	0	0	27	LC	LC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
507	1230_4441	796	14	36	LC	LC	LC	1212	13	37	LC	LC	LC	1756	22	37	LC	LC	LC
508	1241_2996	10391	377	31	LC	LC	LC	11503	434	31	LC	HC	LC	9996	383	31	LC	HC	LC
509	1166_1168	0	0	26	HC	HC	LC	0	0	26	HC	HC	LC	0	0	0	-	-	-
510	1149_1109	744	27	32	LC	LC	LC	889	31	31	LC	LC	LC	1011	37	31	LC	LC	LC
511	8791_1413	2542	1268	33	LC	HC	LC	2866	1133	33	LC	HC	LC	2314	1093	33	LC	LC	LC
512	1923_1397	2786	132	69	FF	FF	FF	3705	149	68	FF	FF	FF	3569	149	68	FF	FF	FF
513	1201_1853	816	3	23	HC	HC	HC	1009	3	23	HC	HC	HC	844	3	23	HC	HC	HC
514	4249_1233	8605	412	25	HC	HC	HC	10647	372	25	HC	HC	HC	10415	328	25	HC	HC	HC
515	4249_1235	1819	545	26	HC	HC	HC	2141	410	26	HC	HC	HC	1590	370	27	HC	HC	HC
516	3420_4261	3436	68	22	HC	HC	HC	4699	200	22	HC	HC	HC	4504	174	22	HC	HC	HC
517	4261_2555	3518	67	36	LC	LC	LC	4905	229	36	LC	LC	LC	4464	204	36	LC	LC	LC
518	2555_1247	2911	0	31	LC	LC	LC	3949	162	29	LC	LC	LC	3143	136	30	LC	LC	LC
519	2555_1538	607	67	27	LC	LC	LC	955	68	27	LC	LC	HC	1321	68	26	LC	LC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
520	3140_3139	749	24	37	LC	LC	LC	616	19	37	LC	LC	LC	692	20	37	LC	LC	LC
521	8562_3140	749	24	40	LC	LC	LC	616	19	40	LC	LC	LC	692	20	40	LC	LC	LC
522	2931_2929	0	0	31	LC	LC	LC	0	0	30	LC	LC	LC	0	0	30	LC	LC	LC
523	3901_3902	4821	33	27	LC	LC	LC	4573	26	28	LC	LC	LC	4541	25	28	LC	LC	LC
524	3902_3900	5153	28	28	LC	LC	LC	4944	22	28	LC	LC	LC	4936	21	28	LC	LC	LC
525	1905_1907	385	29	35	LC	LC	LC	368	30	35	LC	LC	LC	407	33	35	LC	LC	LC
526	9046_1906	395	45	40	LC	LC	LC	567	49	40	LC	LC	LC	563	49	40	LC	LC	LC
527	1015_1915	305	27	36	LC	LC	LC	465	30	37	LC	LC	LC	455	30	37	LC	LC	LC
528	1233_4249	6973	648	29	HC	HC	HC	7462	520	29	HC	HC	HC	6779	486	29	HC	HC	HC
529	1235_4249	6785	368	28	HC	HC	HC	8925	325	28	HC	HC	HC	8539	279	28	HC	HC	HC
530	4261_3420	4209	30	27	LC	HC	HC	4718	323	26	LC	HC	HC	3556	242	27	LC	HC	HC
531	2555_4261	5930	30	28	LC	HC	HC	6494	341	27	LC	HC	HC	5231	265	28	LC	HC	HC
532	1247_2555	4051	0	30	LC	LC	LC	3775	308	30	LC	LC	LC	3573	242	30	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
533	1538_2555	1879	30	32	LC	LC	LC	2719	33	30	LC	LC	LC	1659	23	32	LC	LC	LC
534	3139_3140	77	19	40	LC	LC	LC	288	22	40	LC	LC	LC	314	22	40	LC	LC	LC
535	3140_8562	77	19	41	LC	LC	LC	288	22	41	LC	LC	LC	314	22	41	LC	LC	LC
536	2929_2931	153	9	27	HC	HC	LC	262	9	27	HC	HC	LC	328	34	27	HC	HC	LC
537	3900_3902	0	0	24	HC	HC	HC	0	0	24	HC	HC	HC	0	0	24	HC	HC	HC
538	1907_1905	87	12	39	LC	LC	LC	105	12	39	LC	LC	LC	104	12	39	LC	LC	LC
539	1906_9046	502	46	39	LC	LC	LC	544	49	39	LC	LC	LC	572	49	39	LC	LC	LC
540	1915_1015	384	23	37	LC	LC	LC	417	25	37	LC	LC	LC	438	25	37	LC	LC	LC
541	1443_2550	1159	131	24	HC	HC	HC	1254	137	24	HC	HC	HC	1334	139	24	HC	HC	HC
542	2550_1443	227	3	28	HC	LC	LC	46	3	28	HC	LC	LC	121	3	28	HC	LC	LC
543	2889_2887	819	90	25	HC	HC	HC	925	96	25	HC	HC	HC	937	98	25	HC	HC	HC
544	4277_2887	6811	742	37	LC	LC	LC	7083	760	37	LC	LC	LC	7703	783	37	LC	LC	LC
545	2889_2888	194	8	30	LC	LC	HC	212	9	30	LC	LC	HC	205	9	30	LC	LC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
546	1211_1827	0	0	22	HC	HC	HC	0	0	22	HC	HC	HC	1	0	22	HC	HC	HC
547	1239_1237	2176	407	26	LC	HC	HC	2835	448	24	HC	HC	HC	1955	383	26	LC	HC	HC
548	8759_1245	9856	224	32	LC	HC	LC	10452	229	31	HC	HC	LC	10582	233	32	HC	HC	LC
549	3380_8986	3436	116	37	LC	LC	LC	3733	105	37	LC	LC	LC	3691	98	37	LC	LC	LC
550	4323_3085	10160	346	35	LC	LC	LC	11413	374	35	LC	LC	HC	11821	409	35	LC	LC	HC
551	3085_1518	8524	140	37	LC	LC	LC	10405	152	37	LC	LC	LC	10416	146	37	LC	LC	LC
552	3447_3085	5369	345	23	HC	HC	HC	6591	352	23	HC	HC	HC	6450	337	23	HC	HC	HC
553	3447_1519	2585	195	34	LC	LC	LC	3228	192	34	LC	LC	LC	3358	201	34	LC	LC	LC
554	2225_1519	3204	155	40	LC	LC	LC	4566	161	40	LC	LC	LC	4358	157	40	LC	LC	LC
555	2587_3447	2924	291	30	LC	LC	HC	3119	296	30	LC	HC	HC	3158	286	30	LC	HC	HC
556	6001_6018	0	0	0	-	-	-	21641	2577	34	HC	HC	HC	22461	2616	34	HC	HC	HC
557	6017_6016	0	0	0	-	-	-	16785	1642	56	FF	FF	FF	19065	1701	55	LC	FF	FF
558	6003_6004	0	0	0	-	-	-	3669	590	29	HC	HC	HC	3821	596	29	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
559	6002_6003	0	0	0	-	-	-	2663	326	29	HC	HC	HC	5213	374	28	HC	HC	HC
560	6001_6002	0	0	0	-	-	-	2663	326	29	HC	HC	HC	5213	374	28	HC	HC	HC
561	6005_6006	0	0	0	-	-	-	3043	133	30	HC	HC	HC	5099	167	30	HC	HC	HC
562	6006_6007	0	0	0	-	-	-	3043	133	31	HC	HC	HC	5099	167	31	HC	HC	HC
563	6010_6011	0	0	0	-	-	-	2173	37	28	HC	HC	HC	1930	36	28	HC	HC	HC
564	6015_6016	0	0	0	-	-	-	3517	1022	33	HC	HC	HC	5213	1117	33	HC	HC	HC
565	6018_6003	0	0	0	-	-	-	3512	537	38	LC	LC	LC	3254	529	38	LC	LC	LC
566	6003_6005	0	0	0	-	-	-	2508	272	30	HC	HC	HC	4644	308	30	HC	HC	HC
567	6014_6015	0	0	0	-	-	-	3517	1022	31	HC	HC	HC	5213	1117	31	HC	HC	HC
568	6011_6012	0	0	0	-	-	-	2173	37	30	HC	HC	HC	1930	36	30	HC	HC	HC
569	6005_6008	0	0	0	-	-	-	3983	1020	29	HC	HC	HC	5606	1112	29	HC	HC	HC
570	6017_6018	0	0	0	-	-	-	3512	537	25	HC	HC	HC	3254	529	25	HC	HC	HC
571	6009_6012	0	0	0	-	-	-	3983	1020	39	LC	LC	LC	5606	1112	39	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
572	6014_6017	0	0	0	-	-	-	3512	537	29	HC	HC	HC	3254	529	29	HC	HC	HC
573	6018_6008	0	0	0	-	-	-	21641	2577	40	HC	HC	HC	22461	2616	38	HC	HC	HC
574	4140_6005	0	0	0	-	-	-	4521	880	30	HC	HC	HC	6062	970	29	HC	HC	HC
575	6009_6017	0	0	0	-	-	-	16785	1642	43	LC	LC	LC	19065	1701	42	HC	HC	LC
576	6008_6009	0	0	0	-	-	-	3983	1020	25	HC	HC	HC	5606	1112	25	HC	HC	HC
577	6012_6014	0	0	0	-	-	-	3592	842	27	HC	HC	HC	5048	929	27	HC	HC	HC
578	6012_6013	0	0	0	-	-	-	2554	222	29	HC	HC	HC	2484	222	29	HC	HC	HC
579	6008_6007	0	0	0	-	-	-	21641	2577	53	LC	LC	LC	22461	2616	51	LC	LC	LC
580	6010_6009	0	0	0	-	-	-	16785	1642	36	HC	HC	HC	19065	1701	35	HC	HC	HC
581	6004_4140	0	0	0	-	-	-	3669	590	44	LC	LC	LC	3821	596	44	LC	LC	LC
582	6013_3139	0	0	0	-	-	-	2554	222	32	LC	LC	LC	2484	222	32	LC	LC	LC
583	3139_6014	0	0	0	-	-	-	3430	722	36	LC	HC	LC	3412	722	36	LC	HC	LC
584	2685_1518	11102	592	44	LC	LC	LC	12188	636	44	LC	LC	LC	12990	666	44	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
585	1518_2684	9303	339	46	FF	LC	LC	11321	355	46	FF	LC	LC	11395	344	46	FF	LC	LC
586	1245_8759	9560	345	33	LC	HC	LC	10232	332	33	LC	HC	LC	10309	328	33	LC	HC	LC
587	8986_3380	3592	47	35	LC	HC	LC	3692	52	35	LC	HC	LC	3832	66	35	LC	HC	LC
588	2887_4277	4724	360	38	LC	LC	LC	5235	370	38	LC	LC	LC	5793	378	38	LC	LC	LC
589	2887_2889	0	0	30	LC	LC	LC	0	0	30	LC	LC	LC	0	0	30	LC	LC	LC
590	2888_2889	378	39	34	LC	LC	LC	405	44	34	LC	LC	LC	379	35	34	LC	LC	LC
591	3085_4323	10649	538	42	LC	LC	LC	11672	576	41	LC	LC	LC	12319	594	41	LC	LC	LC
592	1519_2225	2585	195	40	LC	LC	LC	3228	192	40	LC	LC	LC	3358	201	40	LC	LC	LC
593	1519_3447	3204	155	30	LC	LC	HC	4566	161	29	HC	LC	HC	4358	157	29	HC	LC	HC
594	3447_2587	3432	341	30	LC	LC	HC	3841	361	30	LC	LC	HC	4046	397	30	LC	LC	HC
595	3085_3447	5257	435	23	HC	HC	HC	5975	448	23	HC	HC	HC	6337	492	23	HC	HC	HC
596	1518_3085	9476	442	34	LC	HC	LC	10681	472	34	LC	HC	HC	11397	507	34	LC	HC	HC
597	1505_1422	2801	27	36	LC	LC	LC	2858	27	36	LC	LC	LC	2891	25	36	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
598	2640_2627	1008	3	25	HC	HC	HC	1131	8	24	HC	HC	HC	1472	13	24	HC	HC	HC
599	4307_1482	4429	619	44	LC	LC	LC	5118	657	44	LC	LC	LC	4791	650	44	LC	LC	LC
600	1603_5101	0	0	0	-	-	-	0	0	0	-	-	-	28745	3496	53	LC	LC	LC
601	5100_1864	0	0	0	-	-	-	0	0	0	-	-	-	33845	3232	51	LC	LC	LC
602	5102_5100	0	0	0	-	-	-	0	0	0	-	-	-	33854	3232	49	LC	HC	LC
603	5123_5102	0	0	0	-	-	-	0	0	0	-	-	-	7483	301	35	LC	LC	LC
604	5112_1232	0	0	0	-	-	-	0	0	0	-	-	-	4851	129	32	HC	HC	HC
605	5107_5112	0	0	0	-	-	-	0	0	0	-	-	-	4673	129	32	HC	LC	HC
606	5119_5120	0	0	0	-	-	-	0	0	0	-	-	-	4976	117	33	LC	HC	LC
607	8992_5119	0	0	0	-	-	-	0	0	0	-	-	-	4976	117	48	FF	FF	FF
608	5107_5122	0	0	0	-	-	-	0	0	0	-	-	-	4430	275	41	LC	LC	LC
609	5121_5122	0	0	0	-	-	-	0	0	0	-	-	-	2696	26	29	HC	HC	HC
610	5120_5121	0	0	0	-	-	-	0	0	0	-	-	-	2696	26	30	HC	HC	HC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
611	5113_5105	0	0	0	-	-	-	0	0	0	-	-	-	6797	295	29	HC	HC	HC
612	5105_5106	0	0	0	-	-	-	0	0	0	-	-	-	7387	316	38	LC	LC	LC
613	5106_5118	0	0	0	-	-	-	0	0	0	-	-	-	2949	41	39	LC	LC	LC
614	5119_8992	0	0	0	-	-	-	0	0	0	-	-	-	3821	55	39	LC	LC	LC
615	5116_5117	0	0	0	-	-	-	0	0	0	-	-	-	873	14	31	HC	HC	HC
616	5116_5106	0	0	0	-	-	-	0	0	0	-	-	-	2384	38	25	HC	HC	HC
617	5106_5107	0	0	0	-	-	-	0	0	0	-	-	-	6823	312	28	HC	HC	HC
618	5105_5115	0	0	0	-	-	-	0	0	0	-	-	-	3607	134	44	LC	LC	LC
619	5103_5110	0	0	0	-	-	-	0	0	0	-	-	-	32756	3630	57	FF	FF	FF
620	5110_5124	0	0	0	-	-	-	0	0	0	-	-	-	32756	3630	44	LC	HC	LC
621	5126_5108	0	0	0	-	-	-	0	0	0	-	-	-	29632	2980	53	LC	FF	FF
622	4258_5111	0	0	0	-	-	-	0	0	0	-	-	-	0	0	30	LC	LC	LC
623	5111_4258	0	0	0	-	-	-	0	0	0	-	-	-	0	0	32	LC	LC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
624	4307_8855	6477	465	41	LC	LC	LC	8675	578	39	LC	LC	LC	8020	574	39	LC	LC	LC
625	5120_5107	0	0	0	-	-	-	0	0	0	-	-	-	2280	91	26	HC	HC	HC
626	5117_5118	0	0	0	-	-	-	0	0	0	-	-	-	873	14	38	LC	LC	LC
627	5115_1230	0	0	0	-	-	-	0	0	0	-	-	-	10489	345	44	LC	LC	LC
628	6016_5127	0	0	0	-	-	-	0	0	0	-	-	-	24272	2822	56	LC	FF	FF
629	5114_5115	0	0	0	-	-	-	0	0	0	-	-	-	6882	211	30	HC	HC	HC
630	5113_5114	0	0	0	-	-	-	0	0	0	-	-	-	6882	211	32	HC	HC	HC
631	5104_5116	0	0	0	-	-	-	0	0	0	-	-	-	3257	52	44	LC	LC	LC
632	5109_6001	0	0	0	-	-	-	0	0	0	-	-	-	27674	2990	51	LC	LC	LC
633	5124_1144	0	0	0	-	-	-	0	0	0	-	-	-	6115	667	47	LC	LC	LC
634	5112_5105	0	0	0	-	-	-	0	0	0	-	-	-	4197	155	27	HC	HC	HC
635	1230_1215	0	0	0	-	-	-	0	0	0	-	-	-	8732	323	46	LC	LC	FF
636	1215_5103	0	0	0	-	-	-	0	0	0	-	-	-	8384	291	42	HC	HC	LC

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
637	1232_5113	0	0	0	-	-	-	0	0	0	-	-	-	13679	506	46	LC	LC	LC
638	5124_5125	0	0	0	-	-	-	0	0	0	-	-	-	26641	2963	53	LC	LC	LC
639	5127_5126	0	0	0	-	-	-	0	0	0	-	-	-	23261	2785	54	LC	FF	FF
640	1148_5126	0	0	0	-	-	-	0	0	0	-	-	-	6372	195	45	LC	LC	LC
641	5127_1149	0	0	0	-	-	-	0	0	0	-	-	-	1011	37	46	LC	LC	LC
642	1145_5125	0	0	0	-	-	-	0	0	0	-	-	-	1033	27	44	LC	LC	LC
643	5101_5103	0	0	0	-	-	-	0	0	0	-	-	-	24370	3341	55	LC	LC	FF
644	5101_5112	0	0	0	-	-	-	0	0	0	-	-	-	4375	155	36	LC	HC	LC
645	5104_5102	0	0	0	-	-	-	0	0	0	-	-	-	26375	2928	54	LC	LC	FF
646	5108_5104	0	0	0	-	-	-	0	0	0	-	-	-	29632	2980	53	LC	LC	LC
647	2896_1860	2909	300	34	HC	LC	LC	3159	305	34	HC	LC	LC	3394	305	34	HC	LC	LC
648	1860_2896	3144	318	41	LC	LC	LC	3111	312	41	LC	LC	LC	3434	308	41	LC	LC	LC
649	5122_5123	0	0	0	-	-	-	0	0	0	-	-	-	7126	301	47	FF	FF	FF

Figure ID	Link ID	Base 2015						Do Minimum 2025						Do Something 2025					
		Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band	Flow (veh/ day)	HDV Flow (veh/ day)	Daily Speed (Kph)	AM Peak Speed Band	PM Peak Speed Band	IP Peak Speed Band
650	5125_5109	0	0	0	-	-	-	0	0	0	-	-	-	27674	2990	55	LC	LC	FF

Note: Links represent one way flows. Letters shown in the ID column show parallel links that are added to create a two way flow.
LC = Light Congestion
HC = Heavy Congestion
HS = High Speed
FF = Free Flow

A63 Castle Street Improvements, Hull
Environmental Statement

Volume 3 Appendix 6.2

AIR QUALITY – LOCAL AIR QUALITY RECEPTOR RESULTS

TR010016/APP/6.3
HE514508-MMSJV-EAQ-S0-RP-LA-000003
6 September 2018

A63 Castle Street Improvements, Hull

Environmental Statement

Appendix 6.2 Local air quality receptor results

Revision Record						
Rev No	**Date**	**Originator**	**Checker**	**Approver**	**Status**	**Suitability**
P01.1	24.04.18	J Burnell	C Mills	J McKenna	S0	For review
P01	31.07.18	J Burnell	C Mills	J McKenna	Shared	S4
P02	06.09.18	J Burnell	C Mills	J McKenna	Shared	S4

Prepared for:
Highways England
Lateral
8 City Walk
Leeds
LS11 9AT

Prepared by:
Mott MacDonald Sweco JV
Stoneham Place, Stoneham Lane
Southampton, Hampshire
SO50 9NW

Table Error! No text of specified style in document.**.1: Construction local air quality assessment results at human receptors for nitrogen dioxide (µg m^{-3}) in Base, Do Minimum (DM) and Do Something (DS) scenario**

Receptor ID	X	Y	Z	Base Year (2015)		Construction Phase 1 Start Year (2021)			
				Background	Total	Background	DM Total	DS Total	Impact
1	509962	428453	1.5	21.9	38.8	18.2	30.6	30.3	-0.3
2	509924	428454	1.5	21.9	40.7	18.2	32.6	32.2	-0.4
3	509906	428455	1.5	21.9	41.6	18.2	33.5	33.1	-0.4
4	509878	428456	1.5	21.9	43.8	18.2	35.4	35	-0.4
5	509851	428458	1.5	21.9	44.6	18.2	36.1	35.7	-0.4
6	509817	428458	1.5	21.9	55.5	18.2	45.2	44.5	-0.7
7	509796	428458	1.5	21.9	58.3	18.2	47.6	46.8	-0.8
8	509793	428458	1.5	21.9	58.7	18.2	48	47.2	-0.8
9	509790	428458	1.5	21.9	59.2	18.2	48.4	47.6	-0.8
10	509786	428459	1.5	21.9	59.8	18.2	48.9	48	-0.9
11	509775	428459	1.5	21.9	61.6	18.2	50.5	49.6	-0.9
12	509772	428459	1.5	21.9	61.5	18.2	50.5	49.6	-0.9
13	509734	428466	1.5	21.9	46.9	18.2	37.8	37.3	-0.5
14	509971	428406	1.5	21.9	38.7	18.2	31.5	31.5	0

Receptor ID	X	Y	Z	Base Year (2015)		Construction Phase 1 Start Year (2021)			
				Background	Total	Background	DM Total	DS Total	Impact
15	509927	428418	1.5	21.9	39.4	18.2	32.3	32.3	0
16	509355	428314	4.5	21.9	28.2	18.2	21.6	22.9	1.3
17	509244	428350	1.5	21.9	38.9	18.2	32.5	34.6	2.1
18	509207	428340	1.5	21.9	33.7	18.2	27.6	28.9	1.3
19	509105	428301	1.5	21.9	30.4	18.2	24.5	25.3	0.8
20	508912	428193	1.5	21.3	31.1	17.4	25.2	26.8	1.6
21	508857	428156	1.5	21.3	34.5	17.4	28.4	30.9	2.5
22	508833	428146	1.5	21.3	34.6	17.4	28.4	30.9	2.5
23	508766	428119	1.5	21.3	36.3	17.4	29.8	32.7	2.9
24	508691	428086	1.5	21.3	38.5	17.4	31.1	32.8	1.7
25	508656	428071	1.5	21.3	39.6	17.4	31.7	33.2	1.5
26	508613	428053	1.5	21.3	34.7	17.4	27.7	28.8	1.1
27	508521	428022	1.5	21.3	32.4	17.4	25.6	26.4	0.8
28	508489	428010	1.5	21.3	31.5	17.4	24.7	25.5	0.8
29	508398	427979	1.5	18.5	26.5	15.4	18.8	18.9	0.1
30	508417	428127	1.5	21.3	30.9	17.4	21.9	22.2	0.3

Receptor ID	X	Y	Z	Base Year (2015)		Construction Phase 1 Start Year (2021)			
				Background	Total	Background	DM Total	DS Total	Impact
33	507828	427212	1.5	21.7	28.8	18	22.4	22.3	-0.1
34	507708	427155	1.5	21.7	28.9	18	21.4	21.3	-0.1
44	508348	428651	1.5	21.3	28.5	17.4	22.3	22.9	0.6
51	508890	428637	1.5	21.3	25.9	17.4	19.7	19.9	0.2
52	509260	428584	1.5	21.9	27.8	18.2	20.9	20.2	-0.7
53	509285	428470	1.5	21.9	28.3	18.2	22.2	22.2	0
54	509356	429296	1.5	23.7	31.6	20	24.6	25.3	0.7
55	509384	429263	1.5	23.7	30.4	20	23.4	23.9	0.5
56	509578	429257	1.5	23.7	28.4	20	21.9	22.1	0.2
57	509641	429304	1.5	23.7	28.7	20	22.5	23	0.5
58	509711	429281	1.5	23.7	28.3	20	22.4	22.8	0.4
59 short	509760	429277	1.5	23.7	28.6	20	22.1	22.5	0.4
60	509983	429198	1.5	23.7	32.5	20	24.7	25.4	0.7
61	510177	429201	2.5	27	35.9	22.4	27.7	28.3	0.6
65	510615	428664	1.5	22.2	28.1	18.6	21.6	21.6	0
68	509804	428459	1.5	21.9	56.1	18.2	45.7	45	-0.7

Receptor ID	X	Y	Z	Base Year (2015)		Construction Phase 1 Start Year (2021)			
				Background	Total	Background	DM Total	DS Total	Impact
69	509812	428459	1.5	21.9	54.7	18.2	44.5	43.9	-0.6
70	509842	428458	1.5	21.9	45.6	18.2	36.9	36.4	-0.5
71	509846	428458	1.5	21.9	45	18.2	36.5	36	-0.5
72	509855	428458	1.5	21.9	44.3	18.2	35.8	35.4	-0.4
73	509890	428456	1.5	21.9	42.8	18.2	34.5	34.1	-0.4
74	508798	428085	4.5	21.3	41.8	17.4	34.3	37.4	3.1
75	508794	428084	4.5	21.3	41.9	17.4	34.4	37.4	3
76	509772	428462	4.5	21.9	41.7	18.2	33.8	33.5	-0.3
77	509775	428460	4.5	21.9	42	18.2	34	33.8	-0.2
78	509775	428460	7.5	21.9	32.4	18.2	25.7	25.7	0
79	509790	428460	4.5	21.9	41.6	18.2	33.6	33.3	-0.3
80	509793	428460	4.5	21.9	41.5	18.2	33.5	33.3	-0.2
81	509793	428460	7.5	21.9	32.5	18.2	25.8	25.7	-0.1
82	509817	428460	4.5	21.9	41	18.2	33	32.8	-0.2
83	509817	428460	7.5	21.9	32.5	18.2	25.8	25.7	-0.1
84	509825	428459	1.5	21.9	52	18.2	42.3	41.7	-0.6

Receptor ID	X	Y	Z	Base Year (2015)		Construction Phase 1 Start Year (2021)			
				Background	Total	Background	DM Total	DS Total	Impact
85	509825	428460	4.5	21.9	40.5	18.2	32.6	32.4	-0.2
86	509825	428460	7.5	21.9	32.6	18.2	25.8	25.8	0
88	510347	429268	4.5	27	36	22.4	24.3	24.4	0.1
89	510636	428873	4.5	22.2	30.4	18.6	22.1	22.4	0.3
94	509835	429291	1.5	23.7	30.1	20	23.6	24.3	0.7
98	510560	428582	1.5	22.2	27.1	18.6	21	21	0

Table 1.2: Operation local air quality assessment results at human receptors for particulate matter (PM_{10}) (µg m^{-3}) in Base, Do Minimum (DM) and Do Something (DS) scenario.

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
1	509962	428453	1.5	15.5	21.6	14.8	18.9	19.8	0.9
2	509924	428454	1.5	15.5	22.4	14.8	19.4	20.5	1.1
3	509906	428455	1.5	15.5	22.8	14.8	19.7	21.2	1.5
4	509878	428456	1.5	15.5	23.7	14.8	20.3	21.8	1.5
5	509851	428458	1.5	15.5	24.1	14.8	20.6	21.9	1.3
6	509817	428458	1.5	15.5	25.7	14.8	21.6	22.7	1.1
7	509796	428458	1.5	15.5	26.7	14.8	22.3	22.9	0.6
8	509793	428458	1.5	15.5	26.9	14.8	22.5	22.9	0.4
9	509790	428458	1.5	15.5	27.1	14.8	22.6	22.9	0.3
10	509786	428459	1.5	15.5	27.3	14.8	22.7	22.9	0.2
11	509775	428459	1.5	15.5	28	14.8	23.2	23	-0.2
12	509772	428459	1.5	15.5	28	14.8	23.2	22.9	-0.3
13	509734	428466	1.5	15.5	25.1	14.8	21.2	21.1	-0.1
14	509971	428406	1.5	15.5	21.6	14.8	18.9	21.2	2.3
15	509927	428418	1.5	15.5	21.9	14.8	19.2	21.4	2.2

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
16	509355	428314	4.5	15.5	18	14.8	16.5	16.8	0.3
17	509244	428350	1.5	15.5	21.5	14.8	19.3	19.9	0.6
18	509207	428340	1.5	15.5	19.7	14.8	17.9	18.4	0.5
19	509105	428301	1.5	15.5	18.6	14.8	17.1	17.6	0.5
20	508912	428193	1.5	16.1	19.7	15.4	18	18.6	0.6
21	508857	428156	1.5	16.1	21	15.4	19	19.7	0.7
22	508833	428146	1.5	16.1	21	15.4	19	19.8	0.8
23	508766	428119	1.5	16.1	21.8	15.4	19.6	20.6	1
24	508691	428086	1.5	16.1	22.4	15.4	20	21.1	1.1
25	508656	428071	1.5	16.1	22.8	15.4	20.3	21.4	1.1
26	508613	428053	1.5	16.1	23.7	15.4	21	22.3	1.3
27	508521	428022	1.5	16.1	22.6	15.4	20	20.8	0.8
28	508489	428010	1.5	16.1	22.5	15.4	19.8	20.3	0.5
29	508398	427979	1.5	16.2	19.5	15.6	17.8	17.9	0.1
30	508417	428127	1.5	16.1	20.4	15.4	17.9	17.6	-0.3
31	508702	428191	1.5	16.1	19.8	15.4	17.5	17.3	-0.2

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
32	508704	428171	1.5	16.1	19.7	15.4	17.5	17.4	-0.1
33	507828	427212	1.5	16.7	19.8	16.1	18.4	18.6	0.2
34	507708	427155	1.5	16.7	19.9	16.1	18.5	18.7	0.2
35	503488	425890	1.5	14.1	17	13.5	15.9	16	0.1
36	503463	425882	1.5	14.1	17.1	13.5	15.9	16	0.1
37	503228	425837	1.5	14.1	15.7	13.5	14.8	14.9	0.1
38	503071	425776	1.5	14.1	16	13.5	15	15.1	0.1
39	502979	425648	1.5	13.7	17.5	13.1	16.2	16.3	0.1
40	502593	425601	1.5	13.7	16.8	13.1	15.6	15.6	0
41	502565	425512	1.5	13.7	16.6	13.1	15.5	15.5	0
42	507067	427580	4.5	16.7	18.3	16.1	17.7	17.8	0.1
43	507329	429473	1.5	13.8	16.7	13	14.8	14.8	0
44	508348	428651	1.5	16.1	19.3	15.4	17.5	17.4	-0.1
45	508530	429501	1.5	14.6	18	13.9	16.3	16.2	-0.1
46	508514	429479	4.5	14.6	16.1	13.9	14.9	14.9	0
47	508776	429385	4.5	14.6	16.3	13.9	15.1	14.9	-0.2

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
48	508831	429396	1.5	14.6	17.6	13.9	16	15.7	-0.3
49	509034	429298	4.5	16.6	19.3	16.2	17.9	17.7	-0.2
50	508757	428989	1.5	16.1	17.8	15.4	16.5	16.4	-0.1
51	508890	428637	1.5	16.1	18.1	15.4	16.6	16.5	-0.1
52	509260	428584	1.5	15.5	17.9	14.8	16.3	16.6	0.3
53	509285	428470	1.5	15.5	17.9	14.8	16.5	16.8	0.3
54	509356	429296	1.5	16.6	21	16.2	19.3	18.9	-0.4
55	509384	429263	1.5	16.6	20.3	16.2	18.8	18.5	-0.3
56	509578	429257	1.5	16.6	18.9	16.2	17.9	17.7	-0.2
57	509641	429304	1.5	16.6	19.3	16.2	18.2	17.8	-0.4
58	509711	429281	1.5	16.6	19	16.2	18	17.8	-0.2
59 short	509760	429277	1.5	16.6	19.3	16.2	18.1	17.9	-0.2
60	509983	429198	1.5	16.6	20.9	16.2	19.3	18.9	-0.4
61	510177	429201	2.5	16.2	20.3	15.4	18.2	18	-0.2
62	510029	428647	5.5	15.2	16.8	14.5	15.5	15.8	0.3
63	510051	428675	5.5	15.2	16.9	14.5	15.6	15.9	0.3

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
64	510129	428549	1.5	15.2	18.9	14.5	16.9	17.4	0.5
65	510615	428664	1.5	15.2	17.2	14.5	15.8	16	0.2
66	511143	428875	1.5	13.3	14.9	12.6	13.7	13.9	0.2
67	512019	429266	1.5	15.1	19.5	14.4	17.6	17.7	0.1
68	509804	428459	1.5	15.5	25.9	14.8	21.8	22.5	0.7
69	509812	428459	1.5	15.5	25.4	14.8	21.5	22.3	0.8
70	509842	428458	1.5	15.5	24.4	14.8	20.8	22.1	1.3
71	509846	428458	1.5	15.5	24.2	14.8	20.7	22	1.3
72	509855	428458	1.5	15.5	23.9	14.8	20.5	21.7	1.2
73	509890	428456	1.5	15.5	23.3	14.8	20	21.6	1.6
74	508798	428085	4.5	16.1	20.7	15.4	18.8	19.6	0.8
75	508794	428084	4.5	16.1	20.7	15.4	18.8	19.6	0.8
76	509772	428462	4.5	15.5	21.2	14.8	18.7	19.2	0.5
77	509775	428460	4.5	15.5	21.3	14.8	18.8	19.3	0.5
78	509775	428460	7.5	15.5	18.5	14.8	16.8	17.3	0.5
79	509790	428460	4.5	15.5	21.2	14.8	18.7	19.2	0.5

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
80	509793	428460	4.5	15.5	21.2	14.8	18.6	19.2	0.6
81	509793	428460	7.5	15.5	18.5	14.8	16.8	17.3	0.5
82	509817	428460	4.5	15.5	21	14.8	18.5	19.2	0.7
83	509817	428460	7.5	15.5	18.5	14.8	16.8	17.3	0.5
84	509825	428459	1.5	15.5	24.4	14.8	20.8	21.8	1
85	509825	428460	4.5	15.5	20.8	14.8	18.4	19.1	0.7
86	509825	428460	7.5	15.5	18.5	14.8	16.8	17.3	0.5
87	510183	429135	1.5	16.2	17.8	15.4	16.5	16.4	-0.1
88	510347	429268	4.5	16.2	19.6	15.4	17.7	17.8	0.1
89	510636	428873	4.5	15.2	17.8	14.5	15.8	16	0.2
90	510144	428887	1.5	15.2	18.8	14.5	16.7	17	0.3
91	508475	429521	1.5	14.6	17.9	13.9	16.3	16.1	-0.2
92	508579	429408	1.5	14.6	15.4	13.9	14.5	14.4	-0.1
93	508899	429256	1.5	14.6	16.3	13.9	15	14.9	-0.1
94	509835	429291	1.5	16.6	20.2	16.2	18.8	18.4	-0.4
95	508633	428180	1.5	16.1	19.1	15.4	17.1	17	-0.1

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
96	503973	425868	1.5	14.1	15.1	13.5	14.3	14.3	0
97	509175	429415	1.5	16.6	18	16.2	17.1	17	-0.1
98	510560	428582	1.5	15.2	16.9	14.5	15.6	15.8	0.2

Note: Exceedances of annual mean PM_{10} objective (40 µg m^{-3}) shown in bold

Table 1.3: Operation local air quality assessment results at human receptors for nitrogen dioxide (µg m^{-3}) in Base, Do Minimum (DM) and Do Something (DS) scenario.

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
1	509962	428453	1.5	21.9	38.8	16.2	28.6	28.6	0
2	509924	428454	1.5	21.9	**40.7**	16.2	30	30.7	0.7
3	509906	428455	1.5	21.9	**41.6**	16.2	30.7	32.6	1.9
4	509878	428456	1.5	21.9	**43.8**	16.2	32.3	32.7	0.4
5	509851	428458	1.5	21.9	**44.6**	16.2	33	32.4	-0.6
6	509817	428458	1.5	21.9	**55.5**	16.2	**41.2**	39.4	-1.8
7	509796	428458	1.5	21.9	**58.3**	16.2	**43.3**	**40.4**	-2.9
8	509793	428458	1.5	21.9	**58.7**	16.2	**43.6**	**40.5**	-3.1
9	509790	428458	1.5	21.9	**59.2**	16.2	**44**	**40.7**	-3.3
10	509786	428459	1.5	21.9	**59.8**	16.2	**44.4**	**40.8**	-3.6
11	509775	428459	1.5	21.9	**61.6**	16.2	**45.8**	**41.7**	-4.1
12	509772	428459	1.5	21.9	**61.5**	16.2	**45.8**	**41.6**	-4.2
13	509734	428466	1.5	21.9	**46.9**	16.2	34.7	32.4	-2.3
14	509971	428406	1.5	21.9	38.7	16.2	29.2	29.8	0.6
15	509927	428418	1.5	21.9	39.4	16.2	29.9	30.6	0.7

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
16	509355	428314	4.5	21.9	28.2	16.2	20.7	20.5	-0.2
17	509244	428350	1.5	21.9	38.9	16.2	30.1	28.5	-1.6
18	509207	428340	1.5	21.9	33.7	16.2	25.6	24.9	-0.7
19	509105	428301	1.5	21.9	30.4	16.2	22.8	22.8	0
20	508912	428193	1.5	21.3	31.1	15.4	23.5	23.8	0.3
21	508857	428156	1.5	21.3	34.5	15.4	26.3	26.5	0.2
22	508833	428146	1.5	21.3	34.6	15.4	26.3	26.6	0.3
23	508766	428119	1.5	21.3	36.3	15.4	27.6	28	0.4
24	508691	428086	1.5	21.3	38.5	15.4	28.8	30.2	1.4
25	508656	428071	1.5	21.3	39.6	15.4	29.3	31.2	1.9
26	508613	428053	1.5	21.3	34.7	15.4	25.5	26.9	1.4
27	508521	428022	1.5	21.3	32.4	15.4	23.7	24.6	0.9
28	508489	428010	1.5	21.3	31.5	15.4	23	23.5	0.5
29	508398	427979	1.5	18.5	26.5	13.8	19.3	19.6	0.3
30	508417	428127	1.5	21.3	30.9	15.4	22.1	21.6	-0.5
31	508702	428191	1.5	21.3	29.3	15.4	22	21.4	-0.6

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
32	508704	428171	1.5	21.3	29.4	15.4	22.1	21.6	-0.5
33	507828	427212	1.5	21.7	28.8	16.3	21.1	21.2	0.1
34	507708	427155	1.5	21.7	28.9	16.3	21.2	21.4	0.2
35	503488	425890	1.5	14.9	22.2	11.1	16.6	16.7	0.1
36	503463	425882	1.5	14.9	22.3	11.1	16.7	16.8	0.1
37	503228	425837	1.5	14.9	19.1	11.1	14.1	14.1	0
38	503071	425776	1.5	14.9	19.7	11.1	14.5	14.6	0.1
39	502979	425648	1.5	14.3	23.5	10.2	17.7	17.9	0.2
40	502593	425601	1.5	14.3	21.7	10.2	16.2	16.3	0.1
41	502565	425512	1.5	14.3	21.5	10.2	16.1	16.2	0.1
42	507067	427580	4.5	21.7	24.7	16.3	17.8	18.3	0.5
43	507329	429473	1.5	17.7	23.7	12.8	17.1	17.2	0.1
44	508348	428651	1.5	21.3	28.5	15.4	20.9	20.7	-0.2
45	508530	429501	1.5	20.9	27.5	15.3	20.3	20.1	-0.2
46	508514	429479	4.5	20.9	23.8	15.3	17.4	17.3	-0.1
47	508776	429385	4.5	20.9	24.6	15.3	18	17.8	-0.2

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
48	508831	429396	1.5	20.9	27.5	15.3	20.2	19.8	-0.4
49	509034	429298	4.5	23.7	29.2	18.2	21.4	21	-0.4
50	508757	428989	1.5	21.3	24.2	15.4	17.9	17.7	-0.2
51	508890	428637	1.5	21.3	25.9	15.4	18.8	18.6	-0.2
52	509260	428584	1.5	21.9	27.8	16.2	20.2	20.3	0.1
53	509285	428470	1.5	21.9	28.3	16.2	20.7	20.7	0
54	509356	429296	1.5	23.7	31.6	18.2	23.3	22.7	-0.6
55	509384	429263	1.5	23.7	30.4	18.2	22.4	22	-0.4
56	509578	429257	1.5	23.7	28.4	18.2	20.8	20.5	-0.3
57	509641	429304	1.5	23.7	28.7	18.2	21.2	20.6	-0.6
58	509711	429281	1.5	23.7	28.3	18.2	20.8	20.5	-0.3
59 short	509760	429277	1.5	23.7	28.6	18.2	21	20.6	-0.4
60	509983	429198	1.5	23.7	32.5	18.2	23.8	23.3	-0.5
61	510177	429201	2.5	27	35.9	20.3	26.2	26	-0.2
62	510029	428647	5.5	22.2	26.5	17	19.1	19.3	0.2
63	510051	428675	5.5	22.2	26.7	17	19.3	19.5	0.2

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
64	510129	428549	1.5	22.2	30.2	17	21.9	22.4	0.5
65	510615	428664	1.5	22.2	28.1	17	20.2	20.3	0.1
66	511143	428875	1.5	18.6	23	14.4	16.5	16.6	0.1
67	512019	429266	1.5	22.3	31.8	16.7	23.3	23.4	0.1
68	509804	428459	1.5	21.9	**56.1**	16.2	**41.6**	39.3	-2.3
69	509812	428459	1.5	21.9	**54.7**	16.2	**40.6**	38.7	-1.9
70	509842	428458	1.5	21.9	**45.6**	16.2	33.7	32.9	-0.8
71	509846	428458	1.5	21.9	**45**	16.2	33.3	32.7	-0.6
72	509855	428458	1.5	21.9	**44.3**	16.2	32.7	32.2	-0.5
73	509890	428456	1.5	21.9	**42.8**	16.2	31.5	33.2	1.7
74	508798	428085	4.5	21.3	**41.8**	15.4	31.9	33.3	1.4
75	508794	428084	4.5	21.3	**41.9**	15.4	31.9	33.4	1.5
76	509772	428462	4.5	21.9	**41.7**	16.2	31	30.3	-0.7
77	509775	428460	4.5	21.9	**42**	16.2	31.2	30.5	-0.7
78	509775	428460	7.5	21.9	32.4	16.2	23.8	23.9	0.1
79	509790	428460	4.5	21.9	**41.6**	16.2	30.8	30.1	-0.7

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
80	509793	428460	4.5	21.9	**41.5**	16.2	30.8	30.1	-0.7
81	509793	428460	7.5	21.9	32.5	16.2	23.9	23.9	0
82	509817	428460	4.5	21.9	**41**	16.2	30.4	29.8	-0.6
83	509817	428460	7.5	21.9	32.5	16.2	23.9	23.8	-0.1
84	509825	428459	1.5	21.9	52	16.2	38.6	37.2	-1.4
85	509825	428460	4.5	21.9	**40.5**	16.2	30	29.4	-0.6
86	509825	428460	7.5	21.9	32.6	16.2	24	23.9	-0.1
87	510183	429135	1.5	27	30.7	20.3	22.2	22	-0.2
88	510347	429268	4.5	27	36	20.3	26.2	26.2	0
89	510636	428873	4.5	22.2	30.4	17	21.3	21.7	0.4
90	510144	428887	1.5	22.2	31.7	17	22.8	23.1	0.3
91	508475	429521	1.5	20.9	27.2	15.3	20.1	20	-0.1
92	508579	429408	1.5	20.9	22.6	15.3	16.4	16.4	0
93	508899	429256	1.5	20.9	23.8	15.3	17.4	17.2	-0.2
94	509835	429291	1.5	23.7	30.1	18.2	22.2	21.7	-0.5
95	508633	428180	1.5	21.3	28	15.4	20.8	20.4	-0.4

Receptor ID	X	Y	Z	Base Year (2015)		Opening Year (2025)			
				Background	Total	Background	DM Total	DS Total	Impact
96	503973	425868	1.5	14.9	17.4	11.1	12.7	12.7	0
97	509175	429415	1.5	23.7	27	18.2	19.5	19.4	-0.1
98	510560	428582	1.5	22.2	27.1	17	19.5	19.5	0

Note: Exceedances of annual mean NO2 objective (40 µg m^{-3}) shown in bold

Table 1.4: Local air quality assessment results at ecological receptors for nitrogen dioxide and nitrogen oxides (µg m^{-3}) in Base Year scenario

Transect	Distance from edge of A63 (m)	X	Y	Base Year (2015)			
				Background NO_x	Total NO_x	Background NO_2	Total NO_2
Transect_1	3	505699	426427	21.9	66.5	15.5	36.7
Transect 1	13	505702	426417	21.9	43.6	15.5	26.4
Transect 1	23	505704	426407	21.9	36.9	15.5	23.2
Transect 1	33	505707	426398	21.9	33.4	15.5	21.5
Transect 1	43	505712	426389	21.9	31.2	15.5	20.4
Transect 1	53	505715	426380	21.9	29.7	15.5	19.6
Transect 1	63	505718	426370	21.9	28.6	15.5	19.1
Transect 1	73	505721	426361	21.9	27.8	15.5	18.6
Transect 1	83	505725	426350	21.9	27.1	15.5	18.3
Transect 1	93	505728	426342	21.9	26.7	15.5	18.0
Transect 1	103	505731	426332	21.9	26.2	15.5	17.8
Transect 1	113	505735	426323	21.9	25.9	15.5	17.6
Transect 1	123	505738	426313	21.9	25.6	15.5	17.5
Transect 1	133	505741	426304	21.9	25.3	15.5	17.3
Transect 1	143	505744	426294	21.9	25.1	15.5	17.2

Transect	Distance from edge of A63 (m)	X	Y	Base Year (2015)			
				Background NO_x	Total NO_x	Background NO_2	Total NO_2
Transect 1	153	505748	426285	21.9	24.9	15.5	17.1
Transect 1	163	505751	426275	21.9	24.7	15.5	17.0
Transect 1	173	505754	426266	21.9	24.6	15.5	16.9
Transect 1	183	505757	426257	21.9	24.4	15.5	16.9
Transect 1	193	505761	426247	21.9	24.3	15.5	16.8
Transect 2	35	504466	425989	20.3	33.8	14.5	21.5
Transect 2	45	504469	425980	20.3	30.4	14.5	19.8
Transect 2	55	504474	425970	20.3	28.3	14.5	18.7
Transect 2	65	504478	425962	20.3	27.1	14.5	18.1
Transect 2	75	504482	425953	20.3	26.2	14.5	17.7
Transect 2	85	504486	425944	20.3	25.5	14.5	17.3
Transect 2	95	504490	425934	20.3	24.9	14.5	17.0
Transect 2	105	504494	425925	20.3	24.5	14.5	16.8
Transect 2	115	504498	425916	20.3	24.1	14.5	16.6
Transect 2	125	504502	425907	20.3	23.8	14.5	16.4
Transect 2	135	504506	425898	20.3	23.5	14.5	16.3

Transect	Distance from edge of A63 (m)	X	Y	Base Year (2015)			
				Background NO_x	Total NO_x	Background NO_2	Total NO_2
Transect 2	145	504510	425890	20.3	23.3	14.5	16.2
Transect 2	155	504514	425880	20.3	23.1	14.5	16.0
Transect 2	165	504518	425871	20.3	22.9	14.5	16.0
Transect 2	175	504523	425862	20.3	22.8	14.5	15.9
Transect 2	185	504527	425853	20.3	22.6	14.5	15.8
Transect 2	195	504531	425843	20.3	22.5	14.5	15.7
Transect 3	13	503419	425800	20.9	44.1	14.9	26.6
Transect 3	23	503420	425790	20.9	36.2	14.9	22.8
Transect 3	33	503420	425780	20.9	32.7	14.9	21.0
Transect 3	43	503420	425770	20.9	30.6	14.9	20.0
Transect 3	53	503420	425760	20.9	29.3	14.9	19.3
Transect 3	63	503420	425750	20.9	28.3	14.9	18.8
Transect 3	73	503421	425740	20.9	27.6	14.9	18.4
Transect 3	83	503421	425730	20.9	27.0	14.9	18.1
Transect 3	93	503421	425720	20.9	26.5	14.9	17.8
Transect 3	103	503421	425710	20.9	26.0	14.9	17.6

Transect	Distance from edge of A63 (m)	X	Y	Base Year (2015)			
				Background NO_x	Total NO_x	Background NO_2	Total NO_2
Transect 3	113	503422	425700	20.9	25.4	14.9	17.3
Transect 3	123	503422	425689	20.9	24.9	14.9	17.1
Transect 3	133	503422	425680	20.9	24.6	14.9	16.9
Transect 3	143	503423	425670	20.9	24.2	14.9	16.7
Transect 3	153	503424	425660	20.9	23.9	14.9	16.5
Transect 3	163	503427	425651	20.9	23.7	14.9	16.4
Transect 3	173	503426	425640	20.9	23.5	14.9	16.3
Transect 3	183	503430	425629	20.9	23.3	14.9	16.2
Transect 3	193	503440	425623	20.9	23.1	14.9	16.1

Note: Exceedances of annual mean NOx objective (30 µg m^{-3}) shown in bold

Table 1.5: Local air quality assessment results at ecological receptors for nitrogen dioxide and nitrogen oxides (µg m^{-3}) in Opening Year Do Minimum (DM) and Do Something (DS) scenario

Transect	Distance from edge of A63 (m)	Opening Year (2025)							
		Background NO_x	DM Total NO_x	DS Total NO_x	Impact NO_x	Background NO_2	DM Total NO_2	DS Total NO_2	Impact NO_2
Transect_1	3	15.3	44.7	45.6	0.9	11.3	28.0	28.5	0.45
Transect 1	13	15.3	28.6	29.0	0.4	11.3	19.8	20.0	0.21
Transect 1	23	15.3	23.9	24.2	0.2	11.3	17.2	17.3	0.13
Transect 1	33	15.3	21.5	21.7	0.2	11.3	15.8	15.9	0.10
Transect 1	43	15.3	20.0	20.1	0.1	11.3	15.0	15.1	0.09
Transect 1	53	15.3	19.0	19.1	0.1	11.3	14.4	14.4	0.07
Transect 1	63	15.3	18.2	18.3	0.1	11.3	13.9	14.0	0.07
Transect 1	73	15.3	17.7	17.8	0.1	11.3	13.6	13.7	0.04
Transect 1	83	15.3	17.2	17.3	0.1	11.3	13.3	13.4	0.04
Transect 1	93	15.3	16.9	17.0	0.1	11.3	13.1	13.2	0.04
Transect 1	103	15.3	16.6	16.7	0.1	11.3	13.0	13.0	0.04
Transect 1	113	15.3	16.4	16.4	0.1	11.3	12.8	12.9	0.03
Transect 1	123	15.3	16.1	16.2	0.1	11.3	12.7	12.7	0.03
Transect 1	133	15.3	16.0	16.0	0.0	11.3	12.6	12.6	0.02
Transect 1	143	15.3	15.8	15.9	0.0	11.3	12.5	12.5	0.02

Transect	Distance from edge of A63 (m)	Opening Year (2025)							
		Background NO_x	DM Total NO_x	DS Total NO_x	Impact NO_x	Background NO_2	DM Total NO_2	DS Total NO_2	Impact NO_2
Transect 1	153	15.3	15.7	15.7	0.0	11.3	12.4	12.4	0.02
Transect 1	163	15.3	15.6	15.6	0.0	11.3	12.4	12.4	0.02
Transect 1	173	15.3	15.5	15.5	0.0	11.3	12.3	12.3	0.02
Transect 1	183	15.3	15.4	15.4	0.0	11.3	12.2	12.3	0.02
Transect 1	193	15.3	15.3	15.3	0.0	11.3	12.2	12.2	0.02
Transect 2	35	14.6	21.4	21.6	0.2	10.8	15.7	15.8	0.12
Transect 2	45	14.6	19.3	19.4	0.1	10.8	14.4	14.5	0.08
Transect 2	55	14.6	17.9	18.0	0.1	10.8	13.6	13.7	0.07
Transect 2	65	14.6	17.2	17.3	0.1	10.8	13.2	13.3	0.04
Transect 2	75	14.6	16.6	16.7	0.1	10.8	12.9	12.9	0.04
Transect 2	85	14.6	16.1	16.2	0.1	10.8	12.6	12.6	0.04
Transect 2	95	14.6	15.8	15.8	0.1	10.8	12.4	12.4	0.03
Transect 2	105	14.6	15.5	15.5	0.0	10.8	12.2	12.2	0.03
Transect 2	115	14.6	15.2	15.3	0.0	10.8	12.0	12.1	0.03
Transect 2	125	14.6	15.0	15.0	0.0	10.8	11.9	11.9	0.02
Transect 2	135	14.6	14.8	14.9	0.0	10.8	11.8	11.8	0.02
Transect 2	145	14.6	14.7	14.7	0.0	10.8	11.7	11.7	0.02

Transect	Distance from edge of A63 (m)	Opening Year (2025)							
		Background NO_x	DM Total NO_x	DS Total NO_x	Impact NO_x	Background NO_2	DM Total NO_2	DS Total NO_2	Impact NO_2
Transect 2	155	14.6	14.6	14.6	0.0	10.8	11.6	11.7	0.01
Transect 2	165	14.6	14.4	14.5	0.0	10.8	11.6	11.6	0.02
Transect 2	175	14.6	14.3	14.4	0.0	10.8	11.5	11.5	0.01
Transect 2	185	14.6	14.2	14.3	0.0	10.8	11.5	11.5	0.02
Transect 2	195	14.6	14.2	14.2	0.0	10.8	11.4	11.4	0.02
Transect 3	13	15.0	29.6	29.9	0.3	11.1	20.3	20.5	0.16
Transect 3	23	15.0	23.8	24.0	0.2	11.1	17.1	17.2	0.11
Transect 3	33	15.0	21.3	21.5	0.1	11.1	15.7	15.8	0.08
Transect 3	43	15.0	19.9	20.0	0.1	11.1	14.8	14.9	0.07
Transect 3	53	15.0	18.9	19.0	0.1	11.1	14.3	14.3	0.06
Transect 3	63	15.0	18.2	18.3	0.1	11.1	13.9	13.9	0.04
Transect 3	73	15.0	17.7	17.8	0.1	11.1	13.6	13.6	0.04
Transect 3	83	15.0	17.3	17.4	0.1	11.1	13.3	13.4	0.03
Transect 3	93	15.0	16.9	17.0	0.1	11.1	13.1	13.1	0.03
Transect 3	103	15.0	16.6	16.6	0.1	11.1	12.9	12.9	0.03
Transect 3	113	15.0	16.2	16.3	0.0	11.1	12.7	12.7	0.02
Transect 3	123	15.0	15.9	15.9	0.0	11.1	12.5	12.5	0.03

Transect	Distance from edge of A63 (m)	Opening Year (2025)							
		Background NO_x	DM Total NO_x	DS Total NO_x	Impact NO_x	Background NO_2	DM Total NO_2	DS Total NO_2	Impact NO_2
Transect 3	133	15.0	15.6	15.6	0.0	11.1	12.3	12.3	0.02
Transect 3	143	15.0	15.3	15.4	0.0	11.1	12.2	12.2	0.02
Transect 3	153	15.0	15.1	15.2	0.0	11.1	12.0	12.0	0.01
Transect 3	163	15.0	15.0	15.0	0.0	11.1	11.9	11.9	0.01
Transect 3	173	15.0	14.8	14.8	0.0	11.1	11.8	11.9	0.02
Transect 3	183	15.0	14.7	14.7	0.0	11.1	11.8	11.8	0.01
Transect 3	193	15.0	14.6	14.6	0.0	11.1	11.7	11.7	0.02

Note: Impacts shown to 2 decimal places to fully demonstrate spatial trend
Exceedances of annual mean NOx objective (30 µg m^{-3}) shown in bold

A63 Castle Street Improvements, Hull
Environmental Statement

Volume 3 Appendix 6.3

AIR QUALITY – MODEL VERIFICATION

TR010016/APP/6.3
HE514508-MMSJV-EAQ-S0-RP-LA-000004
31 July 2018

A63 Castle Street Improvements, Hull

Environmental Statement

Appendix 6.3 Model verification

Revision Record						
Rev No	**Date**	**Originator**	**Checker**	**Approver**	**Status**	**Suitability**
P01.1	24.04.18	J Burnell	C Mills	J McKenna	S0	For review
P02	31.07.18	J Burnell	C Mills	J McKenna	Shared	S4

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1. Model verification

1.1 Overview

1.1.1 Model verification is a process by which checks are carried out to determine the performance of a dispersion model at a local level, primarily by comparison of modelled results with monitoring data. The verification process benefits an assessment by investigating uncertainties and minimising them either through informed refinement of model input parameters or adjustment of the model output if it is deemed necessary.

1.1.2 Guidance produced by the Department for Environment, Food & Rural Affairs (Defra) provides a methodology for model verification including calculation methods and directions on the suitability of monitoring data.

1.1.3 Verification of modelled 2015 annual mean NO_2 concentrations has been undertaken utilising monitoring results from relevant diffusion tube sites within the study area.

1.1.4 Background concentrations used in the model verification have been taken from Defra. The Defra background concentrations were compared against background air quality monitoring sites, as discussed in Section 6.5 of the ES. Data from Hull City Council (HCC) and the Scheme monitoring were reviewed and only roadside sites within the affected road network have been included in the verification process. The exact location of each of the sites was confirmed from street photography as well as the personnel that undertook the surveys.

1.1.5 Eleven HCC sites and 24 Scheme monitoring sites met this criterion. The locations of these monitoring sites are indicated in Figure 6.13. The Scheme monitoring sites were annualised and bias adjusted in accordance with Defra guidance, as described in Appendix 6.3.

1.1.6 Table Error**! No text of specified style in document.**.1 presents the monitoring data used within the model verification.

1.2 Results

1.2.1 Table Error**! No text of specified style in document.**.1 presents a comparison of the monitored and modelled concentrations of NO_X and NO_2 at the diffusion tube sites for the year 2015. There is no systematic under or over prediction of monitored concentrations across most of the study area, however there were three areas where the model appears to perform differently to elsewhere.

1.2.2 The model over predicts NO_2 concentrations by 10.2 to 24.8% at S11 and P14, which are sites located in the vicinity of the flyover on Clive Sullivan Way. This over prediction is a result of the model not accounting for the increased distance of the vehicles from the monitoring locations due to the height of the road. As such, a

separate verification factor has been calculated for sites in close proximity to the flyover where there are differences in height between the road and receptor.

1.2.3 The model under-predicts NO_2 concentrations by -25.4 to -31.7% at P21 and P22, which are located near the off slip road of Clive Sullivan Way. This is likely to be because these monitoring sites are adjacent to road links which have been assigned Free-Flow speeds but in reality speeds will likely be slower as cars will be slowing down to exit the A63. An additional verification factor has therefore been calculated for the two receptors in this location.

1.2.4 The model under-predicts NO_2 concentrations by -18.6 to -21.5% at P5 and P42, which are located on Castle Street, near Dagger Lane. This is likely to be because these monitoring sites are located near to a pedestrian crossing where speeds will be slower than those assigned in the model, resulting in a localised area of higher concentrations. Sites P5 and P42 also have the highest monitored concentrations (56.4µg/m^3 and 48.9µg/m^3) so a separate adjustment factor has been calculated for this area as, for significance purposes, it is particularly important this area of the model is performing well.

1.2.5 Four verification zones have therefore been used within the assessment as follows:

- Verification Zone 1 – All monitoring locations outside of Zone 2, 3 and 4
- Verification Zone 2 – Monitoring locations adjacent to the flyover at Clive Sullivan Way (adjacent to A63 between Daltry Street/Rawlings Way and Neptune Street)
- Verification Zone 3 – Monitoring locations adjacent to the off slip road of the A63 near Clive Sullivan Way
- Verification Zone 4 – Monitoring locations adjacent to the Castle Street Pedestrian Crossing (between Dagger Lane and Fish Street)

Table Error! No text of specified style in document.**.1: Unadjusted model verification results – all monitoring locations**

Site ID	Monitored road NO_X (µg/m^3)	Modelled road NO_X (µg/m^3)	Monitored total NO_2 (µg/m^3)	Modelled total NO_2 (µg/m^3)	Total NO_2 % difference	Verification zone
S1[1]	19.2	22.0	31.2	32.5	4.2	1
S2[1]	21.2	17.5	32.2	30.5	-5.3	1
S4[1]	33.5	20.7	37.7	32.0	-15.2	1
S5[1]	31.1	27.5	33.5	31.9	-4.8	2
S11[1 (a)]	24.3	31.9	33.0	36.4	10.2	2
S12[1]	40.8	42.2	40.8	41.4	1.5	1
S14[1]	53.4	37.1	45.9	39.2	-14.5	1
S15[1]	40.0	29.5	40.4	35.9	-11.2	1

Site ID	Monitored road NO_X ($\mu g/m^3$)	Modelled road NO_X ($\mu g/m^3$)	Monitored total NO_2 ($\mu g/m^3$)	Modelled total NO_2 ($\mu g/m^3$)	Total NO_2 % difference	Verification zone
S20[1]	26.5	12.3	33.6	27.0	-19.6	1
S3[1]	53.6	35.5	46.0	38.5	-16.3	1
S30[1]	10.2	14.4	27.3	29.3	7.5	1
P2[2]	21.7	24.1	32.4	33.5	3.3	1
P5[2]	81.2	49.2	56.4	44.3	-21.5	4
P6[2]	45.9	37.9	42.9	39.6	-7.8	1
P7[2]	35.3	33.3	38.4	37.6	-2.3	1
P9[2]	12.8	9.8	25.0	23.5	-6.1	1
P14[2]	17.4	33.7	29.8	37.2	24.8	2
P16[2]	40.3	33.0	40.0	36.9	-7.8	1
P18[2]	55.5	40.1	46.2	39.9	-13.7	1
P21[2]	53.2	26.0	45.3	33.8	-25.4	3
P22[2]	71.7	30.5	52.4	35.8	-31.7	3
P32[2]	32.1	17.9	34.0	27.5	-19.2	1
P37[2]	28.3	19.0	34.4	30.2	-12.3	1
P39[2]	16.7	20.0	30.4	32.0	5.1	1
P41[2]	8.0	16.7	26.2	30.4	16.0	1
P42[2]	61.1	39.8	48.9	39.8	-18.6	4
P43[2]	20.8	20.7	32.0	32.0	-0.1	1
P44[2]	21.3	21.8	32.2	32.5	0.7	1
P45[2]	22.2	22.8	32.6	32.9	0.9	1
P46[2]	36.5	30.3	39.0	36.3	-6.9	1
P3[2]	23.3	27.1	33.1	34.9	5.2	1
P10[2]	16.5	13.1	31.7	30.1	-5.1	1
P11[2]	18.9	13.8	32.9	30.5	-7.2	1
P20[2]	40.8	25.1	40.2	33.4	-17.1	1
P31[2]	12.4	9.3	27.5	25.9	-5.5	1

Note: [1] Hull City Council Monitoring Site

[2] Scheme Monitoring Site

[(a)] Co-located with P15. Results presented are the average of the two sets of results.

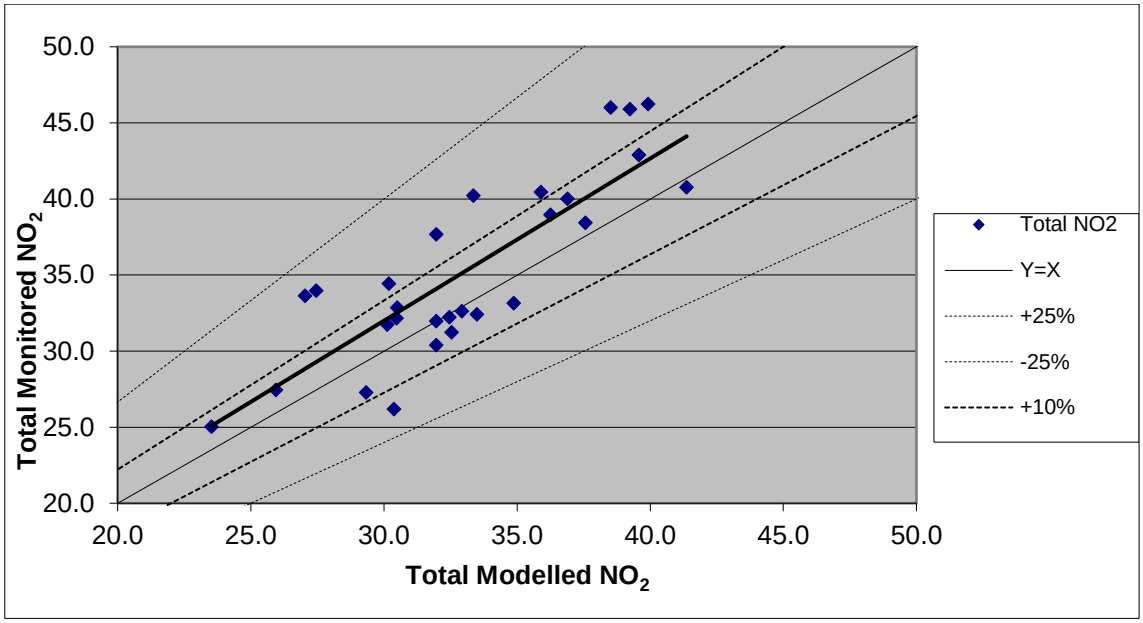
Verification Zone 1

1.2.6 Table **Error! No text of specified style in document.**.1 and Figure 1 present a comparison of the monitored and modelled concentrations of NO_X and NO_2 at the sites in Verification Zone 1. Following Defra guidance, modelled and measured road traffic concentrations have been compared to derive a verification factor to apply to the modelled results. As diffusion tubes only measure total NO_2, the road traffic NO_X concentration measured by the diffusion tube was estimated following

Defra TG.16. Monitored road traffic NO_X was estimated using Version 6.1 of the NO_X to NO_2 calculator, based on the Defra predicted background NO_2.

1.2.7 Following Defra guidance, a model adjustment factor of 1.21 has been calculated when comparing modelled and monitored road traffic NO_X.

Figure 1: Zone 1 - Unadjusted model verification (Annual mean NO_2; µg/m^3)



1.2.8 Table **Error! No text of specified style in document.**.2 and Figure 2 present the adjusted modelled NO_2 with monitored NO_2 at the verification sites. The model predicts NO_2 within 10% of the monitored concentrations at 18 of the 28 sites, and predicts NO_2 within 25% of the monitored concentrations at all sites. The model predicts an exceedance of the annual AQS objective at all sites but one where an exceedance was measured. In particular, the model appears to be performing well around concentrations of 40µg/m^3 with the model generally slightly overpredicting around this concentration.

Table Error! No text of specified style in document.**.2: Adjusted model verification results – Zone 1**

Site ID	Monitored total NO_2 (µg/m^3)	Modelled total NO_2 (µg/m^3)	% difference
S1	31.2	34.7	11.2
S2	32.2	32.2	0.0
S12	40.8	45.0	10.3
S14	45.9	42.6	-7.2
S15	40.4	38.6	-4.5
S20	33.6	28.3	-15.8
P2	32.4	35.8	10.5
P6	42.9	42.9	0.0

Site ID	Monitored total NO_2 ($\mu g/m^3$)	Modelled total NO_2 ($\mu g/m^3$)	% difference
P7	38.4	40.6	5.7
P9	25.0	24.5	-2.0
P16	40.0	39.9	-0.3
P18	46.2	43.5	-5.8
P32	34.0	29.3	-13.8
P37	34.4	32.1	-6.7
P39	30.4	33.9	11.5
P41	26.2	32.0	22.1
P43	32.0	34.0	6.3
P44	32.2	34.6	7.5
P45	32.6	35.1	7.7
P46	39.0	39.1	0.3
S30	27.3	30.8	12.8
S3	46.0	41.7	-9.3
P3	33.1	37.4	13.0
P10	31.7	31.5	-0.6
P11	32.9	31.9	-3.0
P31	27.5	26.9	-2.2
S4	37.7	34.0	-9.8
P20	40.2	35.8	-10.9

Figure 2: Zone 1 - Adjusted model verification (Annual mean NO_2; µg m^{-3})

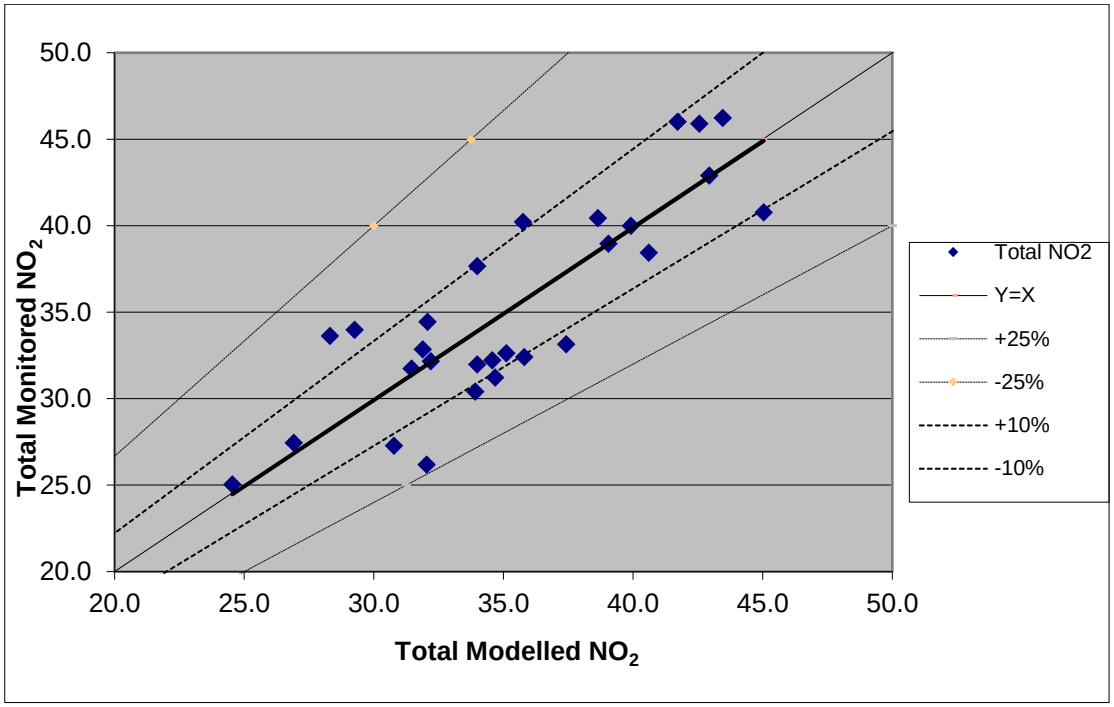

50.0
45.0
40.0
35.0
30.0
25.0
20.0
Total Monitored NO2
20.0
25.0
30.0
35.0
40.0
45.0
50.0
Total Modelled NO2
Total NO2
Y=X
+25%
-25%
+10%
-10%

Table **Error! No text of specified style in document.**.3 presents statistical parameters for describing model uncertainty. The Root Mean Square Error (RMSE) is used to define the average error or uncertainty of the model. The results of the RMSE calculation in this case are concentrations of NO_2 measured in units of micrograms per metre cubed.

1.2.9 Table **Error! No text of specified style in document.**.3 shows that before adjustment the model uncertainty was ±3.9µg/m^3 or 9.8% of the annual mean NO_2 objective. After adjustment the model uncertainty is reduced to ±3.1µg/m^3 or 7.8% of the annual mean NO_2 objective. After adjustment the model uncertainty is within the desired 10% of the relevant objective, as recommended by Defra guidance.

Fractional Bias (FB) is used to identify if the model shows a tendency to over or under predict and values can vary between +2 and -2 and have an ideal value of 0. Negative values suggest a model over-prediction and positive values suggest a model under-prediction.

1.2.10 Table **Error! No text of specified style in document.**.3 shows that before adjustment the model is under-predicting annual mean NO_2 concentrations. Following adjustment the model is very close to the desired FB value of 0 with a slight tendency to over-predict.

1.2.11 The correlation coefficient (R) is used to measure the linear relationship between modelled and measured data. A value of zero means no relationship and a value of 1 means absolute relationship. The value of R is increases slightly from 0.84 to 0.85 following model adjustment.

Table Error! No text of specified style in document.**.3: Description of model uncertainty**

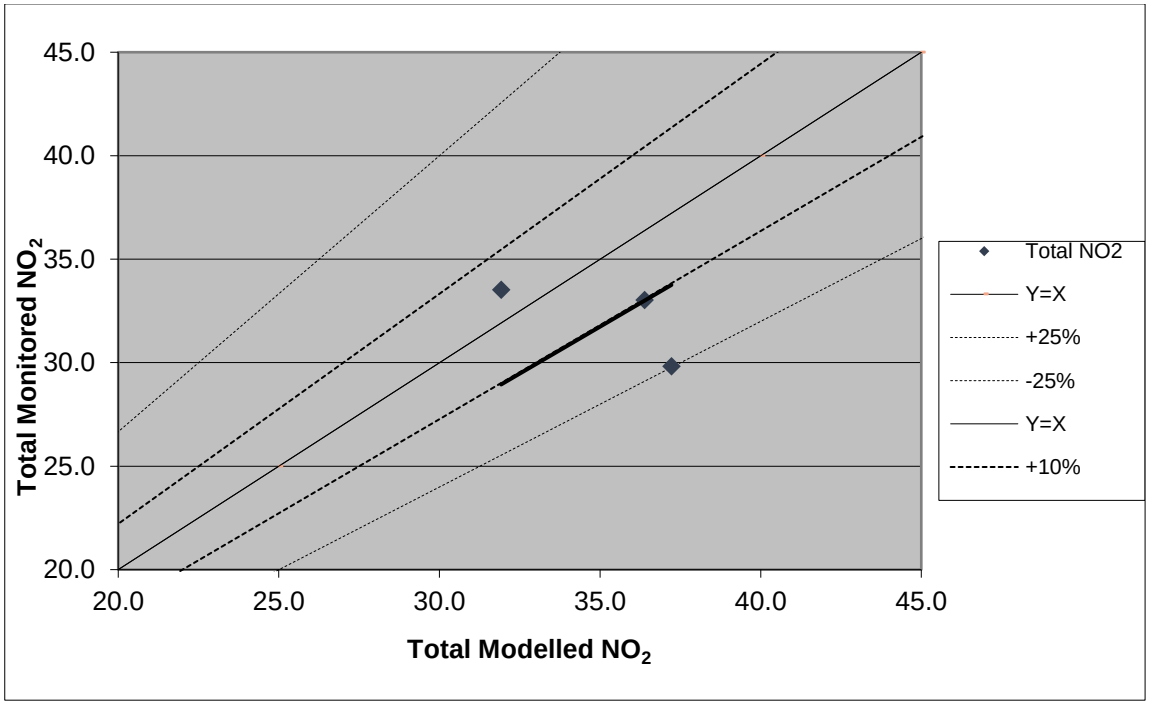
Statistical parameter	Before adjustment	After adjustment	Ideal value
Root Mean Square Error	3.87	3.11	0
Fractional Bias(a)	0.06	-0.002	0
Correlation Coefficient	0.84	0.85	1

1.2.12 The statistical analysis above demonstrates that the model performs adequately versus monitoring data, following adjustment. An adjustment factor of 1.21 has therefore been applied to modelled road NO_x contributions at all receptors within this zone.

Verification Zone 2

1.2.13 Table **Error! No text of specified style in document.**.1 and Figure 3 present a comparison of the monitored and modelled concentrations of NO_X and NO_2 at the sites within Verification Zone 2. Following Defra guidance modelled and measured road traffic concentrations have been compared to derive a verification factor to apply to the modelled results. As diffusion tubes only measure total NO_2, the road traffic NO_X concentration measures by the diffusion tube was estimated following Defra TG.16. Monitored road traffic NO_x was estimated using Version 6.1 of the NO_X to NO_2 calculator, based on the Defra predicted background NO_2. Following Defra guidance, a model adjustment factor of 0.76 has been calculated when comparing modelled and monitored road traffic NO_X.

Figure 3: Zone 2 - Unadjusted model verification (Annual mean NO_2; µg m^{-3})

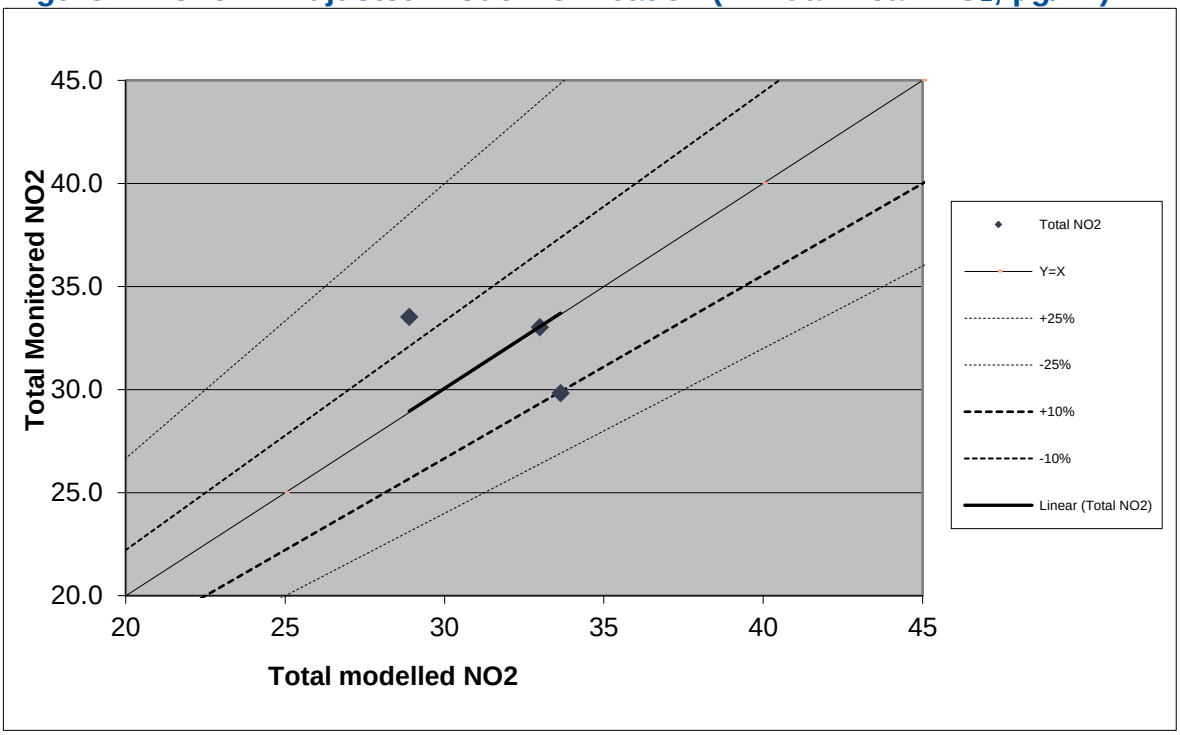


1.2.14 Table **Error! No text of specified style in document.**.4 and Figure 4 present the adjusted modelled NO_2 with monitored NO_2 at the verification sites in Zone 2.

Table Error! No text of specified style in document.**.4: Adjusted model verification results – Zone 2**

Site ID	Monitored total NO_2 (µg/m3)	Modelled total NO_2 (µg/m3)	% difference
S5	33.5	28.9	-13.7
S11	33.0	33.0	0.0
P14	29.8	33.6	12.8

Figure 4: Zone 2 - Adjusted model verification (Annual mean NO_2; µg/m^3)



1.2.15 Table **Error! No text of specified style in document.**.5 presents statistical parameters for describing model uncertainty. The RMSE is used to define the average error or uncertainty of the model. The results of the RMSE calculation in this case are concentrations of NO_2 measured in units of micrograms per metre cubed. Table **Error! No text of specified style in document.**.5 shows that before adjustment the model uncertainty was 4.8µg/m^3 or 11.3% of the annual mean NO_2 objective. After adjustment the model uncertainty is reduced to ±3.5µg/m^3 or 8.8% of the annual mean NO^2 objective. After adjustment the model uncertainty is within the desired 10% of the relevant objective, as recommended by Defra guidance.

1.2.16 Fractional Bias (FB) is used to identify if the model shows a tendency to over or under predict and values can vary between +2 and -2 and have an ideal value of 0. Negative values suggest a model over-prediction and positive values suggest a model under-prediction. Table **Error! No text of specified style in document.**.5 shows that before adjustment the model is over-predicting annual mean NO_2

concentrations. Following adjustment the model is very close to the desired FB value of 0.

1.2.17 The correlation coefficient (R) is used to measure the linear relationship between modelled and measured data. A value of zero means no relationship and a value of 1 means absolute relationship. The value of R decreases slightly from -0.71 to -0.70 following model adjustment.

Table Error! No text of specified style in document.**.5: Description of model uncertainty**

Statistical Parameter	Before Adjustment	After Adjustment	Ideal Value
Root Mean Square Error	4.79	3.47	0
Fractional Bias(a)	-0.09	0.01	0
Correlation Coefficient	-0.71	-0.70	1

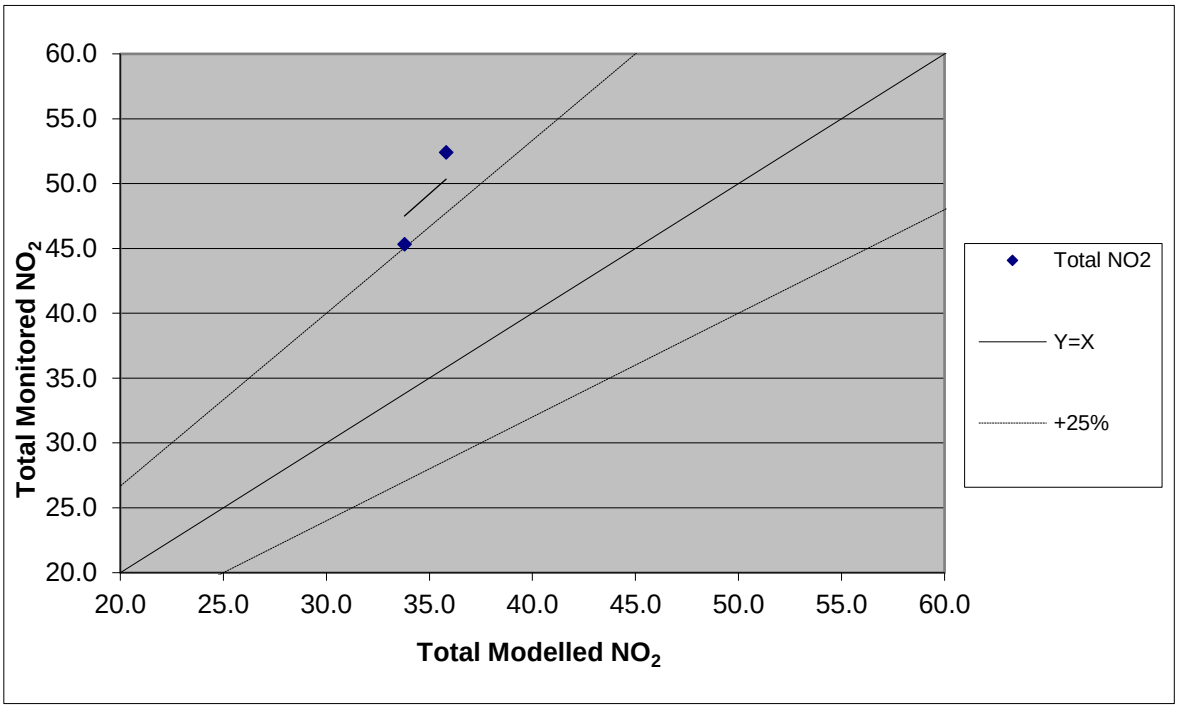
1.2.18 The statistical analysis above demonstrates that the model performs adequately versus monitoring data, following adjustment. An adjustment factor of 0.76 has therefore been applied to modelled road NO_x contributions at all receptors within this zone.

Verification Zone 3

1.2.19 Table **Error! No text of specified style in document.**.1 and Figure 5 present a comparison of the monitored and modelled concentrations of NO_X and NO_2 at the sites within Verification Zone 3. Following Defra guidance modelled and measured road traffic concentrations have been compared to derive a verification factor to apply to the modelled results. As diffusion tubes only measure NO_2, the road traffic NO_X concentrations measured by the diffusion tubes were estimated following Defra TG.16. Monitored road traffic NO_x was estimated using Version 6.1 of the NO_X to NO_2 calculator, based on the Defra predicted background NO_2.

1.2.20 Following Defra guidance, a model adjustment factor of 2.22 has been calculated when comparing modelled and monitored road traffic NO_x.

Figure 5: Zone 3 - Unadjusted model verification (Annual mean NO_2; µg/m^3)

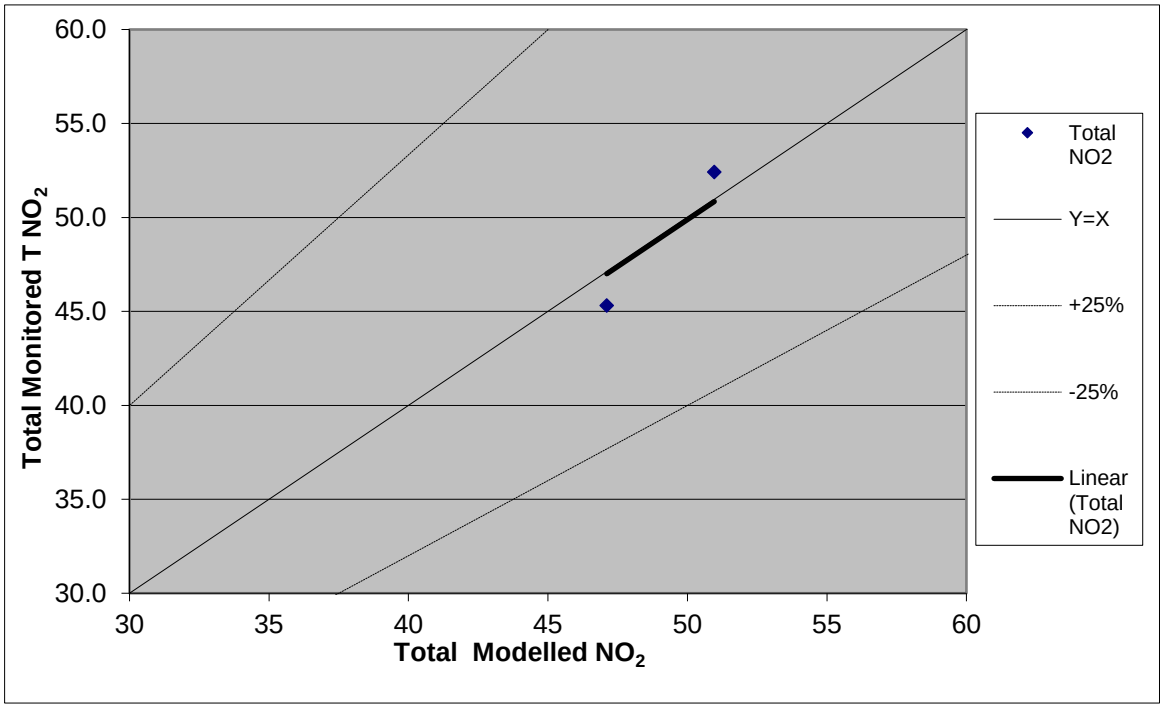


1.2.21 Table Error**! No text of specified style in document.**.6 and Figure 6 present the adjusted modelled NO_2 with monitored NO_2 at the verification sites. The model predicts NO_2 within 10% of the monitored concentrations at all sites. The model predicts an exceedance of the annual AQS objective at every site where an exceedance was measured. The model is therefore assumed to perform adequately following adjustment. The adjustment factor has been applied to modelled road NO_X contributions at all receptors within this Zone.

Table Error! No text of specified style in document.**.6: Adjusted model verification results – Zone 3**

Site ID	Monitored Total NO_2 (µg/m^3)	Modelled Total NO_2 (µg/m^3)	% Difference
P21	**45.3**	**47.1**	4.0
P22	**52.4**	**51.0**	-2.7

Figure 6: Zone 3 - Adjusted model verification (Annual mean NO_2; µg/m^3)



1.2.22 Table **Error! No text of specified style in document.**.7 presents statistical parameters for describing model uncertainty. The RMSE is used to define the average error or uncertainty of the model. The results of the RMSE calculation in this case are concentrations of NO_2 measured in units of micrograms per metre cubed.

1.2.23 Table **Error! No text of specified style in document.**.7 shows that before adjustment the model uncertainty was ±14.3µg/m^3 or 35.8% of the annual mean NO_2 objective. After adjustment the model uncertainty is reduced to ±1.6µg/m^3 or 4.0% of the annual mean NO_2 objective. After adjustment the model uncertainty is within the desired 10% of the relevant objective, as recommended by Defra guidance.

Fractional Bias (FB) is used to identify if the model shows a tendency to over or under predict and values can vary between +2 and -2 and have an ideal value of 0. Negative values suggest a model over-prediction and positive values suggest a model under-prediction.

1.2.24 Table **Error! No text of specified style in document.**.7 shows that before adjustment the model is under-predicting annual mean NO_2 concentrations. Following adjustment the model is very close to the desired FB value of 0.

1.2.25 The correlation coefficient (R) is used to measure the linear relationship between modelled and measured data. A value of zero means no relationship and a value of 1 means absolute relationship. The value of R does not change following model adjustment.

Table Error! No text of specified style in document.**.7: Description of model uncertainty**

Statistical Parameter	Before Adjustment	After Adjustment	Ideal Value
Root Mean Square Error	14.29	1.63	0
Fractional Bias(a)	0.34	-0.004	0
Correlation Coefficient	1.00	1.00	1

1.2.26 The statistical analysis above demonstrates that the model performs adequately versus monitoring data, following adjustment. An adjustment factor of 2.22 has therefore been applied to modelled road NO_x contributions at all receptors within this zone.

Verification Zone 4

1.2.27 Table Error**! No text of specified style in document.**.1 and Figure 7 present a comparison of the monitored and modelled concentrations of NO_X and NO_2 at the sites within Verification Zone 4. Following Defra guidance modelled and measured road traffic concentrations have been compared to derive a verification factor to apply to the modelled results. As diffusion tubes only measure NO_2, the road traffic NO_X concentrations measured by the diffusion tubes were estimated following Defra TG.16. Monitored road traffic NO_x was estimated using Version 6.1 of the NO_X to NO_2 calculator, based on the Defra predicted background NO_2.

1.2.28 Following Defra guidance, a model adjustment factor of 1.60 has been calculated when comparing modelled and monitored road traffic NO_x.

Figure 7: Zone 4 - Unadjusted model verification (Annual mean NO_2; $\mu g/m^3$)

1.2.29 Table Error**! No text of specified style in document.**.6 and Figure 8 present the adjusted modelled NO_2 with monitored NO_2 at the verification sites. The model predicts NO_2 within 10% of the monitored concentrations at all sites. The model predicts an exceedance of the annual AQS objective at every site where an exceedance was measured. The model is therefore assumed to perform adequately following adjustment. The adjustment factor has been applied to modelled road NO_X contributions at all receptors within this Zone.

Table Error! No text of specified style in document.**.8: Adjusted model verification results – Zone 4**

Site ID	Monitored Total NO_2 ($\mu g/m^3$)	Modelled Total NO_2 ($\mu g/m^3$)	% Difference
P5	56.4	55.6	-1.4
P42	48.9	50.0	2.2

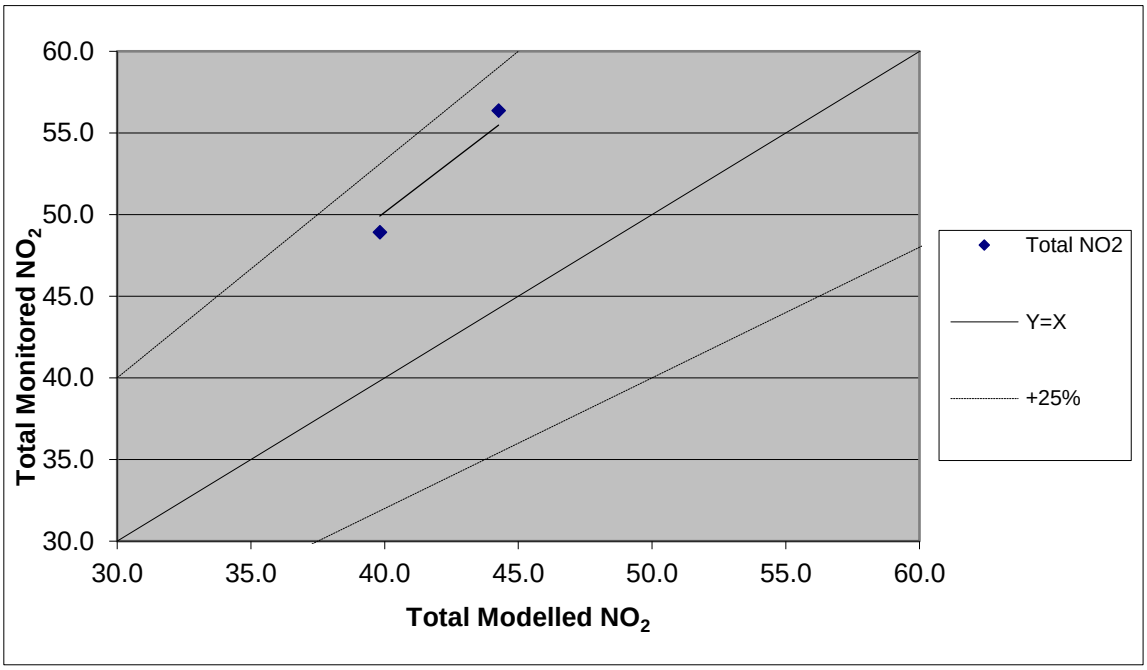
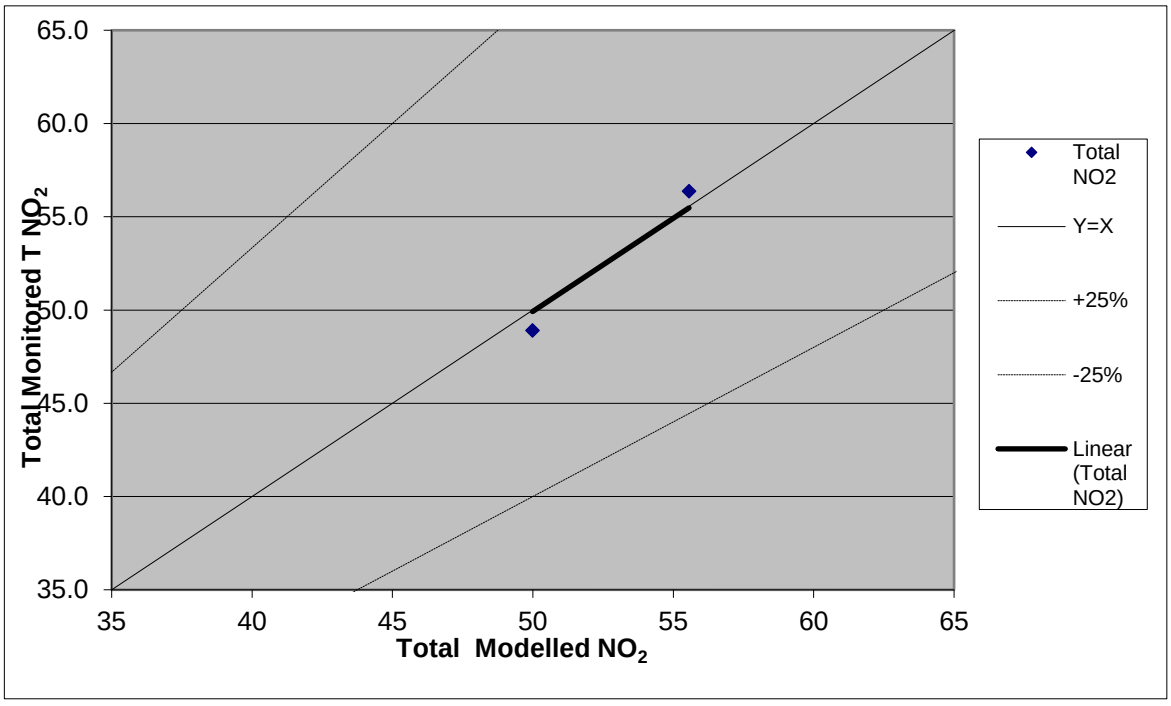


Figure 8: Zone 4 - Adjusted model verification (Annual mean NO_2; µg/m^3)

1.2.30 Table **Error! No text of specified style in document.**.7 presents statistical parameters for describing model uncertainty. The RMSE is used to define the average error or uncertainty of the model. The results of the RMSE calculation in this case are concentrations of NO_2 measured in units of micrograms per metre cubed.

1.2.31 Table **Error! No text of specified style in document.**.7 shows that before adjustment the model uncertainty was ±10.7µg/m^3 or 26.8% of the annual mean NO_2 objective. After adjustment the model uncertainty is reduced to ±1.0µg/m^3 or 2.5% of the annual mean NO_2 objective. After adjustment the model uncertainty is within the desired 10% of the relevant objective, as recommended by Defra guidance.

Fractional Bias (FB) is used to identify if the model shows a tendency to over or under predict and values can vary between +2 and -2 and have an ideal value of 0. Negative values suggest a model over-prediction and positive values suggest a model under-prediction.



1.2.32 Table **Error! No text of specified style in document.**.7 shows that before adjustment the model is under-predicting annual mean NO_2 concentrations. Following adjustment the model is very close to the desired FB value of 0.

1.2.33 The correlation coefficient (R) is used to measure the linear relationship between modelled and measured data. A value of zero means no relationship and a value of 1 means absolute relationship. The value of R does not change following model adjustment.

Table Error! No text of specified style in document.**.9: Description of model uncertainty**

Statistical Parameter	Before Adjustment	After Adjustment	Ideal Value
Root Mean Square Error	10.71	0.95	0
Fractional Bias(a)	0.22	-0.002	0
Correlation Coefficient	1.00	1.00	1

1.2.34 The statistical analysis above demonstrates that the model performs adequately versus monitoring data, following adjustment. An adjustment factor of 1.60 has therefore been applied to modelled road NO_x contributions at all receptors within this zone.

A63 Castle Street Improvements, Hull
Environmental Statement

Volume 3 Appendix 6.4

AIR QUALITY – MONITORING SURVEY

TR010016/APP/6.3
HE514508-MMSJV-EAQ-S0-RP-LA-000005
31 July 2018

A63 Castle Street Improvements, Hull

Environmental Statement

Appendix 6.4 Monitoring survey

Revision Record						
Rev No	**Date**	**Originator**	**Checker**	**Approver**	**Status**	**Suitability**
P01.1	24.04.18	J Burnell	C Mills	J McKenna	S0	For review
P02	31.07.18	J Burnell	C Mills	J McKenna	Shared	S4

Prepared for:
Highways England
Lateral
8 City Walk
Leeds
LS11 9AT

Prepared by:
Mott MacDonald Sweco JV
Stoneham Place, Stoneham Lane
Southampton, Hampshire
SO50 9NW

1. Monitoring survey

1.1 Overview

1.1.1 A Scheme specific monitoring survey of NO_2 concentrations was undertaken for 42 sites along the extent of the Scheme and across the wider road network. Monitoring was undertaken from January to December 2015 using passive diffusion tubes. Duplicate or triplicate tubes were exposed at each location for approximately one month, then collected, sent back to the laboratory for analysis and replaced with new tubes.

1.1.2 The tubes were prepared and analysed by Environmental Scientifics Group (ESG), Didcot, using 50% TEA in acetone method.

1.2 Monitoring locations

1.2.1 Monitoring sites were selected based on their proximity to major roads and junctions likely to be affected by the Scheme and at locations where sensitive receptors are present. The location of each monitoring site is shown in Volume 2, Figure 6.11 of the Environmental Statement.

1.2.2 A site average concentration was calculated across the duplicate and triplicate tubes used at each site. The site average results were then averaged across the 12 month monitoring period and bias adjusted to enable comparison with the annual mean NO_2 objective. The methodology behind the adjustment process is outlined below.

1.3 Bias adjustment

1.3.1 Diffusion tubes are less accurate than continuous monitoring methods and typically under or over read concentrations. In order to correct for this, diffusion tubes are co-located with continuous monitoring stations, and a bias adjustment factor is calculated by comparing results from both techniques. Bias adjustment factors can be calculated by carrying out a specific co-location study as part of a monitoring survey or by using a combined national bias adjustment factor available from Department for Environment, Food & Rural Affairs (Defra). This is based on the results of co-location studies undertaken by local authorities (which can be filtered by laboratory and tube preparation method).

1.3.2 Triplicate tubes were co-located with the Automatic Urban Rural Network (AURN) roadside site at Holderness Road as part of the Scheme survey. An annual mean concentration of 31.5 µg/m^3 was monitored from the AURN site compared to 37 µg/m^3 from the triplicate diffusion tubes. A bias adjustment factor of 0.85 was

calculated from this data using the local bias adjustment factor tool available from the Defra website[1]. The inputs and outputs from this tool are shown in Figure 1

1.3.3 Based on 26 co-location studies, the overall bias adjustment factor for ESG, Didcot in 2015 is 0.79, based on national bias adjustment spreadsheet v06_16 available from Defra.

1.3.4 Based on the results above, a bias adjustment factor of 0.85 was applied to the annual mean diffusion tube results to provide a worst-case bias adjustment, since this will result in higher concentrations.

Figure 1: Local bias adjustment factor

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	Jan	Feb	43.7	39.4	46.0	43	3.4	8	8.3	39.1473	99.3	Good	Good
2	Feb	Mar	36.9	40.3	46.1	41	4.7	11	11.6	38.0769	86.0	Good	Good
3	Mar	Apr	28.0	29.0	31.4	29	1.7	6	4.3	32.1865	100.0	Good	Good
4	Apr	May	34.0	28.8	32.6	32	2.7	8	6.7	28.4257	100.0	Good	Good
5	May	Jun	35.2	26.4	34.7	32	4.9	15	12.3	24	99.9	Good	Good
6	Jun	Jul	26.5	37.4	34.9	33	5.7	17	14.2	26	99.9	Good	Good
7	Jul	Aug	34.4	35.6	32.3	34	1.7	5	4.1	27	100.0	Good	Good
8	Aug	Sept								23	94.1		Good
9	Sept	Oct	42.0	43.4	43.1	43	0.7	2	1.8	32	99.8	Good	Good
10	Oct	Nov	47.6	42.7	42.3	44	3.0	7	7.3	36	99.9	Good	Good
11	Nov	Dec	51.1							39.6406	99.9		Good
12	Dec	Jan								32.1462	99.8		Good
13													
											Overall survey -->	Good precision	Good Overall

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

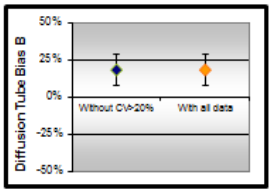
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision 9 out of 9 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 9 periods of data
Bias factor A 0.85 (0.78 - 0.94)
Bias B 17% (7% - 27%)
Diffusion Tubes Mean: 37 µgm^{-3}
Mean CV (Precision): 9
Automatic Mean: 31 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 31 (29 - 35) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 9 periods of data
Bias factor A 0.85 (0.78 - 0.94)
Bias B 17% (7% - 27%)
Diffusion Tubes Mean: 37 µgm^{-3}
Mean CV (Precision): 9
Automatic Mean: 31 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 31 (29 - 35) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

Note: no data available for Aug-Sept and Dec-Jan and only one tube available for Nov-Dec as tubes for these months were missing.

[1] http://laqm.defra.gov.uk/bias-adjustment-factors/local-bias.html