



APPENDIX 6.1 AIR QUALITY APPENDICES

Not updated



6.1 TRAFFIC DATA



Traffic Data

Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
50157-7065	2,408	2.1	49	3,186	1.5	49	3,176	1.5	49	3,278	1.5	49
50136-7866	4,715	4.2	37	4,307	4.7	38	4,306	4.7	38	4,312	4.7	38
50063-50018	26,997	7.2	102	29,201	6.6	102	28,809	6.7	102	28,711	6.6	102
50136-50018	810	10.2	45	884	10.1	45	876	9.6	45	864	9.7	45
70016-50019	2,566	5.1	47	2,426	5.0	47	2,348	4.8	47	2,885	4.4	47
50027-50026	258	8.1	49	226	36.3	48	247	33.3	49	360	24.4	49
70032-50026	2,661	6.1	49	2,817	4.8	49	2,363	4.7	49	2,283	4.4	49
70010-50026	3,466	5.4	50	3,389	6.1	50	3,019	6.1	50	3,014	5.9	50
70033-50028	8,319	2.9	30	9,067	2.1	30	9,420	2.0	30	9,252	1.9	30
70029-50028	7,239	2.6	31	7,618	2.3	32	8,306	1.9	32	8,240	1.9	32
70032-50028	2,438	6.6	38	2,642	4.6	39	2,184	4.4	39	2,083	4.0	39
50063-50029	27,967	7.0	91	28,911	6.5	92	28,343	6.6	92	28,443	6.6	92
75012-50029	39,821	6.7	85	42,099	6.1	92	41,775	6.3	92	42,009	6.3	92
50136-50029	16,294	6.1	47	15,742	5.7	47	15,765	5.9	47	15,871	5.9	47
50102-50033	11,225	2.7	45	13,295	2.3	44	14,804	2.2	43	14,470	2.2	44

Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
70013-50033	9,804	2.3	61	11,963	1.9	60	13,394	1.9	58	13,234	2.0	58
75014-50033	1,421	5.3	49	1,331	5.5	47	1,410	5.1	47	1,236	5.2	47
50104-50034	1,090	8.3	39	1,469	6.1	39	775	8.6	39	754	9.0	39
70024-50034	1,816	5.9	26	1,919	5.3	33	1,980	5.1	33	1,771	5.3	32
50064-50034	2,770	6.9	30	3,155	5.9	29	2,539	6.4	28	2,342	6.6	29
50064-50063	1,523	10.6	33	1,048	14.1	39	1,083	11.8	40	888	13.2	39
70025-50064	1,732	5.1	41	2,518	3.5	42	1,872	4.7	42	1,854	4.7	42
50169-50085	28,149	3.4	44	35,776	3.3	37	35,769	3.3	37	36,325	3.2	36
50245-50090	12,110	3.5	24	14,200	3.1	23	14,148	3.1	23	4,116	4.4	27
70053-50090	1,397	3.4	36	2,932	2.6	34	2,883	2.7	35	2,436	3.3	45
70073-50090	12,214	3.3	24	13,172	3.1	23	13,087	3.1	23	3,561	4.0	27
75015-50091	1,100	4.1	47	2,655	2.7	47	2,606	2.8	47	2,159	3.6	47
70060-50092	9,053	1.5	46	10,080	1.3	46	9,763	1.4	46	10,968	1.3	45
70060-50093	9,192	2.6	36	10,344	2.3	34	10,026	2.4	35	11,244	2.1	39
50103-50093	17,536	3.1	40	19,616	2.8	38	19,213	2.9	39	10,246	2.6	42
70047-50093	14,591	3.2	43	15,279	3.1	43	15,276	3.1	43	5,331	3.5	46
50169-50101	13,052	3.2	57	15,934	2.9	55	15,883	2.9	55	17,739	2.8	54



Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
50144-50101	129	2.3	56	2,173	1.9	56	2,173	2.0	56	2,171	1.9	55
50272-50101	12,944	3.2	59	14,367	3.0	58	14,315	3.1	58	16,244	2.9	56
80002-50102	-	0.0	5	-	0.0	5	15,843	2.2	27	14,642	2.2	30
50104-50102	838	1.9	51	1,035	1.5	51	1,039	1.5	50	172	1.7	51
75024-50103	12,179	3.1	39	13,630	2.8	33	11,837	3.0	35	5,112	3.6	40
70043-50103	12,028	2.5	39	13,233	2.2	38	10,239	2.6	38	7,894	2.0	41
70026-50104	2,634	4.8	41	2,815	4.3	40	2,736	4.2	40	3,282	3.9	43
70010-50104	1,870	6.3	50	2,200	5.0	49	1,427	5.7	50	2,817	3.8	49
50161-50157	17,542	7.1	100	19,421	5.9	99	19,696	6.0	99	19,535	6.0	99
50159-50157	1,101	1.5	29	1,285	1.2	26	1,275	1.3	25	1,352	1.2	25
70023-50159	20,255	6.5	98	22,299	5.9	97	22,421	5.8	97	21,858	6.0	97
50159-50160	19,155	6.8	99	21,014	6.1	98	21,146	6.1	98	20,506	6.3	98
70009-50160	-	0.0	5	-	0.0	5	-	0.0	5	-	0.0	5
50154-50161	17,542	7.1	100	19,421	5.9	99	19,696	6.0	99	19,535	6.0	99
70006-50169	17,333	2.8	52	17,295	3.0	50	17,260	3.0	50	16,840	3.2	50
70076-50169	593	14.8	40	10,926	3.2	35	10,925	3.2	35	10,914	3.2	34

Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
70044-50177	1,481	2.8	36	1,542	2.5	36	1,541	2.5	36	1,541	2.5	35
70020-50177	10,414	2.5	45	10,187	2.5	45	11,374	2.5	45	12,759	2.5	45
80007-50177	-	0.0	5	-	0.0	5	12,050	2.5	45	13,611	2.5	44
70054-50245	12,110	3.5	25	14,200	3.1	25	14,148	3.1	25	4,116	4.4	26
80027-50272	-	0.0	5	-	0.0	5	-	0.0	5	15,927	2.9	56
50273-50272	719	3.1	37	602	3.5	37	602	3.4	37	601	3.5	37
70072-50274	12,478	3.2	45	13,993	3.1	44	13,943	3.1	44	4,454	3.9	47
70054-50274	12,312	3.3	45	14,368	3.0	44	14,317	3.1	44	4,272	4.1	47
50275-50274	513	2.7	38	1,485	0.9	37	1,484	0.9	37	533	2.6	39
70004-50288	17,333	2.8	66	17,295	3.0	66	17,260	3.0	66	16,840	3.2	66
70006-70004	17,333	2.8	67	17,295	3.0	67	17,260	3.0	67	16,840	3.2	67
70023-70007	238	0.8	36	-	0.0	5	-	0.0	5	-	0.0	5
70013-70007	238	0.8	45	-	0.0	5	-	0.0	5	-	0.0	5
70008-70007	-	0.0	5	-	0.0	5	-	0.0	5	-	0.0	5
70019-70008	-	0.0	5	-	0.0	5	-	0.0	5	-	0.0	5
70019-70009	-	0.0	5	-	0.0	5	-	0.0	5	-	0.0	5
70022-70010	2,422	6.1	44	2,228	7.7	44	2,355	7.0	44	3,808	4.9	45



Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
70021-70011	2,612	4.7	48	2,276	6.0	48	2,276	6.0	48	2,276	6.0	48
70012-70011	2,786	3.9	50	2,411	5.1	50	2,411	5.1	50	2,411	5.1	50
70036-70011	775	4.4	41	802	4.6	41	802	4.7	41	801	4.6	40
70038-70012	810	4.3	41	836	4.5	41	1,069	4.6	41	2,579	4.6	40
70020-70012	3,015	3.3	39	2,529	4.3	39	2,864	4.0	39	4,452	3.7	37
75004-70013	9,566	2.3	53	11,964	1.9	62	13,395	1.9	61	13,234	2.0	61
70024-70014	970	4.0	40	821	4.5	40	820	4.5	40	821	4.5	40
70025-70015	1,777	4.1	39	1,513	4.5	39	1,512	4.5	39	1,512	4.5	39
70026-70016	2,529	4.9	48	2,467	4.7	48	2,388	4.5	48	2,931	4.2	48
70027-70016	937	4.8	40	794	5.3	40	794	5.3	40	794	5.3	40
70026-70017	843	5.0	40	865	5.3	40	864	5.3	40	864	5.3	40
70029-70020	7,057	2.1	32	7,367	1.9	32	8,180	2.0	32	7,861	1.9	32
70035-70020	1,530	2.9	39	1,287	3.3	39	1,287	3.3	39	1,286	3.3	39
70022-70021	2,612	4.7	47	2,276	6.0	47	2,276	6.0	47	2,276	6.0	47
70037-70022	1,484	4.9	41	1,558	5.0	41	1,790	5.0	41	3,299	5.0	40
75010-70023	20,018	6.6	98	22,299	5.9	97	22,421	5.8	97	21,858	6.0	97

Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
75014-70024	1,421	5.3	49	1,554	4.7	50	1,616	4.5	50	1,444	4.4	50
75002-70025	2,618	3.4	40	2,816	2.8	48	2,249	3.4	48	2,267	3.4	48
70030-70029	3,109	3.6	40	3,040	3.6	39	3,039	3.6	39	2,668	3.6	39
70032-70031	751	4.8	41	633	5.4	40	633	5.3	41	633	5.4	41
75023-70033	6,696	3.5	47	7,803	2.4	48	8,140	2.3	48	7,793	2.2	48
70034-70033	3,695	2.5	39	3,107	2.8	38	3,106	2.8	38	3,106	2.8	38
70060-70039	3,399	3.6	38	3,471	3.6	37	3,471	3.6	37	3,474	3.6	37
70059-70040	2,120	3.5	40	3,259	2.1	37	1,782	3.9	40	1,782	3.9	42
70043-70041	774	2.2	38	821	2.2	37	822	2.2	38	822	2.2	39
80006-70042	-	0.0	5	-	0.0	5	9,189	2.7	46	7,446	2.1	47
70068-70042	915	2.3	39	968	2.3	38	968	2.2	39	968	2.3	39
70043-70042	11,494	2.5	45	12,688	2.2	45	9,694	2.6	46	7,642	2.0	46
70048-70045	1,232	3.1	34	1,248	3.3	34	1,248	3.3	34	1,248	3.3	39
70047-70046	1,015	2.8	36	1,037	2.9	36	1,037	2.8	36	1,037	2.9	39
70048-70047	13,960	3.2	44	14,618	3.1	44	14,615	3.1	44	4,676	3.6	47
80035-70048	13,162	3.3	44	13,803	3.1	44	13,799	3.1	44	3,892	3.8	47
70050-70049	1,553	3.0	37	1,580	3.1	36	1,580	3.1	36	1,580	3.1	39



Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
80035-70050	13,162	3.3	44	13,750	3.1	43	13,746	3.1	43	4,136	4.0	41
70058-70050	12,364	3.3	45	13,174	3.1	45	13,092	3.1	45	3,574	4.2	48
70054-70051	629	2.7	33	531	3.0	32	531	3.0	32	530	3.0	38
70053-70052	828	3.1	40	697	3.4	39	697	3.5	39	697	3.4	39
75015-70053	1,100	4.1	47	2,689	2.7	48	2,640	2.8	48	2,192	3.6	48
70058-70057	870	3.1	35	881	3.3	35	881	3.3	35	882	3.3	39
70073-70058	11,947	3.4	45	12,908	3.1	45	12,822	3.2	45	3,298	4.2	47
80001-70059	-	0.0	5	-	0.0	5	11,231	2.6	45	4,421	2.8	47
75024-70059	12,179	3.1	39	13,874	2.7	42	11,230	3.1	43	4,418	4.1	44
50160-70062	19,155	6.8	99	21,014	6.1	98	21,146	6.1	98	20,506	6.3	98
80028-70072	-	0.0	5	-	0.0	5	-	0.0	5	4,454	3.9	64
70074-70073	413	2.9	39	419	2.9	39	419	2.8	39	419	2.9	41
75007-75002	2,618	3.4	40	2,816	2.8	35	2,249	3.4	34	2,267	3.4	34
75003-75002	-	0.0	5	-	0.0	5	-	0.0	5	-	0.0	5
75006-75004	9,566	2.3	53	11,964	1.9	56	13,395	1.9	55	13,234	2.0	56
75005-75004	-	0.0	5	-	0.0	5	-	0.0	5	-	0.0	5

Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
75007-75006	18,570	6.8	40	26,514	5.3	40	26,786	5.3	40	26,460	5.3	40
75011-75007	18,570	6.8	40	26,407	5.3	40	26,351	5.4	40	26,012	5.4	40
75009-75008	18,570	6.8	91	24,083	5.3	40	24,459	5.4	40	24,654	5.4	40
50157-75009	20,018	6.6	98	20,049	5.8	77	20,323	5.9	77	20,197	5.9	77
75010-75009	18,570	6.8	40	26,334	5.4	40	26,560	5.4	40	26,318	5.4	40
75006-75010	18,570	6.8	91	26,334	5.4	40	26,560	5.4	40	26,318	5.4	40
75008-75011	18,126	7.1	40	19,890	6.1	40	19,944	6.4	40	20,328	6.2	40
75012-75011	18,126	7.1	88	22,210	6.1	26	21,831	6.2	26	21,681	6.3	26
75008-75012	18,126	7.1	88	19,890	6.1	104	19,944	6.4	104	20,328	6.2	104
75014-75013	1,421	5.3	49	773	0.0	40	772	0.0	40	772	0.0	40
75016-75015	-	0.0	5	388	0.0	40	388	0.0	40	388	0.0	40
75023-75020	6,696	3.5	47	7,591	2.5	48	7,927	2.4	48	7,455	2.3	48
75023-75022	-	0.0	5	470	0.0	39	470	0.0	38	470	0.0	39
75025-75024	-	0.0	5	1,318	0.0	35	1,319	0.0	35	1,320	0.0	39
80002-80001	-	0.0	5	-	0.0	5	11,231	2.6	31	4,421	2.8	30
80003-80002	-	0.0	5	-	0.0	5	5,164	1.0	35	10,334	1.9	35
80004-80003	-	0.0	5	-	0.0	5	5,164	1.0	45	10,334	1.9	44



Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
80005-80004	-	0.0	5	-	0.0	5	4,245	1.2	46	9,853	2.0	45
80031-80004	-	0.0	5	-	0.0	5	1,476	0.0	41	1,475	0.0	40
80009-80005	-	0.0	5	-	0.0	5	4,245	1.2	34	9,853	2.0	32
80009-80006	-	0.0	5	-	0.0	5	9,189	2.7	35	7,446	2.1	35
80009-80007	-	0.0	5	-	0.0	5	12,050	2.5	33	13,611	2.5	31
80021-80008	-	0.0	5	1,670	0.0	64	1,668	0.0	64	12,906	2.3	45
80009-80008	-	0.0	5	1,670	0.0	42	1,668	0.0	42	12,906	2.3	32
80014-80010	-	0.0	5	-	0.0	5	-	0.0	5	11,562	2.6	32
80011-80010	-	0.0	5	-	0.0	5	-	0.0	5	436	3.2	28
80012-80010	-	0.0	5	-	0.0	5	-	0.0	5	12,036	2.5	39
80013-80010	-	0.0	5	-	0.0	5	-	0.0	5	892	2.4	27
80037-80011	-	0.0	5	-	0.0	5	-	0.0	5	66	0.0	38
80034-80011	-	0.0	5	-	0.0	5	-	0.0	5	371	3.8	32
80019-80012	-	0.0	5	-	0.0	5	-	0.0	5	12,036	2.5	45
80035-80013	-	0.0	5	212	0.0	31	212	0.0	31	634	3.3	31
80036-80013	-	0.0	5	-	0.0	5	-	0.0	5	260	0.0	37

Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
80020-80014	-	0.0	5	-	0.0	5	-	0.0	5	11,562	2.6	45
80019-80015	-	0.0	5	-	0.0	5	-	0.0	5	12,036	2.5	31
80016-80015	-	0.0	5	-	0.0	5	-	0.0	5	212	0.0	35
80017-80015	-	0.0	5	-	0.0	5	-	0.0	5	11,520	2.6	39
80018-80015	-	0.0	5	-	0.0	5	-	0.0	5	950	0.0	40
80032-80017	-	0.0	5	-	0.0	5	-	0.0	5	11,520	2.6	58
80030-80020	-	0.0	5	-	0.0	5	-	0.0	5	1,193	0.0	35
80022-80020	-	0.0	5	-	0.0	5	-	0.0	5	12,755	2.4	42
80029-80021	-	0.0	5	-	0.0	5	-	0.0	5	151	0.0	32
80022-80021	-	0.0	5	-	0.0	5	-	0.0	5	12,755	2.4	45
80032-80023	-	0.0	5	-	0.0	5	-	0.0	5	11,520	2.6	58
80024-80023	-	0.0	5	-	0.0	5	-	0.0	5	11,520	2.6	41
80026-80024	-	0.0	5	-	0.0	5	-	0.0	5	7,816	2.6	64
80024-80025	-	0.0	5	-	0.0	5	-	0.0	5	8,160	3.1	64
80027-80025	-	0.0	5	-	0.0	5	-	0.0	5	15,927	2.9	38
80025-80026	-	0.0	5	-	0.0	5	-	0.0	5	7,767	2.7	64
80028-80026	-	0.0	5	-	0.0	5	-	0.0	5	4,454	3.9	41



Model Link	2017 Baseline			2023 Do-minimum			2023 Do-something			Cumulative		
	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)	Total AADT	%HDV	Speed (kph)
80033-80032	-	0.0	5	-	0.0	5	-	0.0	5	-	0.0	5
70059-50102	12,063	2.6	45	14,330	2.2	44	-	0.0	5	-	0.0	5
80038-70072	-	0.0	5	-	0.0	5	-	0.0	5	-	0.0	5
70072-50272	12,478	3.2	59	13,994	3.1	58	13,943	3.1	58	4,454	3.9	64
Rnd_CP1	-	0.0	5	-	0.0	5	5,164	1.0	45	10,334	1.9	44
70042-50177_W	10,968	2.5	46	12,189	2.2	45	-	0.0	5	-	0.0	5
70042-50177_E	10,968	2.5	46	10,842	2.4	46	-	0.0	5	-	0.0	5
Rnd_SP1_AB	-	0.0	5	-	0.0	5	6,821	2.2	32	10,842	2.3	32
Rnd_SP1_BC	-	0.0	5	-	0.0	5	6,025	2.2	32	10,482	2.2	32
Rnd_SP1_CD	-	0.0	5	-	0.0	5	7,457	2.1	32	11,079	2.3	32
Rnd_SP1_DA	-	0.0	5	-	0.0	5	7,045	2.3	32	11,431	2.3	32
Rnd_NP1_AB	-	0.0	5	-	0.0	5	7,126	2.3	32	6,179	2.2	32
Rnd_NP1_BC	-	0.0	5	-	0.0	5	9,302	2.1	32	8,236	2.3	32
Rnd_NP1_CA	-	0.0	5	-	0.0	5	8,008	2.2	32	7,361	2.2	32
70073-70058_a	11,947	3.4	24	12,908	3.1	23	12,822	3.2	23	3,298	4.2	27



6.2 METEOROLOGICAL DATA

Observing station	Shoreham
Latitude	50.8°
Surface roughness	0.5m
Minimum Monin-Obukhov length	10m
Year	2017
Format	Hourly sequential
Height of recorded wind	10m
Met file parameters	Year
	Julian day
	Hour ending
	Wind direction (10-degree sectors)
	Wind speed (m/s)
	Surface temperature (degrees Celsius)
	Cloud cover (oktas)
Wind rose	<p>Wind rose plot showing wind frequency by direction and speed. The plot is a polar coordinate system with directions from 0° to 350° in 10-degree increments. Concentric circles represent frequency counts from 0 to 600. A color scale at the bottom indicates wind speed in knots (0, 3, 6, 10, 16) and m/s (0, 1.5, 3.1, 5.1, 8.2).</p>

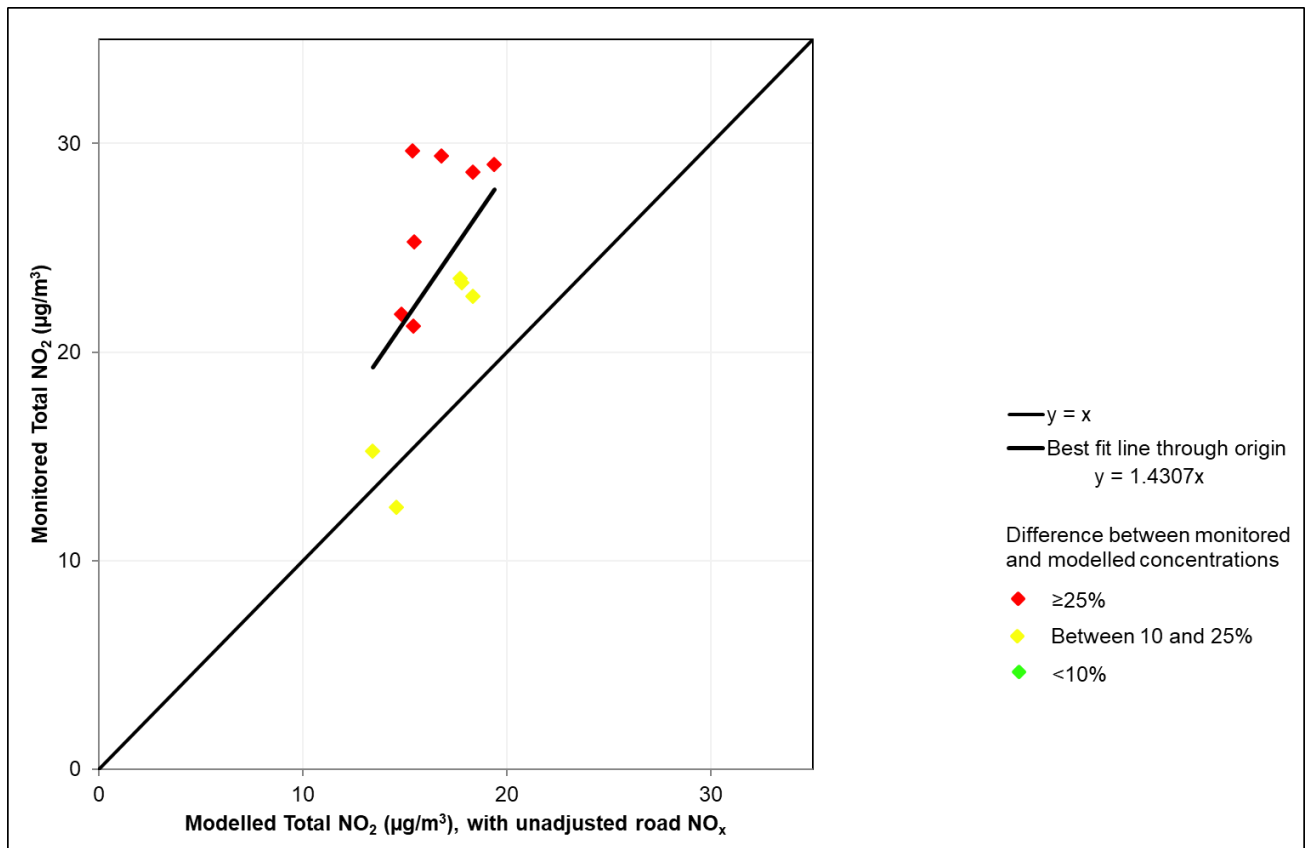


6.3 MODEL VERIFICATION



COMPARISON OF MODELLED AND MONITORED NO₂ BEFORE ADJUSTMENT

Site ID	Background Annual Mean NO ₂	Total Annual Mean NO ₂		Difference	
		Monitored (A)	Modelled (B), with Unadjusted Road NO _x	B - A (C)	C/A (%)
A29x1	9.9	21.8	14.9	-6.9	-31.8%
A29x2	9.9	15.2	13.5	-1.8	-11.7%
A29x3	10.3	23.5	17.8	-5.8	-24.5%
A29x4	10.3	29.4	16.8	-12.6	-42.8%
A29x5	10.4	23.3	17.8	-5.5	-23.6%
A29x6	10.8	29.0	19.4	-9.6	-33.0%
A29x7	10.8	28.6	18.4	-10.3	-35.8%
A29x8	10.8	22.7	18.4	-4.3	-18.9%
A29x9	10.8	25.2	15.5	-9.8	-38.7%
A29x10	10.8	12.5	14.6	2.1	16.5%
A29x11	10.9	29.6	15.4	-14.2	-48.0%
A29x12	10.9	21.2	15.5	-5.8	-27.2%



Within +10%	0
Within -10%	0
Within ±10%	0
Within +10 to +25%	1
Within -10 to -25%	4
Within ±10 to ±25%	5
Over +25%	0
Under -25%	7
Greater ±25%	7
Within ±25%	5

Uncertainty Statistics

Root Mean Square Error 8.3 $\mu\text{g}/\text{m}^3$

The RMSE is within 25% of the AQS.

Extract from LAQM.TG(16):

7.541 If the RMSE values are higher than $\pm 25\%$ of the objective being assessed, it is recommended that the model inputs and verification should be revisited in order to make improvements. For example, if the model predictions are for the annual mean NO_2 objective of $40\mu\text{g}/\text{m}^3$, if an RMSE of $10\mu\text{g}/\text{m}^3$ or above is determined for a model, the local authority would be advised to revisit the model parameters and model verification. Ideally an RMSE within 10% of the air quality objective would be derived, which equates to $4\mu\text{g}/\text{m}^3$ for the annual average NO_2 objective.



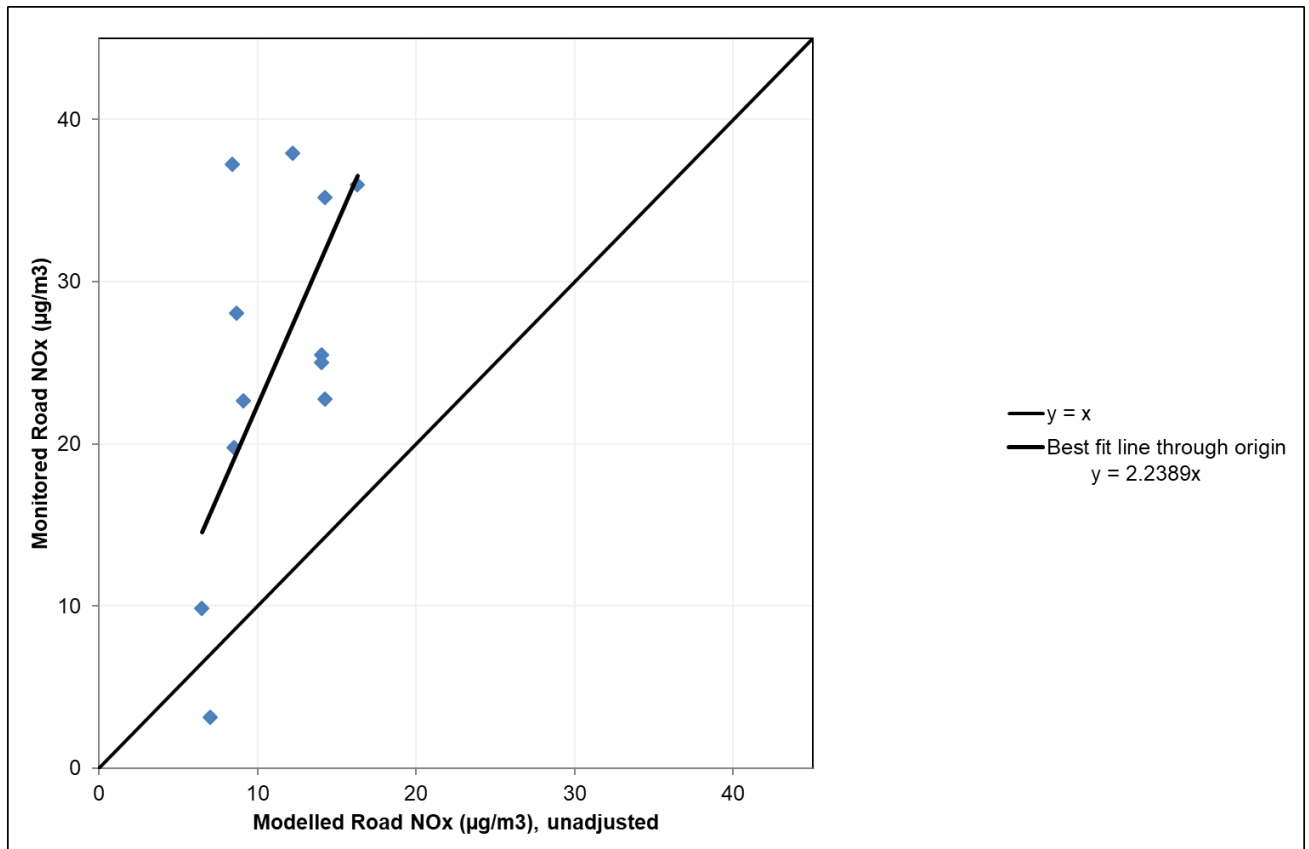
COMPARISON OF MONITORED AND MODELLED ROAD-NO_x AND ADJUSTMENT

Site ID	Monitored Road NO _x (B)	Modelled Road NO _x (C)	B/C	Adjusted Modelled Road NO _x
A29x1	22.7	9.1	2.5	20.4
A29x2	9.9	6.5	1.5	14.5
A29x3	25.5	14.0	1.8	31.4
A29x4	37.9	12.2	3.1	27.4
A29x5	25.0	14.0	1.8	31.4
A29x6	36.0	16.3	2.2	36.5
A29x7	35.2	14.2	2.5	31.9
A29x8	22.8	14.3	1.6	32.0
A29x9	28.1	8.7	3.2	19.5
A29x10	3.2	7.0	0.4	15.7
A29x11	37.2	8.4	4.4	18.9
A29x12	19.76	8.5	2.3	19.1

Best Fit Line

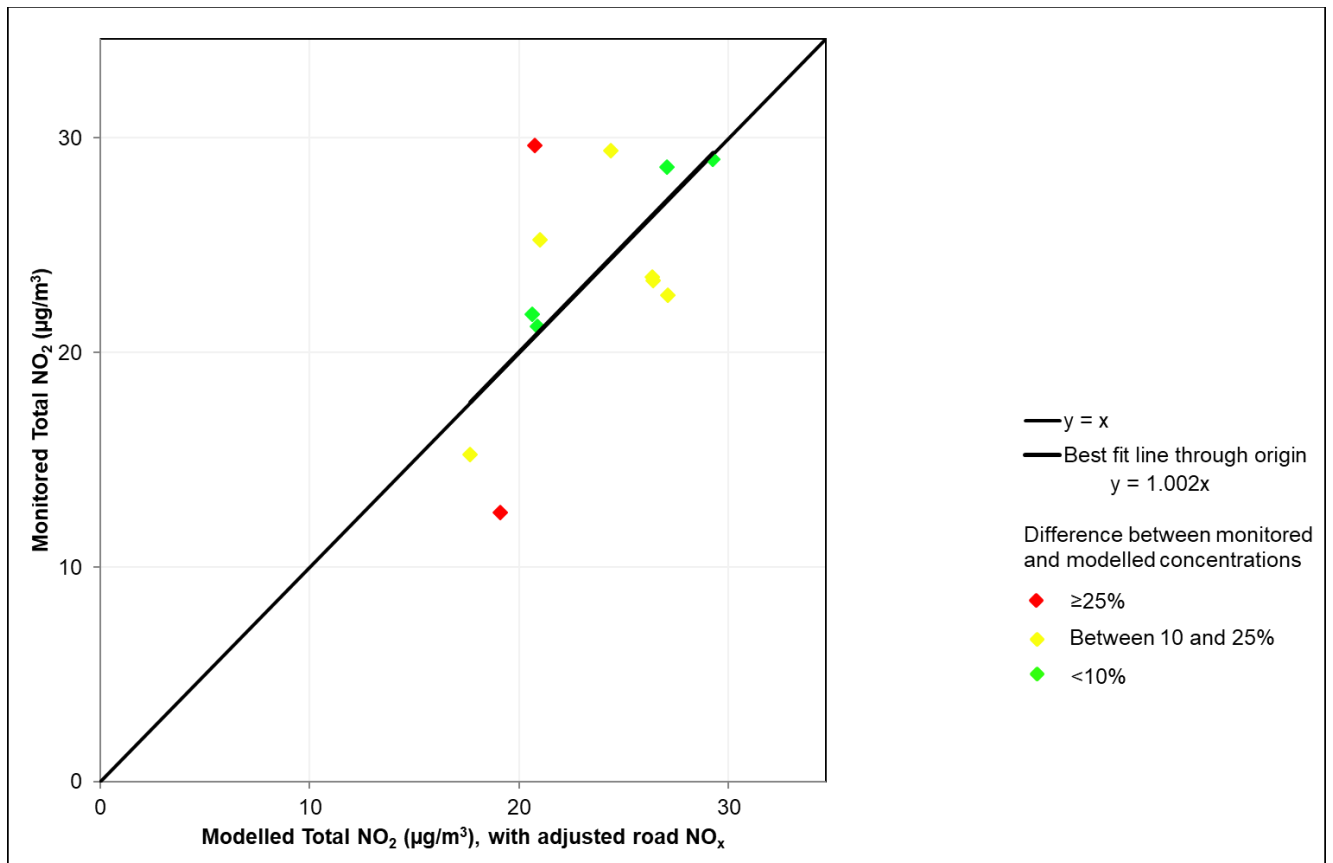
Equation $y = 2.2389x$

Slope 2.24 (adjustment factor)



COMPARISON OF MODELLED AND MONITORED NO₂ AFTER ADJUSTMENT

Site ID	Background Annual Mean NO ₂	Total Annual Mean NO ₂		Difference	
		Monitored (A)	Modelled (B), with Adjusted Road NO _x	B - A (C)	C/A * 100%
A29x1	9.9	21.8	20.7	-1.1	-5.2%
A29x2	9.9	15.2	17.7	2.4	15.9%
A29x3	10.3	23.5	26.4	2.8	12.1%
A29x4	10.3	29.4	24.4	-5.0	-17.0%
A29x5	10.4	23.3	26.4	3.1	13.3%
A29x6	10.8	29.0	29.2	0.3	0.9%
A29x7	10.8	28.6	27.1	-1.6	-5.4%
A29x8	10.8	22.7	27.1	4.4	19.6%
A29x9	10.8	25.2	21.0	-4.2	-16.7%
A29x10	10.8	12.5	19.1	6.6	52.6%
A29x11	10.9	29.6	20.8	-8.8	-29.8%
A29x12	10.9	21.2	20.9	-0.3	-1.5%





Within +10%	1
Within -10%	3
Within ±10%	4
Within +10 to +25%	4
Within -10 to -25%	2
Within ±10 to ±25%	6
Over +25%	1
Under -25%	1
Greater ±25%	2
Within ±25%	10

Uncertainty Statistics

Root Mean Square Error 4.2 $\mu\text{g}/\text{m}^3$

The RMSE for the adjusted model is within 10.5% of the AQS.



6.4 WSP NO2 BASELINE SURVEY



Project / Scheme Monitoring Year Start Year to which annualisation done	A29		
	2019	Monitoring Duration	5 (months)
	2017		

Location ID	X	Y	Z	Distance From Road	Site Description	Site Classification Drop down list	Lab Analysed Tube / Tube Preparation method
A29 x1	493742.0	102481.0	2		A29 Shripney Road, near The Robin Hood PH, Shripney		Gradko-20% TEA in Water
A29 x 2	493881.0	102937.0	2		Entrance to Lidsey Caravan Park 10m back from A29		Gradko-20% TEA in Water
A29 x 3	493811.0	104173.0	2		A29 Lidsey Road, near Wood Gate Road, Woodgate		Gradko-20% TEA in Water
A29 x 4	493784.0	104491.0	2		A29 Westergate Street, near Orchard Gardens, Woodgate		Gradko-20% TEA in Water
A29 x 5	493858.0	105105.0	2		A29 Westergate Street, near Old Manor House B&B, Westergate		Gradko-20% TEA in Water
A29 x 6	494013.0	105595.0	2		A29 Nyton Road, near Westergate Mews, Westergate,		Gradko-20% TEA in Water
A29 x 7	494363.0	105607.0	2		A29 Nyton Road, opposite Post Office, Eastergate		Gradko-20% TEA in Water
A29 x 8	494509.0	105583.0	2		B2233 Barnham Road, Eastergate		Gradko-20% TEA in Water
A29 x 9	494528.0	105741.0	2		A29 Fontwell Avenue, Eastergate		Gradko-20% TEA in Water
A29 x 10	494970.0	105306.0	2		B2233 Barnham Road, 10m back from road off Church Lane		Gradko-20% TEA in Water
A29 x 11	494713.0	106190.0	2		A29 Fontwell Aveny, near Northfields Farm		Gradko-20% TEA in Water
A29 x 12	494965.0	106897.0	2		A29 Fontwell Avenue, south of roundabout junction with A29		Gradko-20% TEA in Water

	Date ON	04/10/2019	05/11/2019	03/12/2019	07/01/2020	04/02/2020
	Date OF	05/11/2019	03/12/2019	07/01/2020	04/02/2020	04/03/2020
Location ID		1	2	3	4	5
A29 x1		19.2	29.3	23.9		
A29 x 2		14.6	19.6	15.2	17.6	12.5
A29 x 3		25.0	23.2	27.4	27.8	
A29 x 4		29.8	31.0	31.7	31.1	28.8
A29 x 5		23.0	26.6	23.3	26.8	21.7
A29 x 6		26.3	34.6	28.4	31.2	30.9
A29 x 7		29.9	31.9	28.3	29.6	29.1
A29 x 8		21.7	29.3	22.5	22.1	22.3
A29 x 9		27.4	29.9	24.7	25.9	23.3
A29 x 10		13.9	11.3	14.6	15.2	
A29 x 11		31.1	33.4	28.1	34.5	27.3
A29 x 12		21.1	26.6	20.6	23.8	18.7

	Brighton	Portsmouth
Annualisation Year Data Capture	98.1%	98.0%
Ratified %	100.0%	100.0%

Brighton	2017 Annual Mean:	17.0
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Portsmouth	2017 Annual Mean:	19.2
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Bias Adjustment Factor **0.87**

Time DTs put out **12:00:00**

In this case, data spans 2 years, so has been bias adjusted before input

	Brighton	Portsmouth	-	-	-
Annualisation Year Data Capture	98.1%	98.0%	0.0%	0.0%	0.0%
Ratified %	100.0%	100.0%	0.0%	0.0%	0.0%

Use Site?				
Y	Y			

Location ID	Average (unadjusted)	Bias Adjustment Factor	Average (Bias Adjusted)	Data Capture <small>If longer than 12months split it over 2 years</small>	Needs Annualisation <small>Y/N</small>	Annualisation Factor	Annualised 2017 Average	Site 1 Annual Mean / Period Mean	Site 2 Annual Mean / Period Mean	Site 3 Annual Mean / Period Mean	Site 4 Annual Mean / Period Mean	Site 5 Annual Mean / Period Mean
A29 x1	23.9	0.87	20.8	25%	Y	1.048	21.8	1.096	0.9994	#DIV/0!	#DIV/0!	#DIV/0!
A29 x2	15.8	0.87	13.8	42%	Y	1.108	15.2	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!
A29 x3	25.9	0.87	22.5	33%	Y	1.043	23.5	1.108	0.9780	#DIV/0!	#DIV/0!	#DIV/0!
A29 x4	30.5	0.87	26.5	42%	Y	1.108	29.4	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!
A29 x5	24.2	0.87	21.0	42%	Y	1.108	23.3	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!
A29 x6	30.1	0.87	26.2	42%	Y	1.108	29.0	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!
A29 x7	29.7	0.87	25.8	42%	Y	1.108	28.6	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!
A29 x8	23.5	0.87	20.4	42%	Y	1.108	22.7	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!
A29 x9	26.2	0.87	22.8	42%	Y	1.108	25.2	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!
A29 x10	13.8	0.87	12.0	33%	Y	1.043	12.5	1.108	0.9780	#DIV/0!	#DIV/0!	#DIV/0!
A29 x11	30.7	0.87	26.7	42%	Y	1.108	29.6	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!
A29 x12	22.0	0.87	19.1	42%	Y	1.108	21.2	1.177	1.0392	#DIV/0!	#DIV/0!	#DIV/0!



6.5 OPERATIONAL STAGE: SCHEME (PHASE 1) IMPACTS



Annual Mean NO₂ (AQS 40µg/m³)

Receptor	2017 Existing Baseline	2023 Do-minimum	2023 Do-something	Difference (Do-something minus Do-minimum)	Change relative to AQS (%)	Impact
E01	17.5	14.2	14.2	0.0	0	Negligible
E02	26.7	20.0	19.9	-0.1	0	Negligible
E03	26.1	19.5	19.5	0.0	0	Negligible
E04	17.6	13.7	13.7	0.0	0	Negligible
E05	23.1	17.5	17.5	0.0	0	Negligible
E06	21.2	15.8	15.7	-0.1	0	Negligible
E07	22.5	16.5	16.5	0.0	0	Negligible
E08	26.8	19.6	19.5	-0.1	0	Negligible
E09	25.2	19.1	18.6	-0.5	-1	Negligible
E10	20.5	15.6	14.4	-1.2	-3	Negligible
E11	15.7	12.0	13.2	1.2	3	Negligible
E12	11.8	9.3	10.5	1.2	3	Negligible
E13	16.2	12.1	12.5	0.4	1	Negligible
E14	19.6	14.2	14.8	0.6	2	Negligible
E15	14.1	10.9	11.1	0.2	0	Negligible
E16	21.9	17.0	15.7	-1.3	-3	Negligible
E17	18.0	14.0	14.4	0.4	1	Negligible
E18	17.7	13.8	12.8	-1.0	-3	Negligible
E19	19.9	15.4	16.4	1.0	3	Negligible
E20	20.2	15.6	16.3	0.7	2	Negligible

Annual Mean PM₁₀ (AQS 40µg/m³)

Receptor	2017 Existing Baseline	2023 Do-minimum	2023 Do-something	Difference (Do-something minus Do-minimum)	Change relative to AQS (%)	Impact
E01	16.4	15.8	15.8	0.0	0	Negligible
E02	18.2	17.5	17.4	-0.1	0	Negligible
E03	18.1	17.3	17.3	0.0	0	Negligible
E04	16.5	15.6	15.6	0.0	0	Negligible
E05	16.9	16.1	16.1	0.0	0	Negligible
E06	16.3	15.4	15.4	0.0	0	Negligible
E07	16.8	15.8	15.8	0.0	0	Negligible
E08	17.7	16.8	16.8	0.0	0	Negligible
E09	16.8	16.0	15.9	-0.1	0	Negligible
E10	16.1	15.2	14.9	-0.3	-1	Negligible
E11	14.8	13.9	14.1	0.2	0	Negligible
E12	14.1	13.2	13.5	0.3	1	Negligible
E13	14.9	13.9	14.0	0.1	0	Negligible
E14	16.2	15.1	15.2	0.1	0	Negligible
E15	15.2	14.3	14.3	0.0	0	Negligible
E16	16.3	15.6	15.2	-0.4	-1	Negligible
E17	15.6	14.8	14.9	0.1	0	Negligible
E18	15.6	14.8	14.4	-0.4	-1	Negligible
E19	15.6	14.8	15.0	0.2	0	Negligible
E20	15.7	15.0	15.2	0.2	0	Negligible



24-hour Mean PM₁₀ (AQS no more than 35 days >50µg/m³)

Receptor	2017 Existing Baseline	2023 Do-minimum	2023 Do-something	Difference (Do-something minus Do-minimum)	Impact
E01	0	0	0	0	Negligible
E02	2	1	1	0	Negligible
E03	1	1	1	0	Negligible
E04	0	0	0	0	Negligible
E05	1	0	0	0	Negligible
E06	0	0	0	0	Negligible
E07	1	0	0	0	Negligible
E08	1	1	1	0	Negligible
E09	1	0	0	0	Negligible
E10	0	0	0	0	Negligible
E11	0	0	0	0	Negligible
E12	0	0	0	0	Negligible
E13	0	0	0	0	Negligible
E14	0	0	0	0	Negligible
E15	0	0	0	0	Negligible
E16	0	0	0	0	Negligible
E17	0	0	0	0	Negligible
E18	0	0	0	0	Negligible
E19	0	0	0	0	Negligible
E20	0	0	0	0	Negligible

Annual Mean PM_{2.5} (AQS 25µg/m³)

Receptor	2017 Existing Baseline	2023 Do-minimum	2023 Do-something	Difference (Do-something minus Do-minimum)	Change relative to AQS (%)	Impact
E01	10.4	9.8	9.8	0.0	0	Negligible
E02	11.5	10.7	10.7	0.0	0	Negligible
E03	11.4	10.7	10.6	-0.1	0	Negligible
E04	10.3	9.5	9.5	0.0	0	Negligible
E05	11.0	10.2	10.2	0.0	0	Negligible
E06	10.6	9.8	9.8	0.0	0	Negligible
E07	10.9	10.0	10.0	0.0	0	Negligible
E08	11.3	10.5	10.5	0.0	0	Negligible
E09	11.1	10.3	10.2	-0.1	0	Negligible
E10	10.6	9.8	9.7	-0.1	0	Negligible
E11	10.0	9.2	9.3	0.1	0	Negligible
E12	9.6	8.8	9.0	0.2	1	Negligible
E13	10.0	9.2	9.2	0.0	0	Negligible
E14	10.6	9.7	9.8	0.1	0	Negligible
E15	10.0	9.2	9.3	0.1	0	Negligible
E16	10.8	10.0	9.9	-0.1	0	Negligible
E17	10.4	9.6	9.6	0.0	0	Negligible
E18	10.4	9.6	9.4	-0.2	-1	Negligible
E19	10.3	9.6	9.7	0.1	0	Negligible
E20	10.4	9.7	9.8	0.1	0	Negligible



6.6 OPERATIONAL STAGE: SCHEME + PHASE 2 (CUMULATIVE) IMPACTS

Annual Mean NO₂ (AQS 40µg/m³)

Receptor	2017 Existing Baseline	Do-minimum	Cumulative	Difference (Cumulative minus Do-minimum)	Change relative to AQS (%)	Impact
E01	17.5	14.2	14.8	0.6	2	Negligible
E02	26.7	20.0	21.4	1.4	4	Negligible
E03	26.1	19.5	21.3	1.8	5	Negligible
E04	17.6	13.7	13.0	-0.7	-2	Negligible
E05	23.1	17.5	11.8	-5.7	-14	Moderate Beneficial
E06	21.2	15.8	10.9	-4.9	-12	Moderate Beneficial
E07	22.5	16.5	11.5	-5.0	-13	Moderate Beneficial
E08	26.8	19.6	14.7	-4.9	-12	Moderate Beneficial
E09	25.2	19.1	14.5	-4.6	-12	Moderate Beneficial
E10	20.5	15.6	13.4	-2.2	-6	Slight Beneficial
E11	15.7	12.0	15.5	3.5	9	Slight Adverse
E12	11.8	9.3	12.2	2.9	7	Slight Adverse
E13	16.2	12.1	13.3	1.2	3	Negligible
E14	19.6	14.2	15.8	1.6	4	Negligible
E15	14.1	10.9	12.3	1.4	4	Negligible
E16	21.9	17.0	12.6	-4.4	-11	Moderate Beneficial
E17	18.0	14.0	12.8	-1.2	-6	Negligible
E18	17.7	13.8	12.0	-1.8	-8	Negligible
E19	19.9	15.4	16.0	0.6	3	Negligible
E20	20.2	15.6	16.2	0.6	2	Negligible



Annual Mean PM₁₀ (AQS 40µg/m³)

Receptor	2017 Existing Baseline	Do-minimum	Cumulative	Difference (Cumulative minus Do-minimum)	Change relative to AQS (%)	Impact
E01	16.4	15.8	15.9	0.1	0	Negligible
E02	18.2	17.5	17.9	0.4	1	Negligible
E03	18.1	17.3	17.8	0.5	1	Negligible
E04	16.5	15.6	15.5	-0.1	0	Negligible
E05	16.9	16.1	14.6	-1.5	-4	Negligible
E06	16.3	15.4	14.4	-1.0	-3	Negligible
E07	16.8	15.8	14.5	-1.3	-3	Negligible
E08	17.7	16.8	15.5	-1.3	-3	Negligible
E09	16.8	16.0	14.9	-1.1	-3	Negligible
E10	16.1	15.2	14.7	-0.5	-1	Negligible
E11	14.8	13.9	14.6	0.7	2	Negligible
E12	14.1	13.2	13.9	0.7	2	Negligible
E13	14.9	13.9	14.2	0.3	1	Negligible
E14	16.2	15.1	15.5	0.4	1	Negligible
E15	15.2	14.3	14.6	0.3	1	Negligible
E16	16.3	15.6	14.5	-1.1	-3	Negligible
E17	15.6	14.8	14.5	-0.3	-1	Negligible
E18	15.6	14.8	14.3	-0.5	-1	Negligible
E19	15.6	14.8	14.9	0.1	0	Negligible
E20	15.7	15.0	15.1	0.1	0	Negligible

24-hour Mean PM₁₀ (AQS no more than 35 days >50µg/m³)

Receptor	2017 Existing Baseline	Do-minimum	Cumulative	Difference (Cumulative minus Do-minimum)	Impact
E01	1	0	0	0	Negligible
E02	2	1	1	0	Negligible
E03	2	1	1	0	Negligible
E04	1	0	0	0	Negligible
E05	1	0	0	0	Negligible
E06	1	0	0	0	Negligible
E07	1	0	0	0	Negligible
E08	2	1	0	-1	Negligible
E09	1	0	0	0	Negligible
E10	0	0	0	0	Negligible
E11	0	0	0	0	Negligible
E12	0	0	0	0	Negligible
E13	0	0	0	0	Negligible
E14	0	0	0	0	Negligible
E15	0	0	0	0	Negligible
E16	1	0	0	0	Negligible
E17	1	0	0	0	Negligible
E18	1	0	0	0	Negligible
E19	1	0	0	0	Negligible
E20	0	0	0	0	Negligible



Annual Mean PM_{2.5} (AQS 25µg/m³)

Receptor	2017 Existing Baseline	Do-minimum	Cumulative	Difference (Cumulative minus Do-minimum)	Change relative to AQS (%)	Impact
E01	10.4	9.8	9.9	0.1	0	Negligible
E02	11.5	10.7	11.0	0.3	1	Negligible
E03	11.4	10.7	10.9	0.2	1	Negligible
E04	10.3	9.5	9.4	-0.1	0	Negligible
E05	11.0	10.2	9.4	-0.8	-3	Negligible
E06	10.6	9.8	9.2	-0.6	-2	Negligible
E07	10.9	10.0	9.3	-0.7	-3	Negligible
E08	11.3	10.5	9.8	-0.7	-3	Negligible
E09	11.1	10.3	9.7	-0.6	-2	Negligible
E10	10.6	9.8	9.5	-0.3	-1	Negligible
E11	10.0	9.2	9.6	0.4	2	Negligible
E12	9.6	8.8	9.2	0.4	2	Negligible
E13	10.0	9.2	9.4	0.2	1	Negligible
E14	10.6	9.7	9.9	0.2	1	Negligible
E15	10.0	9.2	9.4	0.2	1	Negligible
E16	10.8	10.0	9.4	-0.6	-2	Negligible
E17	10.4	9.6	9.4	-0.2	-1	Negligible
E18	10.4	9.6	9.3	-0.3	-1	Negligible
E19	10.3	9.6	9.7	0.1	0	Negligible
E20	10.4	9.7	9.8	0.1	0	Negligible
