The Sizewell C Project

6.11 Volume 10 Project-wide, Cumulative and Transboundary Effects

Chapter 4 Assessment of Cumulative Effects with Other Plans, Projects and Programmes

Appendices 4A - 4C

Revision:	1.0
Applicable Regulation:	Regulation 5(2)(a)
PINS Reference Number:	EN010012

May 2020

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

VOLUME 10, CHAPTER 4, APPENDIX 4A: TRANSPORT CUMULATIVE ASSESSMENT AND SCREENING OF LINKS

Contents

1 Traffic Link Screening 1
2 Assessment Tables 24
2.1 Severance 24
2.2 Pedestrian Delay 33
2.3 Amenity 35
2.4 Fear and Intimidation 49

Tables

Table 1.1: 2023 Screening of Links 1
Table 1.2: 2028 Screening of Links 10
Table 1.3: Summary of Screening of Links 19
Table 2.1: Severance 2023 24hr AAWT Cumulative 24
Table 2.2: Severance 2028 24hr AAWT Cumulative 28
Table 2.3: Pedestrian Delay 2023 24 AAWT Cumulative 33
Table 2.4: Pedestrian Delay 2028 24 AAWT Cumulative 34
Table 2.5: Amenity 2023 24hr AAWT Total Traffic Cumulative 35
Table 2.6: Amenity 2023 24hr AAWT HDVs Cumulative 38
Table 2.7: Amenity 2028 24hr AAWT Cumulative 41
Table 2.8: Amenity 2028 24hr AAWT HDVs Cumulative 45
Table 2.9: Fear and Intimidation 2023 18 hr AAWT Cumulative 49
Table 2.10: Fear and Intimidation 2023 18 hr AAWT HDVs Cumulative 53
Table 2.11: Fear and Intimidation 2028 18 hr AAWT Cumulative 56
Table 2.12: Fear and Intimidation 2028 18 hr AAWT HDVs Cumulative 60

Plates

None provided.

Figures

None provided.

1 Traffic Link Screening

Table 1.1: 2023 Screening of Links

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
Yes	1	Sizewell Gap	7060	8026	14	99	740	649	Low
No	2	King George's Avenue	6179	6985	13	92	92	0	Medium
Yes	3	Lover's Lane (LEEIE)	3258	4962	52	85	1006	1084	Very Low
No	4a	B1122 (S)	3573	4140	16	217	217	0	Medium
Yes	4b	Lover's Lane	3312	4791	45	87	788	806	Very Low
Yes	4c	B1122 (N)	6061	7940	31	212	913	331	Medium
No	5	B1122 Abbey Road (existing level crossing)	4753	5303	12	140	140	0	Medium
No	6	B1119 Samundham Road	4941	5441	10	62	62	0	High
No	7	B1069 Coldfair Green	6577	7133	8	196	194	-1	Medium
No	8	B1122 Aldeburgh	3830	3956	3	94	106	12	Medium
Yes	9a	A1094 (W)	8735	9393	8	185	351	90	Low
No	9b	Snape Road	5645	6004	6	178	178	0	High

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
Yes	9c	A1094 (E)	9972	10660	7	227	396	74	Medium
Yes	10	B1122 through Theberton	6054	7892	30	216	918	324	Medium
No	10A	Theberton Bypass	0	0	0	0	0	0	Medium
Yes	11	B1125 through Westleton	2732	3371	23	81	81	0	High
No	12a	B1121 (N)	5486	5946	8	49	49	0	Medium
No	12b	B1119 (E)	5124	5608	9	72	66	-9	High
No	12c	B1121 (S)	5549	6166	11	177	177	0	Medium
No	13a	A12 (N)	15469	16104	4	893	1122	26	Low
Yes	13b	B1122	4163	5391	30	177	903	410	Low
Yes	13c	A12 (middle)	15864	17242	9	848	1575	86	Low
Yes	13d	A1120	4138	4663	13	184	184	0	High
Yes	13e	A12 (S)	12302	13393	9	715	1440	102	Medium
No	14	A12 north of Darsham park and ride	15189	15687	3	833	1028	23	Medium
No	15	A144 Halesworth	7800	7934	2	244	242	-1	High
No	16	A12 Wrentham	9766	10287	5	436	567	30	High

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
No	17a	A12 (N)	11020	11931	8	659	856	30	Medium
Yes	17b	B1125	1849	2435	32	55	55	0	High
Yes	17c	A12 (S)	9194	9513	3	616	813	32	Very Low
No	18	A145 Beccles	9481	9640	2	449	516	15	High
Yes	19a	A1117 (N)	9693	9975	3	110	244	123	High
No	19b	A12 (N)	11715	11277	-4	13	13	0	High
No	19c	B1384 Stradbroke Rd	9576	9510	-1	10	10	0	High
Yes	19d	A12 (S)	11904	11936	0	409	542	32	High
No	19e	A1145 (W)	14650	14591	0	318	318	0	High
No	20	A1095 Southwold	4224	4244	0	71	71	0	High
No	21a	B1119 (west of A12)	3331	3420	3	75	75	0	High
Yes	21b	A12 (north of B1119)	13051	14240	9	669	1537	130	Medium
Yes	21c	A12 (middle)	15478	16701	8	686	1554	126	Medium
No	21d	B1119 (east of A12)	5729	5608	-2	145	145	0	High
Yes	21e	A12 (south of B1119)	14833	15705	6	712	1577	122	Medium

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
Yes	22a	A12 (N)	15962	17344	9	628	1520	142	Very Low
Yes	22b	A1094	8698	9632	11	181	469	160	Low
Yes	22c	A12 (S) (Farnham)	20962	22623	8	907	1971	117	Medium
Yes	23	A12 Farnham Bend	20957	22619	8	907	1977	118	Medium
No	23A	A12 Two Village Bypass	0	0	0	0	0	0	Medium
Yes	24	A12 Stratford St Andrew (Low Road)	20317	21975	8	901	1973	119	Medium
Yes	25	A12 Little Glemham	20317	21975	8	901	1973	119	Medium
Yes	26	A12 Marlesford	20933	22585	8	908	1982	118	Medium
Yes	27	A12 south of Wickham Market	27140	28620	5	1176	2275	94	Medium
No	28a	B1078 Wickham Market	5086	5296	4	161	161	0	Medium
No	28b	B1078 Wickham Market (east of B1438)	4395	4566	4	172	172	0	Medium
No	28c	B1438 High Street, Wickham Market	3142	3214	2	11	11	0	Medium
No	29	B1078 onslip to A12	2075	2223	7	93	96	3	Very Low
No	30	B1116 Hatcheston	7808	7772	0	79	79	0	Low
No	31	B1069 Tunstall	3795	4144	9	152	152	0	Medium

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
Yes	32a	A12 (N)	27240	28698	5	1180	2280	93	Very Low
No	32b	A1152	17923	16828	-6	789	777	-2	High
Yes	32c	A12 (S)	40926	41335	1	2218	3307	49	Medium
Yes	33	A12 south of Woodbridge	39683	39099	-1	1050	2109	101	Very Low
Yes	34a	A12 (N)	42967	43746	2	1180	2255	91	Very Low
No	34b	Main Road (E)	4764	4479	-6	127	127	0	High
Yes	34c	A12 (S)	46215	46369	0	2341	3417	46	Medium
No	34d	A1214 Main Road (W)	24312	24347	0	677	673	-1	High
No	35	A14 south of Ipswich (east of Copdock jcn)	80900	80699	0	12795	13521	6	Medium
No	36	A14 south of Ipswich (west of Seven Hills jcn)	63250	63180	0	10151	11043	9	Medium
No	37	A14 Felixstowe branch (east of Seven Hills jcn)	49458	49622	0	8540	8707	2	Medium
No	38a	B1079 Woodbridge w/o A12	17205	17206	0	583	579	-1	Low
Yes	38b	A12 Woodbridge n/o B1079	40926	41335	1	2218	3307	49	Very Low
No	38c	B1079 Woodbridge e/o A12	14179	14100	-1	816	810	-1	High
Yes	39a	A1094 (west of B1069)	11468	12239	7	234	403	72	Very Low

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
Yes	39b	B1069 (north of A1094)	6533	7328	12	207	387	87	Very Low
No	39c	A1094 (east of B1069)	4819	4902	2	153	164	7	Low
No	41	B1125 through Middleton	2134	2763	29	42	42	0	Low
No	42	B1125 (south of B1387)	2054	2654	29	55	55	0	Medium
No	43	A1120 (east of Dennington)	2959	3202	8	230	230	0	Medium
No	44	A1120 (west of Dennington)	4954	5202	5	657	657	0	High
No	45	A1120 (east of Pettaugh)	13275	13582	2	1163	1163	0	Medium
No	46	B1119 (east of Framlingham)	3426	3560	4	95	95	0	High
No	47	B1119 (through Framlingham)	8779	8919	2	731	731	0	High
No	48	B1119 (east of Saxstead Green)	5321	5449	2	841	839	0	High
No	49	B1078 (east of Clopton)	3343	3525	5	159	159	0	Low
No	50	B1079 (west of Clopton)	11339	11579	2	612	610	0	Very Low
No	51	B1078 (through Gibraltar)	9160	9405	3	612	610	0	High
No	52	B1078 (west of Coddenham)	8946	9151	2	619	619	0	High
No	53a	A144 (west of A12)	4526	4679	3	190	190	0	High

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
Yes	53b	A12 (north of A144)	10027	10341	3	626	825	32	Very Low
No	53c	A12 (south of A144)	14226	14731	4	827	1026	24	Very Low
No	55	A140 (south of B1078)	35434	35965	1	3934	3926	0	Medium
No	56	A140 (north of B1078)	26947	27271	1	3358	3348	0	Medium
No	57	Sizewell Link Road (east of A12)	0	0	0	0	0	0	Medium
Yes	58	A12 (north of SLR)	12242	13325	9	713	1438	102	Very Low
Yes	59	A12 (south of SLR)	12242	13526	10	713	1578	121	Very Low
No	62	B1079 (south of Otley)	2180	2167	-1	0	0	0	Medium
No	63	Theberton Bypass (west of B1125)	0	0	0	0	0	0	Medium
Yes	64	B1122 north of SZC access	6054	7892	30	216	918	324	Medium
No	65	Middleton Moor Link	0	0	0	0	0	0	Medium
Yes	66	B1122 west of B1125	3507	4715	34	165	867	424	Medium
Yes	67	Main Site Access	0	787	786655	0	0	0	Very low
Yes	68	Darsham P&R	0	279	278900	0	46	45900	Very low
Yes	69	Wickham Market P&R	0	223	222900	0	42	41900	Very Low

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
Yes	70	A12 on-slip (west of WM P&R)	2075	2407	16	93	132	42	Very Low
No	71	B1116 north of B1078	8247	8218	0	86	86	0	Very Low
No	72	B1078 west of B1116	4395	4571	4	177	177	0	Medium
Yes	73	B1078 south of B1116	9914	10031	1	225	264	17	Medium
Yes	74	B1122 (Middleton Moor)	4163	5367	29	177	879	396	Medium
Yes	75	Lover's Lane	3312	5011	51	87	1008	1059	Very Low
No	76	B1069 (north of Aldringham Lane)	5538	6076	10	169	169	0	Medium
No	77	Aldeburgh Rd (north of Aldringham Lane)	4898	5054	3	57	57	0	Medium
Yes	78	A12 (north of B1121)	14874	15798	6	712	1577	122	Medium
No	79	B1121 at Benhall	5746	6289	9	176	176	0	Low
No	80	A1152 at Rendlesham	7517	7810	4	292	289	-1	Very Low
No	81	B1078 at Campsea Ashe	1378	1390	1	0	0	0	High
Yes	82	B1438 Melton Hill	4728	5425	15	489	487	0	High
Yes	83	A145 west of A12	2900	3109	7	233	300	28	High
Yes	84	A12 south of B1126	8760	9298	6	479	611	28	Very Low

Scoped in	Link Number	Link Name	2023 Reference case (total traffic)	2023 Reference + Sizewell + Scottish Power	% Change	2023 Reference case HGVs	2023 Reference + Sizewell + Scottish Power HGVs	% Change	Sensitivity
Yes	85	A12 south of A1095	11157	11738	5	672	801	19	Very Low
Yes	86	A12 south of B1387	9582	9908	3	659	855	30	Very Low
Yes	87	A12 south of Eagle Way/Anson Rd roundabout	48831	49019	0	2152	3226	50	Very Low
Yes	88	A12 south of Foxhall Road	38447	38563	0	2279	3353	47	Very Low
Yes	89	A1120 east of A140	14316	14619	2	1991	1991	0	High
Yes	90	A1120 Sibton (east of Mill Hill)	4279	4802	12	194	194	0	High
Yes	91	A1152 at Eyke	7556	7805	3	298	296	-1	High

Table 1.2: 2028 Screening of Links

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
Yes	1	Sizewell Gap	7228	7637	6	99	200	103	Low
No	2	King George's Avenue	6255	6422	3	92	92	0	Medium
Yes	3	Lover's Lane (LEEIE)	3361	4157	24	85	356	318	Very Low
Yes	4a	B1122 (S)	3723	7075	90	217	429	98	Medium
Yes	4b	Lover's Lane	3415	4066	19	87	213	145	Very Low
Yes	4c	B1122 (N)	6201	10107	63	214	556	160	Medium
Yes	5	B1122 Abbey Road (existing level crossing)	4946	8345	69	142	359	152	Medium
Yes	6	B1119 Samundham Road	5213	5913	13	62	86	39	High
Yes	7	B1069 Coldfair Green	6840	8074	18	196	386	97	Medium
No	8	B1122 Aldeburgh	3941	4737	20	94	106	12	Medium
Yes	9a	A1094 (W)	9133	9601	5	185	351	90	Low
Yes	9b	Snape Road	5902	6562	11	178	178	0	High
Yes	9c	A1094 (E)	10291	11346	10	229	392	71	Medium

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
Yes	10	B1122 through Theberton	6183	638	-90	218	0	-100	Medium
Yes	10A	Theberton Bypass	0	8953	8,953,000	0	1828	1828,000	Medium
Yes	11	B1125 through Westleton	2823	3215	14	81	81	0	High
No	12a	B1121 (N)	5528	5788	5	51	51	0	Medium
Yes	12b	B1119 (E)	5400	5968	11	70	86	22	High
No	12c	B1121 (S)	5882	6643	13	179	173	-3	Medium
Yes	13a	A12 (N)	15903	16879	6	905	1340	48	Low
Yes	13b	B1122	4284	4663	9	177	537	203	Low
No	13c	A12 (middle)	16358	16316	0	858	867	1	Low
Yes	13d	A1120	4296	4937	15	188	192	2	High
No	13e	A12 (S)	12713	12018	-5	719	726	1	Medium
No	14	A12 north of Darsham park and ride	15623	18017	15	845	1082	28	Medium
No	15	A144 Halesworth	8127	8797	8	244	244	0	High
Yes	16	A12 Wrentham	10224	11383	11	440	620	41	High

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
Yes	17a	A12 (N)	11345	13103	16	673	914	36	Medium
Yes	17b	B1125	1871	2127	14	55	55	0	High
Yes	17c	A12 (S)	9497	10990	16	630	871	38	Very Low
No	18	A145 Beccles	9323	9643	3	453	514	13	High
Yes	19a	A1117 (N)	9856	10307	5	26	205	683	High
No	19b	A12 (N)	14525	14654	1	212	206	-3	High
No	19c	B1384 Stradbroke Rd	10462	10503	0	10	12	20	High
Yes	19d	A12 (S)	12979	13473	4	528	704	33	High
No	19e	A1145 (W)	16304	16424	1	320	320	0	High
No	20	A1095 Southwold	4409	4459	1	79	79	0	High
No	21a	B1119 (west of A12)	3399	3476	2	75	75	0	High
Yes	21b	A12 (north of B1119)	13490	14536	8	681	1886	177	Medium
Yes	21c	A12 (middle)	15969	16948	6	688	1893	175	Medium
No	21d	B1119 (east of A12)	5897	5724	-3	145	145	0	High

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
Yes	21e	A12 (south of B1119)	15555	16341	5	718	1920	168	Medium
Yes	22a	A12 (N)	16746	18129	8	635	1837	189	Very Low
Yes	22b	A1094	9117	9541	5	187	351	88	Low
Yes	22c	A12 (S) (Farnham)	21805	819	-96	917	58	-94	Medium
Yes	23	A12 Farnham Bend	21806	275	-99	919	11	-99	Medium
Yes	23A	A12 Two Village Bypass	0	22585	22,585,000	0	2215	2,215,000	Medium
Yes	24	A12 Stratford St Andrew (Low Road)	21166	584	-97	911	44	-95	Medium
Yes	25	A12 Little Glemham	21166	22859	8	911	2236	145	Medium
Yes	26	A12 Marlesford	21794	23491	8	922	2247	144	Medium
Yes	27	A12 south of Wickham Market	27555	30174	10	1180	2320	97	Medium
No	28a	B1078 Wickham Market	5676	6730	19	165	161	-2	Medium
No	28b	B1078 Wickham Market (east of B1438)	4915	5962	21	176	161	-9	Medium
No	28c	B1438 High Street, Wickham Market	3311	3399	3	11	0	-100	Medium
Yes	29	B1078 onslip to A12	2143	2393	12	95	186	96	Very Low

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
No	30	B1116 Hatcheston	7707	7851	2	79	79	0	Low
No	31	B1069 Tunstall	4068	4655	14	154	152	-1	Medium
Yes	32a	A12 (N)	27479	30005	9	1188	2328	96	Very Low
No	32b	A1152	19616	18208	-7	801	793	-1	High
Yes	32c	A12 (S)	42872	43803	2	2240	3389	51	Medium
Yes	33	A12 south of Woodbridge	40186	39650	-1	1034	2159	109	Very Low
Yes	34a	A12 (N)	43285	44251	2	1190	2317	95	Very Low
Yes	34b	Main Road (E)	2854	5506	93	127	127	0	High
Yes	34c	A12 (S)	49525	48296	-2	2335	3422	47	Medium
No	34d	A1214 Main Road (W)	25376	26060	3	663	705	6	High
No	35	A14 south of Ipswich (east of Copdock jcn)	83662	84195	1	12898	13595	5	Medium
No	36	A14 south of Ipswich (west of Seven Hills jcn)	65909	66485	1	10227	11069	8	Medium
No	37	A14 Felixstowe branch (east of Seven Hills jcn)	50978	51188	0	8597	8769	2	Medium
No	38a	B1079 Woodbridge w/o A12	15801	15982	1	544	546	0	Low

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
Yes	38b	A12 Woodbridge n/o B1079	42872	43803	2	2240	3389	51	Very Low
No	38c	B1079 Woodbridge e/o A12	15149	14720	-3	832	830	0	High
Yes	39a	A1094 (west of B1069)	11922	13020	9	236	399	69	Very Low
Yes	39b	B1069 (north of A1094)	6792	8041	18	209	395	89	Very Low
No	39c	A1094 (east of B1069)	5028	5259	5	155	164	6	Low
Yes	41	B1125 through Middleton	2189	2964	35	42	42	0	Low
No	42	B1125 (south of B1387)	2101	2340	11	55	55	0	Medium
No	43	A1120 (east of Dennington)	3131	3363	7	236	236	0	Medium
No	44	A1120 (west of Dennington)	5330	5580	5	663	663	0	High
No	45	A1120 (east of Pettaugh)	13454	13809	3	1178	1176	0	Medium
No	46	B1119 (east of Framlingham)	3549	3689	4	97	95	-2	High
No	47	B1119 (through Framlingham)	8946	9212	3	735	735	0	High
No	48	B1119 (east of Saxstead Green)	5559	5769	4	843	843	0	High
No	49	B1078 (east of Clopton)	4131	5125	24	165	163	-1	Low

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
No	50	B1079 (west of Clopton)	11964	13162	10	624	626	0	Very Low
No	51	B1078 (through Gibraltar)	9783	10959	12	624	626	0	High
No	52	B1078 (west of Coddenham)	8621	9387	9	617	621	1	High
Yes	53a	A144 (west of A12)	4621	5289	14	190	190	0	High
Yes	53b	A12 (north of A144)	10187	11754	15	634	876	38	Very Low
Yes	53c	A12 (south of A144)	14626	16971	16	846	1082	28	Very Low
No	55	A140 (south of B1078)	35558	36685	3	3973	3971	0	Medium
No	56	A140 (north of B1078)	27410	27808	1	3397	3393	0	Medium
Yes	57	Sizewell Link Road (east of A12)	0	2618	2,618,000	0	1320	1,320,000	Medium
No	58	A12 (north of SLR)	12649	12094	-4	721	730	1	Very Low
Yes	59	A12 (south of SLR)	12649	14218	12	721	1926	167	Very Low
No	62	B1079 (south of Otley)	2184	2198	1	0	0	0	Medium
Yes	63	Theberton Bypass (west of B1125)	0	6898	6,898,000	0	1850	1,850,000	Medium
Yes	64	B1122 north of SZC access	6183	9314	51	218	1830	738	Medium

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
Yes	65	Middleton Moor Link	0	4431	4430673	0	561	561283	Medium
No	66	B1122 west of B1125	3593	122	-97	169	0	-100	Medium
Yes	67	Main Site Access	0	5732	5,732,000	0	1740	1,740,000	Very low
Yes	68	Darsham P&R	0	2500	2,500,000	0	198	198,000	Very low
Yes	69	Wickham Market P&R	0	2645	2,645,000	0	198	198,000	Very low
Yes	70	A12 on-slip (west of WM P&R)	2143	5035	135	95	186	96	Very low
No	71	B1116 north of B1078	8156	8311	2	86	86	0	Very low
No	72	B1078 west of B1116	4894	5962	22	183	170	-7	Medium
Yes	73	B1078 south of B1116	10158	12016	18	225	319	42	Medium
Yes	74	B1122 (Middleton Moor)	4284	370	-91	177	4	-98	Medium
Yes	75	Lover's Lane	3415	4206	23	87	353	306	Very low
Yes	76	B1069 (north of Aldringham Lane)	5732	6912	21	169	361	114	Medium
No	77	Aldeburgh Rd (north of Aldringham Lane)	4982	6322	27	57	57	0	Medium
Yes	78	A12 (north of B1121)	15970	16698	5	718	1920	168	Medium

Scoped in	Link Number	Link Name	2028 Reference case (total traffic)	2028 Reference + Sizewell + Scottish Power (busiest day)	% Change	2028 Reference case HGVs	2028 Reference + Sizewell + Scottish Power HGVs Busiest	% Change	Sensitivity
No	79	B1121 at Benhall	6238	6986	12	176	168	-5	Low
No	80	A1152 at Rendlesham	7682	8021	4	289	289	0	Very low
No	81	B1078 at Campsea Ashe	1585	1602	1	0	0	0	High
Yes	82	B1438 Melton Hill	3862	4996	29	491	478	-3	High
Yes	83	A145 west of A12	2909	3369	16	237	302	27	High
Yes	84	A12 south of B1126	9171	10367	13	485	661	36	Very Low
Yes	85	A12 south of A1095	11662	12977	11	682	860	26	Very Low
Yes	86	A12 south of B1387	9921	11377	15	673	913	36	Very Low
Yes	87	A12 south of Eagle Way/Anson Rd roundabout	48946	49534	1	2148	3233	51	Very low
Yes	88	A12 south of Foxhall Road	39610	40363	2	2305	3349	45	Very low
Yes	89	A1120 east of A140	14484	14855	3	2016	2018	0	High
Yes	90	A1120 Sibton (east of Mill Hill)	4444	5056	14	196	200	2	High
Yes	91	A1152 at Eyke	7735	7932	3	298	296	-1	High

Table 1.3: Summary of Screening of Links

Link Number	Link Name	2023 Early Years Links Screened In	2028 Peak Construction Links Screened In
1	Sizewell Gap	Yes	Yes
2	King George's Avenue	No	No
3	Lover's Lane (LEEIE)	Yes	Yes
4a	B1122 (S)	No	Yes
4b	Lover's Lane	Yes	Yes
4c	B1122 (N)	Yes	Yes
5	B1122 Abbey Road (existing level crossing)	No	Yes
6	B1119 Samundham Road	No	Yes
7	B1069 Coldfair Green	No	Yes
8	B1122 Aldeburgh	No	No
9a	A1094 (W)	Yes	Yes
9b	Snape Road	No	Yes
9c	A1094 (E)	Yes	Yes
10	B1122 through Theberton	Yes	Yes
10A	Theberton Bypass	No	Yes
11	B1125 through Westleton	Yes	Yes
12a	B1121 (N)	No	No
12b	B1119 (E)	No	Yes
12c	B1121 (S)	No	No
13a	A12 (N)	No	Yes
13b	B1122	Yes	Yes
13c	A12 (middle)	Yes	No
13d	A1120	Yes	Yes
13e	A12 (S)	Yes	No
14	A12 north of Darsham park and ride	No	No
15	A144 Halesworth	No	No
16	A12 Wrentham	No	Yes
17a	A12 (N)	No	Yes

Link Number	Link Name	2023 Early Years Links Screened In	2028 Peak Construction Links Screened In
17b	B1125	Yes	Yes
17c	A12 (S)	Yes	Yes
18	A145 Beccles	No	No
19a	A1117 (N)	Yes	Yes
19b	A12 (N)	No	No
19c	B1384 Stradbroke Rd	No	No
19d	A12 (S)	Yes	Yes
19e	A1145 (W)	No	No
20	A1095 Southwold	No	No
21a	B1119 (west of A12)	No	No
21b	A12 (north of B1119)	Yes	Yes
21c	A12 (middle)	Yes	Yes
21d	B1119 (east of A12)	No	No
21e	A12 (south of B1119)	Yes	Yes
22a	A12 (N)	Yes	Yes
22b	A1094	Yes	Yes
22c	A12 (S) (Farnham)	Yes	Yes
23	A12 Farnham Bend	Yes	Yes
23A	A12 Two Village Bypass	No	Yes
24	A12 Stratford St Andrew (Low Road)	Yes	Yes
25	A12 Little Glemham	Yes	Yes
26	A12 Marlesford	Yes	Yes
27	A12 south of Wickham Market	Yes	Yes
28a	B1078 Wickham Market	No	No
28b	B1078 Wickham Market (east of B1438)	No	No
28c	B1438 High Street, Wickham Market	No	No
29	B1078 onslip to A12	No	Yes
30	B1116 Hatcheston	No	No
31	B1069 Tunstall	No	No

Link Number	Link Name	2023 Early Years Links Screened In	2028 Peak Construction Links Screened In
32a	A12 (N)	Yes	Yes
32b	A1152	No	No
32c	A12 (S)	Yes	Yes
33	A12 south of Woodbridge	Yes	Yes
34a	A12 (N)	Yes	Yes
34b	Main Road (E)	No	Yes
34c	A12 (S)	Yes	Yes
34d	A1214 Main Road (W)	No	No
35	A14 south of Ipswich (east of Copdock jcn)	No	No
36	A14 south of Ipswich (west of Seven Hills jcn)	No	No
37	A14 Felixstowe branch (east of Seven Hills jcn)	No	No
38a	B1079 Woodbridge w/o A12	No	No
38b	A12 Woodbridge n/o B1079	Yes	Yes
38c	B1079 Woodbridge e/o A12	No	No
39a	A1094 (west of B1069)	Yes	Yes
39b	B1069 (north of A1094)	Yes	Yes
39c	A1094 (east of B1069)	No	No
41	B1125 through Middleton	No	Yes
42	B1125 (south of B1387)	No	No
43	A1120 (east of Dennington)	No	No
44	A1120 (west of Dennington)	No	No
45	A1120 (east of Pettaugh)	No	No
46	B1119 (east of Framlingham)	No	No
47	B1119 (through Framlingham)	No	No
48	B1119 (east of Saxstead Green)	No	No
49	B1078 (east of Clopton)	No	No
50	B1079 (west of Clopton)	No	No
51	B1078 (through Gibraltar)	No	No
52	B1078 (west of Coddenham)	No	No

Link Number	Link Name	2023 Early Years Links Screened In	2028 Peak Construction Links Screened In
53a	A144 (west of A12)	No	Yes
53b	A12 (north of A144)	Yes	Yes
53c	A12 (south of A144)	No	Yes
55	A140 (south of B1078)	No	No
56	A140 (north of B1078)	No	No
57	Sizewell Link Road (east of A12)	No	Yes
58	A12 (north of SLR)	Yes	No
59	A12 (south of SLR)	Yes	Yes
62	B1079 (south of Otley)	No	No
63	Theberton Bypass (west of B1125)	No	Yes
64	B1122 north of SZC access	Yes	Yes
65	Middleton Moor Link	No	Yes
66	B1122 west of B1125	Yes	Yes
67	Main Site Access	Yes	Yes
68	Darsham P&R	Yes	Yes
69	Wickham Market P&R	Yes	Yes
70	A12 on-slip (west of WM P&R)	Yes	Yes
71	B1116 north of B1078	No	No
72	B1078 west of B1116	No	No
73	B1078 south of B1116	Yes	Yes
74	B1122 (Middleton Moor)	Yes	Yes
75	Lover's Lane	Yes	Yes
76	B1069 (north of Aldringham Lane)	No	Yes
77	Aldeburgh Rd (north of Aldringham Lane)	No	No
78	A12 (north of B1121)	Yes	Yes
79	B1121 at Benhall	No	No
80	A1152 at Rendlesham	No	No
81	B1078 at Campsea Ashe	No	No
82	B1438 Melton Hill	Yes	Yes

Link Number	Link Name	2023 Early Years Links Screened In	2028 Peak Construction Links Screened In
83	A145 west of A12	Yes	Yes
84	A12 south of B1126	Yes	Yes
85	A12 south of A1095	Yes	Yes
86	A12 south of B1387	Yes	Yes
87	A12 south of Eagle Way/Anson Rd roundabout	Yes	Yes
88	A12 south of Foxhall Road	Yes	Yes
89	A1120 east of A140	Yes	Yes
90	A1120 Sibton (east of Mill Hill)	Yes	Yes
91	A1152 at Eyke	Yes	Yes

2 Assessment Tables

2.1 Severance

Table 2.1: Severance 2023 24hr AAWT Cumulative

Link Number	Link Name	2023 Reference Case 24hr AAWT total traffic	2023 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	7,060	8,026	14	Very Low	Low	Negligible
3	Lover's Lane (LEEIE)	3,258	4,962	52	Low	Very Low	Negligible
4b	Lover's Lane	3,312	4,791	45	Low	Very Low	Negligible
4c	B1122 (N)	6,061	7,940	31	Low	Medium	Minor adverse
9a	A1094 (W)	8,735	9,393	8	Very Low	Low	Negligible
9c	A1094 (E)	9,972	10,660	7	Very Low	Medium	Minor adverse
10	B1122 through Theberton	6,054	7,892	30	Low	Medium	Minor adverse
11	B1125 through Westleton	2,732	3,371	23	Very Low	High	Minor adverse
13b	B1122	4,163	5,391	30	Low	Low	Minor adverse
13c	A12 (middle)	15,864	17,242	9	Very Low	Low	Negligible
13d	A1120	4,138	4,663	13	Very Low	High	Minor adverse
13e	A12 (S)	12,302	13,393	9	Very Low	Medium	Minor adverse
17b	B1125	1,849	2,435	32	Low	High	**Moderate adverse**
17c	A12 (S)	9194	9513	3	Very Low	Very Low	Negligible
19a	A1117 (N)	9693	9975	3	Very Low	High	Minor adverse

Link Number	Link Name	2023 Reference Case 24hr AAWT total traffic	2023 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
19d	A12 (S)	11904	11936	0	Very Low	High	Minor adverse
21b	A12 (north of B1119)	13051	14240	9	Very Low	Medium	Minor adverse
21c	A12 (middle)	15478	16701	8	Very Low	Medium	Minor adverse
21e	A12 (south of B1119)	14833	15705	6	Very Low	Medium	Minor adverse
22a	A12 (N)	15962	17344	9	Very Low	Very Low	Negligible
22b	A1094	8698	9632	11	Very Low	Low	Negligible
22c	A12 (S) (Farnham)	20962	22623	8	Very Low	Medium	Minor adverse
23	A12 Farnham Bend	20957	22619	8	Very Low	Medium	Minor adverse
24	A12 Stratford St Andrew (Low Road)	20317	21975	8	Very Low	Medium	Minor adverse
25	A12 Little Glemham	20317	21975	8	Very Low	Medium	Minor adverse
26	A12 Marlesford	20933	22585	8	Very Low	Medium	Minor adverse
27	A12 south of Wickham Market	27140	28620	5	Very Low	Medium	Minor adverse
32a	A12 (N)	27240	28698	5	Very Low	Very Low	Negligible
32c	A12 (S)	40926	41335	1	Very Low	Medium	Minor adverse
33	A12 south of Woodbridge	39683	39099	-1	Very Low	Very Low	Negligible
34a	A12 (N)	42967	43746	2	Very Low	Very Low	Negligible
34c	A12 (S)	46215	46369	0	Very Low	Medium	Minor adverse
38b	A12 Woodbridge n/o B1079	40926	41335	1	Very Low	Very Low	Negligible
39a	A1094 (west of B1069)	11468	12239	7	Very Low	Very Low	Negligible

Link Number	Link Name	2023 Reference Case 24hr AAWT total traffic	2023 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
39b	B1069 (north of A1094)	6533	7328	12	Very Low	Very Low	Negligible
53b	A12 (north of A144)	10027	10341	3	Very Low	Very Low	Negligible
58	A12 (north of SLR)	12242	13325	9	Very Low	Very Low	Negligible
59	A12 (south of SLR)	12242	13526	10	Very Low	Very Low	Negligible
64	B1122 north of SZC access	6054	7892	30	Low	Medium	Minor adverse
66	B1122 west of B1125	3507	4715	34	Low	Medium	Minor adverse
67	Main Site Access	0	787	787,000	High	Very low	Minor adverse
68	Darsham P&R	0	279	279,000	High	Very low	Minor adverse
69	Wickham Market P&R	0	223	223,000	High	Very Low	Minor adverse
70	A12 on-slip (west of WM P&R)	2075	2407	16	Very Low	Very Low	Negligible
73	B1078 south of B1116	9914	10031	1	Very Low	Medium	Minor adverse
74	B1122 (Middleton Moor)	4163	5367	29	Very Low	Medium	Minor adverse
75	Lover's Lane	3312	5011	51	Low	Very Low	Negligible
78	A12 (north of B1121)	14874	15798	6	Very Low	Medium	Minor adverse
82	B1438 Melton Hill	4728	5425	15	Very Low	High	Minor adverse
83	A145 west of A12	2900	3109	7	Very Low	High	Minor adverse
84	A12 south of B1126	8760	9298	6	Very Low	Very Low	Negligible
85	A12 south of A1095	11157	11738	5	Very Low	Very Low	Negligible
86	A12 south of B1387	9582	9908	3	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	48831	49019	0	Very Low	Very Low	Negligible
88	A12 south of Foxhall Road	38447	38563	0	Very Low	Very Low	Negligible

Link Number	Link Name	2023 Reference Case 24hr AAWT total traffic	2023 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
89	A1120 east of A140	14316	14619	2	Very Low	High	Minor adverse
90	A1120 Sibton (east of Mill Hill)	4279	4802	12	Very Low	High	Minor adverse
91	A1152 at Eyke	7556	7805	3	Very Low	High	Minor adverse

Table 2.2: Severance 2028 24hr AAWT Cumulative

Link Number	Link Name	2028 Reference Case (24hr AAWT total traffic)	2028 Reference+ Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	7228	7637	6	Very Low	Low	Negligible
3	Lover's Lane (LEEIE)	3361	4157	24	Very Low	Very Low	Negligible
4a	B1122 (S)	3723	7075	90	High	Medium	**Major Adverse**
4b	Lover's Lane	3415	4066	19	Very Low	Very Low	Negligible
4c	B1122 (N)	6201	10107	63	Medium	Medium	**Moderate Adverse**
5	B1122 Abbey Road (existing level crossing)	4946	8345	69	Medium	Medium	**Moderate Adverse**
6	B1119 Samundham Road	5213	5913	13	Very Low	High	Minor adverse
7	B1069 Coldfair Green	6840	8074	18	Very Low	Medium	Minor adverse
9a	A1094 (W)	9133	9601	5	Very Low	Low	Negligible
9b	Snape Road	5902	6562	11	Very Low	High	Minor adverse
9c	A1094 (E)	10291	11346	10	Very Low	Medium	Minor adverse
10	B1122 through Theberton	6183	638	-90	High	Medium	**Major beneficial**
10A	Theberton Bypass	0	8953	8,953,000	High	Medium	**Major adverse**
11	B1125 through Westleton	2823	3215	14	Very Low	High	Minor adverse
12b	B1119 (E)	5400	5968	11	Very Low	High	Minor adverse
13a	A12 (N)	15903	16879	6	Very Low	Low	Negligible

Link Number	Link Name	2028 Reference Case (24hr AAWT total traffic)	2028 Reference+ Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
13b	B1122	4284	4663	9	Very Low	Low	Negligible
13d	A1120	4296	4937	15	Very Low	High	Minor adverse
16	A12 Wrentham	10224	11383	11	Very Low	High	Minor adverse
17a	A12 (N)	11345	13103	16	Very Low	Medium	Minor adverse
17b	B1125	1871	2127	14	Very Low	High	Minor adverse
17c	A12 (S)	9497	10990	16	Very Low	Very Low	Negligible
19a	A1117 (N)	9856	10307	5	Very Low	High	Minor adverse
19d	A12 (S)	12979	13473	4	Very Low	High	Minor adverse
21b	A12 (north of B1119)	13490	14536	8	Very Low	Medium	Minor adverse
21c	A12 (middle)	15969	16948	6	Very Low	Medium	Minor adverse
21e	A12 (south of B1119)	15555	16341	5	Very Low	Medium	Minor adverse
22a	A12 (N)	16746	18129	8	Very Low	Very Low	Negligible
22b	A1094	9117	9541	5	Very Low	Low	Negligible
22c	A12 (S) (Farnham)	21805	819	-96	High	Medium	**Major beneficial**
23	A12 Farnham Bend	21806	275	-99	High	Medium	**Major beneficial**
23a	A12 Two Village Bypass	0	22585	2,2585,000	High	Medium	**Major adverse**
24	A12 Stratford St Andrew (Low Road)	21166	584	-97	High	Medium	**Major beneficial**
25	A12 Little Glemham	21166	22859	8	Very Low	Medium	Minor adverse
26	A12 Marlesford	21794	23491	8	Very Low	Medium	Minor adverse

Link Number	Link Name	2028 Reference Case (24hr AAWT total traffic)	2028 Reference+ Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
27	A12 south of Wickham Market	27555	30174	10	Very Low	Medium	Minor adverse
29	B1078 onslip to A12	2143	2393	12	Very Low	Very Low	Negligible
32a	A12 (N)	27479	30005	9	Very Low	Very Low	Negligible
32c	A12 (S)	42872	43803	2	Very Low	Medium	Minor adverse
33	A12 south of Woodbridge	40186	39650	-1	Very Low	Very Low	Negligible
34a	A12 (N)	43285	44251	2	Very Low	Very Low	Negligible
34b	Main Road (E)	2854	5506	93	High	High	**Major adverse**
34c	A12 (S)	49525	48296	-2	Very Low	Medium	Minor adverse
38b	A12 Woodbridge n/o B1079	42872	43803	2	Very Low	Very Low	Negligible
39a	A1094 (west of B1069)	11922	13020	9	Very Low	Very Low	Negligible
39b	B1069 (north of A1094)	6792	8041	18	Very Low	Very Low	Negligible
41	B1125 through Middleton	2189	2964	35	Low	Low	Minor adverse
53a	A144 (west of A12)	4621	5289	14	Very Low	High	Minor adverse
53b	A12 (north of A144)	10187	11754	15	Very Low	Very Low	Negligible
53c	A12 (south of A144)	14626	16971	16	Very Low	Very Low	Negligible
57	Sizewell Link Road (east of A12)	0	2618	2,618,000	High	Medium	**Major adverse**
59	A12 (south of SLR)	12649	14218	12	Very Low	Very Low	Negligible
63	Theberton Bypass (west of B1125)	0	6898	6,898,000	High	Medium	**Major adverse**
64	B1122 north of SZC access	6183	9314	51	Low	Medium	Minor adverse

Link Number	Link Name	2028 Reference Case (24hr AAWT total traffic)	2028 Reference+ Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
65	Middleton Moor Link	0	4431	4,431,000	Very Low	Medium	Minor adverse
66	B1122 west of B1125	3593	122	-97	High	Medium	**Major beneficial**
67	Main Site Access	0	5732	5,732,000	High	Very low	Minor adverse
68	Darsham P&R	0	2500	2,500,000	High	Very low	Minor adverse
69	Wickham Market P&R	0	2645	2,645,000	High	Very Low	Minor adverse
70	A12 on-slip (west of WM P&R)	2143	5035	135	High	Very Low	Minor adverse
73	B1078 south of B1116	10158	12016	18	Very Low	Medium	Minor adverse
74	B1122 (Middleton Moor)	4284	370	-91	High	Medium	**Major beneficial**
75	Lover's Lane	3415	4206	23	Very Low	Very Low	Negligible
76	B1069 (north of Aldringham Lane)	5732	6912	21	Very Low	Medium	Minor adverse
78	A12 (north of B1121)	15970	16698	5	Very Low	Medium	Minor adverse
82	B1438 Melton Hill	3862	4996	29	Very Low	High	Minor adverse
83	A145 west of A12	2909	3369	16	Very Low	High	Minor adverse
84	A12 south of B1126	9171	10367	13	Very Low	Very Low	Negligible
85	A12 south of A1095	11662	12977	11	Very Low	Very Low	Negligible
86	A12 south of B1387	9921	11377	15	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	48946	49534	1	Very Low	Very Low	Negligible
88	A12 south of Foxhall Road	39610	40363	2	Very Low	Very Low	Negligible
89	A1120 east of A140	14484	14855	3	Very Low	High	Minor adverse

Link Number	Link Name	2028 Reference Case (24hr AAWT total traffic)	2028 Reference+ Sizewell + Scottish Power (busiest) 24hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
90	A1120 Sibton (east of Mill Hill)	4444	5056	14	Very Low	High	Minor adverse
91	A1152 at Eyke	7735	7932	3	Very Low	High	Minor adverse

2.2 Pedestrian Delay

Table 2.3: Pedestrian Delay 2023 24 AAWT Cumulative

Link Number	Link Name	2023 Reference Case			2023 Reference Case + Sizewell + Scottish Power (busiest)			Mean Pedestrian Delay Increase (seconds)	Magnitude	Sensitivity	Effect Significance
		24 hour AAWT vehicles	Average vehicles per hour	Mean Pedestrian Delay (seconds)	24 hour AAWT vehicles	Average vehicles per hour	Mean Pedestrian Delay (seconds)				
32c	A12 (S)	40926	1705	14.0	41335	1722	15.0	1.0	Low	Medium	Minor adverse
33	A12 south of Woodbridge	39683	1653	13.5	39099	1629	13.5	0.0	Very Low	Very Low	Negligible
34a	A12 (N)	42967	1790	15.5	43746	1823	16.0	0.5	Very Low	Very Low	Negligible
34c	A12 (S)	46215	1926	17.5	46369	1932	18.5	1.0	Low	Medium	Minor adverse
38b	A12 Woodbridge n/o B1079	40926	1705	14.0	41335	1722	15.0	1.0	Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	48831	2035	20.5	49019	2042	20.5	0.0	Very Low	Very Low	Negligible
88	A12 south of Foxhall Road	38447	1602	13.0	38563	1607	13.5	0.5	Very Low	Very Low	Negligible

Table 2.4: Pedestrian Delay 2028 24 AAWT Cumulative

Link No.	Link Name	2028 Reference Case			2028 Reference Case + Sizewell Scottish Power (busiest)			Mean Pedestrian Delay Increase (seconds)	Magnitude	Sensitivity	Effect Significance
		24 hour AAWT vehicles	Average vehicles per hour	Mean Pedestrian Delay (seconds)	24 hour AAWT vehicles	Average vehicles per hour	Mean Pedestrian Delay (seconds)				
32c	A12 (S)	42872	1786	15.5	43803	1825	16	0.5	Very Low	Medium	Minor adverse
33	A12 south of Woodbridge	40186	1674	14.0	39650	1652	14	0	Very Low	Very Low	Negligible
34a	A12 (N)	43285	1804	16.0	44251	1844	16	0	Very Low	Very Low	Negligible
34c	A12 (S)	49525	2064	20.5	48296	2012	20	-0.5	Very Low	Medium	Minor adverse
38b	A12 Woodbridge n/o B1079	42872	1786	15.5	43803	1825	16	0.5	Very Low	Very Low	Negligible
87	A12 south Eagle Way/ Anson Rd	48946	2039	20.5	49534	2064	20.5	0	Very Low	Very Low	Negligible
88	A12 south of Foxhall Road	39610	1650	13.5	40363	1682	14	0.5	Very Low	Very Low	Negligible

2.3 Amenity

Table 2.5: Amenity 2023 24hr AAWT Total Traffic Cumulative

Link Number	Link Name	2023 Reference Case 24hr AAWT total traffic	2023 Reference + Sizewell + Scottish Power 24hr AAWT total traffic (busiest)	% Change	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	7060	8026	14	Very Low	Low	Negligible
3	Lover's Lane (LEEIE)	3258	4962	52	Very Low	Very Low	Negligible
4b	Lover's Lane	3312	4791	45	Very Low	Very Low	Negligible
4c	B1122 (N)	6061	7940	31	Very Low	Medium	Minor adverse
9a	A1094 (W)	8735	9393	8	Very Low	Low	Negligible
9c	A1094 (E)	9972	10660	7	Very Low	Medium	Minor adverse
10	B1122 through Theberton	6054	7892	30	Very Low	Medium	Minor adverse
11	B1125 through Westleton	2732	3371	23	Very Low	High	Minor adverse
13b	B1122	4163	5391	30	Very Low	Low	Negligible
13c	A12 (middle)	15864	17242	9	Very Low	Low	Negligible
13d	A1120	4138	4663	13	Very Low	High	Minor adverse
13e	A12 (S)	12302	13393	9	Very Low	Medium	Minor adverse
17b	B1125	1849	2435	32	Very Low	High	Minor adverse
17c	A12 (S)	9194	9513	3	Very Low	Very Low	Negligible
19a	A1117 (N)	9693	9975	3	Very Low	High	Minor adverse
19d	A12 (S)	11904	11936	0	Very Low	High	Minor adverse
21b	A12 (north of B1119)	13051	14240	9	Very Low	Medium	Minor adverse
21c	A12 (middle)	15478	16701	8	Very Low	Medium	Minor adverse

Link Number	Link Name	2023 Reference Case 24hr AAWT total traffic	2023 Reference + Sizewell + Scottish Power 24hr AAWT total traffic (busiest)	% Change	Magnitude	Sensitivity	Effect Significance
21e	A12 (south of B1119)	14833	15705	6	Very Low	Medium	Minor adverse
22a	A12 (N)	15962	17344	9	Very Low	Very Low	Negligible
22b	A1094	8698	9632	11	Very Low	Low	Negligible
22c	A12 (S) (Farnham)	20962	22623	8	Very Low	Medium	Minor adverse
23	A12 Farnham Bend	20957	22619	8	Very Low	Medium	Minor adverse
24	A12 Stratford St Andrew (Low Road)	20317	21975	8	Very Low	Medium	Minor adverse
25	A12 Little Glemham	20317	21975	8	Very Low	Medium	Minor adverse
26	A12 Marlesford	20933	22585	8	Very Low	Medium	Minor adverse
27	A12 south of Wickham Market	27140	28620	5	Very Low	Medium	Minor adverse
32a	A12 (N)	27240	28698	5	Very Low	Very Low	Negligible
32c	A12 (S)	40926	41335	1	Very Low	Medium	Minor adverse
33	A12 south of Woodbridge	39683	39099	-1	Very Low	Very Low	Negligible
34a	A12 (N)	42967	43746	2	Very Low	Very Low	Negligible
34c	A12 (S)	46215	46369	0	Very Low	Medium	Minor adverse
38b	A12 Woodbridge n/o B1079	40926	41335	1	Very Low	Very Low	Negligible
39a	A1094 (west of B1069)	11468	12239	7	Very Low	Very Low	Negligible
39b	B1069 (north of A1094)	6533	7328	12	Very Low	Very Low	Negligible
53b	A12 (north of A144)	10027	10341	3	Very Low	Very Low	Negligible
58	A12 (north of SLR)	12242	13325	9	Very Low	Very Low	Negligible
59	A12 (south of SLR)	12242	13526	10	Very Low	Very Low	Negligible
64	B1122 north of SZC access	6054	7892	30	Very Low	Medium	Minor adverse

Link Number	Link Name	2023 Reference Case 24hr AAWT total traffic	2023 Reference + Sizewell + Scottish Power 24hr AAWT total traffic (busiest)	% Change	Magnitude	Sensitivity	Effect Significance
66	B1122 west of B1125	3507	4715	34	Very Low	Medium	Minor adverse
67	Main Site Access	0	787	787,000	High	Very low	Minor adverse
68	Darsham P&R	0	279	279,000	Medium	Very low	Minor adverse
69	Wickham Market P&R	0	223	223,000	Medium	Very Low	Minor adverse
70	A12 on-slip (west of WM P&R)	2075	2407	16	Very Low	Very Low	Negligible
73	B1078 south of B1116	9914	10031	1	Very Low	Medium	Minor adverse
74	B1122 (Middleton Moor)	4163	5367	29	Very Low	Medium	Minor adverse
75	Lover's Lane	3312	5011	51	Very Low	Very Low	Negligible
78	A12 (north of B1121)	14874	15798	6	Very Low	Medium	Minor adverse
82	B1438 Melton Hill	4728	5425	15	Very Low	High	Minor adverse
83	A145 west of A12	2900	3109	7	Very Low	High	Minor adverse
84	A12 south of B1126	8760	9298	6	Very Low	Very Low	Negligible
85	A12 south of A1095	11157	11738	5	Very Low	Very Low	Negligible
86	A12 south of B1387	9582	9908	3	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	48831	49019	0	Very Low	Very Low	Negligible
88	A12 south of Foxhall Road	38447	38563	0	Very Low	Very Low	Negligible
89	A1120 east of A140	14316	14619	2	Very Low	High	Minor adverse
90	A1120 Sibton (east of Mill Hill)	4279	4802	12	Very Low	High	Minor adverse
91	A1152 at Eyke	7556	7805	3	Very Low	High	Minor adverse

Table 2.6: Amenity 2023 24hr AAWT HDVs Cumulative

Link Number	Link Name	2023 Reference Case 24hr AAWT HDVs	2023 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT HDVs	% Change	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	99	740	649	High	Low	**Moderate adverse**
3	Lover's Lane (LEEIE)	85	1006	1084	High	Very Low	Minor adverse
4b	Lover's Lane	87	788	806	High	Very Low	Minor adverse
4c	B1122 (N)	212	913	331	High	Medium	**Major adverse**
9a	A1094 (W)	185	351	90	Very Low	Low	Negligible
9c	A1094 (E)	227	396	74	Very Low	Medium	Minor adverse
10	B1122 through Theberton	216	918	324	High	Medium	**Major adverse**
11	B1125 through Westleton	81	81	0	No change	High	Negligible
13b	B1122	177	903	410	High	Low	**Moderate adverse**
13c	A12 (middle)	848	1575	86	Very Low	Low	Negligible
13d	A1120	184	184	0	Very Low	High	Minor adverse
13e	A12 (S)	715	1440	102	Low	Medium	Minor
17b	B1125	55	55	0	No change	High	Negligible
17c	A12 (S)	616	813	32	Very Low	Very Low	Negligible
19a	A1117 (N)	110	244	123	Low	High	**Moderate adverse**
19d	A12 (S)	409	542	32	Very Low	High	Minor adverse
21b	A12 (north of B1119)	669	1537	130	Low	Medium	Minor adverse
21c	A12 (middle)	686	1554	126	Low	Medium	Minor adverse
21e	A12 (south of B1119)	712	1577	122	Low	Medium	Minor adverse
22a	A12 (N)	628	1520	142	Low	Very Low	Negligible
22b	A1094	181	469	160	Medium	Low	Minor adverse

Link Number	Link Name	2023 Reference Case 24hr AAWT HDVs	2023 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT HDVs	% Change	Magnitude	Sensitivity	Effect Significance
22c	A12 (S) (Farnham)	907	1971	117	Low	Medium	Minor adverse
23	A12 Farnham Bend	907	1977	118	Low	Medium	Minor adverse
24	A12 Stratford St Andrew (Low Road)	901	1973	119	Low	Medium	Minor adverse
25	A12 Little Glemham	901	1973	119	Low	Medium	Minor adverse
26	A12 Marlesford	908	1982	118	Low	Medium	Minor adverse
27	A12 south of Wickham Market	1176	2275	94	Very Low	Medium	Minor adverse
32a	A12 (N)	1180	2280	93	Very Low	Very Low	Negligible
32c	A12 (S)	2218	3307	49	Very Low	Medium	Minor adverse
33	A12 south of Woodbridge	1050	2109	101	Low	Very Low	Negligible
34a	A12 (N)	1180	2255	91	Very Low	Very Low	Negligible
34c	A12 (S)	2341	3417	46	Very Low	Medium	Minor adverse
38b	A12 Woodbridge n/o B1079	2218	3307	49	Very Low	Very Low	Negligible
39a	A1094 (west of B1069)	234	403	72	Very Low	Very Low	Negligible
39b	B1069 (north of A1094)	207	387	87	Very Low	Very Low	Negligible
53b	A12 (north of A144)	626	825	32	Very Low	Very Low	Negligible
58	A12 (north of SLR)	713	1438	102	Low	Very Low	Negligible
59	A12 (south of SLR)	713	1578	121	Low	Very Low	Negligible
64	B1122 north of SZC access	216	918	324	High	Medium	**Major Adverse**
66	B1122 west of B1125	165	867	424	High	Medium	**Major Adverse**
67	Main Site Access	0	0	0	Nil	Very low	Negligible
68	Darsham P&R	0	46	46,000	High	Very low	Minor adverse
69	Wickham Market P&R	0	42	42,000	High	Very Low	Minor adverse

Link Number	Link Name	2023 Reference Case 24hr AAWT HDVs	2023 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT HDVs	% Change	Magnitude	Sensitivity	Effect Significance
70	A12 on-slip (west of WM P&R)	93	132	42	Very Low	Very Low	Negligible
73	B1078 south of B1116	225	264	17	Very Low	Medium	Minor adverse
74	B1122 (Middleton Moor)	177	879	396	High	Medium	**Major adverse**
75	Lover's Lane	87	1008	1059	High	Very Low	Minor adverse
78	A12 (north of B1121)	712	1577	122	Low	Medium	Minor adverse
82	B1438 Melton Hill	489	487	0	No change	High	Negligible
83	A145 west of A12	233	300	28	Very Low	High	Negligible
84	A12 south of B1126	479	611	28	Very Low	Very Low	Negligible
85	A12 south of A1095	672	801	19	Very Low	Very Low	Negligible
86	A12 south of B1387	659	855	30	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	2152	3226	50	Very Low	Very Low	Negligible
88	A12 south of Foxhall Road	2279	3353	47	Very Low	Very Low	Negligible
89	A1120 east of A140	1991	1991	0	Very Low	High	Minor adverse
90	A1120 Sibton (east of Mill Hill)	194	194	0	Very Low	High	Minor adverse
91	A1152 at Eyke	298	296	0	No change	High	Negligible

Table 2.7: Amenity 2028 24hr AAWT Cumulative

Link Number	Link Name	2028 Reference Case 24 hr AAWT total traffic	2028 Reference + Sizewell + Scottish Power (busiest) 24 hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	7228	7637	6	Very Low	Low	Negligible
3	Lover's Lane (LEEIE)	3361	4157	24	Very Low	Very Low	Negligible
4a	B1122 (S)	3723	7075	90	Very Low	Medium	Minor adverse
4b	Lover's Lane	3415	4066	19	Very Low	Very Low	Negligible
4c	B1122 (N)	6201	10107	63	Very Low	Medium	Minor adverse
5	B1122 Abbey Road (existing level crossing)	4946	8345	69	Very Low	Medium	Minor adverse
6	B1119 Samundham Road	5213	5913	13	Very Low	High	Minor adverse
7	B1069 Coldfair Green	6840	8074	18	Very Low	Medium	Minor adverse
9a	A1094 (W)	9133	9601	5	Very Low	Low	Negligible
9b	Snape Road	5902	6562	11	Very Low	High	Minor adverse
9c	A1094 (E)	10291	11346	10	Very Low	Medium	Minor adverse
10	B1122 through Theberton	6183	638	-90	High	Medium	**Major beneficial**
10a	Theberton Bypass	0	8953	8,953,000	High	Medium	**Major adverse**
11	B1125 through Westleton	2823	3215	14	Very Low	High	Minor adverse
12b	B1119 (E)	5400	5968	11	Very Low	High	Minor adverse
13a	A12 (N)	15903	16879	6	Very Low	Low	Negligible
13b	B1122	4284	4663	9	Very Low	Low	Negligible
13d	A1120	4296	4937	15	Very Low	High	Minor adverse
16	A12 Wrentham	10224	11383	11	Very Low	High	Minor adverse
17a	A12 (N)	11345	13103	16	Very Low	Medium	Minor adverse

Link Number	Link Name	2028 Reference Case 24 hr AAWT total traffic	2028 Reference + Sizewell + Scottish Power (busiest) 24 hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
17b	B1125	1871	2127	14	Very Low	High	Minor adverse
17c	A12 (S)	9497	10990	16	Very Low	Very Low	Negligible
19a	A1117 (N)	9856	10307	5	Very Low	High	Minor adverse
19d	A12 (S)	12979	13473	4	Very Low	High	Minor adverse
21b	A12 (north of B1119)	13490	14536	8	Very Low	Medium	Negligible
21c	A12 (middle)	15969	16948	6	Very Low	Medium	Negligible
21e	A12 (south of B1119)	15555	16341	5	Very Low	Medium	Negligible
22a	A12 (N)	16746	18129	8	Very Low	Very Low	Negligible
22b	A1094	9117	9541	5	Very Low	Low	Negligible
22c	A12 (S) (Farnham)	21805	819	-96	High	Medium	**Major beneficial**
23	A12 Farnham Bend	21806	275	-99	High	Medium	**Major beneficial**
23a	A12 Two Village Bypass	0	22585	22,585,000	High	Medium	**Major adverse**
24	A12 Stratford St Andrew (Low Road)	21166	584	-97	High	Medium	**Major beneficial**
25	A12 Little Glemham	21166	22859	8	Very Low	Medium	Minor adverse
26	A12 Marlesford	21794	23491	8	Very Low	Medium	Minor adverse
27	A12 south of Wickham Market	27555	30174	10	Very Low	Medium	Minor adverse
29	B1078 onslip to A12	2143	2393	12	Very Low	Very Low	Negligible
32a	A12 (N)	27479	30005	9	Very Low	Very Low	Negligible
32c	A12 (S)	42872	43803	2	Very Low	Medium	Minor adverse
33	A12 south of Woodbridge	40186	39650	-1	Very Low	Very Low	Negligible
34a	A12 (N)	43285	44251	2	Very Low	Very Low	Negligible

Link Number	Link Name	2028 Reference Case 24 hr AAWT total traffic	2028 Reference + Sizewell + Scottish Power (busiest) 24 hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
34b	Main Road (E)	2854	5506	93	Very Low	High	Minor adverse
34c	A12 (S)	49525	48296	-2	Very Low	Medium	Minor adverse
38b	A12 Woodbridge n/o B1079	42872	43803	2	Very Low	Very Low	Negligible
39a	A1094 (west of B1069)	11922	13020	9	Very Low	Very Low	Negligible
39b	B1069 (north of A1094)	6792	8041	18	Very Low	Very Low	Negligible
41	B1125 through Middleton	2189	2964	35	Very Low	Low	Negligible
53a	A144 (west of A12)	4621	5289	14	Very Low	High	Minor adverse
53b	A12 (north of A144)	10187	11754	15	Very Low	Very Low	Negligible
53c	A12 (south of A144)	14626	16971	16	Very Low	Very Low	Negligible
57	Sizewell Link Road (east of A12)	0	2618	2,618,000	High	Medium	**Major adverse**
59	A12 (south of SLR)	12649	14218	12	Very Low	Very Low	Negligible
63	Theberton Bypass (west of B1125)	0	6898	6,898,000	High	Medium	**Major adverse**
64	B1122 north of SZC access	6183	9314	51	Very Low	Medium	Minor adverse
65	Middleton Moor Link	0	4431	4,431,000	High	Medium	**Major adverse**
66	B1122 west of B1125	3593	122	-97	High	Medium	**Major beneficial**
67	Main Site Access	0	5732	5,732,000	High	Very low	Minor adverse
68	Darsham P&R	0	2500	2,500,000	High	Very low	Minor adverse
69	Wickham Market P&R	0	2645	2,645,000	High	Very Low	Minor adverse
70	A12 on-slip (west of WM P&R)	2143	5035	135	Low	Very Low	Negligible
73	B1078 south of B1116	10158	12016	18	Very Low	Medium	Minor adverse
74	B1122 (Middleton Moor)	4284	370	-91	High	Medium	**Major beneficial**

Link Number	Link Name	2028 Reference Case 24 hr AAWT total traffic	2028 Reference + Sizewell + Scottish Power (busiest) 24 hr AAWT total traffic	% Change	Magnitude	Sensitivity	Effect Significance
75	Lover's Lane	3415	4206	23	Very Low	Very Low	Negligible
76	B1069 (north of Aldringham Lane)	5732	6912	21	Very Low	Medium	Minor adverse
78	A12 (north of B1121)	15970	16698	5	Very Low	Medium	Minor adverse
82	B1438 Melton Hill	3862	4996	29	Very Low	High	Minor adverse
83	A145 west of A12	2909	3369	16	Very Low	High	Minor adverse
84	A12 south of B1126	9171	10367	13	Very Low	Very Low	Negligible
85	A12 south of A1095	11662	12977	11	Very Low	Very Low	Negligible
86	A12 south of B1387	9921	11377	15	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	48946	49534	1	Very Low	Very Low	Negligible
88	A12 south of Foxhall Road	39610	40363	2	Very Low	Very Low	Negligible
89	A1120 east of A140	14484	14855	3	Very Low	High	Minor adverse
90	A1120 Sibton (east of Mill Hill)	4444	5056	14	Very Low	High	Minor adverse
91	A1152 at Eyke	7735	7932	3	Very Low	High	Minor adverse

Table 2.8: Amenity 2028 24hr AAWT HDVs Cumulative

Link Number	Link Name	2028 Reference 24hr AAWT HDVs	2028 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT HDVs		% Change	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	99	200	101	103	Low	Low	**Minor adverse**
3	Lovers Lane ("Big Field")	85	356	271	318	High	Very Low	Negligible
4a	B1122 (S)	217	429	212	98	Very Low	Medium	Negligible
4b	Lovers Lane	87	213	126	145	Low	Very Low	Negligible
4c	B1122 (N)	214	556	343	160	Medium	Medium	**Moderate adverse**
5	B1122 Abbey Road (existing level crossing)	142	359	216	152	Medium	Medium	**Moderate adverse**
6	B1119 Samundham Road	62	86	24	39	Very Low	High	Negligible
7	B1069 Coldfair Green	196	386	190	97	Very Low	Medium	Negligible
9a	A1094 (W)	185	351	167	90	Very Low	Low	Negligible
9b	Snape Road	178	178	0	0	Very Low	High	Negligible
9c	A1094 (E)	229	392	162	71	Very Low	Medium	Negligible
10	B1122 through Theberton	218	0	-218	-100	Low	Medium	**Minor beneficial**
10A	Theberton Bypass	0	1828	1828	1827480	High	Medium	**Major adverse**
11	B1125 through Westleton	81	81	0	0	Very Low	High	Negligible
12b	B1119 (E)	70	86	16	22	Very Low	High	Negligible
13a	A12 (N)	905	1340	434	48	Very Low	Low	Negligible
13b	B1122	177	537	360	203	High	Low	**Moderate adverse**
13d	A1120	188	192	4	2	Very Low	High	Negligible
16	A12 Wrentham	440	620	180	41	Very Low	High	Negligible
17a	A12 (N)	673	914	240	36	Very Low	Medium	Negligible

Link Number	Link Name	2028 Reference 24hr AAWT HDVs	2028 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT HDVs		% Change	Magnitude	Sensitivity	Effect Significance
17b	B1125	55	55	0	0	Very Low	High	Negligible
17c	A12 (S)	630	871	240	38	Very Low	Very Low	Negligible
19a	A1117 (N)	26	205	179	683	High	High	**Major adverse**
19d	A12 (S)	528	704	176	33	Very Low	High	Negligible
21b	A12 (north of B1119)	681	1886	1205	177	Medium	Medium	**Moderate adverse**
21c	A12 (middle)	688	1893	1205	175	Medium	Medium	**Moderate adverse**
21e	A12 (south of B1119)	718	1920	1203	168	Medium	Medium	**Moderate adverse**
22a	A12 (N)	635	1837	1203	189	Medium	Very Low	Negligible
22b	A1094	187	351	164	88	Very Low	Low	Negligible
22c	A12 (S) (Farnham)	917	58	-859	-94	Very Low	Medium	Negligible
23	A12 Farnham Bend	919	11	-908	-99	Low	Medium	**Minor beneficial**
23A	A12 Two Village Bypass	0	2215	2215	2214526	High	Medium	**Major adverse**
24	A12 Stratford St Andrew (Low Road)	911	44	-867	-95	Low	Medium	**Minor beneficial**
25	A12 Little Glemham	911	2236	1325	145	Low	Medium	**Minor adverse**
26	A12 Marlesford	922	2247	1325	144	Low	Medium	**Minor adverse**
27	A12 south of Wickham Market	1180	2320	1140	97	Very Low	Medium	Negligible
29	B1078 onslip to A12	95	186	91	96	Very Low	Very Low	Negligible
32a	A12 (N)	1188	2328	1140	96	Very Low	Very Low	Negligible
32c	A12 (S)	2240	3389	1148	51	Very Low	Medium	Negligible
33	A12 south of Woodbridge	1034	2159	1126	109	Low	Very Low	Negligible
34a	A12 (N)	1190	2317	1127	95	Very Low	Very Low	Negligible

Link Number	Link Name	2028 Reference 24hr AAWT HDVs	2028 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT HDVs		% Change	Magnitude	Sensitivity	Effect Significance
34b	Main Road (E)	127	127	0	0	Very Low	High	Negligible
34c	A12 (S)	2335	3422	1087	47	Very Low	Medium	Negligible
38b	A12 Woodbridge n/o B1079	2240	3389	1148	51	Very Low	Very Low	Negligible
39a	A1094 (west of B1069)	236	399	162	69	Very Low	Very Low	Negligible
39b	B1069 (north of A1094)	209	395	186	89	Very Low	Very Low	Negligible
41	B1125 through Middleton	42	42	0	0	Very Low	Low	Negligible
53a	A144 (west of A12)	190	190	0	0	Very Low	High	Negligible
53b	A12 (north of A144)	634	876	242	38	Very Low	Very Low	Negligible
53c	A12 (south of A144)	846	1082	236	28	Very Low	Very Low	Negligible
57	Sizewell Link Road (east of A12)	0	1320	1320	1319625	High	Medium	**Major adverse**
59	A12 (south of SLR)	721	1926	1205	167	Medium	Very Low	Negligible
63	Theberton Bypass (west of B1125)	0	1850	1850	1850083	High	Medium	**Major adverse**
64	B1122 north of SZC access	218	1830	1611	738	High	Medium	**Major adverse**
65	Middleton Moor Link	0	561	561	561283	High	Medium	**Major adverse**
66	B1122 west of B1125	169	0	-169	-100	Low	Medium	**Minor beneficial**
67	Main Site Access	0	1740	1740	1740338	High	Very Low	Negligible
68	Darsham P&R	0	198	198	197900	High	Very Low	Negligible
69	Wickham Market P&R	0	198	198	197900	High	Very Low	Negligible
70	A12 on-slip (west of WM P&R)	95	186	91	96	Very Low	Very Low	Negligible
73	B1078 south of B1116	225	319	94	42	Very Low	Medium	Negligible
74	B1122 (Middleton Moor)	177	4	-173	-98	Low	Medium	**Minor adverse**

Link Number	Link Name	2028 Reference 24hr AAWT HDVs	2028 Reference + Sizewell + Scottish Power (busiest) 24hr AAWT HDVs		% Change	Magnitude	Sensitivity	Effect Significance
75	Lovers Lane	87	353	266	306	High	Very Low	Negligible
76	B1069 (north of Aldringham Lane)	169	361	192	114	Low	Medium	**Minor adverse**
78	A12 (north of B1121)	718	1920	1203	168	Medium	Medium	**Moderate adverse**
82	B1438 Melton Hill	491	478	-13	-3	Low	High	**Moderate beneficial**
83	A145 west of A12	237	302	64	27	Very Low	High	Negligible
84	A12 south of B1126	485	661	176	36	Very Low	Very Low	Negligible
85	A12 south of A1095	682	860	178	26	Very Low	Very Low	Negligible
86	A12 south of B1387	673	913	240	36	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	2148	3233	1085	51	Very Low	Very Low	Negligible
88	A12 south of Foxhall Road	2305	3349	1044	45	Very Low	Very Low	Negligible
89	A1120 east of A140	2016	2018	2	0	Very Low	High	Negligible
90	A1120 Sibton (east of Mill Hill)	196	200	4	2	Very Low	High	Negligible
91	A1152 at Eyke	298	296	-2	-1	Low	High	**Moderate beneficial**

2.4 Fear and Intimidation

Table 2.9: Fear and Intimidation 2023 18 hr AAWT Cumulative

Link Number	Link Name	2023 Reference Case					2023 Reference + Sizewell + Scottish Power (busiest)				
		18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance	18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	6739	374	Very Low	Low	Negligible	7063	392	Very Low	Low	Negligible
3	Lover's Lane (LEEIE)	3086	171	Very Low	Very Low	Negligible	3869	215	Very Low	Very Low	Negligible
4b	Lover's Lane	3137	174	Very Low	Very Low	Negligible	3915	217	Very Low	Very Low	Negligible
4c	B1122 (N)	5708	317	Very Low	Medium	Minor adverse	6881	382	Very Low	Medium	Minor adverse
9a	A1094 (W)	8359	464	Very Low	Low	Negligible	8852	492	Very Low	Low	Negligible
9c	A1094 (E)	9521	529	Very Low	Medium	Minor adverse	10040	558	Very Low	Medium	Minor adverse
10	B1122 through Theberton	5696	316	Very Low	Medium	Minor adverse	6831	379	Very Low	Medium	Minor adverse
11	B1125 through Westleton	2590	144	Very Low	High	Minor adverse	3228	179	Very Low	High	Minor adverse
13b	B1122	3888	216	Very Low	Low	Negligible	4390	244	Very Low	Low	Negligible
13c	A12 (middle)	14702	817	Low	Low	Minor adverse	15355	853	Low	Low	Minor adverse
13d	A1120	3867	215	Very Low	High	Minor adverse	4390	244	Very Low	High	Minor adverse
13e	A12 (S)	11348	630	Low	Medium	Minor adverse	11719	651	Low	Medium	Minor adverse
17b	B1125	1752	97	Very Low	High	Minor adverse	2337	130	Very Low	High	Minor adverse
17c	A12 (S)	8402	467	Very Low	Very Low	Negligible	8528	474	Very Low	Very Low	Negligible
19a	A1117 (N)	9386	521	Very Low	High	Minor adverse	9534	530	Very Low	High	Minor adverse
19d	A12 (S)	11257	625	Low	High	**Moderate Adverse**	11164	620	Low	High	**Moderate Adverse**
21b	A12 (north of B1119)	12124	674	Low	Medium	Minor adverse	12451	692	Low	Medium	Minor adverse

Link Number	Link Name	2023 Reference Case					2023 Reference + Sizewell + Scottish Power (busiest)				
		18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance	18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance
21c	A12 (middle)	14481	805	Low	Medium	Minor adverse	14841	825	Low	Medium	Minor adverse
21e	A12 (south of B1119)	13831	768	Low	Medium	Minor adverse	13848	769	Low	Medium	Minor adverse
22a	A12 (N)	15017	834	Low	Very Low	Negligible	15514	862	Low	Very Low	Negligible
22b	A1094	8328	463	Very Low	Low	Negligible	8974	499	Very Low	Low	Negligible
22c	A12 (S) (Farnham)	19629	1090	Low	Medium	Minor adverse	20235	1124	Low	Medium	Minor adverse
23	A12 Farnham Bend	19624	1090	Low	Medium	Minor adverse	20226	1124	Low	Medium	Minor adverse
24	A12 Stratford St Andrew (Low Road)	19003	1056	Low	Medium	Minor adverse	19599	1089	Low	Medium	Minor adverse
25	A12 Little Glemham	19003	1056	Low	Medium	Minor adverse	19599	1089	Low	Medium	Minor adverse
26	A12 Marlesford	19599	1089	Low	Medium	Minor adverse	20188	1122	Low	Medium	Minor adverse
27	A12 south of Wickham Market	25420	1412	Medium	Medium	**Moderate Adverse**	25811	1434	Medium	Medium	**Moderate Adverse**
32a	A12 (N)	25514	1417	Medium	Very Low	Minor adverse	25883	1438	Medium	Very Low	Minor adverse
32c	A12 (S)	37902	2106	High	Medium	**Major Adverse**	37254	2070	High	Medium	**Major Adverse**
33	A12 south of Woodbridge	37830	2102	High	Very Low	Minor adverse	36237	2013	High	Very Low	Minor adverse
34a	A12 (N)	40920	2273	High	Very Low	Minor adverse	40644	2258	High	Very Low	Minor adverse
34c	A12 (S)	42968	2387	High	Medium	**Major Adverse**	42076	2338	High	Medium	**Major Adverse**
38b	A12 Woodbridge n/o B1079	37902	2106	High	Very Low	Minor adverse	37254	2070	High	Very Low	Minor adverse
39a	A1094 (west of B1069)	10979	610	Low	Very Low	Negligible	11582	643	Low	Very Low	Negligible
39b	B1069 (north of A1094)	6172	343	Very Low	Very Low	Negligible	6788	377	Very Low	Very Low	Negligible
53b	A12 (north of A144)	9208	512	Very Low	Very Low	Negligible	9326	518	Very Low	Very Low	Negligible
58	A12 (north of SLR)	11292	627	Low	Very Low	Negligible	11654	647	Low	Very Low	Negligible

Link Number	Link Name	2023 Reference Case					2023 Reference + Sizewell + Scottish Power (busiest)				
		18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance	18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance
59	A12 (south of SLR)	11292	627	Low	Very Low	Negligible	11715	651	Low	Very Low	Negligible
64	B1122 north of SZC access	5696	316	Very Low	Medium	Minor adverse	6831	379	Very Low	Medium	Minor adverse
66	B1122 west of B1125	3258	181	Very Low	Medium	Minor adverse	3762	209	Very Low	Medium	Minor adverse
67	Main Site Access	0	0	Nil	Medium	Negligible	783	44	Very Low	Very low	Negligible
68	Darsham P&R	0	0	Nil	Low	Negligible	233	13	Very Low	Very low	Negligible
69	Wickham Market P&R	0	0	Nil	Very Low	Negligible	181	10	Very Low	Very Low	Negligible
70	A12 on-slip (west of WM P&R)	1941	108	Very Low	Very Low	Negligible	2233	124	Very Low	Very Low	Negligible
73	B1078 south of B1116	9489	527	Very Low	Medium	Minor adverse	9569	532	Very Low	Medium	Minor adverse
74	B1122 (Middleton Moor)	3888	216	Very Low	Medium	Minor adverse	4390	244	Very Low	Medium	Minor adverse
75	Lover's Lane	3137	174	Very Low	Very Low	Negligible	3915	217	Very Low	Very Low	Negligible
78	A12 (north of B1121)	13871	771	Very Low	Medium	Minor adverse	13939	774	Low	Medium	Minor adverse
82	B1438 Melton Hill	4151	231	Very Low	High	Minor adverse	4836	269	Very Low	High	Minor adverse
83	A145 west of A12	2610	145	Very Low	High	Minor adverse	2754	153	Very Low	High	Minor adverse
84	A12 south of B1126	8107	450	Very Low	Very Low	Negligible	8517	473	Very Low	Very Low	Negligible
85	A12 south of A1095	10265	570	Very Low	Very Low	Negligible	10722	596	Very Low	Very Low	Negligible
86	A12 south of B1387	8739	486	Very Low	Very Low	Negligible	8873	493	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	45715	2540	High	Very Low	Minor adverse	44859	2492	High	Very Low	Minor adverse
88	A12 south of Foxhall Road	35422	1968	High	Very Low	Minor adverse	34494	1916	High	Very Low	Minor adverse
89	A1120 east of A140	12071	671	Low	High	**Moderate Adverse**	12370	687	Low	High	**Moderate Adverse**
90	A1120 Sibton (east of Mill Hill)	3995	222	Very Low	High	Minor adverse	4516	251	Very Low	High	Minor adverse

Link Number	Link Name	2023 Reference Case					2023 Reference + Sizewell + Scottish Power (busiest)				
		18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance	18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance
91	A1152 at Eyke	7107	395	Very Low	High	Minor adverse	7353	409	Very Low	High	Minor adverse

Table 2.10: Fear and Intimidation 2023 18 hr AAWT HDVs Cumulative

Link Number	Link Name	2023 Reference Case				2023 Reference + Sizewell + Scottish Power (busiest)			
		18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance	18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	97	Very Low	Low	Negligible	738	Very Low	Low	Negligible
3	Lover's Lane (LEEIE)	83	Very Low	Very Low	Negligible	1005	Low	Very Low	Negligible
4b	Lover's Lane	85	Very Low	Very Low	Negligible	787	Very Low	Very Low	Negligible
4c	B1122 (N)	207	Very Low	Medium	Minor adverse	909	Very Low	Medium	Minor adverse
9a	A1094 (W)	181	Very Low	Low	Negligible	348	Very Low	Low	Negligible
9c	A1094 (E)	223	Very Low	Medium	Minor adverse	392	Very Low	Medium	Minor adverse
10	B1122 through Theberton	212	Very Low	Medium	Minor adverse	913	Very Low	Medium	Minor adverse
11	B1125 through Westleton	80	Very Low	High	Minor adverse	80	Very Low	High	Minor adverse
13b	B1122	173	Very Low	Low	Negligible	899	Very Low	Low	Negligible
13c	A12 (middle)	830	Very Low	Low	Negligible	1558	Low	Low	Minor adverse
13d	A1120	180	Very Low	High	Minor adverse	180	Very Low	High	Minor adverse
13e	A12 (S)	700	Very Low	Medium	Minor adverse	1426	Low	Medium	Minor adverse
17b	B1125	54	Very Low	High	Minor adverse	54	Very Low	High	Minor adverse
17c	A12 (S)	603	Very Low	Very Low	Negligible	800	Very Low	Very Low	Negligible
19a	A1117 (N)	107	Very Low	High	Minor adverse	242	Very Low	High	Minor adverse
19d	A12 (S)	401	Very Low	High	Minor adverse	533	Very Low	High	Minor adverse
21b	A12 (north of B1119)	655	Very Low	Medium	Minor adverse	1523	Low	Medium	Minor adverse
21c	A12 (middle)	672	Very Low	Medium	Minor adverse	1540	Low	Medium	Minor adverse
21e	A12 (south of B1119)	697	Very Low	Medium	Minor adverse	1563	Low	Medium	Minor adverse
22a	A12 (N)	616	Very Low	Very Low	Negligible	1508	Low	Very Low	Negligible
22b	A1094	177	Very Low	Low	Negligible	466	Very Low	Low	Negligible

Link Number	Link Name	2023 Reference Case				2023 Reference + Sizewell + Scottish Power (busiest)			
		18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance	18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance
22c	A12 (S) (Farnham)	888	Very Low	Medium	Minor adverse	1953	Low	Medium	Minor adverse
23	A12 Farnham Bend	888	Very Low	Medium	Minor adverse	1959	Low	Medium	Minor adverse
24	A12 Stratford St Andrew (Low Road)	882	Very Low	Medium	Minor adverse	1955	Low	Medium	Minor adverse
25	A12 Little Glemham	882	Very Low	Medium	Minor adverse	1955	Low	Medium	Minor adverse
26	A12 Marlesford	889	Very Low	Medium	Minor adverse	1963	Low	Medium	Minor adverse
27	A12 south of Wickham Market	1151	Low	Medium	Minor adverse	2251	Medium	Medium	**Moderate Adverse**
32a	A12 (N)	1155	Low	Very Low	Negligible	2256	Medium	Very Low	Minor adverse
32c	A12 (S)	2172	Medium	Medium	**Moderate Adverse**	3262	High	Medium	**Major Adverse**
33	A12 south of Woodbridge	1029	Low	Very Low	Negligible	2089	High	Very Low	Minor adverse
34a	A12 (N)	1157	Low	Very Low	Negligible	2233	High	Very Low	Minor adverse
34c	A12 (S)	2294	Medium	Medium	**Moderate Adverse**	3370	High	Medium	**Major Adverse**
38b	A12 Woodbridge n/o B1079	2172	Medium	Very Low	Minor adverse	3262	High	Very Low	Minor adverse
39a	A1094 (west of B1069)	230	Very Low	Very Low	Negligible	399	Very Low	Very Low	Negligible
39b	B1069 (north of A1094)	203	Very Low	Very Low	Negligible	383	Very Low	Very Low	Negligible
53b	A12 (north of A144)	613	Very Low	Very Low	Negligible	812	Very Low	Very Low	Negligible
58	A12 (north of SLR)	698	Very Low	Very Low	Negligible	1424	Low	Very Low	Negligible
59	A12 (south of SLR)	698	Very Low	Very Low	Negligible	1564	Low	Very Low	Negligible
64	B1122 north of SZC access	212	Very Low	Medium	Minor adverse	913	Very Low	Medium	Minor adverse
66	B1122 west of B1125	162	Very Low	Medium	Minor adverse	863	Very Low	Medium	Minor adverse
67	Main Site Access	0	Nil	Very low	Negligible	0	Very Low	Very low	Negligible
68	Darsham P&R	0	Nil	Very low	Negligible	46	Very Low	Very low	Negligible
69	Wickham Market P&R	0	Nil	Very Low	Negligible	42	Very Low	Very Low	Negligible

Link Number	Link Name	2023 Reference Case				2023 Reference + Sizewell + Scottish Power (busiest)			
		18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance	18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance
70	A12 on-slip (west of WM P&R)	91	Very Low	Very Low	Negligible	130	Very Low	Very Low	Negligible
73	B1078 south of B1116	220	Very Low	Medium	Minor adverse	259	Very Low	Medium	Minor adverse
74	B1122 (Middleton Moor)	173	Very Low	Medium	Minor adverse	875	Very Low	Medium	Minor adverse
75	Lover's Lane	85	Very Low	Very Low	Negligible	1007	Low	Very Low	Negligible
78	A12 (north of B1121)	697	Very Low	Medium	Minor adverse	1563	Low	Medium	Minor adverse
82	B1438 Melton Hill	480	Very Low	High	Minor adverse	478	Very Low	High	Minor adverse
83	A145 west of A12	228	Very Low	High	Minor adverse	295	Very Low	High	Minor adverse
84	A12 south of B1126	469	Very Low	Very Low	Negligible	601	Very Low	Very Low	Negligible
85	A12 south of A1095	658	Very Low	Very Low	Negligible	787	Very Low	Very Low	Negligible
86	A12 south of B1387	645	Very Low	Very Low	Negligible	842	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd roundabout	2108	Medium	Very Low	Minor adverse	3182	High	Very Low	Minor adverse
88	A12 south of Foxhall Road	2232	Medium	Very Low	Minor adverse	3306	High	Very Low	Minor adverse
89	A1120 east of A140	1952	Low	High	**Moderate Adverse**	1952	Low	High	**Moderate Adverse**
90	A1120 Sibton (east of Mill Hill)	190	Very Low	High	Minor adverse	190	Very Low	High	Minor adverse
91	A1152 at Eyke	293	Very Low	High	Minor adverse	291	Very Low	High	Minor adverse

Table 2.11: Fear and Intimidation 2028 18 hr AAWT Cumulative

Link No.	Link Name	2028 Reference Case					2028 Reference + Sizewell + Scottish Power (busiest)				
		18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance	18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	6904	384	Very Low	Low	Negligible	7201	400	Very Low	Low	Negligible
3	Lover's Lane (LEEIE)	3187	177	Very Low	Very Low	Negligible	3682	205	Very Low	Very Low	Negligible
4a	B1122 (S)	3435	191	Very Low	Medium	Minor adverse	6311	351	Very Low	Medium	Minor adverse
4b	Lover's Lane	3237	180	Very Low	Very Low	Negligible	3732	207	Very Low	Very Low	Negligible
4c	B1122 (N)	5842	325	Very Low	Medium	Minor adverse	9121	507	Very Low	Medium	Minor adverse
5	B1122 Abbey Road (existing level crossing)	4705	261	Very Low	Medium	Minor adverse	7618	423	Very Low	Medium	Minor adverse
6	B1119 Samundham Road	5037	280	Very Low	High	Minor adverse	5662	315	Very Low	High	Minor adverse
7	B1069 Coldfair Green	6484	360	Very Low	Medium	Minor adverse	7442	413	Very Low	Medium	Minor adverse
9a	A1094 (W)	8750	486	Very Low	Low	Negligible	9033	502	Very Low	Low	Negligible
9b	Snape Road	5597	311	Very Low	High	Minor adverse	6195	344	Very Low	High	Minor adverse
9c	A1094 (E)	9831	546	Very Low	Medium	Minor adverse	10647	592	Very Low	Medium	Minor adverse
10	B1122 through Theberton	5821	323	Very Low	Medium	Negligible	618	34	Very Low	Medium	Negligible
10a	Theberton Bypass	0	0	Nil	Medium	Negligible	6898	383	Very Low	Medium	Minor adverse
11	B1125 through Westleton	2679	149	Very Low	High	Minor adverse	3043	169	Very Low	High	Minor adverse
12b	B1119 (E)	5212	290	Very Low	High	Minor adverse	5717	318	Very Low	High	Minor adverse
13a	A12 (N)	14680	816	Low	Low	Minor adverse	15150	842	Low	Low	Minor adverse
13b	B1122	4007	223	Very Low	Low	Negligible	4011	223	Very Low	Low	Negligible
13d	A1120	4018	223	Very Low	High	Minor adverse	4614	256	Very Low	High	Minor adverse
16	A12 Wrentham	9579	532	Very Low	High	Minor adverse	10463	581	Very Low	High	Minor adverse
17a	A12 (N)	10447	580	Very Low	Medium	Minor adverse	11818	657	Low	Medium	Minor adverse

Link No.	Link Name	2028 Reference Case					2028 Reference + Sizewell + Scottish Power (busiest)				
		18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance	18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance
17b	B1125	1774	99	Very Low	High	Minor adverse	2019	112	Very Low	High	Minor adverse
17c	A12 (S)	8684	482	Very Low	Very Low	Negligible	9801	545	Very Low	Very Low	Negligible
19a	A1117 (N)	9627	535	Very Low	High	Minor adverse	9871	548	Very Low	High	Minor adverse
19d	A12 (S)	12193	677	Low	High	**Moderate Adverse**	12472	693	Low	High	**Moderate Adverse**
21b	A12 (north of B1119)	12543	697	Low	Medium	Minor adverse	12366	687	Low	Medium	Minor adverse
21c	A12 (middle)	14960	831	Low	Medium	Minor adverse	14720	818	Low	Medium	Minor adverse
21e	A12 (south of B1119)	14531	807	Low	Medium	Minor adverse	14116	784	Low	Medium	Minor adverse
22a	A12 (N)	15780	877	Low	Very Low	Negligible	15930	885	Low	Very Low	Negligible
22b	A1094	8732	485	Very Low	Low	Negligible	8978	499	Very Low	Low	Negligible
22c	A12 (S) (Farnham)	20444	1136	Low	Medium	Minor adverse	744	41	Very Low	Medium	Negligible
23	A12 Farnham Bend	20443	1136	Low	Medium	Minor adverse	258	14	Very Low	Medium	Negligible
23a	A12 Two Village Bypass	0	0	Nil	Medium	Negligible	19905	1106	Low	Medium	Minor adverse
24	A12 Stratford St Andrew (Low Road)	19824	1101	Low	Medium	Minor adverse	527	29	Very Low	Medium	Negligible
25	A12 Little Glemham	19824	1101	Low	Medium	Minor adverse	20150	1119	Low	Medium	Minor adverse
26	A12 Marlesford	20429	1135	Low	Medium	Minor adverse	20758	1153	Low	Medium	Minor adverse
27	A12 south of Wickham Market	25822	1435	Medium	Medium	**Moderate Adverse**	27135	1508	Medium	Medium	**Moderate Adverse**
29	B1078 onslip to A12	2005	111	Very Low	Very Low	Negligible	2156	120	Very Low	Very Low	Negligible
32a	A12 (N)	25739	1430	Medium	Very Low	Minor adverse	26967	1498	Medium	Very Low	Minor adverse
32c	A12 (S)	39786	2210	High	Medium	**Major adverse**	39445	2191	High	Medium	**Major adverse**
33	A12 south of Woodbridge	38339	2130	High	Very Low	Minor adverse	36602	2033	High	Very Low	Minor adverse
34a	A12 (N)	41221	2290	High	Very Low	Minor adverse	40959	2275	High	Very Low	Minor adverse

Link No.	Link Name	2028 Reference Case					2028 Reference + Sizewell + Scottish Power (busiest)				
		18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance	18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance
34b	Main Road (E)	2671	148	Very Low	High	Minor adverse	5267	293	Very Low	High	Minor adverse
34c	A12 (S)	46216	2568	High	Medium	**Major adverse**	43876	2438	High	Medium	**Major adverse**
38b	A12 Woodbridge n/o B1079	39786	2210	High	Very Low	Minor adverse	39445	2191	High	Very Low	Minor adverse
39a	A1094 (west of B1069)	11422	635	Low	Very Low	Negligible	12278	682	Low	Very Low	Negligible
39b	B1069 (north of A1094)	6424	357	Very Low	Very Low	Negligible	7402	411	Very Low	Very Low	Negligible
41	B1125 through Middleton	2098	117	Very Low	Low	Negligible	2836	158	Very Low	Low	Negligible
53a	A144 (west of A12)	4333	241	Very Low	High	Minor adverse	4935	274	Very Low	High	Minor adverse
53b	A12 (north of A144)	9357	520	Very Low	Very Low	Negligible	10539	585	Very Low	Very Low	Negligible
53c	A12 (south of A144)	13490	749	Low	Very Low	Negligible	15388	855	Low	Very Low	Negligible
57	Sizewell Link Road (east of A12)	0	0	Very Low	Medium	Minor adverse	1245	69	Very Low	Medium	Minor adverse
59	A12 (south of SLR)	11682	649	Low	Very Low	Negligible	11998	667	Low	Very Low	Negligible
63	Theberton Bypass (west of B1125)	0	0	Nil	Medium	Negligible	4888	272	Very Low	Medium	Minor adverse
64	B1122 north of SZC access	5821	323	Very Low	Medium	Minor adverse	7242	402	Very Low	Medium	Minor adverse
65	Middleton Moor Link	0	0	Nil	Medium	Negligible	3761	209	Very Low	Medium	Minor adverse
66	B1122 west of B1125	3338	185	Very Low	Medium	Negligible	115	6	Very Low	Medium	Negligible
67	Main Site Access	0	0	Nil	Medium	Negligible	3753	208	Very Low	Very low	Negligible
68	Darsham P&R	0	0	Nil	Low	Negligible	1893	105	Very Low	Very low	Negligible
69	Wickham Market P&R	0	0	Nil	Very Low	Negligible	1988	110	Very Low	Very Low	Negligible
70	A12 on-slip (west of WM P&R)	2005	111	Very Low	Very Low	Negligible	4556	253	Very Low	Very Low	Negligible
73	B1078 south of B1116	9728	540	Very Low	Medium	Minor adverse	11307	628	Low	Medium	Minor adverse
74	B1122 (Middleton Moor)	4007	223	Very Low	Medium	Negligible	358	20	Very Low	Medium	Negligible

Link No.	Link Name	2028 Reference Case					2028 Reference + Sizewell + Scottish Power (busiest)				
		18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance	18hr AAWT veh	Ave veh per hour	Magnitude	Sensitivity	Effect Significance
75	Lover's Lane	3237	180	Very Low	Very Low	Negligible	3732	207	Very Low	Very Low	Negligible
76	B1069 (north of Aldringham Lane)	5425	301	Very Low	Medium	Minor adverse	6331	352	Very Low	Medium	Minor adverse
78	A12 (north of B1121)	14938	830	Low	Medium	Minor adverse	14467	804	Low	Medium	Minor adverse
82	B1438 Melton Hill	3301	183	Very Low	High	Minor adverse	4424	246	Very Low	High	Minor adverse
83	A145 west of A12	2614	145	Very Low	High	Minor adverse	2972	165	Very Low	High	Minor adverse
84	A12 south of B1126	8504	472	Very Low	Very Low	Negligible	9426	524	Very Low	Very Low	Negligible
85	A12 south of A1095	10750	597	Very Low	Very Low	Negligible	11777	654	Low	Very Low	Negligible
86	A12 south of B1387	9057	503	Very Low	Very Low	Negligible	10137	563	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd	45832	2546	High	Very Low	Minor adverse	45273	2515	High	Very Low	Minor adverse
88	A12 south of Foxhall Road	36535	2030	High	Very Low	Minor adverse	36187	2010	High	Very Low	Minor adverse
89	A1120 east of A140	12212	678	Low	High	**Moderate adverse**	12569	698	Low	High	**Moderate adverse**
90	A1120 Sibton (east of Mill Hill)	4154	231	Very Low	High	Minor adverse	4726	263	Very Low	High	Minor adverse
91	A1152 at Eyke	7282	405	Very Low	High	Minor adverse	7462	415	Very Low	High	Minor adverse

Table 2.12: Fear and Intimidation 2028 18 hr AAWT HDVs Cumulative

Link Number	Link Name	2028 Reference Case				2028 Reference + Sizewell + Scottish Power (busiest)			
		18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance	18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance
1	Sizewell Gap	97	Very Low	Low	Negligible	198	Very Low	Low	Negligible
3	Lover's Lane (LEEIE)	83	Very Low	Very Low	Negligible	354	Very Low	Very Low	Negligible
4a	B1122 (S)	212	Very Low	Medium	Minor adverse	407	Very Low	Medium	Minor adverse
4b	Lover's Lane	85	Very Low	Very Low	Negligible	212	Very Low	Very Low	Negligible
4c	B1122 (N)	209	Very Low	Medium	Minor adverse	535	Very Low	Medium	Minor adverse
5	B1122 Abbey Road	140	Very Low	Medium	Minor adverse	339	Very Low	Medium	Minor adverse
6	B1119 Samundham Road	61	Very Low	High	Minor adverse	83	Very Low	High	Minor adverse
7	B1069 Coldfair Green	192	Very Low	Medium	Minor adverse	367	Very Low	Medium	Minor adverse
9a	A1094 (W)	181	Very Low	Low	Negligible	348	Very Low	Low	Negligible
9b	Snape Road	175	Very Low	High	Minor adverse	175	Very Low	High	Minor adverse
9c	A1094 (E)	225	Very Low	Medium	Minor adverse	388	Very Low	Medium	Minor adverse
10A	Theberton Bypass	0	Very Low	Medium	Minor adverse	1803	Low	Medium	Minor adverse
11	B1125 through Westleton	80	Very Low	High	Minor adverse	80	Very Low	High	Minor adverse
12b	B1119 (E)	69	Very Low	High	Minor adverse	83	Very Low	High	Minor adverse
13a	A12 (N)	887	Very Low	Low	Negligible	1313	Low	Low	Minor
13b	B1122	173	Very Low	Low	Negligible	527	Very Low	Low	Negligible
13d	A1120	184	Very Low	High	Minor adverse	188	Very Low	High	Minor adverse
16	A12 Wrentham	431	Very Low	High	Minor adverse	609	Very Low	High	Minor adverse
17a	A12 (N)	660	Very Low	Medium	Minor adverse	898	Very Low	Medium	Minor adverse
17b	B1125	54	Very Low	High	Minor adverse	54	Very Low	High	Minor adverse
17c	A12 (S)	617	Very Low	Very Low	Negligible	856	Very Low	Very Low	Negligible

Link Number	Link Name	2028 Reference Case				2028 Reference + Sizewell + Scottish Power (busiest)			
		18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance	18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance
19a	A1117 (N)	26	Very Low	High	Minor adverse	203	Very Low	High	Minor adverse
19d	A12 (S)	517	Very Low	High	Minor adverse	691	Very Low	High	Minor adverse
21b	A12 (north of B1119)	667	Very Low	Medium	Minor adverse	1860	Low	Medium	Minor adverse
21c	A12 (middle)	674	Very Low	Medium	Minor adverse	1867	Low	Medium	Minor adverse
21e	A12 (south of B1119)	703	Very Low	Medium	Minor adverse	1894	Low	Medium	Minor adverse
22a	A12 (N)	622	Very Low	Very Low	Negligible	1813	Low	Very Low	Negligible
22b	A1094	183	Very Low	Low	Negligible	348	Very Low	Low	Negligible
23A	A12 Two Village Bypass	0	Very Low	Medium	Minor adverse	2185	Medium	Medium	**Moderate adverse**
25	A12 Little Glemham	893	Very Low	Medium	Minor adverse	2206	Medium	Medium	**Moderate adverse**
26	A12 Marlesford	903	Very Low	Medium	Minor adverse	2216	Medium	Medium	**Moderate adverse**
27	A12 south of Wickham Market	1155	Low	Medium	Minor adverse	2293	Medium	Medium	**Moderate adverse**
29	B1078 onslip to A12	93	Very Low	Very Low	Negligible	179	Very Low	Very Low	Negligible
32a	A12 (N)	1163	Low	Very Low	Negligible	2302	Medium	Very Low	Minor adverse
32c	A12 (S)	2194	Medium	Medium	**Moderate adverse**	3340	High	Medium	**Major adverse**
33	A12 south of Woodbridge	1013	Low	Very Low	Negligible	2137	Medium	Very Low	Minor adverse
34a	A12 (N)	1167	Low	Very Low	Negligible	2292	Medium	Very Low	Minor adverse
34b	Main Road (E)	124	Very Low	High	Minor adverse	124	Very Low	High	Minor adverse
34c	A12 (S)	2288	Medium	Medium	**Moderate adverse**	3375	High	Medium	**Major adverse**
38b	A12 Woodbridge n/o B1079	2194	Medium	Very Low	Minor adverse	3340	High	Very Low	Minor adverse
39a	A1094 (west of B1069)	232	Very Low	Very Low	Negligible	395	Very Low	Very Low	Negligible
39b	B1069 (north of A1094)	205	Very Low	Very Low	Negligible	391	Very Low	Very Low	Negligible
41	B1125 through Middleton	41	Very Low	Low	Negligible	41	Very Low	Low	Negligible

Link Number	Link Name	2028 Reference Case				2028 Reference + Sizewell + Scottish Power (busiest)			
		18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance	18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance
53a	A144 (west of A12)	186	Very Low	High	Minor adverse	186	Very Low	High	Minor adverse
53b	A12 (north of A144)	621	Very Low	Very Low	Negligible	861	Very Low	Very Low	Negligible
53c	A12 (south of A144)	828	Very Low	Very Low	Negligible	1063	Low	Very Low	Negligible
57	Sizewell Link Road (east of A12)	0	Very Low	Medium	Minor adverse	1305	Low	Medium	Minor adverse
59	A12 (south of SLR)	706	Very Low	Very Low	Negligible	1899	Low	Very Low	Negligible
63	Theberton Bypass (west of B1125)	0	Very Low	Medium	Minor adverse	1825	Low	Medium	Minor adverse
64	B1122 north of SZC access	214	Very Low	Medium	Minor adverse	1805	Low	Medium	Minor adverse
65	Middleton Moor Link	0	Very Low	Medium	Minor adverse	550	Very Low	Medium	Minor adverse
67	Main Site Access	0	Very Low	Very low	Negligible	1703	Low	Very low	Negligible
68	Darsham P&R	0	Very Low	Very low	Negligible	192	Very Low	Very low	Negligible
69	Wickham Market P&R	0	Very Low	Very Low	Negligible	188	Very Low	Very Low	Negligible
70	A12 on-slip (west of WM P&R)	93	Very Low	Very Low	Negligible	179	Very Low	Very Low	Negligible
73	B1078 south of B1116	220	Very Low	Medium	Minor adverse	309	Very Low	Medium	Minor adverse
75	Lover's Lane	85	Very Low	Very Low	Negligible	352	Very Low	Very Low	Negligible
76	B1069 (north of Aldringham Lane)	165	Very Low	Medium	Minor adverse	342	Very Low	Medium	Minor adverse
78	A12 (north of B1121)	703	Very Low	Medium	Minor adverse	1894	Low	Medium	Minor adverse
82	B1438 Melton Hill	482	Very Low	High	Minor adverse	469	Very Low	High	Minor adverse
83	A145 west of A12	232	Very Low	High	Minor adverse	297	Very Low	High	Minor adverse
84	A12 south of B1126	475	Very Low	Very Low	Negligible	649	Very Low	Very Low	Negligible
85	A12 south of A1095	668	Very Low	Very Low	Negligible	844	Very Low	Very Low	Negligible
86	A12 south of B1387	659	Very Low	Very Low	Negligible	898	Very Low	Very Low	Negligible
87	A12 south of Eagle Way/Anson Rd	2104	Medium	Very Low	Minor adverse	3189	High	Very Low	Minor adverse

Link Number	Link Name	2028 Reference Case				2028 Reference + Sizewell + Scottish Power (busiest)			
		18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance	18hr AAWT HDVs	Magnitude	Sensitivity	Effect Significance
88	A12 south of Foxhall Road	2258	Medium	Very Low	Minor adverse	3303	High	Very Low	Minor adverse
89	A1120 east of A140	1976	Low	High	**Moderate adverse**	1978	Low	High	**Moderate adverse**
90	A1120 Sibton (east of Mill Hill)	192	Very Low	High	Minor adverse	196	Very Low	High	Minor adverse
91	A1152 at Eyke	293	Very Low	High	Minor adverse	291	Very Low	High	Minor adverse

VOLUME 10, CHAPTER 4, APPENDIX 4B: CUMULATIVE TRANSPORT EMISSIONS RESULTS

Contents

Appendix 4B Cumulative Transport Emissions Results..... 1

Tables

Table 1.1: Modelled NO_2 concentrations at receptors for 2023 cumulative scenario..... 1

Table 1.2: Modelled PM_{10} concentrations at receptors for 2023 cumulative scenario 11

Table 1.3: Modelled $PM_{2.5}$ concentrations at receptors for 2023 cumulative scenario..... 21

Table 1.4: Modelled NO_2 concentrations at receptors for 2028 average day cumulative scenario 31

Table 1.5: Modelled PM_{10} concentrations at receptors for 2028 average day cumulative scenario 41

Table 1.6: Modelled $PM_{2.5}$ concentrations at receptors for 2028 average day cumulative scenario 51

Table 1.7: Modelled NO_2 concentrations at receptors for 2028 busiest day cumulative scenario 61

Table 1.8: Modelled PM_{10} concentrations at receptors for 2028 busiest day cumulative scenario 71

Table 1.9: Modelled $PM_{2.5}$ concentrations at receptors for 2028 busiest day cumulative scenario 81

Plates

None provided.

Figures

None provided.

B.1. Cumulative Transport Emissions Results

Table 1.1: Modelled NO_2 concentrations at receptors for 2023 cumulative scenario

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	7.3	2.9	10.3	3.0	10.3	>0.0	Imperceptible	Negligible
BC2	7.3	12.9	20.2	13.0	20.3	0.1	Imperceptible	Negligible
BC3	7.9	2.0	9.9	2.0	10.0	>0.0	Imperceptible	Negligible
BC4	8.9	3.8	12.7	3.8	12.8	0.1	Imperceptible	Negligible
BC5	9.0	9.0	18.0	9.2	18.1	0.2	Imperceptible	Negligible
SW6	6.6	1.6	8.2	1.7	8.3	0.1	Imperceptible	Negligible
SW5	6.6	1.7	8.3	1.8	8.4	0.1	Imperceptible	Negligible
BC7	8.1	2.9	10.9	2.9	11.0	>0.0	Imperceptible	Negligible
BC8	7.1	2.1	9.2	2.1	9.2	>0.0	Imperceptible	Negligible
KS4	6.8	2.4	9.2	2.5	9.3	0.1	Imperceptible	Negligible
LW1	15.0	6.8	21.9	7.0	22.0	0.1	Imperceptible	Negligible
LW3	11.2	13.6	24.8	13.8	25.0	0.2	Imperceptible	Negligible
LW5	8.9	2.7	11.7	2.8	11.7	0.1	Imperceptible	Negligible
LW6	8.9	3.4	12.3	3.4	12.3	<0.0	Imperceptible	Negligible
KS1	7.5	2.6	10.1	2.6	10.1	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
KS2	6.8	3.9	10.7	4.1	10.9	0.2	Imperceptible	Negligible
KS3	6.8	4.9	11.7	5.1	11.9	0.2	Imperceptible	Negligible
SW4	6.5	2.8	9.3	3.0	9.5	0.2	Imperceptible	Negligible
HS3	6.5	3.5	10.0	3.6	10.0	0.1	Imperceptible	Negligible
YX1	6.5	8.0	14.5	8.3	14.9	0.4	Imperceptible	Negligible
YX3	6.5	7.7	14.2	8.5	15.0	0.8	Very Low	Negligible
YX7	6.5	1.3	7.8	1.8	8.3	0.5	Very Low	Negligible
LE3	6.5	2.3	8.8	2.9	9.4	0.6	Very Low	Negligible
LE9	7.5	9.9	17.4	10.7	18.1	0.8	Very Low	Negligible
LE10	7.5	6.9	14.4	7.3	14.8	0.4	Very Low	Negligible
LE11	6.7	3.3	10.0	3.4	10.1	0.1	Imperceptible	Negligible
LE14	6.6	6.1	12.7	6.6	13.1	0.4	Very Low	Negligible
SX12	6.7	2.4	9.1	2.5	9.2	0.1	Imperceptible	Negligible
YX4	6.4	3.6	10.0	3.8	10.2	0.2	Imperceptible	Negligible
SX1	6.5	3.5	10.0	3.8	10.3	0.3	Imperceptible	Negligible
WM2	7.1	12.9	20.0	13.9	21.0	0.9	Low	Negligible
WM6	7.2	1.9	9.1	2.0	9.2	0.1	Imperceptible	Negligible
WM7	7.5	3.8	11.3	3.9	11.4	0.1	Imperceptible	Negligible
WM8	7.8	4.6	12.3	4.7	12.5	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM4	7.4	2.2	9.6	2.2	9.6	>0.0	Imperceptible	Negligible
WB8	9.2	10.8	20.0	10.9	20.1	0.1	Imperceptible	Negligible
WB9	9.2	7.9	17.1	7.8	17.0	-0.1	Imperceptible	Negligible
WB10	8.8	4.3	13.1	4.3	13.1	>0.0	Imperceptible	Negligible
BK2	10.1	4.7	14.8	4.6	14.7	-0.1	Imperceptible	Negligible
BK4	10.6	3.6	14.1	3.3	13.9	-0.3	Imperceptible	Negligible
BK5	10.6	5.4	16.0	5.4	16.0	>0.0	Imperceptible	Negligible
IP1	11.4	7.7	19.1	7.6	19.0	-0.1	Imperceptible	Negligible
IP2	9.3	7.5	16.8	7.4	16.7	-0.1	Imperceptible	Negligible
BK3	9.3	5.1	14.4	5.1	14.4	>0.0	Imperceptible	Negligible
IP3	8.2	8.8	17.0	8.8	17.0	0.0	Imperceptible	Negligible
IP4	8.4	13.1	21.6	13.1	21.5	<0.0	Imperceptible	Negligible
IP5	8.6	2.0	10.6	2.0	10.6	0.0	Imperceptible	Negligible
IP6	10.5	0.7	11.1	0.7	11.1	0.0	Imperceptible	Negligible
IP7	12.3	0.5	12.7	0.5	12.7	0.0	Imperceptible	Negligible
IP8	14.3	0.5	14.8	0.5	14.8	0.0	Imperceptible	Negligible
IP9	14.3	0.5	14.8	0.5	14.8	0.0	Imperceptible	Negligible
IP10	14.3	0.5	14.8	0.5	14.8	0.0	Imperceptible	Negligible
IP11	14.3	0.5	14.8	0.5	14.8	<0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND1	10.8	9.5	20.3	9.5	20.3	>0.0	Imperceptible	Negligible
ND2	9.5	2.9	12.4	2.9	12.4	>0.0	Imperceptible	Negligible
ND3	8.7	5.5	14.2	5.5	14.2	>0.0	Imperceptible	Negligible
ND4	8.0	6.9	14.8	7.0	15.0	0.1	Imperceptible	Negligible
ND5	7.6	4.9	12.4	5.0	12.6	0.1	Imperceptible	Negligible
ND6	7.6	0.9	8.6	0.9	8.6	0.0	Imperceptible	Negligible
WM9	7.1	1.6	8.7	1.6	8.8	0.1	Imperceptible	Negligible
ND7	7.5	4.1	11.6	4.1	11.6	0.1	Imperceptible	Negligible
FR1	6.7	2.4	9.2	2.4	9.2	>0.0	Imperceptible	Negligible
FR2	7.6	4.8	12.4	4.8	12.3	<0.0	Imperceptible	Negligible
FR3	7.6	1.6	9.2	1.7	9.2	>0.0	Imperceptible	Negligible
FR4	6.5	2.4	8.9	2.5	9.0	0.1	Imperceptible	Negligible
FR5	6.5	1.9	8.4	2.0	8.5	0.1	Imperceptible	Negligible
FR6	6.6	1.9	8.4	1.9	8.5	0.1	Imperceptible	Negligible
IP12	10.9	0.4	11.3	0.4	11.3	0.0	Imperceptible	Negligible
IP13	11.8	0.6	12.4	0.6	12.4	0.0	Imperceptible	Negligible
IP14	10.4	12.9	23.3	12.9	23.2	<0.0	Imperceptible	Negligible
IP15	9.7	9.3	19.0	9.3	18.9	-0.1	Imperceptible	Negligible
WB11	9.6	5.0	14.6	5.0	14.6	-0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB12	9.3	4.1	13.4	3.9	13.3	-0.1	Imperceptible	Negligible
WB7	8.8	5.0	13.7	5.1	13.9	0.2	Imperceptible	Negligible
WB6	9.3	4.3	13.6	4.6	13.9	0.3	Imperceptible	Negligible
WB5	9.8	9.3	19.1	9.6	19.4	0.3	Imperceptible	Negligible
WB4	9.8	3.9	13.7	4.2	14.0	0.3	Imperceptible	Negligible
WB3	8.7	4.2	12.9	4.0	12.6	-0.3	Imperceptible	Negligible
WB2	8.7	6.4	15.1	4.4	13.1	-2.0	Medium	Minor beneficial
SX13	6.8	2.0	8.8	2.1	8.9	0.1	Imperceptible	Negligible
SX14	6.9	2.4	9.2	2.5	9.3	0.1	Imperceptible	Negligible
WM13	7.0	2.1	9.1	2.1	9.1	>0.0	Imperceptible	Negligible
HS1	7.5	3.7	11.2	3.8	11.3	>0.0	Imperceptible	Negligible
HS2	6.5	2.5	8.9	2.5	9.0	>0.0	Imperceptible	Negligible
SW1	7.1	2.6	9.7	2.7	9.7	>0.0	Imperceptible	Negligible
YX2	6.5	4.7	11.3	5.2	11.7	0.5	Very Low	Negligible
YX6	6.7	2.9	9.6	3.8	10.5	0.9	Low	Negligible
SX2	6.8	0.9	7.7	0.9	7.8	>0.0	Imperceptible	Negligible
SX4	7.3	6.2	13.5	6.6	14.0	0.4	Very Low	Negligible
SX3	6.7	1.1	7.8	1.2	7.9	0.1	Imperceptible	Negligible
SX10	6.7	4.6	11.2	5.0	11.7	0.4	Very Low	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX5	6.7	7.4	14.1	8.0	14.7	0.7	Very Low	Negligible
SX6	6.7	11.7	18.4	12.4	19.2	0.7	Very Low	Negligible
SX7	6.7	13.0	19.8	13.8	20.6	0.8	Low	Negligible
SX11	6.6	4.0	10.6	4.3	10.9	0.3	Imperceptible	Negligible
SW3	6.5	6.6	13.1	6.9	13.4	0.3	Imperceptible	Negligible
SW2	6.5	4.7	11.2	5.1	11.6	0.4	Imperceptible	Negligible
YX8	6.5	2.8	9.3	3.3	9.8	0.5	Very Low	Negligible
LE13	6.4	4.1	10.5	4.5	10.9	0.4	Very Low	Negligible
LE12	7.0	2.8	9.8	3.1	10.1	0.3	Imperceptible	Negligible
LE7	6.6	1.2	7.9	1.6	8.3	0.4	Imperceptible	Negligible
LE1	7.5	5.2	12.7	5.6	13.0	0.3	Imperceptible	Negligible
LE8	7.5	2.9	10.3	3.1	10.5	0.2	Imperceptible	Negligible
LE6	6.5	3.4	9.9	4.3	10.8	0.9	Low	Negligible
LE5	6.5	2.1	8.6	2.6	9.1	0.5	Very Low	Negligible
ND8	7.1	6.7	13.8	6.8	13.9	0.1	Imperceptible	Negligible
WM1	6.7	1.0	7.8	1.1	7.8	0.1	Imperceptible	Negligible
SX8	6.7	0.4	7.1	0.4	7.1	>0.0	Imperceptible	Negligible
SX9	6.7	0.5	7.2	0.5	7.2	>0.0	Imperceptible	Negligible
LE4	6.5	0.3	6.8	0.3	6.8	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
YX5	6.5	0.3	6.8	0.3	6.8	>0.0	Imperceptible	Negligible
LW2	11.2	3.7	14.9	3.8	15.0	0.1	Imperceptible	Negligible
BK1	10.6	7.6	18.2	8.7	19.2	1.0	Low	Negligible
WM10	7.5	6.8	14.2	6.9	14.3	0.1	Imperceptible	Negligible
WB1	8.3	7.8	16.0	7.4	15.7	-0.3	Imperceptible	Negligible
BC6	6.6	3.3	10.0	3.5	10.1	0.2	Imperceptible	Negligible
LW4	9.8	3.8	13.6	3.9	13.7	0.1	Imperceptible	Negligible
LW7	8.9	1.6	10.5	1.6	10.5	<0.0	Imperceptible	Negligible
LW8	21.3	4.0	25.4	4.1	25.4	0.1	Imperceptible	Negligible
LW9	8.9	3.1	12.0	3.1	12.0	>0.0	Imperceptible	Negligible
LE2	6.7	1.1	7.8	1.2	7.9	0.1	Imperceptible	Negligible
WM5	8.1	1.9	10.0	2.0	10.1	>0.0	Imperceptible	Negligible
WM11	7.2	2.6	9.9	2.7	9.9	0.1	Imperceptible	Negligible
WM12	7.2	1.1	8.3	1.1	8.3	0.1	Imperceptible	Negligible
SX15	6.7	15.8	22.5	17.2	23.9	1.4	Low	Negligible
YX9	6.4	0.6	7.1	0.7	7.1	>0.0	Imperceptible	Negligible
LE15	6.5	0.4	6.9	0.5	7.0	0.1	Imperceptible	Negligible
LE16	6.5	0.3	6.9	0.4	6.9	>0.0	Imperceptible	Negligible
LE19	6.7	0.5	7.1	0.5	7.2	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE17	6.4	0.4	6.8	0.4	6.8	>0.0	Imperceptible	Negligible
LE18	6.6	0.3	6.9	0.3	7.0	>0.0	Imperceptible	Negligible
LE20	6.6	0.4	7.0	0.4	7.0	>0.0	Imperceptible	Negligible
LE21	6.6	0.4	7.0	0.4	7.0	>0.0	Imperceptible	Negligible
LE22	6.7	0.4	7.1	0.4	7.1	>0.0	Imperceptible	Negligible
LE23	6.6	0.3	6.9	0.3	6.9	>0.0	Imperceptible	Negligible
WM3	7.0	3.8	10.8	3.8	10.8	<0.0	Imperceptible	Negligible
WM14	7.0	0.6	7.6	0.6	7.6	>0.0	Imperceptible	Negligible
YX10	6.5	4.9	11.4	5.0	11.5	0.1	Imperceptible	Negligible
LE24	6.6	0.4	7.0	0.4	7.0	>0.0	Imperceptible	Negligible
YX11	6.5	1.6	8.1	1.7	8.1	0.1	Imperceptible	Negligible
YX12	6.5	1.4	7.9	1.4	7.9	0.1	Imperceptible	Negligible
LE25	6.4	0.2	6.6	0.2	6.6	>0.0	Imperceptible	Negligible
LE26	6.4	0.4	6.8	0.4	6.8	0.1	Imperceptible	Negligible
LE27	6.5	0.3	6.7	0.3	6.8	>0.0	Imperceptible	Negligible
LE28	6.5	0.7	7.2	0.8	7.3	0.2	Imperceptible	Negligible
LE29	6.4	0.2	6.6	0.2	6.6	>0.0	Imperceptible	Negligible
LE30	6.4	0.7	7.1	0.8	7.2	0.1	Imperceptible	Negligible
LE31	6.4	0.4	6.8	0.4	6.8	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE32	6.6	0.6	7.2	0.7	7.3	0.1	Imperceptible	Negligible
LE33	6.6	0.9	7.6	1.2	7.8	0.3	Imperceptible	Negligible
LE34	7.0	0.5	7.5	0.5	7.5	>0.0	Imperceptible	Negligible
LE35	7.5	0.8	8.3	0.8	8.3	>0.0	Imperceptible	Negligible
LE36	7.0	1.6	8.6	1.8	8.8	0.2	Imperceptible	Negligible
LE37	7.0	1.7	8.7	1.9	8.9	0.2	Imperceptible	Negligible
LE38	7.0	2.0	9.0	2.2	9.2	0.3	Imperceptible	Negligible
LE39	6.6	1.3	7.9	1.5	8.0	0.1	Imperceptible	Negligible
LE40	7.0	0.6	7.6	0.6	7.6	>0.0	Imperceptible	Negligible
LE52	6.6	1.2	7.8	1.5	8.2	0.4	Imperceptible	Negligible
LE53	6.6	0.4	7.0	0.4	7.0	>0.0	Imperceptible	Negligible
LE54	6.6	0.3	6.9	0.3	6.9	>0.0	Imperceptible	Negligible
YX13	6.5	5.2	11.7	5.3	11.8	0.1	Imperceptible	Negligible
YX14	6.5	0.3	6.8	0.3	6.8	>0.0	Imperceptible	Negligible
YX15	6.6	3.4	9.9	3.5	10.0	0.1	Imperceptible	Negligible
YX16	6.5	3.6	10.1	3.7	10.2	0.2	Imperceptible	Negligible
YX17	6.6	0.5	7.1	0.5	7.1	>0.0	Imperceptible	Negligible
LE55	6.5	1.1	7.6	1.1	7.6	>0.0	Imperceptible	Negligible
LE56	6.7	2.2	8.9	2.4	9.1	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
YX18	6.5	2.3	8.8	2.5	9.1	0.3	Imperceptible	Negligible
YX19	6.7	1.7	8.3	2.2	8.8	0.5	Very Low	Negligible
YX20	6.5	4.4	10.9	4.6	11.1	0.2	Imperceptible	Negligible
SX16	7.3	2.5	9.8	2.6	9.9	0.1	Imperceptible	Negligible
SX18	6.7	0.3	7.0	0.3	7.0	>0.0	Imperceptible	Negligible
SX17	7.3	0.5	7.8	0.5	7.9	>0.0	Imperceptible	Negligible
SX19	6.9	0.3	7.2	0.3	7.2	>0.0	Imperceptible	Negligible
WM15	7.4	1.3	8.7	1.3	8.7	>0.0	Imperceptible	Negligible
WM16	7.3	0.4	7.7	0.4	7.7	>0.0	Imperceptible	Negligible
WM17	7.4	0.5	7.9	0.5	7.9	0.0	Imperceptible	Negligible
BK6	9.3	2.4	11.7	1.8	11.0	-0.6	Very Low	Negligible
BK7	9.3	1.6	11.0	1.6	11.0	0.0	Imperceptible	Negligible
LE46	6.6	1.1	7.8	1.5	8.1	0.3	Imperceptible	Negligible
BK8	9.5	2.5	12.1	2.5	12.1	0.0	Imperceptible	Negligible
LE57	6.5	2.1	8.6	3.3	9.8	1.2	Low	Negligible
LE42	6.4	0.3	6.7	0.3	6.8	>0.0	Imperceptible	Negligible

Table 1.2: Modelled PM_{10} concentrations at receptors for 2023 cumulative scenario

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	13.6	0.3	13.9	0.3	14.0	>0.0	Imperceptible	Negligible
BC2	15.1	1.4	16.5	1.4	16.5	>0.0	Imperceptible	Negligible
BC3	12.9	0.2	13.1	0.2	13.1	>0.0	Imperceptible	Negligible
BC4	12.9	0.4	13.3	0.4	13.3	>0.0	Imperceptible	Negligible
BC5	14.3	1.0	15.3	1.0	15.3	>0.0	Imperceptible	Negligible
SW6	13.9	0.2	14.1	0.2	14.1	>0.0	Imperceptible	Negligible
SW5	14.6	0.2	14.8	0.2	14.8	>0.0	Imperceptible	Negligible
BC7	15.3	0.3	15.6	0.3	15.6	>0.0	Imperceptible	Negligible
BC8	13.9	0.2	14.1	0.2	14.1	>0.0	Imperceptible	Negligible
KS4	14.4	0.2	14.6	0.2	14.6	>0.0	Imperceptible	Negligible
LW1	14.2	0.7	15.0	0.7	15.0	>0.0	Imperceptible	Negligible
LW3	12.6	1.4	14.0	1.4	14.0	>0.0	Imperceptible	Negligible
LW5	13.6	0.3	13.8	0.3	13.8	>0.0	Imperceptible	Negligible
LW6	13.6	0.3	13.9	0.3	13.9	<0.0	Imperceptible	Negligible
KS1	13.0	0.2	13.2	0.2	13.2	>0.0	Imperceptible	Negligible
KS2	14.4	0.4	14.8	0.4	14.8	>0.0	Imperceptible	Negligible
KS3	14.4	0.5	14.9	0.6	14.9	>0.0	Imperceptible	Negligible
SW4	12.8	0.3	13.1	0.4	13.1	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
HS3	15.2	0.4	15.6	0.4	15.6	>0.0	Imperceptible	Negligible
YX1	15.1	1.0	16.1	1.7	16.8	0.8	Very Low	Negligible
YX3	13.7	0.9	14.6	1.0	14.7	0.1	Imperceptible	Negligible
YX7	13.7	0.1	13.8	0.2	13.9	0.1	Imperceptible	Negligible
LE3	13.9	0.3	14.2	0.4	14.3	0.1	Imperceptible	Negligible
LE9	12.9	0.6	13.6	0.7	13.6	0.1	Imperceptible	Negligible
LE10	12.9	0.7	13.6	0.8	13.7	>0.0	Imperceptible	Negligible
LE11	13.2	0.3	13.5	0.3	13.5	>0.0	Imperceptible	Negligible
LE14	14.6	0.6	15.2	0.7	15.3	0.1	Imperceptible	Negligible
SX12	14.4	0.2	14.7	0.2	14.7	>0.0	Imperceptible	Negligible
YX4	15.1	0.4	15.5	0.4	15.6	0.1	Imperceptible	Negligible
SX1	14.4	0.4	14.7	0.5	14.8	0.1	Imperceptible	Negligible
WM2	15.0	1.5	16.5	1.8	16.8	0.3	Imperceptible	Negligible
WM6	14.4	0.2	14.6	0.2	14.6	>0.0	Imperceptible	Negligible
WM7	15.7	0.3	16.0	0.3	16.0	>0.0	Imperceptible	Negligible
WM8	15.1	0.4	15.5	0.5	15.5	>0.0	Imperceptible	Negligible
WM4	13.4	0.2	13.6	0.2	13.6	>0.0	Imperceptible	Negligible
WB8	13.8	1.3	15.1	1.4	15.1	0.1	Imperceptible	Negligible
WB9	13.8	0.8	14.6	0.9	14.6	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB10	14.8	0.4	15.2	0.4	15.2	>0.0	Imperceptible	Negligible
BK2	15.2	0.4	15.6	0.4	15.6	>0.0	Imperceptible	Negligible
BK4	17.1	0.4	17.5	0.4	17.5	<0.0	Imperceptible	Negligible
BK5	17.1	0.6	17.7	0.6	17.7	>0.0	Imperceptible	Negligible
IP1	17.4	1.0	18.5	1.0	18.5	>0.0	Imperceptible	Negligible
IP2	17.0	0.8	17.9	0.9	17.9	>0.0	Imperceptible	Negligible
BK3	15.0	0.6	15.6	0.6	15.6	>0.0	Imperceptible	Negligible
IP3	15.0	1.1	16.1	1.2	16.1	>0.0	Imperceptible	Negligible
IP4	16.5	1.7	18.2	1.8	18.3	0.1	Imperceptible	Negligible
IP5	17.3	0.3	17.5	0.3	17.5	>0.0	Imperceptible	Negligible
IP6	14.3	0.1	14.4	0.1	14.4	>0.0	Imperceptible	Negligible
IP7	14.8	0.1	14.9	0.1	14.9	>0.0	Imperceptible	Negligible
IP8	15.1	0.1	15.2	0.1	15.2	>0.0	Imperceptible	Negligible
IP9	15.1	0.1	15.2	0.1	15.2	>0.0	Imperceptible	Negligible
IP10	15.1	0.1	15.2	0.1	15.2	>0.0	Imperceptible	Negligible
IP11	15.1	0.1	15.2	0.1	15.2	>0.0	Imperceptible	Negligible
ND1	15.6	1.4	17.0	1.4	17.0	>0.0	Imperceptible	Negligible
ND2	16.2	0.4	16.7	0.4	16.7	>0.0	Imperceptible	Negligible
ND3	15.3	0.7	16.0	0.7	16.0	<0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND4	14.4	0.7	15.1	0.7	15.1	>0.0	Imperceptible	Negligible
ND5	15.3	0.6	15.8	0.6	15.9	>0.0	Imperceptible	Negligible
ND6	14.7	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
WM9	14.3	0.2	14.5	0.2	14.5	>0.0	Imperceptible	Negligible
ND7	15.6	0.5	16.2	0.6	16.2	>0.0	Imperceptible	Negligible
FR1	15.2	0.4	15.5	0.3	15.5	<0.0	Imperceptible	Negligible
FR2	13.8	0.6	14.4	0.5	14.4	<0.0	Imperceptible	Negligible
FR3	13.8	0.2	14.0	0.2	14.0	>0.0	Imperceptible	Negligible
FR4	15.3	0.3	15.6	0.3	15.6	>0.0	Imperceptible	Negligible
FR5	14.5	0.2	14.7	0.2	14.7	>0.0	Imperceptible	Negligible
FR6	15.2	0.2	15.4	0.2	15.4	>0.0	Imperceptible	Negligible
IP12	14.4	0.0	14.5	0.1	14.5	>0.0	Imperceptible	Negligible
IP13	14.7	0.1	14.7	0.1	14.8	>0.0	Imperceptible	Negligible
IP14	14.3	1.3	15.5	1.3	15.5	<0.0	Imperceptible	Negligible
IP15	14.5	1.0	15.5	1.0	15.5	<0.0	Imperceptible	Negligible
WB11	14.0	0.5	14.5	0.5	14.5	>0.0	Imperceptible	Negligible
WB12	13.8	0.4	14.2	0.4	14.2	<0.0	Imperceptible	Negligible
WB7	14.1	0.5	14.6	0.5	14.7	>0.0	Imperceptible	Negligible
WB6	13.6	0.4	14.0	0.5	14.0	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB5	13.1	0.5	13.6	0.5	13.7	>0.0	Imperceptible	Negligible
WB4	13.1	0.3	13.5	0.4	13.5	>0.0	Imperceptible	Negligible
WB3	13.3	0.4	13.7	0.4	13.7	<0.0	Imperceptible	Negligible
WB2	13.3	0.5	13.8	0.4	13.8	<0.0	Imperceptible	Negligible
SX13	14.9	0.2	15.1	0.2	15.1	>0.0	Imperceptible	Negligible
SX14	15.3	0.2	15.6	0.3	15.6	>0.0	Imperceptible	Negligible
WM13	14.4	0.2	14.6	0.2	14.6	>0.0	Imperceptible	Negligible
HS1	13.8	0.4	14.2	0.4	14.2	>0.0	Imperceptible	Negligible
HS2	15.1	0.3	15.4	0.3	15.4	>0.0	Imperceptible	Negligible
SW1	11.9	0.2	12.1	0.2	12.1	>0.0	Imperceptible	Negligible
YX2	13.7	0.5	14.2	0.6	14.3	0.1	Imperceptible	Negligible
YX6	13.8	0.3	14.1	0.5	14.3	0.2	Imperceptible	Negligible
SX2	14.2	0.1	14.3	0.1	14.4	>0.0	Imperceptible	Negligible
SX4	13.3	0.6	13.9	0.7	14.0	>0.0	Imperceptible	Negligible
SX3	14.9	0.1	15.1	0.1	15.1	>0.0	Imperceptible	Negligible
SX10	15.0	0.5	15.5	0.6	15.6	0.1	Imperceptible	Negligible
SX5	14.1	0.8	14.9	1.0	15.1	0.1	Imperceptible	Negligible
SX6	13.8	1.4	15.2	1.6	15.4	0.2	Imperceptible	Negligible
SX7	13.8	1.5	15.4	1.8	15.6	0.3	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX11	14.2	0.4	14.6	0.5	14.7	>0.0	Imperceptible	Negligible
SW3	12.6	0.8	13.4	0.8	13.4	0.1	Imperceptible	Negligible
SW2	12.6	0.5	13.2	0.6	13.2	0.1	Imperceptible	Negligible
YX8	14.5	0.3	14.8	0.3	14.9	0.1	Imperceptible	Negligible
LE13	12.8	0.4	13.2	0.5	13.3	0.1	Imperceptible	Negligible
LE12	13.7	0.3	14.0	0.3	14.1	>0.0	Imperceptible	Negligible
LE7	14.3	0.1	14.4	0.2	14.5	0.1	Imperceptible	Negligible
LE1	12.9	0.4	13.3	0.5	13.4	>0.0	Imperceptible	Negligible
LE8	12.9	0.3	13.2	0.3	13.2	>0.0	Imperceptible	Negligible
LE6	14.3	0.4	14.7	0.6	14.9	0.2	Imperceptible	Negligible
LE5	14.3	0.2	14.5	0.3	14.6	0.1	Imperceptible	Negligible
ND8	14.8	0.9	15.7	0.9	15.7	>0.0	Imperceptible	Negligible
WM1	13.8	0.1	13.9	0.1	14.0	>0.0	Imperceptible	Negligible
SX8	14.5	0.0	14.5	0.0	14.6	>0.0	Imperceptible	Negligible
SX9	14.5	0.0	14.6	0.1	14.6	>0.0	Imperceptible	Negligible
LE4	14.3	0.0	14.3	0.0	14.3	>0.0	Imperceptible	Negligible
YX5	14.5	0.0	14.6	0.0	14.6	>0.0	Imperceptible	Negligible
LW2	12.6	0.4	13.0	0.4	13.0	>0.0	Imperceptible	Negligible
BK1	13.8	0.7	14.5	0.8	14.7	0.2	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM10	15.3	0.8	16.1	0.8	16.1	>0.0	Imperceptible	Negligible
WB1	15.0	0.9	15.9	0.9	15.9	<0.0	Imperceptible	Negligible
BC6	15.1	0.4	15.5	0.4	15.5	>0.0	Imperceptible	Negligible
LW4	13.0	0.4	13.4	0.4	13.4	>0.0	Imperceptible	Negligible
LW7	13.6	0.2	13.7	0.2	13.7	<0.0	Imperceptible	Negligible
LW8	13.4	0.4	13.8	0.4	13.8	>0.0	Imperceptible	Negligible
LW9	13.6	0.3	13.9	0.3	13.9	>0.0	Imperceptible	Negligible
LE2	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
WM5	14.8	0.2	15.0	0.2	15.0	>0.0	Imperceptible	Negligible
WM11	14.4	0.2	14.7	0.3	14.7	>0.0	Imperceptible	Negligible
WM12	14.4	0.1	14.5	0.1	14.5	>0.0	Imperceptible	Negligible
SX15	14.1	1.8	15.9	2.1	16.2	0.3	Imperceptible	Negligible
YX9	15.1	0.1	15.2	0.1	15.2	>0.0	Imperceptible	Negligible
LE15	13.9	0.0	13.9	0.1	14.0	>0.0	Imperceptible	Negligible
LE16	13.9	0.0	13.9	0.0	13.9	>0.0	Imperceptible	Negligible
LE19	14.0	0.0	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
LE17	13.3	0.0	13.3	0.0	13.3	>0.0	Imperceptible	Negligible
LE18	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE20	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE21	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE22	13.7	0.0	13.8	0.0	13.8	>0.0	Imperceptible	Negligible
LE23	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
WM3	14.4	0.4	14.7	0.4	14.7	>0.0	Imperceptible	Negligible
WM14	14.4	0.1	14.4	0.1	14.4	>0.0	Imperceptible	Negligible
YX10	14.9	0.6	15.5	0.6	15.5	>0.0	Imperceptible	Negligible
LE24	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
YX11	14.9	0.2	15.1	0.2	15.1	>0.0	Imperceptible	Negligible
YX12	14.9	0.2	15.1	0.2	15.1	>0.0	Imperceptible	Negligible
LE25	14.0	0.0	14.0	0.0	14.0	>0.0	Imperceptible	Negligible
LE26	13.3	0.0	13.3	0.0	13.3	>0.0	Imperceptible	Negligible
LE27	13.9	0.0	14.0	0.0	14.0	>0.0	Imperceptible	Negligible
LE28	13.9	0.1	14.0	0.1	14.0	>0.0	Imperceptible	Negligible
LE29	14.0	0.0	14.0	0.0	14.0	>0.0	Imperceptible	Negligible
LE30	12.8	0.1	12.9	0.1	12.9	>0.0	Imperceptible	Negligible
LE31	12.8	0.0	12.9	0.0	12.9	>0.0	Imperceptible	Negligible
LE32	14.3	0.1	14.4	0.1	14.4	>0.0	Imperceptible	Negligible
LE33	14.3	0.1	14.4	0.2	14.5	0.1	Imperceptible	Negligible
LE34	13.7	0.0	13.8	0.1	13.8	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE35	12.9	0.1	13.0	0.1	13.0	>0.0	Imperceptible	Negligible
LE36	13.7	0.2	13.9	0.2	13.9	>0.0	Imperceptible	Negligible
LE37	13.7	0.2	13.9	0.2	14.0	>0.0	Imperceptible	Negligible
LE38	13.7	0.2	13.9	0.2	14.0	>0.0	Imperceptible	Negligible
LE39	13.3	0.1	13.4	0.2	13.5	>0.0	Imperceptible	Negligible
LE40	13.7	0.1	13.8	0.1	13.8	>0.0	Imperceptible	Negligible
LE52	14.3	0.1	14.4	0.2	14.5	0.1	Imperceptible	Negligible
LE53	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE54	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
YX13	15.1	0.6	15.7	0.7	15.8	>0.0	Imperceptible	Negligible
YX14	14.9	0.0	14.9	0.0	14.9	>0.0	Imperceptible	Negligible
YX15	14.3	0.4	14.7	0.4	14.8	>0.0	Imperceptible	Negligible
YX16	15.1	0.4	15.5	0.7	15.8	0.3	Imperceptible	Negligible
YX17	14.3	0.1	14.4	0.1	14.4	>0.0	Imperceptible	Negligible
LE55	13.9	0.1	14.0	0.1	14.0	>0.0	Imperceptible	Negligible
LE56	13.7	0.2	14.0	0.2	14.0	>0.0	Imperceptible	Negligible
YX18	13.7	0.2	14.0	0.3	14.0	0.1	Imperceptible	Negligible
YX19	13.8	0.2	14.0	0.3	14.1	0.1	Imperceptible	Negligible
YX20	14.3	0.5	14.8	0.9	15.2	0.4	Imperceptible	Negligible

Receptor	2023 Background (µg/m^3)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX16	13.3	0.2	13.6	0.3	13.6	>0.0	Imperceptible	Negligible
SX18	15.0	0.0	15.0	0.0	15.0	>0.0	Imperceptible	Negligible
SX17	13.3	0.1	13.4	0.1	13.4	>0.0	Imperceptible	Negligible
SX19	15.0	0.0	15.0	0.0	15.0	>0.0	Imperceptible	Negligible
WM15	14.8	0.1	14.9	0.1	14.9	>0.0	Imperceptible	Negligible
WM16	13.3	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
WM17	13.8	0.0	13.8	0.0	13.8	>0.0	Imperceptible	Negligible
BK6	14.1	0.3	14.4	0.2	14.3	-0.1	Imperceptible	Negligible
BK7	16.8	0.2	17.0	0.2	17.0	>0.0	Imperceptible	Negligible
LE46	14.3	0.1	14.4	0.2	14.5	0.1	Imperceptible	Negligible
BK8	16.7	0.3	17.0	0.3	17.0	>0.0	Imperceptible	Negligible
LE57	13.6	0.2	13.8	0.4	13.9	0.1	Imperceptible	Negligible
LE42	13.3	0.0	13.3	0.0	13.3	>0.0	Imperceptible	Negligible

Table 1.3: Modelled $PM_{2.5}$ concentrations at receptors for 2023 cumulative scenario

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	8.3	0.5	8.8	0.5	8.8	>0.0	Imperceptible	Negligible
BC2	8.6	2.4	11.0	2.4	11.1	>0.0	Imperceptible	Negligible
BC3	8.2	0.4	8.6	0.4	8.6	>0.0	Imperceptible	Negligible
BC4	8.3	0.7	9.0	0.7	9.0	>0.0	Imperceptible	Negligible
BC5	9.3	1.7	11.0	1.8	11.1	0.1	Imperceptible	Negligible
SW6	8.3	0.4	8.6	0.4	8.7	>0.0	Imperceptible	Negligible
SW5	8.4	0.4	8.8	0.4	8.9	>0.0	Imperceptible	Negligible
BC7	9.1	0.5	9.6	0.5	9.6	>0.0	Imperceptible	Negligible
BC8	8.3	0.3	8.6	0.3	8.6	>0.0	Imperceptible	Negligible
KS4	8.4	0.4	8.8	0.4	8.8	>0.0	Imperceptible	Negligible
LW1	10.0	1.2	11.2	1.2	11.3	0.1	Imperceptible	Negligible
LW3	8.5	2.3	10.8	2.4	10.9	0.1	Imperceptible	Negligible
LW5	8.8	0.5	9.3	0.5	9.3	>0.0	Imperceptible	Negligible
LW6	8.8	0.6	9.4	0.6	9.4	<0.0	Imperceptible	Negligible
KS1	8.2	0.4	8.5	0.4	8.5	>0.0	Imperceptible	Negligible
KS2	8.4	0.7	9.1	0.7	9.2	>0.0	Imperceptible	Negligible
KS3	8.4	0.9	9.3	1.0	9.4	0.1	Imperceptible	Negligible
SW4	8.0	0.6	8.6	0.6	8.6	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
HS3	8.6	0.6	9.2	0.7	9.3	>0.0	Imperceptible	Negligible
YX1	8.6	1.6	10.2	1.1	9.7	-0.6	Very Low	Negligible
YX3	8.3	1.5	9.8	1.7	10.0	0.2	Imperceptible	Negligible
YX7	8.2	0.2	8.4	0.4	8.6	0.2	Imperceptible	Negligible
LE3	8.2	0.4	8.7	0.6	8.9	0.2	Imperceptible	Negligible
LE9	8.5	1.0	9.5	1.1	9.6	0.1	Imperceptible	Negligible
LE10	8.5	1.2	9.7	1.3	9.7	0.1	Imperceptible	Negligible
LE11	8.1	0.6	8.7	0.6	8.7	>0.0	Imperceptible	Negligible
LE14	8.5	1.1	9.6	1.2	9.7	0.1	Imperceptible	Negligible
SX12	8.6	0.4	9.0	0.4	9.0	>0.0	Imperceptible	Negligible
YX4	8.6	0.6	9.3	0.8	9.4	0.1	Imperceptible	Negligible
SX1	8.5	0.6	9.1	0.8	9.2	0.1	Imperceptible	Negligible
WM2	8.8	2.6	11.4	3.1	11.9	0.5	Very Low	Negligible
WM6	8.7	0.3	9.0	0.3	9.0	>0.0	Imperceptible	Negligible
WM7	9.0	0.5	9.6	0.6	9.6	0.1	Imperceptible	Negligible
WM8	8.9	0.7	9.6	0.8	9.7	0.1	Imperceptible	Negligible
WM4	8.4	0.4	8.8	0.4	8.8	>0.0	Imperceptible	Negligible
WB8	9.0	2.2	11.2	2.3	11.3	0.1	Imperceptible	Negligible
WB9	9.0	1.4	10.4	1.4	10.4	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB10	9.1	0.6	9.7	0.6	9.7	>0.0	Imperceptible	Negligible
BK2	9.1	0.7	9.8	0.7	9.9	>0.0	Imperceptible	Negligible
BK4	10.0	0.7	10.7	0.7	10.6	<0.0	Imperceptible	Negligible
BK5	10.0	1.0	11.0	1.1	11.0	>0.0	Imperceptible	Negligible
IP1	10.3	1.8	12.0	1.8	12.1	>0.0	Imperceptible	Negligible
IP2	10.1	1.4	11.5	1.5	11.5	>0.0	Imperceptible	Negligible
BK3	9.1	1.0	10.1	1.0	10.1	>0.0	Imperceptible	Negligible
IP3	9.3	1.9	11.2	2.0	11.3	0.1	Imperceptible	Negligible
IP4	9.7	2.9	12.6	3.0	12.7	0.1	Imperceptible	Negligible
IP5	10.1	0.4	10.6	0.4	10.6	>0.0	Imperceptible	Negligible
IP6	9.5	0.1	9.6	0.1	9.6	>0.0	Imperceptible	Negligible
IP7	9.9	0.1	10.0	0.1	10.0	>0.0	Imperceptible	Negligible
IP8	10.1	0.1	10.2	0.1	10.2	>0.0	Imperceptible	Negligible
IP9	10.1	0.1	10.2	0.1	10.2	>0.0	Imperceptible	Negligible
IP10	10.1	0.1	10.2	0.1	10.2	>0.0	Imperceptible	Negligible
IP11	10.1	0.1	10.2	0.1	10.2	>0.0	Imperceptible	Negligible
ND1	9.7	2.4	12.0	2.4	12.0	>0.0	Imperceptible	Negligible
ND2	9.7	0.7	10.4	0.7	10.4	>0.0	Imperceptible	Negligible
ND3	9.1	1.2	10.3	1.2	10.2	<0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND4	8.8	1.1	9.9	1.2	9.9	>0.0	Imperceptible	Negligible
ND5	8.9	1.0	9.9	1.0	9.9	>0.0	Imperceptible	Negligible
ND6	8.7	0.2	8.9	0.2	8.9	>0.0	Imperceptible	Negligible
WM9	8.6	0.3	8.8	0.3	8.8	>0.0	Imperceptible	Negligible
ND7	9.1	0.9	10.0	0.9	10.0	>0.0	Imperceptible	Negligible
FR1	8.7	0.6	9.3	0.6	9.2	<0.0	Imperceptible	Negligible
FR2	8.6	0.9	9.5	0.9	9.5	<0.0	Imperceptible	Negligible
FR3	8.6	0.3	8.9	0.3	8.9	>0.0	Imperceptible	Negligible
FR4	8.7	0.6	9.3	0.6	9.3	>0.0	Imperceptible	Negligible
FR5	8.5	0.4	8.9	0.4	8.9	>0.0	Imperceptible	Negligible
FR6	8.6	0.3	8.9	0.3	8.9	>0.0	Imperceptible	Negligible
IP12	9.3	0.1	9.4	0.1	9.4	>0.0	Imperceptible	Negligible
IP13	10.0	0.1	10.1	0.1	10.1	>0.0	Imperceptible	Negligible
IP14	9.3	2.1	11.4	2.1	11.4	<0.0	Imperceptible	Negligible
IP15	9.2	1.7	10.9	1.7	10.8	<0.0	Imperceptible	Negligible
WB11	9.0	0.8	9.8	0.8	9.9	>0.0	Imperceptible	Negligible
WB12	8.7	0.7	9.4	0.7	9.4	<0.0	Imperceptible	Negligible
WB7	8.9	0.9	9.8	0.9	9.8	>0.0	Imperceptible	Negligible
WB6	8.8	0.7	9.5	0.8	9.5	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB5	8.8	0.8	9.6	0.8	9.6	>0.0	Imperceptible	Negligible
WB4	8.8	0.6	9.3	0.6	9.4	>0.0	Imperceptible	Negligible
WB3	8.6	0.6	9.2	0.6	9.2	<0.0	Imperceptible	Negligible
WB2	8.6	0.8	9.4	0.7	9.3	-0.1	Imperceptible	Negligible
SX13	8.7	0.3	9.0	0.3	9.0	>0.0	Imperceptible	Negligible
SX14	8.8	0.4	9.2	0.4	9.3	>0.0	Imperceptible	Negligible
WM13	8.5	0.4	8.9	0.4	8.9	>0.0	Imperceptible	Negligible
HS1	8.6	0.7	9.3	0.7	9.3	>0.0	Imperceptible	Negligible
HS2	8.6	0.4	9.1	0.5	9.1	>0.0	Imperceptible	Negligible
SW1	7.9	0.4	8.3	0.4	8.3	>0.0	Imperceptible	Negligible
YX2	8.3	0.9	9.2	1.0	9.4	0.1	Imperceptible	Negligible
YX6	8.2	0.5	8.8	0.8	9.1	0.3	Imperceptible	Negligible
SX2	8.6	0.2	8.7	0.2	8.7	>0.0	Imperceptible	Negligible
SX4	8.4	1.1	9.5	1.1	9.5	0.1	Imperceptible	Negligible
SX3	8.7	0.2	8.9	0.2	8.9	>0.0	Imperceptible	Negligible
SX10	8.7	0.8	9.5	1.0	9.7	0.1	Imperceptible	Negligible
SX5	8.5	1.4	9.8	1.6	10.1	0.2	Imperceptible	Negligible
SX6	8.4	2.3	10.7	2.8	11.2	0.4	Very Low	Negligible
SX7	8.4	2.6	11.0	3.1	11.5	0.5	Very Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX11	8.5	0.7	9.2	0.8	9.2	0.1	Imperceptible	Negligible
SW3	8.0	1.3	9.2	1.4	9.3	0.1	Imperceptible	Negligible
SW2	8.0	0.9	8.9	1.0	8.9	0.1	Imperceptible	Negligible
YX8	8.4	0.5	8.9	0.6	9.0	0.1	Imperceptible	Negligible
LE13	8.0	0.6	8.6	0.8	8.8	0.2	Imperceptible	Negligible
LE12	8.4	0.5	8.8	0.5	8.9	0.1	Imperceptible	Negligible
LE7	8.4	0.2	8.6	0.4	8.8	0.2	Imperceptible	Negligible
LE1	8.5	0.7	9.2	0.8	9.2	0.1	Imperceptible	Negligible
LE8	8.5	0.4	8.9	0.5	8.9	>0.0	Imperceptible	Negligible
LE6	8.4	0.6	9.0	1.0	9.3	0.3	Imperceptible	Negligible
LE5	8.4	0.4	8.8	0.6	8.9	0.2	Imperceptible	Negligible
ND8	8.7	1.5	10.2	1.5	10.2	<0.0	Imperceptible	Negligible
WM1	8.4	0.2	8.6	0.2	8.6	>0.0	Imperceptible	Negligible
SX8	8.5	0.1	8.6	0.1	8.6	>0.0	Imperceptible	Negligible
SX9	8.5	0.1	8.6	0.1	8.6	>0.0	Imperceptible	Negligible
LE4	8.4	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
YX5	8.4	0.1	8.5	0.1	8.5	>0.0	Imperceptible	Negligible
LW2	8.5	0.7	9.1	0.7	9.2	>0.0	Imperceptible	Negligible
BK1	9.0	1.1	10.1	1.4	10.4	0.3	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM10	8.8	1.4	10.2	1.4	10.2	>0.0	Imperceptible	Negligible
WB1	9.2	1.5	10.7	1.5	10.7	<0.0	Imperceptible	Negligible
BC6	8.6	0.6	9.2	0.7	9.3	>0.0	Imperceptible	Negligible
LW4	8.7	0.7	9.4	0.7	9.4	>0.0	Imperceptible	Negligible
LW7	8.8	0.3	9.1	0.3	9.1	<0.0	Imperceptible	Negligible
LW8	9.1	0.7	9.8	0.7	9.8	>0.0	Imperceptible	Negligible
LW9	8.8	0.5	9.4	0.6	9.4	>0.0	Imperceptible	Negligible
LE2	8.3	0.2	8.5	0.2	8.6	>0.0	Imperceptible	Negligible
WM5	8.7	0.3	9.0	0.3	9.0	>0.0	Imperceptible	Negligible
WM11	8.7	0.4	9.1	0.4	9.1	>0.0	Imperceptible	Negligible
WM12	8.7	0.2	8.8	0.2	8.9	>0.0	Imperceptible	Negligible
SX15	8.5	3.0	11.5	3.6	12.0	0.5	Very Low	Negligible
YX9	8.6	0.1	8.8	0.1	8.8	>0.0	Imperceptible	Negligible
LE15	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE16	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE19	8.3	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
LE17	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
LE18	8.2	0.0	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE20	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE21	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE22	8.3	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE23	8.2	0.0	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
WM3	8.5	0.6	9.2	0.6	9.2	>0.0	Imperceptible	Negligible
WM14	8.5	0.1	8.6	0.1	8.6	>0.0	Imperceptible	Negligible
YX10	8.5	1.0	9.5	1.0	9.5	>0.0	Imperceptible	Negligible
LE24	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
YX11	8.5	0.3	8.8	0.3	8.8	>0.0	Imperceptible	Negligible
YX12	8.5	0.3	8.8	0.3	8.8	>0.0	Imperceptible	Negligible
LE25	8.2	0.0	8.3	0.0	8.3	>0.0	Imperceptible	Negligible
LE26	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
LE27	8.3	0.0	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE28	8.2	0.1	8.4	0.2	8.4	>0.0	Imperceptible	Negligible
LE29	8.2	0.0	8.3	0.0	8.3	>0.0	Imperceptible	Negligible
LE30	8.0	0.1	8.1	0.1	8.1	>0.0	Imperceptible	Negligible
LE31	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE32	8.4	0.1	8.5	0.1	8.6	>0.0	Imperceptible	Negligible
LE33	8.4	0.1	8.6	0.3	8.7	0.1	Imperceptible	Negligible
LE34	8.4	0.1	8.5	0.1	8.5	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE35	8.5	0.1	8.6	0.1	8.6	>0.0	Imperceptible	Negligible
LE36	8.4	0.3	8.6	0.3	8.7	>0.0	Imperceptible	Negligible
LE37	8.4	0.3	8.6	0.3	8.7	0.1	Imperceptible	Negligible
LE38	8.4	0.3	8.7	0.4	8.8	0.1	Imperceptible	Negligible
LE39	8.1	0.2	8.3	0.3	8.4	0.1	Imperceptible	Negligible
LE40	8.4	0.1	8.5	0.1	8.5	>0.0	Imperceptible	Negligible
LE52	8.4	0.2	8.6	0.3	8.8	0.2	Imperceptible	Negligible
LE53	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE54	8.2	0.0	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
YX13	8.6	1.0	9.6	1.1	9.7	>0.0	Imperceptible	Negligible
YX14	8.5	0.1	8.6	0.1	8.6	>0.0	Imperceptible	Negligible
YX15	8.4	0.7	9.1	0.7	9.1	>0.0	Imperceptible	Negligible
YX16	8.6	0.7	9.3	0.5	9.1	-0.2	Imperceptible	Negligible
YX17	8.4	0.1	8.5	0.1	8.5	>0.0	Imperceptible	Negligible
LE55	8.2	0.2	8.4	0.2	8.4	>0.0	Imperceptible	Negligible
LE56	8.3	0.4	8.6	0.4	8.7	>0.0	Imperceptible	Negligible
YX18	8.3	0.4	8.8	0.5	8.8	0.1	Imperceptible	Negligible
YX19	8.2	0.3	8.5	0.5	8.7	0.1	Imperceptible	Negligible
YX20	8.4	0.9	9.3	0.6	9.0	-0.3	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX16	8.4	0.4	8.8	0.4	8.8	>0.0	Imperceptible	Negligible
SX18	8.6	0.1	8.7	0.1	8.7	>0.0	Imperceptible	Negligible
SX17	8.4	0.1	8.5	0.1	8.5	>0.0	Imperceptible	Negligible
SX19	8.6	0.1	8.7	0.1	8.7	>0.0	Imperceptible	Negligible
WM15	8.8	0.2	9.0	0.2	9.0	>0.0	Imperceptible	Negligible
WM16	8.4	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
WM17	8.5	0.1	8.6	0.1	8.6	>0.0	Imperceptible	Negligible
BK6	8.7	0.4	9.2	0.3	9.1	-0.1	Imperceptible	Negligible
BK7	9.7	0.3	10.0	0.3	10.0	>0.0	Imperceptible	Negligible
LE46	8.4	0.2	8.6	0.3	8.7	0.1	Imperceptible	Negligible
BK8	9.8	0.5	10.3	0.5	10.3	>0.0	Imperceptible	Negligible
LE57	8.2	0.4	8.6	0.6	8.8	0.2	Imperceptible	Negligible
LE42	8.1	0.1	8.1	0.1	8.2	>0.0	Imperceptible	Negligible

Table 1.4: Modelled NO_2 concentrations at receptors for 2028 average day cumulative scenario

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	6.6	2.0	8.7	2.1	8.7	0.1	Imperceptible	Negligible
BC2	6.6	9.1	15.6	9.3	15.8	0.2	Imperceptible	Negligible
BC3	7.2	1.4	8.6	1.4	8.7	0.1	Imperceptible	Negligible
BC4	8.2	2.6	10.8	2.7	10.9	0.1	Imperceptible	Negligible
BC5	8.1	5.8	14.0	6.0	14.1	0.2	Imperceptible	Negligible
SW6	6.0	1.1	7.0	1.3	7.3	0.3	Imperceptible	Negligible
SW5	5.9	1.1	7.1	1.4	7.4	0.3	Imperceptible	Negligible
BC7	7.3	2.0	9.3	2.0	9.4	>0.0	Imperceptible	Negligible
BC8	6.4	1.5	7.9	1.7	8.1	0.2	Imperceptible	Negligible
KS4	6.1	1.8	7.9	2.0	8.1	0.2	Imperceptible	Negligible
LW1	13.6	3.8	17.3	3.9	17.5	0.2	Imperceptible	Negligible
LW3	10.1	8.7	18.7	8.7	18.8	0.1	Imperceptible	Negligible
LW5	8.0	1.9	9.9	2.0	10.0	0.1	Imperceptible	Negligible
LW6	8.0	2.4	10.5	2.5	10.5	>0.0	Imperceptible	Negligible
KS1	6.7	1.8	8.5	1.8	8.5	0.1	Imperceptible	Negligible
KS2	6.1	2.8	8.9	3.0	9.1	0.3	Imperceptible	Negligible
KS3	6.1	3.4	9.5	3.7	9.8	0.3	Imperceptible	Negligible
SW4	5.9	1.9	7.8	2.2	8.1	0.3	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
HS3	5.8	2.3	8.2	2.6	8.5	0.3	Imperceptible	Negligible
YX1	5.9	5.5	11.4	6.4	12.3	0.9	Low	Negligible
YX3	5.9	5.2	11.1	5.1	11.0	-0.1	Imperceptible	Negligible
YX7	5.8	0.9	6.7	0.4	6.2	-0.5	Very Low	Negligible
LE3	5.9	1.5	7.4	2.3	8.2	0.8	Low	Negligible
LE9	6.7	7.1	13.8	8.8	15.6	1.8	Low	Negligible
LE10	6.7	4.7	11.4	5.7	12.4	1.1	Low	Negligible
LE11	6.0	2.2	8.2	2.7	8.7	0.5	Very Low	Negligible
LE14	5.9	4.2	10.1	4.6	10.5	0.4	Very Low	Negligible
SX12	6.0	1.6	7.6	1.8	7.8	0.1	Imperceptible	Negligible
YX4	5.8	2.4	8.2	2.4	8.1	-0.1	Imperceptible	Negligible
SX1	5.8	2.4	8.2	2.6	8.4	0.2	Imperceptible	Negligible
WM2	6.3	9.0	15.3	9.6	15.9	0.6	Very Low	Negligible
WM6	6.5	1.3	7.8	1.4	7.8	0.1	Imperceptible	Negligible
WM7	6.7	2.5	9.2	2.7	9.4	0.2	Imperceptible	Negligible
WM8	6.9	3.1	10.0	3.3	10.2	0.2	Imperceptible	Negligible
WM4	6.6	1.5	8.1	1.6	8.2	0.1	Imperceptible	Negligible
WB8	8.2	7.4	15.6	7.5	15.7	0.1	Imperceptible	Negligible
WB9	8.2	5.2	13.4	5.2	13.4	<0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB10	7.8	2.9	10.7	2.9	10.7	>0.0	Imperceptible	Negligible
BK2	9.0	3.2	12.2	3.2	12.2	>0.0	Imperceptible	Negligible
BK4	9.4	2.4	11.8	2.3	11.7	-0.1	Imperceptible	Negligible
BK5	9.4	3.7	13.1	3.7	13.2	0.1	Imperceptible	Negligible
IP1	10.3	5.2	15.5	5.2	15.5	>0.0	Imperceptible	Negligible
IP2	8.2	5.0	13.2	5.0	13.2	>0.0	Imperceptible	Negligible
BK3	8.4	3.4	11.8	3.4	11.8	>0.0	Imperceptible	Negligible
IP3	7.2	5.9	13.1	5.9	13.2	>0.0	Imperceptible	Negligible
IP4	7.4	8.9	16.3	8.9	16.3	>0.0	Imperceptible	Negligible
IP5	7.6	1.3	8.9	1.3	8.9	>0.0	Imperceptible	Negligible
IP6	9.3	0.4	9.7	0.5	9.7	>0.0	Imperceptible	Negligible
IP7	10.9	0.3	11.2	0.3	11.2	0.0	Imperceptible	Negligible
IP8	12.8	0.3	13.1	0.3	13.1	>0.0	Imperceptible	Negligible
IP9	12.8	0.3	13.1	0.3	13.1	0.0	Imperceptible	Negligible
IP10	12.8	0.3	13.1	0.3	13.1	0.0	Imperceptible	Negligible
IP11	12.8	0.3	13.1	0.3	13.1	0.0	Imperceptible	Negligible
ND1	9.9	6.2	16.1	6.2	16.1	>0.0	Imperceptible	Negligible
ND2	8.7	1.9	10.6	1.9	10.6	>0.0	Imperceptible	Negligible
ND3	7.6	3.7	11.3	3.7	11.3	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND4	7.1	4.5	11.6	4.8	11.9	0.3	Imperceptible	Negligible
ND5	6.8	3.2	10.0	3.4	10.2	0.2	Imperceptible	Negligible
ND6	6.9	0.6	7.5	0.6	7.5	>0.0	Imperceptible	Negligible
WM9	6.4	1.2	7.7	1.5	7.9	0.2	Imperceptible	Negligible
ND7	6.8	2.7	9.4	2.8	9.5	0.1	Imperceptible	Negligible
FR1	6.1	1.6	7.7	1.7	7.7	0.1	Imperceptible	Negligible
FR2	6.8	3.2	10.0	3.2	10.1	0.1	Imperceptible	Negligible
FR3	6.8	1.1	7.9	1.1	8.0	>0.0	Imperceptible	Negligible
FR4	5.9	1.7	7.6	1.7	7.6	0.1	Imperceptible	Negligible
FR5	5.9	1.3	7.2	1.4	7.2	0.1	Imperceptible	Negligible
FR6	5.9	1.3	7.2	1.4	7.3	0.1	Imperceptible	Negligible
IP12	9.7	0.3	10.0	0.3	10.0	0.0	Imperceptible	Negligible
IP13	10.5	0.4	10.9	0.4	10.9	0.0	Imperceptible	Negligible
IP14	9.2	8.3	17.5	8.4	17.6	0.1	Imperceptible	Negligible
IP15	8.6	6.4	15.0	6.5	15.1	0.1	Imperceptible	Negligible
WB11	8.5	3.2	11.7	3.5	12.0	0.3	Imperceptible	Negligible
WB12	8.2	2.1	10.3	2.9	11.2	0.9	Low	Negligible
WB7	7.8	3.1	10.9	3.5	11.3	0.4	Imperceptible	Negligible
WB6	8.2	2.7	10.9	3.2	11.4	0.5	Very Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB5	8.7	6.7	15.4	7.1	15.8	0.4	Very Low	Negligible
WB4	8.7	2.5	11.1	2.6	11.3	0.2	Imperceptible	Negligible
WB3	7.7	2.9	10.6	2.8	10.5	-0.2	Imperceptible	Negligible
WB2	7.7	4.7	12.4	3.2	10.9	-1.5	Low	Negligible
SX13	6.1	1.4	7.5	1.5	7.6	0.2	Imperceptible	Negligible
SX14	6.2	1.7	7.8	1.8	7.9	0.1	Imperceptible	Negligible
WM13	6.3	1.4	7.6	1.4	7.7	>0.0	Imperceptible	Negligible
HS1	6.8	2.6	9.3	2.7	9.5	0.2	Imperceptible	Negligible
HS2	5.8	1.7	7.5	1.9	7.7	0.2	Imperceptible	Negligible
SW1	6.4	1.8	8.2	1.9	8.3	>0.0	Imperceptible	Negligible
YX2	5.9	3.2	9.1	3.3	9.1	0.1	Imperceptible	Negligible
YX6	6.0	1.9	7.9	2.1	8.1	0.2	Imperceptible	Negligible
SX2	6.1	0.6	6.7	0.7	6.8	>0.0	Imperceptible	Negligible
SX4	6.6	4.2	10.8	4.6	11.2	0.4	Imperceptible	Negligible
SX3	6.0	0.8	6.8	0.8	6.8	>0.0	Imperceptible	Negligible
SX10	6.0	3.2	9.2	3.4	9.4	0.2	Imperceptible	Negligible
SX5	6.0	5.0	11.0	0.6	6.6	-4.5	High	Moderate beneficial
SX6	6.0	8.1	14.1	0.7	6.7	-7.4	High	Moderate beneficial
SX7	6.0	9.0	15.1	0.8	6.8	-8.3	High	Moderate beneficial

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX11	5.9	2.7	8.6	2.9	8.8	0.2	Imperceptible	Negligible
SW3	5.9	4.5	10.3	5.0	10.9	0.6	Very Low	Negligible
SW2	5.9	3.1	9.0	3.5	9.4	0.4	Very Low	Negligible
YX8	5.8	1.9	7.7	2.1	8.0	0.2	Imperceptible	Negligible
LE13	5.8	2.8	8.6	2.9	8.7	0.1	Imperceptible	Negligible
LE12	6.3	1.9	8.2	2.0	8.4	0.2	Imperceptible	Negligible
LE7	6.0	0.8	6.8	1.1	7.1	0.3	Imperceptible	Negligible
LE1	6.7	3.7	10.4	5.6	12.4	1.9	Low	Negligible
LE8	6.7	2.0	8.7	2.4	9.1	0.4	Imperceptible	Negligible
LE6	5.9	2.3	8.2	0.4	6.3	-1.9	Low	Negligible
LE5	5.9	1.4	7.3	0.4	6.2	-1.0	Low	Negligible
ND8	6.4	4.5	10.8	4.6	10.9	0.1	Imperceptible	Negligible
WM1	6.0	0.7	6.7	0.4	6.4	-0.3	Imperceptible	Negligible
SX8	6.0	0.3	6.3	1.0	7.0	0.8	Very Low	Negligible
SX9	6.0	0.3	6.3	0.9	7.0	0.6	Very Low	Negligible
LE4	5.9	0.2	6.0	0.3	6.1	0.1	Imperceptible	Negligible
YX5	5.9	0.2	6.1	0.3	6.2	0.1	Imperceptible	Negligible
LW2	10.1	2.4	12.4	2.4	12.4	>0.0	Imperceptible	Negligible
BK1	9.5	5.2	14.6	6.0	15.4	0.8	Very Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM10	6.7	4.7	11.4	5.1	11.8	0.4	Imperceptible	Negligible
WB1	7.4	5.5	12.9	5.3	12.6	-0.2	Imperceptible	Negligible
BC6	6.0	2.2	8.2	2.5	8.5	0.3	Imperceptible	Negligible
LW4	8.7	2.5	11.3	2.6	11.4	0.1	Imperceptible	Negligible
LW7	8.0	1.2	9.3	1.3	9.3	>0.0	Imperceptible	Negligible
LW8	19.4	2.8	22.2	2.1	21.5	-0.7	Very Low	Negligible
LW9	8.0	2.2	10.2	2.3	10.3	0.1	Imperceptible	Negligible
LE2	6.0	0.7	6.8	1.2	7.2	0.4	Very Low	Negligible
WM5	7.3	1.3	8.6	1.4	8.7	0.1	Imperceptible	Negligible
WM11	6.5	1.8	8.3	2.0	8.5	0.2	Imperceptible	Negligible
WM12	6.5	0.7	7.2	0.8	7.3	0.1	Imperceptible	Negligible
SX15	6.0	10.9	16.9	0.5	6.5	-10.4	High	Moderate beneficial
YX9	5.8	0.4	6.2	0.5	6.3	>0.0	Imperceptible	Negligible
LE15	5.9	0.3	6.1	0.4	6.3	0.1	Imperceptible	Negligible
LE16	5.9	0.2	6.1	0.3	6.2	0.1	Imperceptible	Negligible
LE19	6.0	0.3	6.3	0.4	6.4	0.1	Imperceptible	Negligible
LE17	5.8	0.2	6.1	0.3	6.1	0.1	Imperceptible	Negligible
LE18	6.0	0.2	6.2	0.3	6.2	0.1	Imperceptible	Negligible
LE20	6.0	0.3	6.2	0.3	6.3	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE21	6.0	0.3	6.2	0.3	6.3	>0.0	Imperceptible	Negligible
LE22	6.0	0.3	6.3	0.3	6.3	>0.0	Imperceptible	Negligible
LE23	6.0	0.2	6.2	0.2	6.2	>0.0	Imperceptible	Negligible
WM3	6.3	2.5	8.7	2.5	8.8	0.1	Imperceptible	Negligible
WM14	6.3	0.4	6.7	0.5	6.7	>0.0	Imperceptible	Negligible
YX10	5.9	3.4	9.2	3.9	9.7	0.5	Very Low	Negligible
LE24	6.0	0.3	6.2	0.3	6.3	>0.0	Imperceptible	Negligible
YX11	5.9	1.1	6.9	1.3	7.1	0.2	Imperceptible	Negligible
YX12	5.9	0.9	6.8	1.1	7.0	0.2	Imperceptible	Negligible
LE25	5.8	0.1	5.9	0.2	5.9	>0.0	Imperceptible	Negligible
LE26	5.8	0.2	6.0	0.3	6.1	0.1	Imperceptible	Negligible
LE27	5.8	0.2	6.0	0.2	6.0	>0.0	Imperceptible	Negligible
LE28	5.9	0.4	6.3	0.7	6.6	0.3	Imperceptible	Negligible
LE29	5.8	0.1	5.9	0.2	5.9	>0.0	Imperceptible	Negligible
LE30	5.8	0.5	6.3	0.5	6.3	0.1	Imperceptible	Negligible
LE31	5.8	0.3	6.1	0.3	6.1	0.1	Imperceptible	Negligible
LE32	6.0	0.4	6.4	0.5	6.5	0.2	Imperceptible	Negligible
LE33	6.0	0.6	6.6	0.8	6.8	0.2	Imperceptible	Negligible
LE34	6.3	0.3	6.7	0.5	6.8	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE35	6.7	0.5	7.3	0.7	7.4	0.1	Imperceptible	Negligible
LE36	6.3	1.1	7.4	2.1	8.4	1.0	Low	Negligible
LE37	6.3	1.2	7.5	2.8	9.2	1.7	Low	Negligible
LE38	6.3	1.3	7.6	3.0	9.4	1.7	Low	Negligible
LE39	5.9	0.9	6.8	1.2	7.1	0.3	Imperceptible	Negligible
LE40	6.3	0.4	6.7	0.6	6.9	0.2	Imperceptible	Negligible
LE52	6.0	0.8	6.8	1.0	7.0	0.2	Imperceptible	Negligible
LE53	6.0	0.3	6.2	0.3	6.3	>0.0	Imperceptible	Negligible
LE54	6.0	0.2	6.2	0.2	6.2	0.1	Imperceptible	Negligible
YX13	5.9	3.5	9.4	4.0	9.9	0.5	Very Low	Negligible
YX14	5.9	0.2	6.1	0.2	6.1	>0.0	Imperceptible	Negligible
YX15	5.9	2.3	8.2	2.6	8.5	0.3	Imperceptible	Negligible
YX16	5.9	2.4	8.3	2.9	8.7	0.4	Very Low	Negligible
YX17	5.9	0.3	6.3	0.4	6.3	0.1	Imperceptible	Negligible
LE55	5.9	0.7	6.6	0.8	6.7	0.1	Imperceptible	Negligible
LE56	6.0	1.6	7.6	1.7	7.8	0.2	Imperceptible	Negligible
YX18	5.9	1.5	7.4	1.3	7.2	-0.2	Imperceptible	Negligible
YX19	6.0	1.1	7.1	1.2	7.2	0.1	Imperceptible	Negligible
YX20	5.8	3.0	8.8	3.5	9.3	0.5	Very Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX16	6.6	1.7	8.2	1.8	8.4	0.2	Imperceptible	Negligible
SX18	6.0	0.2	6.2	0.3	6.3	0.1	Imperceptible	Negligible
SX17	6.6	0.4	6.9	0.7	7.3	0.3	Imperceptible	Negligible
SX19	6.2	0.2	6.4	0.4	6.5	0.1	Imperceptible	Negligible
WM15	6.6	0.8	7.5	1.0	7.6	0.1	Imperceptible	Negligible
WM16	6.5	0.3	6.8	0.4	6.9	0.1	Imperceptible	Negligible
WM17	6.7	0.3	7.0	0.5	7.2	0.2	Imperceptible	Negligible
BK6	8.3	1.6	9.9	1.2	9.5	-0.4	Imperceptible	Negligible
BK7	8.4	1.1	9.5	1.1	9.5	>0.0	Imperceptible	Negligible
LE46	6.0	0.8	6.8	1.0	7.0	0.3	Imperceptible	Negligible
BK8	8.6	1.7	10.2	1.7	10.2	0.0	Imperceptible	Negligible
LE57	5.9	1.5	7.3	2.4	8.2	0.9	Low	Negligible
LE42	5.8	0.2	6.0	0.3	6.1	0.1	Imperceptible	Negligible

Table 1.5: Modelled PM_{10} concentrations at receptors for 2028 average day cumulative scenario

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	13.3	0.3	13.6	0.3	13.6	>0.0	Imperceptible	Negligible
BC2	14.8	1.4	16.2	1.5	16.3	>0.0	Imperceptible	Negligible
BC3	12.6	0.2	12.8	0.2	12.8	>0.0	Imperceptible	Negligible
BC4	12.5	0.4	12.9	0.4	13.0	>0.0	Imperceptible	Negligible
BC5	13.9	1.0	14.9	1.0	14.9	>0.0	Imperceptible	Negligible
SW6	13.6	0.2	13.8	0.3	13.8	>0.0	Imperceptible	Negligible
SW5	14.3	0.2	14.5	0.3	14.5	>0.0	Imperceptible	Negligible
BC7	15.0	0.3	15.2	0.3	15.3	>0.0	Imperceptible	Negligible
BC8	13.6	0.2	13.8	0.2	13.8	>0.0	Imperceptible	Negligible
KS4	14.0	0.2	14.3	0.3	14.3	>0.0	Imperceptible	Negligible
LW1	13.9	0.6	14.5	0.6	14.5	>0.0	Imperceptible	Negligible
LW3	12.3	1.3	13.6	1.3	13.6	>0.0	Imperceptible	Negligible
LW5	13.3	0.3	13.5	0.3	13.6	>0.0	Imperceptible	Negligible
LW6	13.3	0.4	13.6	0.4	13.6	>0.0	Imperceptible	Negligible
KS1	12.7	0.2	12.9	0.2	12.9	>0.0	Imperceptible	Negligible
KS2	14.0	0.4	14.5	0.5	14.5	>0.0	Imperceptible	Negligible
KS3	14.0	0.5	14.6	0.6	14.6	0.1	Imperceptible	Negligible
SW4	12.5	0.3	12.8	0.4	12.9	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
HS3	14.9	0.4	15.2	0.4	15.3	0.1	Imperceptible	Negligible
YX1	14.8	1.0	15.8	1.1	15.9	0.1	Imperceptible	Negligible
YX3	13.4	0.9	14.3	0.9	14.3	<0.0	Imperceptible	Negligible
YX7	13.4	0.1	13.5	0.1	13.4	-0.1	Imperceptible	Negligible
LE3	13.6	0.3	13.8	0.4	14.0	0.1	Imperceptible	Negligible
LE9	12.6	0.6	13.2	0.7	13.3	0.1	Imperceptible	Negligible
LE10	12.6	0.7	13.3	0.9	13.5	0.2	Imperceptible	Negligible
LE11	12.9	0.3	13.2	0.4	13.3	0.1	Imperceptible	Negligible
LE14	14.3	0.6	14.9	0.7	15.0	0.1	Imperceptible	Negligible
SX12	14.1	0.2	14.3	0.2	14.4	>0.0	Imperceptible	Negligible
YX4	14.8	0.4	15.2	0.4	15.2	<0.0	Imperceptible	Negligible
SX1	14.1	0.4	14.4	0.5	14.5	0.1	Imperceptible	Negligible
WM2	14.7	1.6	16.2	1.8	16.5	0.3	Imperceptible	Negligible
WM6	14.1	0.2	14.3	0.2	14.3	>0.0	Imperceptible	Negligible
WM7	15.4	0.3	15.7	0.3	15.7	>0.0	Imperceptible	Negligible
WM8	14.8	0.4	15.2	0.4	15.2	>0.0	Imperceptible	Negligible
WM4	13.1	0.2	13.3	0.2	13.3	>0.0	Imperceptible	Negligible
WB8	13.5	1.3	14.8	1.3	14.8	0.1	Imperceptible	Negligible
WB9	13.5	0.8	14.3	0.8	14.3	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB10	14.5	0.3	14.9	0.4	14.9	>0.0	Imperceptible	Negligible
BK2	14.9	0.4	15.3	0.4	15.3	>0.0	Imperceptible	Negligible
BK4	16.8	0.4	17.2	0.4	17.2	<0.0	Imperceptible	Negligible
BK5	16.8	0.6	17.4	0.6	17.4	>0.0	Imperceptible	Negligible
IP1	17.2	1.0	18.2	1.0	18.3	>0.0	Imperceptible	Negligible
IP2	16.7	0.8	17.5	0.8	17.6	>0.0	Imperceptible	Negligible
BK3	14.7	0.6	15.3	0.6	15.3	>0.0	Imperceptible	Negligible
IP3	14.7	1.1	15.8	1.2	15.8	>0.0	Imperceptible	Negligible
IP4	16.2	1.7	17.9	1.7	18.0	0.1	Imperceptible	Negligible
IP5	17.0	0.3	17.2	0.3	17.2	>0.0	Imperceptible	Negligible
IP6	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
IP7	14.5	0.1	14.6	0.1	14.6	>0.0	Imperceptible	Negligible
IP8	14.8	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
IP9	14.8	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
IP10	14.8	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
IP11	14.8	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
ND1	15.3	1.3	16.6	1.4	16.7	>0.0	Imperceptible	Negligible
ND2	15.9	0.4	16.3	0.4	16.3	>0.0	Imperceptible	Negligible
ND3	15.0	0.7	15.6	0.7	15.6	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND4	14.1	0.7	14.8	0.7	14.8	>0.0	Imperceptible	Negligible
ND5	14.9	0.6	15.5	0.6	15.5	>0.0	Imperceptible	Negligible
ND6	14.4	0.1	14.5	0.1	14.5	>0.0	Imperceptible	Negligible
WM9	14.0	0.2	14.2	0.2	14.2	>0.0	Imperceptible	Negligible
ND7	15.3	0.5	15.8	0.5	15.9	>0.0	Imperceptible	Negligible
FR1	14.8	0.3	15.2	0.4	15.2	>0.0	Imperceptible	Negligible
FR2	13.5	0.5	14.1	0.6	14.1	>0.0	Imperceptible	Negligible
FR3	13.5	0.2	13.7	0.2	13.7	>0.0	Imperceptible	Negligible
FR4	15.0	0.3	15.3	0.3	15.3	>0.0	Imperceptible	Negligible
FR5	14.2	0.2	14.4	0.2	14.4	>0.0	Imperceptible	Negligible
FR6	14.9	0.2	15.0	0.2	15.1	>0.0	Imperceptible	Negligible
IP12	14.1	0.0	14.2	0.1	14.2	>0.0	Imperceptible	Negligible
IP13	14.4	0.1	14.4	0.1	14.5	>0.0	Imperceptible	Negligible
IP14	14.0	1.2	15.1	1.2	15.2	>0.0	Imperceptible	Negligible
IP15	14.2	1.0	15.2	1.0	15.3	>0.0	Imperceptible	Negligible
WB11	13.7	0.4	14.1	0.5	14.2	0.1	Imperceptible	Negligible
WB12	13.5	0.3	13.8	0.4	14.0	0.1	Imperceptible	Negligible
WB7	13.9	0.5	14.3	0.5	14.4	0.1	Imperceptible	Negligible
WB6	13.3	0.4	13.7	0.5	13.8	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB5	12.9	0.4	13.3	0.5	13.4	0.1	Imperceptible	Negligible
WB4	12.9	0.3	13.2	0.3	13.2	>0.0	Imperceptible	Negligible
WB3	13.0	0.3	13.4	0.3	13.4	>0.0	Imperceptible	Negligible
WB2	13.0	0.5	13.5	0.4	13.5	<0.0	Imperceptible	Negligible
SX13	14.6	0.2	14.8	0.2	14.8	>0.0	Imperceptible	Negligible
SX14	15.0	0.3	15.3	0.3	15.3	>0.0	Imperceptible	Negligible
WM13	14.0	0.2	14.2	0.2	14.3	>0.0	Imperceptible	Negligible
HS1	13.5	0.4	13.9	0.4	13.9	>0.0	Imperceptible	Negligible
HS2	14.8	0.3	15.1	0.3	15.1	>0.0	Imperceptible	Negligible
SW1	11.6	0.2	11.8	0.3	11.8	>0.0	Imperceptible	Negligible
YX2	13.4	0.5	13.9	0.5	13.9	>0.0	Imperceptible	Negligible
YX6	13.5	0.3	13.8	0.4	13.9	0.1	Imperceptible	Negligible
SX2	13.9	0.1	14.0	0.1	14.0	>0.0	Imperceptible	Negligible
SX4	13.0	0.6	13.6	0.7	13.7	>0.0	Imperceptible	Negligible
SX3	14.6	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
SX10	14.7	0.5	15.2	0.6	15.3	0.1	Imperceptible	Negligible
SX5	13.8	0.8	14.6	0.1	13.9	-0.7	Very Low	Negligible
SX6	13.5	1.4	14.9	0.1	13.6	-1.3	Low	Negligible
SX7	13.5	1.6	15.1	0.1	13.6	-1.4	Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX11	13.9	0.4	14.3	0.5	14.4	>0.0	Imperceptible	Negligible
SW3	12.3	0.8	13.1	0.9	13.2	0.1	Imperceptible	Negligible
SW2	12.3	0.5	12.8	0.6	12.9	0.1	Imperceptible	Negligible
YX8	14.2	0.3	14.5	0.3	14.5	>0.0	Imperceptible	Negligible
LE13	12.5	0.4	12.9	0.4	12.9	>0.0	Imperceptible	Negligible
LE12	13.4	0.3	13.7	0.3	13.7	>0.0	Imperceptible	Negligible
LE7	14.0	0.1	14.1	0.2	14.2	>0.0	Imperceptible	Negligible
LE1	12.6	0.4	13.0	0.6	13.2	0.2	Imperceptible	Negligible
LE8	12.6	0.3	12.9	0.3	12.9	>0.0	Imperceptible	Negligible
LE6	14.0	0.4	14.3	0.1	14.0	-0.3	Imperceptible	Negligible
LE5	14.0	0.2	14.2	0.1	14.0	-0.2	Imperceptible	Negligible
ND8	14.5	0.9	15.4	0.9	15.4	>0.0	Imperceptible	Negligible
WM1	13.5	0.1	13.6	0.1	13.6	-0.1	Imperceptible	Negligible
SX8	14.2	0.0	14.2	0.2	14.4	0.1	Imperceptible	Negligible
SX9	14.2	0.0	14.3	0.2	14.4	0.1	Imperceptible	Negligible
LE4	14.0	0.0	14.0	0.1	14.0	>0.0	Imperceptible	Negligible
YX5	14.2	0.0	14.3	0.1	14.3	>0.0	Imperceptible	Negligible
LW2	12.3	0.4	12.7	0.4	12.7	>0.0	Imperceptible	Negligible
BK1	13.5	0.7	14.2	0.8	14.3	0.2	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM10	14.9	0.8	15.8	0.9	15.8	0.1	Imperceptible	Negligible
WB1	14.7	0.9	15.7	0.9	15.6	<0.0	Imperceptible	Negligible
BC6	14.8	0.4	15.2	0.4	15.2	>0.0	Imperceptible	Negligible
LW4	12.7	0.4	13.1	0.4	13.1	>0.0	Imperceptible	Negligible
LW7	13.3	0.2	13.4	0.2	13.4	>0.0	Imperceptible	Negligible
LW8	13.1	0.4	13.5	0.3	13.4	-0.1	Imperceptible	Negligible
LW9	13.3	0.3	13.6	0.4	13.6	>0.0	Imperceptible	Negligible
LE2	13.7	0.1	13.8	0.2	13.9	0.1	Imperceptible	Negligible
WM5	14.5	0.2	14.7	0.2	14.7	>0.0	Imperceptible	Negligible
WM11	14.1	0.2	14.4	0.3	14.4	>0.0	Imperceptible	Negligible
WM12	14.1	0.1	14.2	0.1	14.2	>0.0	Imperceptible	Negligible
SX15	13.8	1.8	15.6	0.1	13.9	-1.7	Low	Negligible
YX9	14.8	0.1	14.9	0.1	14.9	>0.0	Imperceptible	Negligible
LE15	13.6	0.0	13.6	0.1	13.7	>0.0	Imperceptible	Negligible
LE16	13.6	0.0	13.6	0.0	13.6	>0.0	Imperceptible	Negligible
LE19	13.7	0.0	13.7	0.1	13.8	>0.0	Imperceptible	Negligible
LE17	13.0	0.0	13.0	0.0	13.0	>0.0	Imperceptible	Negligible
LE18	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
LE20	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE21	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
LE22	13.4	0.0	13.5	0.0	13.5	>0.0	Imperceptible	Negligible
LE23	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
WM3	14.0	0.4	14.4	0.4	14.4	>0.0	Imperceptible	Negligible
WM14	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
YX10	14.6	0.6	15.2	0.7	15.3	0.1	Imperceptible	Negligible
LE24	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
YX11	14.6	0.2	14.8	0.2	14.8	>0.0	Imperceptible	Negligible
YX12	14.6	0.2	14.7	0.2	14.8	>0.0	Imperceptible	Negligible
LE25	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE26	13.0	0.0	13.0	0.0	13.0	>0.0	Imperceptible	Negligible
LE27	13.6	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE28	13.6	0.1	13.7	0.1	13.7	0.1	Imperceptible	Negligible
LE29	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE30	12.5	0.1	12.6	0.1	12.6	>0.0	Imperceptible	Negligible
LE31	12.5	0.0	12.6	0.0	12.6	>0.0	Imperceptible	Negligible
LE32	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
LE33	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
LE34	13.4	0.0	13.5	0.1	13.5	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE35	12.6	0.1	12.7	0.1	12.7	>0.0	Imperceptible	Negligible
LE36	13.4	0.2	13.6	0.2	13.6	>0.0	Imperceptible	Negligible
LE37	13.4	0.2	13.6	0.2	13.6	>0.0	Imperceptible	Negligible
LE38	13.4	0.2	13.6	0.2	13.6	>0.0	Imperceptible	Negligible
LE39	13.0	0.1	13.1	0.1	13.1	>0.0	Imperceptible	Negligible
LE40	13.4	0.1	13.5	0.1	13.5	>0.0	Imperceptible	Negligible
LE52	14.0	0.1	14.1	0.1	14.2	>0.0	Imperceptible	Negligible
LE53	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
LE54	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
YX13	14.8	0.6	15.4	0.7	15.5	0.1	Imperceptible	Negligible
YX14	14.6	0.0	14.6	0.0	14.6	>0.0	Imperceptible	Negligible
YX15	14.0	0.4	14.4	0.5	14.5	0.1	Imperceptible	Negligible
YX16	14.8	0.4	15.2	0.5	15.3	0.1	Imperceptible	Negligible
YX17	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
LE55	13.6	0.1	13.7	0.1	13.7	>0.0	Imperceptible	Negligible
LE56	13.4	0.2	13.7	0.3	13.7	>0.0	Imperceptible	Negligible
YX18	13.4	0.2	13.6	0.2	13.6	<0.0	Imperceptible	Negligible
YX19	13.5	0.2	13.7	0.2	13.7	>0.0	Imperceptible	Negligible
YX20	14.0	0.5	14.5	0.6	14.6	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX16	13.0	0.2	13.2	0.3	13.3	>0.0	Imperceptible	Negligible
SX18	14.7	0.0	14.7	0.0	14.7	>0.0	Imperceptible	Negligible
SX17	13.0	0.1	13.1	0.1	13.1	>0.0	Imperceptible	Negligible
SX19	14.6	0.0	14.7	0.0	14.7	>0.0	Imperceptible	Negligible
WM15	14.5	0.1	14.6	0.1	14.6	>0.0	Imperceptible	Negligible
WM16	13.1	0.0	13.1	0.0	13.1	>0.0	Imperceptible	Negligible
WM17	13.5	0.0	13.5	0.0	13.6	>0.0	Imperceptible	Negligible
BK6	13.8	0.2	14.1	0.2	14.0	-0.1	Imperceptible	Negligible
BK7	16.6	0.2	16.7	0.2	16.8	>0.0	Imperceptible	Negligible
LE46	14.0	0.1	14.1	0.1	14.2	>0.0	Imperceptible	Negligible
BK8	16.4	0.3	16.7	0.3	16.7	>0.0	Imperceptible	Negligible
LE57	13.3	0.2	13.5	0.4	13.6	0.1	Imperceptible	Negligible
LE42	13.0	0.0	13.0	0.0	13.0	>0.0	Imperceptible	Negligible

Table 1.6: Modelled $PM_{2.5}$ concentrations at receptors for 2028 average day cumulative scenario

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	8.0	0.5	8.5	0.6	8.5	>0.0	Imperceptible	Negligible
BC2	8.4	2.5	10.9	2.6	10.9	0.1	Imperceptible	Negligible
BC3	7.9	0.4	8.3	0.4	8.3	>0.0	Imperceptible	Negligible
BC4	8.1	0.7	8.7	0.7	8.8	>0.0	Imperceptible	Negligible
BC5	9.0	1.7	10.7	1.7	10.7	0.1	Imperceptible	Negligible
SW6	8.0	0.4	8.4	0.4	8.4	0.1	Imperceptible	Negligible
SW5	8.2	0.4	8.6	0.5	8.6	0.1	Imperceptible	Negligible
BC7	8.8	0.5	9.3	0.5	9.4	>0.0	Imperceptible	Negligible
BC8	8.0	0.3	8.3	0.4	8.4	>0.0	Imperceptible	Negligible
KS4	8.2	0.4	8.6	0.5	8.6	0.1	Imperceptible	Negligible
LW1	9.8	1.0	10.7	1.0	10.8	0.1	Imperceptible	Negligible
LW3	8.2	2.2	10.4	2.2	10.4	>0.0	Imperceptible	Negligible
LW5	8.6	0.5	9.1	0.5	9.1	>0.0	Imperceptible	Negligible
LW6	8.6	0.6	9.2	0.6	9.2	>0.0	Imperceptible	Negligible
KS1	7.9	0.4	8.3	0.4	8.3	>0.0	Imperceptible	Negligible
KS2	8.2	0.7	8.9	0.8	9.0	0.1	Imperceptible	Negligible
KS3	8.2	0.9	9.1	1.0	9.2	0.1	Imperceptible	Negligible
SW4	7.7	0.6	8.3	0.7	8.4	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
HS3	8.3	0.6	9.0	0.7	9.1	0.1	Imperceptible	Negligible
YX1	8.3	1.7	10.0	1.9	10.2	0.2	Imperceptible	Negligible
YX3	8.1	1.5	9.6	1.5	9.5	<0.0	Imperceptible	Negligible
YX7	7.9	0.2	8.2	0.1	8.1	-0.1	Imperceptible	Negligible
LE3	8.0	0.4	8.4	0.7	8.7	0.3	Imperceptible	Negligible
LE9	8.2	1.0	9.2	1.1	9.3	0.1	Imperceptible	Negligible
LE10	8.2	1.2	9.4	1.5	9.7	0.3	Imperceptible	Negligible
LE11	7.9	0.6	8.4	0.7	8.6	0.1	Imperceptible	Negligible
LE14	8.2	1.1	9.3	1.2	9.5	0.1	Imperceptible	Negligible
SX12	8.3	0.4	8.7	0.4	8.7	>0.0	Imperceptible	Negligible
YX4	8.4	0.6	9.0	0.6	9.0	<0.0	Imperceptible	Negligible
SX1	8.2	0.6	8.8	0.8	9.0	0.1	Imperceptible	Negligible
WM2	8.5	2.7	11.2	3.1	11.6	0.4	Very Low	Negligible
WM6	8.4	0.3	8.7	0.3	8.7	>0.0	Imperceptible	Negligible
WM7	8.8	0.5	9.3	0.6	9.4	0.1	Imperceptible	Negligible
WM8	8.7	0.7	9.4	0.8	9.4	0.1	Imperceptible	Negligible
WM4	8.2	0.4	8.5	0.4	8.6	>0.0	Imperceptible	Negligible
WB8	8.8	2.2	11.0	2.3	11.1	0.1	Imperceptible	Negligible
WB9	8.8	1.4	10.1	1.4	10.2	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB10	8.8	0.6	9.4	0.6	9.4	>0.0	Imperceptible	Negligible
BK2	8.9	0.7	9.6	0.7	9.6	>0.0	Imperceptible	Negligible
BK4	9.7	0.7	10.4	0.7	10.4	<0.0	Imperceptible	Negligible
BK5	9.7	1.0	10.7	1.1	10.8	>0.0	Imperceptible	Negligible
IP1	10.1	1.8	11.8	1.8	11.9	>0.0	Imperceptible	Negligible
IP2	9.8	1.4	11.3	1.5	11.3	>0.0	Imperceptible	Negligible
BK3	8.9	1.0	9.9	1.0	9.9	>0.0	Imperceptible	Negligible
IP3	9.0	1.9	11.0	2.0	11.0	0.1	Imperceptible	Negligible
IP4	9.5	2.9	12.4	3.0	12.5	0.1	Imperceptible	Negligible
IP5	9.9	0.5	10.3	0.5	10.3	>0.0	Imperceptible	Negligible
IP6	9.2	0.2	9.4	0.2	9.4	>0.0	Imperceptible	Negligible
IP7	9.6	0.1	9.7	0.1	9.7	>0.0	Imperceptible	Negligible
IP8	9.8	0.1	9.9	0.1	9.9	>0.0	Imperceptible	Negligible
IP9	9.8	0.1	9.9	0.1	9.9	>0.0	Imperceptible	Negligible
IP10	9.8	0.1	9.9	0.1	9.9	>0.0	Imperceptible	Negligible
IP11	9.8	0.1	9.9	0.1	9.9	>0.0	Imperceptible	Negligible
ND1	9.4	2.4	11.7	2.4	11.8	>0.0	Imperceptible	Negligible
ND2	9.5	0.7	10.2	0.7	10.2	>0.0	Imperceptible	Negligible
ND3	8.8	1.2	10.0	1.2	10.0	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND4	8.5	1.1	9.6	1.2	9.7	0.1	Imperceptible	Negligible
ND5	8.6	1.0	9.6	1.0	9.6	0.1	Imperceptible	Negligible
ND6	8.4	0.2	8.6	0.2	8.6	>0.0	Imperceptible	Negligible
WM9	8.3	0.3	8.6	0.4	8.7	0.1	Imperceptible	Negligible
ND7	8.8	0.9	9.8	0.9	9.8	>0.0	Imperceptible	Negligible
FR1	8.4	0.6	9.0	0.6	9.0	>0.0	Imperceptible	Negligible
FR2	8.3	0.9	9.3	1.0	9.3	>0.0	Imperceptible	Negligible
FR3	8.3	0.3	8.6	0.3	8.6	>0.0	Imperceptible	Negligible
FR4	8.4	0.6	9.0	0.6	9.0	>0.0	Imperceptible	Negligible
FR5	8.2	0.4	8.6	0.4	8.6	>0.0	Imperceptible	Negligible
FR6	8.3	0.3	8.6	0.3	8.7	>0.0	Imperceptible	Negligible
IP12	9.1	0.1	9.2	0.1	9.2	>0.0	Imperceptible	Negligible
IP13	9.7	0.1	9.8	0.1	9.8	>0.0	Imperceptible	Negligible
IP14	9.0	2.0	11.0	2.0	11.0	>0.0	Imperceptible	Negligible
IP15	8.9	1.7	10.6	1.8	10.7	>0.0	Imperceptible	Negligible
WB11	8.8	0.7	9.5	0.8	9.6	0.1	Imperceptible	Negligible
WB12	8.5	0.5	9.0	0.7	9.2	0.2	Imperceptible	Negligible
WB7	8.7	0.8	9.5	0.9	9.6	0.1	Imperceptible	Negligible
WB6	8.5	0.7	9.2	0.8	9.3	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB5	8.5	0.7	9.3	0.8	9.4	0.1	Imperceptible	Negligible
WB4	8.5	0.5	9.0	0.5	9.1	>0.0	Imperceptible	Negligible
WB3	8.4	0.6	9.0	0.6	9.0	>0.0	Imperceptible	Negligible
WB2	8.4	0.8	9.2	0.7	9.1	<0.0	Imperceptible	Negligible
SX13	8.4	0.3	8.8	0.4	8.8	>0.0	Imperceptible	Negligible
SX14	8.6	0.4	9.0	0.5	9.0	>0.0	Imperceptible	Negligible
WM13	8.3	0.3	8.6	0.4	8.6	>0.0	Imperceptible	Negligible
HS1	8.3	0.7	9.0	0.7	9.1	>0.0	Imperceptible	Negligible
HS2	8.4	0.5	8.8	0.5	8.9	>0.0	Imperceptible	Negligible
SW1	7.6	0.4	8.0	0.4	8.0	>0.0	Imperceptible	Negligible
YX2	8.1	0.9	9.0	0.9	9.0	>0.0	Imperceptible	Negligible
YX6	8.0	0.5	8.5	0.6	8.6	0.1	Imperceptible	Negligible
SX2	8.3	0.2	8.5	0.2	8.5	>0.0	Imperceptible	Negligible
SX4	8.1	1.1	9.2	1.1	9.3	0.1	Imperceptible	Negligible
SX3	8.4	0.2	8.6	0.2	8.6	>0.0	Imperceptible	Negligible
SX10	8.4	0.9	9.3	1.0	9.4	0.1	Imperceptible	Negligible
SX5	8.2	1.4	9.6	0.2	8.4	-1.2	Low	Negligible
SX6	8.2	2.4	10.5	0.2	8.3	-2.2	Medium	Minor beneficial
SX7	8.2	2.7	10.8	0.2	8.4	-2.5	Medium	Minor beneficial

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX11	8.2	0.7	8.9	0.8	9.0	0.1	Imperceptible	Negligible
SW3	7.7	1.3	9.0	1.5	9.2	0.2	Imperceptible	Negligible
SW2	7.7	0.9	8.6	1.0	8.7	0.1	Imperceptible	Negligible
YX8	8.1	0.5	8.7	0.6	8.7	0.1	Imperceptible	Negligible
LE13	7.7	0.6	8.4	0.7	8.4	>0.0	Imperceptible	Negligible
LE12	8.1	0.5	8.6	0.5	8.6	>0.0	Imperceptible	Negligible
LE7	8.2	0.2	8.4	0.3	8.4	0.1	Imperceptible	Negligible
LE1	8.2	0.7	8.9	1.1	9.3	0.3	Imperceptible	Negligible
LE8	8.2	0.4	8.6	0.5	8.7	0.1	Imperceptible	Negligible
LE6	8.1	0.7	8.8	0.1	8.2	-0.5	Very Low	Negligible
LE5	8.1	0.4	8.5	0.1	8.2	-0.3	Imperceptible	Negligible
ND8	8.5	1.5	9.9	1.5	10.0	>0.0	Imperceptible	Negligible
WM1	8.2	0.2	8.3	0.1	8.3	-0.1	Imperceptible	Negligible
SX8	8.3	0.1	8.3	0.3	8.5	0.2	Imperceptible	Negligible
SX9	8.3	0.1	8.3	0.3	8.5	0.2	Imperceptible	Negligible
LE4	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
YX5	8.2	0.1	8.2	0.1	8.3	0.1	Imperceptible	Negligible
LW2	8.2	0.6	8.8	0.6	8.9	>0.0	Imperceptible	Negligible
BK1	8.8	1.1	9.9	1.4	10.2	0.3	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM10	8.6	1.4	10.0	1.5	10.1	0.1	Imperceptible	Negligible
WB1	9.0	1.6	10.6	1.6	10.5	-0.1	Imperceptible	Negligible
BC6	8.3	0.6	8.9	0.7	9.0	0.1	Imperceptible	Negligible
LW4	8.5	0.6	9.1	0.7	9.2	>0.0	Imperceptible	Negligible
LW7	8.6	0.3	8.9	0.3	8.9	>0.0	Imperceptible	Negligible
LW8	8.8	0.7	9.6	0.5	9.4	-0.2	Imperceptible	Negligible
LW9	8.6	0.6	9.2	0.6	9.2	>0.0	Imperceptible	Negligible
LE2	8.1	0.2	8.3	0.3	8.4	0.1	Imperceptible	Negligible
WM5	8.5	0.3	8.8	0.3	8.8	>0.0	Imperceptible	Negligible
WM11	8.4	0.4	8.8	0.5	8.9	0.1	Imperceptible	Negligible
WM12	8.4	0.2	8.6	0.2	8.6	>0.0	Imperceptible	Negligible
SX15	8.2	3.1	11.3	0.1	8.3	-3.0	Medium	Minor beneficial
YX9	8.4	0.1	8.5	0.1	8.5	>0.0	Imperceptible	Negligible
LE15	8.0	0.1	8.1	0.1	8.1	>0.0	Imperceptible	Negligible
LE16	8.0	0.1	8.0	0.1	8.1	>0.0	Imperceptible	Negligible
LE19	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
LE17	7.8	0.1	7.9	0.1	7.9	>0.0	Imperceptible	Negligible
LE18	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE20	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE21	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE22	8.0	0.1	8.1	0.1	8.1	>0.0	Imperceptible	Negligible
LE23	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
WM3	8.3	0.6	8.9	0.6	8.9	>0.0	Imperceptible	Negligible
WM14	8.3	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
YX10	8.3	1.0	9.3	1.2	9.4	0.2	Imperceptible	Negligible
LE24	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
YX11	8.3	0.3	8.6	0.4	8.6	0.1	Imperceptible	Negligible
YX12	8.3	0.3	8.5	0.3	8.6	0.1	Imperceptible	Negligible
LE25	8.0	0.0	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE26	7.8	0.1	7.9	0.1	7.9	>0.0	Imperceptible	Negligible
LE27	8.0	0.0	8.0	0.1	8.1	>0.0	Imperceptible	Negligible
LE28	8.0	0.1	8.1	0.2	8.2	0.1	Imperceptible	Negligible
LE29	8.0	0.0	8.0	0.0	8.0	>0.0	Imperceptible	Negligible
LE30	7.7	0.1	7.8	0.1	7.8	>0.0	Imperceptible	Negligible
LE31	7.7	0.1	7.8	0.1	7.8	>0.0	Imperceptible	Negligible
LE32	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE33	8.2	0.2	8.3	0.2	8.4	>0.0	Imperceptible	Negligible
LE34	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE35	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE36	8.1	0.3	8.4	0.3	8.4	>0.0	Imperceptible	Negligible
LE37	8.1	0.3	8.4	0.3	8.4	>0.0	Imperceptible	Negligible
LE38	8.1	0.3	8.4	0.4	8.5	>0.0	Imperceptible	Negligible
LE39	7.9	0.2	8.1	0.2	8.1	>0.0	Imperceptible	Negligible
LE40	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
LE52	8.2	0.2	8.4	0.3	8.4	0.1	Imperceptible	Negligible
LE53	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE54	8.0	0.0	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
YX13	8.3	1.1	9.4	1.2	9.6	0.2	Imperceptible	Negligible
YX14	8.3	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
YX15	8.2	0.7	8.8	0.8	8.9	0.1	Imperceptible	Negligible
YX16	8.3	0.7	9.1	0.8	9.2	0.1	Imperceptible	Negligible
YX17	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE55	8.0	0.2	8.2	0.2	8.2	>0.0	Imperceptible	Negligible
LE56	8.0	0.4	8.4	0.4	8.5	>0.0	Imperceptible	Negligible
YX18	8.1	0.4	8.5	0.4	8.4	-0.1	Imperceptible	Negligible
YX19	8.0	0.3	8.3	0.4	8.3	0.1	Imperceptible	Negligible
YX20	8.2	0.9	9.1	1.0	9.2	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX16	8.1	0.4	8.6	0.4	8.6	>0.0	Imperceptible	Negligible
SX18	8.3	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
SX17	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
SX19	8.4	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
WM15	8.6	0.2	8.7	0.2	8.8	>0.0	Imperceptible	Negligible
WM16	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
WM17	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
BK6	8.5	0.4	8.9	0.3	8.8	-0.1	Imperceptible	Negligible
BK7	9.5	0.3	9.8	0.3	9.8	>0.0	Imperceptible	Negligible
LE46	8.2	0.2	8.3	0.2	8.4	0.1	Imperceptible	Negligible
BK8	9.5	0.5	10.0	0.5	10.0	>0.0	Imperceptible	Negligible
LE57	8.0	0.4	8.4	0.7	8.6	0.3	Imperceptible	Negligible
LE42	7.8	0.1	7.9	0.1	7.9	>0.0	Imperceptible	Negligible

Table 1.7: Modelled NO_2 concentrations at receptors for 2028 busiest day cumulative scenario

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	6.6	2.0	8.7	2.1	8.7	0.1	Imperceptible	Negligible
BC2	6.6	9.1	15.6	9.3	15.8	0.2	Imperceptible	Negligible
BC3	7.2	1.4	8.6	1.4	8.7	0.1	Imperceptible	Negligible
BC4	8.2	2.6	10.8	2.7	10.9	0.1	Imperceptible	Negligible
BC5	8.1	5.8	14.0	6.0	14.1	0.2	Imperceptible	Negligible
SW6	6.0	1.1	7.0	1.3	7.3	0.3	Imperceptible	Negligible
SW5	5.9	1.1	7.1	1.4	7.4	0.3	Imperceptible	Negligible
BC7	7.3	2.0	9.3	2.0	9.4	0.1	Imperceptible	Negligible
BC8	6.4	1.5	7.9	1.7	8.1	0.2	Imperceptible	Negligible
KS4	6.1	1.8	7.9	2.0	8.1	0.2	Imperceptible	Negligible
LW1	13.6	3.8	17.3	3.9	17.5	0.2	Imperceptible	Negligible
LW3	10.1	8.7	18.7	8.7	18.8	0.1	Imperceptible	Negligible
LW5	8.0	1.9	9.9	2.0	10.0	0.1	Imperceptible	Negligible
LW6	8.0	2.4	10.5	2.5	10.5	>0.0	Imperceptible	Negligible
KS1	6.7	1.8	8.5	1.8	8.5	0.1	Imperceptible	Negligible
KS2	6.1	2.8	8.9	3.0	9.2	0.3	Imperceptible	Negligible
KS3	6.1	3.4	9.5	3.7	9.8	0.3	Imperceptible	Negligible
SW4	5.9	1.9	7.8	2.2	8.1	0.3	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
HS3	5.8	2.3	8.2	2.6	8.5	0.3	Imperceptible	Negligible
YX1	5.9	5.5	11.4	6.5	12.3	1.0	Low	Negligible
YX3	5.9	5.2	11.1	9.5	15.4	4.3	High	Moderate adverse
YX7	5.8	0.9	6.7	0.4	6.2	-0.5	Very Low	Negligible
LE3	5.9	1.5	7.4	2.3	8.2	0.8	Low	Negligible
LE9	6.7	7.1	13.8	8.9	15.6	1.8	Low	Negligible
LE10	6.7	4.7	11.4	5.7	12.4	1.1	Low	Negligible
LE11	6.0	2.2	8.2	2.7	8.7	0.5	Very Low	Negligible
LE14	5.9	4.2	10.1	4.6	10.5	0.4	Very Low	Negligible
SX12	6.0	1.6	7.6	1.8	7.8	0.2	Imperceptible	Negligible
YX4	5.8	2.4	8.2	2.3	8.1	-0.1	Imperceptible	Negligible
SX1	5.8	2.4	8.2	2.6	8.4	0.2	Imperceptible	Negligible
WM2	6.3	9.0	15.3	9.6	15.9	0.6	Very Low	Negligible
WM6	6.5	1.3	7.8	1.4	7.8	0.1	Imperceptible	Negligible
WM7	6.7	2.5	9.2	2.7	9.4	0.2	Imperceptible	Negligible
WM8	6.9	3.1	10.0	3.3	10.2	0.2	Imperceptible	Negligible
WM4	6.6	1.5	8.1	1.6	8.2	0.1	Imperceptible	Negligible
WB8	8.2	7.4	15.6	7.5	15.7	0.1	Imperceptible	Negligible
WB9	8.2	5.2	13.4	5.2	13.3	-0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB10	7.8	2.9	10.7	2.9	10.7	>0.0	Imperceptible	Negligible
BK2	9.0	3.2	12.2	3.2	12.2	0.0	Imperceptible	Negligible
BK4	9.4	2.4	11.8	2.3	11.7	-0.1	Imperceptible	Negligible
BK5	9.4	3.7	13.1	3.7	13.2	0.1	Imperceptible	Negligible
IP1	10.3	5.2	15.5	5.2	15.5	0.0	Imperceptible	Negligible
IP2	8.2	5.0	13.2	5.0	13.2	>0.0	Imperceptible	Negligible
BK3	8.4	3.4	11.8	3.4	11.8	>0.0	Imperceptible	Negligible
IP3	7.2	5.9	13.1	5.9	13.2	>0.0	Imperceptible	Negligible
IP4	7.4	8.9	16.3	8.9	16.3	>0.0	Imperceptible	Negligible
IP5	7.6	1.3	8.9	1.3	8.9	>0.0	Imperceptible	Negligible
IP6	9.3	0.4	9.7	0.5	9.7	>0.0	Imperceptible	Negligible
IP7	10.9	0.3	11.2	0.3	11.2	0.0	Imperceptible	Negligible
IP8	12.8	0.3	13.1	0.3	13.1	0.0	Imperceptible	Negligible
IP9	12.8	0.3	13.1	0.3	13.1	0.0	Imperceptible	Negligible
IP10	12.8	0.3	13.1	0.3	13.1	0.0	Imperceptible	Negligible
IP11	12.8	0.3	13.1	0.3	13.1	0.0	Imperceptible	Negligible
ND1	9.9	6.2	16.1	6.2	16.1	>0.0	Imperceptible	Negligible
ND2	8.7	1.9	10.6	1.9	10.6	>0.0	Imperceptible	Negligible
ND3	7.6	3.7	11.3	3.7	11.4	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND4	7.1	4.5	11.6	4.8	11.9	0.3	Imperceptible	Negligible
ND5	6.8	3.2	10.0	3.4	10.2	0.2	Imperceptible	Negligible
ND6	6.9	0.6	7.5	0.6	7.5	>0.0	Imperceptible	Negligible
WM9	6.4	1.2	7.7	1.5	7.9	0.2	Imperceptible	Negligible
ND7	6.8	2.7	9.4	2.8	9.5	0.1	Imperceptible	Negligible
FR1	6.1	1.6	7.7	1.7	7.7	0.1	Imperceptible	Negligible
FR2	6.8	3.2	10.0	3.3	10.1	0.1	Imperceptible	Negligible
FR3	6.8	1.1	7.9	1.1	8.0	>0.0	Imperceptible	Negligible
FR4	5.9	1.7	7.6	1.7	7.6	0.1	Imperceptible	Negligible
FR5	5.9	1.3	7.2	1.4	7.3	0.1	Imperceptible	Negligible
FR6	5.9	1.3	7.2	1.4	7.3	0.1	Imperceptible	Negligible
IP12	9.7	0.3	10.0	0.3	10.0	0.0	Imperceptible	Negligible
IP13	10.5	0.4	10.9	0.4	10.9	0.0	Imperceptible	Negligible
IP14	9.2	8.3	17.5	8.4	17.7	0.1	Imperceptible	Negligible
IP15	8.6	6.4	15.0	6.5	15.1	0.1	Imperceptible	Negligible
WB11	8.5	3.2	11.7	3.5	12.0	0.3	Imperceptible	Negligible
WB12	8.2	2.1	10.3	3.0	11.2	0.9	Low	Negligible
WB7	7.8	3.1	10.9	3.6	11.3	0.4	Very Low	Negligible
WB6	8.2	2.7	10.9	3.3	11.5	0.6	Very Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB5	8.7	6.7	15.4	7.2	15.9	0.5	Very Low	Negligible
WB4	8.7	2.5	11.1	2.7	11.4	0.3	Imperceptible	Negligible
WB3	7.7	2.9	10.6	2.8	10.5	-0.1	Imperceptible	Negligible
WB2	7.7	4.7	12.4	3.2	10.9	-1.5	Low	Negligible
SX13	6.1	1.4	7.5	1.5	7.6	0.2	Imperceptible	Negligible
SX14	6.2	1.7	7.8	1.8	7.9	0.1	Imperceptible	Negligible
WM13	6.3	1.4	7.6	1.4	7.7	>0.0	Imperceptible	Negligible
HS1	6.8	2.6	9.3	2.7	9.5	0.2	Imperceptible	Negligible
HS2	5.8	1.7	7.5	1.9	7.7	0.2	Imperceptible	Negligible
SW1	6.4	1.8	8.2	1.9	8.3	>0.0	Imperceptible	Negligible
YX2	5.9	3.2	9.1	3.8	9.6	0.6	Very Low	Negligible
YX6	6.0	1.9	7.9	9.6	15.6	7.7	High	Moderate adverse
SX2	6.1	0.6	6.7	0.7	6.8	>0.0	Imperceptible	Negligible
SX4	6.6	4.2	10.8	4.6	11.2	0.4	Imperceptible	Negligible
SX3	6.0	0.8	6.8	0.8	6.8	>0.0	Imperceptible	Negligible
SX10	6.0	3.2	9.2	3.4	9.4	0.2	Imperceptible	Negligible
SX5	6.0	5.0	11.0	0.6	6.6	-4.5	High	Moderate beneficial
SX6	6.0	8.1	14.1	0.7	6.7	-7.4	High	Moderate beneficial
SX7	6.0	9.0	15.1	0.8	6.8	-8.3	High	Moderate beneficial

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX11	5.9	2.7	8.6	2.9	8.8	0.2	Imperceptible	Negligible
SW3	5.9	4.5	10.3	5.1	10.9	0.6	Very Low	Negligible
SW2	5.9	3.1	9.0	3.5	9.4	0.4	Very Low	Negligible
YX8	5.8	1.9	7.7	2.1	8.0	0.2	Imperceptible	Negligible
LE13	5.8	2.8	8.6	2.9	8.7	0.1	Imperceptible	Negligible
LE12	6.3	1.9	8.2	2.1	8.4	0.2	Imperceptible	Negligible
LE7	6.0	0.8	6.8	1.1	7.1	0.3	Imperceptible	Negligible
LE1	6.7	3.7	10.4	5.7	12.4	2.0	Low	Negligible
LE8	6.7	2.0	8.7	2.4	9.1	0.4	Imperceptible	Negligible
LE6	5.9	2.3	8.2	0.5	6.3	-1.8	Low	Negligible
LE5	5.9	1.4	7.3	0.4	6.3	-1.0	Low	Negligible
ND8	6.4	4.5	10.8	4.6	10.9	0.1	Imperceptible	Negligible
WM1	6.0	0.7	6.7	0.4	6.4	-0.3	Imperceptible	Negligible
SX8	6.0	0.3	6.3	1.0	7.0	0.8	Very Low	Negligible
SX9	6.0	0.3	6.3	0.9	7.0	0.6	Very Low	Negligible
LE4	5.9	0.2	6.0	0.3	6.1	0.1	Imperceptible	Negligible
YX5	5.9	0.2	6.1	0.3	6.2	0.1	Imperceptible	Negligible
LW2	10.1	2.4	12.4	2.4	12.5	>0.0	Imperceptible	Negligible
BK1	9.5	5.2	14.6	5.9	15.4	0.8	Very Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM10	6.7	4.7	11.4	5.1	11.8	0.4	Very Low	Negligible
WB1	7.4	5.5	12.9	5.2	12.6	-0.3	Imperceptible	Negligible
BC6	6.0	2.2	8.2	2.5	8.5	0.3	Imperceptible	Negligible
LW4	8.7	2.5	11.3	2.6	11.4	0.1	Imperceptible	Negligible
LW7	8.0	1.2	9.3	1.3	9.3	>0.0	Imperceptible	Negligible
LW8	19.4	2.8	22.2	2.1	21.5	-0.7	Very Low	Negligible
LW9	8.0	2.2	10.2	2.3	10.3	0.1	Imperceptible	Negligible
LE2	6.0	0.7	6.8	1.2	7.2	0.4	Very Low	Negligible
WM5	7.3	1.3	8.6	1.4	8.7	0.1	Imperceptible	Negligible
WM11	6.5	1.8	8.3	2.0	8.5	0.2	Imperceptible	Negligible
WM12	6.5	0.7	7.2	0.8	7.3	0.1	Imperceptible	Negligible
SX15	6.0	10.9	16.9	0.5	6.5	-10.4	High	Moderate beneficial
YX9	5.8	0.4	6.2	0.5	6.3	0.1	Imperceptible	Negligible
LE15	5.9	0.3	6.1	0.4	6.3	0.1	Imperceptible	Negligible
LE16	5.9	0.2	6.1	0.3	6.2	0.1	Imperceptible	Negligible
LE19	6.0	0.3	6.3	0.4	6.4	0.1	Imperceptible	Negligible
LE17	5.8	0.2	6.1	0.3	6.1	0.1	Imperceptible	Negligible
LE18	6.0	0.2	6.2	0.3	6.2	0.1	Imperceptible	Negligible
LE20	6.0	0.3	6.2	0.3	6.3	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE21	6.0	0.3	6.2	0.3	6.3	>0.0	Imperceptible	Negligible
LE22	6.0	0.3	6.3	0.3	6.3	>0.0	Imperceptible	Negligible
LE23	6.0	0.2	6.2	0.2	6.2	>0.0	Imperceptible	Negligible
WM3	6.3	2.5	8.7	2.5	8.8	0.1	Imperceptible	Negligible
WM14	6.3	0.4	6.7	0.5	6.7	>0.0	Imperceptible	Negligible
YX10	5.9	3.4	9.2	3.9	9.7	0.5	Very Low	Negligible
LE24	6.0	0.3	6.2	0.3	6.3	>0.0	Imperceptible	Negligible
YX11	5.9	1.1	6.9	1.3	7.2	0.2	Imperceptible	Negligible
YX12	5.9	0.9	6.8	1.1	7.0	0.2	Imperceptible	Negligible
LE25	5.8	0.1	5.9	0.2	5.9	>0.0	Imperceptible	Negligible
LE26	5.8	0.2	6.0	0.3	6.1	0.1	Imperceptible	Negligible
LE27	5.8	0.2	6.0	0.2	6.0	>0.0	Imperceptible	Negligible
LE28	5.9	0.4	6.3	0.8	6.6	0.3	Imperceptible	Negligible
LE29	5.8	0.1	5.9	0.2	5.9	>0.0	Imperceptible	Negligible
LE30	5.8	0.5	6.3	0.5	6.3	0.1	Imperceptible	Negligible
LE31	5.8	0.3	6.1	0.3	6.1	0.1	Imperceptible	Negligible
LE32	6.0	0.4	6.4	0.5	6.5	0.2	Imperceptible	Negligible
LE33	6.0	0.6	6.6	0.8	6.8	0.2	Imperceptible	Negligible
LE34	6.3	0.3	6.7	0.5	6.8	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE35	6.7	0.5	7.3	0.7	7.4	0.1	Imperceptible	Negligible
LE36	6.3	1.1	7.4	2.1	8.4	1.0	Low	Negligible
LE37	6.3	1.2	7.5	2.8	9.2	1.7	Low	Negligible
LE38	6.3	1.3	7.6	3.0	9.4	1.7	Low	Negligible
LE39	5.9	0.9	6.8	1.2	7.1	0.3	Imperceptible	Negligible
LE40	6.3	0.4	6.7	0.6	6.9	0.2	Imperceptible	Negligible
LE52	6.0	0.8	6.8	1.0	7.0	0.2	Imperceptible	Negligible
LE53	6.0	0.3	6.2	0.3	6.3	0.1	Imperceptible	Negligible
LE54	6.0	0.2	6.2	0.2	6.2	0.1	Imperceptible	Negligible
YX13	5.9	3.5	9.4	4.1	9.9	0.5	Very Low	Negligible
YX14	5.9	0.2	6.1	0.2	6.1	>0.0	Imperceptible	Negligible
YX15	5.9	2.3	8.2	2.6	8.5	0.3	Imperceptible	Negligible
YX16	5.9	2.4	8.3	2.9	8.7	0.4	Very Low	Negligible
YX17	5.9	0.3	6.3	0.4	6.3	0.1	Imperceptible	Negligible
LE55	5.9	0.7	6.6	0.9	6.7	0.1	Imperceptible	Negligible
LE56	6.0	1.6	7.6	1.8	7.8	0.2	Imperceptible	Negligible
YX18	5.9	1.5	7.4	2.0	7.9	0.5	Very Low	Negligible
YX19	6.0	1.1	7.1	4.8	10.8	3.7	Medium	Minor adverse
YX20	5.8	3.0	8.8	3.6	9.4	0.6	Very Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX16	6.6	1.7	8.2	1.9	8.4	0.2	Imperceptible	Negligible
SX18	6.0	0.2	6.2	0.3	6.3	0.1	Imperceptible	Negligible
SX17	6.6	0.4	6.9	0.7	7.3	0.3	Imperceptible	Negligible
SX19	6.2	0.2	6.4	0.4	6.5	0.1	Imperceptible	Negligible
WM15	6.6	0.8	7.5	1.0	7.6	0.1	Imperceptible	Negligible
WM16	6.5	0.3	6.8	0.4	6.9	0.1	Imperceptible	Negligible
WM17	6.7	0.3	7.0	0.5	7.2	0.2	Imperceptible	Negligible
BK6	8.3	1.6	9.9	1.2	9.5	-0.4	Imperceptible	Negligible
BK7	8.4	1.1	9.5	1.1	9.5	>0.0	Imperceptible	Negligible
LE46	6.0	0.8	6.8	1.0	7.0	0.3	Imperceptible	Negligible
BK8	8.6	1.7	10.2	1.7	10.2	0.0	Imperceptible	Negligible
LE57	5.9	1.5	7.3	2.4	8.2	0.9	Low	Negligible
LE42	5.8	0.2	6.0	0.3	6.1	0.1	Imperceptible	Negligible

Table 1.8: Modelled PM_{10} concentrations at receptors for 2028 busiest day cumulative scenario

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	13.3	0.3	13.6	0.3	13.6	>0.0	Imperceptible	Negligible
BC2	14.8	1.4	16.2	1.5	16.3	>0.0	Imperceptible	Negligible
BC3	12.6	0.2	12.8	0.2	12.8	>0.0	Imperceptible	Negligible
BC4	12.5	0.4	12.9	0.4	13.0	>0.0	Imperceptible	Negligible
BC5	13.9	1.0	14.9	1.0	14.9	>0.0	Imperceptible	Negligible
SW6	13.6	0.2	13.8	0.3	13.9	>0.0	Imperceptible	Negligible
SW5	14.3	0.2	14.5	0.3	14.5	0.1	Imperceptible	Negligible
BC7	15.0	0.3	15.2	0.3	15.3	>0.0	Imperceptible	Negligible
BC8	13.6	0.2	13.8	0.2	13.8	>0.0	Imperceptible	Negligible
KS4	14.0	0.2	14.3	0.3	14.3	>0.0	Imperceptible	Negligible
LW1	13.9	0.6	14.5	0.6	14.5	>0.0	Imperceptible	Negligible
LW3	12.3	1.3	13.6	1.3	13.6	>0.0	Imperceptible	Negligible
LW5	13.3	0.3	13.5	0.3	13.6	>0.0	Imperceptible	Negligible
LW6	13.3	0.4	13.6	0.4	13.6	>0.0	Imperceptible	Negligible
KS1	12.7	0.2	12.9	0.2	12.9	>0.0	Imperceptible	Negligible
KS2	14.0	0.4	14.5	0.5	14.5	>0.0	Imperceptible	Negligible
KS3	14.0	0.5	14.6	0.6	14.6	0.1	Imperceptible	Negligible
SW4	12.5	0.3	12.8	0.4	12.9	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
HS3	14.9	0.4	15.2	0.4	15.3	0.1	Imperceptible	Negligible
YX1	14.8	1.0	15.8	1.1	15.9	0.1	Imperceptible	Negligible
YX3	13.4	0.9	14.3	1.5	14.9	0.7	Very Low	Negligible
YX7	13.4	0.1	13.5	0.1	13.4	-0.1	Imperceptible	Negligible
LE3	13.6	0.3	13.8	0.4	14.0	0.2	Imperceptible	Negligible
LE9	12.6	0.6	13.2	0.7	13.3	0.1	Imperceptible	Negligible
LE10	12.6	0.7	13.3	0.9	13.5	0.2	Imperceptible	Negligible
LE11	12.9	0.3	13.2	0.4	13.3	0.1	Imperceptible	Negligible
LE14	14.3	0.6	14.9	0.7	15.0	0.1	Imperceptible	Negligible
SX12	14.1	0.2	14.3	0.2	14.4	>0.0	Imperceptible	Negligible
YX4	14.8	0.4	15.2	0.4	15.2	<0.0	Imperceptible	Negligible
SX1	14.1	0.4	14.4	0.5	14.5	0.1	Imperceptible	Negligible
WM2	14.7	1.6	16.2	1.9	16.5	0.3	Imperceptible	Negligible
WM6	14.1	0.2	14.3	0.2	14.3	>0.0	Imperceptible	Negligible
WM7	15.4	0.3	15.7	0.3	15.7	>0.0	Imperceptible	Negligible
WM8	14.8	0.4	15.2	0.5	15.2	0.1	Imperceptible	Negligible
WM4	13.1	0.2	13.3	0.2	13.3	>0.0	Imperceptible	Negligible
WB8	13.5	1.3	14.8	1.4	14.9	0.1	Imperceptible	Negligible
WB9	13.5	0.8	14.3	0.8	14.3	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB10	14.5	0.3	14.9	0.4	14.9	>0.0	Imperceptible	Negligible
BK2	14.9	0.4	15.3	0.4	15.3	>0.0	Imperceptible	Negligible
BK4	16.8	0.4	17.2	0.4	17.2	<0.0	Imperceptible	Negligible
BK5	16.8	0.6	17.4	0.6	17.4	>0.0	Imperceptible	Negligible
IP1	17.2	1.0	18.2	1.0	18.3	>0.0	Imperceptible	Negligible
IP2	16.7	0.8	17.5	0.8	17.6	>0.0	Imperceptible	Negligible
BK3	14.7	0.6	15.3	0.6	15.3	>0.0	Imperceptible	Negligible
IP3	14.7	1.1	15.8	1.2	15.9	>0.0	Imperceptible	Negligible
IP4	16.2	1.7	17.9	1.8	18.0	0.1	Imperceptible	Negligible
IP5	17.0	0.3	17.2	0.3	17.2	>0.0	Imperceptible	Negligible
IP6	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
IP7	14.5	0.1	14.6	0.1	14.6	>0.0	Imperceptible	Negligible
IP8	14.8	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
IP9	14.8	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
IP10	14.8	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
IP11	14.8	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
ND1	15.3	1.3	16.6	1.4	16.7	>0.0	Imperceptible	Negligible
ND2	15.9	0.4	16.3	0.4	16.3	>0.0	Imperceptible	Negligible
ND3	15.0	0.7	15.6	0.7	15.7	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND4	14.1	0.7	14.8	0.7	14.8	>0.0	Imperceptible	Negligible
ND5	14.9	0.6	15.5	0.6	15.5	>0.0	Imperceptible	Negligible
ND6	14.4	0.1	14.5	0.1	14.5	>0.0	Imperceptible	Negligible
WM9	14.0	0.2	14.2	0.2	14.2	>0.0	Imperceptible	Negligible
ND7	15.3	0.5	15.8	0.5	15.9	>0.0	Imperceptible	Negligible
FR1	14.8	0.3	15.2	0.4	15.2	>0.0	Imperceptible	Negligible
FR2	13.5	0.5	14.1	0.6	14.1	>0.0	Imperceptible	Negligible
FR3	13.5	0.2	13.7	0.2	13.7	>0.0	Imperceptible	Negligible
FR4	15.0	0.3	15.3	0.3	15.3	>0.0	Imperceptible	Negligible
FR5	14.2	0.2	14.4	0.2	14.4	>0.0	Imperceptible	Negligible
FR6	14.9	0.2	15.0	0.2	15.1	>0.0	Imperceptible	Negligible
IP12	14.1	0.0	14.2	0.1	14.2	>0.0	Imperceptible	Negligible
IP13	14.4	0.1	14.4	0.1	14.5	>0.0	Imperceptible	Negligible
IP14	14.0	1.2	15.1	1.2	15.2	>0.0	Imperceptible	Negligible
IP15	14.2	1.0	15.2	1.0	15.3	>0.0	Imperceptible	Negligible
WB11	13.7	0.4	14.1	0.5	14.2	0.1	Imperceptible	Negligible
WB12	13.5	0.3	13.8	0.4	14.0	0.1	Imperceptible	Negligible
WB7	13.9	0.5	14.3	0.5	14.4	0.1	Imperceptible	Negligible
WB6	13.3	0.4	13.7	0.5	13.8	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB5	12.9	0.4	13.3	0.5	13.4	0.1	Imperceptible	Negligible
WB4	12.9	0.3	13.2	0.3	13.2	>0.0	Imperceptible	Negligible
WB3	13.0	0.3	13.4	0.3	13.4	>0.0	Imperceptible	Negligible
WB2	13.0	0.5	13.5	0.4	13.5	<0.0	Imperceptible	Negligible
SX13	14.6	0.2	14.8	0.2	14.8	>0.0	Imperceptible	Negligible
SX14	15.0	0.3	15.3	0.3	15.3	>0.0	Imperceptible	Negligible
WM13	14.0	0.2	14.2	0.2	14.3	>0.0	Imperceptible	Negligible
HS1	13.5	0.4	13.9	0.4	13.9	>0.0	Imperceptible	Negligible
HS2	14.8	0.3	15.1	0.3	15.1	>0.0	Imperceptible	Negligible
SW1	11.6	0.2	11.8	0.3	11.8	>0.0	Imperceptible	Negligible
YX2	13.4	0.5	13.9	0.6	14.0	0.1	Imperceptible	Negligible
YX6	13.5	0.3	13.8	1.5	15.0	1.2	Low	Negligible
SX2	13.9	0.1	14.0	0.1	14.0	>0.0	Imperceptible	Negligible
SX4	13.0	0.6	13.6	0.7	13.7	>0.0	Imperceptible	Negligible
SX3	14.6	0.1	14.8	0.1	14.8	>0.0	Imperceptible	Negligible
SX10	14.7	0.5	15.2	0.6	15.3	0.1	Imperceptible	Negligible
SX5	13.8	0.8	14.6	0.1	13.9	-0.7	Very Low	Negligible
SX6	13.5	1.4	14.9	0.1	13.6	-1.3	Low	Negligible
SX7	13.5	1.6	15.1	0.1	13.6	-1.4	Low	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX11	13.9	0.4	14.3	0.5	14.4	>0.0	Imperceptible	Negligible
SW3	12.3	0.8	13.1	0.9	13.2	0.1	Imperceptible	Negligible
SW2	12.3	0.5	12.8	0.6	12.9	0.1	Imperceptible	Negligible
YX8	14.2	0.3	14.5	0.3	14.5	>0.0	Imperceptible	Negligible
LE13	12.5	0.4	12.9	0.4	12.9	>0.0	Imperceptible	Negligible
LE12	13.4	0.3	13.7	0.3	13.7	>0.0	Imperceptible	Negligible
LE7	14.0	0.1	14.1	0.2	14.2	>0.0	Imperceptible	Negligible
LE1	12.6	0.4	13.0	0.6	13.2	0.2	Imperceptible	Negligible
LE8	12.6	0.3	12.9	0.3	12.9	>0.0	Imperceptible	Negligible
LE6	14.0	0.4	14.3	0.1	14.1	-0.3	Imperceptible	Negligible
LE5	14.0	0.2	14.2	0.1	14.0	-0.2	Imperceptible	Negligible
ND8	14.5	0.9	15.4	0.9	15.4	>0.0	Imperceptible	Negligible
WM1	13.5	0.1	13.6	0.1	13.6	-0.1	Imperceptible	Negligible
SX8	14.2	0.0	14.2	0.2	14.4	0.1	Imperceptible	Negligible
SX9	14.2	0.0	14.3	0.2	14.4	0.1	Imperceptible	Negligible
LE4	14.0	0.0	14.0	0.1	14.0	>0.0	Imperceptible	Negligible
YX5	14.2	0.0	14.3	0.1	14.3	>0.0	Imperceptible	Negligible
LW2	12.3	0.4	12.7	0.4	12.7	>0.0	Imperceptible	Negligible
BK1	13.5	0.7	14.2	0.8	14.4	0.2	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM10	14.9	0.8	15.8	0.9	15.8	0.1	Imperceptible	Negligible
WB1	14.7	0.9	15.7	0.9	15.6	<0.0	Imperceptible	Negligible
BC6	14.8	0.4	15.2	0.4	15.2	0.1	Imperceptible	Negligible
LW4	12.7	0.4	13.1	0.4	13.1	>0.0	Imperceptible	Negligible
LW7	13.3	0.2	13.4	0.2	13.4	>0.0	Imperceptible	Negligible
LW8	13.1	0.4	13.5	0.3	13.4	-0.1	Imperceptible	Negligible
LW9	13.3	0.3	13.6	0.4	13.6	>0.0	Imperceptible	Negligible
LE2	13.7	0.1	13.8	0.2	13.9	0.1	Imperceptible	Negligible
WM5	14.5	0.2	14.7	0.2	14.7	>0.0	Imperceptible	Negligible
WM11	14.1	0.2	14.4	0.3	14.4	>0.0	Imperceptible	Negligible
WM12	14.1	0.1	14.2	0.1	14.2	>0.0	Imperceptible	Negligible
SX15	13.8	1.8	15.6	0.1	13.9	-1.7	Low	Negligible
YX9	14.8	0.1	14.9	0.1	14.9	>0.0	Imperceptible	Negligible
LE15	13.6	0.0	13.6	0.1	13.7	>0.0	Imperceptible	Negligible
LE16	13.6	0.0	13.6	0.0	13.6	>0.0	Imperceptible	Negligible
LE19	13.7	0.0	13.7	0.1	13.8	>0.0	Imperceptible	Negligible
LE17	13.0	0.0	13.0	0.0	13.0	>0.0	Imperceptible	Negligible
LE18	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
LE20	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE21	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
LE22	13.4	0.0	13.5	0.0	13.5	>0.0	Imperceptible	Negligible
LE23	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
WM3	14.0	0.4	14.4	0.4	14.4	>0.0	Imperceptible	Negligible
WM14	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
YX10	14.6	0.6	15.2	0.7	15.3	0.1	Imperceptible	Negligible
LE24	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
YX11	14.6	0.2	14.8	0.2	14.8	>0.0	Imperceptible	Negligible
YX12	14.6	0.2	14.7	0.2	14.8	>0.0	Imperceptible	Negligible
LE25	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE26	13.0	0.0	13.0	0.0	13.0	>0.0	Imperceptible	Negligible
LE27	13.6	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE28	13.6	0.1	13.7	0.1	13.7	0.1	Imperceptible	Negligible
LE29	13.7	0.0	13.7	0.0	13.7	>0.0	Imperceptible	Negligible
LE30	12.5	0.1	12.6	0.1	12.6	>0.0	Imperceptible	Negligible
LE31	12.5	0.0	12.6	0.0	12.6	>0.0	Imperceptible	Negligible
LE32	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
LE33	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
LE34	13.4	0.0	13.5	0.1	13.5	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE35	12.6	0.1	12.7	0.1	12.7	>0.0	Imperceptible	Negligible
LE36	13.4	0.2	13.6	0.2	13.6	>0.0	Imperceptible	Negligible
LE37	13.4	0.2	13.6	0.2	13.6	>0.0	Imperceptible	Negligible
LE38	13.4	0.2	13.6	0.2	13.6	>0.0	Imperceptible	Negligible
LE39	13.0	0.1	13.1	0.1	13.1	>0.0	Imperceptible	Negligible
LE40	13.4	0.1	13.5	0.1	13.5	>0.0	Imperceptible	Negligible
LE52	14.0	0.1	14.1	0.1	14.2	>0.0	Imperceptible	Negligible
LE53	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
LE54	13.4	0.0	13.4	0.0	13.4	>0.0	Imperceptible	Negligible
YX13	14.8	0.6	15.4	0.7	15.5	0.1	Imperceptible	Negligible
YX14	14.6	0.0	14.6	0.0	14.6	>0.0	Imperceptible	Negligible
YX15	14.0	0.4	14.4	0.5	14.5	0.1	Imperceptible	Negligible
YX16	14.8	0.4	15.2	0.5	15.3	0.1	Imperceptible	Negligible
YX17	14.0	0.1	14.1	0.1	14.1	>0.0	Imperceptible	Negligible
LE55	13.6	0.1	13.7	0.1	13.7	>0.0	Imperceptible	Negligible
LE56	13.4	0.2	13.7	0.3	13.7	>0.0	Imperceptible	Negligible
YX18	13.4	0.2	13.6	0.3	13.7	0.1	Imperceptible	Negligible
YX19	13.5	0.2	13.7	0.7	14.3	0.6	Very Low	Negligible
YX20	14.0	0.5	14.5	0.6	14.6	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX16	13.0	0.2	13.2	0.3	13.3	>0.0	Imperceptible	Negligible
SX18	14.7	0.0	14.7	0.0	14.7	>0.0	Imperceptible	Negligible
SX17	13.0	0.1	13.1	0.1	13.1	>0.0	Imperceptible	Negligible
SX19	14.6	0.0	14.7	0.0	14.7	>0.0	Imperceptible	Negligible
WM15	14.5	0.1	14.6	0.1	14.6	>0.0	Imperceptible	Negligible
WM16	13.1	0.0	13.1	0.0	13.1	>0.0	Imperceptible	Negligible
WM17	13.5	0.0	13.5	0.0	13.6	>0.0	Imperceptible	Negligible
BK6	13.8	0.2	14.1	0.2	14.0	<0.0	Imperceptible	Negligible
BK7	16.6	0.2	16.7	0.2	16.8	>0.0	Imperceptible	Negligible
LE46	14.0	0.1	14.1	0.1	14.2	>0.0	Imperceptible	Negligible
BK8	16.4	0.3	16.7	0.3	16.7	>0.0	Imperceptible	Negligible
LE57	13.3	0.2	13.5	0.4	13.6	0.2	Imperceptible	Negligible
LE42	13.0	0.0	13.0	0.0	13.0	>0.0	Imperceptible	Negligible

Table 1.9: Modelled $PM_{2.5}$ concentrations at receptors for 2028 busiest day cumulative scenario

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
BC1	8.0	0.5	8.5	0.6	8.5	>0.0	Imperceptible	Negligible
BC2	8.4	2.5	10.9	2.6	10.9	0.1	Imperceptible	Negligible
BC3	7.9	0.4	8.3	0.4	8.3	>0.0	Imperceptible	Negligible
BC4	8.1	0.7	8.7	0.7	8.8	>0.0	Imperceptible	Negligible
BC5	9.0	1.7	10.7	1.7	10.8	0.1	Imperceptible	Negligible
SW6	8.0	0.4	8.4	0.4	8.5	0.1	Imperceptible	Negligible
SW5	8.2	0.4	8.6	0.5	8.7	0.1	Imperceptible	Negligible
BC7	8.8	0.5	9.3	0.5	9.4	>0.0	Imperceptible	Negligible
BC8	8.0	0.3	8.3	0.4	8.4	>0.0	Imperceptible	Negligible
KS4	8.2	0.4	8.6	0.5	8.6	0.1	Imperceptible	Negligible
LW1	9.8	1.0	10.7	1.1	10.8	0.1	Imperceptible	Negligible
LW3	8.2	2.2	10.4	2.2	10.4	>0.0	Imperceptible	Negligible
LW5	8.6	0.5	9.1	0.5	9.1	>0.0	Imperceptible	Negligible
LW6	8.6	0.6	9.2	0.6	9.2	>0.0	Imperceptible	Negligible
KS1	7.9	0.4	8.3	0.4	8.3	>0.0	Imperceptible	Negligible
KS2	8.2	0.7	8.9	0.8	9.0	0.1	Imperceptible	Negligible
KS3	8.2	0.9	9.1	1.0	9.2	0.1	Imperceptible	Negligible
SW4	7.7	0.6	8.3	0.7	8.4	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
HS3	8.3	0.6	9.0	0.7	9.1	0.1	Imperceptible	Negligible
YX1	8.3	1.7	10.0	1.9	10.3	0.3	Imperceptible	Negligible
YX3	8.1	1.5	9.6	2.6	10.7	1.1	Low	Negligible
YX7	7.9	0.2	8.2	0.1	8.1	-0.1	Imperceptible	Negligible
LE3	8.0	0.4	8.4	0.7	8.7	0.3	Imperceptible	Negligible
LE9	8.2	1.0	9.2	1.1	9.3	0.1	Imperceptible	Negligible
LE10	8.2	1.2	9.4	1.5	9.7	0.3	Imperceptible	Negligible
LE11	7.9	0.6	8.4	0.7	8.6	0.1	Imperceptible	Negligible
LE14	8.2	1.1	9.3	1.2	9.5	0.1	Imperceptible	Negligible
SX12	8.3	0.4	8.7	0.4	8.7	>0.0	Imperceptible	Negligible
YX4	8.4	0.6	9.0	0.6	9.0	<0.0	Imperceptible	Negligible
SX1	8.2	0.6	8.8	0.8	9.0	0.2	Imperceptible	Negligible
WM2	8.5	2.7	11.2	3.2	11.7	0.5	Very Low	Negligible
WM6	8.4	0.3	8.7	0.3	8.7	>0.0	Imperceptible	Negligible
WM7	8.8	0.5	9.3	0.6	9.4	0.1	Imperceptible	Negligible
WM8	8.7	0.7	9.4	0.8	9.5	0.1	Imperceptible	Negligible
WM4	8.2	0.4	8.5	0.4	8.6	>0.0	Imperceptible	Negligible
WB8	8.8	2.2	11.0	2.4	11.1	0.1	Imperceptible	Negligible
WB9	8.8	1.4	10.1	1.4	10.2	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB10	8.8	0.6	9.4	0.6	9.5	>0.0	Imperceptible	Negligible
BK2	8.9	0.7	9.6	0.7	9.6	>0.0	Imperceptible	Negligible
BK4	9.7	0.7	10.4	0.7	10.4	<0.0	Imperceptible	Negligible
BK5	9.7	1.0	10.7	1.1	10.8	>0.0	Imperceptible	Negligible
IP1	10.1	1.8	11.8	1.8	11.9	>0.0	Imperceptible	Negligible
IP2	9.8	1.4	11.3	1.5	11.3	>0.0	Imperceptible	Negligible
BK3	8.9	1.0	9.9	1.0	9.9	>0.0	Imperceptible	Negligible
IP3	9.0	1.9	11.0	2.0	11.1	0.1	Imperceptible	Negligible
IP4	9.5	2.9	12.4	3.1	12.5	0.1	Imperceptible	Negligible
IP5	9.9	0.5	10.3	0.5	10.3	>0.0	Imperceptible	Negligible
IP6	9.2	0.2	9.4	0.2	9.4	>0.0	Imperceptible	Negligible
IP7	9.6	0.1	9.7	0.1	9.7	>0.0	Imperceptible	Negligible
IP8	9.8	0.1	9.9	0.1	9.9	>0.0	Imperceptible	Negligible
IP9	9.8	0.1	9.9	0.1	9.9	>0.0	Imperceptible	Negligible
IP10	9.8	0.1	9.9	0.1	9.9	>0.0	Imperceptible	Negligible
IP11	9.8	0.1	9.9	0.1	10.0	>0.0	Imperceptible	Negligible
ND1	9.4	2.4	11.7	2.4	11.8	>0.0	Imperceptible	Negligible
ND2	9.5	0.7	10.2	0.7	10.2	>0.0	Imperceptible	Negligible
ND3	8.8	1.2	10.0	1.2	10.0	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
ND4	8.5	1.1	9.6	1.2	9.7	0.1	Imperceptible	Negligible
ND5	8.6	1.0	9.6	1.0	9.6	0.1	Imperceptible	Negligible
ND6	8.4	0.2	8.6	0.2	8.6	>0.0	Imperceptible	Negligible
WM9	8.3	0.3	8.6	0.4	8.7	0.1	Imperceptible	Negligible
ND7	8.8	0.9	9.8	0.9	9.8	>0.0	Imperceptible	Negligible
FR1	8.4	0.6	9.0	0.6	9.0	>0.0	Imperceptible	Negligible
FR2	8.3	0.9	9.3	1.0	9.3	>0.0	Imperceptible	Negligible
FR3	8.3	0.3	8.6	0.3	8.6	>0.0	Imperceptible	Negligible
FR4	8.4	0.6	9.0	0.6	9.0	>0.0	Imperceptible	Negligible
FR5	8.2	0.4	8.6	0.4	8.6	>0.0	Imperceptible	Negligible
FR6	8.3	0.3	8.6	0.3	8.7	>0.0	Imperceptible	Negligible
IP12	9.1	0.1	9.2	0.1	9.2	>0.0	Imperceptible	Negligible
IP13	9.7	0.1	9.8	0.1	9.8	>0.0	Imperceptible	Negligible
IP14	9.0	2.0	11.0	2.0	11.0	>0.0	Imperceptible	Negligible
IP15	8.9	1.7	10.6	1.8	10.7	>0.0	Imperceptible	Negligible
WB11	8.8	0.7	9.5	0.8	9.6	0.1	Imperceptible	Negligible
WB12	8.5	0.5	9.0	0.8	9.3	0.2	Imperceptible	Negligible
WB7	8.7	0.8	9.5	0.9	9.6	0.1	Imperceptible	Negligible
WB6	8.5	0.7	9.2	0.8	9.3	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WB5	8.5	0.7	9.3	0.8	9.4	0.1	Imperceptible	Negligible
WB4	8.5	0.5	9.0	0.6	9.1	0.1	Imperceptible	Negligible
WB3	8.4	0.6	9.0	0.6	9.0	>0.0	Imperceptible	Negligible
WB2	8.4	0.8	9.2	0.7	9.1	<0.0	Imperceptible	Negligible
SX13	8.4	0.3	8.8	0.4	8.8	>0.0	Imperceptible	Negligible
SX14	8.6	0.4	9.0	0.5	9.0	>0.0	Imperceptible	Negligible
WM13	8.3	0.3	8.6	0.4	8.6	>0.0	Imperceptible	Negligible
HS1	8.3	0.7	9.0	0.7	9.1	>0.0	Imperceptible	Negligible
HS2	8.4	0.5	8.8	0.5	8.9	>0.0	Imperceptible	Negligible
SW1	7.6	0.4	8.0	0.4	8.0	>0.0	Imperceptible	Negligible
YX2	8.1	0.9	9.0	1.0	9.1	0.1	Imperceptible	Negligible
YX6	8.0	0.5	8.5	2.6	10.6	2.1	Medium	Minor adverse
SX2	8.3	0.2	8.5	0.2	8.5	>0.0	Imperceptible	Negligible
SX4	8.1	1.1	9.2	1.1	9.3	0.1	Imperceptible	Negligible
SX3	8.4	0.2	8.6	0.2	8.6	>0.0	Imperceptible	Negligible
SX10	8.4	0.9	9.3	1.0	9.4	0.1	Imperceptible	Negligible
SX5	8.2	1.4	9.6	0.2	8.4	-1.2	Low	Negligible
SX6	8.2	2.4	10.5	0.2	8.3	-2.2	Medium	Minor beneficial
SX7	8.2	2.7	10.8	0.2	8.4	-2.5	Medium	Minor beneficial

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX11	8.2	0.7	8.9	0.8	9.0	0.1	Imperceptible	Negligible
SW3	7.7	1.3	9.0	1.5	9.2	0.2	Imperceptible	Negligible
SW2	7.7	0.9	8.6	1.0	8.7	0.1	Imperceptible	Negligible
YX8	8.1	0.5	8.7	0.6	8.7	0.1	Imperceptible	Negligible
LE13	7.7	0.6	8.4	0.7	8.4	>0.0	Imperceptible	Negligible
LE12	8.1	0.5	8.6	0.5	8.6	>0.0	Imperceptible	Negligible
LE7	8.2	0.2	8.4	0.3	8.4	0.1	Imperceptible	Negligible
LE1	8.2	0.7	8.9	1.1	9.3	0.3	Imperceptible	Negligible
LE8	8.2	0.4	8.6	0.5	8.7	0.1	Imperceptible	Negligible
LE6	8.1	0.7	8.8	0.1	8.2	-0.5	Very Low	Negligible
LE5	8.1	0.4	8.5	0.1	8.2	-0.3	Imperceptible	Negligible
ND8	8.5	1.5	9.9	1.5	10.0	>0.0	Imperceptible	Negligible
WM1	8.2	0.2	8.3	0.1	8.3	-0.1	Imperceptible	Negligible
SX8	8.3	0.1	8.3	0.3	8.6	0.2	Imperceptible	Negligible
SX9	8.3	0.1	8.3	0.3	8.5	0.2	Imperceptible	Negligible
LE4	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
YX5	8.2	0.1	8.2	0.1	8.3	0.1	Imperceptible	Negligible
LW2	8.2	0.6	8.8	0.6	8.9	>0.0	Imperceptible	Negligible
BK1	8.8	1.1	9.9	1.4	10.2	0.3	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
WM10	8.6	1.4	10.0	1.5	10.1	0.1	Imperceptible	Negligible
WB1	9.0	1.6	10.6	1.6	10.5	-0.1	Imperceptible	Negligible
BC6	8.3	0.6	8.9	0.7	9.0	0.1	Imperceptible	Negligible
LW4	8.5	0.6	9.1	0.7	9.2	0.1	Imperceptible	Negligible
LW7	8.6	0.3	8.9	0.3	8.9	>0.0	Imperceptible	Negligible
LW8	8.8	0.7	9.6	0.5	9.4	-0.2	Imperceptible	Negligible
LW9	8.6	0.6	9.2	0.6	9.2	>0.0	Imperceptible	Negligible
LE2	8.1	0.2	8.3	0.3	8.4	0.1	Imperceptible	Negligible
WM5	8.5	0.3	8.8	0.3	8.8	>0.0	Imperceptible	Negligible
WM11	8.4	0.4	8.8	0.5	8.9	0.1	Imperceptible	Negligible
WM12	8.4	0.2	8.6	0.2	8.6	>0.0	Imperceptible	Negligible
SX15	8.2	3.1	11.3	0.1	8.3	-3.0	Medium	Minor beneficial
YX9	8.4	0.1	8.5	0.2	8.5	>0.0	Imperceptible	Negligible
LE15	8.0	0.1	8.1	0.1	8.1	>0.0	Imperceptible	Negligible
LE16	8.0	0.1	8.0	0.1	8.1	>0.0	Imperceptible	Negligible
LE19	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
LE17	7.8	0.1	7.9	0.1	7.9	>0.0	Imperceptible	Negligible
LE18	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE20	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE21	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE22	8.0	0.1	8.1	0.1	8.1	>0.0	Imperceptible	Negligible
LE23	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
WM3	8.3	0.6	8.9	0.6	8.9	>0.0	Imperceptible	Negligible
WM14	8.3	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
YX10	8.3	1.0	9.3	1.2	9.4	0.2	Imperceptible	Negligible
LE24	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
YX11	8.3	0.3	8.6	0.4	8.6	0.1	Imperceptible	Negligible
YX12	8.3	0.3	8.5	0.3	8.6	0.1	Imperceptible	Negligible
LE25	8.0	0.0	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE26	7.8	0.1	7.9	0.1	7.9	>0.0	Imperceptible	Negligible
LE27	8.0	0.0	8.0	0.1	8.1	>0.0	Imperceptible	Negligible
LE28	8.0	0.1	8.1	0.2	8.2	0.1	Imperceptible	Negligible
LE29	8.0	0.0	8.0	0.0	8.0	>0.0	Imperceptible	Negligible
LE30	7.7	0.1	7.8	0.1	7.8	>0.0	Imperceptible	Negligible
LE31	7.7	0.1	7.8	0.1	7.8	>0.0	Imperceptible	Negligible
LE32	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE33	8.2	0.2	8.3	0.2	8.4	>0.0	Imperceptible	Negligible
LE34	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
LE35	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE36	8.1	0.3	8.4	0.3	8.4	>0.0	Imperceptible	Negligible
LE37	8.1	0.3	8.4	0.3	8.4	>0.0	Imperceptible	Negligible
LE38	8.1	0.3	8.4	0.4	8.5	>0.0	Imperceptible	Negligible
LE39	7.9	0.2	8.1	0.2	8.1	>0.0	Imperceptible	Negligible
LE40	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
LE52	8.2	0.2	8.4	0.3	8.4	0.1	Imperceptible	Negligible
LE53	8.0	0.1	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
LE54	8.0	0.0	8.0	0.1	8.0	>0.0	Imperceptible	Negligible
YX13	8.3	1.1	9.4	1.2	9.6	0.2	Imperceptible	Negligible
YX14	8.3	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
YX15	8.2	0.7	8.8	0.8	8.9	0.1	Imperceptible	Negligible
YX16	8.3	0.7	9.1	0.8	9.2	0.1	Imperceptible	Negligible
YX17	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
LE55	8.0	0.2	8.2	0.2	8.2	>0.0	Imperceptible	Negligible
LE56	8.0	0.4	8.4	0.4	8.5	>0.0	Imperceptible	Negligible
YX18	8.1	0.4	8.5	0.6	8.6	0.1	Imperceptible	Negligible
YX19	8.0	0.3	8.3	1.3	9.2	1.0	Low	Negligible
YX20	8.2	0.9	9.1	1.0	9.2	0.1	Imperceptible	Negligible

Receptor	2023 Background (µg/m³)	2023RC Road + Rail (µg/m3)	2023RC Total (µg/m3)	2023AD Road + Rail (µg/m3)	2023AD Total (µg/m3)	Magnitude of Change (µg/m3)	Magnitude of Change Descriptor	Effect Descriptor
SX16	8.1	0.4	8.6	0.4	8.6	>0.0	Imperceptible	Negligible
SX18	8.3	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
SX17	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
SX19	8.4	0.1	8.4	0.1	8.4	>0.0	Imperceptible	Negligible
WM15	8.6	0.2	8.7	0.2	8.8	>0.0	Imperceptible	Negligible
WM16	8.1	0.1	8.2	0.1	8.2	>0.0	Imperceptible	Negligible
WM17	8.2	0.1	8.3	0.1	8.3	>0.0	Imperceptible	Negligible
BK6	8.5	0.4	8.9	0.3	8.8	-0.1	Imperceptible	Negligible
BK7	9.5	0.3	9.8	0.3	9.8	>0.0	Imperceptible	Negligible
LE46	8.2	0.2	8.3	0.2	8.4	0.1	Imperceptible	Negligible
BK8	9.5	0.5	10.0	0.5	10.0	>0.0	Imperceptible	Negligible
LE57	8.0	0.4	8.4	0.7	8.6	0.3	Imperceptible	Negligible
LE42	7.8	0.1	7.9	0.1	7.9	>0.0	Imperceptible	Negligible

VOLUME 10, CHAPTER 4, APPENDIX 4C: MARINE ECOLOGY AND WATER QUALITY CUMULATIVE EFFECTS ASSESSMENT

Contents

1. Marine Ecology and Fisheries 1
1.1 Rationale CEA 1
1.2 Water Quality 7
1.3 Benthic ecology 15
1.4 Fish 23
1.5 Marine Mammals 50
1.6 Commercial and recreational fisheries 76
1.7 Residual effects 79
References 84

Tables

Table 1.1: CEA Zone of Influence (ZOI) summary table 3
Table 1.2: Total number of projects considered in the CEA 4
Table 1.3: Impacts on marine water quality and sediment considered in the CEA 12
Table 1.4: Impacts on marine benthos considered in the CEA 16
Table 1.5: Impacts on fish considered in the CEA 25
Table 1.6: Hearing categories of fish receptors (* indicates uncertainty in the role of the swim bladder in the hearing of these species) 30
Table 1.7: Auditory effect zones areas (expressed in hectares) and/or auditory effect zone maximum ranges (expressed in metres) for the three hearing categories in fish, based on a 200kJ piling hammer energy. 32
Table 1.8: Behavioural effect zones for impact piling, with the area (expressed in hectares) and maximum range (expressed in metres) are shown. 32
Table 1.9: Summary of UK power stations abstracting seawater and screening of project phases for the cumulative effect assessment 36
Table 1.10: Available International Council for the Exploration of the Seas stock advice in 2017-2018 for European seabass and eel 39
Table 1.11: Taxa, stock unit and rationale for screening into the cumulative effect assessment at stock level screened into assessment. 41
Table 1.12: Taxa, stock unit and rationale for screening out of the cumulative effect assessment at stock level 43

Table 1.13: Taxa, stock unit and rationale for screening out of the cumulative effect assessment (impingement risk). 44

Table 1.14: Impingement predictions at Hinkley Point C and the proposed development with inclusion of embedded mitigation..... 49

Table 1.15: Marine developments considered in cumulative effect assessment (CEA) for the potential disturbance of harbour porpoise or seals. 56

Table 1.16: Assigning impact magnitude for noise assessments relative to the reference population 59

Table 1.17: Harbour porpoise auditory impact zones for piling activity 60

Table 1.18: CEA for the potential disturbance of harbour porpoise during single piling of marine developments with possible temporal ovelap with the BLF at Sizewell C. 63

Table 1.19: Spatial area and percentage of the Winter area of the Southern North Sea SAC exposed to disturbance events form consecutive piling activities. 66

Table 1.20: Seal auditory impact zones for piling activity. 68

Table 1.21: CEA for the potential disturbance of grey seals and harbour seals during single piling of marine developments with possible temporal ovelap with the BLF at Sizewell C... 74

Table 1.22: Summary of cumulative effects 80

Plates

Plate 1.1: Sizewell C proposed infrastructure and construction safety buffer zones relative to indicative cable routes for East Anglia One North and East Anglia Two 9

Plate 1.2: International Council for the Exploration of the Seas stock unit areas for cumulative effects of Hinkley Point C and Sizewell C 42

Plate 1.3. Marine Mammal Cumulative Noise Assessment 62

Plate 1.4. Cumulative noise assessment for the Southern North Sea Conservation Objective showing the relevant Winter area for the proposed development. 65

Plate 1.5: Locations of the main grey seal breeding sites around the UK (Ref. 1.32) and the boundaries of the seal MUs indicating the location of the SE England MU (9), north-east England MU (8) and east coast of Scotland MU (7)..... 69

Plate 1.6: Locations of the main harbour seal breeding sites around the UK Ref 1.32) and the boundaries of the seal MUs indicating the location of the SE England MU (9). 70

Appendix Plate 1.1: Indicative development timeline for assessment scenarios.

Figures

None provided.

Appendices

Appendix 4C.1: Cumulative Effects Assessment Project Screening..... 87

Appendix 4C.2: Alternative Assessments of Disturbance to Marine Mammals During Piling .. 115

1. Marine Ecology and Fisheries

1.1 Rationale CEA

1.1.1 The requirement for cumulative effects assessment (CEA) is set out in Article 4(3) and Article 5(1) of the Environmental Impact Assessment (EIA) Directive. As a Nationally Significant Infrastructure Project (NSIP) the proposed development is subject to the requirements of the Directive implemented through the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended). Schedule 4 of these regulations states that the ES should include:

- "A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, beneficial and adverse effects of the development, resulting from:
  - the existing development;
  - the use of natural resources;
  - the emission of pollutants, the creation of nuisances and the elimination of waste;
  - and the description by the applicant of the forecasting methods used to assess the effects on the environment".

1.1.2 Guidance in the form of Advice Note Seventeen: Cumulative Effects Assessment (Ref. 1.1) has been used to develop the CEA. The Advice Note sets out a four-stage approach to CEA as follows:

- Stage 1: Establish the NSIP's zone of influence and identify a list of 'other development';
- Stage 2: Identify a shortlist of 'other development' for CEA;
- Stage 3: Information Gathering, and;
- Stage 4: Assessment.

1.1.3 'Other development' types that should be considered in the CEA are as follows;

- projects under construction;
- permitted application(s), but not yet implemented;

- submitted application(s), but not yet determined;
- projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted, and;
- projects either on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted, or identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited, or identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

1.1.4 It is acknowledged that the availability of information necessary to conduct the CEA is dependent on the current status of the 'other developments'.

a) Topic specific methodology

1.1.5 The CEA broadly follows the Marine Ecology and Fisheries ES methodology detailed in **Appendix 6R** of **Chapter 6** of **Volume 1** in terms of impact assessment. Differences in the approach are described here.

1.1.6 The zone of influence (ZOI) for water quality and marine ecology receptor groups considers the most appropriate scale for the assessment.

1.1.7 The scope of the Marine Ecology CEA has been informed following consultation with statutory stakeholders through comments on the draft of the Environmental Statement (**Chapter 22** of **Volume 2** of the **ES**), during Marine Technical Forum meetings and following similar consultation processes at Hinkley Point. For most receptors the ZOI will be the extent of potential impacts from the proposed development. In the case of highly mobile species the CEA considers similar impacts within the ZOI with the potential to overlap temporally at the population scale. For example, the primary impacts associated with the proposed development on fish receptors relates to water abstraction causing mortality of fish receptors through impingement and entrainments. The effects of impingement and entrainment act as a form of non-selective fishing pressure that can act on all life-history stages of fish (from eggs to adult individuals). Fish entrapment assessments are contextualised against International Council for the Exploration of the Seas derived SSB (spawning stock biomass), which represents the international best practice approach for determining effects on a stock for either a fleet or individual vessel. However, International Council for the Exploration of the Seas stock assessment areas represent large spatial areas and cumulative effects from other relevant projects within the UK EEZ are considered at the

same spatial scale. **Table 1.1** summarises the ZOIs used and therefore the extent of search for the project screening exercise.

Table 1.1: CEA Zone of Influence (ZOI) summary table

Receptor	Description of zone of influence
Water quality	Within 10km of the Greater Sizewell Bay (GSB) as most impacts from the project alone are spatially restricted, although recognising that increases in SSC above background could extend further than 10km.
Benthic ecology	Benthic receptors found within the GSB are ubiqutous of the southern North Sea communities and impacts are spatially restricted. As such the GSB is considered to be the most appropriate ZOI.
Fish	The CEA adopts the same assessment area as those used to contextualise impacts from the proposed development. The most wide ranging impact from the proposed development relates to impingement. To assess the potential for effects, impingement losses are considered at the appropriate sea-area or regional stock/population level. Acordingly, the CEA follows the same approach. In the case of seabass, for example, assessment areas are International Council for the Exploration of the Seas Divisions 4.b-c, 7.a, and 7.d-h (Central and southern North Sea, Irish Sea, English Channel, Bristol Channel and Celtic Sea. The International Council for the Exploration of the Seas stock unit means the proposed development and Hinkley Point C would affect fish from the same management unit. Accordingly, the cumulative effects of Sizewell C and Hinkley Point C entrapment are assessed together in a CEA context.
Marine mammals.	Marine mammals are highly mobile species with high conservation value. Impacts from the proposed development have the potential to act cumulatively to effect species across the population range. The North Sea Management Unit (MU) is considered the appropriate area for assessment of effects on harbour porpoise. The UK south-east England MU, north-east England MU and east coast of Scotland MU are considered for seals. The southern North Sea Special Area of Conservation (SAC), designated for harbour porpoise, is adjacent to the proposed development. One of the conservation objectives of the SAC is to prevent significant noise disturbance to harbour porpoise. Cumulative impacts of the proposed development in conjunction with other projects are considered at the spatial scale of the SAC. Potential effects on harbour porpoise in relation to the conservation objectives of the site are provided in further detail in the shadow HRA (Doc Ref. 5.10).

Receptor	Description of zone of influence
Commercial fisheries.	The CEA considers the potential for direct effects on commercial fisheries within the GSB arising from impacts of the proposed development and other developments. Indirect effects on the fishery due to effects on fish and shellfish (e.g. impingement) are considered.

1.1.8 In accordance with the guidance issued by the Planning Inspectorate (Ref. 1.1), the first stage of the CEA identified a long list of 'other developments' with the potential to result in cumulative effects in the marine environment.

1.1.9 Projects identified with possible cumulative impacts on marine receptors are detailed in Appendix 4C.1 – Cumulative Effects Assessment Project Screening. Construction and operational impacts of the proposed development are considered in relation to other developments.

1.1.10 Receptor specific shortlists of 'other developments' to be included in the CEA are identified. Relevant impacts in a CEA context have undergone a scoping exercise and a rational is presented for impacts that are scoped out of further assessment.

1.1.11 In accordance with the Planning Inspectorate Advice Note 17 (Ref. 1.1), projects have been assigned to a 'tier'. Natural England and the JNCC have published advice on definitions for a tiered approach to the types of plans and projects included in a CEA, as provided for Scottish Power Renewables (Ref. 1.2). This approach is based on the stage of projects within the planning and development process and allows for different levels of uncertainty and differences in quality of data to be taken into account. The Natural England and JNCC advice use a five-tier approach compared to the advice from the Planning Inspectorate which uses a three-tier approach. The five-tier approach has been used and accepted by regulators for OWF projects and is applied here for marine water quality, ecology and fisheries assessments.

1.1.12 The total number of projects considered in the CEA is presented in **Table 1.2**. The types of projects considered are discussed further in Appendix 4C.1.

Table 1.2: Total number of projects considered in the CEA

Tier	Description	Number of projects
Tier 1	Operational projects - no potential for temporal or geographic overlap with the construction or operational phase of the proposed development.	255

Tier	Description	Number of projects
Tier 2	Marine infrastructure projects currently under construction and will be operational prior to the construction of proposed development.	17
Tier 3	Marine infrastructure projects that have been consented but for which construction has not yet started.	28
Tier 4	Marine infrastructure projects which have been submitted to the relevant regulatory body but not yet determined or projects consented but on hold due to legal challenge or appeal.	14
Tier 5	Marine infrastructure projects which the regulatory body are expecting to be submitted for determination. These projects are excluded from the CEA due to the amount of uncertainty and lack of information to allow for a robust assessment	3

1.1.13 Tier 5 projects are included in the initial long list as potential future concerns. However, due to the paucity of information and the high degree of uncertainty regarding these projects, qualitative assessments are made in the CEA. This approach conforms with the guidance within Planning Inspectorate Advice Note 17 (Ref. 1.1) and follows a similar approach used for the Norfolk Vanguard Offshore Wind Farm.

b) Indicative timeline

1.1.14 The CEA has been based on the potential for pressures from other projects to overlap temporally and/or spatially according to the timeline detailed in Section 1.1 of Appendix 4C.1. Cumulative effects assessments are inherently tied to the timelines of the proposed development and other (third party) developments. The CEA is therefore based on the following indicative timelines:

- Peak construction for the development is anticipated to occur in 2028. For the purposes of the marine assessments, the early construction phase for the development is defined as the six year period leading up to the peak construction year in 2028.
- Construction of the beach landing facility (under water noise assessments) is anticipated during the early construction phase (Appendix 4C.1).
- The station is anticipated to be operational by 2033 with both units operational by 2034.

1.1.15 Based on the CEA scoping exercise, assessment of cumulative effects considers the cumulative impact magnitude and the sensitivity of the receptor to the impact. Sensitivity information is based on assessments within **Chapter 22** of **Volume 2** of the **ES**.

1.1.16 The conclusions of the CEA and any additional (secondary) mitigation is detailed in Section 1.7.

1.1.17 A **shadow Habitats Regulations Assessment (HRA)** accompanies the ES and specifically details effects on the designated features of European Marine Sites. This chapter does not consider designated features *per se* with the exception of marine mammals.

1.1.18 The following assumptions have been made in this assessment:

- The timeline of the of the proposed development and other developments is assumed to be accurate and is applied to determine the potential for temporal overlap of development activities. Whilst development timelines are subject to variation the assessed effects from the proposed development acting cumulatively with other developments, are not anticipated to change significantly if timelines shift by the order of years.
- It is assumed that Tier 4 projects are consented using the current worst-case scenario.
- Due to the timescales involved and difficulty with accurately predicting impacts so far in advance it is assumed that the projects considered will have to undertake a detailed assessment of decommissioning activities nearer the time. For these reasons decommissioning activities associated with the proposed development are scoped out of the CEA.

1.1.19 The following limitations have been identified:

- Project timelines for the developments considered within this chapter are indicative, particularly in regard to third party developments.
- Information published relating to other developments has been considered up to 1st June 2019.

1.2 Water Quality

a) Receptor specific assessment approach

1.2.1 Detailed water quality assessments for the proposed development are assessed in **Chapter 21** of **Volume 2** of the **ES**. The ZOI for water quality impacts was determined as being a 10km radius of the proposed development and details were gathered on projects within this area.

1.2.2 Cumulative increase in chemical, biological or thermal pollutants have the potential to exceed Environmental Quality Standards (EQS) or to affect the Water Framework Directive ecological status of coastal waterbodies.

1.2.3 The CEA for water quality considers pressures from all stages of any project where there is potential to overlap with the proposed development.

b) Project screening

1.2.4 Projects with active environmental permits for discharges to surface water and groundwater, including those associated with Sizewell B, were identified as having the potential for cumulative effects (Appendix 4C.1). These pressures could impact marine receptors by the release of contaminants into surface runoff, wastewater effluent and flow through storm drain outfalls. However, these projects have been considered as part of the baseline for water quality and are not considered further in terms of CEA.

1.2.5 The project screening did not identify any projects within the 10km radius that had planned thermal or chlorinated discharges that would impact on EQS levels.

1.2.6 Nutrient/sewage discharges exist but are on-going projects, which form part of the baseline and therefore have been screened out for further consideration in the CEA.

1.2.7 There are active licences along the coast for outfall/sluice/marker works and the RNLI have an existing licence for their annual maintenance works. These have been considered but are relatively small-scale works and not considered to impact water quality and therefore have been screened out for further consideration in the CEA.

1.2.8 The project screening exercise identified four projects that have the potential for a spatial overlap with the ZOI for water quality issues in terms of changes is suspended sediments. These projects are;

- East Anglia One North OWF;

- East Anglia Two OWF;
- Eurolink National Grid Interconnector, and;
- Nautilus National Grid Interconnector.

1.2.9 East Anglia One North OWF and East Anglia Two OWF are Tier 4 projects with DCO applications submitted in October 2019. The OWF locations at 50km and 35km, respectively from the proposed development. The nearest point of the offshore cable corridor is 550m from infrastructure associated with the proposed development and landfall for the East Anglia One North and East Anglia Two export cables would be north of Thorpeness (**Plate 1.1**). As such the potential impacts from construction and operational maintenance of the offshore cables is considered.

1.2.10 The application for Nautilus National Grid Interconnector is expected by the Planning Inspectorate in Q2 of 2022, by which time construction is anticipated to have begun at the proposed development. At the time of writing the EuroLink National Grid Interconnector is in the very early stages of development with no publicly available information.

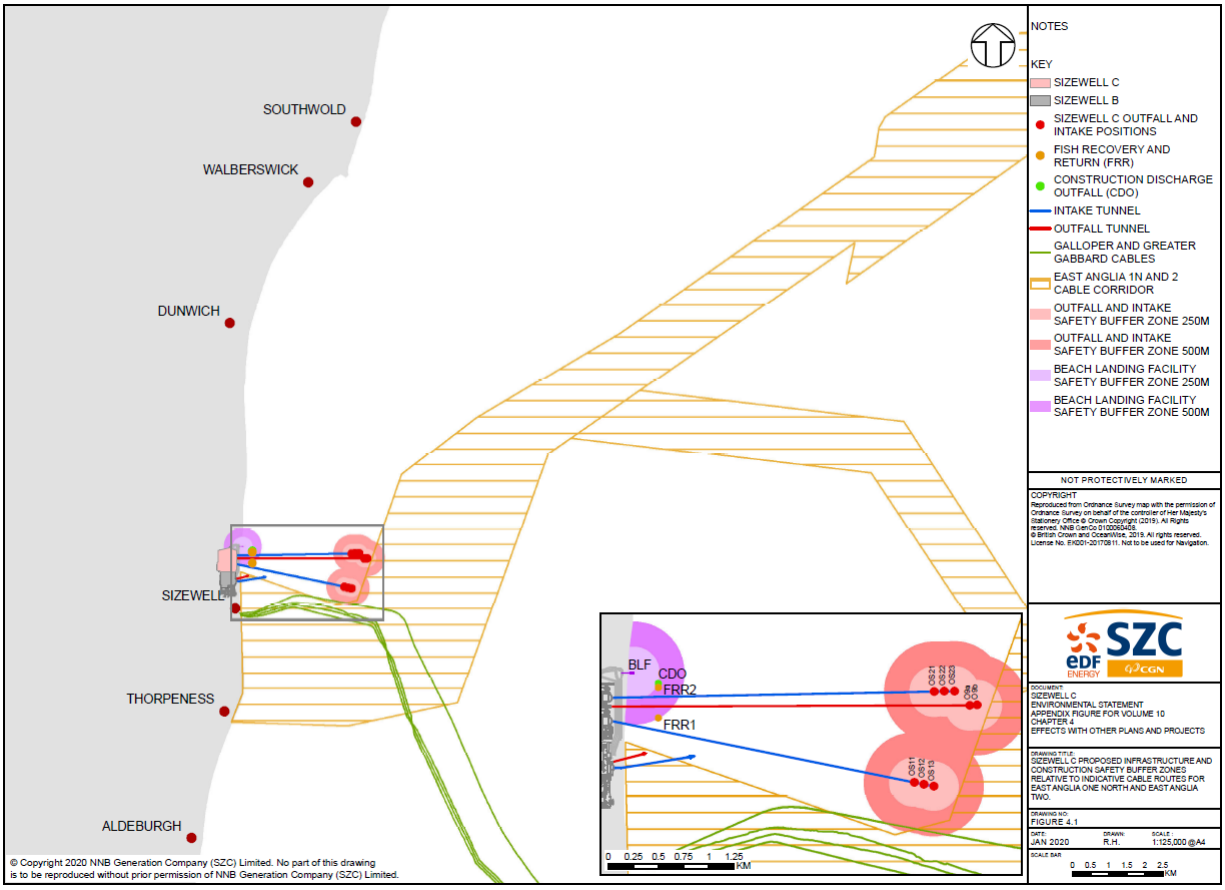
1.2.11 Cable laying activities (including trenching), which would cause sediment disturbance resulting in increases in suspended sediment concentrations potentially effecting water quality. A pre-lay grapnel run would proceed the installation of the OWF export cables and could disturb the seabed up to a depth of 3m. At any given location along the cable route the sediment release volumes would be low and confined to near the seabed. A summary of the suspended sediments from the East Anglia One North and East Anglia Two Environmental Statements (Ref. 1.3; 4) is provided:

- In shallow subtidal environments (less than 5m LAT) suspended sediments would peak at 400mg/l. Plumes would be localised, extending to less than 1km from the trenching activity and persist for a few hours.
- In deeper waters (greater than 20m LAT) suspended sediments would typically be at less than 100mg/l, higher concentrations would occur within tens of meters of the trenching.
- Within 180 hours of the activity, sediment plumes would have fully dispersed.

1.2.12 Increases in suspended sediments and sedimentation from the proposed development is also predicted to be short-term and localised with conditions returning to baseline shortly after dredging activities ceasing. Furthermore, the magnitude of impacts is relatively small in comparison to high baseline

concentrations with mean suspended sediment concentrations of ca. 500mg/l at the seabed near the offshore infrastructure and peaks over 2,000mg/l (**Chapter 22** of **Volume 2** of the **ES**). As such, significant cumulative effects on water quality are not anticipated should activities resulting in increases in suspended sediment temporally overlap with other developments.

Plate 1.1: Sizewell C proposed infrastructure and construction safety buffer zones relative to indicative cable routes for East Anglia One North and East Anglia Two



1.2.13 Whilst East Anglia Three, Norfolk Vanguard and Norfolk Boreas have the potential for cable laying activities to have a temporal overlap with the proposed development, the planned cable routes would be outside of the ZOI, as such no spatial overlap exists. The landfall for cables associated with East Anglia Three is at Bawdsey, Suffolk, over 20km from the GSB. The proposed landfall site for both Norfolk Vangaurd and Norfolk Boreas is Happisburgh South, over 70km to the north of GSB.

1.2.14 Aggregate extraction has the potential to cause sediment disturbance and add to the cumulative effect alongside the proposed development. The nearest aggregate extraction site is over 20km from the ZOI (Area 430) and whilst a sediment plume would be present, screening of the aggregate suspended sediment levels has been assessed as returning to background within 6-7 tidal cycles (Ref. 1.5). In addition, sediment transport is in a predominantly north-south direction and so the plume from Area 430 (located further offshore) would not be expected to reach the GSB and hence interact spatially with activities from the proposed development.

1.2.15 Operational maintenance of the existing cables in the ZOI including for Greater Gabbard OWF and Galloper OWF along with the proposed East Anglia One North and East Anglia Two cables is feasible. There is no scheduled repair or replacement of the export cables for East Anglia One North and East Anglia Two. Periodic inspection of all cables routes is anticipated. During inspection sections of cables would be uncovered, repaired and reburied. Maintenance impacts, including changes in suspended sediments and sedimentation rate changes are assumed to be smaller scale than during construction. Should such impact occur during the operational phase of the proposed development, the only activity with the potential to act cumulatively to increase suspended sediments and sedimentation rate changes would be occasional dredging for the BLF (deliveries anticipated every 5-10 years). The cumulative effects of the assumed small-scale impacts of cable maintenance and the short-term, localised effects from the proposed development are not considered to result in significant water quality effects.

c) Summary

1.2.16 Operationally on-going projects are considered part of the baseline environment for construction of the proposed development. These projects, typically small-scale wastewater treatment operations, were screened out of the CEA. Increases in suspended sediments from dredging activities associated with the proposed development are predicted to be short-term and localised with conditions returning to baseline within days of dredging activities ceasing. No information available regarding other developments

indicates the potential for cumulative impacts to significantly effect water quality within the GSB.

Table 1.3: Impacts on marine water quality and sediment considered in the CEA

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
Construction (and operation where activities are the same).	Dredging and disposal for infrastructure installation, and navigational dredging for the BLF.	Changes in suspended sediments.	Extent of plumes above 100mg/l during construction activities and maintenance dredging are spatially restricted and short-term, returning to baseline conditions within days of dredging ceasing. ***Minor adverse***, Not Significant.	**Yes.** Potential for other developments with similar activities to cause short-term changes in suspended sediments within the GSB.
	Construction discharges of un-ionised ammonia and heavy metals.	Pollution and other chemical changes.	Un-ionised ammonia - GSB. Discharges from the CDO throughout construction phase the EQS exceeded only within 6.3m of CDO (worst-case). When commissioning discharges are added, un-ionised ammonia would be below EQS within 25m. ***Negligible***, Not significant Metals – GSB. Zinc and chromium discharges only detectable above background and EQS over an area of 0.11ha and 5.49ha of the sea surface, respectively during month long dewatering activities. There was no exceedance at the bed for either metal ***Negligible***, Not significant	No. Very localised effects.
	Commissioning discharges of tunnelling chemicals, hydrazine and ethanolamine	Synthetic compound contamination	Tunnelling chemicals - GSB. Small areas affected at both seabed and sea surface. ***Negligible***, Not significant	No. Very localised effects and activities with similar pressures are not anticipated.

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
			Hydrazine – GSB. PNEC exceeded over small area at seabed and surface. ***Minor adverse effect***, Not Significant.	
Operation	Navigational dredging for the BLF.	Changes in suspended sediments.	Extent of plumes above 100mg/l are spatially restricted and short-term, returning to baseline conditions within days of dredging ceasing. ***Minor adverse***, Not Significant.	**Yes.** Potential for other developments with similar activities to cause short-term changes in suspended sediments within the GSB.
	Thermal discharges	Temperature changes	Temperature changes due to cooling water discharges - GSB. ***Minor adverse effect***, Not Significant.	No. Sizewell B forms part of the baseline and no other third-party developments would have similar overlapping impacts.
	Thermal discharges and chlorinated discharges (TROs and chlorinated by-products).	Temperature changes and synthetic compound contamination	Temperature & TRO and Chlorinate by-products - GSB. The Sizewell C TRO plume is highly stratified, and concentrations exceed the EQS over a sea surface area of 338ha and a seabed area of 2.1ha. For chlorinated by-products (bromoform) areas of PNEC exceedance would be 52ha at the surface and 0.15ha at the seabed. These areas overlap with thermal plume at the seabed, and the surface. ***Minor adverse effect***, Not Significant.	No. Effects of TROs from the proposed development and Sizewell B are considered together during the initial assessment of effects. No further discharges are planned within the Zone of Influence (ZOI).

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
	Thermal discharges and discharges of total residual oxidants and hydrazine.	Temperature changes and synthetic compound contamination	Temperature & Hydrazine - GSB. At the seabed, acute and chronic PNECs are predicted to be exceeded over <1ha, while at the sea surface the acute PNEC would be exceeded over a maximum of 17.9ha and the chronic PNEC would be exceeded over 158.1ha. ***Minor adverse effect***, Not Significant.	No. Effects of hydrazine from the proposed development and Sizewell B thermal are considered together during the initial assessment of effects. No further discharges are planned within the ZOI.

1.3 Benthic ecology

a) Receptor specific assessment approach

1.3.1 The ZOI for cumulative effects on benthic ecology from the proposed development and third-party developments is the Greater Sizewell Bay (GSB). Benthic receptors found within the GSB are ubiquitous in the southern North Sea communities and impacts from the project alone are largely spatially restricted. The GSB extends from Walberswick in the north to the Coralline Crag outcrops near Thorpeness in the south. The seaward boundary extends to the eastern flank of the Sizewell-Dunwich Bank, so includes the spatial extent of the proposed cooling water infrastructure. The landward limit is delineated by Mean High Water Springs (MHWS).

1.3.2 Based on the results of Benthic Ecology assessments (**Chapter 22** of **Volume 2** of the **ES**) the CEA for benthic communities considered the types of impact from all stages of any project where there is the potential to overlap with the proposed development, these are summarised in **Table 1.4**. Where relevant, assessments consider inter-relationships of the proposed development acting cumulatively with third-party projects, thereby representing the worst-case scenario.

Table 1.4: Impacts on marine benthos considered in the CEA

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
Construction (and operation where activities are the same).	Heavy plant operations associated with installation of the CDF.	Compaction of substratum.	Population level effects on benthic invertebrates. ***Minor adverse effect***, Not Significant.	No – Very localised impact. A small proportion of any intertidal benthic invertebrate population would be affected, and rapid recovery is expected.
	Dredging and disposal for infrastructure installation, and navigational dredging for the BLF.	Removal of substratum (extraction).	Population level effects on benthic invertebrates. ***Minor adverse effect***, Not Significant.	No – Limited spatial extent during construction. A small proportion of any subtidal benthic invertebrate population would be affected. Rapid recovery is expected, except where maintenance dredging occurs or where infrastructure is installed.
	Dredging and disposal for infrastructure installation, and navigational dredging for the BLF.	Changes in suspended sediments.	Population level effects on benthic invertebrates. ***Minor adverse effects***, Not Significant.	**Yes.** Potential for other developments with similar activities to cause changes in suspended sediments within the GSB.
	Dredging and disposal for infrastructure installation, and navigational dredging for the BLF.	Sedimentation rate changes.	Population level effects on benthic invertebrates. ***Minor adverse effect,*** Not Significant, for benthic invertebrates.	**Yes.** Potential for other developments with similar activities to cause changes in sedimentation rates within the GSB.
	Navigational dredging and piling	Underwater noise and vibration.	Population level effects on benthic invertebrates.	No – Localised impact.

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
			Minor adverse effect, Not Significant.	A small proportion of any benthic invertebrate population would be affected, and rapid recovery is expected.
	Navigational dredging and presence of BLF structure	Changes in wave exposure.	Population level effects on benthic invertebrates. ***Negligible effect***, Not significant	No – Very localised impact. Changes in population densities are expected to be within the range of natural variability.
	Combined presence of infrastructure components.	Physical change to another seabed type	Population level effects on benthic invertebrates. ***Minor adverse effect***, Not Significant.	**Yes** – Potential for other developments to increase the extent of habitat change within the GSB. Despite the limited spatial extent of infrastructure associated with the proposed development, this pressure is included as a precautionary measure.
	Combined presence of infrastructure components.	Spread of non-indigenous species (NIS).	Population level effects on benthic invertebrates. ***Minor adverse effect***, Not Significant.	No – Very localised impact. Operational and planned offshore wind farms (OWF) are at least 35km away from the proposed development. Moreover, to date, no reports through compliance monitoring indicate the spread of NIS via OWF structures. The inter-relationship between cooling water discharges and climate change on the spread of NIS via infrastructure associated with the proposed development are assessed in **Chapter 22** of **Volume 2** of the **ES.**
	Construction discharges of un-	Pollution and other chemical changes.	Population level effects on benthic invertebrates and *Sabellaria spinulosa* reef.	No – Very localised impact and developments with similar pressures are not anticipated.

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
	ionised ammonia from the combined drainage outfall (CDO).		***Negligible effects***, Not significant	
	Construction discharges of heavy metals from the CDO.	Pollution and other chemical changes.	Population level effects on benthic invertebrates and *Sabellaria spinulosa* reef. ***Negligible effects***, Not significant	No – Very localised impact and other developments with similar pressures are not anticipated.
	Commissioning discharges of tunnelling boring machine (TBM) chemicals from the CDO.	Synthetic compound contamination	Population level effects on benthic invertebrates and *Sabellaria spinulosa* reef. ***Negligible effects***, Not Significant.	No – Very localised impact and other developments with similar pressures are not anticipated.
	Commissioning discharges of hydrazine from the CDO.	Synthetic compound contamination	Population level effects on benthic invertebrates and *Sabellaria spinulosa* reef. ***Minor adverse effect,*** Not Significant, for benthic invertebrates. ***Negligible effect***, Not significant, for *S. spinulosa*.	No – Localised impact and other developments with similar pressures are not anticipated.
Operation	Presence of coastal defence feature (CDF)	Emergence regime changes	Population level effects on benthic invertebrates. ***Minor adverse effect,*** Not Significant.	No – Very localised impact due to future coastal squeeze that would occur after 2053 and only in the absence of mitigation. Other developments with similar pressures are not anticipated.

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
	Cooling water abstraction.	Entrainment	Population level effects on benthic invertebrates and *Sabellaria spinulosa* reef. ***Minor adverse effect***, Not Significant.	No – Sizewell B forms part of the baseline and other developments with similar pressures are not anticipated. The potential influence of cooling water discharges and climate change on the effects of entrainment are assessed in **Chapter 22** of **Volume 2**.
	Cooling water abstraction.	Impingement	Population level effects on benthic invertebrates. ***Minor adverse effect***, Not Significant.	No – Sizewell B forms part of the baseline and other developments with similar pressures are not anticipated. The potential influence of cooling water discharges on the effects of impingement is assessed in **Chapter 22** of **Volume 2**.
	Thermal discharges from cooling water system (CWS) outfalls.	Temperature changes.	Population level effects on benthic invertebrates. ***Minor adverse* to *minor beneficial effect***, Not Significant, for benthic invertebrates	No – Sizewell B forms part of the baseline and other developments with similar pressures are not anticipated. The potential influence of climate change on the effects of thermal discharges is assessed in **Chapter 22** of **Volume 2**.
	Cooling water discharges of total residual oxidants (TROs) and chlorination by-products from CWS outfalls.	Synthetic compound contamination	Population level effects on benthic invertebrates. ***Minor adverse effects***, Not Significant.	No – Footprint of pressure does not overlap with that of Sizewell B and other developments with similar pressures are not anticipated.

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
	Cooling water discharges of hydrazine from CWS outfalls.	Synthetic compound contamination	Population level effects on benthic invertebrates. ***Minor adverse effects***, Not Significant.	No – Localised impact (very localised at the seabed) and other developments with similar pressures are not anticipated.
	Discharges of dead and moribund biota from fish recovery and return (FRR) system.	Organic loading	Population level effects on benthic invertebrates. ***Minor beneficial effect***, Not Significant.	No – Sizewell B forms part of the baseline and other developments with similar pressures are not anticipated.
	Increases in un-ionised ammonia due to discharges of dead and moribund biota from FRR system.	Pollution and other chemical changes	Population level effects on benthic invertebrates. ***Minor adverse effect***, Not Significant, for benthic invertebrates.	No – Sizewell B forms part of the baseline and other developments with similar pressures are not anticipated.

b) Project screening

1.3.3 The project screening exercise identified four projects that have the potential for a spatial overlap with the zone of influence for benthic ecology in terms of changes is suspended sediments, sedimentation rate changes and physical change to another seabed type. These projects are;

- East Anglia One North OWF;
- East Anglia Two OWF;
- Eurolink National Grid Interconnector, and;
- Nautilus National Grid Interconnector.

1.3.4 Eurolink National Grid Interconnector and Nautilus National Grid Interconnector are Tier 5 with limited information available. East Anglia One North OWF and East Anglia Two OWF are Tier 4 projects with DCO applications submitted in October 2019. The OWF locations at 50km and 35km, respectively from the proposed development. The nearest point of the offshore cable corridor is 550m from infrastructure associated with the proposed development and landfall for the East Anglia One North and East Anglia Two export cables would be north of Thorpeness (**Plate 1.1**). As such the potential impacts from construction and operational maintenance of the offshore cables is considered.

1.3.5 Cable laying activities (including trenching), resulting in increases in SSC and sedimentation from sediment disturbance, and possible changes in habitat (due to cable protection).

1.3.6 A pre-lay grapnel run would precede the installation of the OWF export cables and could disturb the seabed up to a depth of 3m. At any given location along the cable route the sediment release volumes would be low and confined to near the seabed. A summary of the suspended sediments from the East Anglia One North and East Anglia Two Environmental Statements (Ref. 1.3; 4) is provided:

- In shallow subtidal environments (less than 5m depth at Lowest Astronomical Tide) suspended sediments would peak at 400mg/l. Plumes would be localised, extending to less than 1km from the trenching activity and persist for a few hours.
- In deeper waters (greater than 20m depth at Lowest Astronomical Tide) suspended sediments would typically be at less than 100mg/l, higher concentrations would occur within tens of meters of the trenching.

- Within 180 hours of the activity, sediment plumes would have fully dispersed.

1.3.7 Increases in suspended sediments and sedimentation from the proposed development is also predicted to be short-term and localised with conditions returning to baseline shortly after dredging activities ceasing. Furthermore, the magnitude of impacts is relatively small in comparison to high baseline concentrations with mean suspended sediment concentrations of ca. 500mg/l at the seabed near the offshore infrastructure and peaks over 2,000mg/l (**Chapter 22** of **Volume 2** of the **ES**). Therefore, the potential for significant cumulative effects is low. Changes in suspended sediments and are predicted to have a ***minor adverse/minor beneficial***[1] effect on benthic receptors. Sedimentation rate changes are predicted to have a ***minor adverse*** effect on benthic receptors. Effects are not significant. The CEA is consistent with the assessment of effects from the proposed development alone.

1.3.8 Cable installation and protection measures for OWF export cables (e.g. the introduction of hard substrate) have the potential to result in a physical change in seabed type. Furthermore, where export cables reach landfall, intertidal habitat could be altered. In the predominantly soft sediment environment, cable burial through ploughing is anticipated (except for pipeline crossings), thus reducing the requirement for cable protection. The preparation of the seabed for cable laying may permanently change the baseline habitat, however in the dynamic environment the change in habitat is likely to be small and support similar diversity (Ref. 1.3; 4). Landfall for the East Anglia One North and East Anglia Two export cables would be north of Thorpeness. Horizontal directional drilling would be applied, thereby eliminating the requirement for works or impact to the intertidal. As such, significant effects on benthic receptors are not anticipated. Physical change in seabed type is predicted to have a ***minor adverse*** effect on benthic receptors and not is not significant. The CEA is consistent with the assessment of effects from the proposed development alone.

1.3.9 Operational maintenance of the existing cables in the ZOI including for Greater Gabbard OWF and Galloper OWF along with the proposed East Anglia One North and East Anglia Two cables is feasible. There is no scheduled repair or replacement of the export cables for East Anglia One North and East Anglia Two. Periodic inspection of all cables routes is anticipated. During inspection sections of cables would be uncovered,

[1] Some species, such as *Sabellaria spinulosa,* may benefit from increases in suspended sediment concentrations and effects may be ***minor beneficial*** although not significant. Further details are provided in **Chapter 22** of **Volume 2** of the **ES**.

repaired and reburied. Maintenance impacts, including changes in suspended sediments and sedimentation rate changes are assumed to be smaller scale than during construction. Should such impact occur during the operational phase of the proposed development, the only activity with the potential to act cumulatively to increase suspended sediments and sedimentation rate changes would be occasional dredging for the BLF (deliveries anticipated every 5-10 years). The cumulative effects of cable maintenance and the short-term, localised effects from the proposed development are not considered to result in significant effects on benthic receptors.

1.4 Fish

a) Receptor specific assessment approach

1.4.1 The project-level assessment has considered a range of pressures from activities in the construction and operational phases with the potential for significant effects to marine and migratory fish receptors. The assessment of effects has been based upon a tiered approach, with consideration of effects at the following levels:

- The sea-area or regional stock/population level, considering effects on the viability of the stock/population.
- Localised displacement effects, with consideration of fish receptors as prey species for designated features such as seabirds or marine mammals and as fisheries resources.

1.4.2 The approach to the CEA involves considering pressures which could generate potentially significant cumulative effects to fish receptors at a sea-area or regional stock/population level. This approach, therefore, aligns the CEA and the project-specific assessments in **Chapter 22** of **Volume 2** of the **ES**.

1.4.3 The CEA considers activities and resulting pressures from the proposed development with the potential to interact with other developments. The CEA considers effects from the proposed development where effects are predicted to be minor or greater. The activities and associated pressures from the proposed development that are considered in a CEA context are provided in **Table 1.5**.

1.4.4 CEA assessments for fish consider other developments with the potential for significant cumulative underwater noise impacts, notably OWFs, that may be constructed within the same time frame as the BLF. During the operational phase, other developments that will abstract large volumes of seawater with

the potential to cause in-combination effects are also considered cumulatively with the proposed development. For example, the International Council for the Exploration of the Seas stock unit for seabass means the proposed development and Hinkley Point C would effect fish from the same management unit. Accordingly, the cumulative effects of Sizewell C and Hinkley Point C impingement and entrainment are assessed together in a CEA context.

Table 1.5: Impacts on fish considered in the CEA

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
Construction	Navigational dredging for BLF and construction dredging for intakes, outfalls and CDO.	Suspended sediment concentration increases.	Stock level and local displacement effects. No barrier to the movement of migratory species. Mortality of ichthyoplankton and adults predicted to be minimal but chronic effects and avoidance behaviours could occur. Effects are short lived and not significant for fish populations. ***Minor adverse effect***, Not Significant.	No – Sediment plumes generated during dredging and disposal, are predicted to be transient and would return to background levels several days after dredging.
	Dredging and disposal for cooling water infrastructure.	Sedimentation.	Stock level and local displacement effects. Smothering of eggs and adults (unable to avoid the SSC plume) would occur over a very limited spatial area and natural resuspension rates are high. ***Negligible effects,*** Not Significant.	No - Areas of ecologically relevant sedimentation are very localised and sedimentation depth rapidly reduces with distance from the disposal site and is subject to natural resuspension.
	Navigational dredging for BLF and construction dredging for intakes, outfalls and CDO.	Underwater noise.	Stock level and local displacement effects. 'Fish with swim bladder or other air cavities to aid hearing'; are considered more acoustically sensitive. Continuous noise sources from dredging produce no instantaneous effects. Mortality (up to 2ha in the worst case) and recoverable injury from cumulative (24-h) exposure are predicted over very small areas. Behavioural responses could result in temporary avoidance behaviours.	No - Continuous noise levels associated with navigational and construction dredging, are predicted to be short-term and localised.

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
			Minor negative effects, Not Significant.	
	Impact piling for BLF	Underwater noise.	Stock level and local displacement effects. 'Fish with swim bladder or other air cavities to aid hearing'; are considered more acoustically sensitive. Impact pilling has the potential to cause localised instantaneous mortality and behavioural responses may occur over wider areas. Cumulative (24-h) exposure is predicted over relatively small areas for mortality and recoverable injury (assuming no avoidance behaviours). ***Minor adverse effect***, Not Significant.	**Yes** – Pilling represents the largest confirmed noise impact from the proposed development and has the potential to occur concurrently with other developments.
	Hypothetical unexploded ordnance (UXO) clearance.	Underwater noise.	Should a UXO be identified on site, a full assessment would be completed considering the exact UXO specifications and location. Alternative disposal methods or relocation would be considered as well as appropriate management actions and mitigation measures in order to minimise the risk of potential impacts.	No – UXO modelling is based on a hypothetical scenario and whilst other developments may also include UXO clearance the details of clearance approaches and any mitigation is not sufficient at this stage to allow a robust assessment.
Commissioning	Commissioning discharges: Hydrazine.	Synthetic compound contamination.	Stock level and local displacement effects. No barrier to the movement of migratory species. Discharges at ecologically relevant concentrations are predicted to be highly localised. ***Minor adverse effects***, Not Significant.	No - No further hydrazine discharges are planned within the ZOI.

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
Operation.	Cooling water discharge via cooling water outfalls.	Thermal plume and temperature changes (absolute water temperature and thermal uplift).	Stock level and local displacement effects, considering absolute temperature change and thermal uplift. There is potential for avoidance behaviours in close proximity to the discharge. Behavioural avoidance would reduce the potential for acute effects. However, there is also the potential for attraction of warmed areas for some of the species, capable of exploiting the heated cooling water. Thermal discharges may result in localised changes in physiology and behaviour. No barrier to the movement of migratory species are predicted. ***Minor adverse effects***, Not Significant.	No - Sizewell B thermal discharges forms part of the baseline. Thermal plumes from the proposed development and Sizewell B are considered together during the initial assessment of effects. No further thermal discharges are planned within the ZOI.
	Cooling water discharge via cooling water outfalls.	Chemical discharges including TROs, chlorinated by-productss and hydrazine.	Stock level and local displacement effects. No barrier to the movement of migratory species. Behavioural avoidance may reduce the potential for acute effects in adult life stages, which would be limited to a very small spatial area. TRO discharges may result in localised chronic effects and/or behavioural avoidance. ***Minor adverse effects***, Not Significant.	No – The discharge plumes for Sizewell B and the proposed development are spatially distinct. Impacts for Sizewell B form part of the baseline and no other developments are expected to contribute to these discharges.
	Cooling water abstraction via	Impingement.	Impingement is assessed in terms of losses of the relevant stock and/or fisheries unit.	**Yes** – Impingement from the proposed development has the

Phase	Activity	Pressure	Level assessed, effect conclusion and significance (Sizewell C)	Assessed in CEA context
	cooling water intakes.		Impingement losses are predicted to have a negligible effect on stock viability. However due to the long-term nature of the impacts and the predicted fish mortality ***negligible*** to ***minor adverse effects*** are concluded depending on the specific species tested. Not Significant.	potential to occur concurrently with other developments.
	Cooling water abstraction via cooling water intakes.	Entrainment.	The loss of ichthyoplankton and small juvenile fish during entrainment is predicted to have a negligible effect on stock viability. ***Negligible effect***, Not Significant.	**Yes** – Entrainment from the proposed development has the potential to occur concurrently with other developments.

b) Project screening for construction impacts

i. Underwater noise from impact piling

1.4.5 The timeline for the proposed development indicates there is the potential for pilling activities associated with the indicative construction window of the BLF to occur simultaneously with offshore wind farm (OWF) projects. The worst-case temporal overlap of piling with the BLF includes the following OWFs:

- Hornsea Project Two OWF;
- Dogger Bank Creyke Beck A OWF;
- Dogger Bank Teeside A OWF;
- East Anglia Three OWF, or;
- Norfolk Vanguard OWF.

1.4.6 Norfolk Vanguard and East Anglia Three OWFs have the potential to overlap with piling activities at the proposed development but would not temporally overlap each other (Section 1.5; **Table 1.15**).

1.4.7 Two Tier 4 projects, the Thanet Extension OWF and Hornsea Project Three OWF, may also occur during the same period. These projects are screened in for further assessment.

1.4.8 East Anglia ONE North and East Anglia TWO OWFs are Tier 4. Offshore construction, including pilling, is anticipated 2026-2028 for East Anglia ONE North and 2025-2027 for East Anglia TWO. Piling is not anticipated to overlap with the construction of the BLF in the early construction phase. These projects are screened out for further assessment.

Unexploded ordnance

1.4.9 The detonation and clearance of hypothetical unexploded ordnance (UXO) has been considered for fish receptors within the ES of the proposed development (**Chapter 22** of **Volume 2** of the **ES**), thereby encompassing the full suite of potential auditory impacts. However, to-date UXOs have not been identified on site. Should an UXO be identified a full assessment would be completed considering the exact UXO specifications and location in relation to site-specific factors such as proximity to existing nuclear infrastructure. Alternative disposal methods or relocation would be considered as well as appropriate mitigation measures in order to minimise the risk of potential impacts. Given the uncertainty regarding the very

presence of UXOs and mitigation/management scenarios, impact pilling was used to inform underwater assessment scenarios.

1.4.10 It is noted that a Marine licence (MLA/2019/00191) for Galloper UXO detonation has been issued. Hence there is the potential for cumulative effects should UXO clearance and detonation be required during the proposed development. However, effects from Galloper UXO detonation and hypothetical UXO clearance from the proposed development cannot be assessed because full details of the planned activities are not currently available. Should UXOs be identified at the proposed development, an assessment of the potential effects of different detonation strategies and mitigation measures would be undertaken.

c) Construction phase CEA – Impact Piling

i. Sensitivity of receptors

1.4.11 **Table 1.6** summarises the receptors of interest, grouped into hearing categories of: Category 1 'fish with swim bladder or other air cavities to aid hearing; Category 2 'fish with swim bladder that does not aid hearing'; and Category 3 'fish without a swim bladder'.

Table 1.6: Hearing categories of fish receptors (* indicates uncertainty in the role of the swim bladder in the hearing of these species)

Category	Receptors
(1) Fish with swim bladder or other air cavities to aid hearing.	Atlantic herring.
	European sprat.
	Allis and Twaite shad.
	Anchovy
	European cod.
(2) Fish with swim bladder that does not aid hearing.	European seabass.
	Whiting
	Thin-lipped grey mullet.
	European smelt*.
	Sea trout.
	Atlantic salmon.
	European eel.
(3) Fish without a swim bladder.	Mackerel
	Horse mackerel.
	Dover sole (swimbladder larval stages).

Category	Receptors
	European plaice.
	Dab
	European flounder.
	Sand gobies (swimbladder larval stages).
	Thornback ray.
	Tope
	River and sea lamprey.

1.4.12 Category 1 receptors ('fish with swim bladder or other air cavities to aid hearing') are regarded as acoustically sensitive. Within this category, nursery grounds of cod, herring and sprat are considered to intersect the proposed development. Whiting, a Category 2 receptor, is considered less acoustically sensitive than, herring and sprat. Category 3 receptors ('fish without a swim bladder') are not considered acoustically sensitive. Within Category 3, there are nursery grounds of Dover sole, plaice, thornback ray, and mackerel, as well as spawning grounds of Dover sole and plaice intersecting the proposed development.

1.4.13 For the proposed development, **Table 1.7** shows the predicted impact ranges applicable to the three hearing categories, based on modelling for the worst-case hammer energy (200kJ). It should be noted that a 90kJ hammer energy is anticipated to be applied for the installation of BLF piles (**Chapter 22** of **Volume 2** of the **ES**), however, to encompass the worst-case engineering scenario results for a precautionary 200kJ assessment are applied in the fish CEA.

1.4.14 **Table 1.8** shows the predicted behavioural effect zones for impact piling, applicable to the three hearing categories for the worst-case hammer energy (200kJ). The applied threshold for behavioural effects is based on observations of a startle response in sprat (135 dB re 1 µPa2s) and in mackerel (142 dB re 1 µPa2s). In the case of 'fish with swim bladder or other air cavities to aid hearing' and for 'fish with a swim bladder that does not aid hearing', behavioural effects are predicted at a range of 5.60km (3,816ha) from piling based on the 200kJ hammer energy scenario (**Table 1.8**). Behavioural effects from piling at proposed development, are likely to be short-lived and do not necessitate displacement from the ensonified area.

1.4.15 The spatial 'footprint' from the combined piling at the proposed development and up to six OWFs being pilled consecutively, is predicted to affect a small area of the expansive spawning and nursery grounds for the key taxa. In the case of herring, an acoustically sensitive species, the closest known large-

scale spawning ground (Downs herring) from the proposed development is beyond the ZOI of the proposed development, and it is located towards the English Channel.

1.4.16 It is predicted that there would be no changes to fish sensitivity with the proposed development and OWFs combined. Therefore, the sensitivity assessment in **Chapter 22** of **Volume 2** of the **ES** is applied. Accordingly, Category 1 receptors ('fish with swim bladder or other air cavities to aid hearing') are predicted to have a sensitivity of *Medium*. While the sensitivity of Category 2 receptors ('fish with swim bladder that does not aid hearing') and Category 3 ('fish without a swim bladder') is predicted to be *Low*.

Table 1.7: Auditory effect zones areas (expressed in hectares) and/or auditory effect zone maximum ranges (expressed in metres) for the three hearing categories in fish, based on a 200kJ piling hammer energy. The grey shaded boxes indicate that TTS is not defined for instantaneous noise exposure for fish. (From: Appendix 22L)

Hearing category	Threshold	Instantaneous	Cumulative
(1) Fish with swim bladder or other air cavities to aid hearing.	Mortality.	66m.	206m; 8ha.
	Recoverable injury.	66m.	303m; 16ha.
	Temporary Threshold Shift.		1,955m; 443ha.
(2) Fish with swim bladder that does not aid hearing.	Mortality.	66m	158m; 5ha
	Recoverable injury.	45m.	303m; 16ha
	Temporary Threshold Shift.		1.96km; 443ha
(3) Fish without a swim bladder.	Mortality.	40m.	<25m.
	Recoverable injury.	40m.	111m; 2ha.
	Temporary Threshold Shift.		1,955m; 443ha.

Table 1.8: Behavioural effect zones for impact piling, with the area (expressed in hectares) and maximum range (expressed in metres) are shown. The applied threshold is based on observations of a startle

response in sprat (135 dB re 1 µPa^{2}s) and in mackerel (142 dB re 1 µPa^{2}s). (From: Appendix 22L)

Activity	Threshold	Behavioural zone
Impact piling BLF (200kJ).	135 dB. Applicable to Atlantic herring, shad, sprat, seabass; cod, whiting, mullet.	5,597m. 3,816ha.
	142 dB. Applicable to makerel, horse mackerel, flatfish e.g. Dover sole; sand gobies, tope; and, thornback ray.	3,104m; 1,093ha.

ii. Magnitude of impact

1.4.17 The proposed development is closest to the Thanet Extension and East Anglia Three OWFs (both approximately 80km away). Hornsea Project Two and Three are >180km from the proposed development, and then the furthest OWFs are Dogger Bank Creyke Beck A and Dogger Bank Teesside A, at approximately 270km and >300km, respectively.

1.4.18 At a stock/population level, there may be an increased spatial effect, should construction occur concurrently, or increased temporal effects if construction occurs sequentially. However, piling would be intermittent and short-term, with a limited period of piling in the construction phase of the proposed development and the OWFs (Hornsea Project Two; East Anglia Three; Dogger Bank Creyke Beck A; Dogger Bank Teesside A; Thanet Extension, and Hornsea Project Three). The combined impact magnitude is assessed as *Low*.

iii. Cumulative Effect Significance

1.4.19 In **Chapter 22** of **Volume 2** of the **ES**, a ***minor adverse effect*** is predicted for fish receptors in Category 1, 2 and 3. Effects of the proposed development alone are not considered significant at the sea area and regional stock/population levels.

1.4.20 Considering the installation of 12 piles for the proposed development and the associated limited modelled effect zones, the impact magnitude and resulting effects in-combination with the six OWFs, is predicted to remain as ***minor adverse effect***. Hence, no significant cumulative effects are predicted at the stock/population level.

d) Project screening for operational impacts

i. Seawater Abstraction: Entrainment and Impingement

1.4.21 Entrainment and impingement of adult and juvenile fish and ichthyoplankton can result from seawater abstraction. Information on licenced seawater abstraction was obtained by consulting the Environment Agency for data in England.

1.4.22 A summary is given in Appendix 4C.1 Section 1.7 for all permitted developments within 10km of the English coastline. Power stations in abstracting seawater from the North-East Atlantic and North Sea are given in Appendix 4C.1 Section 1.8. Based on this information, the baseline consists of licensed seawater abstraction for one of six purposes:

- agriculture and aquaculture;
- amenity;
- water supply;
- environmental (wetland support projects);
- industrial, commercial and public services; and,
- energy (biomass, coal-fired, gas, biomass and nuclear).

1.4.23 There are a substantial number of sites around the UK, including 66 (non-nuclear) developments within 10km of the English coast, licensed by the Environment Agency to abstract seawater (Appendix 4C.1 Section 1.7). Variations in daily/annual abstraction volumes are apparent.

1.4.24 The available data on developments licensed for water abstraction was interrogated. Developments abstracting >1 million m^3 water per day, equating to approximately 10% of the proposed development when functioning at full capacity (approximately $11.4x10^6m^3$) been identified in **Table 1.9**.

1.4.25 Licenced operational seawater abstraction activities fall into Tier 1 of the screening CEA stage (i.e. consented and operational) and form part of the existing baseline against which impacts of the proposed development have been assessed and are, therefore, not considered further. These include:

- industrial, Commercial and Public Services: Marchwood station (River Test, Southampton Water), and;

- production of energy: Hartlepool, Great Yarmouth power station, Sizewell B, Dungeness B, Hunterston B, Heysham; Hinkley Point B; South Humber Bank power station, Hartlepool power station and Medway power station, and the Isle of Grain.

1.4.26 Existing UK nuclear power stations shown in **Table 1.9**, are expected to have ceased operations by the time the proposed development is operational in 2033 with the exception of Sizewell B. Therefore, the existing impingement and entrainment effects would be removed.

1.4.27 Planned nuclear power stations with the potential to have operational overlap with the proposed development include:

- Hinkley Point C, a Tier 2 project currently in development, located >350km from the proposed development.
- Wylfa Newydd on Anglesey North Wales, a Tier 4 project currently on hold by the developer.
- Bradwell B in Maldon Essex, a Tier 5 development located 90km from the proposed development. The project is currently in the process of carrying out technical assessment work in order to inform emerging proposals. Based on the current status of the proposed project, Bradwell B is not considered in the CEA.

1.4.28 The main station for consideration is Hinkley Point C, which is consented and is in the construction phase (Tier 2).

1.4.29 The water pumping rate for Hinkley Point C is 132m^3/s (11.4 million m^3 per day).

1.4.30 All details presented are based on the most up-to-date information for each project at the time of writing.

Table 1.9: Summary of UK power stations abstracting seawater and screening of project phases for the cumulative effect assessment. (bold text = temporal overlap with the proposed development)

Name of Project	Power station type	Status	Tier	Phase Screened into CEA	
				Construction	Operation and Maintenance
Medway	Natural gas	Operational	1	No	No; End of generation expected 2025[2].
South Humber Bank, Grimsby	Natural gas	Operational	1	No	No; End of generation expected 2027[2].
Marchwood, River Test	Gas-fired combined cycle power	Operational	1	No	No; End of generation expected 2039[2] and forms part of the current baseline.
Shoreham	Natural gas	Operational	1	No	No; End of generation expected 2032[2].
Hunterston B	Nuclear	Operational	1	No	No; End of generation expected 2023.
Torness	Nuclear	Operational	1	No	No; End of generation expected 2030.
Hartlepool	Nuclear	Operational	1	No	No; End of generation expected 2024.
Sizewell B	Nuclear	Operational	1	No	No; forms part of the baseline. End of generation expected 2035, but potential extension up to 2055 (worst-case assessment scenario).
Heysham 1	Nuclear	Operational	1	No	No; End of generation expected 2024.
Heysham 2	Nuclear	Operational	1	No	No; End of generation expected 2030.
Dungeness B	Nuclear	Operational	1	No	No; Estimated decommissioning in 2028.

[2] End of generation based on assumption of 30-year life span of gas-fired power station in UK.

Name of Project	Power station type	Status	Tier	Phase Screened into CEA	
				Construction	Operation and Maintenance
Hinkley B	Nuclear	Operational	1	No	No; End of generation expected 2023.
Hinkley C	**Nuclear**	**Construction**	**2**	**No**	**Yes**
Wylfa Newydd	Nuclear	Examination in progress, but projects on hold by developer.	4	Unknown at time of writing.	Unknown at time of writing.

e) Operational phase CEA - Entrainment

1.4.31 The operation of Hinkley Point C (HPC) has the potential to act cumulatively with the proposed development in relation to entrainment of fish eggs, larvae and juveniles.

1.4.32 The location of the proposed development is on the coast of the southern North Sea, while HPC is located on the south coast of Inner Bristol Channel.

1.4.33 A review of the ichthyoplankton recorded in the BEEMS Comprehensive Entrainment Monitoring Programme (CEMP) at Sizewell B, indicates that seabass is the only taxa where the stock encompasses the Central and southern North Sea, as well as the Irish Sea, English Channel, Bristol Channel, and Celtic Sea. Accordingly, seabass ichthyoplankton could be exposed to entrainment at both stations and so an assessment is made.

i. Sensitivity of receptors

1.4.34 For the operation of HPC and the proposed development, the assessment of the proposed development is applied (**Chapter 22** of **Volume 2** of the **ES**). Sensitivity of seabass ichthyoplankton is *Not Sensitive*.

ii. Magnitude of impact

1.4.35 It is generally considered that the higher the volume of seawater pumped through the power station the higher the number of passively transported biota that are entrained. The rate of water abstraction at the proposed development (132m^3/s) would be the same as HPC (132m^3/s). Water abstraction and resulting entrainment would occur during the operational lifetime of the proposed development and HPC. The combined impact magnitude is *Medium.*

iii. Cumulative effect significance

1.4.36 For the proposed development alone, the predicted entrainment losses of seabass ichthyoplankton are negligible (**Appendix 22G** of **Volume 2** of the **ES**). The predicted entrainment loss is considered ecologically negligible when considered against the natural variability in recruitment and the natural mortality of the species (**Appendix 22G** of **Volume 2** of the **ES**).

1.4.37 It stands to reason that the combined entrainment of seabass ichthyoplankton from the proposed development and HPC, is unlikely to increase the significance of the effect. ***Negligible effects*** are concluded and no significant cumulative effects to the stocks/populations are predicted.

f) Operational phase CEA – Impingement at stock/population level

1.4.38 The operation of the proposed development and HPC have the potential to act cumulatively, in relation to impingement of juvenile and adult fish.

1.4.39 Impingement can be considered a form of fishing (harvesting), but of lower selectivity and much lower impact magnitude. To have a negligible impact on a fish stock, the predicted total anthropogenic harvest rate must be less than the value whereby the stock can replace itself on a year to year basis (**Appendix 22I** of **Volume 2** of the **ES**).

1.4.40 For well monitored stocks (data-rich stocks) quantitative stock assessment can be carried out. This produces spawning stock biomass (SSB) reference points, below which a stock is either at risk of becoming unsustainable or is in an unsustainable condition, together with limits on the maximum harvest rate.

1.4.41 It is useful to consider a 1% negligible effects threshold applied to impingement assessment for the proposed development alone, in the context of sustainable harvest rates for data-rich stocks, which in many cases, are much greater than 20% (**Appendix 22I** of **Volume 2** of the **ES**).

1.4.42 Fish stocks are subject to considerable annual variability due to highly variable levels of recruitment, food availability and predation pressure. A precautionary level of 1% is much less than the natural variability of any species at Sizewell, which the ecosystem is adapted to and, hence, would have no significant effects on predator-prey relationships (**Appendix 22I** of **Volume 2** of the **ES**).

1.4.43 Moreover, it should be recognised that fish stocks experience natural variability, as evident in some the International Council for the Exploration of the Sea advice, displayed in **Table 1.10**, for European seabass and eel.

1.4.44 The assessment is undertaken with the inclusion of the FRR and low-velocity site entry (LVSE) intake heads (embedded mitigation), at the proposed development. The mitigation is described fully in **Chapter 22** of **Volume 2** of the **ES** for the proposed development.

Table 1.10: Available International Council for the Exploration of the Seas stock advice in 2017-2018 for European seabass and eel

Taxa	Stock advice where available
European seabass.	"Spawning–stock biomass (SSB) has been declining since 2005 and is now below B_{lim}. Fishing mortality (F) has increased over the time-series, peaking in 2013 before a rapid decline to below F_{MSY}. Recruitment was estimated to be poor since 2008, with the exception

Taxa	Stock advice where available
	of the 2013 and 2014 year-class estimates which show average recruitment" (Ref. 1.6).
European Eel	"Indices of both glass and yellow eel recruitment strongly declined from 1980 to about 2010 and have remained at a low level since. The annual recruitment of glass eel to European waters in 2018 is 2.1% of the 1960–1979 level in the "North Sea" series and 10.1% in the "Elsewhere Europe" series. The annual recruitment of young yellow eel to European waters in 2018 was 29% of the 1960–1979 level" (Ref. 1.7).

i. Receptor screening

1.4.45 Key taxa recorded in the Sizewell B Comprehensive Impingement Monitoring Programme (CIMP) dataset were related to the applicable stock unit where information was available. Information on stock units for taxa assessed for impingement losses at Hinkley Point C (Ref. 1.8) were also consulted. It was then possible to identify the stocks spanning the southern North Sea, the Channel and into the Bristol Channel, Irish and Celtic Seas, hence stocks coinciding geographically with the proposed development and HPC (**Table 1.11**; **Plate 1.2**). As a result, the following taxa were identified and have been screening into the CEA:

- seabass (*Dicentrarchus labrax*);
- thin-lipped grey mullet (*Liza ramada*); and,
- European eel (*Anguilla anguilla*).

1.4.46 It is unlikely there would be impingement of taxa from the North Sea stocks at Hinkley Point C and the proposed development combined, given the geographic separation of the stocks and stations. Therefore, the relevant taxa are screened out from the CEA (**Plate 1.2**; **Table 1.12**).

1.4.47 There are taxa where very limited impingement occurred at Sizewell B. Where limited impingement is predicted for taxa at the proposed development alone, negligible effects are concluded. This applies to tope, smelt, sea lamprey, Allis shad, sea trout and salmon (**Table 1.13**). These taxa are screened out from the CEA.

Table 1.11: Taxa, stock unit and rationale for screening into the cumulative effect assessment at stock level screened into assessment.

Taxa	Stock unit	Screened in /out of CEA
European seabass. (*Dicentrarchus labrax*)	Divisions 4.b-c, 7.a, and 7.d-h (Central and southern North Sea, Irish Sea, English Channel, Bristol Channel and Celtic Sea).	In
Thin-lipped grey mullet. (*Liza ramada*)	Stock unit not defined. Alternative sources for catches or landings were used; International Council for the Exploration of the Seas' Official Nominal Catches 2006 – 2017, downloaded from the International Council for the Exploration of the Seas website.	In. Precautionary assessment due to lack of evidence of stock unit.
European eel. (*Anguilla anguilla*)	Europe and North Africa.	In

Plate 1.2: International Council for the Exploration of the Seas stock unit areas for cumulative effects of Hinkley Point C and Sizewell C

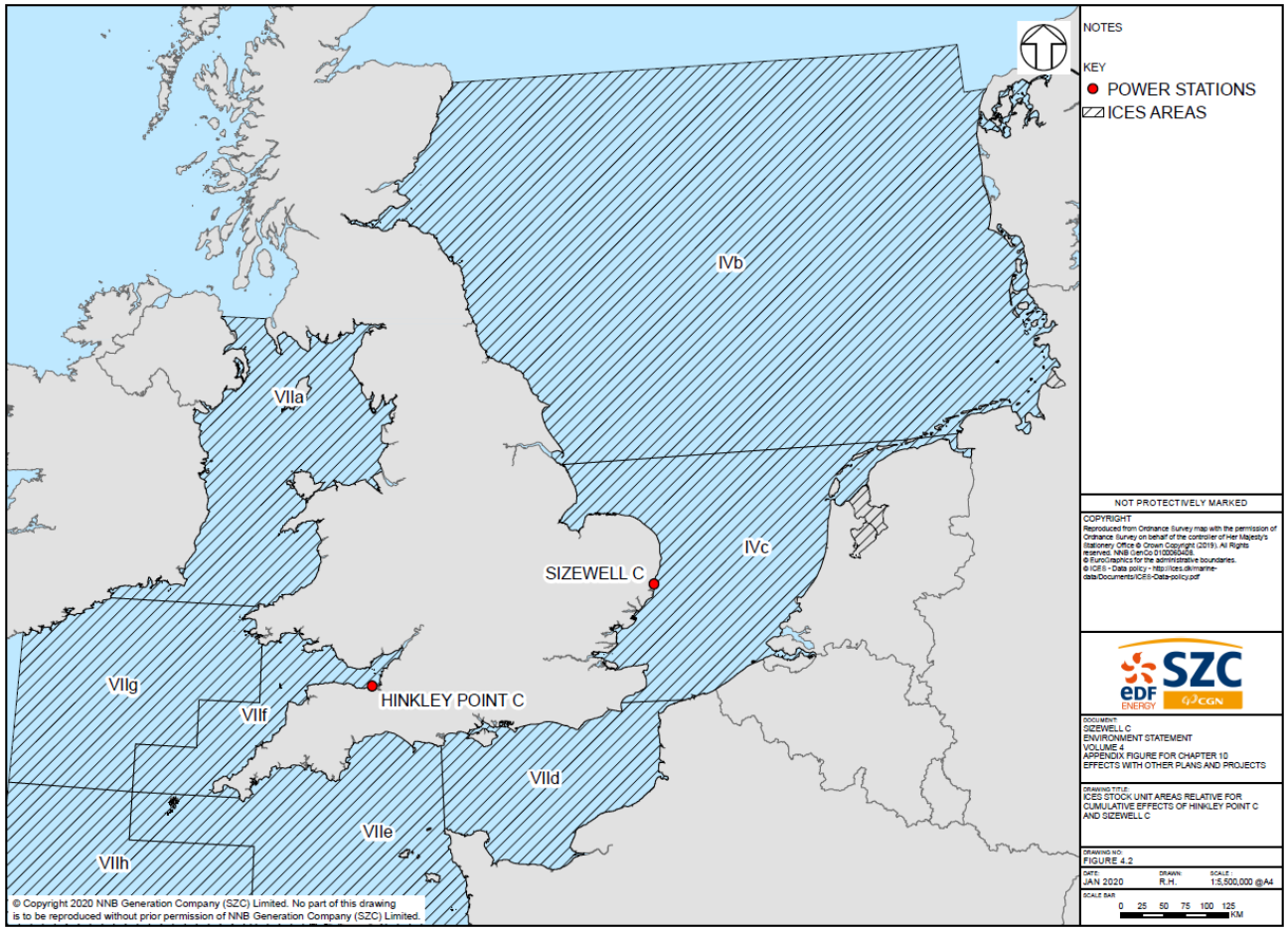


Table 1.12: Taxa, stock unit and rationale for screening out of the cumulative effect assessment at stock level

Taxa	Stock unit	Screened in /out of CEA
Dover sole *(Solea solea)*	Subarea 4 (North Sea).	Out
Dab (*Limanda limanda*)	Subarea 4 and Division 3.a (North Sea, Skagerrak and Kattegat).	Out
European flounder (*Platichthys flesus*)	Subarea 4 and 3.a (North Sea and Skagerrak and Kattegat).	Out
European plaice (*Pleuronectes platessa*)	Subarea 4 IV and Subdivision 20 (North Sea and Skagerrak).	Out
Sand goby (*Pomatoschistus spp*)	Not defined.	Out
European sprat (*Sprattus sprattus*)	Subarea 4 (North Sea).	Out
Whiting (*Merlangius merlangus*)	Subarea 4, Division 7.d (North Sea, Eastern Channel).	Out
Atlantic cod (*Gadus morhua*)	Subarea 4 and Subdivisions 7.d and 20 (North Sea, Eastern Channel, Skagerrak and Kattegat).	Out
Thornback ray (*Raja clavata*)	Subarea 4 and Divisions 3.a and 7.d (North Sea, Skagerrak, Kattegat and eastern English Channel).	Out
Atlantic herring (*Clupea harengus*)	Subarea 4 and Divisions 3.a and 7.d (North Sea, Skagerrak and Kattegat, Eastern Channel).	Out

Taxa	Stock unit	Screened in /out of CEA
Anchovy (*Engraulis encrasicolus*)	Given as 'Northerly anchovy'.	Out

Table 1.13: Taxa, stock unit and rationale for screening out of the cumulative effect assessment (impingement risk).

Taxa	Stock unit	Screened in /out of CEA	Occurrence of stock unit and rationale for screening decision
Mackerel. (*Scomber scombrus*)	Subareas 1–8 and 14, and in Division 9.a (the Northeast Atlantic and adjacent waters).	Out	Very limited impingement predicted for the proposed development, thus negligible cumulative effects predicted.
Tope (*Galeorhinus galeus*)	North East Atlantic.	Out	Very limited impingement predicted for the proposed development, thus negligible effects predicted.
European smelt (*Osmerus eperlanus*)	Not defined. But includes the East Anglian coast and rivers on the European coast from the Elbe to the Scheldt.	Out	Given the genetic information on the smelt at Sizewell, it is probable that the smelt impinged are from multiple locations on the east coast of the UK. As well as probably from European estuaries in at least Belgium, the Netherlands and Germany (**Appendix 22I** of **Volume 2** of the **ES)**. Screened out from assessment.
River lamprey (*Lampetra fluviatilis*)	Humber catchment.	Out	Impingement at the proposed development alone, with full mitigation, is predicted to take 530 individuals or 0.04t of river lampreys. This equates to 0.07% of the estimated 2018 lamprey run in the Humber catchment. The Southern North Sea population of river lamprey are probably one stock. Therefore, no potential for cumulative effects is predicted with HPC. Spawning is thought to take place in the Ouse in the UK, in the Scheldt in the Netherlands where the adult population is estimated to be in the 100,000s (Ref. 1.9), and in other European rivers that drain into the North Sea.
Sea lamprey (*Petromyzon marinus*)	Not defined.	Out	Very limited impingement predicted for the proposed development, thus negligible cumulative effects predicted.

Taxa	Stock unit	Screened in /out of CEA	Occurrence of stock unit and rationale for screening decision
Allis shad (*Alosa alosa*)	Garonne.	Out	Very limited impingement predicted for the proposed development, thus negligible cumulative effects predicted.
Twaite shad (*Alosa fallax*)	Not defined but includes the River Elbe and Belgian river Scheldt. A separate spawning population on the river Weser has not been included in the assessment.	Out	The populations on the east coast are genetically distinct from the HPC populations (**Appendix 22I** of **Volume 2** of the **ES**). Therefore, no potential for cumulative effects.
Sea trout (*Salmo trutta*)	Not defined.	Out	Very limited impingement predicted for the proposed development, thus negligible cumulative effects predicted.
Salmon (*Salmo salar*)	North Atlantic.	Out	Very limited impingement predicted for the proposed development, thus negligible cumulative effects predicted.

ii. Sensitivity of receptors

1.4.48 Changes in the sensitivity of receptors during the combined operation of Hinkley Point C and the proposed development are not predicted. As such, the sensitivity assessment for the proposed development (**Chapter 22** of **Volume 2** of the **ES**) is applied to the following taxa:

- seabass - *Low* sensitivity;
- thin-lipped grey mullet - *Not Sensitive,* and;
- European eel - *Low* sensitivity.

Impingement assessment (with embedded mitigation)

1.4.49 The assessment is made with the FRR systems and LVSE intake heads fitted, as embedded mitigation at the proposed development, and as mitigation at Hinkley Point C. High survival rates from the presence of the FRR embedded mitigation are predicted for robust, demersal/epi-benthic species like the seabass, mullet and eel (**Chapter 22** of **Volume 2** and **Appendix 22I** of the **ES**). The combination of the FRR systems and LVSE intake heads, are considered to have a 78.9% effectiveness in reducing impingement losses (compared to unmitigated losses) for seabass and mullet. This value is higher at 92.1% for European eel (**Chapter 22** of **Volume 2** and **Appendix 22I**).

iii. Magnitude of impact

1.4.50 Impingement assessments are specifically designed to account for the magnitude of impact (annual abstraction) and sensitivity of the impinged species (age-dependent mortality). Given these assessment criteria are intrinsically linked they are considered together.

iv. Cumulative effect significance

Seabass impingement with embedded mitigation

1.4.51 As shown in **Table 1.14**, the predicted impingement of seabass (as a % SSB) is 0.28% for the proposed development (**Chapter 22** of **Volume 2** of the **ES** and **Appendix 22I**) and 0.011% for HPC (Ref. 1.8).

1.4.52 Seabass are not uniformly distributed immediately offshore from Sizewell with evidence suggesting juvenile seabass are attracted to the warm water effluents of Sizewell B in Winter when seabass are most commonly impinged at Sizewell B. Seabass surveys identified that 95% of seabass were

recorded inside the Sizewell-Dunwich Bank. Once operational, the proposed development would generate a thermal plume offshore, however, in the deeper water the thermally buoyant plume has reduced interaction with the seabed but would enhance the warming effect within the Sizewell-Dunwich Bank. Therefore, should the distribution of seabass remain similar to that currently observed, impingement predictions represent a marked overestimate. Accounting for the greater distribution of seabass in the inshore waters away from the Sizewell C intakes, impingement predictions are estimated to be as low as 0.03% of SSB. Further details are provided in **Appendix 22I** of **Volume 2** of the **ES**.

1.4.53 It is acknowledged SSB values for different years, were incorporated into the seabass calculations for the respective stations. Nonetheless, the combined value of predicted impingement loss indicates the value is below the proposed 1% threshold for significant effects. With consideration of the current status of the seabass stock (**Table 1.10**), ***minor adverse effects*** are predicted to seabass stocks. Effects are not significant for stock sustainability.

Thin-lipped grey mullet impingement with embedded mitigation

1.4.54 As shown in **Table 1.14**, the predicted impingement of thin-lipped grey mullet stock for the proposed development is considered to be 0.52% of landings. The data is from International Council for the Exploration of the Seas' Official Nominal Catches 2006 – 2017 (Ref. 1.10). Trend data for HPC impingement, concluded negligible effects. With the stations combined, ***negligible effects*** are predicted for thin-lipped grey mullet stocks. Effects are not significant for stock sustainability.

European eel impingement with embedded mitigation

1.4.55 The European eel is present in rivers and estuaries throughout northern Europe. In open coastal area of the North Sea, there is a high level of dispersal for the glass eel life stages (**Appendix 22D** and **22I** of **Volume 2** of the **ES**).

1.4.56 The predicted impingement of European eel is given in **Table 1.14**. The predicted impingement for the proposed development alone, is 0.15% SSB for the Anglian River Basin District, based on silver eel biomass estimates. The predicted losses are 0.84% of eel landings. Effects of the proposed development are negligible. An assessment of losses of an independent stock population assessment of eels at Hinkley Point C, predicted a loss of 0.043% of the SSB. It is acknowledged that stock units for assessment of the effects of the power stations differ; however, the effects are small in both cases.

1.4.57 With consideration of the current status of the European eel stock (**Table 1.10**) then with the stations combined, ***minor adverse effects*** are predicted for European eel stocks. Effects are not significant for stock sustainability.

Table 1.14: Impingement predictions at Hinkley Point C and the proposed development with inclusion of embedded mitigation. Predicted impingement expressed as a % of the fishery and % of spawning stock biomass for select taxa. Impingement indicators and assessment conclusions are also presented. (Sources: Ref. 1.8 and Appendix 22I)

Taxa	Hinkley Point C			Proposed development		
	% of fishery	% of SSB	Impingement Indicator	% of fishery	% of SSB	Impingement Indicator
European seabass	-	0.011	SSB for 2009.	1.36	0.28 [3]	SSB (Ref. 1.11).
Thin-lipped grey mullet	Population trend increasing.		HPC routine impingement monitoring programme trend analysis.	0.52 [4]	N/A	ICES' Official Nominal Catches 2006 – 2017 (Ref. 1.10).
European eel	-	0.043	Independent stock estimate.	0.84	0.15	Anglian River Basin District estimated silver eel biomass (Ref. 1.12; 13).

[3] Seabass are not uniformly distributed across the site with evidence demonstrating that juvenile seabass are attracted to the warm water effluents of Sizewell B in Winter. Accounting for the significantly greater distribution of seabass in the inshore waters away from the Sizewell C intakes, impingement predictions reduce to **0.03% of SSB** and **0.14% of landings**. Further details are provided in **Appendix 22I** of **Volume 2** of the **ES** .

[4] There is not a directed commercial fishery for grey mullet in the southern North Sea and therefore the landings data (120t) are considered highly likely to represent less than 20% SSB. Therefore, the predicted impingement at 0.52% of landings is equivalent to approximately 0.1% of a conservative SSB estimate. Further details are provided in **Appendix 22I** of **Volume 2** of the **ES.**

v. Future baseline and species trends

1.4.58 The cooling water intakes would act as a sampler of taxa in the receiving waters; therefore, a declining stock/population trend would be reflected in a corresponding decline in numbers of fish impinged, and *vice versa.* This enables long-term trends to be identified with respect to changes in species distribution and abundance over the 60-year lifetime of the proposed development.

1.5 Marine Mammals

a) Receptor specific assessment approach

1.5.1 Three species of marine mammals have been included as key taxa within the EIA of the proposed development. These include harbour porpoises (*Phocoena phocoena),* grey seal (*Halichoerus grypus*) and harbour seal (*Phoca vitulina*). Baseline assessments and receptor specific impact arising from the proposed development is provided in **Chapter 22** of **Volume 2** of the **ES**.

1.5.2 All three species of marine mammals are highly mobile Annex II species. As such, the ZOI for CEA purposes encompasses their relevant Management Units (MUs) in order to allow assessment at the population level (**Table 1.1**).

1.5.3 The ZOI for harbour porpoise assessments is the North Sea MU. This area encompasses the Southern North Sea SAC designated for harbour porpoises. In addition to the MU, spatial assessments consider the conservation objectives of the SAC.

1.5.4 The ZOI for seals includes the UK south-east England MU, north-east England MU and east coast of Scotland MU.

1.5.5 The CEA for marine mammals has considered pressures from all stages of projects where there is the potential to spatially or temporally overlap with the proposed development.

1.5.6 The following pressures from the proposed development are considered for the marine mammals CEA:

- underwater noise from impact pilling, drilling and dredging activities;
- suspended sediments;
- visual disturbance;

- physical disturbance and;
- indirect effects due to impingement and entrainment of prey species.

i. Underwater noise

1.5.7 Impact pilling results in the highest acoustic effect area for marine mammals. Pilling auditory effect zones have been modelled based on a stationary and fleeing individual for instantaneous and cumulative (24h) effects (**Appendix 22L** of **Volume 2** of the **ES**). Fleeing behaviours incorporated into the underwater noise modelling, eliminates or reduces auditory effects to highly restricted areas. However, fleeing infers (temporary) displacement. Therefore, as a precautionary measure, the CEA considers the stationary model results for temporary auditory damage (TTS) based on the worst-case cumulative noise scenario whereby five piles are installed within a 24h period using a 200kJ hammer energy. The CEA considers harbour porpoise, grey seal and harbour seal relative to the MU population sizes.

1.5.8 Two methods have been used for the CEA for underwater noise effects on harbour porpoise. The first method follows that used in previous assessments for offshore wind farms (e.g. Norfolk Vanguard) and applies a population approach to determines the total number of harbour porpoise effected by simultaneous piling activities within the MU. The second approach considers the area of the SAC impacted in relation to the draft thresholds for noise disturbance produced by JNCC (Ref. 1.14).

1.5.9 Advice on the Conservation Objectives of the Southern North Sea SAC was produced in March 2019 (Ref. 1.14). In relation to Conservation Objective 2: 'There is no significant disturbance of the species', disturbance is considered to be significant if it leads to the exclusion of harbour porpoise from a significant proportion of the site. 'Noise disturbance within the SAC from a plan/project individually or in combination is significant if it excludes harbour porpoises from more than:

- 20% of the relevant area[5] of the site in any given day[6], and;
- an average of 10% of the relevant area of the site over a season.

[5] The relevant area is defined as that part of the SAC that was designated on the basis of higher persistent densities for that season (Summer defined as April to September inclusive, Winter as October to March inclusive). The proposed development is within the Winter area.
[6] The assessment is only applicable for Habitats Regulations Assessments (HRA) due to impracticality of daily noise limit management of activities, but retrospective compliance analysis advised. Herein, an indicative assessment is provided.

1.5.10 A Rochdale envelope approach can be applied to consider the worst-case scenario for the duration of effects (12 piles) and the worst case for cumulative auditory effects. The worst-case scenario of cumulative auditory effects assumes a maximum of five piles installed in a given 24-hour period (the period for modelling cumulative auditory effects). Under such circumstances pilling would be completed within three days. The cumulative noise assessment (3 days of piling) results in the greatest auditory effect ranges and is considered as the worst-case CEA. As the worst-case auditory impacts from piling for the proposed development is expected to last no more than three days the assessment focusses on the first of the two conservation objectives.

1.5.11 Dredging for the BLF results in the largest cumulative impact ranges for continuous noise sources (**Appendix 22L** of **Volume 2** of the **ES**). However, minimal noise is associated with the capital dredge of the BLF and the activity is anticipated to be short term (days). In comparison, the scale of the dredging operations is less than the usual period required for the maintenance dredge for a port or removal of aggregates from a licensed extraction site. Maintenance dredging by ploughing, likely to be used to maintain the navigable depth of the BLF, results in small scale auditory effect zones. All the projects considered in the project screening (e.g. aggregate extraction projects, see Appendix 4C.1 Section 1.6) are operationally on-going projects which form part of the baseline and therefore have been screened out for further consideration in the CEA.

1.5.12 Drilling due to the insertion of vertical connecting shafts for the offshore cooling water system creates mainly low frequency noise. Underwater noise modelling (**Appendix 22L** of **Volume 2** of the **ES**) has indicated that drilling activities result in negligible auditory impact zones for stationary animals and no effects are anticipated for fleeing animals. Drilling has been excluded from the marine mammals CEA.

1.5.13 The detonation and clearance of hypothetical unexploded ordnance (UXO) has been considered for marine mammal receptors within the ES of the proposed development (**Chapter 22** of **Volume 2** of the **ES**), thereby encompassing the full suite of potential auditory impacts. However, to-date UXOs have not been identified on site. Should a UXO be identified a full assessment would be completed considering the exact UXO specifications and location in relation to site-specific factors such as proximity to existing nuclear infrastructure, sensitive habitats and geomorphic features. Alternative disposal methods or relocation would be considered as well as appropriate mitigation measures in order to minimise the risk of potential impacts. Such considerations would be critical in determining management and mitigation measures in the tidally dominated, high turbidity inshore

waters at Sizewell and would be presented in a dedicated Marine Mammal Mitigation Protocol (MMMP). Further details are provided in **Chapter 22** of **Volume 2** of the **ES**.

1.5.14 There is the potential for cumulative effects should UXO clearance and detonation be required during the proposed development in-combination with other projects. However, effects from other potential detonations[7] and hypothetical UXO clearance from the proposed development cannot be assessed because full details of the planned activities are not currently available. Should UXOs be identified at the proposed development, an assessment of the potential effects of different detonation strategies and mitigation measures would be undertaken.

ii. Dredging and suspended sediments

1.5.15 Dredging, and to a much lesser extent drilling activities, during the construction phase and occasional maintenance of the BLF access channel during the operational phase would result in increases in suspended sediments.

1.5.16 Installation of the cooling water infrastructure would result in the largest suspended sediment plumes[8] (**Chapter 22** of **Volume 2** of the **ES**). The plume size and duration are predicted to be less than those resulting from large maintenance dredge projects or aggregate extraction which occur on a more regular basis. Increased suspended sediments can also result from seabed clearance works associated with OWF construction and cable laying (Section 1.2). Marine mammals are considered to be *Not Sensitive* to increases in suspended sediments associated with the proposed development and effects are assessed as ***negligible*** (**Chapter 22** of **Volume 2** of the **ES**).

1.5.17 The aggregate extraction and dredging projects identified in the CEA screening (Appendix 4C.1 Section 1.6) are all on-going projects (i.e. active dredge zones). To date no consented dredging project, aggregate extraction operation or OWF development has undertaken a CEA on the effects of increased suspended sediments on marine mammals. Given effects from the proposed development are predicted to have negligible effects on marine mammals, increased suspended sediment has been scoped out of the CEA.

[7] Other likely projects that might require UXO clearance include Galloper OWF, East Anglia Three OWF, Norfolk Boreas OWF, Norfolk Vanguard OWF.

[8] Plumes with instantaneous SSC of >100mg/l above background levels are expected to form over an area of up to 373ha (depth averaged, 291ha at the sea surface). A smaller area of up to 14ha is expected to experience a depth averaged instantaneous SSC of >1,000mg/l above background levels (34ha at the sea surface).

iii. Visual disturbance

1.5.18 Artificial lighting from the main development site, the BLF and moored vessels would introduce light into the marine environment. The introduction of artificial lighting in the marine environment could potentially cause visual disturbance to marine mammals. A lighting strategy, provided in Lighting Management Plan; **Appendix 2C, Volume 2** of the **ES**, for the construction and operational sites has been designed and is outlined in the **CoCP** (Doc Ref. 8.11). The strategy considers is designed to minimise, where practicable, landscape, seascape and visual effects; minimise light spill without compromising either safety or security, and reduce disturbance to protected species and habitats, where reasonably practicable. The implementation of the lighting strategy during all stages of the project would minimise the lighting pollution. Therefore, expected effects are ***negligible*** and as such, visual disturbance is scoped out of the CEA.

iv. Physical disturbance

1.5.19 Vessel activity associated with the inshore construction, deliveries and maintenance have the potential to cause physical disturbance to marine mammals. The most likely behavioural reaction is short-term avoidance of the immediate vicinity of vessels. The resulting effects in terms of local abundance is assessed as ***minor adverse***. The expected volume and frequency of the vessel activity would be much less than that experienced within busy shipping lanes and thus would not significantly add to the already existing marine traffic in the North Sea. Physical disturbance is not considered further in the CEA.

v. Changes in prey availability

1.5.20 Marine mammals as top predators are heavily impacted by their prey availability and are known to shift their distribution in response to changes in prey availability and density. One of the conservation objectives of the SACs designated for marine mammals is maintaining prey availability for protected species and considering that ZOI encompasses such areas, this impact resulting from impingement/entrainment as well as underwater noise will be considered further in the CEA.

vi. Impacts considered for CEA

1.5.21 Based on the assessment of effects presented in **Chapter 22** of **Volume 2** of the **ES** and summarised here, the following impacts on marine mammals have been taken forward in the CEA;

- underwater noise from piling on harbour porpoise;

- underwater noise from piling on phocid seals, and;
- changes in prey availability (indirect impact from impingement and entrainment and underwater noise).

b) Project screening

1.5.22 The greatest noise source from other developments is likely to result from pile driving during the construction of offshore wind farms (OWF) and other construction activities (e.g. bridge construction). Here the cumulative assessment of underwater noise considers the potential disturbance of harbour porpoise and seals during piling operations from the proposed development and other projects screened into the CEA that could be pilled at the same time (**Table 1.15**). Timelines have been taken from Environmental Statements or Scoping Reports submitted to the Planning Inspectorate.

1.5.23 The CEA has been based on single piling of the BLF at the proposed development, i.e. one piling vessel installing a single pile at a time. A total of 12 piles (eight of approximately 1m diameter and four of approximately 1.5m diameter) would be installed in shallow water. The anticipated hammer energies (90kJ is the most likely required energy while 200kJ hammer energy is considered as the worst case) would be relatively small when compared with OWF installation (e.g. 5,000kJ maximum quoted for some OWF developments). Cumulative auditory effects assume a maximum of five piles installed in a given 24-hour period (the period for modelling cumulative auditory effects). Under such circumstances pilling would be completed within three days. Construction is scheduled for years 0-2 from 2022 onwards (Appendix 4C.1 Plate 1.1). As a precautionary worst case it is assumed that piling could take place at any time during the construction period of the BLF, although it would not be continuous for the duration of the construction period.

1.5.24 In the case of OWF projects, it is important to realise that the likelihood of several projects piling at the same time is comparatively low as the piling period is a small percentage of the whole construction period. The risk of concurrent piling activity is usually limited by piling vessel availability but can also be limited by seasonality and weather.

1.5.25 The proposed development is a relatively small project in terms of scale of piling and thus levels of underwater noise. Nonetheless, being adjacent to the Southern North Sea SAC, underwater noise impacts have the potential to affect the conservation objectives of the site. Thus, projects where piling has potential to overlap with the Southern North Sea SAC were screened into the assessment.

Table 1.15: Marine developments considered in cumulative effect assessment (CEA) for the potential disturbance of harbour porpoise or seals. Timelines are taken from project specific Environmental Statements or Scoping Reports but should be considered indicative.

Project Name	Distance from Sizewell C	Number of turbines/piles	Expected construction window	Dates of piling	Piling potentially occurring at same time as Sizewell C
Sizewell C	0km	5	2022 - 2028	2022 - 2024	N/A
Tier 3: Consented					
Hornsea Project Two	179km	165	2020 – 2025	2021 – 2024 (16 months)	Yes
East Anglia Three	84km	100 – 172	2022 – 2026	2022 – 2023 (15 months)	Yes
Dogger Bank Creyke Beck A	272km	200	2020 – 2023	Unknown[2]	Yes[1]
Dogger Bank Creyke Beck B	294km	200	2020 – 2023	Unknown[2]	No[1]
Dogger Bank Teeside A	311km	200	2023 – 2029	Unknown	Yes[1]
Sofia (formerly Teeside B)	294km	200	2023 – 2029	Unknown	No[1]
Tier 4: Application submitted and not yet determined or project on hold.					
Thanet Extension	83km	35	2021 – 2024	Unknown (6 months)	Yes
Norfolk Vanguard	85km	120 – 257	2024 – 2028	2024 – 2026 (8 months)	Yes
Hornsea Project Three	181km	342	2020 – 2026	Earliest possible Q1 2023	Yes
Norfolk Boreas	105km	90 – 180	2024 – 2028	2027 – 2028	No
East Anglia One North	50km	Up to 67	2026 – 2028	Unknown	No
East Anglia Two	35km	Up to 75	2025 – 2027	Unknown	No

Project Name	Distance from Sizewell C	Number of turbines/piles	Expected construction window	Dates of piling	Piling potentially occurring at same time as Sizewell C
Tier 5: Application in process.					
Horsea Project Four	180km	Up to 180	Unknown	Unknown	No
[1] It is highly unlikely that all four Dogger Bank projects would be piling at the same time (as per EIAs for these projects); therefore only two projects that could be constructed at the same time (i.e. with different developers) have been included in this assessment. [2] Offshore works to begin in 2021					

1.5.26 Details from the Environmental Statement for Hornsea Project Two suggest a construction window of six years beginning in 2020. The earliest piling could begin is in Q1 of year two, with a potential window until Q3 of year five, although piling is only scheduled to last for 16 months (Ref. 1.15). There has been no commitment by the developers of the Hornsea zone to schedule piling to prevent overlap between projects. It is theoretically possible that Hornsea Projects Two and Three could be under construction at the same time (Ref. 1.16). At the time of writing, the Hornsea Project Four application to the Planning Inspectorate is in the pre-application stage and project information has been taken from the published scoping document (Ref. 1.17), however as a Tier 5 project it is not considered further in the CEA due to project uncertainties.

1.5.27 Creyke Beck A and B construction may take place continuously or in phases with either project being constructed first. Offshore construction will last between three and six years (Ref. 1.18). This also applies for Dogger Bank Teeside A and Sofia (Ref. 1.19). Currently the developers have not published details of their construction plans and so no specific information on the timing of piling activities is available.

1.5.28 The Environmental Statement for East Anglia Three (Ref. 1.20) suggests offshore construction would begin in 2020 at the earliest but could begin as late as 2025. Both a one and two phased approach are still being considered. If a single phase were used the construction window would be 41 months and 45 months for a two phased approach. It is expected to take seven months to install the monopiles (which would be the worst-case scenario in terms of underwater noise levels). It is noted that this timeframe differs slightly to that in the **shadow HRA** (Doc Ref. 5.10) but in both cases the project is scoped into the assessment.

1.5.29 East Anglia One North and East Anglia Two OWFs are Tier 4. Offshore construction, including pilling, is anticipated 2026-2028 for East Anglia One North and 2025-2027 for East Anglia Two. Piling is not anticipated to overlap with the construction of the BLF in the early construction phase (**Table 1.15**). East Anglia One North and East Anglia Two OWFs would not pile concurrently and only single piling ins anticipated at the sites (Ref. 1.3; 4). These projects are screened out for further assessment.

1.5.30 The Thanet Extension consists of a relatively small number of turbines. Offshore construction is expected to start in 2021 at the earliest. The timeframe for piling of the turbines has not been determined but could occur at any point during offshore construction but is expected to last for six months (Ref. 1.21).

1.5.31 The Norfolk Boreas application was submitted to the Planning Inspectorate in June 2019 and information is based on the project description in the submitted ES (Ref. 1.22). Offshore construction is expected to take approximately three years starting in 2024, with piling beginning in Q2 of 2027.

1.5.32 The Norfolk Vanguard application is currently being considered by the Planning Inspectorate (March 2020) and information is based on the project description in the submitted ES (Ref. 1.23). Offshore construction is expected to take eight months between 2024 and 2026 and is scoped into the assessment as a precautionary measure.

c) Assigning impact magnitude

1.5.33 A cumulative effects assessment for piling has recently been completed for Norfolk Vanguard (Ref. 1.23) and Norfolk Boreas (Ref. 1.22) EIAs.

1.5.34 The methodology outlined in the Norfolk Vanguard and Norfolk Boreas EIAs ((Ref. 1.23) and (Ref. 1.22)) has been applied here assuming single piling occurring consecutively at all OWFs with temporal overlap of piling activities and at the proposed development. The spatial extent of the impact magnitude for cumulative underwater noise assessments from other developments (OWFs), considers a potential impact area during single pile installation of 2,124km^2, based on a radius of 26km from each OWF piling location.

1.5.35 In the case of the relatively small scale underwater noise impact areas from the proposed development, predicted effects ranges for TTS in stationary animals are applied as a precautionary measure. The fleeing model predicts no PTS and spatially limited TTS cumulative auditory impact zones for BLF piling associated with the proposed development. However, the fleeing

model assumes fleeing behaviours may occur up to distance of 25km, which is well beyond the predicted range of auditory effects. Therefore, the stationary auditory impact zones for TTS are applied as a precautionary assessment of temporary auditory effects for animals that remain within the ensonified area for the duration of pilling.

1.5.36 The impact magnitude associated with cumulative assessments of underwater noise considers the total area of exposure to pilling noise and the proportion of the reference population of marine mammals (porpoise or seals) that are potentially disturbed. Impact magnitude scales are provided in **Table 1.16**.

Table 1.16: Assigning impact magnitude for noise assessments relative to the reference population

Impact Magnitude	Percentage of reference population disturbed
Negligible (here Very Low)	<1% of the reference population.
Low	1-5% of the reference population.
Medium	5-10% of the reference population.
High	>10% of the reference population.

d) Impact Assessment 1 – Underwater noise from piling on harbour porpoise

1.5.37 The potential sources of underwater noise during each stage of the proposed development is detailed in **Chapter 22** of **Volume 2** of the **ES**. A total of 12 piles would be installed below MHWS in the intertidal and shallow subtidal.

1.5.38 The worst-case TTS cumulative auditory impact zone for five piles being installed within a 24-h period and piling using 200kJ hammer energy, without fleeing, are applied. The cumulative auditory impact zones extend furthest in the north and south directions from the proposed development. Thresholds for auditory effects of stationary animals are exceeded up to 12.5km from the BLF for harbour porpoise TTS and around 2km for PTS. The fleeing model predicts no PTS and spatially limited TTS cumulative auditory impact zones (**Table 1.17**).

1.5.39 The CEA applies the stationary model. Whilst the fleeing model predicts no PTS and spatially limited TTS cumulative auditory impact zones, the model assumes fleeing behaviours may occur up to distance of 25km, which is well beyond the predicted range of auditory effects. Therefore, the quantitative stationary auditory impact zones for TTS are applied

Table 1.17: Harbour porpoise auditory impact zones for piling activity

Activity	Threshold	Instantaneous	Stationary Cumulative (5 piles in 24h period).	Fleeing Cumulative (5 piles in 24h period).
Impact piling 90kJ.	PTS	27m	1,297m; 1.9km^2	No impact.
	TTS	45m	6,624m; 49.94km^2	2,765m; 7.68km^2
Impact piling 200kJ.	PTS	41m	2,081m; 5.61km^2	No impact.
	TTS	67m	12,450m; 102.23km^2	4,795m; 21.79km^2

i. Magnitude of impact

1.5.40 The approach to assessing underwater noise has been undertaken using the following parameters:

- a potential impact area during single pile installation, based on a radius of 26km from each OWF piling location (2,124km^2);
- the predicted cumulative (24 hour) auditory impact range for TTS in stationary harbour porpoises of 12.5km (102.2km^2) for worst case pilling scenarios (**Table 1.17**). Population Density Approach.

1.5.41 There are a total of seven projects where the timeline for piling has the potential to overlap with the indicative construction window for BLF piling at the proposed development (**Table 1.15**). However, the potential worst-case scenario for other projects that could simultaneously be piling at the same time as the proposed development includes six projects. This is because the current timeframes for East Anglia Three and Norfolk Vanguard do not overlap (**Table 1.15**). The assessment has been undertaken using the following projects to represent the worst-case scenario (**Plate 1.3**):

- Hornsea Project Two OWF;
- Dogger Bank Creyke Beck A OWF;
- Dogger Bank Teeside A OWF;
- Thanet Extension OWF, and;
- Hornsea Project Three OWF, and;

- Norfolk Vanguard OWF.

1.5.42 SCANS-III density estimates (Ref. 1.24) for the relevant survey block that the proposed development is located in have been used to estimate the number of harbour porpoise within the potential impact areas. The assessment has been undertaken using Norfolk Vanguard instead of East Anglia Three as the density estimate for harbour porpoise for Norfolk Vanguard is higher than that of East Anglia Three and is thus more precautionary in terms of numbers of harbour porpoise exposed.

1.5.43 Norfolk Vanguard spans SCANS-III survey blocks O and L. The Norfolk Vanguard CEA (Ref. 1.23) density estimate is based on block O, where higher porpoise numbers are reported, to depict worst-case in terms of numbers impacted. As a comparison the assessment has also been undertaken substituting Norfolk Vanguard for East Anglia Three and is presented in Appendix 4C.2, although conclusions are drawn using the worst-case scenario (Norfolk Vanguard).

1.5.44 If each of the six OWF projects adopted a method of single pile installation (i.e. one piling vessel in operation on each project) the estimated maximum area of disturbance would be approximately 12,846km^2 (i.e. 6 x 2,124 km^2 + 102.23 km^2 from the proposed development). The area estimate is precautionary in that it does not account for overlap of projects impact areas (**Plate 1.3**).

1.5.45 The maximum number of harbour porpoise that could potentially be disturbed is 10,782 (3.12% of the reference population) (**Table 1.18**). The proposed development has the potential to expose 62 animals (stationary TTS model) and contributes just 0.58% of the total number of animals disturbed.

1.5.46 The magnitude for the cumulative effects of single pilling for projects in combination with the proposed development is between 1% and 5% of the reference population (3.12%) and therefore, based on the methodology applied in previous OWF EIAs (**Table 1.16**), is assessed as *Low*.

1.5.47 **Table 1.1** in Appendix 4C.2 shows the magnitude of impact if East Anglia Three were included instead of Norfolk Vanguard. In this case, 2.95% of the reference population could potentially be disturbed under single piling scenarios (*Low* impact magnitude).

Plate 1.3. Marine Mammal Cumulative Noise Assessment

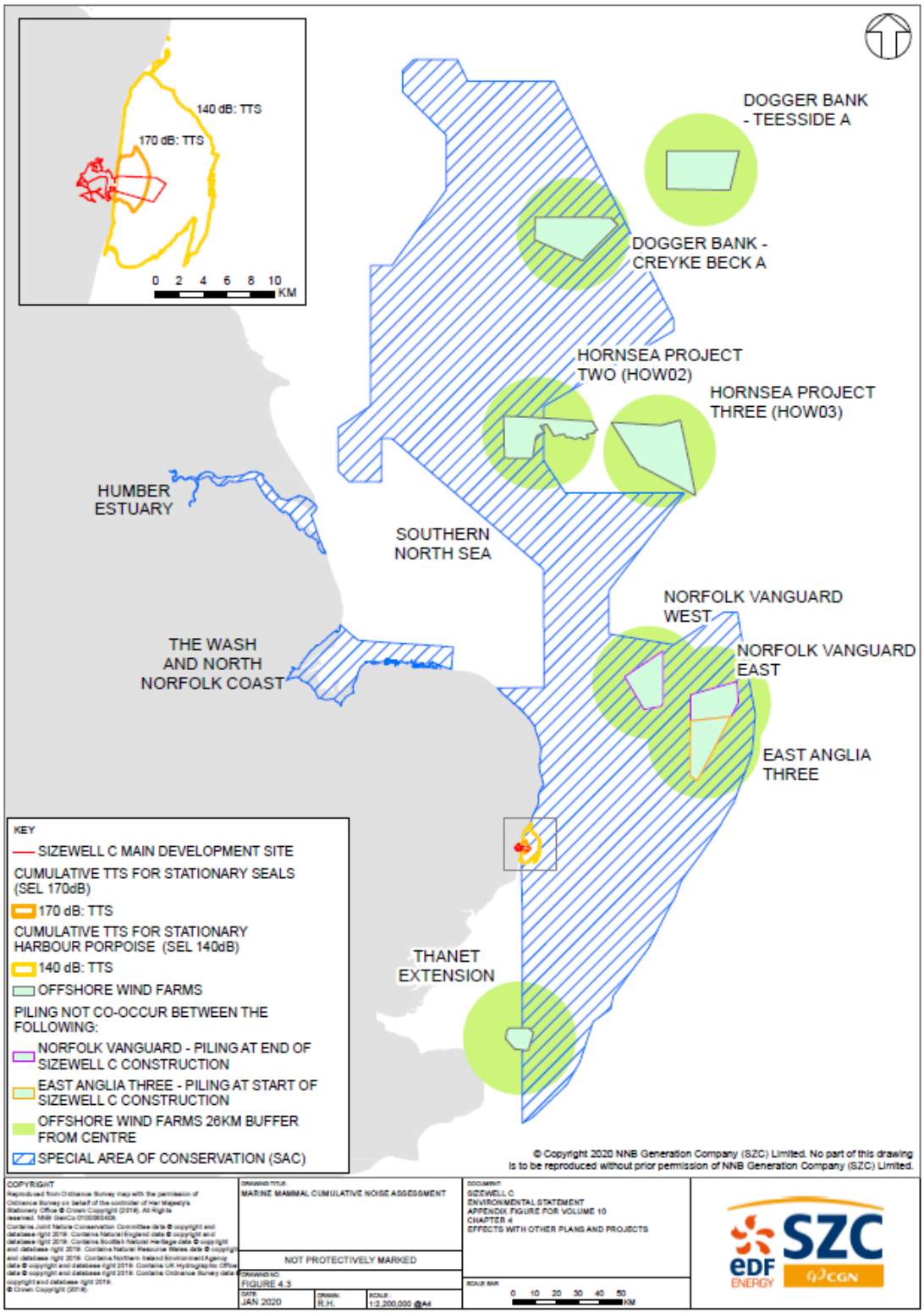


Table 1.18: CEA for the potential disturbance of harbour porpoise during single piling of marine developments with possible temporal ovelap with the BLF at Sizewell C.

Project	Tier	Distance to Sizewell C	SCANS-III Survey Block	SCANS-III density estimate (No./km^2)	Potential number of harbour porpoise disturbed during single piling event
Sizewell C	4	N/A	L	0.607	62.05
Hornsea Project Two	3	179km	O	0.888	1,886.11
Dogger Bank Creyke Beck A	3	272km	O	0.888	1,886.11
Dogger Bank Teeside A	3	311km	O	0.888	1,886.11
Norfolk Vanguard	4	85km	O	0.888	1,886.11
Thanet Extension	4	83km	L	0.607	1,289.26
Hornsea Project Three	4	181km	O	0.888	1,886.11
Total					**10,781.86**
% of North Sea Management Unit reference population (345,373 individuals)					**3.12%**

Conservation Objectives Approach

1.5.48 Noise disturbance within a SAC from a plan/project individually or in combination is significant if it excludes harbour porpoises from more than 20% of the relevant Summer or Winter area of the site in any given day. Relevant areas are delineated based on the persistent seasonal population densities within the SAC. The proposed development is located within the south of the SAC where Winter (October to March inclusive) densities are higher. As such the Winter Area is applied.

1.5.49 Three projects have the potential to overlap with piling at the proposed development within the winter area. These are:

- Thanet Extension OWF;
- East Anglia Three OWF, and;
- Norfolk Vanguard OWF.

1.5.50 East Anglia Three and Norfolk Vanguard would not overlap (**Table 1.15**). East Anglia Three is applied as it represents the worst-case scenario in terms of spatial overlap with the SAC Winter area (**Plate 1.4**). Therefore, the proposed development could temporally overlap with East Anglia Three and the Thanet Extension OWF.

1.5.51 A precautionary scenario assuming piling at the proposed development, East Anglia Three and the Thanet Extension OWF results in a total area of 214,458ha (2,145km^2) of spatial overlap with the Winter area of the Southern North Sea SAC, representing 16.9% of the 12,687km^2 (**Table 1.19**). Predicted TTS auditory effect zones based on stationary models indicated the proposed development contributes 0.8% to the total. Furthermore, cumulative effects would only transpire for a period of three days and only then if piling at the proposed development occurred in the Winter period (October to March Inclusive).

1.5.52 For completeness, spatial overlap of all OWF in **Plate 1.3** at the scale of the SAC is provided in Appendix 4C.2.

Plate 1.4. Cumulative noise assessment for the Southern North Sea Conservation Objective showing the relevant Winter area for the proposed development.

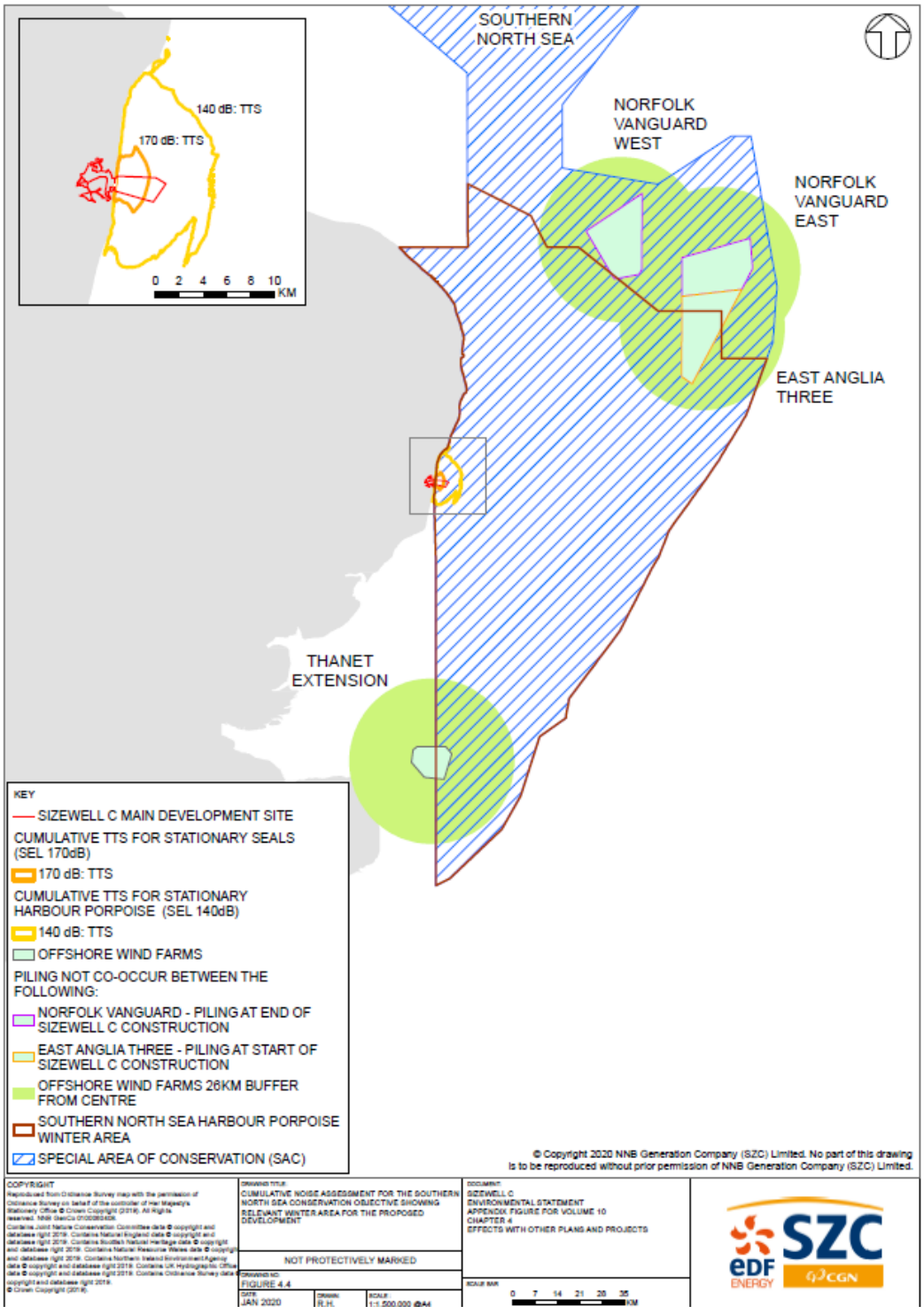


Table 1.19: Spatial area and percentage of the Winter area of the Southern North Sea SAC exposed to disturbance events form consecutive piling activities. Projects in bold are assessed for worst-case temporal overlap.

OWF	Intersect area (ha)*	Percentage of Southern North Sea Winter area (%)*
Thanet Extension	99,588	7.85
Norfolk Vanguard East	22,954	1.81
Norfolk Vanguard West	48,418	3.82
Norfolk Vanguard Combined	71,373	5.63
East Anglia Three	104,638	8.25
Sizewell C 140 dB TTS	10,132	0.80
Total	**214,458**	**16.90**

* It should be noted areas are calculated based on WGS84 UTM 31N projections, however, errors between geodetic transformations are approximately 0.06% and has no bearing on the outcome of the assessment.

ii. Sensitivity of receptor

1.5.53 The potential effects of underwater noise from piling range from direct injury and/or auditory damage at close range to short-term behavioural or barrier effects. To date, there has been no documented evidence of injury or mortality in harbour porpoises or seals as a result of pile driving noise. This could be due to employment of the avoidance strategies by animals and/or implementation of mitigation measures thus reducing the occurrence of injury and lethal effects (Ref. 1.25).

1.5.54 Changes in the behaviour of harbour porpoises in response to pile driving have been reported at multiple offshore wind farm sites. However, harbour porpoises returned to the area once the piling noise stopped. Piling duration has a large impact on harbour porpoise displacement from an area with longer pile driving durations leading to a longer displacement (Ref. 1.26).

1.5.55 Even though clear adverse short term effects on individual animals have been recorded in different studies (Ref. 1.26–30), there is currently no indication that harbour porpoises are significantly affected by construction piling at the population level (Ref. 1.31). The Marine Evidence Group tasked with assessing the population effects of spatial displacement of harbour porpoises during OWF construction concluded that despite some small, measurable population-level effects, the magnitude of the potential changes are much less significant than those related to other human activities and are

unlikely to affect the long-term viability of this species in the North Sea (Ref. 1.31).

1.5.56 For the purpose of the CEA, displacement at a radius of 26km is assumed for other projects. This temporary avoidance would cause disturbance but minimise acoustic injury. The auditory impact rages applied for the proposed development are based on the theoretical model assuming no fleeing behaviour and represent the maximum TTS ranges.

1.5.57 Maximum temporary auditory damage ranges from the proposed development and displacement behaviours from OWFs mean harbour porpoises have the potential to recover and sensitivity is adjudged as *Medium*.

iii. Cumulative effect significance

1.5.58 The assessment of population effects is based on complete temporal overlap of all the construction projects. The theoretical assessment does not consider the limited availability of piling vessels involved in the construction of offshore wind farms which is a constraint in terms of actual project build timeframes

Population Density Approach

1.5.59 The relative contribution of Sizewell C piling to underwater noise is extremely low. In quantitative terms, predicted numbers of harbour porpoise potentially disturbed due to piling noise from Sizewell C constitutes approximately 0.02% of the reference population. In the single piling event scenario, the proposed development contributes 0.58% of the total number of animals disturbed. Therefore, the proposed development contributes very little to the overall effect.

1.5.60 In the case of the proposed development acting cumulatively with six OWFs pilling concurrently with single pilling events the impact magnitude in terms of intersection with the North Sea MU area populations is *Low* (3.12% of population). Taking into account the receptor sensitivity (*Medium*) there is the potential for ***minor adverse effects*** for harbour porpoise. Effects are not significant at the level of the reference population.

Conservation Objectives Approach

1.5.61 The proposed development is directly adjacent to the Southern North Sea SAC. The SAC conservation objective is to maintain Favourable Conservation Status (FCS) for harbour porpoise in UK waters (Ref. 1.14). The CEA for single pilling activities predicts no significant effects pertaining

to the disturbance of harbour porpoise with the Winter (worst case) area for any given day. The cumulative area disturbed accounts for 16.9% of the Winter area, less than the 20% threshold (**Table 1.19**). The proposed development would contribute less than 1% of the total area effected and only for three days if piling were to occur in winter. Therefore, the integrity of the site is maintained.

e) Impact assessment 2 - Underwater noise from piling on phocid seals

1.5.62 The potential sources of underwater noise during each stage of the proposed development and effects on seals is detailed in **Chapter 22** of **Volume 2** of the **ES**.

1.5.63 The assessment of underwater noise effects on seals applies the same rationale as for harbour porpoises. The worst-case scenario considers, the stationary cumulative model auditory impact zones from piling with a 200kJ hammer energy. The resulting impact zones extend to ~3.1km and 303m for TTS and PTS, respectively (**Table 1.20**).

Table 1.20: Seal auditory impact zones for piling activity.

Activity	Threshold	Instantaneous	Stationary Cumulative	Fleeing cumulative
Impact piling 90kJ.	PTS	6m	206m; 0.10km^2	No impact.
	TTS	10m	1,882m; 4.30km^2	No impact.
Impact piling 200kJ.	PTS	9m	303m; 0.20km^2	No impact.
	TTS	16m	3,104m; 10.64km^2	No impact.

1.5.64 The grey seal reference population is based on the most recent counts and telemetry data (Ref. 1.32). Due to the transient nature of grey seals (Ref. 1.33) the south-east England MU (8,716), north-east England MU (7,004) and east coast of Scotland MU (3,652) are included in the reference population (Ref. 1.32) (**Plate 1.5**) with a total of 19,372 grey seals used for the assessment.

Plate 1.5: Locations of the main grey seal breeding sites around the UK (Ref. 1.32) and the boundaries of the seal MUs indicating the location of the SE England MU (9), north-east England MU (8) and east coast of Scotland MU (7).

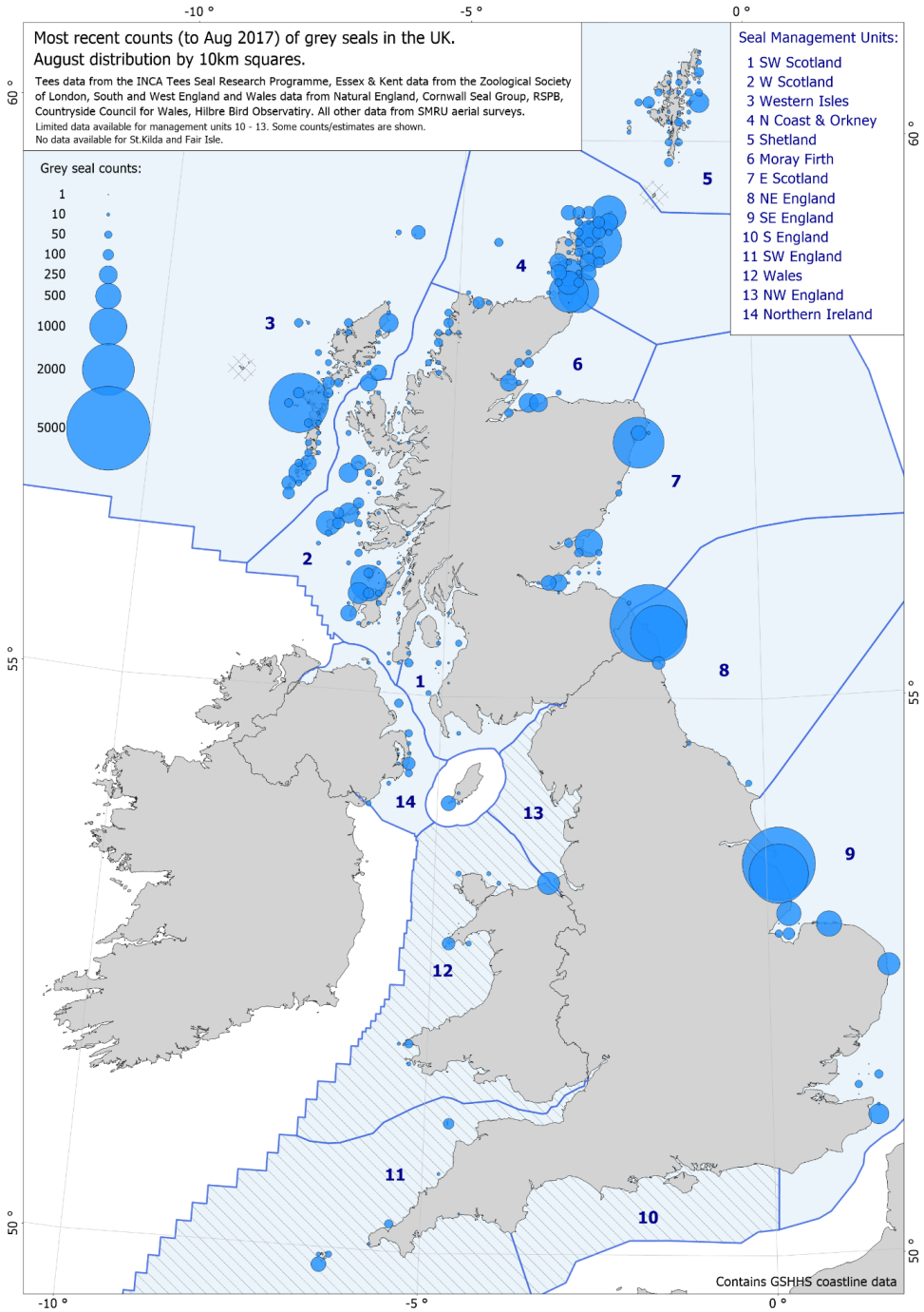
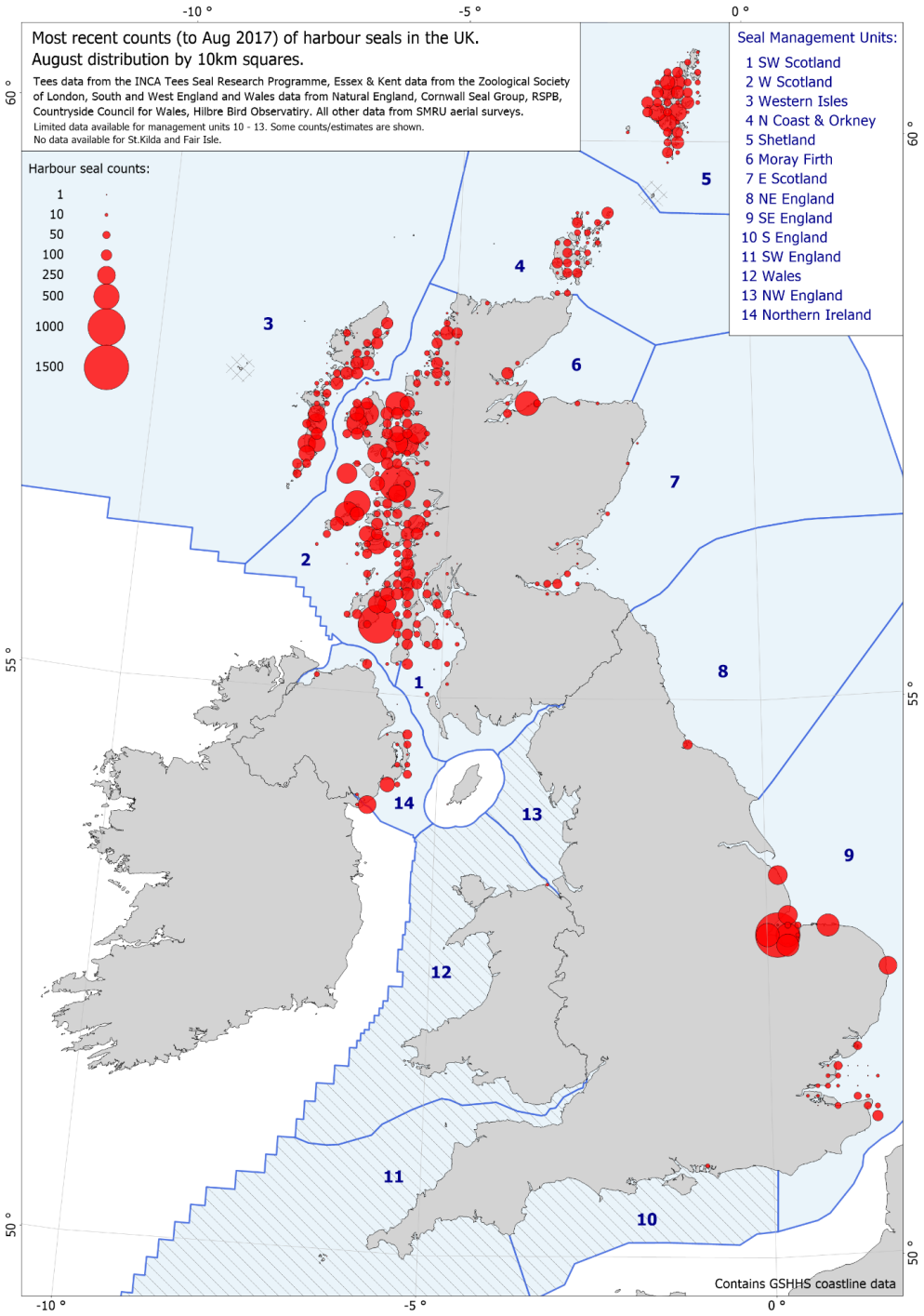


Plate 1.6: Locations of the main harbour seal breeding sites around the UK Ref 1.32) and the boundaries of the seal MUs indicating the location of the SE England MU (9).



1.5.65 Harbour seals on the east coast on the UK tend to have a restricted distribution, with a population being predominantly concentrated in the Thames and The Wash (Ref. 1.33).

1.5.66 The harbour seal reference population is based on the most recent count for the south-east England MU = 4,965 harbour seal (Ref. 1.32) (**Plate 1.6**).

i. Sensitivity of receptor

1.5.67 The potential effects of underwater noise from piling range from direct injury and/or auditory damage at close range to short-term behavioural or barrier effects. Behavioural changes, for example avoidance, have also been observed in harbour seals as a result of pile driving up to 25km from the sound source. However, seals returned to the area shortly after piling ceased (within two hours) (Ref. 1.34). It is suggested that the extent of spatial avoidance depends on differences in piling characteristics and the effects of bathymetry on sound propagation, resulting in various degrees of displacement between sites (Ref. 1.35).

1.5.68 For the purpose of the CEA, displacement at a radius of 26km is assumed for other projects. This temporary avoidance would cause disturbance but minimise acoustic injury. The auditory impact rages applied for the proposed development are based on the theoretical model assuming no fleeing behaviour and represent the maximum TTS ranges.

1.5.69 Following the same rationale as for the harbour porpoises, seals are assigned *Medium* sensitivity to impacts from piling.

ii. Magnitude of cumulative effects

1.5.70 The magnitude of the potential disturbance of grey and harbour seals has been estimated based on the following parameters:

- A potential (behavioural) impact area during single pile installation, based on a radius of 26km[9] from each piling location (2,124km^2).
- The predicted cumulative (24 hour) auditory impact range for TTS in stationary harbour selas of 3.1km (10.6km^2) for worst case pilling scenarios (**Table 1.20**).

[9] The radius of 26km was assigned to encompass potential behavioural impacts to harbour porpoises. This cetacean species is known to be more sensitive to underwater noise than two species of pinnipeds. Nonetheless, the same radius is considered for pinnipeds applying the precautionary principle.

1.5.71 The latest seal at sea usage maps (Ref. 1.36) have been used to estimate the density of grey and harbour seals in the potential impact areas relevant to the area that the projects are located in for the most recent projects. For older projects, the data published in the relevant ES chapters is based on the previous assessment (Ref. 1.37).

1.5.72 The TTS effect area for piling at Sizewell C extends over several 5x5km grids thus for the purpose of the assessment the block with the highest density has been used. This results in 1.145 animals for grey seal and 1.322 animals for harbour seals per 25km^2 grid (Ref. 1.36). The number of individuals per km^2 has been calculated as 0.046 (1.145/25) for harbour seals and 0.053 (1.322/25) for grey seals.

1.5.73 There are a total of seven projects where the timeline for piling has the potential to overlap with piling at the proposed development (**Table 1.15**). However, the potential worst-case scenario for other projects that could simultaneously be piling at the same time as the proposed development includes only six projects. This is because the current timeframes for East Anglia Three and Norfolk Vanguard do not overlap (**Table 1.15**). The assessment has been undertaken using the following projects (**Plate 1.3**):

- Hornsea Project Two OWF;
- Dogger Bank Creyke Beck A OWF;
- Dogger Bank Teeside A OWF;
- Thanet Extension OWF;
- Hornsea Project Three OWF, and;
- Norfolk Vanguard OWF.

1.5.74 The assessment has been undertaken using Norfolk Vanguard instead of East Anglia Three as the density estimates for both grey and harbour seals for Norfolk Vanguard are higher than that of East Anglia Three. As a comparison the assessment has also been undertaken substituting Norfolk Vanguard for East Anglia Three and is presented in Appendix 4C.2, although conclusions on significance are drawn using the worst-case scenario (Norfolk Vanguard).

1.5.75 The total area of potential disturbance from single piling of all six OWFs along with the proposed development is 12,766km^2. The area estimate is precautionary in that it does not account for overlap of projects impact areas (**Plate 1.3**).

1.5.76 The maximum number of grey seals that could potentially be disturbed as a result of single piling is 646 (3.34% of the reference population).

1.5.77 The maximum number of harbour seals that could be disturbed as a result of single piling is 165 (3.33% of the reference population) (**Table 1.21**).

1.5.78 The magnitude for the cumulative effects of single pilling for projects in combination with the proposed development is between 1% and 5% of the reference population for both grey and harbour seals (3.34% and 3.33% respectively). Therefore, based on the scales in Table 1.16, the magnitude is assessed as *Low* for both species.

1.5.79 Appendix 4C.2 (**Table 1.2**) shows the magnitude of impact if East Anglia Three were included instead of Norfolk Vanguard. This shows 3.31% and 3.33%of the grey seal and harbour seal populations could potentially be disturbed under single piling scenarios, respectively. As per Table 16 this equates to the same impact magnitude (*Low*) for each species as for the worst-case scenario (Norfolk Vanguard).

Table 1.21: CEA for the potential disturbance of grey seals and harbour seals during single piling of marine developments with possible temporal ovelap with the BLF at Sizewell C.

Project	Tier	Distance to the proposed development	Grey seal density estimate (No/km^2)[1]	Harbour seal density estimate (No/km^2)[1]	Potential number of grey seals disturbed	Potential number of harbour seals disturbed.
Sizewell C	4	0	0.046	0.053	0.49	0.56
Hornsea Project 2	3	179km	0.08	0.008	169.92	16.99
Dogger Bank Creyke Beck A	3	272km	0.05	0.0004	106.20	0.85
Dogger Bank Teeside A	3	311km	0.09	0.001	191.16	2.12
Norfolk Vangaurd	4	85km	0.002	0.0001	4.25	0.21
Thanet Extension	4	83km	0.002	0.06	4.25	127.44
Hornsea Project 3	4	181km	0.08	0.008	169.92	16.99
Total					**646.19**	**165.16**
% of Management Unit (19,372 grey seals; 4,965 harbour seals).					**3.34%**	**3.33%**
[1] Single piling events only are planned for the proposed development, but assessment was based on a installing five piles in one day.						

iii. Cumulative effect significance

1.5.80 The cumulative assessment is based on complete overlap between all OWF construction projects. The current assessment does not take into account the limited availability of piling vessels involved in the construction of OWFs.

1.5.81 The conservation objectives for seals within the Humber Estuary SAC and the Wash and North Norfolk Coast SAC are for no significant change to;

- the extent and distribution of qualifying natural habitats and habitats of qualifying species;
- the structure and function (including typical species) of qualifying natural habitats;
- the structure and function of the habitats of qualifying species;
- the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
- the populations of qualifying species; or
- the distribution of qualifying species within the site.

1.5.82 The effects on designated sites are dealt with within the HRA. The CEA has been undertaken using populations at the MU level in line with assessments for other projects.

1.5.83 In the case all six OWF projects were to undertake impact piling concurrently with the proposed development the cumulative effects are predicted to expose 3.34% and 3.33% of the grey and harbour seals reference populations, respectively. This represents a *Low* impact magnitude, combined with a *Medium* sensitivity, ***minor adverse effects*** are predicted. Effects are not significant at the reference population level.

1.5.84 The relative contribution of the proposed development to underwater noise effects on seals is extremely low. In quantitative terms, the predicted impacts on grey and harbour seals from piling at the proposed development would affect (less than) 1 individual of each species. The removal of the proposed development from this cumulative assessment would result in the same prediction of effects. Any additive effect from the proposed development would be very short lived, in the order of days. Therefore, significant effects from the proposed development are considered to be unlikely.

f) Impact Assessment 3 – Changes in prey availability (indirect impact) due to impingement/ entrainment and underwater noise

1.5.85 Marine mammals, as top predators, are heavily influenced by availability and presence of their prey. Changes in prey availability for marine mammals can result in a number of effects including changes in geographical distribution, changes in number of animals and community structure, increased competition for food and reduced disease resilience (Ref. 1.23).

1.5.86 The proposed development is adjacent to the Southern North Sea SAC for which Conservation Objective 3 states that *'the condition of supporting habitats and processes, and the availability of prey is maintained'*.

i. Effect of underwater noise on prey availability

1.5.87 As described in **Chapter 22** of **Volume 2** of the **ES**, marine mammals feed on a variety of small shoaling demersal or pelagic fish, some of which are sensitive to piling noise. **Table 1.7** and **Table 1.8** shows that the auditory and behavioural impact zones in terms of impact pilling are smaller for fish that for marine mammals. The CEA for the effects of underwater noise from piling on fish (**Chapter 22**) concludes that no significant effects are predicted at the stock/population level. Therefore, it is reasonable to conclude that, as the auditory and behavioural impact zones are smaller for fish than marine mammals, and as there is no significant effect at the stock/population level then there would be no significant impact in terms of prey availability.

ii. Effect of impingement and entrainment of prey availability

1.5.88 As presented in **Chapter 22** of **Volume 2** of the **ES**, fish impingement and entrainment results in losses of prey species, however this represents a small percentage of prey available in the area.

1.5.89 The cumulative effects assessment for impingement and entrainment of selected fish species at the relevant stock/population level is presented in Section 1.4 concludes ***minor adverse effects*** with no significant effects on the stock. Therefore, impingement/entrainment losses are unlikely to represent a significant change in the availability of prey. As such, the conservation objectives of the SAC are not compromised.

1.6 Commercial and recreational fisheries

1.6.1 The CEA for commercial and recreational fisheries considers pressures from all stages of projects where there is the potential to overlap with the proposed development. Each type of pressure has been considered where relevant for commercial fisheries receptors (netters, potters and longliners) and

recreational fisheries receptors (recreational fishing vessels and beach anglers).

1.6.2 For reference purposes the proposed development is located within International Council for the Exploration of the Seas rectangle 33F1. Netting, potting and longlining all occur within this rectangle. Commercial fishing activity within the GSB is limited. From Sizewell itself, a single, beach-launched ≤10 metre (m) vessel operates, using either pots for brown crab and lobster (*Cancer pagurus* and *Homarus gammarus*, respectively), or nets during the winter for cod (*Gadus morhua*), herring (*Clupea harrengus*), sprat (*Sprattus sprattus*), sea bass (*Dicentrarchus labrax*), sole (*Solea solea*) and thornback ray (*Raja clavata*). Another small vessel from Aldeburgh to the south regularly operates of Sizewell, using pots to fish for lobsters and crabs over an area of Coralline Crag off Thorpeness **Appendix 22F** of **Volume 2** of the **ES**.

1.6.3 Spatial resolution of landings is available at the International Council for the Exploration of the Seas rectangle scale, whereas the vessels fishing within the ZOI of the proposed development off Sizewell operate over a limited spatial area.

1.6.4 Recreationally, camera analysis conducted by Cefas estimate that ~1,570 beach anglers fish from Sizewell beach per year, with peaks in January, July and December. Recreational sea vessels activity off Sizewell is low, primarily due to the lack of access for launching.

1.6.5 The ZOI for cumulative effects on commercial and recreational fishing activities is considered to be the GSB.

1.6.6 The ES has concluded **minor adverse effects** from the proposed development on netters, potters, long-liners and otter trawlers and **negligible effects** on recreational boat anglers.

1.6.7 Cables from the Galloper OWF have already been installed within the vicinity of the proposed development and hence form part of the baseline in terms displacement of fishing activities.

1.6.8 The construction of four projects have the potential to spatially overlap with the proposed development and have impacts in terms of temporary displacement of fishing activities during the construction period. These projects are;

- Nautilus National Grid Interconnector, connecting the UK to Belgium;

- EuroLink National Grid Interconnector, connecting the UK to the Netherlands;
- East Anglia One North (cable routes), and;
- East Anglia Two (cable routes).

1.6.9 East Anglia One North OWF and East Anglia Two OWF are Tier 4 projects with DCO applications submitted in October 2019. The OWF locations at 50km and 35km, respectively from the proposed development. The offshore cable corridor for the East Anglia One North and East Anglia Two is located within the GSB and ZOI for fishing activities, with landfall anticipated to be north of Thorpeness (**Plate 1.1**). As such the potential impacts from construction and operational maintenance of the offshore cables is considered.

1.6.10 Both interconnector projects are in the very early stages of planning and as such are also considered as Tier 5 projects. The application for Nautilus National Grid Interconnector is expected by the Planning Inspectorate in Q2 of 2022. At the time of writing the EuroLink National Grid Interconnector is in the very early stages of development with no publicly available information. Details of any operational and maintenance activities for these developments are currently unknown.

1.6.11 During the 60-year operational life of the proposed development, each reactor unit would undergo refuelling and maintenance shutdowns (otherwise known as 'outages') at approximately 18-month intervals. The duration of these outages would vary according to the maintenance and inspections required, but would typically be up to two months. Occasional maintenance of the offshore cooling water infrastructure may result in temporary loss of access to fishing areas.

1.6.12 During maintenance of offshore infrastructure hierarchical safety buffer zones of approximately 250m to 500m depending on the activity would likely be applied surrounding construction vessels. These safety buffer zones would be implemented through Notice to Mariners (NtM). EDF Energy has a history of offshore operations within the area and has developed and maintained communications with fishers prior to offshore works. Such communications would be expected to continue throughout the operational phase for maintenance activities.

1.6.13 An application for a Marine Licence for operation and maintenance works along the export cables for Galloper OWF has been made for works including export cable repair and replacement as well as remedial burial of the export cable (MLA/2019/00256). It anticipates a maximum number of four events

to replace or repair the export cable during the lifetime of the project (25 years) lasting approximately three months each. A maximum of four events are also predicted for remedial burial of the export cable although predicted timeframes for this are not given. An assessment of the impacts of the works on commercial and recreational fisheries has not been undertaken but a Fisheries Liaison and Coexistence Plan has been produced which establishes a Commercial Fisheries Working Group (CFWG) to provide a point of contact for representatives of commercial fishermen and to promote engagement and understanding of each other's activities during the operational phase of GWF. Galloper Offshore Wind Limited are also required to produce NtM in advance of works as a condition of the Marine Licence.

1.6.14 To-date UXOs have not been identified on site. Should an UXO be identified a full assessment would be completed considering the exact UXO specifications and location in relation to site-specific factors such as proximity to existing nuclear infrastructure. It is noted that a Marine Licence (MLA/2019/00191) for Galloper UXO detonation has been issued. Hence there is the potential for cumulative effects should UXO clearance and detonation be required during the proposed development. However, effects from Galloper UXO detonation and hypothetical UXO clearance from the proposed development cannot be assessed because full details of the planned activities are not currently available. Should UXOs be identified at the proposed development, an assessment of the potential effects of different detonation strategies and mitigation measures would be undertaken.

1.6.15 Cable laying activities (including trenching), associated with the aforementioned developments and UXO clearance have the potential to result in temporary restrictions to fishing vessels within the ZOI of the proposed development (**Plate 1.1**). However, any closures to vessels are predicted to be short-term and localised. Once construction and maintenance works are complete activities such as the potting and netting currently undertaken would be able to resume. As such, significant effects on commercial and recreational fisheries are not anticipated.

1.7 Residual effects

1.7.1 The following table presents a summary of the CEA assessments.

Table 1.22: Summary of cumulative effects

Receptor	Impact	Primary or Tertiary Mitigation	Assessment of effects	Additional Mitigation	Residual Effects
Water Quality	Changes in suspended sediments due to construction activities of the proposed development and cables associated with four other developments.	None	No information is available regarding proposed other developments which would indicate a potential for cumulative impacts to significantly effect water quality within the GSB area. Increases in suspended sediments and sedimentation from the proposed development is predicted to be short-term and localised with conditions returning to baseline shortly after dredging activities ceasing thereby minimising the potential for significant cumulative effects with other small scale impacts from other developments.	None	***Minor adverse effects.*** **Not Significant.**
Benthic Ecology	Changes in suspended sediments, sedimentation rate changes and physical change to other saeabed type due to construction activities of the proposed development and four other developments.	None	No information is available regarding proposed other developments which would indicate a potential for cumulative impacts to significantly effect benthic ecology within the GSB area. Increases in suspended sediments and sedimentation from the proposed development is predicted to be short-term and localised with conditions returning to baseline shortly after dredging activities ceasing thereby minimising the potential for significant cumulative effects with other small scale impacts from other developments.	None	***Minor adverse effects.*** **Not Significant.**

Receptor	Impact	Primary or Tertiary Mitigation	Assessment of effects	Additional Mitigation	Residual Effects
Fish receptors.	Underwater noise from piling for the BLF and six OWFs with potential temporal overlap in pilling activities.	Statutory nature conservation agency protocol for minimasing the risk of injury to marine mammals from piling noise (Ref. 1.38). Where feasible pilling should be avoided during periods of high water to reduce the potential for underwater noise propagation.	At a stock/population level, there may be an increased spatial effect, should construction occur concurrently, or increased temporal effects if construction occurs sequentially. However, piling would be intermittent and short-term, with a limited period of piling in the construction phase of the proposed development and the six OWFs that may pile concurrently. Effects at the stock level are considered to be ***minor adverse effect.*** Not significant.	None	***Minor adverse effects.*** **Not Significant.**
Ichtyoplankton (seabass)	Entrainment in the cooloing water abstracted for the proposed development and Hinkley Point C.	None	Seabass ichthyoplankton from the same stock could be exposed to entrainment from both stations. However, the predicted entrainment losses are ecologically negligible when considered against the natural variability in recruitment and the natural mortality of the species. ***Negligible effects***, Not significant.	None	***Negligible effects.*** **Not Significant.**
Seabass	Impingement in the cooloing water abstracted for the proposed development and Hinkley Point C (HPC).	Low cross section intake head and unchlorinated FRR systems fitted.	The combined losses of seabass from both stations is below the 1% spawning stock biomass threshold. Effects are **minor adverse** at the stock level and are not significant relative to natural variability.	None	***Minor adverse effects.*** **Not Significant.**

Receptor	Impact	Primary or Tertiary Mitigation	Assessment of effects	Additional Mitigation	Residual Effects
European Eel			The combined losses of eel from both stations is low. Losses from the proposed development is below 1% of eel landings, whilst losses from HPC are less than 0.1% of SSB. Effects are ***minor adverse*** at the stock level and are not significant relative to natural variability.		
Harbour porpoise.	Underwater noise from piling for the BLF and six OWFs with potential temporal overlap in pilling activities.	Statutory nature conservation agency protocol for minimasing the risk of injury to marine mammals from piling noise (Ref. 1.38). Where feasible pilling should be avoided during periods of high water to reduce the potential for underwater noise propagation.	If all six projects were to undertake single piling at the same time as the proposed development there is the potential for ***minor adverse effects*** for harbour porpoise. The proposed development will not exceed, neither individually nor in combination, the proposed thresholds for Southern North Sea SAC. Therefore, the conservation objectives and site integrity will be maintained. No significant disturbance of harbour porpoises is expected.	None	***Minor adverse effects.*** **Not Significant.**
Grey and Harbour seals	Underwater noise from piling for the BLF and six OWFs with potential temporal overlap in pilling activities.	Statutory nature conservation agency protocol for minimasing the risk of injury to marine mammals from piling noise (Ref. 1.38). Where feasible pilling should be avoided during periods of high water to reduce the potential for underwater noise propagation.	***Minor adverse effects*** are predicted for single piling events with less than 5% of the reference population exposed to disturbance. The relative contribution of the proposed development to underwater noise effects is extremely low. Predicted impacts on harbour seals from piling at the proposed development would effect 1 individual. The removal of the proposed development from	None	***Minor adverse effects.*** **Not Significant**

Receptor	Impact	Primary or Tertiary Mitigation	Assessment of effects	Additional Mitigation	Residual Effects
			the cumulative assessment would result in the same prediction of effects. Any additive effect from the proposed development would be very short lived, in the order of days.		
Marine mammals	Changes in prey availability due to impigement, entratement and underwater noise from piling	The FRR system designed to minimise impacts on impinged fish and invertebrates. Coarse bar screens at the intake are in place to prevent large prey entering the cooling water system.	No significant cummulative effect on the availability of prey species for marine mammals in the North Sea.	None	***Minor adverse effects.*** **Not Significant**
Commercial and recreational fisheries	Displacement of fishing activities due to construction of the proposed development and four other developments with the potential for spatial overlap.	Provision of Notice to Mariners (NtM).	Limited information is available meaning quantitative assessments of cumulative effects are not feasible. However, any closures to vessels are predicted to be short-term and localised. Once construction works are complete activities such as the potting and netting currently undertaken would be able to resume. As such, significant effects on commercial and recreational fisheries are not anticipated.	None	***No significant effects anticipated.***

References

1.1. Planning Inspectorate. Advice Note Seventeen: Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects. 2019, pp. 10 Available from:https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf.

1.2. Scottish Power Renewables. JNCC and Natural England Suggested Tiers for Cumulative Impact Assessment. 2013.

1.3. Scottish Power Renewables. East Anglia ONE Offshore Windfarm. Environmental Statement. Volume 1. Chapter 9: Benthic Ecology. 2019.

1.4. Scottish Power Renewables. East Anglia TWO Offshore Windfarm. Environmental Statement. Volume 1. Chapter 9: Benthic Ecology. 2019.

1.5. United Marine Dredging Limited and Cemex UK Marine Limited. Aggregate Licence Renewal Application: Area 430 Environmental Statement. 2008.

1.6. ICES. Sea Bass (Dicentrarchus Labrax) in Divisions 4.b–c, 7.a, and 7.d–h (Central and Southern North Sea, Irish Sea, English Channel, Bristol Channel, and Celtic Sea). Celtic Seas and Greater North Sea Ecoregions. Bss.27.4bc7ad-h. Published 29 June 2018. 2018.

1.7. ICES. European Eel (Anguilla Anguilla) throughout Its Natural Range. ICES Advice on Fishing Opportunities, Catch, and Effort. Ecoregions in the Northeast Atlantic. Ele.2737.Nea. Published 7 November 2018. 2018.

1.8. BEEMS. Revised Predictions of Impingement Effects at Hinkley Point C – 2018. Technical Report TR456. 2nd ed.Lowestoft, UK: Cefas, 2019.

1.9. H.M. Jansen et al. Bijvangst van Trekvissen in de Nederlandse Fuikenvisserij. Rapport Nummer: C048/07. 2007.

1.10. ICES. ICES, 2019. Official Nominal Catches 2006 - 2017. Version 07-08-2018. ICES, Copenhagen. 2019. Available from: https://www.ices.dk/marine-data/dataset-collections/Pages/Fish-catch-and-stock-assessment.aspx

1.11. ICES. Report of the Working Group on Celtic Seas Ecoregion (WGCSE) 9–18 May 2018 Copenhagen, Denmark (DRAFT). ICES CM 2018/ACOM:13. 2018.

1.12. Defra. Report to the European Commission in Line with Article 9 of the Eel Regulation 1100/2007: Implementation of UK Eel Management Plans. 2015.

1.13. Defra. Report to the European Commission in Line with Article 9 of the Eel Regulation 1100/2007: Implementation of UK Eel Management Plans. 2018.

1.14. JNCC. Harbour Porpoise (*Phocoena phocoena*) Special Area of Conservation: Southern North Sea. Conservation Objectives and Advice on Operations. Aberdeen, UK:2019. Available from: http://archive.jncc.gov.uk/pdf/SNorthSea_ConsAdvice.pdf.

1.15. Smartwind. Hornsea Offshore Wind Farm Project Two Environmental Statement. Volume 1. Chapter 3, Project Description and Volume 2. Chapter 4, Marine Mammals. 2015.

1.16. Orsted. Hornsea Project Three Environmental Statement. Volume 1. Chapter 3, Project Description and Volume 2. Chapter 4, Marine Mammals. 2018.

1.17. Orsted. Hornsea Four Environmental Impact Assessment: Scoping Report. 2018, pp. 782 Available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010098/EN010098-000021-EN010098 - Scoping Report.pdf.

1.18. Forewind. Dogger Bank Creyke Beck A and B Environmental Statement. Chapter 5, Project Description. 2013.

1.19. Forewind. Dogger Bank Teeside A and B Environmental Statement. Chapter 5, Project Description. 2014.

1.20. Vattenfall and Scottish Power Renewables. East Anglia Three Environmental Statement. Chapter 5 Description of the Development and Chapter 12 Marine Mammal Ecology. 2015.

1.21. Vattenfall Offshore Wind Limited. Thanet Extension Offshore Wind Farm Environmental Statement. Volume 2. Chapter 1, Project Description and Chapter 7, Marine Mammals. 2018.

1.22. Vattenfall Offshore Wind Limited. Norfolk Boreas Offshore Windfarm Environmental Statement. Chapter 5, Project Description and Capter 12, Marine Mammal Ecology. 2019.

1.23. Vattenfall Offshore Wind Limited. Norfolk Vanguard Offshore Windfarm Environmental Statement. Chapter 5, Project Description and Chapter 12, Marine Mammal Ecology. 2018.

1.24. P.S. Hammond et al. Estimates of Cetacean Abundance in European Atlantic Waters in Summer 2016 from the SCANS-III Aerial and Shipboard Surveys. 2017. Available from: https://synergy.st-andrews.ac.uk/scans3/.

1.25. BEEMS. Sizewell Marine Mammal Noise Exposure Criteria. Technical Report TR335. Lowestoft: Cefas, 2016.

1.26. M. Dähne et al. Effects of Pile-Driving on Harbour Porpoises (P*hocoena*

phocoena) at the First Offshore Wind Farm in Germany. Environmental Research Letters, 2013, 8 (2), pp. 025002 .

1.27. J. Carstensen et al. Impacts of Offshore Wind Farm Construction on Harbour Porpoises: Acoustic Monitoring of Echolocation Activity Using Porpoise Detectors (T-PODs). Marine Ecology-progress Series. 2006, 321, pp. 295–308 .

1.28. J. Tougaard et al. Underwater Noise from Three Types of Offshore Wind Turbines: Estimation of Impact Zones for Harbor Porpoises and Harbor Seals. Journal of the Acoustical Society of America. 2009, 125 , pp. 3766–3773 .

1.29. M. Brandt et al. Responses of Harbour Porpoises to Pile Driving at the Horns Rev II Offshore Wind Farm in the Danish North Sea. Marine Ecology Progress Series. 2011, 421 , pp. 205–216 .

1.30. P. Skjellerup et al. Marine Mammals and Underwater Noise in Relation to Pile Driving – Working Group 2014. Report to the Danish Energy Authority. 2015.

1.31. J. Tougaard et al. An Analysis of Potential Broad-Scale Impacts on Harbour Porpoise from Proposed Pile Driving Activities in the North Sea. Report of an Expert Group Convened under the Habitats and Wild Birds Directives – Marine Evidence Group. 2013. 38 pp.

1.32. SCOS. Scientific Advice on Matters Related to the Management of Seal Populations: 2018. 2018, pp. 155. Available from: http://www.smru.st-andrews.ac.uk/research-policy/scos/.

1.33. D.J.F. Russell and B.J. McConnell. Seal At-Sea Distribution, Movements and Behaviour. Department of Energy and Climate Change, 2014. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/346304/OESEA2_SMRU_Seal_distribution_and_behaviour.pdf.

1.34. D.J.F. Russell et al. Avoidance of Windfarms by Harbour Seals Is Limited to Pile Driving Activities. Journal of Applied Ecology. 2016, 53: 1642–1652.

1.35. P. Madsen et al. Wind Turbine Underwater Noise and Marine Mammals: Implications of Current Knowledge and Data Needs. Marine Ecology Progress Series. 2006, 309 , pp. 279–295 .

1.36. D.J.F. Russell et al. Updated Seal Usage Maps: The Estimated at-Sea Distribution of Grey and Harbour Seals. 2017. 30 pp.

1.37. E. Jones et al. Grey and Harbour Seal Usage Maps. Marine Mammal Scientific Support Research Programme MMSS/001/11. Task MR 5. 2013.

1.38. JNCC. Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise. JNCC Report August 2010. 2010.

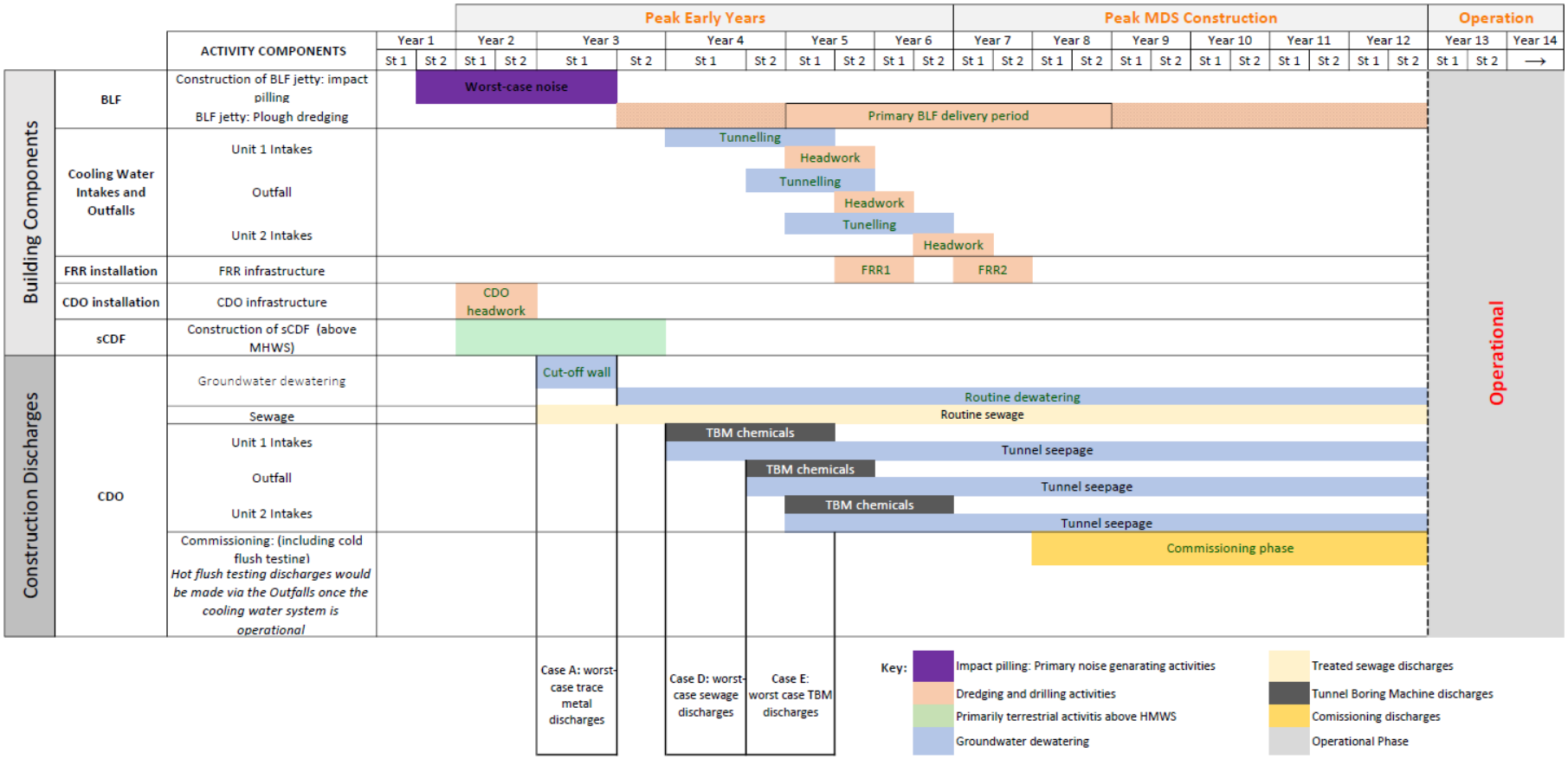
Appendix 4C.1: Cumulative Effects Assessment Project Screening

1.1 Introduction

1.1.1 The information in this Appendix summarise the results of the Cumulative Effect Assessment (CEA) screening process. Projects were screened in or out of the marine ecology CEA based on the following criteria:

- Whether temporally the project has the potential to overalp with the Sizewell C development.
- The potential to cause an impact which could have a cumulative effect with the proposed development.
- From a Tier that was screened into the assessment.
- Projects have been considered from as wide a geographical area as possible and cover the zones of influence for each receptor.
- The geographical overlap of impacts from projects has been considered at a receptor level and the zone of influence is discussed in the relevant section.
- It is likely that the decommissioning of nuclear, renewable and oil and gas projects will themselves require environmental impact assessments. Due this and the timescales involved it is not possible at thisstage to acurately predict the impacts associated with decommissioning. For this reason, whilst considered in the project screening, any decommissioning impacts are scoped out of the CEA.
- The screening is based on the widest likely range of construction dates with an additional temporal buffer to activities that are close to each other in time, as any effects from a preceding activity may not have recovered before the subsequent activity begins (Plate 1.1).
- Screening is divided by industry to assess projects with potential to cause cumulative impacts, including: nuclear power; offshore renewables; aggregate extraction/mining; and oil and gas exploration.

Plate 1.1: Indicative development timeline for assessment scenarios



1.2. Data Sources

1.2.1 The CIA has been based on data collected from a variety of sources. These include, but are not limited to:

- MMO Marine Information System;
- MMO Licensing Public Register;
- Nationally Significant Infrastructure Planning Portal;
- EMODnet human activities portal;
- Crown Estate Maps and GIS portal;
- Suffolk Coastal and Waveney Council Planning Application Portal;
- East Anglia Project website;
- Defra MAGIC maps;
- 4C Offshore Winds Database (http://www.4coffshore.com/offshorewind/).

1.3. Discharge consents

1.3.1 Discharge considered in the CEA screening process are listed in **Table 1.1**. Discharges were screened in where there was potential for overlap with the proposed construction, operation and development timetable for the proposed development.

1.3.2 The discharges listed are those that are currently licensed.

1.3.3 The screening identified 12 projects with the potential for cumulative effects on marine ecology receptors.

Table 1.1: CEA screening output for EA discharge consents where there is potential for impacts to overlap with operation or decommissioning phases of the proposed development (within 10km)

Consent Number	Consent Holder	Type of Discharge
AN/PRECS03962/004	Sizewell B Power Station	Waste Collection/Treatment/Disposal/ Materials Recovery
AN/PR4CS1516/005	Magnox Limited	Waste Collection/Treatment/Disposal/ Materials Recovery

Consent Number	Consent Holder	Type of Discharge
AN/NPSWQD006825/002	Cliff House Park	Holiday Accommodation/Camping Site/Caravan Site/Hotel/Hostel
AN/EPRGP3529GQ/001	National Trust	Public Conveniences
AN/PRELF21060/002	Cliff House Holiday Park	WwTW (not water co) (not STP at a private premises)
AN/PRELF20650/002	Dunwich Cliff Caravan Park	Holiday Accommodation/Camping Site/Caravan Site/Hotel/Hostel
AN/PRELF20649/002	Dunwich Cliff Caravan Park	Holiday Accommodation/Camping Site/Caravan Site/Hotel/Hostel
AN/ASENF12016/002	Anglian Water Services Limited	Pumping Station on Sewerage Network (water company)
AN/EPRGP3023GB/001	The National Trust	Domestic property (single) (incl farm house)
AN/ASENF12030/002	Anglian Water Services Limited	WwTW/Sewage Treatment Works (water company)
AN/PR4TS765X/001	Slaughden Sailing Club	Sport, Amusement+Recreation/Golf Club/Gym/Theme Park/Spa
AN/PR4TS753X/001	Suffolk Coastal District Council	WwTW (not water co) (not STP at a private premises)

1.4. Renewable Energy

1.4.1 **Table 1.1** details the European offshore renewables developments considered in the CEA screening process. Projects listed in Tiers 1-4 within the zones of influence for marine ecology receptors were screened in where construction, operation or decommissioning phases had the potential for overlap with the proposed construction, operation and development timetable for the proposed development.

1.4.2 Whilst listed, Tier 5 projects have not been screened in to the overall assessment given the uncertainties associated with progress of early stage developments. It is expected that the predicted effects of the proposed development should instead be incorporated within the baseline assessment for Tier 5 assessments.

1.4.3 The construction period for all Tier 3 projects (consent projects, where development has not yet started) was assumed to be the maximum allowable (seven-year consent window). This precautionary approach was adopted to account for unforeseen delays or changes to construction schedule, and ensures that screening considers the worst case scenario.

1.4.4 The screening identified 125 offshore renewables developments with the potential for temporal cumulative effects on marine ecology receptors. Of these, nine have the potential for overlap with the construction phase and 119 with the development phase.

Table 1.2: CEA screening output for European offshore renewables where there is potential for impacts to overlap with Sizewell C construction and operation phases. Y = yes; N = no

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Forthwind Energy Test Site	UK	Commissioned	1	N	Y
Greater Gabbard	UK	Operational	1	N	Y
Gunfleet Sands 3 (Demo Zone)	UK	Operational	1	N	Y
Gunfleet Sands I and II	UK	Operational	1	N	Y
Humber Gateway	UK	Operational	1	N	Y
Inner Dowsing	UK	Operational	1	N	Y
Kentish Flats	UK	Operational	1	N	Y
Kentish Flats Extension	UK	Operational	1	N	Y
Levenmouth (Demo Zone)	UK	Operational	1	N	Y
Lincs	UK	Operational	1	N	Y
London Array	UK	Operational	1	N	Y
Methil Samsung	UK	Commissioned	1	N	Y
Scroby Sands	UK	Operational	1	N	Y
Sheringham Shoal	UK	Operational	1	N	Y
Teesside	UK	Operational	1	N	Y
Thanet	UK	Operational	1	N	Y
Westermost Rough	UK	Operational	1	N	Y

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Blyth demonstration site (2)	UK	Operational	1	N	Y
Dudgeon	UK	Operational	1	N	Y
Race Bank	UK	Operational	1	N	Y
Hywind Pilot Park	UK	Operational	1	N	Y
Galloper	UK	Operational	1	N	Y
Hornsea Project One	UK	Construction	2	N	Y
Hornsea Project Two	UK	Pre-construction	3	Y	Y
Hornsea Project Three	UK	Application submitted	4	Y	Y
Hornsea Project Four	UK	Pre-application	4	N	Y
Moray East	UK	Construction	2	N	Y
Moray West	UK	Pre-application	4	N	Y
Rampion	UK	Operational	1	N	Y
Beatrice	UK	Pre-construction	3	N	Y
Blyth demonstration site (3A & 4)	UK	Consented	3	N	Y
Dogger Bank Zone Creyke Beck A	UK	Consented	3	Y	Y
Dogger Bank Zone Creyke Beck B	UK	Consented	3	N	Y
Dogger Bank Zone Teesside A	UK	Consented	3	Y	Y
Sofia (previously Dogger Bank Zone Teesside B)	UK	Consented	3	N	Y

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
East Anglia One	UK	Construction	2	N	Y
East Anglia One North	UK	Pre-application	4	Y	Y
East Anglia Two	UK	Pre-application	4	Y	Y
East Anglia Three	UK	Consented	3	Y	Y
Norfolk Vanguard	UK	Application submitted	4	Y	Y
Norfolk Boreas	UK	Pre-application	4	N	Y
European Offshore Wind Deployment Centre EOWDC (Aberdeen Demonstration)	UK	Construction	2	N	Y
Kincardine (floating turbines)	UK	Consented	3	N	Y
Triton Knoll	UK	Construction	3	N	Y
Firth of Forth Phase 1 Seagreen Alpha	UK	Consented -ON HOLD	4	Unknown	Y
Firth of Forth Phase 1 Seagreen Bravo	UK	Consented -ON HOLD	4	Unknown	Y
Neart na Gaoithe	UK	Consented -ON HOLD	4	Unknown	Y
Hywind 2 (floating turbines)	UK	Application submitted	3	Unknown	Y
Inch Cape	UK	Consented	4	N	Y
Thanet Extension	UK	Application submitted	4	Y	Y
Belwind 1	Belgium	Operational	1	N	Y
Belwind 2 (zone 3, Bligh Bank)	Belgium	Operational	1	N	Y
Belwind Alstom Haliade Demonstration	Belgium	Operational	1	N	Y

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Mermaid	Belgium	Pre-construction	2	N	Y
NobelWind	Belgium	Operational	1	N	Y
Norther	Belgium	Construction	2	N	Y
Northwester 2	Belgium	Pre-construction	2	N	Y
Northwind	Belgium	Operational	1	N	Y
Rentel	Belgium	Pre-construction	2	N	Y
Seastar	Belgium	Pre-construction	2	N	Y
Thornton Bank phase I	Belgium	Operational	1	N	Y
Thornton Bank phase II	Belgium	Operational	1	N	Y
Thornton Bank phase III	Belgium	Operational	1	N	Y
Haliade	Denmark	Operational	1	N	Y
Horns Rev 1	Denmark	Operational	1	N	Y
Horns Rev 2	Denmark	Operational	1	N	Y
Horns Rev 3	Denmark	Construction	2	N	Y
Nissum Bredning Vind (gravity based foundations)	Denmark	Operational	1	N	Y
Rønland	Denmark	Operational	1	N	Y
Vesterhav Nord/Syd	Denmark	Consented	3	N	Y
Alpha Ventus	Germany	Operational	1	N	Y

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Amrumbank West	Germany	Operational	1	N	Y
BARD Offshore 1	Germany	Operational	1	N	Y
Borkum Riffgrund I	Germany	Operational	1	N	Y
Borkum Riffgrund II	Germany	Consented	3	N	Y
Borkum Riffgrund West I	Germany	Consented	3	N	Y
Butendiek (Offshore- Bürger- windpark)	Germany	Operational	1	N	Y
Dan Tysk	Germany	Operational	1	N	Y
Deutsche Bucht	Germany	Pre-construction	2	N	Y
EnBW He Dreiht	Germany	Consented	3	N	Y
EnBW Hohe See (Hochsee Windpark 'Nrdsee')	Germany	Construction	2	N	Y
ENOVA Ems Emden	Germany	Operational	1	N	Y
Global Tech I	Germany	Operational	1	N	Y
Gode Wind 04	Germany	Consented	3	N	Y
Gode Wind 1 and 2	Germany	Operational	1	N	Y
Meerwind Sud/Ost	Germany	Operational	1	N	Y
Merkur	Germany	Construction	2	N	Y
Nordergrunde	Germany	Operational	1	N	Y
Nordlicher Grund	Germany	Consented	3	N	Y

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Nordsee 2 (InNgy Nordsee II)	Germany	Consented	3	N	Y
Nordsee 3 (InNgy Nordsee III)	Germany	Consented	3	N	Y
Nordsee One (InNgy Nordsee I)	Germany	Consented	3	N	Y
Nordsee Ost	Germany	Operational	1	N	Y
OWP Albatros Phase 1	Germany	Construction	2	N	Y
OWP Albatros Phase 2	Germany	Construction	2	N	Y
OWP West	Germany	Consented	3	N	Y
Riffgat	Germany	Operational	1	N	Y
Sandbank	Germany	Operational	1	N	Y
Sandbank Plus	Germany	Consented	3	N	Y
Trianel Windpark Borkum Phase 1 (Borkum West II phase 1)	Germany	Consented	3	N	Y
Trianel Windpark Borkum Phase 2 (aka Borkum West II phase 2)	Germany	Consented	3	N	Y
Veja Mate	Germany	Operational	1	N	Y
Borssele I and II	The Netherlands	Pre-construction	2	N	Y
Borssele III and IV	The Netherlands	Pre-construction	2	N	Y
Borssele Site V - Leeghwater - InNvation Plot	The Netherlands	Consented	3	N	Y
Egmond aan Zee (aka OWEZ)	The Netherlands	Operational	1	N	Y

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Eneco Luchterduinen	The Netherlands	Operational	1	N	Y
Gemini	The Netherlands	Operational	1	N	Y
Netherlands	The Netherlands	Operational	1	N	Y
Irene Vorrink	The Netherlands	Operational	1	N	Y
Prinses Amalia Windpark (formerly Q7)	The Netherlands	Operational	1	N	Y
Westermeerwind	The Netherlands	Operational	1	N	Y
Hywind - Metcentre	Norway	Operational	1	N	Y
KvitsØy Wind Turbine Demonstration Area	Norway	Consented	3	N	Y
Karmoy Marine Energy Test Centre (Metcentre)	Norway	Operational	1	N	Y
RennesØy Wind Turbine Demonstration Area	Norway	Consented	3	N	Y
EMEC - Billia Croo	UK	Operational	1	N	Y
Scapa Flow	UK	Operational	1	N	Y
Bluemell Sound	UK	Operational	1	N	Y
EMEC Fall of Warness	UK	Operational	1	N	Y
EMEC Shapinsay Sound	UK	Operational	1	N	Y
Inner Sound - MeyGen	UK	Operational	1	N	Y
North Yell	UK	Operational	1	N	Y
Perpetuus Tidal Energy Centre (PTEC)	UK	Consented -ON HOLD	3	N	Y

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Brims (Cantick Head) Tidal Development	UK	Application submitted	4	N	Y

1.5. Interconnector Projects

1.5.1 UK interconnector projects considered in the CEA screening process are listed in **Table 1.1**.

1.5.2 No projects were identified in Tiers 1-4. No European projects were screened into the assessment due the absence of available information.

1.5.3 The screening identified 2 projects with the potential for cumulative effects marine ecology receptors in the construction phase.

Table 1.3: CEA screening output for UK interconnector projects with potential to overlap with construction, operation or decommissioning phases of the proposed development. Y = yes; N = no

Name of Project	Country	Status	Tier	Phase of plan screened into CEA		
				Construction	Operation and Maintenance	Decommissioning
Nautilus National Grid Interconnector	UK	Pre-Application	5	Y	N	N
EuroLink National Grid Interconnector	UK	Pre-Application	5	Y	N	N

1.6. Aggregate Extraction

1.6.1 UK aggregate extraction, dredge disposal areas and sites natural resource exploitation considered in the CEA screening process are listed in **Table 1.1**. Projects listed in Tiers 1-4 within the zones of influence for marine ecology receptors were screened in where there was potential for overlap with the proposed construction, operation and development timetable for the proposed development.

1.6.2 No projects were identified in Tiers 3, 4 or 5. No European projects were screened into the assessment due the absence of available information.

1.6.3 The screening identified 91 projects with the potential for cumulative effects marine ecology receptors in the operational phase.

Table 1.4: CEA screening output for UK aggregate extraction with potential to overlap with Sizewell C construction and operation phases. Y = yes; N = no

Name of Project	Area	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation
106 East	480	Active	1	NA	Y
ABP Lowestoft	TH005	Active	1	NA	Y
Area 1 South	478	Active	1	NA	Y
Cleveland Potash Outfall	TY181	Active	1	NA	Y
Cross Sands	296	Active	1	NA	Y
Cross Sands	242 -361/1-3	Active	1	NA	Y
Cutline	447	Active	1	NA	Y
Cutline	447	Active	1	NA	Y
Cutline	447	Active	1	NA	Y
EEC 5 South	482	Active	1	NA	Y
EEC North	473, 474 & 475	Active	1	NA	Y
EEC South	475	Active	1	NA	Y
Goodwin Sands	521	Active	1	NA	Y
Great Yarmouth Inner Harbour	HU150	Active	1	NA	Y
Greenwich Light East	473	Active	1	NA	Y
Greenwich Light East	473/1	Active	1	NA	Y
Greenwich Light East	473/2	Active	1	NA	Y

Name of Project	Area	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation
Humber	514	Active	1	NA	Y
Humber 3	484	Active	1	NA	Y
Humber 4	490	Active	1	NA	Y
Humber 4 and 7	506	Active	1	NA	Y
Humber 5	483	Active	1	NA	Y
Humber 7	491	Active	1	NA	Y
Humber Estuary	400 & 106/1-3	Active	1	NA	Y
Humber Overfalls	493	Active	1	NA	Y
Humber Region	514/1-4	Active	1	NA	Y
Inner Dowsing	439	Active	1	NA	Y
Inner Dowsing	481/1-2	Active	1	NA	Y
Inner Dowsing	481/1-2	Active	1	NA	Y
Inner Owers	396/1-2	Active	1	NA	Y
Inner Owers	435/1-2	Active	1	NA	Y
Inner Owers North	488	Active	1	NA	Y
Longsand	508	Active	1	NA	Y
Longsand	509/1-3	Active	1	NA	Y
Longsand	510/1-2	Active	1	NA	Y
Median Deep	461	Active	1	NA	Y

Name of Project	Area	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation
Needles Isle of Wight	137	Active	1	NA	Y
New 495	525	Active	1	NA	Y
Norfolk	212	Active	1	NA	Y
North Cross Sands	494	Active	1	NA	Y
North Falls East	501	Active	1	NA	Y
North Inner Gabbard	498	Active	1	NA	Y
North Inner Gabbard	498	Active	1	NA	Y
North Nab	372/1	Active	1	NA	Y
Off Great Yarmouth	228	Active	1	NA	Y
Off Great Yarmouth	254	Active	1	NA	Y
Off Great Yarmouth	328/1-3	Active	1	NA	Y
Off Great Yarmouth Extension	240	Active	1	NA	Y
Off Saltfleet	197	Active	1	NA	Y
Off Saltfleet	197	Active	1	NA	Y
Off Selsey Bill	395/1-2	Active	1	NA	Y
Off Selsey Bill	395/1-2	Active	1	NA	Y
Outer Dowsing	515/1-2	Active	1	NA	Y
Owers Extension	453	Active	1	NA	Y
Shipwash	507	Active	1	NA	Y

Name of Project	Area	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation
South East Isle of Wight	340	Active	1	NA	Y
South East Isle of Wight	351	Active	1	NA	Y
South East Isle of Wight	340	Active	1	NA	Y
South East Isle of Wight	351	Active	1	NA	Y
South East Isle of Wight	351	Active	1	NA	Y
South Hastings	460	Active	1	NA	Y
South Hastings	460	Active	1	NA	Y
South Hastings	461	Active	1	NA	Y
South West Isle of Wight	127	Active	1	NA	Y
South West Isle of Wight	127/1-3	Active	1	NA	Y
South Wight	500	Active	1	NA	Y
South Wight	500	Active	1	NA	Y
Southwold East	430	Active	1	NA	Y
Southwold East	430	Active	1	NA	Y
St Catherine's	407	Active	1	NA	Y
St Catherine's	451	Active	1	NA	Y
TBC	511	Active	1	NA	Y
TBC	512	Active	1	NA	Y
TBC	242-361 & 328a	Active	1	NA	Y

Name of Project	Area	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation
TBC	254	Active	1	NA	Y
TBC	273 East	Active	1	NA	Y
TBC	328	Active	1	NA	Y
TBC	473, 474 & 475	Active	1	NA	Y
TBC	500	Active	1	NA	Y
TBC	513/1-2	Active	1	NA	Y
Thames C	523	Active	1	NA	Y
Thames D	524	Active	1	NA	Y
West Bassurelle	458	Active	1	NA	Y
West Bassurelle	464	Active	1	NA	Y
West Bassurelle	458 & 464	Active	1	NA	Y
West Bassurelle	458 & 464	Active	1	NA	Y
West Wight	522	Active	1	NA	Y
Yarmouth	401/2A	Active	1	NA	Y
Yarmouth	401/2B	Active	1	NA	Y
Hundale Potash Mine	NA	Construction	2	N	Y
Boulby Potash Mine	NA	Operational	1	N	Y

1.7. Water Abstraction

1.7.1 Water abstraction projects considered in the CEA screening process are listed in **Table 1.2**. Projects were screened in where there was potential for overlap with the proposed construction, operation and development timetable for the proposed development.

1.7.2 Data has been provided by the EA with the following notes, which apply to **Table 1.2**.

1.7.3 Information provided for current live water abstraction licences is based on that available at the time of preparation (June 2019). Timing of licence renewals and updates to the dataset may impact on the information available.

1.7.4 The maximum daily and annual authorised quantities, are the quantities that can be abstracted under the licence within the authorised period of abstraction. No account is taken of 'licence to licence' aggregate quantity conditions.

1.7.5 If the same water abstraction licence number is listed multiple times it means the licence authorises abstraction from multiple points and/or for multiple purposes.

1.7.6 Maximum authorised annual and daily quantity does not take into account any conditions which may restrict abstraction.

1.7.7 New projects have not been screened in given the uncertainties associated with progress of early stage developments. It is expected that the predicted effects of the proposed development should instead be incorporated within the baseline assessment for new peojects. No European projects were screened into the assessment due the absence of available information.

1.7.8 The screening identified 69 projects with the potential for cumulative effects. However, all developments abstracting seawater are Tier 1 (i.e. consented and operational) and form part of the existing baseline.

Table 1.5: Developments within 10km of the English coastline with permits for water abstraction in 2019 (Source: Environment Agency, 2019)

Description of Water Abstraction	Development Description	Maximum Annual Abstraction (m^3)	Maximum Daily Abstraction (m^3)
Agriculture	River Wampool, Kirkbride	18,184.0	954.7
Agriculture	Hayling Island Ferry Pontoon	441,504.0	1,209.6
Agriculture	Tidal River Axe at Bindon Manor Estate	10,273.0	513.6
Agriculture	Brixham Outer Harbour at Freshwater Quarry	65,700.0	180.0
Agriculture	Inland Water Known as Helford River at National Seal Sanctuary	130,000.0	450.0
Amenity	Inland Water Known as Plymouth Sound at Tinside Pool	10,000.0	40.0
Environmental	Abstraction Point on Oldfleet Drain	65,000.0	3,576.0
Environmental	Wherry Dyke Burgh St Peter	15,000.0	2,500.0
Environmental	Soak Dyke, Burgh St Peter	45,000.0	2,393.0
Environmental	Control Structure at Peto's Marsh	109,000.0	3,114.0
Environmental	River Rother at Rye Harbour Farm	-	-
Industrial, Commercial and Public Services	River Humber - Immingham Docks	104,560.0	6,546.4
Industrial, Commercial and Public Services	Abstraction Point 'A' off Jetty Head at Harwich Refinery	40,000.0	1,600.0
Industrial, Commercial and Public Services	River Tees Estuary - Tidal	263,832,000.0	722,828.0
Industrial, Commercial and Public Services	River Tees - Tidal Section - Billingham	35,136,000.0	96,000.0
Industrial, Commercial and Public Services	River Hull - Tidal	3,409,571.3	9,546.8

Description of Water Abstraction	Development Description	Maximum Annual Abstraction (m³)	Maximum Daily Abstraction (m³)
Industrial, Commercial and Public Services	Humber Estuary - Saltend & King George Dock - Tidal	12,697,243.7	36,005.1
Industrial, Commercial and Public Services	River Hull - Tidal	3,295,850.0	9,210.2
Industrial, Commercial and Public Services	Queen Elizabeth Dock - Tidal	250,000.0	2,500.0
Industrial, Commercial and Public Services	Humber Estuary - King George Dock - Tidal	26,280,000.0	72,000.0
Industrial, Commercial and Public Services	Humber Estuary - King George Dock - Hull - Tidal	7,884,000.0	21,600.0
Industrial, Commercial and Public Services	Port of Tyne - Tidal	40,000.0	120.0
Industrial, Commercial and Public Services	Tidal - Jarrow Wharf	15,000.0	250.0
Industrial, Commercial and Public Services	River Tyne at Ship Repairing Yard Hebburn	296,920.0	2,520.0
Industrial, Commercial and Public Services	River Tees - Tidal - Tees Dock Potash Terminal	95,557.0	261.8
Industrial, Commercial and Public Services	Seaton On Tees Channel - Tidal	14,000.0	108.0
Industrial, Commercial and Public Services	Gladstone Dock (No. 2), Bootle, Merseyside	18,386,000.0	50,400.0
Industrial, Commercial and Public Services	Brocklebank Dock, Bootle, Merseyside	39,420,000.0	108,000.0
Industrial, Commercial and Public Services	Estuary of River Wyre at Burn Naze Fleetwood Lancashire	25,457,600.0	70,008.4
Industrial, Commercial and Public Services	River Keer at Warton,Carnforth	2,836.7	141.8
Industrial, Commercial and Public Services	Heysham Harbour, Heysham	1,092,740,204.0	5,987,627.5
Industrial, Commercial and Public Services	Heysham Harbour, Heysham	1,575,425,392.0	4,309,608.0
Industrial, Commercial and Public Services	Devonshire & Buccleuch Docks at Barrow-In-Furness	2,200,000.0	43,000.0
Industrial, Commercial and Public Services	Walney Channel at The Deep Water Berth Barrow In Furness	31,822,000.0	306,855.0

Description of Water Abstraction	Development Description	Maximum Annual Abstraction (m^3)	Maximum Daily Abstraction (m^3)
Industrial, Commercial and Public Services	Walney Channel at The Deep Water Berth Barrow In Furness	18,502.2	654.6
Industrial, Commercial and Public Services	River Mersey at Birckenhead, Wirral	250,000.0	16,320.0
Industrial, Commercial and Public Services	River Mersey Dock System, Dock Road, West Float	32,000.0	150.0
Industrial, Commercial and Public Services	Canada Dock West A	50,080.0	501.0
Industrial, Commercial and Public Services	Culvert at Tidal River Wyre, Fleetwood Fish Dock, Lancashire	29,000,000.0	80,000.0
Industrial, Commercial and Public Services	River Medway at Foster Yeoman	35,420.0	220.0
Industrial, Commercial and Public Services	Shoreham Harbour	180,000,000.0	500,000.0
Industrial, Commercial and Public Services	Canal Basin (Shoreham Harbour)	65,000.0	250.0
Industrial, Commercial and Public Services	River Arun Estuary - Tidal	39,277.4	163.7
Industrial, Commercial and Public Services	Shoreham Power Station	260,000,000.0	710,000.0
Industrial, Commercial and Public Services	Point A River Itchen Empress Dock Southampton	236,000.0	3,888.0
Industrial, Commercial and Public Services	Esso Refinery, Fawley	193,000,000.0	528,770.0
Industrial, Commercial and Public Services	Marchwood Incinerator	28,908,000.0	79,200.0
Industrial, Commercial and Public Services	Tidal Reaches of the River Test (Southampton Water)	473,040,000.0	1,296,000.0
Industrial, Commercial and Public Services	Portsmouth Harbour at Portsmouth Commercial Port	128,772.0	635.0
Industrial, Commercial and Public Services	Gunwharf Quays, Portsmouth	36,500.0	100.0
Industrial, Commercial and Public Services	River Teign	60,000.0	1,472.9
Industrial, Commercial and Public Services	Brixham Outer Harbour at Freshwater Quarry	40,320.0	308.0

Description of Water Abstraction	Development Description	Maximum Annual Abstraction (m³)	Maximum Daily Abstraction (m³)
Industrial, Commercial and Public Services	Inland Water Known as Hamoaze - Point A	3,180,000.0	36,000.0
Industrial, Commercial and Public Services	Inland Water Known as Hamoaze at Devonport Royal Dockyard	5,510,424.0	68,304.0
Industrial, Commercial and Public Services	Restormel Estates Ltd - Tidal River Fowey	1,227,440.0	3,364.0
Industrial, Commercial and Public Services	River Teign at Teignmouth Docks	43,800.0	120.0
Industrial, Commercial and Public Services	Mount Wise Swimming Pools, River Tamar, Plymouth	3,120.0	480.0
Industrial, Commercial and Public Services	Kenwith Pumping Station on the River Torridge	55,000.0	24,000.0
Production of Energy	River Humber - N. Killingholme	29,300,000.0	80,000.0
Production of Energy	River Humber - N. Killingholme	14,643,600.0	40,013.0
Production of Energy	River Humber-Pt 'A' Stallingborough Cleethorpes	869,616,000.0	2,376,000.0
Production of Energy	Tidal River Yare, South Denes Road, Gt Yarmouth	293,284,800.0	803,520.0
Production of Energy	Seaton on Tees Channel - Tidal	1,098,981,800.0	3,010,900.0
Production of Energy	Cavendish Dock, Barrow-In-Furness	127,344,370.0	380,227.0
Production of Energy	Point A, Tidal River Medway at Isle of Grain	23,652,000.0	64,800.0
Production of Energy	Point 1, River Medway in Hoo.	1,822,946,000.0	5,546,120.0
Production of Energy	River Medway Nr.Horseshoe Point on Isle Of Grain.	2,050,246,000.0	6,364,400.0
Water Supply	River Hull - Tidal - Kingston Upon Hull	90,920.0	863.7
Water Supply	River Hull Adjacent to Bransholme Reservoir - Tidal	150,000.0	28,512.0

1.8. Nuclear Power

1.8.1 European nuclear power developments in Tiers 1-4 within the zones of influence were considered for potential overlap with construction, operation and decommissioning at the proposed development (**Table 1.3**). Developments within Tier 5 were not considered; given the uncertainties associated with progress of early stage developments. It is expected that the predicted effects of the proposed development should instead be incorporated within the baseline assessment for Tier 5 assessments.

1.8.2 The screening identified eight nuclear power developments with the potential for cumulative effects on marine ecology receptors. Of these, one (Hinkley C) has the potential for overlap with the construction phase and eight with the operational phase.

Table 1.6: CEA screening output for European nuclear power developments where there is potential for impacts to overlap with Sizewell C construction and operation phases. Y = yes; N = no

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Torness	UK	Operational	1	N	N
Hartlepool	UK	Operational	1	N	N
Sizewell B	UK	Operational	1	N	Y
Bradwell B	UK	Pre-Application	5	N	N
Dungeness B	UK	Operational	1	N	N
Hunterston B	UK	Operational	1	N	N
Heysham 1	UK	Operational	1	N	N
Heysham 2	UK	Operational	1	N	N
Hinkley B	UK	Operational	1	N	N
Hinkley C	UK	Construction	2	N	Y
Wylfa Newydd	UK	Application submitted	4	N	N
Flamanville (1-2)	France	Operational	1	N	N
Flamanville (3)	France	Construction	2	N	Y
Gravelines	France	Operational	1	N	N
Penly	France	Operational	1	N	N
Paluel	France	Operational	1	N	N

Name of Project	Country	Status	Tier	Phase of Plan Screened into CEA	
				Construction	Operation and Maintenance
Borssele	Netherlands	Operational	1	N	N
Unterweser	Germany	Decommissioning	NA	N	N
Brokdorf	Germany	Operational	1	N	N
Brunsbüttel	Germany	Decommissioning	NA	N	N

Appendix 4C.2: Alternative Assessments of Disturbance to Marine Mammals During Piling

Table 1.1: CEA for the potential disturbance of harbour porpoise during single piling of marine developments based on developments which could be piling at the same timewith possible temporal ovelap with the BLF ats Sizewell C (East Anglia Three example).

Project	Tier	Distance to Sizewell C	SCANS-III Survey Block	SCANS-III Density Estimate (No./km^2)	Potential Number of Harbour Porpoise Disturbed During Single Piling Event
Sizewell C	4	N/A	L	0.607	62.05
Hornsea Project Two	3	179km	O	0.888	1,886.11
Dogger Bank Creyke Beck A	3	272km	O	0.888	1,886.11
Dogger Bank Teeside A	3	311km	O	0.888	1,886.11
East Anglia Three	3	84km	L	0.607	1,289.26
Thanet Extension	4	83km	L	0.607	1,289.26
Hornsea Project Three	4	181km	O	0.888	1,886.11
Total					**10,185.01**
% of North Sea Management Unit reference population (345,373 individuals)					**2.95%**

Table 1.2: CEA for the potential disturbance of grey and harbour seals during single piling piling of marine developments based on developments which could be piling at the same timewith possible temporal ovelap with the BLF ats Sizewell C (East Anglia Three example).

Project	Tier	Distance to the Proposed Development	Grey Seal Density Estimate (No/km^2)[1]	Harbour Seal Density Estimate (No/km^2)[1]	Potential Number of Grey Seals Disturbed.	Potential Number of Harbour Seals Disturbed.
Sizewell C	4	0	0.046	0.053	0.49	0.56
Hornsea Project 2	3	179km	0.08	0.008	169.92	16.99
Dogger Bank Creyke Beck A	3	272km	0.05	0.0004	106.20	0.85
Dogger Bank Teeside A	3	311km	0.09	0.001	191.16	2.12
East Anglia Three	3	84km	0.00009	0.00009	0.19	0.19
Thanet Extension	4	83km	0.002	0.06	4.25	127.44
Hornsea Project 3	4	181km	0.08	0.008	169.92	16.99
Total					**642.13**	**165.14**
% of Management Unit (19,372 grey seals; 4,965 harbour seals).					**3.31%**	**3.33%**

Table 1.3: Spatial area and percentage of the whole Southern North Sea SAC exposed to disturbance events from consecutive piling activities. Projects in bold are assessed for worst-case temporal overlap. To note: conservation objectives are divided into Summer and Winter areas, as assessed, rather than the whole SAC.

OWF	Intersect area (ha)[1]	Percentage of Southern North Sea (%)[1]
Hornsea Project Two	133,607	3.62
Dogger Bank Creyke Beck A	209,154	5.66
Dogger Bank Teesside A	0	0
Thanet Extension	99,588	2.70
Hornsea Project Three	13,560	0.37
Norfolk Vanguard East[2]	188,105	5.09
Norfolk Vanguard West[2]	197,572	5.35
Norfolk Vanguard Combined[2]	327,626	8.87
East Anglia Three	203,643	5.51
Sizewell C 140 dB TTS	10,132	0.27
Total	**793,667**	**21.49**

[1] It should be noted areas are calculated based on WGS84 UTM 31N projections, however, errors between geodetic transformations are approximately 0.06% and has no bearing on the outcome of the assessment.

[2] A conservative approach assumes both Norfolk Vanguard OWFs piling concurrently.