

A358 Taunton to Southfields Dualling Scheme

Preliminary Environmental Information Report - Appendix 5.5
Air Quality Operational Phase Impacts

HE551508-ARP-EAQ-ZZ-RP-LA-000010

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1 Operational phase impacts

1.1 Ecological receptor results

1.1.1 The modelled results showing the total, and change in, nitrogen deposition at all sites as a result of the scheme are provided in Table 1-1 for the baseline year (2019), and the opening year (2023) 'Do-Minimum' (DM) and 'Do-Something' (DS) scenarios.

Table 1-1 Annual mean nutrient nitrogen (N) deposition

Receptor ID	Site name	Critical load	Nitrogen deposition (kg N ha ⁻¹ yr ⁻¹)				
			Baseline	2023 DM	2023 DS	Change (DS-DM)	% change against lowest critical load
1.0	Ruttersleigh	10-15	22.1	22.1	22.0	-0.1	-1.0
1.1	Ruttersleigh	10-15	21.7	21.8	21.8	0.0	0.0
3.0	Killerton	10-20	34.4	34.6	34.6	0.0	0.0
4.0	Deadman	10-15	22.3	22.4	22.2	-0.2	-2.0
6.0	Maiden Down	10-20	26.2	26.3	26.4	0.1	1.0
6_T1		10-20	26.0	26.1	26.1	0.0	0.0
6_T2		10-20	25.8	26.0	26.0	0.0	0.0
6_T3		10-20	25.7	25.9	25.9	0.0	0.0
6_T4		10-20	25.7	25.8	25.8	0.0	0.0
6_T5		10-20	25.6	25.8	25.8	0.0	0.0
6_T6		10-20	25.6	25.7	25.7	0.0	0.0
6_T7		10-20	25.5	25.7	25.7	0.0	0.0
6_T8		10-20	25.5	25.6	25.6	0.0	0.0
6_T9		10-20	25.5	25.6	25.6	0.0	0.0
6_T10		10-20	25.4	25.6	25.6	0.0	0.0
6_T11		10-20	25.4	25.5	25.6	0.1	1.0
6_T12		10-20	25.4	25.5	25.5	0.0	0.0
6_T13		10-20	25.4	25.5	25.5	0.0	0.0
6_T14		10-20	25.4	25.5	25.5	0.0	0.0
6_T15	10-20	25.3	25.5	25.5	0.0	0.0	
7.0	Huntspill River	10-15	29.0	29.2	29.4	0.2	2.0
7_T1		10-15	28.2	28.4	28.5	0.1	1.0
7_T2		10-15	27.9	28.0	28.1	0.1	1.0
7_T3		10-15	28.7	29.0	29.1	0.1	1.0
7_T4		10-15	28.4	28.8	28.8	0.0	0.0
7_T5		10-15	28.2	28.6	28.6	0.0	0.0
7_T6		10-15	28.0	28.4	28.5	0.1	1.0
7_T7		10-15	27.9	28.3	28.3	0.0	0.0
7_T8	10-15	27.8	28.1	28.2	0.1	1.0	

Receptor ID	Site name	Critical load	Nitrogen deposition (kg N ha ⁻¹ yr ⁻¹)				
			Baseline	2023 DM	2023 DS	Change (DS-DM)	% change against lowest critical load
7_T9		10-15	27.7	28.0	28.1	0.1	1.0
7_T10		10-15	27.6	28.0	28.0	0.0	0.0
7_T11		10-15	27.5	27.9	27.9	0.0	0.0
7_T12		10-15	27.5	27.8	27.9	0.1	1.0
7_T13		10-15	27.4	27.8	27.8	0.0	0.0
7_T14		10-15	27.4	27.7	27.8	0.1	1.0
7_T15		10-15	27.3	27.7	27.7	0.0	0.0
7_T16		10-15	27.3	27.7	27.7	0.0	0.0
7_T17		10-15	27.3	27.6	27.6	0.0	0.0
8.0	Children's Wood/Riverside Park	10-15	26.7	26.9	27.3	0.4	4.0
8_T1		10-15	24.4	24.6	24.8	0.2	2.0
8_T2		10-15	23.7	23.8	24.0	0.2	2.0
8_T3		10-15	23.3	23.5	23.6	0.1	1.0
8_T4		10-15	23.1	23.2	23.3	0.1	1.0
8_T5		10-15	22.9	23.1	23.2	0.1	1.0
8_T6		10-15	22.8	23.0	23.0	0.0	0.0
8_T7		10-15	22.7	22.9	22.9	0.0	0.0
8_T8		10-15	22.6	22.8	22.8	0.0	0.0
8_T9	10-15	22.5	22.7	22.8	0.1	1.0	
8.1	Children's Wood/Riverside Park	10-15	26.0	26.3	26.6	0.3	3.0
8.1_T1		10-15	25.9	26.2	26.4	0.2	2.0
8.1_T2		10-15	25.7	26.0	26.3	0.3	3.0
8.1_T3		10-15	23.6	23.8	23.9	0.1	1.0
8.1_T4		10-15	23.6	23.7	23.8	0.1	1.0
8.1_T5		10-15	23.6	23.7	23.8	0.1	1.0
8.1_T6		10-15	23.5	23.7	23.8	0.1	1.0
8.1_T7		10-15	23.5	23.7	23.8	0.1	1.0
8.1_T8		10-15	23.5	23.7	23.8	0.1	1.0
8.1_T9		10-15	23.4	23.7	23.7	0.0	0.0
8.1_T10	10-15	23.4	23.6	23.7	0.1	1.0	
8.2	Children's Wood/Riverside Park	10-15	23.9	24.0	24.2	0.2	2.0
8.2_T1		10-15	23.1	23.2	23.3	0.1	1.0
8.2_T2		10-15	22.8	22.9	23.0	0.1	1.0
8.2_T3		10-15	22.6	22.7	22.8	0.1	1.0
8.2_T4		10-15	22.5	22.6	22.7	0.1	1.0
8.2_T5		10-15	22.4	22.6	22.6	0.0	0.0
8.2_T6	10-15	22.3	22.5	22.5	0.0	0.0	

Receptor ID	Site name	Critical load	Nitrogen deposition (kg N ha ⁻¹ yr ⁻¹)				
			Baseline	2023 DM	2023 DS	Change (DS-DM)	% change against lowest critical load
9.0	Grand Western Canal Country Park	10-15	30.2	30.2	30.3	0.1	1.0
9_T1		10-15	29.6	29.7	29.7	0.0	0.0
9_T2		10-15	29.4	29.4	29.5	0.1	1.0
9_T3		10-15	29.3	29.3	29.4	0.1	1.0
9_T4		10-20	29.2	29.2	29.3	0.1	1.0
9_T5		10-20	29.1	29.2	29.2	0.0	0.0
9_T6		10-20	29.5	29.6	29.7	0.1	1.0
9_T7		10-20	29.4	29.5	29.6	0.1	1.0
9_T8		10-20	29.3	29.5	29.5	0.0	0.0
9_T9		10-20	29.3	29.4	29.4	0.0	0.0
9_T10		10-20	29.2	29.4	29.4	0.0	0.0
9_T11		10-20	29.2	29.3	29.3	0.0	0.0
9_T12		10-20	29.2	29.3	29.3	0.0	0.0
9_T13		10-20	29.1	29.2	29.3	0.1	1.0
9_T14		10-20	29.1	29.2	29.2	0.0	0.0
9_T15		10-20	29.1	29.2	29.2	0.0	0.0
9_T16		10-20	29.0	29.2	29.2	0.0	0.0
9_T17		10-20	29.0	29.2	29.2	0.0	0.0
9_T18	10-20	29.0	29.1	29.2	0.1	1.0	
10.0	South Taunton Streams	10-20	22.7	22.9	22.9	0.0	0.0
11.0	Screech Owl	10-20	23.0	23.3	23.4	0.1	1.0
12.0	Unnamed AW 1/2/3/4	10-20	42.4	42.4	42.6	0.2	2.0
12_T1		10-20	41.0	41.0	41.1	0.1	1.0
12_T2		10-20	40.6	40.6	40.7	0.1	1.0
12_T3		10-20	40.5	40.5	40.5	0.0	0.0
12_T4		10-20	40.4	40.4	40.4	0.0	0.0
12_T5		10-20	40.3	40.3	40.4	0.1	1.0
12_T6		10-20	40.3	40.3	40.3	0.0	0.0
12_T7		10-20	40.2	40.3	40.3	0.0	0.0
12_T8		10-20	40.2	40.2	40.3	0.1	1.0
12_T9		10-20	40.2	40.2	40.2	0.0	0.0
12_T10		10-20	40.2	40.2	40.2	0.0	0.0
12_T11		10-20	40.2	40.2	40.2	0.0	0.0
12_T12		10-20	40.2	40.2	40.2	0.0	0.0
12_T13		10-20	40.1	40.2	40.2	0.0	0.0
12_T14		10-20	40.1	40.2	40.2	0.0	0.0
12_T15	10-20	40.1	40.1	40.2	0.1	1.0	

Receptor ID	Site name	Critical load	Nitrogen deposition (kg N ha ⁻¹ yr ⁻¹)				
			Baseline	2023 DM	2023 DS	Change (DS-DM)	% change against lowest critical load
12_T16		10-20	40.1	40.1	40.1	0.0	0.0
12_T17		10-20	40.1	40.1	40.1	0.0	0.0
12_T18		10-20	40.1	40.1	40.1	0.0	0.0
12_T19		10-20	40.1	40.1	40.1	0.0	0.0
12_T20		10-20	40.1	40.1	40.1	0.0	0.0
13.0	Unnamed AW 5	10-20	41.8	41.8	41.9	0.1	1.0
13_T1		10-20	40.8	40.8	40.9	0.1	1.0
13_T2		10-20	40.5	40.6	40.6	0.0	0.0
13_T3		10-20	40.4	40.4	40.5	0.1	1.0
13_T4		10-20	40.3	40.4	40.4	0.0	0.0
13_T5		10-20	40.3	40.3	40.3	0.0	0.0
13_T6		10-20	40.3	40.3	40.3	0.0	0.0
13_T7		10-20	40.2	40.3	40.3	0.0	0.0
13_T8		10-20	40.2	40.2	40.3	0.1	1.0
13_T9		10-20	40.2	40.2	40.2	0.0	0.0
13_T10		10-20	40.2	40.2	40.2	0.0	0.0
13_T11		10-20	40.2	40.2	40.2	0.0	0.0
13_T12		10-20	40.1	40.2	40.2	0.0	0.0
13_T13		10-20	40.1	40.2	40.2	0.0	0.0
13_T14		10-20	40.1	40.2	40.2	0.0	0.0
13_T15		10-20	40.1	40.1	40.2	0.1	1.0
13_T16		10-20	40.1	40.1	40.1	0.0	0.0
13_T17		10-20	40.1	40.1	40.1	0.0	0.0
13_T18		10-20	40.1	40.1	40.1	0.0	0.0
13_T19	10-20	40.1	40.1	40.1	0.0	0.0	
14.0	Unnamed AW 6	10-20	39.2	39.2	39.3	0.1	1.0
15.0	Bickenhall Wood	10-20	42.4	42.3	42.8	0.5	5.0
15_T1		10-20	41.9	41.8	42.3	0.5	5.0
15_T2		10-20	41.6	41.6	42.0	0.4	4.0
15_T3		10-20	41.4	41.5	41.8	0.3	3.0
15_T4		10-20	41.3	41.4	41.7	0.3	3.0
15_T5		10-20	41.2	41.3	41.6	0.3	3.0
15_T6		10-20	41.2	41.2	41.5	0.3	3.0
15_T7		10-20	41.1	41.2	41.4	0.2	2.0
15_T8		10-20	41.1	41.1	41.3	0.2	2.0
15_T9		10-20	41.0	41.1	41.3	0.2	2.0
15_T10		10-20	41.0	41.1	41.2	0.1	1.0

Receptor ID	Site name	Critical load	Nitrogen deposition (kg N ha ⁻¹ yr ⁻¹)				
			Baseline	2023 DM	2023 DS	Change (DS-DM)	% change against lowest critical load
15_T11		10-20	41.0	41.0	41.2	0.2	2.0
15_T12		10-20	40.9	41.0	41.2	0.2	2.0
15_T13		10-20	40.9	41.0	41.1	0.1	1.0
15_T14		10-20	40.9	41.0	41.1	0.1	1.0
15_T15		10-20	40.9	40.9	40.9	0.0	0.0
15_T16		10-20	40.9	40.9	40.9	0.0	0.0
15_T17		10-20	40.8	40.9	40.9	0.0	0.0
15_T18		10-20	40.8	40.9	40.9	0.0	0.0
16.0	Helliars Copse	10-20	44.6	44.7	44.7	0.0	0.0
17.0	Higher Ash/Long Woods	10-20	41.7	42.0	42.1	0.1	1.0
17_T1		10-20	41.4	41.6	41.7	0.1	1.0
17_T2		10-20	41.2	41.4	41.5	0.1	1.0
17_T3		10-20	41.0	41.3	41.3	0.0	0.0
17_T4		10-20	40.9	41.2	41.2	0.0	0.0
17_T5		10-20	40.8	41.1	41.1	0.0	0.0
17_T6		10-20	40.7	41.0	41.0	0.0	0.0
17_T7		10-20	40.6	40.9	40.9	0.0	0.0
17_T8		10-20	40.6	40.8	40.9	0.1	1.0
17_T9		10-20	40.5	40.8	40.8	0.0	0.0
17_T10		10-20	40.5	40.7	40.8	0.1	1.0
17_T11		10-20	40.4	40.7	40.7	0.0	0.0
17_T12		10-20	40.4	40.7	40.7	0.0	0.0
17_T13		10-20	40.4	40.6	40.7	0.1	1.0
17_T14		10-20	40.3	40.6	40.6	0.0	0.0
17_T15		10-20	40.3	40.6	40.6	0.0	0.0
17_T16	10-20	40.3	40.6	40.6	0.0	0.0	
18.0	Knights Wood	10-20	48.4	48.7	48.8	0.1	1.0
18_T1		10-20	47.9	48.2	48.2	0.0	0.0
18_T2		10-20	47.6	47.9	47.9	0.0	0.0
18_T3		10-20	47.4	47.7	47.7	0.0	0.0
18_T4		10-20	47.3	47.6	47.6	0.0	0.0
18_T5		10-20	47.2	47.4	47.5	0.1	1.0
18_T6		10-20	47.1	47.3	47.4	0.1	1.0
18_T7		10-20	47.0	47.3	47.3	0.0	0.0
18_T8		10-20	47.0	47.2	47.2	0.0	0.0
18_T9		10-20	46.9	47.1	47.2	0.1	1.0
18_T10	10-20	46.9	47.1	47.1	0.0	0.0	

Receptor ID	Site name	Critical load	Nitrogen deposition (kg N ha ⁻¹ yr ⁻¹)				
			Baseline	2023 DM	2023 DS	Change (DS-DM)	% change against lowest critical load
18_T11		10-20	46.8	47.1	47.1	0.0	0.0
18_T12		10-20	46.8	47.0	47.0	0.0	0.0
18_T13		10-20	46.8	47.0	47.0	0.0	0.0
18_T14		10-20	46.7	47.0	47.0	0.0	0.0
18_T15		10-20	46.7	46.9	47.0	0.1	1.0
18_T16		10-20	46.7	46.9	46.9	0.0	0.0
18_T17		10-20	46.7	46.9	46.9	0.0	0.0
19.0	Line Wood	10-20	37.2	37.2	37.2	0.0	0.0
20.0	Parsonage Wood	10-20	36.2	36.2	36.2	0.0	0.0
21.0	Parsons Steeple	10-20	37.7	37.7	37.7	0.0	0.0
22.0	Staple Park Wood	10-20	35.1	35.2	35.2	0.0	0.0
23.0	Warren Hill	10-20	42.7	42.8	42.8	0.0	0.0

1.2 Human receptor results

1.2.1 The modelled NO₂ concentrations and predicted change in concentrations are presented in Table 1-2.

Table 1-2 Annual mean NO₂ concentrations

Receptor ID	Grid reference		Reference map sheet	Base NO ₂ (2019) (µg/m ³)	NO ₂ annual mean concentration 2023 (µg/m ³)		
	X	Y			DM (µg/m ³)	DS (µg/m ³)	Change (µg/m ³)
1	323375	122036	Sheet 2	14.2	13.2	13.5	0.3
2	323578	122330	Sheet 2	14.3	13.2	13.6	0.4
3	324138	122337	Sheet 2	10.4	9.3	9.0	-0.3
4	328844	122092	Sheet 4	10.8	9.8	13.2	3.4
5	326852	124103	Sheet 3	36.3	33.1	12.4	-20.7
6	327718	127589	Sheet 3	20.2	18.8	19.3	0.5
8	330307	118772	Sheet 5	9.5	8.6	13.0	4.4
9	331473	118120	Sheet 5	6.1	5.5	6.1	0.6
10	326515	124298	Sheet 3	22.8	20.8	11.1	-9.7
12	330520	118563	Sheet 5	18.7	17.1	12.6	-4.5
13	322366	121395	Sheet 2	14.5	13.4	13.7	0.3
14	331248	118008	Sheet 5	8.3	7.5	8.7	1.2
15	343010	115990	Sheet 8/ Sheet 4	11.0	9.5	10.2	0.7
16	326900	115509	Sheet 5	8.2	7.7	6.4	-1.3
17	333808	114100	Sheet 7	13.3	12.0	13.6	1.6

Receptor ID	Grid reference		Reference map sheet	Base NO ₂ (2019) (µg/m ³)	NO ₂ annual mean concentration 2023 (µg/m ³)		
	X	Y			DM (µg/m ³)	DS (µg/m ³)	Change (µg/m ³)
18	326975	123651	Sheet 4	6.9	6.1	9.9	3.8
19	327930	123276	Sheet 4	21.2	19.6	13.9	-5.7
20	324438	123017	Sheet 2	15.5	14.4	14.7	0.3
21	324483	122911	Sheet 2	13.5	12.5	12.8	0.3
22	325728	124729	Sheet 3	17.7	16.0	16.7	0.7
23	326962	124036	Sheet 3	17.0	15.4	10.1	-5.3
24	328607	122816	Sheet 4	14.6	13.5	10.1	-3.4
25	333578	115167	Sheet 7	10.3	9.2	10.3	1.1
26	352349	116016	Sheet 26	-	11.6	11.8	0.2
27	326428	118312	Sheet 5	6.4	5.7	4.9	-0.8
28	323950	122621	Sheet 2	15.3	14.1	14.1	0.0
29	317662	120083	Sheet 2	16.6	15.3	15.8	0.5
30	349729	120428	Sheet 9	13.0	12.0	12.5	0.5
31	330320	133701	Sheet 11	14.5	13.3	13.6	0.3
32	330238	134390	Sheet 11	22.1	18.8	19.1	0.3
33	324968	125484	Sheet 3	22.9	21.3	23.0	1.7
34	327556	123760	Sheet 4	12.9	11.6	8.0	-3.6
35	328211	123022	Sheet 4	16.3	15.0	10.0	-5.0
37	331649	117914	Sheet 5	8.9	7.9	10.6	2.7
38	333221	116696	Sheet 7	9.2	8.4	11.5	3.1
39	332842	108795	Sheet 6	18.4	16.8	19.5	2.7
40	349443	125943	Sheet 10	11.4	10.9	10.3	-0.6
41	302890	107483	Sheet 1	17.5	15.8	15.9	0.1
42	326552	126105	Sheet 3	20.0	18.6	19.1	0.5
43	334317	115274	Sheet 7	23.9	22.2	24.5	2.3
44	323271	124555	Sheet 3	30.9	27.6	28.5	0.9

Notes: “-“ Base traffic data was not available for the road link adjacent to this receptor.

1.3 Compliance risk assessment results

1.3.1 The modelled NO₂ concentrations and change in concentrations at qualifying features are presented in Table 1-3.

Table 1-3 Compliance risk annual mean NO₂ concentrations

Receptor ID ^a	Grid reference		Base NO ₂ (2019) (µg/m ³)	NO ₂ annual mean concentration 2023 (µg/m ³)		
	X	Y		DM (µg/m ³)	DS (µg/m ³)	Change (µg/m ³)
1_QF	296838	92509	24.1	22.7	23.0	0.3
1_4m	296856	92510	31.3	30.3	30.9	0.6
2_QF	324807	125585	22.5	21.3	22.2	0.9
2_4m	324813	125578	28.7	27.4	28.9	1.5
3_QF	323485	125069	28.7	31.0	31.9	0.9
3_4m	323487	125066	33.7	37.2	38.3	1.2
4_QF	323642	125071	37.7	35.0	35.9	1.0
4_4m	323643	125072	34.9	32.3	33.2	0.9
5_QF	323784	125266	25.0	23.6	24.6	1.0
5_4m	323789	125265	29.5	28.1	29.5	1.4
6_QF	325226	125496	30.5	28.4	30.0	1.6
6_4m	325217	125486	36.8	34.4	36.5	2.2
7_QF	330371	135445	17.9	16.2	16.2	0.0
7_4m	330376	135445	21.8	20.1	20.1	0.0
8_QF	332994	135445	18.0	16.6	16.6	0.0
8_4m	332999	109630	14.7	13.7	13.7	0.0
9_QF	333219	109630	12.3	11.4	11.4	0.0
9_4m	333219	108724	12.7	11.7	11.7	0.0