

A38 Derby Junctions
TR010022
Volume 6

6.3 Environmental Statement
Appendices

Appendix 5.1: Air Quality Monitoring
Data

Regulation 5(2)(a)

Planning Act 2008

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

April 2019

Infrastructure Planning

Planning Act 2008

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

A38 Derby Junctions Development Consent Order 202[]

6.3 Environmental Statement Appendices Appendix 5.1: Air Quality Monitoring Data

Regulation Number	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010022
Application Document Reference	6.3
Author	A38 Derby Junctions Project Team, Highways England

Version	Date	Status of Version
1	April 2019	DCO Application

Table of contents

1	Air Quality Monitoring Data	1
----------	--	----------

List of Tables

Table 1: Measured NO ₂ at St Alkmund's automatic site in 2017	1
Table 2: DCiC NO ₂ monitoring results for sites in operation in 2017 (data for 2013 – 2017)	1
Table 3: DCiC NO ₂ monitoring results for model verification sites	3
Table 4: SDDC NO ₂ monitoring results	4
Table 5: Highways England diffusion tube NO ₂ monitoring results	5
Table 6: Comparison of mapped and measured annual mean NO ₂ concentrations	6

Appendix 5.1: Air Quality Monitoring Data

1. Air quality monitoring data

1.1.1 Derby City Council (DCiC) has an automatic monitoring site adjacent to Bass Recreation Ground alongside the inner ring road, A601 St Alkmund's Way (OS Grid Ref 435763, 336306), between Holms Bridge and The Cock Pitt. It started operating in 2017 and is part of Defra's AURN network and measures nitrogen dioxide (NO₂) only.

1.1.2 The results from the first year of monitoring are reported in Table 1.

Table 1: Measured NO₂ at St Alkmund's automatic site in 2017

Averaging period	Statistic
Annual mean (µg/m ³)	36.9
Number of 1 hour means exceeding 200µg/m ³	0

1.1.3 DCiC has carried out passive sampling of NO₂ concentrations using diffusion tubes over many years. In 2017, monitoring was carried out at 74 locations (including triplicate tubes at one location). The results for the diffusion tubes sites in operation in 2017 are shown in Table 2 for the period 2013 - 2017. The locations of these sites are shown in Figure 5.5a to 5.5f [TR010022/APP/6.2].

Table 2: DCiC NO₂ monitoring results for sites in operation in 2017 (data for 2013 – 2017)

2017 ID	Site name	OS grid ref		Site type	Annual mean (µg/m ³)				
		X	Y		2013	2014	2015	2016	2017
DT1	23 Gilbert Close	439776	335696	R	30	27	30	29	27
DT2	10 Kirkleys Ave North	440206	335650	R	29	29	28	29	29
DT3	27 Kirkleys Ave South	440198	335611	R	28	25	25	26	25
DT4	24 Nottingham	439899	335348	R	38	39	36	38	37
DT5	1 Station Road	439793	335415	R	37	29	27	31	36
DT6	23 Leeway	439616	335547	R	31	29	28	28	31
DT7	1 Drury Avenue	439851	335674	R	-	-	-	27	25
DT8	198 Derby Road	438947	335870	R	-	-	-	29	30
DT9	109 Highfield Lane	437382	336044	R	29	30	29	28	30
DT10	203/201 Nottingham Road	436700	336637	R	-	-	-	47	48
DT11	Eastgate (Pentagon)	436053	336490	R	-	-	-	47	45
DT12	Bass Recreation Ground/The Holmes	439750	336205	UB	-	-	-	36	38
DT13	16/18 Harrow Road	437196	334410	R	32	34	30	30	32
DT14	713 London Road	437090	334432	R	27	23	23	27	25
DT15	938 London Road	437676	334090	R	-	-	-	44	44
DT16	1178 London Road	438162	333654	R	-	-	-	35	35
DT17	7 Raynesway	438534	333509	R	-	-	-	31	32

2017 ID	Site name	OS grid ref		Site type	Annual mean ($\mu\text{g}/\text{m}^3$)				
		X	Y		2013	2014	2015	2016	2017
DT18	772 Osmaston Road	436836	332961	R	-	-	-	27	24
DT19	831 Osmaston Road	436992	332713	R	28	27	26	26	26
DT20	113 Chellaston Road	437175	332111	R	-	-	-	27	23
DT21	376 Osmaston Park Road	436869	332783	R	-	-	-	25	22
DT22	523 Osmaston Park Road	436809	332824	K	-	-	-	27	27
DT23	104 Osmaston Park Road	435715	333324	R	-	-	-	43	36
DT24	32 Newdigate Street	435091	333526	R	39	37	34	41	38
DT25	80 Newdigate Street	435023	333583	R	50	47	50	41	36
DT26	Warwick Ave CMS	433680	334536	K	49	48	47	47	32
DT27	Warwick Ave CMS	433680	334536	K	49	46	44	47	33
DT28	Warwick Ave CMS	433680	334536	K	47	46	43	48	30
DT29	2a Lime Walk	433688	334507	R	-	-	-	27	25
DT30	430 Uttoxeter New Road	433076	335299	R	-	-	-	27	24
DT31	431 Uttoxeter New Road	433189	335326	R	-	-	-	31	48
DT32	266 Uttoxeter New Road	433788	335775	R	43	43	39	41	40
DT33	150 Radbourne Street	433119	336651	R	32	29	28	31	28
DT34	Kingsway/A38	433173	336738	R	-	-	-	60	62
DT35	199 Uttoxeter New Road	433887	335804	R	-	-	-	32	35
DT36	59a Stafford Street	434688	336155	R	-	-	-	37	36
DT37	4 Dunkirk	434773	335977	R	29	25	23	26	27
DT38	Wilson Street West	434900	335846	R	25	22	21	23	23
DT39	201 Abbey Street	434849	335650	R	-	-	-	33	29
DT40	315 Burton Road	434279	334921	R	-	-	-	29	28
DT41	220 Burton Road	434784	335241	R	-	-	-	31	33
DT42	114a Burton Road	435026	335509	R	-	-	-	33	32
DT43	131 Green Lane	435198	335761	R	-	-	-	28	25
DT44	57 Normanton Road	435198	335537	R	-	-	-	38	33
DT45	29 Ivy Square off Osmaston Road	436045	334869	R	35	37	32	33	34
DT46	114 Osmaston Road	435536	335469	R	-	-	-	34	37
DT47	Bradshaw Way	435570	335672	K	-	-	-	36	35
DT48	London Road/Westfield	435484	335813	K	-	-	-	37	39
DT49	59 Osmaston Road	435439	335717	R	35	37	31	33	31
DT50	Royal Telegraph Pub	435653	335706	R	42	43	39	39	38
DT51	176 Siddals Road	436008	335943	R	-	-	-	30	28
DT52	123 Nottingham Road	435796	336624	R	38	37	33	32	32
DT53	63 Nottingham Road	435586	336642	R	-	-	-	30	33
DT54	14 Mansfield Road	435439	336817	R	33	31	30	30	31
DT55	171 Mansfield Road	435608	337435	R	-	-	-	29	27

2017 ID	Site name	OS grid ref		Site type	Annual mean ($\mu\text{g}/\text{m}^3$)				
		X	Y		2013	2014	2015	2016	2017
DT56	St Marys Court	435203	336779	R	35	33	32	41	40
DT57	St Alkmunds Way	435250	336774	K	-	-	-	54	41
DT58	171/182 Cavendish Court	434820	336505	R	27	27	27	28	26
DT59	Stafford Street Burleigh Mews Flats	434750	336352	R	-	-	-	51	48
DT60	189/191 Ashbourne Road	433633	336850	R	-	-	-	42	43
DT61	148 Ashbourne Road	433796	336786	R	33	29	32	31	29
DT62	Millgate, Ashbourne Road	434276	336576	R	-	-	-	35	33
DT63	Friargate/Bridge Street corner	434497	336510	R	42	35	36	39	33
DT64	Bridge Street/Agard Street	434530	336577	R	33	36	34	33	31
DT65	8/10 Agard Street	434713	336491	R	-	-	-	35	35
DT66	69 King Street	435013	336734	R	-	-	-	26	25
DT67	26/24a Penny Long Lane	434364	337881	UB	-	-	-	17	16
DT68	Duffield Road (55 West Avenue)	434819	337072	R	38	38	36	35	36
DT69	8 Kedleston Road (Chiropodist)	434777	337086	R	34	34	31	31	31
DT70	Duffield Road/North Street	434814	337041	R	36	34	35	33	26
DT71	5 Duffield Road	434937	336916	R	-	-	-	35	29
DT72	14 The Strand	435131	336256	R	-	-	-	32	29
DT73	Victoria Street/Corn Market	435262	336157	R	29	31	27	26	26
DT74	Morledge	435539	336147	R	-	-	-	41	36
DT75	25 Morledge	435477	336176	R	40	37	38	39	38
DT76	Council House	435496	336294	UC	-	-	-	27	29

Exceedances of the annual mean objective and limit value at $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

R= roadside, K= kerbside, UB= urban background, UC= urban centre

1.1.4 At the end of 2015, the sites used in the DCiC survey were changed. As the baseline year for the assessment is 2015, measured concentrations in 2015 have been used to verify the model results. The monitoring sites used in the verification are shown in Table 3 together with the concentrations measured over the period 2013 - 2015. Only three of the sites that were used in the verification continued to be in operation after 2015.

Table 3: DCiC NO₂ monitoring results for model verification sites

2015 ID	2017 ID	Site name	OS grid ref		Site type	Annual mean ($\mu\text{g}/\text{m}^3$)		
			X	Y		2013	2014	2015
DV34	-	St Albans Road	433225	335127	R	32	30	29
DV35	-	457 Uttoxeter New Road	433003	335212	K	67	62	59
DV36	-	404 Uttoxeter New Road	433247	335420	R	29	30	29
DV37	-	226 Uttoxeter New Road	433785	335778	R	43	43	39

2015 ID	2017 ID	Site name	OS grid ref		Site type	Annual mean ($\mu\text{g}/\text{m}^3$)		
			X	Y		2013	2014	2015
DV38	DT33	150 Radbourne Street	433119	336650	R	32	29	28
DV39	-	15 Thurcroft Close	433083	336608	R	32	29	28
DV40	-	179 Uttoxeter New Road	433943	335829	R	43	43	39
DV41	-	Kensington Street	434733	336112	K	29	26	25
DV42	-	59a Stafford Street	434691	336159	R	41	44	40
DV62	DT50	Royal Telegraph Pub, London Rd	435652	335710	R	42	43	39
DV78	-	Friargate/Ashbourne Road	434386	336520	R	38	37	38
DV80	DT63	Friargate/Bridge Street Corner	434500	336510	R	42	35	36
DV87	-	Friary Street	434744	336245	R	35	35	31

Exceedances of the annual mean objective and limit value at $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

R= roadside, K= kerbside

- 1.1.5 South Derbyshire District Council (SDDC) has one NO_2 diffusion tube site within the local air quality study area. This is located next to the A38, south of the Scheme. The NO_2 monitoring results are shown in Table 4.

Table 4: SDDC NO_2 monitoring results

Site ID	Site Name	OS Grid Ref		Site Type	Annual mean ($\mu\text{g}/\text{m}^3$)				
		X	Y		2013	2014	2015	2016	2017
SDDC1	Findern Lane, Burnaston	430056	331100	R	30.6	25.7	24.5	24.6	22.8

Exceedances of the annual mean objective and limit value at $40\mu\text{g}/\text{m}^3$ are shown in **bold**

R= roadside, K= kerbside

- 1.1.6 In addition to local authority data, Highways England commissioned a passive diffusion tube monitoring programme along the Scheme, starting in August 2013. A network of 33 NO_2 monitors (DJ001 - 033) were initially established to supplement data available from local authority sources and data gaps in relation to the Scheme and adjacent routes. An additional six monitoring locations (DJ034 - 039) were added to the network in June 2014 as a result of measured exceedances in the NO_2 objective, providing greater coverage of applicable Air Quality Management Areas (AQMA's).
- 1.1.7 Markeaton junction and Little Eaton junction were modified as part of the Pinch Point Programme, works took place during 2014, with the works being completed in early 2015. These construction works had the potential to affect monitoring results during 2014 due to on-going construction activities and associated active traffic management. As a result, a further year of monitoring took place to obtain a full year of NO_2 monitoring data post the Pinch Point works (i.e. February 2015 – February 2016).

1.1.8 The data has been analysed to produce results for 2015 to match the year of traffic data used in the baseline scenario. The monitoring results are presented in Table 5, whilst the locations of the diffusion tubes are shown on Figure 5.5.

Table 5: Highways England diffusion tube NO₂ monitoring results

Site ID	OS grid ref		Site name	Site type	2015 annual mean NO ₂ concentration (µg/m ³)
	X	Y			
DJ001	431121	333327	Haven Baulk Lane	I	26.6
DJ002	430625	333847	Ardleigh Close on Hedingham Way	I	27.8
DJ003	431891	334778	Uttoxeter Road next to Mickleover Golf Club entrance	R	41.4
DJ004	431746	334771	Western Road	R	25.0
DJ005	432545	334974	Uttoxeter Road opposite hospital	R	30.0
DJ006	433112	335327	A516/Kingsway junction	K	42.6
DJ007	433199	335813	Kingsway	K	43.0
DJ008	432654	336133	Greenwich Drive South	I	22.1
DJ009	432838	336337	Brackensdale Avenue	I	27.1
DJ010	432985	336435	Raleigh Street	I	35.5
DJ011	433156	336694	Windmill Hill Lane	I	38.6
DJ012	433087	336718	Greenwich Drive North	I	30.4
DJ013	433506	336955	Queensway	R	39.7
DJ014	433479	336929	A52 Ashbourne Road	K	51.9
DJ015	433063	337009	Ravenscourt Road	I	23.4
DJ016	433697	337119	Queensway	I	37.7
DJ017	433834	337646	Kedleston Old Road	I	31.4
DJ018	434036	337783	Broadway Park Close	I	24.2
DJ019	434310	338380	Alstonfield Drive	I	22.1
DJ020	434555	338695	Maltby Close	I	20.9
DJ021	434792	339262	St George's Close	I	24.5
DJ022	434863	339101	A6 Duffield Road	I	30.3
DJ023	434952	339402	King's Croft	I	32.4
DJ024	435587	339839	Derwent Avenue	I	21.5
DJ025	436336	340050	Ford Lane	I	31.9
DJ026	436661	341585	Morley Lane	I	23.4
DJ027	436661	341585	Canon's Walk/Darley Abbey Drive	UB	18.6
DJ028	434909	338664	A6 Duffield Road	K	30.1
DJ029	433735	337175	Queensway	K	54.4
DJ030	433081	336631	Thurcroft Close	I	39.9
DJ031	433081	336631	Finsbury Avenue	UB	18.6
DJ032	433050	336661	Kingsway (A38)	K	45.1
DJ033	433690	334507	A5111 Warwick Avenue CMS	K	50.0
DJ034	433274	335400	407 Uttoxeter New Road	R	33.6

Site ID	OS grid ref		Site name	Site type	2015 annual mean NO ₂ concentration (µg/m ³)
	X	Y			
DJ035	433207	335134	A5111 Manor Road	K	33.6
DJ036	433326	334899	A5111 Manor Road/Eastwood Drive	K	29.5
DJ037	432923	335147	Uttoxeter New Road near hospital	K	51.4
DJ038	433070	335288	Uttoxeter New Road near Manor Road	K	39.4
DJ039	433239	335633	Albany Road	I	27.6

Exceedances of the annual mean objective and limit value at 40µg/m³ are shown in **bold**

R= roadside, K= kerbside, I= intermediate, UB - urban background

1.1.9 Amber Valley Borough Council and Erewash Borough Council have not undertaken any air quality monitoring within the local air quality study area.

1.1.10 Measured annual mean NO₂ concentrations at urban background sites in 2015 have been compared with Defra's mapped background concentrations for the same year. The two sets of results are in broad agreement – refer to Table 6.

Table 6: Comparison of mapped and measured annual mean NO₂ concentrations

Monitoring site	Measured concentration (µg/m ³)	Defra's mapped concentration (µg/m ³)
DJ027	18.6	16.8
DJ031	18.6	19.6