



APPENDIX 6.1 - AIR QUALITY ASSESSMENT INPUTS

TRINITY ISLAND, MANCHESTER

AQ4194

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ASSESSMENT INPUTS

Dispersion Model

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.0). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and DEFRA.

The model requires input data that details the following parameters:

- Assessment area;
- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length; and
- Monin-Obukhov length.

Assessment Area

Ambient concentrations were predicted over the Proposed Development site and surrounding highway network.

To assess on-Site concentrations, a single cartesian grid was included in the model over the area at approximately NGR: 382610, 397650 and 382900, 397940 at the following elevations to represent the relevant floor heights of the Proposed Development:

- Ground Floor Level 00 (1.5m);and
- First Floor Level 01 (5.7m);
- Second Floor Level 02 (8.6m);and
- Third Floor Level 03 (12.9m)

Results were subsequently used to produce contour plots within the Surfer software package. Reference should be made to Figure 6.5 and 6.10 within Appendix 6.2 for a graphical representation of the verification inputs and operation phase DS extents, respectively.

Traffic Flow Data

Development flows traffic data was provided by Curtins, the appointed Transport Consultants for the scheme, and indicated that a total flow of 934 AADT is anticipated as a result of the Purposed Development.

A number of road links used in the assessment were not provided by Curtins and as such were obtained from a number of sources. Traffic data surrounding the Proposed Development was obtained from the agreed TfGM SATURN model provided by Vectos. This dataset fully accounts for planned growth in line with relevant committed developments and is considered to be a robust base upon to assess Proposed Development trips.

Data utilised in the verification process, including Regent Road, Trinity Way, Ordsall Lane and Oldfield Road were obtained from the Department for Transport (DfT).

It should be noted that the SATURN model and DfT matrix are suitable source of data for air quality assessments and are therefore considered to provide a reasonable representation of traffic flows in the vicinity of the site.

Growth factors provided by the Trip End Model Presentation Program (TEMPO) software package were utilised to allow for conversion from the obtained 2019 traffic flow to 2026 which was used to represent the opening year scenario.

Vehicle speeds were estimated based on the free flow potential of each link and local speed limits. Road widths were estimated from aerial photography and UK highway design standards.

A summary of the traffic data used in the verification scenario is provided in Table All 1.

Table All 1: 2019 Verification Traffic Data

Road Link		Road Width (m)	Canyon Height (m)	24 Hour AADT Flow	HDV Pop (%)	Mean Vehicle Speed (km/hr)	Source
L1	A56 (W)	12.5	0	33,055	3.0	40	Curtins
L2	A56 (W) Slow Down (West)	11.5	0	16,527	3.0	20	Curtins
L3	A56 (W) Slow Down (East)	9.5	0	16,527	3.0	10	Curtins
L4	A56 Roundabout	11.3	0	14,574	3.7	10	SATURN
L5	Regent Road Speed Up(South)	11.4		26,067	4.0	15	Vectos
L6	Regent Road (South)	10.5	0	33,445	3.1	55	Vectos
L7	A57 (E)	7.0	0	26,756	3.1	55	Vectos
L8	Regent Road Slow Down (North)	16.4	0	33,445	3.1	15	Vectos
L9	Regent Road (North)	10.5	0	33,445	3.1	55	Vectos
L10	A57 (W)	7.3		26,756	3.1	55	Vectos
L11	Regent Road Onslip	6.3	0	6,689	3.1	32	Vectos
L12	Regent Road Offslip	7.5	0	6,689	3.1	32	Vectos
L13	A56 Roundabout	16.0	0	15,320	4.2	12	SATURN
L14	A56 Across Roundabout (East)	7.5	0	8,264	3.0	32	Curtins
L15	A56 Across Roundabout (West)	7.5	0	5,837	3.0	32	Curtins
L16	A56 Roundabout	11.0	0	15,320	4.2	12	SATURN
L17	A56 Roundabout	11.0	0	17,029	3.6	36	SATURN
L18	A56 roundabout (Manc Way)	11.0	0	17,029	3.6	36	SATURN
L19	A56 Roundabout	13.0	0	17,711	2.6	15	SATURN
L20	Chorlton Road Slow Down (North)	6.0	0	6,060	1.0	15	Curtins
L21	Chorlton Road Slow Down (South)	6.2	0	6,060	1.0	25	Curtins
L22	A56 Roundabout	12.2	0	14,574	3.7	15	SATURN
L23	Chorlton Road (North)	6.0	0	6,060	1.0	40	Curtins
L24	Chorlton Road (South)	6.3	0	6,060	1.0	40	Curtins
L25	Manc Way East (up to slip roads)	9.5	0	37,282	4.0	60	Curtins
L26	Manc Way West (up to slip roads)	9.5	0	37,282	4.0	60	Curtins
L27	Manc Way Onslip	7.3	0	9,361	4.6	45	SATURN
L28	Manc Way Offslip	7.3	0	9,992	2.9	50	SATURN
L29	Manc Way Offslip Medlock Street	7.5	0	10,488	2.1	15	SATURN
L30	Manc Way Onslip Princess Parkway	7.3	0	10,488	2.1	32	SATURN
L31	Manc Way East (up to University)	8.0	0	37,282	4.0	55	Curtins

Road Link		Road Width (m)	Canyon Height (m)	24 Hour AADT Flow	HDV Pop (%)	Mean Vehicle Speed (km/hr)	Source
L32	Manc Way West (up to University)	8.0	0	37,282	4.0	55	Curtins
L33	Princess Parkway	10.7	0	24,490	2.0	50	Curtins
L34	Princess Parkway	8.2	0	24,490	2.0	50	Curtins
L35	Princess Parkway Onslip	7.3	0	12,245	2.0	25	Curtins
L36	Medlock Street Offslip	7.6	0	7,541	1.0	25	Curtins
L37	Medlock Street Slow Down	14.5	0	15,082	1.0	25	Curtins
L38	Medlock Street (River Street to Little Peter Street)	14.6	0	15,522	1.0	40	Curtins
L39	Albion Street	14.9	0	15,522	1.0	35	Curtins
L40	Medlock Street Slow Down	14.7	0	15,522	1.0	15	Curtins
L41	River Street	9.5	0	1,711	0.0	32	Curtins
L42	City Road East/Great Jackson Street	8.2	0	2,050	1.0	20	Curtins
L43	City Road East/Great Jackson Street (Street Canyon Section)	17.8	23.5	2,050	1.0	35	Curtins
L44	City Road East/Great Jackson Street	8.2	0	2,050	1.0	35	Curtins
L45	City Road East Slow Down	9.1	0	3,504	1.0	30	Curtins
L46	Great Jackson Street to Bridgewater Viaduct	5.6	0	1,752	1.0	15	Curtins
L47	Bridgewater Viaduct to Great Jackson Street	4.5	0	1,752	1.0	15	Curtins
L48	Garwood Street	8.6	0	1,226	0.0	32	Curtins
L49	Garwood Street Onslip	5.5	0	613	0.0	25	Curtins
L50	Garwood Street Offslip	5.5	0	613	0.0	15	Curtins
L51	Chester Road East (West of Great Jackson Street)	7.3	0	5,837	3.0	40	Curtins
L52	Chester Road East (West of Great Jackson Street)	7.3	0	11,674	3.0	40	Curtins
L53	Chester Road East (A56 Roundabout Exit)	3.8	0	5,837	3.0	20	Curtins
L54	Chester Road East (West of Great Jackson Street)	7.5	0	5,837	3.0	25	Curtins
L55	Chester Road East (West of Great Jackson Street)	10.8	0	11,674	3.0	20	Curtins
L56	Chester Road East (A56 Roundabout Approach)	5.6	0	5,837	3.0	20	Curtins
L57	Chester Road East (Great Jackson Street to Old Deansgate) Eastbound	7.3	0	11,143	3.0	32	Curtins
L58	Chester Road East (Great Jackson Street to Old Deansgate) Westbound	6.3	0	11,143	3.0	32	Curtins
L59	A56 Bridgewater Viaduct	10.8	0	17,704	3.0	32	Curtins
L60	Old Deansgate Slow Down	9.3	0	4,593	1.0	40	Curtins
L61	Old Deansgate	6.5	0	4,593	1.0	40	Curtins
L62	Little Peter Street	6.1	0	1,553	0.0	15	Curtins
L63	Whitworth Street West - Slow Down	11.5	0	11,369	1.0	15	Curtins
L64	Whitworth Street West	11.5	0	11,369	1.0	48	Curtins
L65	Whitworth Street East - Slow Down	10.5	0	8,820	1.0	15	Curtins

Road Link		Road Width (m)	Canyon Height (m)	24 Hour AADT Flow	HDV Pop (%)	Mean Vehicle Speed (km/hr)	Source
L66	Whitworth Street East	10.5	0	8,820	1.0	48	Curtins
L67	Deansgate	12.0	0	16,325	3.0	48	Curtins
L68	Albion Street	15.6	0	15,448	3.0	35	Curtins
L69	Hewitt Street	5.0	0	496	0.0	15	Curtins
L70	Hewitt Street	5.1	0	496	0.0	30	Curtins
L71	Melborne Street	6.5	0	127	0.0	32	Curtins
L72	Regent Road (West) Slow	11.1		33,445	3.5	15	Vectos
L73	Regent Road (West) Slow	10.2		26,067	4.0	20	Vectos
L74	Regent Road (West) Slow	7.3	0	26,067	4.0	20	Vectos
L75	Regent Road (East) Slow	19.0	0	26,067	4.0	15	Vectos
L76	Regent Road (East) Slow	9.8	0	26,067	4.0	15	Vectos
L77	Regent Road (East) Slow	9.8	0	26,067	4.0	15	Vectos
L78	Regent Road (West) Slow	7.0	0	26,067	4.0	32	Vectos
L79	Regent Road (West) Slow	10.0	0	26,067	4.0	15	Vectos
L80	Regent Road (East) Slow	7.2	0	26,067	4.0	32	Vectos
L81	Regent Road (East) Slow	7.3	0	26,067	4.0	15	Vectos
L82	Regent Road (West) Speed Up	7.1	0	26,067	4.0	15	Vectos
L83	Regent Road (West)	7.5	0	26,067	4.0	32	Vectos
L84	Regent Road (East) Slow Down	9.5	0	26,067	4.0	15	Vectos
L85	Regent Road (East)	7.5	0	26,067	4.0	35	Vectos
L86	Liverpool Road Slow Down	10.3	0	5,551	2	15	DfT
L87	Water Street/Liverpool Street	8.2	0	5,551	2.1	40	Vectos
L88	Water Street Slow Down	15.6	0	6,375	2.0	15	Vectos
L89	Trinity Way Northbound (South of Plot C Access)	8.3		13,066	3.1	20	Vectos
L90	Trinity Way Northbound (North of Plot C Access)	7.2		11,682	3.1	40	Vectos
L91	Trinity Way Southbound (North of Plot C Access)	8.3		11,682	3.1	20	Vectos
L92	Trinity Way Southbound (South of Plot C Access)	7.9		13,066	3.1	40	Vectos
L93	Trinity Way onto Regent Road	10.8	0	6,533	3.1	15	Vectos
L94	Trinity Way onto Egerton Street	7.1	0	6,533	3.1	15	Vectos
L95	Oldfield Road (North) Slow Down	13.1	0	9,755	2.3	15	DfT
L96	Oldfield Road (North)	9.9	0	9,755	2.3	40	DfT
L97	Oldfield Road (South) Slow Down	12.4	0	7,085	2.7	15	DfT
L98	Oldfield Road (South)	8.2	0	7,085	2.7	40	DfT
L99	Ordsall Lane (South)	8.7	0	11,421	1.8	32	DfT
L100	Ordsall Lane (South) Slow Down	13.2	0	11,421	1.8	10	DfT
L101	Regent Road onto Ordsall Lane	4.0	0	3,807	1.8	10	DfT

Road Link		Road Width (m)	Canyon Height (m)	24 Hour AADT Flow	HDV Pop (%)	Mean Vehicle Speed (km/hr)	Source
L102	Ordsall Lane onto Regent Road	4.1	0	3,807	1.8	10	DfT
L103	Ordsall Lane/Regent Road Junction	15.0	0	3,807	1.8	10	DfT
L104	Ordsall Lane (North) Slow Down	18.3	0	9,083	1.8	10	DfT
L105	Ordsall Lane (North)	10.3	0	9,083	1.8	32	DfT
L106	A34 Irwell Street - South of Chapel Street - Northbound	7.7	0	15,171	2.7	25	DfT
L107	A34 Irwell Street - South of Chapel Street (Junction Slowdown) Northbound	11.2	0	15,171	2.7	15	DfT
L108	Trinity Way Northbound - Chapel Street Junction	9.1		15,171	2.7	40	DfT
L109	Trinity Way Northbound - Between New Bridge Street and Bloom Street	8.2		15,171	2.7	40	DfT
L110	A34 Irwell Street - South of Chapel Street - Southbound (Junction Slowdown)	7.8		15,171	2.7	15	DfT
L111	A34 Irwell Street - South of Chapel Street - Southbound	6.7		15,171	2.7	25	DfT
L112	Trinity Way Southbound - Chapel Street Junction	9.6		15,171	2.7	40	DfT
L113	Trinity Way Southbound - Between New Bridge Street and Bloom Street	8.0		15,171	2.7	40	DfT
L114	A6 Chapel Street Eastbound (Junction Slowdown) - West of A34	8.9		8,713	9.4	15	DfT
L115	A6 Chapel Street Eastbound - West of A34	7.0		8,713	9.4	25	DfT
L116	A6 Chapel Street Westbound (Junction Slowdown) - West of A34	8.0		8,713	9.4	15	DfT
L117	A6 Chapel Street Westbound - West of A34	6.9		8,713	9.4	25	DfT
L118	Chapel Street East of Adelphi Street	15.4		17,425	9.4	25	DfT
L119	A6 West of A5066 Westbound, Speed Up	8.0		12,341	7.3	20	DfT
L120	A6 West of A5066 Westbound	7.0		12,341	7.3	40	DfT
L121	A6 Eastbound East of Albion Way	7.7		12,341	7.3	30	DfT
L122	A6 Eastbound East of Albion Way Slowdown at A5066	8.0		12,341	7.3	15	DfT
L123	Water Street (North of Plot D)	7.1		5,551	2.1	20	Vectos

Reference should be made to Figure 6.6 within Appendix 6.2 for a graphical representation of the road link locations used within the verification assessment. The road width, canyon height and mean vehicle speed shown in Table AII.1 remained the same for the 2026 scenarios.

A summary of the 2026 traffic data is shown in **Table AII 2**.

Table AII 2: 2026 Traffic Data

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L1	A56 (W)	36,693	3.0	36,693	3.0
L2	A56 (W) Slow Down (West)	18,346	3.0	18,346	3.0
L3	A56 (W) Slow Down (East)	18,346	3.0	18,346	3.0
L4	A56 Roundabout	16,241	3.7	16,241	3.7
L5	Regent Road Speed Up(South)	26,715	4.0	26,879	4.0
L6	Regent Road (South)	34,364	3.5	34,596	3.5
L7	A57 (E)	27,491	3.5	27,677	3.5
L8	Regent Road Slow Down (North)	34,364	3.5	34,596	3.5
L9	Regent Road (North)	34,364	3.1	34,596	3.1
L10	A57 (W)	27,491	3.0	27,677	3.0
L11	Regent Road Onslip	6,873	3.5	6,919	3.5
L12	Regent Road Offslip	6,873	3.5	6,919	3.5
L13	A56 Roundabout	17,317	4.1	17,317	4.1
L14	A56 Across Roundabout (East)	9,332	3.0	9,332	3.0
L15	A56 Across Roundabout (West)	7,451	3.0	7,451	3.0
L16	A56 Roundabout	17,158	4.1	17,158	4.1
L17	A56 Roundabout	19,106	3.5	19,106	3.5
L18	A56 roundabout (Manc Way)	18,975	3.5	18,975	3.5
L19	A56 Roundabout	19,777	2.5	19,777	2.5
L20	Chorlton Road Slow Down (North)	6,646	1.0	6,646	1.0
L21	Chorlton Road Slow Down (South)	6,646	1.0	6,646	1.0
L22	A56 Roundabout	16,305	3.7	16,305	3.7
L23	Chorlton Road (North)	6,646	1.0	6,646	1.0
L24	Chorlton Road (South)	6,646	1.0	6,646	1.0
L25	Manc Way East (up to slip roads)	40,919	4.0	40,919	4.0
L26	Manc Way West (up to slip roads)	40,919	4.0	40,919	4.0
L27	Manc Way Onslip	10,500	4.6	10,500	4.6
L28	Manc Way Offslip	11,104	2.8	11,104	2.8
L29	Manc Way Offslip Medlock Street	11,629	2.1	11,629	2.1
L30	Manc Way Onslip Princess Parkway	11,629	2.1	11,629	2.1
L31	Manc Way East (up to University)	40,919	4.0	40,919	4.0
L32	Manc Way West (up to University)	40,919	4.0	40,919	4.0
L33	Princess Parkway	26,864	2.0	26,864	2.0
L34	Princess Parkway	26,864	2.0	26,864	2.0
L35	Princess Parkway Onslip	13,432	2.0	13,432	2.0
L36	Medlock Street Offslip	8,409	1.0	8,409	1.0

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L37	Medlock Street Slow Down	16,817	1.0	16,817	1.0
L38	Medlock Street (River Street to Little Peter Street)	17,442	1.0	17,442	1.0
L39	Albion Street	17,442	1.0	17,442	1.0
L40	Medlock Street Slow Down	17,442	1.0	17,442	1.0
L41	River Street	1,908	0.0	1,908	0.0
L42	City Road East/Great Jackson Street	2,734	1.0	2,734	1.0
L43	City Road East/Great Jackson Street (Street Canyon Section)	2,734	1.0	2,734	1.0
L44	City Road East/Great Jackson Street	2,734	1.0	2,734	1.0
L45	City Road East Slow Down	5,779	1.0	5,779	1.0
L46	Great Jackson Street to Bridgewater Viaduct	2,890	1.0	2,890	1.0
L47	Bridgewater Viaduct to Great Jackson Street	2,890	1.0	2,890	1.0
L48	Garwood Street	1,528	0.0	1,528	0.0
L49	Garwood Street Onslip	764	0.0	764	0.0
L50	Garwood Street Offslip	764	0.0	764	0.0
L51	Chester Road East (West of Great Jackson Street)	7,337	3.0	7,337	3.0
L52	Chester Road East (West of Great Jackson Street)	14,674	3.0	14,674	3.0
L53	Chester Road East (A56 Roundabout Exit)	7,337	3.0	7,337	3.0
L54	Chester Road East (West of Great Jackson Street)	7,337	3.0	7,337	3.0
L55	Chester Road East (West of Great Jackson Street)	14,674	3.0	14,674	3.0
L56	Chester Road East (A56 Roundabout Approach)	7,337	3.0	7,337	3.0
L57	Chester Road East (Great Jackson Street to Old Deansgate) Eastbound	13,602	3.0	13,602	3.0
L58	Chester Road East (Great Jackson Street to Old Deansgate) Westbound	13,602	3.0	13,602	3.0
L59	A56 Bridgewater Viaduct	19,633	3.0	19,633	3.0
L60	Old Deansgate Slow Down	8,020	1.0	8,020	1.0
L61	Old Deansgate	8,020	1.0	8,020	1.0
L62	Little Peter Street	1,702	0.0	1,702	0.0
L63	Whitworth Street West - Slow Down	12,464	1.0	12,464	1.0
L64	Whitworth Street West	12,464	1.0	12,464	1.0
L65	Whitworth Street East - Slow Down	9,794	1.0	9,794	1.0
L66	Whitworth Street East	9,794	1.0	9,794	1.0
L67	Deansgate	18,120	3.0	18,120	3.0
L68	Albion Street	17,060	3.0	17,060	3.0
L69	Hewitt Street	544	0.0	544	0.0
L70	Hewitt Street	544	0.0	544	0.0
L71	Melborne Street	1,857	0.0	1,857	0.0

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L72	Regent Road (West) Slow	34,364	3.5	34,596	3.5
L73	Regent Road (West) Slow	26,715	4.0	26,879	4.0
L74	Regent Road (West) Slow	26,715	4.0	26,879	4.0
L75	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L76	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L77	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L78	Regent Road (West) Slow	26,715	4.0	26,879	4.0
L79	Regent Road (West) Slow	26,715	4.0	26,879	4.0
L80	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L81	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L82	Regent Road (West) Speed Up	26,715	4.0	26,879	4.0
L83	Regent Road (West)	26,715	4.0	26,879	4.0
L84	Regent Road (East) Slow Down	26,715	4.0	26,879	4.0
L85	Regent Road (East)	26,715	4.0	26,879	4.0
L86	Liverpool Road Slow Down	7,909	2.4	7,955	2.4
L87	Water Street/Liverpool Street	7,909	2.4	8,155	2.5
L88	Water Street Slow Down	8,738	2.3	9,229	2.5
L89	Trinity Way Northbound (South of Plot C Access)	14,314	3.1	14,706	3.1
L90	Trinity Way Northbound (North of Plot C Access)	11,760	3.1	11,863	3.1
L91	Trinity Way Southbound (North of Plot C Access)	11,760	3.1	11,863	3.1
L92	Trinity Way Southbound (South of Plot C Access)	14,314	3.1	14,706	3.1
L93	Trinity Way onto Regent Road	7,157	3.1	7,353	3.1
L94	Trinity Way onto Egerton Street	7,157	3.1	7,353	3.1
L95	Oldfield Road (North) Slow Down	10,305	2.3	10,305	2.3
L96	Oldfield Road (North)	10,305	2.3	10,305	2.3
L97	Oldfield Road (South) Slow Down	7,485	2.7	7,485	2.7
L98	Oldfield Road (South)	7,485	2.7	7,485	2.7
L99	Ordsall Lane (South)	12,065	1.8	12,065	1.8
L100	Ordsall Lane (South) Slow Down	12,065	1.8	12,065	1.8
L101	Regent Road onto Ordsall Lane	4,022	1.8	4,022	1.8
L102	Ordsall Lane onto Regent Road	4,022	1.8	4,022	1.8
L103	Ordsall Lane/Regent Road Junction	4,022	1.8	4,022	1.8
L104	Ordsall Lane (North) Slow Down	9,595	1.8	9,595	1.8
L105	Ordsall Lane (North)	9,595	1.8	9,595	1.8
L106	A34 Irwell Street - South of Chapel Street - Northbound	16,026	2.7	16,129	2.7

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L107	A34 Irwell Street - South of Chapel Street (Junction Slowdown) Northbound	16,026	2.7	16,129	2.7
L108	Trinity Way Northbound - Chapel Street Junction	16,026	2.7	16,129	2.7
L109	Trinity Way Northbound - Between New Bridge Street and Bloom Street	16,026	2.7	16,129	2.7
L110	A34 Irwell Street - South of Chapel Street - Southbound (Junction Slowdown)	16,026	2.7	16,129	2.7
L111	A34 Irwell Street - South of Chapel Street - Southbound	16,026	2.7	16,129	2.7
L112	Trinity Way Southbound - Chapel Street Junction	16,026	2.7	16,129	2.7
L113	Trinity Way Southbound - Between New Bridge Street and Bloom Street	16,026	2.7	16,129	2.7
L114	A6 Chapel Street Eastbound (Junction Slowdown) - West of A34	9,204	9.4	9,204	9.4
L115	A6 Chapel Street Eastbound - West of A34	9,204	9.4	9,204	9.4
L116	A6 Chapel Street Westbound (Junction Slowdown) - West of A34	9,204	9.4	9,204	9.4
L117	A6 Chapel Street Westbound - West of A34	9,204	9.4	9,204	9.4
L118	Chapel Street East of Adelphi Street	18,408	9.4	18,408	9.4
L119	A6 West of A5066 Westbound, Speed Up	13,037	7.3	13,037	7.3
L120	A6 West of A5066 Westbound	13,037	7.3	13,037	7.3
L121	A6 Eastbound East of Albion Way	13,037	7.3	13,037	7.3
L122	A6 Eastbound East of Albion Way Slowdown at A5066	13,037	7.3	13,037	7.3
L123	Water Street (North of Plot D)	7,909	2.4	7,955	2.4

A summary of the 2026 traffic data is shown in **Table AII 2**.

Table AII 3: 2026 Traffic Data

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L1	A56 (W)	36,693	3.0	36,693	3.0
L2	A56 (W) Slow Down (West)	18,346	3.0	18,346	3.0
L3	A56 (W) Slow Down (East)	18,346	3.0	18,346	3.0
L4	A56 Roundabout	16,241	3.7	16,241	3.7
L5	Regent Road Speed Up(South)	26,715	4.0	26,879	4.0
L6	Regent Road (South)	34,364	3.5	34,596	3.5
L7	A57 (E)	27,491	3.5	27,677	3.5
L8	Regent Road Slow Down (North)	34,364	3.5	34,596	3.5
L9	Regent Road (North)	34,364	3.1	34,596	3.1

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L10	A57 (W)	27,491	3.0	27,677	3.0
L11	Regent Road Onslip	6,873	3.5	6,919	3.5
L12	Regent Road Offslip	6,873	3.5	6,919	3.5
L13	A56 Roundabout	17,317	4.1	17,317	4.1
L14	A56 Across Roundabout (East)	9,332	3.0	9,332	3.0
L15	A56 Across Roundabout (West)	7,451	3.0	7,451	3.0
L16	A56 Roundabout	17,158	4.1	17,158	4.1
L17	A56 Roundabout	19,106	3.5	19,106	3.5
L18	A56 roundabout (Manc Way)	18,975	3.5	18,975	3.5
L19	A56 Roundabout	19,777	2.5	19,777	2.5
L20	Chorlton Road Slow Down (North)	6,646	1.0	6,646	1.0
L21	Chorlton Road Slow Down (South)	6,646	1.0	6,646	1.0
L22	A56 Roundabout	16,305	3.7	16,305	3.7
L23	Chorlton Road (North)	6,646	1.0	6,646	1.0
L24	Chorlton Road (South)	6,646	1.0	6,646	1.0
L25	Manc Way East (up to slip roads)	40,919	4.0	40,919	4.0
L26	Manc Way West (up to slip roads)	40,919	4.0	40,919	4.0
L27	Manc Way Onslip	10,500	4.6	10,500	4.6
L28	Manc Way Offslip	11,104	2.8	11,104	2.8
L29	Manc Way Offslip Medlock Street	11,629	2.1	11,629	2.1
L30	Manc Way Onslip Princess Parkway	11,629	2.1	11,629	2.1
L31	Manc Way East (up to University)	40,919	4.0	40,919	4.0
L32	Manc Way West (up to University)	40,919	4.0	40,919	4.0
L33	Princess Parkway	26,864	2.0	26,864	2.0
L34	Princess Parkway	26,864	2.0	26,864	2.0
L35	Princess Parkway Onslip	13,432	2.0	13,432	2.0
L36	Medlock Street Offslip	8,409	1.0	8,409	1.0
L37	Medlock Street Slow Down	16,817	1.0	16,817	1.0
L38	Medlock Street (River Street to Little Peter Street)	17,442	1.0	17,442	1.0
L39	Albion Street	17,442	1.0	17,442	1.0
L40	Medlock Street Slow Down	17,442	1.0	17,442	1.0
L41	River Street	1,908	0.0	1,908	0.0
L42	City Road East/Great Jackson Street	2,734	1.0	2,734	1.0
L43	City Road East/Great Jackson Street (Street Canyon Section)	2,734	1.0	2,734	1.0
L44	City Road East/Great Jackson Street	2,734	1.0	2,734	1.0
L45	City Road East Slow Down	5,779	1.0	5,779	1.0

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L46	Great Jackson Street to Bridgewater Viaduct	2,890	1.0	2,890	1.0
L47	Bridgewater Viaduct to Great Jackson Street	2,890	1.0	2,890	1.0
L48	Garwood Street	1,528	0.0	1,528	0.0
L49	Garwood Street Onslip	764	0.0	764	0.0
L50	Garwood Street Offslip	764	0.0	764	0.0
L51	Chester Road East (West of Great Jackson Street)	7,337	3.0	7,337	3.0
L52	Chester Road East (West of Great Jackson Street)	14,674	3.0	14,674	3.0
L53	Chester Road East (A56 Roundabout Exit)	7,337	3.0	7,337	3.0
L54	Chester Road East (West of Great Jackson Street)	7,337	3.0	7,337	3.0
L55	Chester Road East (West of Great Jackson Street)	14,674	3.0	14,674	3.0
L56	Chester Road East (A56 Roundabout Approach)	7,337	3.0	7,337	3.0
L57	Chester Road East (Great Jackson Street to Old Deansgate) Eastbound	13,602	3.0	13,602	3.0
L58	Chester Road East (Great Jackson Street to Old Deansgate) Westbound	13,602	3.0	13,602	3.0
L59	A56 Bridgewater Viaduct	19,633	3.0	19,633	3.0
L60	Old Deansgate Slow Down	8,020	1.0	8,020	1.0
L61	Old Deansgate	8,020	1.0	8,020	1.0
L62	Little Peter Street	1,702	0.0	1,702	0.0
L63	Whitworth Street West - Slow Down	12,464	1.0	12,464	1.0
L64	Whitworth Street West	12,464	1.0	12,464	1.0
L65	Whitworth Street East - Slow Down	9,794	1.0	9,794	1.0
L66	Whitworth Street East	9,794	1.0	9,794	1.0
L67	Deansgate	18,120	3.0	18,120	3.0
L68	Albion Street	17,060	3.0	17,060	3.0
L69	Hewitt Street	544	0.0	544	0.0
L70	Hewitt Street	544	0.0	544	0.0
L71	Melborne Street	1,857	0.0	1,857	0.0
L72	Regent Road (West) Slow	34,364	3.5	34,596	3.5
L73	Regent Road (West) Slow	26,715	4.0	26,879	4.0
L74	Regent Road (West) Slow	26,715	4.0	26,879	4.0
L75	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L76	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L77	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L78	Regent Road (West) Slow	26,715	4.0	26,879	4.0
L79	Regent Road (West) Slow	26,715	4.0	26,879	4.0
L80	Regent Road (East) Slow	26,715	4.0	26,879	4.0

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L81	Regent Road (East) Slow	26,715	4.0	26,879	4.0
L82	Regent Road (West) Speed Up	26,715	4.0	26,879	4.0
L83	Regent Road (West)	26,715	4.0	26,879	4.0
L84	Regent Road (East) Slow Down	26,715	4.0	26,879	4.0
L85	Regent Road (East)	26,715	4.0	26,879	4.0
L86	Liverpool Road Slow Down	7,909	2.4	7,955	2.4
L87	Water Street/Liverpool Street	7,909	2.4	8,155	2.5
L88	Water Street Slow Down	8,738	2.3	9,229	2.5
L89	Trinity Way Northbound (South of Plot C Access)	14,314	3.1	14,706	3.1
L90	Trinity Way Northbound (North of Plot C Access)	11,760	3.1	11,863	3.1
L91	Trinity Way Southbound (North of Plot C Access)	11,760	3.1	11,863	3.1
L92	Trinity Way Southbound (South of Plot C Access)	14,314	3.1	14,706	3.1
L93	Trinity Way onto Regent Road	7,157	3.1	7,353	3.1
L94	Trinity Way onto Egerton Street	7,157	3.1	7,353	3.1
L95	Oldfield Road (North) Slow Down	10,305	2.3	10,305	2.3
L96	Oldfield Road (North)	10,305	2.3	10,305	2.3
L97	Oldfield Road (South) Slow Down	7,485	2.7	7,485	2.7
L98	Oldfield Road (South)	7,485	2.7	7,485	2.7
L99	Ordsall Lane (South)	12,065	1.8	12,065	1.8
L100	Ordsall Lane (South) Slow Down	12,065	1.8	12,065	1.8
L101	Regent Road onto Ordsall Lane	4,022	1.8	4,022	1.8
L102	Ordsall Lane onto Regent Road	4,022	1.8	4,022	1.8
L103	Ordsall Lane/Regent Road Junction	4,022	1.8	4,022	1.8
L104	Ordsall Lane (North) Slow Down	9,595	1.8	9,595	1.8
L105	Ordsall Lane (North)	9,595	1.8	9,595	1.8
L106	A34 Irwell Street - South of Chapel Street - Northbound	16,026	2.7	16,129	2.7
L107	A34 Irwell Street - South of Chapel Street (Junction Slowdown) Northbound	16,026	2.7	16,129	2.7
L108	Trinity Way Northbound - Chapel Street Junction	16,026	2.7	16,129	2.7
L109	Trinity Way Northbound - Between New Bridge Street and Bloom Street	16,026	2.7	16,129	2.7
L110	A34 Irwell Street - South of Chapel Street - Southbound (Junction Slowdown)	16,026	2.7	16,129	2.7
L111	A34 Irwell Street - South of Chapel Street - Southbound	16,026	2.7	16,129	2.7
L112	Trinity Way Southbound - Chapel Street Junction	16,026	2.7	16,129	2.7
L113	Trinity Way Southbound - Between New Bridge Street and Bloom Street	16,026	2.7	16,129	2.7

Road Link		DM		DS	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L114	A6 Chapel Street Eastbound (Junction Slowdown) - West of A34	9,204	9.4	9,204	9.4
L115	A6 Chapel Street Eastbound - West of A34	9,204	9.4	9,204	9.4
L116	A6 Chapel Street Westbound (Junction Slowdown) - West of A34	9,204	9.4	9,204	9.4
L117	A6 Chapel Street Westbound - West of A34	9,204	9.4	9,204	9.4
L118	Chapel Street East of Adelphi Street	18,408	9.4	18,408	9.4
L119	A6 West of A5066 Westbound, Speed Up	13,037	7.3	13,037	7.3
L120	A6 West of A5066 Westbound	13,037	7.3	13,037	7.3
L121	A6 Eastbound East of Albion Way	13,037	7.3	13,037	7.3
L122	A6 Eastbound East of Albion Way Slowdown at A5066	13,037	7.3	13,037	7.3
L123	Water Street (North of Plot D)	7,909	2.4	7,955	2.4

Emission Factors

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 10.1) released in August 2020, which incorporates updated COPERT 5 vehicle emissions factors for NO_x and PM and EURO 6 vehicle fleet sub-categories.

There is current uncertainty over NO₂ concentrations within the UK, with roadside levels not reducing as previously expected due to the implementation of new vehicle emission standards. Therefore, 2019 emission factors have been utilised for the prediction of pollution levels for all scenarios in preference to the development opening year in order to provide a robust assessment.

Meteorological Data

Meteorological data used in this assessment was taken from Manchester Ringway meteorological station over the period 1st January 2017 to 31st December 2019 (inclusive). Manchester Ringway meteorological station is located at approximate NGR: 381745, 383960, which is approximately 17km south-west of the proposed development.

All meteorological records used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 6.4 within Appendix 6.3 for a wind rose of utilised meteorological data.

Roughness Length

The specific roughness length (z_0) values used to represent conditions during the verification process, DS scenario, as well as conditions at the Manchester Ringway meteorological station are summarised in Table AII 4.

Table AII 4: Utilised Roughness Lengths

Scenario	Roughness Length (m)	ADMS Description
Verification and Operational phase (DS and DM scenario)	1.0	Cities and Woodlands
Meteorological Station	0.3	Agricultural Areas (Max)

These values of z_0 are considered appropriate for the morphology of the assessment area.

Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere within certain urban or rural contexts. The specific length values used to represent conditions during the verification process, DS scenario, as well as conditions at the Manchester Ringway meteorological station are summarised in Table AII 5

Table AII 5: Utilised Monin-Obukhov Lengths

Scenario	Monin-Obukhov Length (m)	ADMS Description
Verification and Operational phase (DS and DM scenario) and Meteorological Station	30	Cities and Large Town or Mixed Urban/Industrial

This Monin-Obukhov value is considered appropriate for the morphology of the assessment area.

Background Concentrations

Background concentrations provided by DEFRA were used in the dispersion modelling assessment to represent existing annual mean NO₂, NO_x and PM₁₀ concentrations in the vicinity of the site.

In order to avoid 'double-counting' of road vehicle exhaust emissions of NO₂ and NO_x, the proportion of the relevant background concentrations from A-roads was removed in accordance with the methodology outlined in DEFRA guidance LAQM.TG(16). This sector was considered to be the most representative of that being modelled within ADMS-Roads.

The background concentrations before and following the adjustment are presented in Table AII 6.

Table AII 6: Background Pollutant Concentrations

Pollutant	Predicted Annual Mean Background Concentration (µg/m ³)	
	Total Predicted 2019 Background	Predicted Background with A-Roads Removed
NO ₂	33.65	28.30
NO _x	22.79	19.64
Pollutant	Predicted Annual Mean Background Concentration (µg/m ³)	
PM ₁₀	13.16	
PM _{2.5}	8.54	

Like emission factors, background concentrations for 2019 were utilised in preference to the development opening year of 2026. This provided a robust assessment and is likely to overestimate actual pollutant concentrations during the operation of the proposals.

Table AII 7 displays the specific background concentrations as predicted by DEFRA, utilised to represent the condition at the monitoring locations used within the verification process.

As above, In order to avoid 'double-counting' of road vehicle exhaust emissions of NO₂ and NO_x, the proportion of the relevant background concentrations from A-roads was removed in accordance with the methodology outlined in DEFRA guidance LAQM.TG(16).

Table AII 7: Predicted Background Pollutant Concentrations for Diffusion Tubes

Monitoring Location	DEFRA Grid Square	Pollutant	2019 Predicted Background Concentration (µg/m ³)
MAN 77	383500, 397500	NO _x	35.56

Monitoring Location	DEFRA Grid Square	Pollutant	2019 Predicted Background Concentration ($\mu\text{g}/\text{m}^3$)
		NO ₂	22.52
MAN 97, SA60, SA81	382500, 397500	NO _x	28.30
		NO ₂	19.64
SA59	381500, 397500	NO _x	27.19
		NO ₂	19.00
SA79	382500, 398500	NO _x	30.22
		NO ₂	22.97
SA27, SA39	383500, 398500	NO _x	41.13
		NO	26.36

Similar to emission factors, background concentrations for 2019 were utilised in preference to predicted background concentrations for the development opening year (2026). This provided a robust assessment and is likely to overestimate actual pollutant concentrations during the operation of the proposals.

Table All 6 displays the predicted background concentrations by DEFRA used in the operational phase assessment for the sensitive receptor locations.

Table All 8: Predicted Background Pollutant Concentrations for Receptors

Receptor Location	DEFRA Grid Square	Pollutant	2019 Predicted Background Concentration ($\mu\text{g}/\text{m}^3$)
R1 to R15	382500, 397500	NO _x	28.30
		NO ₂	19.64
		PM ₁₀	13.16
		PM _{2.5}	8.54
R16, R20	382500, 398500	NO _x	30.22
		NO ₂	20.69
		PM ₁₀	12.50
		PM _{2.5}	8.23
R17 to R19	383500, 398500	NO _x	41.13
		NO ₂	26.36
		PM ₁₀	13.07
		PM _{2.5}	8.49

NO_x to NO₂ Conversion

Predicted annual mean NO_x concentrations from the dispersion model were converted to NO₂ concentrations using the NO_x to NO₂ Calculator (v.8.1) provided by DEFRA, which is the method detailed within LAQM TG(16).

Verification

The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including:

- Estimates of background concentrations;

- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and
- Uncertainties associated with monitoring data, including locations.

Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

For the purpose of this assessment model verification was undertaken for 2019, using traffic data, meteorological data and monitoring results from this year. MCC and SCC undertake periodic monitoring of NO₂ concentrations at 5 suitable roadside monitoring location within the assessment extents. The dispersion model was run with the traffic input data previously detailed for 2019 to predict the NO_x concentration at the monitoring locations.

The road contribution to total NO_x concentration was calculated from the monitored NO₂ result for use in the verification process. This was undertaken following the methodology contained within DEFRA guidance LAQM TG(16). The monitored annual mean NO₂ concentration and calculated road NO_x concentration are summarised in Table AII 9.

Table AII 9: Monitoring Results

Site ID	Monitored Road NO _x Concentration (µg/m ³)	Modelled Road NO _x Concentration (µg/m ³)	% Difference ((Monitored Modelled)/Monitored) * 100
SA81	56.59	54.11	4%
SA60	34.35	31.44	8%
SA39	31.66	18.27	42%
SA27	21.90	12.21	44%
MAN97	25.02	14.02	44%

**SA81 and SA69 were not included within the verification process due to suitable correlation with monitored NO_x concentration prior to adjustment.*

According to LAQM.TG(16), no adjustment is necessary where the results of the model all lie within 10% of the monitored concentrations or provide systematic overpredictions (SA69 and SA81). Subsequently, specific monitors have not been included within the calculation of the NO_x adjustment factor.

The monitored and modelled NO_x road contribution concentrations were graphed and the equation of the trend line based on the linear progression through zero was calculated, as shown in Graph 1 for the remaining diffusion tube locations. This indicated that a verification factor of **1.7611** was required to be applied to all NO_x modelling results, showing the model underestimated pollutant concentrations throughout the assessment extents.

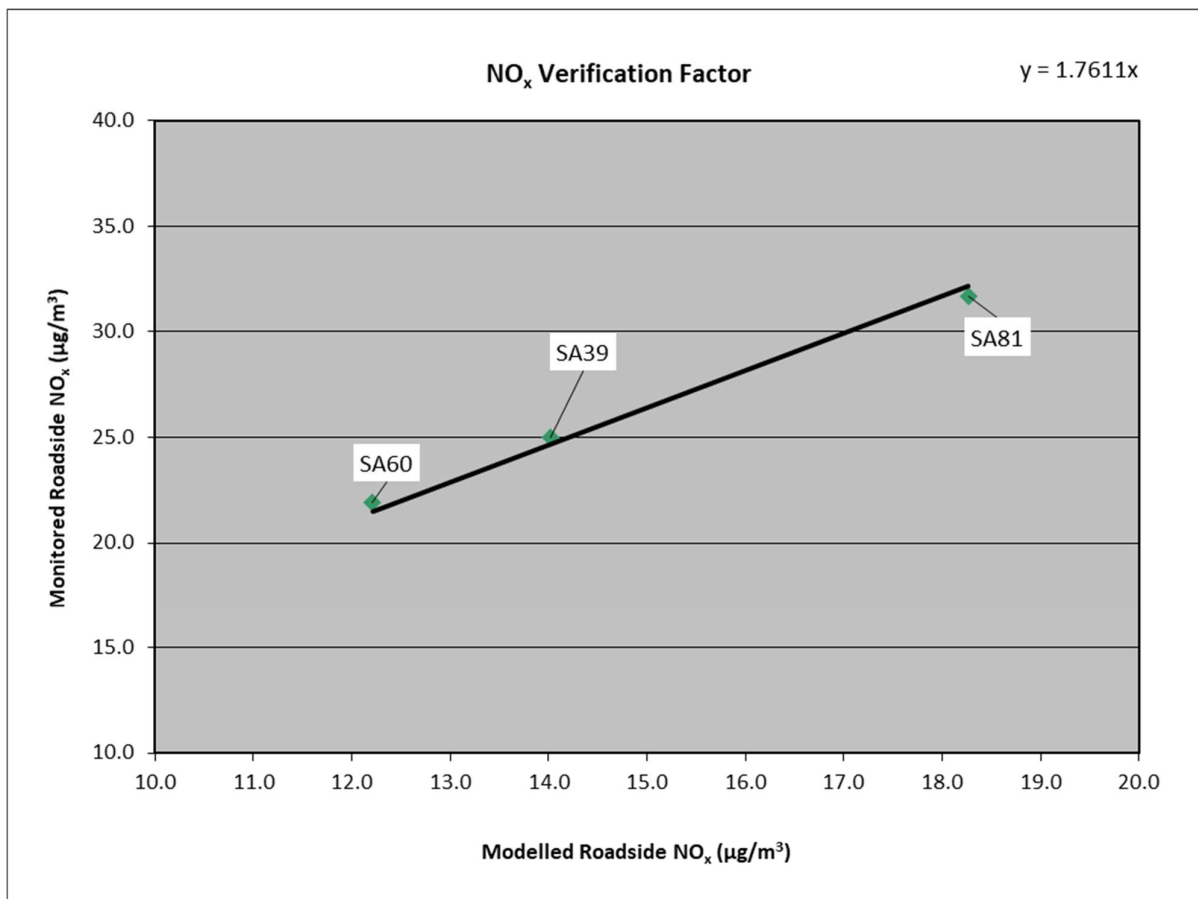
Graph 1 - Verification Adjustment Factor

Table AII 10 presents the monitored annual mean NO₂ concentrations and the adjusted modelled total NO₂ concentration based on the above verification factor.

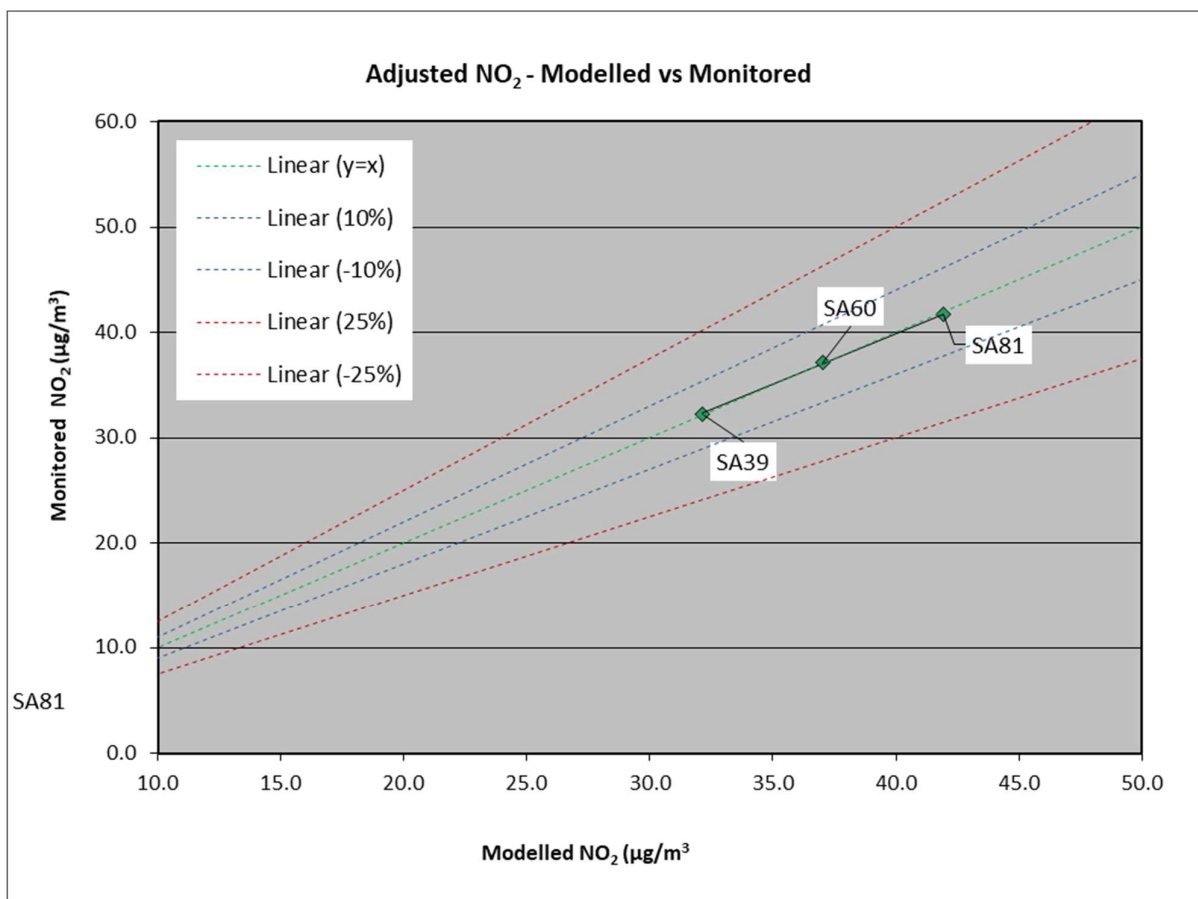
Table AII 10: Modelled Concentrations

Site ID	Monitored Road NO ₂ Concentration (µg/m³)	Adjusted Modelled Road NO ₂ Concentration (µg/m³)	% Difference (((Monitored Modelled)/Monitored)) * 100
SA81	46.40	45.35	2%
SA60	36.66	35.31	4%
SA39	41.70	41.93	-1%
SA27	37.20	37.01	1%
MAN97	32.29	32.13	0%

As demonstrated in **Table AII 10**, the percentage difference between modelled and monitored concentrations is less than 10% at all locations, this reduces uncertainties in the model predictions and provide a robust representation of pollutant concentrations in accordance with the guidance suggested in LAQM.TG(16).

A graphical representation of the adjusted NO₂ concentrations is provided within Graph 2.

Graph 2 – Adjusted NO₂ Concentrations



As PM monitoring is not undertaken within the assessment extents, the NO_x adjustment factor of **1.7611** was utilised to adjust model predictions of PM in accordance with the guidance provided within LAQM (TG16)².

CONSULTATION

There is the potential for the to expose future site users to elevated NO₂ and PM concentrations, as well as to cause impacts at sensitive locations during the construction and operational phases. The following methodology detailed was scoped with the Environmental Health Officer at MCC on 11/06/21 and agreed in principle. Summary of the

Table All 10: Modelled Concentrations

Consultee	Date and Time	Comments
Environmental Health department – Manchester City Council	11/06/2021, 9.37	Email sent in order to agree the scope of assessment methodology in line with current guidance and Standards. Approval given on the basis of previous Plot G acceptance