



APPENDIX 6.5 – SENSITIVITY ANALYSIS ROAD VEHICLE EXHUAUST IMPACTS

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2026 FUTURE YEAR (2026 EMISSIONS)

Sensitivity analysis utilising 2026 operational traffic data, together with 2026 emission factors are provided below in Table 6.5.1 to Table 6.5.8. This approach assumes an emission drop off in line with DEFRA predictions supported due to the current shift towards a greater production and uptake low emission vehicles).

Predicted Concentrations across the Proposed Development

Annual mean NO₂ concentrations were predicted at sensitive uses across the Site for DS scenarios at the following building heights to represent exposure in 2026 across the ground to first floor levels of the Proposed Development:

- Ground Floor Level 00 (1.5m)

Background NO₂ and PM levels are likely to be lower at elevated heights due to increased distance from emission sources, such as roads. Therefore, predicted concentrations at heights above ground floor level are considered acceptable in regards to future exposure and have not been assessed further.

Annual Mean Nitrogen Dioxide (NO₂)

Predicted annual mean NO₂ concentrations across the Proposed Development site during the DS scenario are summarised in Table 6.5.1.

Table 6.5.1: Modelling Results - Annual Mean NO₂ at Proposed Sensitive Use

Floor Level	Predicted 2026 Annual Mean NO ₂ Concentration (µg/m ³) (2026 Emission Factors)			
	Phase C		Phase D	
	C1	C2	D1	D2
Ground (1.5m)	18.99 – 19.35	20.29 – 21.32	21.45 – 23.50	24.93 – 33.20

The predicted concentrations shown in Table 6.5.1 indicate that there were no exceedances of the AQO at sensitive locations across ground floor areas of the proposed development. As such, it is considered that annual mean NO₂ levels at the Proposed Development site should not be viewed as a constraint to development.

Predictions of 1-hour NO₂ concentrations were not produced as part of the dispersion modelling assessment. LAQM.(TG16) states if annual mean NO₂ concentrations are below 60µg/m³ then it is unlikely that the 1-hour AQO will be exceeded. As such, based on the results in Table 6.5.1, it is not predicted that on-site concentrations will exceed the 1-hour mean AQO for NO₂.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for residential use without the implementation of mitigation techniques to protect future site users from elevated NO₂ concentrations.

Annual Mean Particulate Matter (PM₁₀ & PM_{2.5})

Predicted annual mean PM concentrations across the Proposed Development site during the DS scenario are summarised in Table 6.5.2.

Table 6.5.2: Modelling Results - Annual Mean PM at Proposed Sensitive Use

Floor Level	Pollutant species	Predicted 2026 Annual Mean PM ₁₀ Concentration (µg/m ³) (2026 Emission Factors)			
		Phase C		Phase D	
		C1	C2	D1	D2
Ground (1.5m)	PM ₁₀	13.50 – 13.70	13.88 – 14.99	14.17 – 14.91	15.14 – 17.57
	PM _{2.5}	8.60 – 8.72	8.81 – 9.43	8.98 – 9.20	9.53 – 10.85

The predicted concentrations shown in Table 6.5.2Table 6.5.10 indicate that there were no exceedances of the annual mean AQOs for PM₁₀ or PM_{2.5} throughout the modelling area.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for proposed end use without the implementation of mitigation techniques to protect future site users from elevated PM concentrations.

Predicted Concentrations at Sensitive Receptors

Nitrogen Dioxide (NO₂)

Annual mean NO₂ concentrations were predicted for 2026 DM and DS scenarios and are summarised in Table 6.5.11. Reference should be made to Figure 6.7 for a graphical representation of these locations.

Table 6.5.3: Predicted Annual Mean NO₂ Concentrations

Potential Impact		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	25.61	25.69	0.08
R2	Residential - One Regent	24.43	24.51	0.08
R3	Residential - Miranda Court	28.27	28.34	0.07
R4	Residential - St Bartholomew's Drive	22.51	22.55	0.04
R5	Residential - Regent Plaza	27.08	27.14	0.06
R6	Residential - Regent Plaza	24.98	25.04	0.06
R7	Residential - Egerton Street	30.12	30.16	0.04
R8	Residential - Egerton Street	24.49	24.52	0.03
R9	Residential - Egerton Street	25.19	25.24	0.05
R10	Residential - Egerton Street	22.53	22.56	0.03
R11	Residential - Egerton Street	20.15	20.17	0.02
R12	Residential - Chester Road	25.21	25.22	0.01
R13	Commercial - Egerton Street	31.96	32.05	0.09
R14	Commercial - Egerton Street	29.36	29.44	0.08
R15	Residential - Wilburn Basin	21.15	21.21	0.06
R16	Residential - New Bailey Plot A3	21.40	21.45	0.05
R17	Residential – City Point	26.40	26.43	0.03
R18	Residential – Trinity Edge	30.51	30.57	0.06
R19	Residential - The Filaments	31.49	31.57	0.08
R20	Residential – Chapel Street	22.08	22.12	0.04

As indicated in Table 6.5.3, annual mean NO₂ concentrations were below the relevant AQO at all receptor locations considered.

Predicted impacts on annual mean NO₂ concentrations are summarised in Table 6.5.12.

Table 6.5.4: Predicted NO₂ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.20	75% or Less of AQO	Negligible
R2	Residential - One Regent	0.20	75% or Less of AQO	Negligible
R3	Residential - Miranda Court	0.18	75% or Less of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.10	75% or Less of AQO	Negligible
R5	Residential - Regent Plaza	0.15	75% or Less of AQO	Negligible
R6	Residential - Regent Plaza	0.15	75% or Less of AQO	Negligible
R7	Residential - Egerton Street	0.10	75% or Less of AQO	Negligible
R8	Residential - Egerton Street	0.08	75% or Less of AQO	Negligible
R9	Residential - Egerton Street	0.12	75% or Less of AQO	Negligible
R10	Residential - Egerton Street	0.07	75% or Less of AQO	Negligible
R11	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.02	75% or Less of AQO	Negligible
R13	Commercial - Egerton Street	0.22	76-94% of AQO	Negligible
R14	Commercial - Egerton Street	0.20	75% or Less of AQO	Negligible
R15	Residential - Wilburn Basin	0.15	75% or Less of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.13	75% or Less of AQO	Negligible
R17	Residential – City Point	0.08	75% or Less of AQO	Negligible
R18	Residential – Trinity Edge	0.15	76-94% of AQO	Negligible
R19	Residential - The Filaments	0.20	76-94% of AQO	Negligible
R20	Residential – Chapel Street	0.10	75% or Less of AQO	Negligible

As indicated in Table 6.5.11 impacts on annual mean NO₂ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations when considering 2030 emission factors.

The overall impacts as a result of the Proposed Development upon existing NO₂ concentration using this approach are **not** significant. Further justifications are discussed Chapter 6 of the Main ES.

Particulate Matter (PM₁₀)

Annual mean PM₁₀ concentrations were predicted for 2026 DM and DS scenarios and are summarised Table 6.5.13.

Table 6.5.5: Predicted Annual Mean PM₁₀ Concentrations

Potential Impact		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	15.51	15.53	0.02
R2	Residential - One Regent	14.98	15.00	0.02
R3	Residential - Miranda Court	16.10	16.12	0.02
R4	Residential - St Bartholomew's Drive	14.51	14.52	0.01
R5	Residential - Regent Plaza	15.61	15.63	0.02
R6	Residential - Regent Plaza	15.33	15.35	0.02
R7	Residential - Egerton Street	17.40	17.42	0.02
R8	Residential - Egerton Street	15.47	15.48	0.01
R9	Residential - Egerton Street	16.06	16.08	0.02
R10	Residential - Egerton Street	14.96	14.98	0.02
R11	Residential - Egerton Street	14.14	14.15	0.01
R12	Residential - Chester Road	15.35	15.35	0.00
R13	Commercial - Egerton Street	19.35	19.39	0.04
R14	Commercial - Egerton Street	18.12	18.16	0.04
R15	Residential - Wilburn Basin	14.22	14.24	0.02
R16	Residential - New Bailey Plot A3	13.29	13.30	0.01
R17	Residential - City Point	13.79	13.80	0.01
R18	Residential - Trinity Edge	15.33	15.35	0.02
R19	Residential - The Filaments	15.09	15.11	0.02
R20	Residential - Chapel Street	13.44	13.45	0.01

As indicated in Table 6.5.13 annual mean PM₁₀ concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts on annual mean PM₁₀ concentrations are summarised in Table 6.5.14:

Table 6.5.6: Predicted PM₁₀ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.05	75% or Less of AQO	Negligible
R2	Residential - One Regent	0.05	75% or Less of AQO	Negligible
R3	Residential - Miranda Court	0.05	75% or Less of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.02	75% or Less of AQO	Negligible
R5	Residential - Regent Plaza	0.05	75% or Less of AQO	Negligible
R6	Residential - Regent Plaza	0.05	75% or Less of AQO	Negligible
R7	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R8	Residential - Egerton Street	0.02	75% or Less of AQO	Negligible
R9	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R10	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R11	Residential - Egerton Street	0.02	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.00	75% or Less of AQO	Negligible
R13	Commercial - Egerton Street	0.10	75% or Less of AQO	Negligible
R14	Commercial - Egerton Street	0.10	75% or Less of AQO	Negligible
R15	Residential - Wilburn Basin	0.05	75% or Less of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.03	75% or Less of AQO	Negligible
R17	Residential – City Point	0.03	75% or Less of AQO	Negligible
R18	Residential – Trinity Edge	0.05	75% or Less of AQO	Negligible
R19	Residential - The Filaments	0.05	75% or Less of AQO	Negligible
R20	Residential – Chapel Street	0.02	75% or Less of AQO	Negligible

As indicated in Table 6.5.14: impacts on annual mean PM₁₀ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations.

It is therefore considered that the overall impacts as a result of the Proposed Development are not significant. Further justifications are discussed within Chapter 6 of the ES.

Particulate Matter (PM_{2.5})

Annual mean PM_{2.5} concentrations were predicted for 2031 DM and DS scenarios and are summarised Table 6.5.15.

Table 6.5.7: Predicted Annual Mean PM_{2.5} Concentrations

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	9.73	9.74	0.01
R2	Residential - One Regent	9.44	9.45	0.01
R3	Residential - Miranda Court	10.07	10.08	0.01
R4	Residential - St Bartholomew's Drive	9.17	9.17	0.00
R5	Residential - Regent Plaza	9.80	9.81	0.01
R6	Residential - Regent Plaza	9.63	9.64	0.01
R7	Residential - Egerton Street	10.78	10.79	0.01
R8	Residential - Egerton Street	9.69	9.70	0.01
R9	Residential - Egerton Street	10.01	10.02	0.01
R10	Residential - Egerton Street	9.41	9.41	0.00
R11	Residential - Egerton Street	8.94	8.95	0.01
R12	Residential - Chester Road	9.64	9.64	0.00
R13	Commercial - Egerton Street	11.82	11.85	0.03
R14	Commercial - Egerton Street	11.15	11.17	0.02
R15	Residential - Wilburn Basin	9.00	9.01	0.01

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R16	Residential - New Bailey Plot A3	8.52	8.53	0.01
R17	Residential – City Point	8.73	8.74	0.01
R18	Residential – Trinity Edge	9.59	9.60	0.01
R19	Residential - The Filaments	9.47	9.49	0.02
R20	Residential – Chapel Street	8.61	8.62	0.01

As indicated in Table 6.5.15 annual mean PM_{2.5} concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts on annual mean PM_{2.5} concentrations are summarised in Table 6.5.16.

Table 6.5.8: Predicted PM_{2.5} Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.04	75% or Less of AQO	Negligible
R2	Residential - One Regent	0.04	75% or Less of AQO	Negligible
R3	Residential - Miranda Court	0.04	75% or Less of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.00	75% or Less of AQO	Negligible
R5	Residential - Regent Plaza	0.04	75% or Less of AQO	Negligible
R6	Residential - Regent Plaza	0.04	75% or Less of AQO	Negligible
R7	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R8	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R9	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R10	Residential - Egerton Street	0.00	75% or Less of AQO	Negligible
R11	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.00	75% or Less of AQO	Negligible
R13	Commercial - Egerton Street	0.12	75% or Less of AQO	Negligible
R14	Commercial - Egerton Street	0.08	75% or Less of AQO	Negligible
R15	Residential - Wilburn Basin	0.04	75% or Less of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.04	75% or Less of AQO	Negligible
R17	Residential – City Point	0.04	75% or Less of AQO	Negligible
R18	Residential – Trinity Edge	0.04	75% or Less of AQO	Negligible
R19	Residential - The Filaments	0.08	75% or Less of AQO	Negligible
R20	Residential – Chapel Street	0.04	75% or Less of AQO	Negligible

As indicated within Table 6.5.16, impacts on annual mean PM_{2.5} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations. It is therefore considered that the overall impacts as a result of the Proposed Development are **not significant**. Further justifications are discussed within Chapter 6 of the ES.

2031 OPENING YEAR (2019 EMISSIONS)

Predicted Concentrations across the Proposed Development

Annual mean NO₂ concentrations were predicted at sensitive uses across the Site for DS scenarios at the following building heights to represent exposure in 2026 across the ground to first floor levels of the Proposed Development:

- Ground Floor Level 00 (1.5m);
- First Floor Level 01 (5.7m);
- Second Floor Level 02 (8.6m); and
- Third Floor Level 03 (12.9m)
- Fourth Floor Level 04 (17.2m)

Background NO₂ and PM levels are likely to be lower at elevated heights due to increased distance from emission sources, such as roads. Therefore, predicted concentrations at heights above second floor level are considered acceptable in regards to future exposure and have not been assessed further.

Annual Mean Nitrogen Dioxide (NO₂)

Predicted annual mean NO₂ concentrations across the Proposed Development site during the DS scenario are summarised in Table 6.5.9.

Table 6.5.9: Modelling Results - Annual Mean NO₂ at Proposed Sensitive Use

Floor Level	Predicted 2031 Annual Mean NO ₂ Concentration (µg/m ³) (2019 Emission Factors)			
	Phase C		Phase D	
	C1	C2	D1	D2
Ground (1.5m)	27.59 – 28.97	30.29 – 37.59	32.77 – 36.87	41.62 – 58.09
First (5.7m)	27.09 – 28.07	29.19 – 33.74	31.74 – 33.80	37.19 – 43.30
Second (8.6m)	26.50 – 27.29	28.10 – 30.50	30.17 – 31.85	33.67 – 36.14

The predicted concentrations shown in Table 6.5.9 predicted NO₂ concentrations did exceed the annual mean AQO at ground and first floor level of Plot D2. Based on the results of the dispersion modelling and areas of exceedance (see Figures 6.6 to 6.8) there is not a requirement to implement additional mitigation measures at either Building to safeguard future occupants. Annual mean NO₂ concentrations above the relevant AQO are crucially only present at non-sensitive uses. Such areas include car parking, substation and generator rooms as well as refuge and cycle stores. Critically, annual mean NO₂ concentration across sensitive residential use (fourth floor) of Plots C and D are predicted to be below the relevant AQO and thus deemed acceptable.

Predictions of 1-hour NO₂ concentrations were not produced as part of the dispersion modelling assessment. LAQM.(TG16) states if annual mean NO₂ concentrations are below 60µg/m³ then it is unlikely that the 1-hour AQO will be exceeded. As such, based on the results in Table 6.5.9, it is not predicted that on-site concentrations will exceed the 1-hour mean AQO for NO₂.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for residential use without the implementation of mitigation techniques to protect future site users from elevated NO₂ concentrations.

Annual Mean Particulate Matter (PM₁₀ & PM_{2.5})

Predicted annual mean PM concentrations across the Proposed Development site during the DS scenario are summarised in Table 6.5.10.

Table 6.5.10: Modelling Results - Annual Mean PM at Proposed Sensitive Use

Floor Level	Pollutant species	Predicted 2031 Annual Mean PM ₁₀ Concentration (µg/m ³) (2019 Emission Factors)			
		Phase C		Phase D	
		C1	C2	D1	D2
Ground (1.5m)	PM ₁₀	14.63 – 14.71	14.91 – 16.13	15.34 – 15.69	16.34 – 18.74
	PM _{2.5}	9.33 – 9.46	9.58 – 10.30	9.85 – 10.16	10.48 – 11.92

The predicted concentrations shown in Table 6.5.10 indicate that there were no exceedances of the annual mean AQOs for PM₁₀ or PM_{2.5} throughout the modelling area.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for proposed end use without the implementation of mitigation techniques to protect future site users from elevated PM concentrations.

Predicted Concentrations at Sensitive Receptors

Nitrogen Dioxide (NO₂)

Annual mean NO₂ concentrations were predicted for 2031 DM and DS scenarios and are summarised in Table 6.5.11. Reference should be made to Figure 6.7 for a graphical representation of these locations.

Table 6.5.11: Predicted Annual Mean NO₂ Concentrations

Potential Impact		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	41.44	41.59	0.15
R2	Residential - One Regent	38.96	39.10	0.14
R3	Residential - Miranda Court	46.50	46.63	0.13
R4	Residential - St Bartholomew's Drive	35.14	35.23	0.09
R5	Residential - Regent Plaza	44.19	44.30	0.11
R6	Residential - Regent Plaza	39.98	40.08	0.10
R7	Residential - Egerton Street	49.52	49.60	0.08
R8	Residential - Egerton Street	38.56	38.61	0.05
R9	Residential - Egerton Street	39.88	39.97	0.09
R10	Residential - Egerton Street	34.63	34.69	0.06
R11	Residential - Egerton Street	29.96	30.01	0.05
R12	Residential - Chester Road	40.19	40.23	0.04
R13	Commercial - Egerton Street	52.66	52.82	0.16
R14	Commercial - Egerton Street	47.76	47.90	0.14
R15	Residential - Wilburn Basin	31.98	32.10	0.12
R16	Residential - New Bailey Plot A3	31.52	31.63	0.11
R17	Residential - City Point	36.38	36.45	0.07
R18	Residential - Trinity Edge	44.58	44.70	0.12
R19	Residential - The Filaments	46.67	46.84	0.17
R20	Residential - Chapel Street	32.84	32.94	0.10

As indicated in Table 6.5.11, annual mean NO₂ concentrations exceeded the AQO at 9 sensitive human receptor locations considered in both the DM and DS scenarios.

One new exceedance of the AQO is anticipated to arise as a result of the Proposed Development, this concerns location R6 in which the existing baseline DM concentrations is 0.02µg/m³ below the AQO. As such, the exceedance is a result of negligible change. The remaining 11 human receptor locations were predicted to experience NO₂ concentrations below the relevant AQO.

Predicted impacts on annual mean NO₂ concentrations are summarised in Table 6.5.12.

Table 6.5.12: Predicted NO₂ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.38	103-109% of AQO	Negligible
R2	Residential - One Regent	0.35	95-102% of AQO	Negligible
R3	Residential - Miranda Court	0.33	110+ of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.22	76-94% of AQO	Negligible
R5	Residential - Regent Plaza	0.27	110+ of AQO	Negligible
R6	Residential - Regent Plaza	0.25	95-102% of AQO	Negligible
R7	Residential - Egerton Street	0.20	110+ of AQO	Negligible
R8	Residential - Egerton Street	0.12	95-102% of AQO	Negligible
R9	Residential - Egerton Street	0.22	95-102% of AQO	Negligible
R10	Residential - Egerton Street	0.15	76-94% of AQO	Negligible
R11	Residential - Egerton Street	0.13	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.10	95-102% of AQO	Negligible
R13	Commercial - Egerton Street	0.40	110+ of AQO	Negligible
R14	Commercial - Egerton Street	0.35	110+ of AQO	Negligible
R15	Residential - Wilburn Basin	0.30	76-94% of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.27	76-94% of AQO	Negligible
R17	Residential – City Point	0.18	76-94% of AQO	Negligible
R18	Residential – Trinity Edge	0.30	110+ of AQO	Negligible
R19	Residential - The Filaments	0.43	110+ of AQO	Negligible
R20	Residential – Chapel Street	0.25	76-94% of AQO	Negligible

As indicated in Table 6.5.11 impacts on annual mean NO₂ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **negligible** at all 20 human sensitive receptors.

Based on the results, the overall impact significance upon annual mean NO₂ concentrations as a result of the Proposed Development was determined to be not significant.

Particulate Matter (PM₁₀)

Annual mean PM₁₀ concentrations were predicted for 2031 DM and DS scenarios and are summarised Table 6.5.13.

Table 6.5.13: Predicted Annual Mean PM₁₀ Concentrations

Potential Impact		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	16.78	16.81	0.03
R2	Residential - One Regent	16.17	16.20	0.03
R3	Residential - Miranda Court	17.42	17.44	0.02
R4	Residential - St Bartholomew's Drive	15.64	15.66	0.02
R5	Residential - Regent Plaza	16.86	16.88	0.02
R6	Residential - Regent Plaza	16.52	16.54	0.02
R7	Residential - Egerton Street	18.77	18.79	0.02
R8	Residential - Egerton Street	16.62	16.63	0.01
R9	Residential - Egerton Street	17.25	17.27	0.02
R10	Residential - Egerton Street	16.06	16.07	0.01
R11	Residential - Egerton Street	15.19	15.20	0.01
R12	Residential - Chester Road	16.56	16.57	0.01
R13	Commercial - Egerton Street	20.81	20.86	0.05
R14	Commercial - Egerton Street	19.47	19.51	0.04
R15	Residential - Wilburn Basin	15.27	15.29	0.02
R16	Residential - New Bailey Plot A3	14.31	14.32	0.01
R17	Residential - City Point	14.89	14.90	0.01
R18	Residential - Trinity Edge	16.55	16.57	0.02
R19	Residential - The Filaments	16.36	16.38	0.02
R20	Residential - Chapel Street	14.46	14.48	0.02

As indicated in Table 6.5.13 annual mean PM₁₀ concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts on annual mean PM₁₀ concentrations are summarised in Table 6.5.14:

Table 6.5.14: Predicted PM₁₀ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.07	75% or Less of AQO	Negligible
R2	Residential - One Regent	0.07	75% or Less of AQO	Negligible
R3	Residential - Miranda Court	0.05	75% or Less of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.05	75% or Less of AQO	Negligible
R5	Residential - Regent Plaza	0.05	75% or Less of AQO	Negligible
R6	Residential - Regent Plaza	0.05	75% or Less of AQO	Negligible
R7	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R8	Residential - Egerton Street	0.02	75% or Less of AQO	Negligible
R9	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R10	Residential - Egerton Street	0.03	75% or Less of AQO	Negligible
R11	Residential - Egerton Street	0.02	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.03	75% or Less of AQO	Negligible
R13	Commercial - Egerton Street	0.13	75% or Less of AQO	Negligible
R14	Commercial - Egerton Street	0.10	75% or Less of AQO	Negligible
R15	Residential - Wilburn Basin	0.05	75% or Less of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.02	75% or Less of AQO	Negligible
R17	Residential - City Point	0.02	75% or Less of AQO	Negligible
R18	Residential - Trinity Edge	0.05	75% or Less of AQO	Negligible
R19	Residential - The Filaments	0.05	75% or Less of AQO	Negligible
R20	Residential - Chapel Street	0.05	75% or Less of AQO	Negligible

As indicated in Table 6.5.14: impacts on annual mean PM₁₀ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations.

It is therefore considered that the overall impacts as a result of the Proposed Development are not significant. Further justifications are discussed within Chapter 6 of the ES.

Particulate Matter (PM_{2.5})

Annual mean PM_{2.5} concentrations were predicted for 2031 DM and DS scenarios and are summarised Table 6.5.15.

Table 6.5.15: Predicted Annual Mean PM_{2.5} Concentrations

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	10.70	10.71	0.01
R2	Residential - One Regent	10.35	10.36	0.01
R3	Residential - Miranda Court	11.10	11.11	0.01
R4	Residential - St Bartholomew's Drive	10.02	10.03	0.01
R5	Residential - Regent Plaza	10.77	10.78	0.01
R6	Residential - Regent Plaza	10.54	10.55	0.01
R7	Residential - Egerton Street	11.85	11.86	0.01
R8	Residential - Egerton Street	10.58	10.58	0.00
R9	Residential - Egerton Street	10.93	10.94	0.01
R10	Residential - Egerton Street	10.23	10.24	0.01
R11	Residential - Egerton Street	9.72	9.73	0.01
R12	Residential - Chester Road	10.56	10.57	0.01
R13	Commercial - Egerton Street	12.97	12.99	0.02
R14	Commercial - Egerton Street	12.20	12.22	0.02
R15	Residential - Wilburn Basin	9.79	9.80	0.01

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R16	Residential - New Bailey Plot A3	9.30	9.31	0.01
R17	Residential – City Point	9.56	9.57	0.01
R18	Residential – Trinity Edge	10.53	10.55	0.02
R19	Residential - The Filaments	10.46	10.48	0.02
R20	Residential – Chapel Street	9.40	9.40	0.00

As indicated in Table 6.5.15 annual mean PM_{2.5} concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts on annual mean PM_{2.5} concentrations are summarised in Table 6.5.16.

Table 6.5.16: Predicted PM_{2.5} Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.04	75% or Less of AQO	Negligible
R2	Residential - One Regent	0.04	75% or Less of AQO	Negligible
R3	Residential - Miranda Court	0.04	75% or Less of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.04	75% or Less of AQO	Negligible
R5	Residential - Regent Plaza	0.04	75% or Less of AQO	Negligible
R6	Residential - Regent Plaza	0.04	75% or Less of AQO	Negligible
R7	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R8	Residential - Egerton Street	0.00	75% or Less of AQO	Negligible
R9	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R10	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R11	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.04	75% or Less of AQO	Negligible
R13	Commercial - Egerton Street	0.08	75% or Less of AQO	Negligible
R14	Commercial - Egerton Street	0.08	75% or Less of AQO	Negligible
R15	Residential - Wilburn Basin	0.04	75% or Less of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.04	75% or Less of AQO	Negligible
R17	Residential – City Point	0.04	75% or Less of AQO	Negligible
R18	Residential – Trinity Edge	0.08	75% or Less of AQO	Negligible
R19	Residential - The Filaments	0.08	75% or Less of AQO	Negligible
R20	Residential – Chapel Street	0.00	75% or Less of AQO	Negligible

As indicated within Table 6.5.16, impacts on annual mean PM_{2.5} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations. It is therefore considered that the overall impacts as a result of the Proposed Development are **not significant**. Further justifications are discussed within Chapter 6 of the ES.

2031 OPENING YEAR (2030 EMISSIONS)

Sensitivity analysis utilising 2031 operational traffic data, together with 2030 emission factors is provided below in Table 6.5.17 to Table 6.5.24. This approach assumes an emission drop off in line with DEFRA predictions supported due to the current shift towards a greater production and uptake low emission vehicles).

Predicted Concentrations across the Proposed Development

Annual mean NO₂ concentrations were predicted at sensitive uses across the Site for DS scenarios at the following building heights to represent exposure in 2026 across the ground level of the Proposed Development:

Background NO₂ and PM levels are likely to be lower at elevated heights due to increased distance from emission sources, such as roads. Therefore, predicted concentrations at heights above ground floor level are considered acceptable in regards to future exposure and have not been assessed further.

Annual Mean Nitrogen Dioxide (NO₂)

Predicted annual mean NO₂ concentrations across the Proposed Development site during the DS scenario are summarised in Table 6.5.17.

Table 6.5.17: Modelling Results - Annual Mean NO₂ at Proposed Sensitive Use

Floor Level	Predicted 2031 Annual Mean NO ₂ Concentration (µg/m ³) (2030 Emission Factors)			
	Phase C		Phase D	
	C1	C2	D1	D2
Ground (1.5m)	16.72 – 17.14	17.60 – 20.16	18.54 – 19.40	20.09 – 26.08

The predicted concentrations shown in Table 6.5.17Table 6.5.9 indicate that there were no exceedances of the AQO at sensitive locations across ground floor areas of the proposed development. As such, it is considered that annual mean NO₂ levels at the Proposed Development site should not be viewed as a constraint to development.

Predictions of 1-hour NO₂ concentrations were not produced as part of the dispersion modelling assessment. LAQM.(TG16) states if annual mean NO₂ concentrations are below 60µg/m³ then it is unlikely that the 1-hour AQO will be exceeded. As such, based on the results in Table 6.5.17, it is not predicted that on-site concentrations will exceed the 1-hour mean AQO for NO₂.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for residential use without the implementation of mitigation techniques to protect future site users from elevated NO₂ concentrations.

Annual Mean Particulate Matter (PM₁₀ & PM_{2.5})

Predicted annual mean PM concentrations across the Proposed Development site during the DS scenario are summarised in Table 6.5.18.

Table 6.5.18: Modelling Results - Annual Mean PM at Proposed Sensitive Use

Floor Level	Pollutant species	Predicted 2031 Annual Mean PM ₁₀ Concentration (µg/m ³) (2030 Emission Factors)			
		Phase C		Phase D	
		C1	C2	D1	D2
Ground (1.5m)	PM ₁₀	13.48 – 13.69	13.87 – 14.97	14.56 – 14.28	15.13 – 17.47
	PM _{2.5}	8.57 – 8.69	8.80 – 9.40	8.95 – 9.41	9.53 – 10.69

The predicted concentrations shown in Table 6.5.18 indicate that there were no exceedances of the annual mean AQOs for PM10 or PM2.5 throughout the modelling area. As such, it is considered that annual mean PM levels at the Proposed Development site should not be viewed as a constraint to development.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for proposed end use without the implementation of mitigation techniques to protect future site users from elevated PM concentrations.

Predicted Concentrations at Sensitive Receptors

Nitrogen Dioxide (NO₂)

Annual mean NO₂ concentrations were predicted for 2031 DM and DS scenarios and are summarised in Table 6.5.19. Reference should be made to Figure 6 for a graphical representation of these locations.

Table 6.5.19: Predicted Annual Mean NO₂ Concentrations

Potential Impact		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	21.32	21.37	0.05
R2	Residential - One Regent	20.52	20.57	0.05
R3	Residential - Miranda Court	23.25	23.29	0.04
R4	Residential - St Bartholomew's Drive	19.17	19.20	0.03
R5	Residential - Regent Plaza	22.43	22.48	0.05
R6	Residential - Regent Plaza	20.92	20.96	0.04
R7	Residential - Egerton Street	24.56	24.59	0.03
R8	Residential - Egerton Street	20.56	20.58	0.02
R9	Residential - Egerton Street	21.01	21.04	0.03
R10	Residential - Egerton Street	19.16	19.18	0.02
R11	Residential - Egerton Street	17.48	17.50	0.02
R12	Residential - Chester Road	21.07	21.08	0.01
R13	Commercial - Egerton Street	25.75	25.81	0.06
R14	Commercial - Egerton Street	23.91	23.97	0.06
R15	Residential - Wilburn Basin	18.21	18.24	0.03
R16	Residential - New Bailey Plot A3	18.73	18.77	0.04
R17	Residential - City Point	23.89	23.91	0.02
R18	Residential - Trinity Edge	26.76	26.80	0.04
R19	Residential - The Filaments	27.45	27.51	0.06
R20	Residential - Chapel Street	19.22	19.25	0.03

As indicated in Table 6.5.19 annual mean NO₂ concentrations were below the relevant AQO at all receptor locations considered.

Predicted impacts on annual mean NO₂ concentrations are summarised in Table 6.5.20.

Table 6.5.20: Predicted NO₂ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.13	75% or Less of AQO	Negligible
R2	Residential - One Regent	0.13	75% or Less of AQO	Negligible
R3	Residential - Miranda Court	0.10	75% or Less of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.07	75% or Less of AQO	Negligible
R5	Residential - Regent Plaza	0.13	75% or Less of AQO	Negligible
R6	Residential - Regent Plaza	0.10	75% or Less of AQO	Negligible
R7	Residential - Egerton Street	0.08	75% or Less of AQO	Negligible
R8	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R9	Residential - Egerton Street	0.07	75% or Less of AQO	Negligible
R10	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R11	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.02	75% or Less of AQO	Negligible
R13	Commercial - Egerton Street	0.15	75% or Less of AQO	Negligible
R14	Commercial - Egerton Street	0.15	75% or Less of AQO	Negligible
R15	Residential - Wilburn Basin	0.07	75% or Less of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.10	75% or Less of AQO	Negligible
R17	Residential – City Point	0.05	75% or Less of AQO	Negligible
R18	Residential – Trinity Edge	0.10	75% or Less of AQO	Negligible
R19	Residential - The Filaments	0.15	75% or Less of AQO	Negligible
R20	Residential – Chapel Street	0.08	75% or Less of AQO	Negligible

As indicated in Table 6.5.20, impacts on annual mean NO₂ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations when considering 2030 emission factors.

The overall impacts as a result of the Proposed Development upon existing NO₂ concentration using this approach are not significant. Further justifications are discussed Chapter 6 of the Main ES.

Particulate Matter (PM₁₀)

Annual mean PM₁₀ concentrations were predicted for 2031 DM and DS scenarios and are summarised Table 6.5.21.

Table 6.5.21: Predicted Annual Mean PM₁₀ Concentrations

Potential Impact		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	15.52	15.55	0.03
R2	Residential - One Regent	14.99	15.02	0.03

Potential Impact		Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)		
		DM	DS	Change
R3	Residential - Miranda Court	16.14	16.16	0.02
R4	Residential - St Bartholomew's Drive	14.51	14.52	0.01
R5	Residential - Regent Plaza	15.64	15.66	0.02
R6	Residential - Regent Plaza	15.36	15.38	0.02
R7	Residential - Egerton Street	17.49	17.51	0.02
R8	Residential - Egerton Street	15.51	15.52	0.01
R9	Residential - Egerton Street	16.12	16.14	0.02
R10	Residential - Egerton Street	15.00	15.01	0.01
R11	Residential - Egerton Street	14.13	14.14	0.01
R12	Residential - Chester Road	15.37	15.38	0.01
R13	Commercial - Egerton Street	19.50	19.54	0.04
R14	Commercial - Egerton Street	18.25	18.28	0.03
R15	Residential - Wilburn Basin	14.22	14.24	0.02
R16	Residential - New Bailey Plot A3	13.27	13.29	0.02
R17	Residential – City Point	13.78	13.79	0.01
R18	Residential – Trinity Edge	15.36	15.38	0.02
R19	Residential - The Filaments	15.11	15.13	0.02
R20	Residential – Chapel Street	13.43	13.44	0.01

As indicated in Table 6.5.21 annual mean PM₁₀ concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts on annual mean PM₁₀ concentrations are summarised in Table 6.5.22.

Table 6.5.22: Predicted PM₁₀ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.08	75% or Less of AQO	Negligible
R2	Residential - One Regent	0.07	75% or Less of AQO	Negligible
R3	Residential - Miranda Court	0.05	75% or Less of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.02	75% or Less of AQO	Negligible
R5	Residential - Regent Plaza	0.05	75% or Less of AQO	Negligible
R6	Residential - Regent Plaza	0.05	75% or Less of AQO	Negligible
R7	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R8	Residential - Egerton Street	0.02	75% or Less of AQO	Negligible
R9	Residential - Egerton Street	0.05	75% or Less of AQO	Negligible
R10	Residential - Egerton Street	0.02	75% or Less of AQO	Negligible
R11	Residential - Egerton Street	0.02	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.03	75% or Less of AQO	Negligible
R13	Commercial - Egerton Street	0.10	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R14	Commercial - Egerton Street	0.08	75% or Less of AQO	Negligible
R15	Residential - Wilburn Basin	0.05	75% or Less of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.05	75% or Less of AQO	Negligible
R17	Residential – City Point	0.02	75% or Less of AQO	Negligible
R18	Residential – Trinity Edge	0.05	75% or Less of AQO	Negligible
R19	Residential - The Filaments	0.05	75% or Less of AQO	Negligible
R20	Residential – Chapel Street	0.02	75% or Less of AQO	Negligible

As indicated in Table 6.5.22, impacts on annual mean PM₁₀ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **negligible** at all receptor locations.

It is therefore considered that the overall impacts as a result of the Proposed Development are not significant. Further justifications are discussed in Chapter 6 of the Main ES.

Particulate Matter (PM_{2.5})

Annual mean PM_{2.5} concentrations were predicted for 2031 DM and DS scenarios and are summarised Table 6.5.23.

Table 6.5.23: Predicted Annual Mean PM_{2.5} Concentrations

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - One Regent	9.71	9.72	0.01
R2	Residential - One Regent	9.42	9.43	0.01
R3	Residential - Miranda Court	10.06	10.08	0.02
R4	Residential - St Bartholomew's Drive	9.15	9.15	0.00
R5	Residential - Regent Plaza	9.79	9.80	0.01
R6	Residential - Regent Plaza	9.62	9.63	0.01
R7	Residential - Egerton Street	10.79	10.81	0.02
R8	Residential - Egerton Street	9.69	9.70	0.01
R9	Residential - Egerton Street	10.02	10.03	0.01
R10	Residential - Egerton Street	9.40	9.41	0.01
R11	Residential - Egerton Street	8.93	8.93	0.00
R12	Residential - Chester Road	9.63	9.63	0.00
R13	Commercial - Egerton Street	11.88	11.90	0.02
R14	Commercial - Egerton Street	11.19	11.21	0.02
R15	Residential - Wilburn Basin	8.98	8.99	0.01
R16	Residential - New Bailey Plot A3	8.50	8.51	0.01
R17	Residential – City Point	8.71	8.71	0.00
R18	Residential – Trinity Edge	9.58	9.60	0.02
R19	Residential - The Filaments	9.46	9.47	0.01

Potential Impact		Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)		
		DM	DS	Change
R20	Residential – Chapel Street	8.59	8.60	0.01

As indicated in Table 6.5.23 annual mean PM_{2.5} concentrations were below the relevant AQO at all receptor locations considered. Predicted impacts on annual mean PM_{2.5} concentrations are summarised in Table 6.5.24.

Table 6.5.24: Predicted PM_{2.5} Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	Residential - One Regent	0.04	75% or Less of AQO	Negligible
R2	Residential - One Regent	0.04	75% or Less of AQO	Negligible
R3	Residential - Miranda Court	0.08	75% or Less of AQO	Negligible
R4	Residential - St Bartholomew's Drive	0.00	75% or Less of AQO	Negligible
R5	Residential - Regent Plaza	0.04	75% or Less of AQO	Negligible
R6	Residential - Regent Plaza	0.04	75% or Less of AQO	Negligible
R7	Residential - Egerton Street	0.08	75% or Less of AQO	Negligible
R8	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R9	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R10	Residential - Egerton Street	0.04	75% or Less of AQO	Negligible
R11	Residential - Egerton Street	0.00	75% or Less of AQO	Negligible
R12	Residential - Chester Road	0.00	75% or Less of AQO	Negligible
R13	Commercial - Egerton Street	0.08	75% or Less of AQO	Negligible
R14	Commercial - Egerton Street	0.08	75% or Less of AQO	Negligible
R15	Residential -Wilburn Basin	0.04	75% or Less of AQO	Negligible
R16	Residential - New Bailey Plot A3	0.04	75% or Less of AQO	Negligible
R17	Residential – City Point	0.00	75% or Less of AQO	Negligible
R18	Residential – Trinity Edge	0.08	75% or Less of AQO	Negligible
R19	Residential - The Filaments	0.04	75% or Less of AQO	Negligible
R20	Residential – Chapel Street	0.04	75% or Less of AQO	Negligible

As indicated in Table 6.5.24, impacts on annual mean PM_{2.5} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **negligible** at all receptor locations.

It is therefore considered that the overall impacts as a result of the Proposed Development are not significant. Further justifications are discussed in Chapter 6 of the Main ES.