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of construction road traffic modelling
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1. Introduction

- 1.1.1 This Appendix presents full quantitative results of the air quality modelling of construction road traffic associated with Rampion 2. This should be read in conjunction with **Chapter 19: Air quality, Volume 2** (Document Reference: 6.3.19) of the Environmental Statement (ES).
- 1.1.2 This Appendix includes the following:
- Modelled receptors, model verification, relevant monitoring locations and road links for Worthing AQMA (see **Figure 19.2A: Modelled roads and receptors in traffic model, Volume 3** (Document Reference: 6.3.19.2) of the ES; and
 - Modelled receptors, model verification, relevant monitoring locations and road links for Cowfold AQMA (see **Figure 19.2A: Modelled roads and receptors in traffic model, Volume 3** (Document Reference: 6.3.19.2) of the ES);
 - Modelled results for Worthing and Cowfold AQMAs.
- 1.1.3 **Table 1-6** and **Table 1-14** presents details of the receptors where air quality impacts have been modelled for Worthing and Cowfold AQMAs.
- 1.1.4 The methodology and results of the model verification process that was undertaken is also presented in this Appendix. Receptors considered for the model verification represent monitoring locations.

1.2 ADMS-Roads model verification

- 1.2.1 The ADMS-Roads dispersion model has been widely validated for this type of assessment and is specifically listed in the Department for Environment, Food and Rural Affairs (Defra) LAQM Technical Guidance (LAQM.TG(22)) guidance as an accepted dispersion model.
- 1.2.2 Model validation undertaken by the software developer (Cambridge Environmental Research Consultations (CERC)) will not have included validation in the vicinity of the proposed DCO Order Limits. It is therefore necessary to perform a comparison of modelled results with local monitoring data at relevant locations. This process of verification attempts to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment factor to gain greater confidence in the final results.
- 1.2.3 The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including uncertainties associated with:
- background concentration estimates;
 - meteorological data;
 - source activity data such as traffic flows and emissions factors;

- model input parameters such as surface roughness length, minimum Monin-Obukhov length (L_{MOmin});
- monitoring data, including locations; and
- overall model limitations.

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

1.2.5 Model setup parameters and input data were checked prior to running the models in order to reduce these uncertainties, as follows:

- traffic data;
- road widths;
- distance between sources and monitoring as represented in the model;
- speed estimates on roads;
- source types, such as elevated roads and street canyons;
- selection of representative meteorological data;
- background monitoring and background estimates; and
- monitoring data.

Model Uncertainty

1.2.6 An evaluation of model performance has been undertaken to establish confidence in model results. LAQM.TG22 identifies a number of statistical procedures that are appropriate to evaluate model performance and assess the uncertainty. These include:

- Root mean square error (RMSE);
- Fractional bias (FB); and
- Correlation coefficient (CC).

1.2.7 These parameters estimate how the model results agree or diverge from the observations. These calculations can be carried out prior to, and after adjustment, or based on different options for adjustment, and can provide useful information on model improvement. A brief for explanation of each statistic is provided in **Table 1-1**, and further details can be found in Box 7.17 of LAQM.TG22.

Table 1-1 Methods for describing model uncertainty.

Statistical Parameter	Comments	Ideal value
RMSE	<p>RMSE is used to define the average error or uncertainty of the model. The units of RMSE are the same as the quantities compared.</p> <p>If the RMSE values are higher than 25% of the objective being assessed, it is recommended that the model inputs and verification should be revisited in order to make improvements.</p> <p>For example, if the model predictions are for the annual mean NO₂ objective of 40µg/m³, if an RMSE of 10µg/m³ or above is determined for a model it is advised to revisit the model parameters and model verification.</p> <p>Ideally an RMSE within 10% of the air quality objective would be derived, which equates to 4µg/m³ for the annual mean NO₂ objective.</p>	0.01
Fractional Bias	<p>It is used to identify if the model shows a systematic tendency to over or under predict.</p> <p>FB values vary between +2 and -2 and has an ideal value of zero. Negative values suggest a model over-prediction and positive values suggest a model under-prediction.</p>	0.00
Correlation Coefficient	<p>It is used to measure the linear relationship between predicted and observed data. A value of zero means no relationship and a value of 1 means absolute relationship.</p> <p>This statistic can be particularly useful when comparing a large number of model and observed data points.</p>	1.00

- 1.2.8 To assess the uncertainty of a model, the RMSE is the simplest parameter to calculate providing an estimate of the average error of the model in the same units as the modelled predictions. It is also often easier to interpret the RMSE than the other statistical parameters and therefore it has been calculated in this assessment to understand the model uncertainty.

1.3 Worthing AQMA

Monitoring data

- 1.3.1 Suitable local monitoring data for the purpose of verification is available for annual mean nitrogen Oxides (NO_x)/Nitrogen dioxide (NO₂) concentrations as shown in **Table 1-2**. The monitoring locations presented were selected to provide suitable worst-case adjustment factors on local roads found with the Storrington Air Quality Management Area (AQMA).

Table 1-2 Local monitoring data suitable for ADMS-Roads model verification

Location	Type	2019 Annual Mean NO ₂ (µgm ⁻³)	X OS Grid Ref	Y OS Grid Ref
M01	Local	32.9	514184	104963
M04	Local	33.1	515190	105122
M06	Local	28.3	514495	105020
M09	Local	21.7	515315	105141
M12	Local	23.5	515151	105109
M13	Local	17.8	513845	105191
M16	Local	29.9	515014	105099
M19	Local	24.4	514266	104961
M20	Local	28.5	514088	104906
M22	Local	19.9	514199	104982
M23	Local	36.2	514184	104963
M24	Local	35.7	514184	104963
M25	Local	36.3	514184	104963
M29	Local	30.7	513278	105623

Verification calculations

- 1.3.2 The verification of the modelling output was performed in accordance with the methodology provided in LAQM.TG(22) (Department of Food, Environment and Rural Affairs, 2022). **Table 1-3** shows that there was the systematic under prediction of monitored concentrations for all sites.

Table 1-3 Verification, modelled versus monitored

Location	2019 Modelled Annual Mean NO ₂ (µgm ⁻³)	2019 Monitored Annual Mean NO ₂ (µgm ⁻³)	% (Modelled-Monitored)/ Monitored
M01	20.9	32.9	-36.5
M04	18.8	33.1	-43.4
M06	20.6	28.3	-27.2
M09	15.2	21.7	-29.8
M12	16.6	23.5	-29.5
M13	15.1	17.8	-15.3
M16	15.5	29.9	-48.3
M19	18.3	24.4	-25.1
M20	15.8	28.5	-44.6
M22	16.3	19.9	-18.3
M23	20.6	36.2	-43.2
M24	20.6	35.7	-42.4
M25	20.6	36.3	-43.3
M29	15.5	30.7	-49.6

1.3.3 **Table 1-4** shows the comparison of modelled road-NO_x, a direct output from the ADMS-Roads modelling, with the monitored road-NO_x, determined from the LAQM NO_x to NO₂ conversion tool.

Table 1-4 Comparison of modelled and monitored road NO_x to determine verification factor

Site	2019 Modelled Annual Mean Road NO _x (µgm ⁻³)	2019 Monitored Annual Mean Road NO _x (µgm ⁻³)	Ratio
M01	15.7	40.3	2.6
M04	14.3	43.6	3.1
M06	18.4	34.0	1.8

Site	2019 Modelled Annual Mean Road NO _x (µgm ⁻³)	2019 Monitored Annual Mean Road NO _x (µgm ⁻³)	Ratio
M09	7.6	20.0	2.6
M12	10.1	23.6	2.3
M13	6.5	11.6	1.8
M16	8.1	36.7	4.6
M19	10.7	22.7	2.1
M20	6.1	31.0	5.1
M22	6.9	13.8	2.0
M23	15.1	47.6	3.1
M24	15.1	46.5	3.1
M25	15.1	47.8	3.2
M29	7.2	37.5	5.2

- 1.3.4 The road-NO_x adjustment factor was determined as the slope of the best fit line between the 'measured' road contribution and the model derived road contribution, forced through zero (**Figure 19.1.1**). This factor was then applied to the modelled road-NO_x concentration for each monitoring site to provide adjusted modelled road-NO_x concentrations. The total nitrogen dioxide concentrations were then determined by inputting the adjusted modelled road-NO_x concentrations and the background NO₂ concentration into the NO_x to NO₂ calculator.
- 1.3.5 **Table 1-5** shows the comparison of the modelled NO₂ concentration calculated by multiplying the modelled road NO_x by the adjustment factor of 2.8 using the LAQM's NO_x to NO₂ conversion tool to calculate the total adjusted modelled NO₂. This factor was also used to adjust Particulate Matter (PM) concentrations.

Figure 19.1.1 Comparison of Measured Road-NOx with Unadjusted Modelled Road-NOx

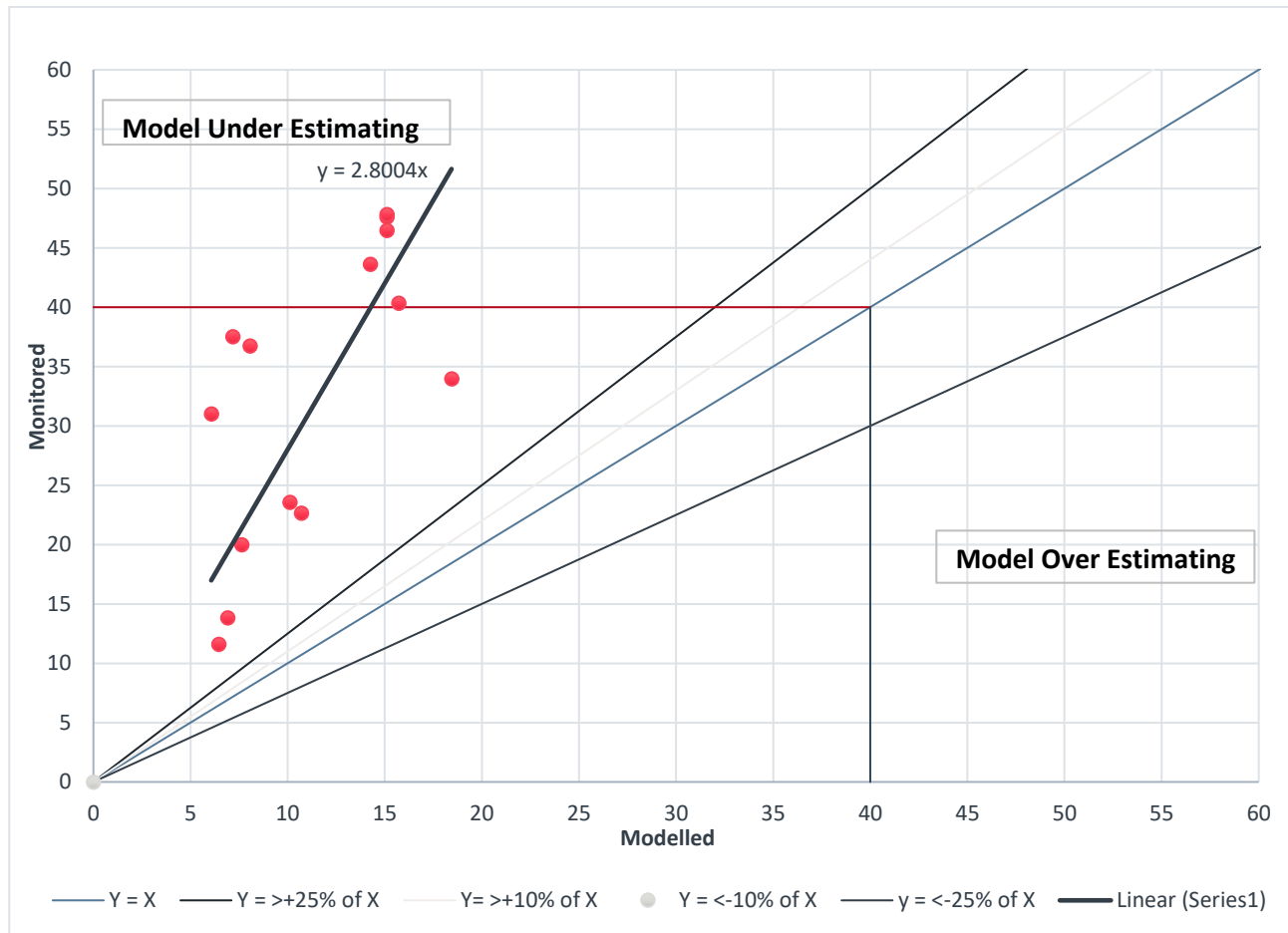


Table 1-5 Comparison of modelled and monitored road NO_x to determine verification factor

Site	2019 Background NO ₂ Concentration (µgm ⁻³)	2019 Adjusted Modelled Annual Mean NO ₂ (µgm ⁻³)	2019 Monitored Annual Mean NO ₂ (µgm ⁻³)	% (Adjusted Modelled-Monitored)/ Monitored
M01	12.9	34.6	32.9	5.1%
M04	11.1	31.4	33.1	-5.1%
M06	10.8	36.5	28.3	28.8%
M09	11.1	22.4	21.7	3.2%
M12	11.1	25.9	23.5	10.0%
M13	11.8	21.2	17.8	18.9%

Site	2019 Background NO ₂ Concentration (µg ^m - ³)	2019 Adjusted Modelled Annual Mean NO ₂ (µg ^m - ³)	2019 Monitored Annual Mean NO ₂ (µg ^m - ³)	% (Adjusted Modelled-Monitored)/ Monitored
M16	11.1	23.0	29.9	-23.0%
M19	12.9	28.0	24.4	14.8%
M20	12.9	21.5	28.5	-24.5%
M22	12.9	22.8	19.9	14.3%
M23	12.9	33.8	36.2	-6.6%
M24	12.9	33.8	35.7	-5.3%
M25	12.9	33.8	36.3	-6.8%
M29	11.8	22.2	30.7	-27.7%

- 1.3.6 Prior to adjustment, the calculated RMSE was **11.6µg/m³**. Following adjustment, this reduced to **4.6µg/m³**. This is just outside the ideal range of 10% for model performance and well within the 25% range for acceptable performance. Therefore, in accordance with LAQM.TG22, the model predictions are considered robust.

ADMS-Roads model results

- 1.3.7 The traffic roads model considered receptors R1 to R193 and they represent residential properties or other locations of relevant exposure along the considered road links. **Table 1-7** to **Table 1-9** present modelled annual mean nitrogen dioxide (NO₂) and PM (PM₁₀ and PM_{2.5}) concentrations, along with the impact descriptor according to Institute of Air Quality Management (IAQM) (2017) guidance. Results are presented to several decimal places. This is to aid comparison against Air Quality Objectives (AQOs), between receptors and between the 'With Proposed Development' and 'Without Proposed Development' scenarios. The number of decimal places should not be interpreted as an indication of the accuracy of the results.
- 1.3.8 The table headers use terminology promulgated by the Environment Agency (2020) but widely used in air quality assessments. The Process Contribution (PC) is the contribution to the concentration of pollutant arising from the Proposed Development, in this case from road traffic generated by construction activity. The Predicted Environmental Contribution (PEC) is the total concentration, including the contribution from the Proposed Development plus the contribution from all other sources, including background sources and road traffic not associated with the Proposed Development.

Table 1-6 List of receptors where impacts due to construction traffic are modelled

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R1	Human	513342	105603	1.6	N/A	Yes
R2	Human	513346	105630	1.6	N/A	Yes
R3	Human	513369	105594	1.6	N/A	Yes
R4	Human	513388	105618	1.6	N/A	Yes
R5	Human	513385	105590	1.6	N/A	Yes
R6	Human	513401	105585	1.6	N/A	Yes
R7	Human	513418	105582	1.6	N/A	Yes
R8	Human	513433	105576	1.6	N/A	Yes
R9	Human	513447	105570	1.6	N/A	Yes
R10	Human	513471	105569	1.6	N/A	Yes
R11	Human	513502	105568	1.6	N/A	Yes
R12	Human	513500	105588	1.6	N/A	Yes
R13	Human	513574	105540	1.6	N/A	No
R14	Human	513589	105526	1.6	N/A	No
R15	Human	513598	105516	1.6	N/A	No
R16	Human	513615	105523	1.6	N/A	No
R17	Human	513635	105506	1.6	N/A	No
R18	Human	513670	105467	1.6	N/A	No
R19	Human	513711	105400	1.6	N/A	No
R20	Human	513717	105395	1.6	N/A	No
R21	Human	513731	105385	1.6	N/A	No
R22	Human	513746	105373	1.6	N/A	No
R23	Human	513794	105335	1.6	N/A	No

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R24	Human	513812	105321	1.6	N/A	No
R25	Human	513820	105315	1.6	N/A	No
R26	Human	513838	105303	1.6	N/A	No
R27	Human	513866	105246	1.6	N/A	Yes
R28	Human	513864	105229	1.6	N/A	Yes
R29	Human	513914	105276	1.6	N/A	Yes
R30	Human	513929	105228	1.6	N/A	Yes
R31	Human	513955	105300	1.6	N/A	Yes
R32	Human	514082	105288	1.6	N/A	Yes
R33	Human	514104	105197	1.6	N/A	Yes
R34	Human	514135	104975	1.6	N/A	Yes
R35	Human	514152	104976	1.6	N/A	Yes
R36	Human	514166	104978	1.6	N/A	Yes
R37	Human	514182	104980	1.6	N/A	Yes
R38	Human	514200	104983	1.6	N/A	Yes
R39	Human	514215	104985	1.6	N/A	Yes
R40	Human	514232	104991	1.6	N/A	Yes
R41	Human	514253	104998	1.6	N/A	Yes
R42	Human	514269	105008	1.6	N/A	Yes
R43	Human	514285	105013	1.6	N/A	Yes
R44	Human	514304	105016	1.6	N/A	Yes
R45	Human	514320	105021	1.6	N/A	Yes
R46	Human	514335	105027	1.6	N/A	Yes
R47	Human	514355	105030	1.6	N/A	Yes

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R48	Human	514370	105033	1.6	N/A	Yes
R49	Human	514385	105036	1.6	N/A	Yes
R50	Human	514414	105034	1.6	N/A	Yes
R51	Human	514424	105037	1.6	N/A	Yes
R52	Human	514439	105037	1.6	N/A	Yes
R53	Human	514451	105036	1.6	N/A	Yes
R54	Human	514470	105038	1.6	N/A	Yes
R55	Human	514484	105033	1.6	N/A	Yes
R56	Human	514522	105036	1.6	N/A	Yes
R57	Human	514537	105039	1.6	N/A	Yes
R58	Human	514556	105043	1.6	N/A	Yes
R59	Human	514570	105047	1.6	N/A	Yes
R60	Human	514596	105057	1.6	N/A	Yes
R61	Human	514606	105076	1.6	N/A	Yes
R62	Human	514631	105082	1.6	N/A	Yes
R63	Human	514647	105089	1.6	N/A	Yes
R64	Human	514657	105091	1.6	N/A	Yes
R65	Human	514679	105098	1.6	N/A	Yes
R66	Human	514696	105109	1.6	N/A	Yes
R67	Human	514710	105110	1.6	N/A	Yes
R68	Human	514726	105114	1.6	N/A	Yes
R69	Human	514741	105117	1.6	N/A	Yes
R70	Human	514778	105115	1.6	N/A	Yes
R71	Human	514788	105116	1.6	N/A	Yes

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R72	Human	514809	105122	1.6	N/A	Yes
R73	Human	514843	105120	1.6	N/A	Yes
R74	Human	514858	105122	1.6	N/A	Yes
R75	Human	514896	105124	1.6	N/A	Yes
R76	Human	514910	105125	1.6	N/A	Yes
R77	Human	514926	105126	1.6	N/A	Yes
R78	Human	514943	105127	1.6	N/A	Yes
R79	Human	514957	105128	1.6	N/A	Yes
R80	Human	514991	105144	1.6	N/A	Yes
R81	Human	514995	105128	1.6	N/A	Yes
R82	Human	515474	105194	1.6	N/A	No
R83	Human	515461	105190	1.6	N/A	No
R84	Human	515448	105186	1.6	N/A	No
R85	Human	515437	105181	1.6	N/A	No
R86	Human	515423	105178	1.6	N/A	No
R87	Human	515411	105174	1.6	N/A	No
R88	Human	515365	105161	1.6	N/A	No
R89	Human	515316	105142	1.6	N/A	No
R90	Human	515264	105103	1.6	N/A	No
R91	Human	515245	105107	1.6	N/A	No
R92	Human	515233	105109	1.6	N/A	No
R93	Human	515218	105111	1.6	N/A	No
R94	Human	515180	105112	1.6	N/A	Yes
R95	Human	515157	105110	1.6	N/A	Yes

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R96	Human	515123	105104	1.6	N/A	Yes
R97	Human	515098	105097	1.6	N/A	Yes
R98	Human	515049	105100	1.6	N/A	Yes
R99	Human	515008	105098	1.6	N/A	Yes
R100	Human	515002	105094	1.6	N/A	Yes
R101	Human	514965	105092	1.6	N/A	No
R102	Human	514947	105091	1.6	N/A	No
R103	Human	514936	105091	1.6	N/A	No
R104	Human	514922	105089	1.6	N/A	No
R105	Human	514905	105089	1.6	N/A	No
R106	Human	514864	105085	1.6	N/A	Yes
R107	Human	514854	105085	1.6	N/A	Yes
R108	Human	514815	105082	1.6	N/A	Yes
R109	Human	514782	105078	1.6	N/A	Yes
R110	Human	514763	105064	1.6	N/A	No
R111	Human	514743	105061	1.6	N/A	No
R112	Human	514714	105056	1.6	N/A	No
R113	Human	514693	105053	1.6	N/A	No
R114	Human	514664	105031	1.6	N/A	No
R115	Human	514557	105004	1.6	N/A	Yes
R116	Human	514560	104997	1.6	N/A	Yes
R117	Human	514563	104988	1.6	N/A	Yes
R118	Human	514566	104980	1.6	N/A	Yes
R119	Human	514568	104973	1.6	N/A	Yes

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R120	Human	514571	104965	1.6	N/A	Yes
R121	Human	514538	105000	1.6	N/A	Yes
R122	Human	514526	104998	1.6	N/A	Yes
R123	Human	514505	104996	1.6	N/A	Yes
R124	Human	514484	104994	1.6	N/A	Yes
R125	Human	514470	104994	1.6	N/A	Yes
R126	Human	514457	104993	1.6	N/A	Yes
R127	Human	514425	104995	1.6	N/A	Yes
R128	Human	514377	104991	1.6	N/A	Yes
R129	Human	514361	104989	1.6	N/A	Yes
R130	Human	514332	104985	1.6	N/A	Yes
R131	Human	514298	104976	1.6	N/A	Yes
R132	Human	514283	104967	1.6	N/A	Yes
R133	Human	514264	104960	1.6	N/A	Yes
R134	Human	514246	104953	1.6	N/A	Yes
R135	Human	514235	104948	1.6	N/A	Yes
R136	Human	514198	104942	1.6	N/A	Yes
R137	Human	514192	104947	1.6	N/A	Yes
R138	Human	514184	104948	1.6	N/A	Yes
R139	Human	514044	104902	1.6	N/A	Yes
R140	Human	514044	104938	1.6	N/A	Yes
R141	Human	514026	104948	1.6	N/A	Yes
R142	Human	514011	104962	1.6	N/A	Yes
R143	Human	514000	104974	1.6	N/A	Yes

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R144	Human	513991	104984	1.6	N/A	Yes
R145	Human	513984	104993	1.6	N/A	Yes
R146	Human	513975	105001	1.6	N/A	Yes
R147	Human	513961	105013	1.6	N/A	No
R148	Human	513953	105023	1.6	N/A	No
R149	Human	513945	105033	1.6	N/A	No
R150	Human	513935	105044	1.6	N/A	No
R151	Human	513925	105057	1.6	N/A	No
R152	Human	513918	105067	1.6	N/A	No
R153	Human	513910	105076	1.6	N/A	No
R154	Human	513903	105086	1.6	N/A	No
R155	Human	513894	105099	1.6	N/A	No
R156	Human	513885	105111	1.6	N/A	No
R157	Human	513880	105123	1.6	N/A	No
R158	Human	513872	105138	1.6	N/A	No
R159	Human	513869	105147	1.6	N/A	No
R160	Human	513855	105162	1.6	N/A	No
R161	Human	513847	105176	1.6	N/A	No
R162	Human	513846	105187	1.6	N/A	No
R163	Human	513845	105199	1.6	N/A	No
R164	Human	513842	105207	1.6	N/A	No
R165	Human	513823	105235	1.6	N/A	No
R166	Human	513819	105271	1.6	N/A	No
R167	Human	513801	105284	1.6	N/A	No

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R168	Human	513792	105291	1.6	N/A	No
R169	Human	513774	105305	1.6	N/A	No
R170	Human	513763	105312	1.6	N/A	No
R171	Human	513741	105327	1.6	N/A	No
R172	Human	513723	105337	1.6	N/A	No
R173	Human	513703	105358	1.6	N/A	No
R174	Human	513676	105372	1.6	N/A	No
R175	Human	513654	105407	1.6	N/A	No
R176	Human	513627	105417	1.6	N/A	No
R177	Human	513602	105448	1.6	N/A	No
R178	Human	513592	105460	1.6	N/A	No
R179	Human	513568	105482	1.6	N/A	No
R180	Human	513519	105506	1.6	N/A	No
R181	Human	513507	105511	1.6	N/A	No
R182	Human	513493	105514	1.6	N/A	No
R183	Human	513478	105519	1.6	N/A	No
R184	Human	513461	105525	1.6	N/A	No
R185	Human	513449	105528	1.6	N/A	No
R186	Human	513432	105532	1.6	N/A	No
R187	Human	513419	105534	1.6	N/A	No
R188	Human	513386	105518	1.6	N/A	No
R189	Human	513346	105514	1.6	N/A	No
R190	Human	513261	105536	1.6	N/A	No
R191	Human	513246	105540	1.6	N/A	No

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R192	Human	513216	105546	1.6	N/A	No
R193	Human	513165	105547	1.6	N/A	No

Table 1-7 Modelled annual mean NO₂ impacts due to construction traffic

ID	AQO (µg m ⁻³)	PC (µg m ⁻³)	PEC (µg m ⁻³)	PC (% of AQO)	PEC (% of AQO)	Impact
R1	40	0.05	12.26	0.12	30.65	Negligible
R2	40	0.02	9.53	0.05	23.83	Negligible
R3	40	0.05	12.74	0.13	31.85	Negligible
R4	40	0.02	9.61	0.05	24.03	Negligible
R5	40	0.06	12.61	0.15	31.53	Negligible
R6	40	0.05	12.68	0.12	31.70	Negligible
R7	40	0.05	12.50	0.13	31.25	Negligible
R8	40	0.06	13.02	0.15	32.55	Negligible
R9	40	0.06	13.54	0.15	33.85	Negligible
R10	40	0.05	12.32	0.13	30.80	Negligible
R11	40	0.04	11.11	0.10	27.78	Negligible
R12	40	0.02	9.61	0.05	24.03	Negligible
R13	40	0.04	10.71	0.10	26.78	Negligible
R14	40	0.04	11.19	0.10	27.98	Negligible
R15	40	0.04	11.63	0.10	29.08	Negligible
R16	40	0.03	9.97	0.08	24.93	Negligible
R17	40	0.03	10.07	0.08	25.18	Negligible
R18	40	0.04	10.48	0.10	26.20	Negligible
R19	40	0.06	13.64	0.15	34.10	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R20	40	0.06	13.47	0.15	33.68	Negligible
R21	40	0.06	12.97	0.15	32.43	Negligible
R22	40	0.05	12.96	0.13	32.40	Negligible
R23	40	0.06	13.75	0.15	34.38	Negligible
R24	40	0.06	13.53	0.15	33.83	Negligible
R25	40	0.07	13.66	0.18	34.15	Negligible
R26	40	0.05	12.63	0.13	31.58	Negligible
R27	40	0.08	14.63	0.20	36.58	Negligible
R28	40	0.13	20.31	0.32	50.78	Negligible
R29	40	0.02	8.82	0.05	22.05	Negligible
R30	40	0.02	9.06	0.05	22.65	Negligible
R31	40	0.01	8.04	0.02	20.10	Negligible
R32	40	0.01	7.52	0.02	18.80	Negligible
R33	40	0.01	7.68	0.02	19.20	Negligible
R34	40	0.08	13.62	0.20	34.05	Negligible
R35	40	0.07	12.78	0.17	31.95	Negligible
R36	40	0.06	12.34	0.15	30.85	Negligible
R37	40	0.06	12.21	0.15	30.53	Negligible
R38	40	0.06	12.23	0.15	30.58	Negligible
R39	40	0.06	12.30	0.15	30.75	Negligible
R40	40	0.05	12.04	0.12	30.10	Negligible
R41	40	0.05	11.93	0.12	29.83	Negligible
R42	40	0.05	11.23	0.13	28.08	Negligible
R43	40	0.04	11.15	0.10	27.88	Negligible
R44	40	0.04	11.68	0.10	29.20	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R45	40	0.04	11.58	0.10	28.95	Negligible
R46	40	0.04	11.21	0.10	28.03	Negligible
R47	40	0.04	11.34	0.10	28.35	Negligible
R48	40	0.04	11.42	0.10	28.55	Negligible
R49	40	0.04	11.37	0.10	28.43	Negligible
R50	40	0.05	12.13	0.13	30.33	Negligible
R51	40	0.04	11.72	0.10	29.30	Negligible
R52	40	0.05	11.91	0.13	29.78	Negligible
R53	40	0.05	12.19	0.12	30.48	Negligible
R54	40	0.05	11.95	0.12	29.88	Negligible
R55	40	0.05	13.04	0.12	32.60	Negligible
R56	40	0.06	12.69	0.15	31.73	Negligible
R57	40	0.05	12.76	0.12	31.90	Negligible
R58	40	0.06	12.86	0.15	32.15	Negligible
R59	40	0.06	12.74	0.15	31.85	Negligible
R60	40	0.05	12.40	0.13	31.00	Negligible
R61	40	0.03	10.36	0.07	25.90	Negligible
R62	40	0.04	10.83	0.10	27.08	Negligible
R63	40	0.03	10.75	0.07	26.88	Negligible
R64	40	0.04	11.11	0.10	27.78	Negligible
R65	40	0.04	11.45	0.10	28.63	Negligible
R66	40	0.03	10.81	0.08	27.03	Negligible
R67	40	0.04	11.23	0.10	28.08	Negligible
R68	40	0.04	11.04	0.10	27.60	Negligible
R69	40	0.04	11.08	0.10	27.70	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R70	40	0.06	12.34	0.15	30.85	Negligible
R71	40	0.05	12.48	0.13	31.20	Negligible
R72	40	0.05	11.88	0.13	29.70	Negligible
R73	40	0.06	12.91	0.15	32.28	Negligible
R74	40	0.06	12.88	0.15	32.20	Negligible
R75	40	0.06	12.99	0.15	32.48	Negligible
R76	40	0.06	13.18	0.15	32.95	Negligible
R77	40	0.06	13.10	0.15	32.75	Negligible
R78	40	0.06	13.01	0.15	32.53	Negligible
R79	40	0.06	12.99	0.15	32.48	Negligible
R80	40	0.03	10.66	0.07	26.65	Negligible
R81	40	0.06	13.21	0.15	33.03	Negligible
R82	40	0.06	12.63	0.15	31.58	Negligible
R83	40	0.06	12.78	0.15	31.95	Negligible
R84	40	0.06	12.79	0.15	31.98	Negligible
R85	40	0.05	12.68	0.12	31.70	Negligible
R86	40	0.06	12.93	0.15	32.33	Negligible
R87	40	0.06	13.00	0.15	32.50	Negligible
R88	40	0.07	13.71	0.18	34.28	Negligible
R89	40	0.06	13.17	0.15	32.93	Negligible
R90	40	0.03	10.45	0.07	26.13	Negligible
R91	40	0.04	11.17	0.10	27.93	Negligible
R92	40	0.05	11.80	0.13	29.50	Negligible
R93	40	0.05	12.51	0.12	31.28	Negligible
R94	40	0.07	14.59	0.18	36.48	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R95	40	0.08	15.10	0.20	37.75	Negligible
R96	40	0.07	15.01	0.18	37.53	Negligible
R97	40	0.07	13.70	0.17	34.25	Negligible
R98	40	0.1	16.86	0.25	42.15	Negligible
R99	40	0.09	16.59	0.23	41.48	Negligible
R100	40	0.08	15.02	0.20	37.55	Negligible
R101	40	0.08	14.88	0.20	37.20	Negligible
R102	40	0.07	14.95	0.17	37.38	Negligible
R103	40	0.07	14.80	0.18	37.00	Negligible
R104	40	0.07	14.61	0.18	36.53	Negligible
R105	40	0.08	14.92	0.20	37.30	Negligible
R106	40	0.07	14.81	0.18	37.03	Negligible
R107	40	0.08	14.99	0.20	37.48	Negligible
R108	40	0.08	15.24	0.20	38.10	Negligible
R109	40	0.08	15.25	0.20	38.13	Negligible
R110	40	0.05	12.58	0.13	31.45	Negligible
R111	40	0.05	12.67	0.13	31.68	Negligible
R112	40	0.06	12.92	0.15	32.30	Negligible
R113	40	0.07	13.58	0.18	33.95	Negligible
R114	40	0.04	12.09	0.10	30.23	Negligible
R115	40	0.07	14.31	0.18	35.78	Negligible
R116	40	0.05	12.43	0.12	31.08	Negligible
R117	40	0.05	11.25	0.13	28.13	Negligible
R118	40	0.04	10.51	0.10	26.28	Negligible
R119	40	0.03	9.98	0.08	24.95	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R120	40	0.03	9.57	0.08	23.93	Negligible
R121	40	0.07	14.24	0.18	35.60	Negligible
R122	40	0.07	14.40	0.18	36.00	Negligible
R123	40	0.07	14.37	0.17	35.93	Negligible
R124	40	0.07	14.01	0.18	35.03	Negligible
R125	40	0.07	14.05	0.18	35.13	Negligible
R126	40	0.07	13.84	0.18	34.60	Negligible
R127	40	0.07	14.99	0.18	37.48	Negligible
R128	40	0.08	15.44	0.20	38.60	Negligible
R129	40	0.09	15.87	0.23	39.68	Negligible
R130	40	0.1	16.82	0.25	42.05	Negligible
R131	40	0.11	17.52	0.27	43.80	Negligible
R132	40	0.08	15.85	0.20	39.63	Negligible
R133	40	0.08	15.37	0.20	38.43	Negligible
R134	40	0.08	15.29	0.20	38.23	Negligible
R135	40	0.09	15.03	0.23	37.58	Negligible
R136	40	0.11	16.51	0.28	41.28	Negligible
R137	40	0.16	20.10	0.40	50.25	Negligible
R138	40	0.2	23.16	0.50	57.90	Negligible
R139	40	0.04	9.61	0.10	24.03	Negligible
R140	40	0.06	11.84	0.15	29.60	Negligible
R141	40	0.05	11.43	0.12	28.58	Negligible
R142	40	0.06	11.73	0.15	29.33	Negligible
R143	40	0.06	12.34	0.15	30.85	Negligible
R144	40	0.06	12.77	0.15	31.93	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R145	40	0.06	13.07	0.15	32.68	Negligible
R146	40	0.06	12.96	0.15	32.40	Negligible
R147	40	0.05	12.78	0.12	31.95	Negligible
R148	40	0.06	13.00	0.15	32.50	Negligible
R149	40	0.06	13.14	0.15	32.85	Negligible
R150	40	0.06	12.86	0.15	32.15	Negligible
R151	40	0.06	12.94	0.15	32.35	Negligible
R152	40	0.06	13.27	0.15	33.18	Negligible
R153	40	0.06	13.16	0.15	32.90	Negligible
R154	40	0.06	13.28	0.15	33.20	Negligible
R155	40	0.06	13.18	0.15	32.95	Negligible
R156	40	0.05	12.76	0.12	31.90	Negligible
R157	40	0.06	13.13	0.15	32.83	Negligible
R158	40	0.05	13.03	0.12	32.58	Negligible
R159	40	0.06	13.56	0.15	33.90	Negligible
R160	40	0.05	11.84	0.13	29.60	Negligible
R161	40	0.04	11.47	0.10	28.68	Negligible
R162	40	0.05	12.12	0.12	30.30	Negligible
R163	40	0.06	12.87	0.15	32.18	Negligible
R164	40	0.06	12.73	0.15	31.83	Negligible
R165	40	0.05	11.61	0.12	29.03	Negligible
R166	40	0.09	15.79	0.23	39.48	Negligible
R167	40	0.07	13.96	0.18	34.90	Negligible
R168	40	0.07	13.78	0.17	34.45	Negligible
R169	40	0.07	13.62	0.17	34.05	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R170	40	0.06	13.49	0.15	33.73	Negligible
R171	40	0.06	13.25	0.15	33.13	Negligible
R172	40	0.05	12.57	0.13	31.43	Negligible
R173	40	0.06	13.85	0.15	34.63	Negligible
R174	40	0.05	11.79	0.12	29.48	Negligible
R175	40	0.07	13.95	0.17	34.88	Negligible
R176	40	0.04	11.43	0.10	28.58	Negligible
R177	40	0.05	12.45	0.12	31.13	Negligible
R178	40	0.05	13.00	0.13	32.50	Negligible
R179	40	0.06	13.70	0.15	34.25	Negligible
R180	40	0.05	13.12	0.12	32.80	Negligible
R181	40	0.06	13.17	0.15	32.93	Negligible
R182	40	0.06	12.76	0.15	31.90	Negligible
R183	40	0.05	12.71	0.13	31.78	Negligible
R184	40	0.05	12.70	0.12	31.75	Negligible
R185	40	0.05	12.74	0.13	31.85	Negligible
R186	40	0.06	12.64	0.15	31.60	Negligible
R187	40	0.05	12.44	0.12	31.10	Negligible
R188	40	0.03	9.98	0.08	24.95	Negligible
R189	40	0.03	9.40	0.08	23.50	Negligible
R190	40	0.03	10.26	0.07	25.65	Negligible
R191	40	0.04	10.45	0.10	26.13	Negligible
R192	40	0.03	10.33	0.07	25.83	Negligible
R193	40	0.03	10.22	0.08	25.55	Negligible

Table 1-8 Modelled annual mean PM₁₀ impacts due to construction traffic

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R1	40	0.01	15.83	0.03	39.58	Negligible
R2	40	0.01	14.76	0.01	36.91	Negligible
R3	40	0.01	16.02	0.03	40.06	Negligible
R4	40	0.01	14.80	0.01	36.99	Negligible
R5	40	0.01	15.97	0.03	39.92	Negligible
R6	40	0.01	16.00	0.03	40.00	Negligible
R7	40	0.01	15.93	0.03	39.82	Negligible
R8	40	0.01	16.13	0.03	40.33	Negligible
R9	40	0.01	16.34	0.03	40.85	Negligible
R10	40	0.01	15.85	0.03	39.64	Negligible
R11	40	0.01	15.38	0.02	38.44	Negligible
R12	40	0.01	14.80	0.01	36.99	Negligible
R13	40	0.01	15.22	0.02	38.05	Negligible
R14	40	0.01	15.41	0.02	38.53	Negligible
R15	40	0.01	15.58	0.02	38.96	Negligible
R16	40	0.01	14.93	0.02	37.33	Negligible
R17	40	0.01	14.97	0.02	37.43	Negligible
R18	40	0.01	15.13	0.02	37.83	Negligible
R19	40	0.01	16.38	0.03	40.95	Negligible
R20	40	0.01	16.31	0.03	40.78	Negligible
R21	40	0.01	16.11	0.03	40.28	Negligible
R22	40	0.01	16.11	0.03	40.27	Negligible
R23	40	0.01	16.42	0.03	41.06	Negligible
R24	40	0.01	16.34	0.03	40.84	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R25	40	0.01	16.39	0.03	40.96	Negligible
R26	40	0.01	15.98	0.03	39.95	Negligible
R27	40	0.02	16.78	0.04	41.94	Negligible
R28	40	0.03	19.12	0.07	47.81	Negligible
R29	40	0.00	14.49	0.01	36.22	Negligible
R30	40	0.00	14.58	0.01	36.46	Negligible
R31	40	0.00	14.19	0.01	35.48	Negligible
R32	40	0.00	13.34	0.00	33.35	Negligible
R33	40	0.00	13.40	0.01	33.51	Negligible
R34	40	0.02	16.96	0.06	42.40	Negligible
R35	40	0.02	16.61	0.05	41.53	Negligible
R36	40	0.02	16.43	0.05	41.08	Negligible
R37	40	0.02	16.38	0.04	40.94	Negligible
R38	40	0.02	16.38	0.04	40.95	Negligible
R39	40	0.02	16.40	0.04	41.00	Negligible
R40	40	0.01	16.28	0.03	40.70	Negligible
R41	40	0.01	16.23	0.03	40.56	Negligible
R42	40	0.01	14.79	0.03	36.96	Negligible
R43	40	0.01	14.75	0.02	36.88	Negligible
R44	40	0.01	14.96	0.03	37.40	Negligible
R45	40	0.01	14.92	0.03	37.30	Negligible
R46	40	0.01	14.77	0.02	36.93	Negligible
R47	40	0.01	14.82	0.02	37.05	Negligible
R48	40	0.01	14.85	0.02	37.13	Negligible
R49	40	0.01	14.83	0.02	37.08	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R50	40	0.01	15.13	0.03	37.82	Negligible
R51	40	0.01	14.97	0.02	37.43	Negligible
R52	40	0.01	15.04	0.03	37.61	Negligible
R53	40	0.01	15.16	0.03	37.89	Negligible
R54	40	0.01	15.06	0.03	37.64	Negligible
R55	40	0.01	15.49	0.03	38.73	Negligible
R56	40	0.01	15.35	0.03	38.38	Negligible
R57	40	0.01	15.38	0.03	38.45	Negligible
R58	40	0.01	15.42	0.03	38.54	Negligible
R59	40	0.01	15.37	0.03	38.42	Negligible
R60	40	0.01	15.24	0.03	38.09	Negligible
R61	40	0.01	14.44	0.02	36.09	Negligible
R62	40	0.01	14.62	0.02	36.54	Negligible
R63	40	0.01	14.59	0.02	36.47	Negligible
R64	40	0.01	14.73	0.02	36.82	Negligible
R65	40	0.01	14.86	0.02	37.15	Negligible
R66	40	0.01	14.61	0.02	36.53	Negligible
R67	40	0.01	14.77	0.02	36.93	Negligible
R68	40	0.01	14.70	0.02	36.75	Negligible
R69	40	0.01	14.72	0.02	36.79	Negligible
R70	40	0.01	15.21	0.03	38.02	Negligible
R71	40	0.01	15.27	0.03	38.17	Negligible
R72	40	0.01	15.03	0.02	37.57	Negligible
R73	40	0.01	15.44	0.03	38.59	Negligible
R74	40	0.01	15.43	0.03	38.56	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R75	40	0.01	15.47	0.03	38.67	Negligible
R76	40	0.01	15.54	0.03	38.86	Negligible
R77	40	0.01	15.51	0.03	38.78	Negligible
R78	40	0.01	15.48	0.03	38.69	Negligible
R79	40	0.01	15.47	0.03	38.67	Negligible
R80	40	0.01	14.55	0.02	36.38	Negligible
R81	40	0.01	15.55	0.03	38.89	Negligible
R82	40	0.01	16.20	0.03	40.50	Negligible
R83	40	0.01	16.26	0.03	40.65	Negligible
R84	40	0.01	16.27	0.03	40.67	Negligible
R85	40	0.01	16.22	0.03	40.56	Negligible
R86	40	0.01	16.32	0.03	40.80	Negligible
R87	40	0.01	16.35	0.03	40.88	Negligible
R88	40	0.01	16.63	0.03	41.58	Negligible
R89	40	0.01	16.42	0.03	41.04	Negligible
R90	40	0.01	15.35	0.02	38.37	Negligible
R91	40	0.01	15.63	0.02	39.07	Negligible
R92	40	0.01	15.87	0.02	39.69	Negligible
R93	40	0.01	16.16	0.03	40.39	Negligible
R94	40	0.01	16.99	0.04	42.46	Negligible
R95	40	0.02	17.19	0.04	42.98	Negligible
R96	40	0.02	17.16	0.04	42.89	Negligible
R97	40	0.01	16.63	0.03	41.57	Negligible
R98	40	0.02	17.91	0.05	44.77	Negligible
R99	40	0.02	17.80	0.05	44.50	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R100	40	0.02	17.16	0.04	42.90	Negligible
R101	40	0.02	16.23	0.04	40.57	Negligible
R102	40	0.02	16.26	0.04	40.64	Negligible
R103	40	0.02	16.20	0.04	40.49	Negligible
R104	40	0.02	16.12	0.04	40.30	Negligible
R105	40	0.02	16.24	0.04	40.61	Negligible
R106	40	0.02	16.20	0.04	40.50	Negligible
R107	40	0.02	16.27	0.04	40.68	Negligible
R108	40	0.02	16.37	0.04	40.93	Negligible
R109	40	0.02	16.38	0.04	40.94	Negligible
R110	40	0.01	15.31	0.03	38.27	Negligible
R111	40	0.01	15.34	0.03	38.36	Negligible
R112	40	0.01	15.44	0.03	38.60	Negligible
R113	40	0.01	15.70	0.03	39.26	Negligible
R114	40	0.01	15.11	0.03	37.79	Negligible
R115	40	0.01	16.00	0.04	40.00	Negligible
R116	40	0.01	16.41	0.03	41.02	Negligible
R117	40	0.01	15.94	0.02	39.85	Negligible
R118	40	0.01	15.65	0.02	39.13	Negligible
R119	40	0.01	15.44	0.02	38.61	Negligible
R120	40	0.01	15.29	0.01	38.22	Negligible
R121	40	0.01	17.13	0.04	42.82	Negligible
R122	40	0.01	17.19	0.04	42.98	Negligible
R123	40	0.01	17.18	0.04	42.96	Negligible
R124	40	0.01	17.04	0.04	42.59	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R125	40	0.01	17.05	0.04	42.63	Negligible
R126	40	0.01	16.97	0.03	42.42	Negligible
R127	40	0.02	17.43	0.04	43.58	Negligible
R128	40	0.02	17.62	0.04	44.04	Negligible
R129	40	0.02	17.79	0.04	44.48	Negligible
R130	40	0.02	18.18	0.05	45.45	Negligible
R131	40	0.02	18.47	0.05	46.18	Negligible
R132	40	0.02	17.79	0.05	44.48	Negligible
R133	40	0.02	17.60	0.05	44.00	Negligible
R134	40	0.02	17.58	0.05	43.94	Negligible
R135	40	0.02	17.49	0.05	43.72	Negligible
R136	40	0.03	18.16	0.08	45.40	Negligible
R137	40	0.05	19.70	0.11	49.26	Negligible
R138	40	0.06	21.06	0.14	52.66	Negligible
R139	40	0.01	15.33	0.02	38.31	Negligible
R140	40	0.02	16.22	0.04	40.56	Negligible
R141	40	0.01	16.05	0.04	40.14	Negligible
R142	40	0.01	16.17	0.04	40.42	Negligible
R143	40	0.02	16.26	0.04	40.66	Negligible
R144	40	0.02	16.42	0.04	41.06	Negligible
R145	40	0.01	16.54	0.04	41.34	Negligible
R146	40	0.01	16.12	0.03	40.30	Negligible
R147	40	0.01	16.04	0.03	40.11	Negligible
R148	40	0.01	16.13	0.03	40.32	Negligible
R149	40	0.01	16.18	0.03	40.46	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R150	40	0.01	16.07	0.03	40.18	Negligible
R151	40	0.01	16.10	0.03	40.25	Negligible
R152	40	0.01	16.24	0.03	40.59	Negligible
R153	40	0.01	16.19	0.03	40.48	Negligible
R154	40	0.01	16.24	0.03	40.59	Negligible
R155	40	0.01	16.20	0.03	40.49	Negligible
R156	40	0.01	16.03	0.03	40.08	Negligible
R157	40	0.01	16.18	0.03	40.44	Negligible
R158	40	0.01	16.14	0.03	40.35	Negligible
R159	40	0.01	16.35	0.03	40.87	Negligible
R160	40	0.01	15.67	0.02	39.16	Negligible
R161	40	0.01	15.52	0.02	38.80	Negligible
R162	40	0.01	15.78	0.03	39.44	Negligible
R163	40	0.01	16.07	0.03	40.18	Negligible
R164	40	0.01	16.02	0.03	40.04	Negligible
R165	40	0.01	15.57	0.02	38.93	Negligible
R166	40	0.02	17.25	0.04	43.12	Negligible
R167	40	0.01	16.51	0.03	41.26	Negligible
R168	40	0.01	16.43	0.03	41.08	Negligible
R169	40	0.01	16.37	0.03	40.92	Negligible
R170	40	0.01	16.32	0.03	40.80	Negligible
R171	40	0.01	16.23	0.03	40.56	Negligible
R172	40	0.01	15.95	0.03	39.89	Negligible
R173	40	0.01	16.46	0.03	41.16	Negligible
R174	40	0.01	15.64	0.02	39.11	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R175	40	0.01	16.50	0.03	41.26	Negligible
R176	40	0.01	15.50	0.02	38.76	Negligible
R177	40	0.01	15.91	0.03	39.77	Negligible
R178	40	0.01	16.13	0.03	40.31	Negligible
R179	40	0.01	16.40	0.03	41.01	Negligible
R180	40	0.01	16.17	0.03	40.43	Negligible
R181	40	0.01	16.19	0.03	40.48	Negligible
R182	40	0.01	16.03	0.03	40.07	Negligible
R183	40	0.01	16.01	0.03	40.03	Negligible
R184	40	0.01	16.00	0.03	40.01	Negligible
R185	40	0.01	16.02	0.03	40.05	Negligible
R186	40	0.01	15.98	0.03	39.95	Negligible
R187	40	0.01	15.90	0.03	39.75	Negligible
R188	40	0.01	14.94	0.02	37.34	Negligible
R189	40	0.01	14.71	0.01	36.78	Negligible
R190	40	0.01	15.05	0.02	37.62	Negligible
R191	40	0.01	15.12	0.02	37.80	Negligible
R192	40	0.01	15.08	0.02	37.69	Negligible
R193	40	0.01	15.04	0.01	37.60	Negligible

Table 1-9 Modelled annual mean PM_{2.5} impacts due to construction traffic

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R1	20	0.01	10.62	0.03	53.12	Negligible
R2	20	0.00	10.03	0.01	50.16	Negligible
R3	20	0.01	10.73	0.03	53.64	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R4	20	0.00	10.05	0.01	50.25	Negligible
R5	20	0.01	10.70	0.03	53.50	Negligible
R6	20	0.01	10.72	0.03	53.58	Negligible
R7	20	0.01	10.68	0.03	53.38	Negligible
R8	20	0.01	10.79	0.03	53.95	Negligible
R9	20	0.01	10.90	0.03	54.52	Negligible
R10	20	0.01	10.64	0.03	53.18	Negligible
R11	20	0.00	10.37	0.02	51.86	Negligible
R12	20	0.00	10.05	0.01	50.25	Negligible
R13	20	0.00	10.28	0.02	51.42	Negligible
R14	20	0.00	10.39	0.02	51.95	Negligible
R15	20	0.01	10.49	0.03	52.43	Negligible
R16	20	0.00	10.13	0.02	50.63	Negligible
R17	20	0.00	10.15	0.02	50.74	Negligible
R18	20	0.00	10.24	0.02	51.18	Negligible
R19	20	0.01	10.93	0.04	54.63	Negligible
R20	20	0.01	10.89	0.04	54.45	Negligible
R21	20	0.01	10.78	0.03	53.89	Negligible
R22	20	0.01	10.78	0.03	53.89	Negligible
R23	20	0.01	10.95	0.04	54.76	Negligible
R24	20	0.01	10.90	0.04	54.51	Negligible
R25	20	0.01	10.93	0.04	54.65	Negligible
R26	20	0.01	10.70	0.03	53.52	Negligible
R27	20	0.01	11.15	0.04	55.73	Negligible
R28	20	0.01	12.45	0.07	62.23	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R29	20	0.00	9.88	0.01	49.40	Negligible
R30	20	0.00	9.93	0.01	49.66	Negligible
R31	20	0.00	9.72	0.01	48.58	Negligible
R32	20	0.00	9.13	0.00	45.66	Negligible
R33	20	0.00	9.17	0.01	45.83	Negligible
R34	20	0.01	11.50	0.06	57.51	Negligible
R35	20	0.01	11.31	0.05	56.56	Negligible
R36	20	0.01	11.21	0.05	56.06	Negligible
R37	20	0.01	11.18	0.05	55.91	Negligible
R38	20	0.01	11.18	0.05	55.92	Negligible
R39	20	0.01	11.19	0.04	55.97	Negligible
R40	20	0.01	11.13	0.04	55.65	Negligible
R41	20	0.01	11.10	0.03	55.50	Negligible
R42	20	0.01	9.93	0.03	49.66	Negligible
R43	20	0.01	9.91	0.03	49.57	Negligible
R44	20	0.01	10.03	0.03	50.14	Negligible
R45	20	0.01	10.01	0.03	50.03	Negligible
R46	20	0.00	9.92	0.02	49.62	Negligible
R47	20	0.01	9.95	0.03	49.76	Negligible
R48	20	0.01	9.97	0.03	49.85	Negligible
R49	20	0.00	9.96	0.02	49.79	Negligible
R50	20	0.01	10.12	0.03	50.61	Negligible
R51	20	0.01	10.03	0.03	50.17	Negligible
R52	20	0.01	10.07	0.03	50.37	Negligible
R53	20	0.01	10.14	0.03	50.68	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R54	20	0.01	10.08	0.03	50.41	Negligible
R55	20	0.01	10.32	0.03	51.61	Negligible
R56	20	0.01	10.24	0.03	51.22	Negligible
R57	20	0.01	10.26	0.03	51.30	Negligible
R58	20	0.01	10.28	0.03	51.41	Negligible
R59	20	0.01	10.25	0.03	51.27	Negligible
R60	20	0.01	10.18	0.03	50.90	Negligible
R61	20	0.00	9.74	0.02	48.69	Negligible
R62	20	0.00	9.84	0.02	49.19	Negligible
R63	20	0.00	9.82	0.02	49.11	Negligible
R64	20	0.00	9.90	0.02	49.50	Negligible
R65	20	0.00	9.97	0.02	49.87	Negligible
R66	20	0.00	9.84	0.02	49.18	Negligible
R67	20	0.00	9.93	0.02	49.63	Negligible
R68	20	0.00	9.88	0.02	49.42	Negligible
R69	20	0.00	9.89	0.02	49.47	Negligible
R70	20	0.01	10.17	0.03	50.83	Negligible
R71	20	0.01	10.20	0.03	50.99	Negligible
R72	20	0.01	10.07	0.03	50.33	Negligible
R73	20	0.01	10.29	0.03	51.46	Negligible
R74	20	0.01	10.29	0.03	51.43	Negligible
R75	20	0.01	10.31	0.03	51.55	Negligible
R76	20	0.01	10.35	0.03	51.76	Negligible
R77	20	0.01	10.33	0.03	51.67	Negligible
R78	20	0.01	10.31	0.03	51.57	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R79	20	0.01	10.31	0.03	51.55	Negligible
R80	20	0.00	9.80	0.02	49.01	Negligible
R81	20	0.01	10.36	0.03	51.79	Negligible
R82	20	0.01	10.32	0.03	51.62	Negligible
R83	20	0.01	10.36	0.03	51.78	Negligible
R84	20	0.01	10.36	0.03	51.80	Negligible
R85	20	0.01	10.34	0.03	51.68	Negligible
R86	20	0.01	10.39	0.03	51.94	Negligible
R87	20	0.01	10.41	0.03	52.03	Negligible
R88	20	0.01	10.56	0.04	52.81	Negligible
R89	20	0.01	10.44	0.03	52.21	Negligible
R90	20	0.00	9.85	0.02	49.25	Negligible
R91	20	0.00	10.01	0.02	50.03	Negligible
R92	20	0.01	10.14	0.03	50.71	Negligible
R93	20	0.01	10.30	0.03	51.49	Negligible
R94	20	0.01	10.76	0.04	53.79	Negligible
R95	20	0.01	10.87	0.04	54.35	Negligible
R96	20	0.01	10.85	0.04	54.26	Negligible
R97	20	0.01	10.56	0.04	52.80	Negligible
R98	20	0.01	11.27	0.05	56.34	Negligible
R99	20	0.01	11.21	0.05	56.03	Negligible
R100	20	0.01	10.85	0.04	54.27	Negligible
R101	20	0.01	10.73	0.04	53.65	Negligible
R102	20	0.01	10.75	0.04	53.73	Negligible
R103	20	0.01	10.71	0.04	53.56	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R104	20	0.01	10.67	0.04	53.35	Negligible
R105	20	0.01	10.74	0.04	53.69	Negligible
R106	20	0.01	10.71	0.04	53.57	Negligible
R107	20	0.01	10.75	0.04	53.77	Negligible
R108	20	0.01	10.81	0.04	54.05	Negligible
R109	20	0.01	10.81	0.04	54.06	Negligible
R110	20	0.01	10.22	0.03	51.10	Negligible
R111	20	0.01	10.24	0.03	51.20	Negligible
R112	20	0.01	10.29	0.03	51.47	Negligible
R113	20	0.01	10.44	0.03	52.20	Negligible
R114	20	0.01	10.11	0.03	50.57	Negligible
R115	20	0.01	10.60	0.04	53.01	Negligible
R116	20	0.01	11.20	0.03	56.01	Negligible
R117	20	0.00	10.94	0.02	54.72	Negligible
R118	20	0.00	10.78	0.02	53.92	Negligible
R119	20	0.00	10.67	0.02	53.35	Negligible
R120	20	0.00	10.58	0.02	52.91	Negligible
R121	20	0.01	11.60	0.04	58.01	Negligible
R122	20	0.01	11.64	0.04	58.18	Negligible
R123	20	0.01	11.63	0.04	58.15	Negligible
R124	20	0.01	11.55	0.04	57.75	Negligible
R125	20	0.01	11.56	0.04	57.79	Negligible
R126	20	0.01	11.51	0.04	57.56	Negligible
R127	20	0.01	11.77	0.04	58.85	Negligible
R128	20	0.01	11.87	0.05	59.35	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R129	20	0.01	11.97	0.05	59.83	Negligible
R130	20	0.01	12.18	0.05	60.92	Negligible
R131	20	0.01	12.34	0.06	61.72	Negligible
R132	20	0.01	11.97	0.05	59.84	Negligible
R133	20	0.01	11.86	0.05	59.30	Negligible
R134	20	0.01	11.85	0.05	59.24	Negligible
R135	20	0.01	11.80	0.06	58.98	Negligible
R136	20	0.02	12.16	0.09	60.82	Negligible
R137	20	0.02	13.02	0.12	65.08	Negligible
R138	20	0.03	13.77	0.15	68.83	Negligible
R139	20	0.00	10.60	0.02	53.01	Negligible
R140	20	0.01	11.10	0.04	55.49	Negligible
R141	20	0.01	11.00	0.04	55.02	Negligible
R142	20	0.01	11.07	0.04	55.33	Negligible
R143	20	0.01	11.11	0.04	55.54	Negligible
R144	20	0.01	11.20	0.04	55.99	Negligible
R145	20	0.01	11.26	0.04	56.30	Negligible
R146	20	0.01	10.78	0.04	53.91	Negligible
R147	20	0.01	10.74	0.03	53.70	Negligible
R148	20	0.01	10.79	0.03	53.94	Negligible
R149	20	0.01	10.82	0.03	54.09	Negligible
R150	20	0.01	10.76	0.03	53.78	Negligible
R151	20	0.01	10.77	0.03	53.86	Negligible
R152	20	0.01	10.85	0.03	54.23	Negligible
R153	20	0.01	10.82	0.03	54.11	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R154	20	0.01	10.85	0.03	54.24	Negligible
R155	20	0.01	10.83	0.03	54.13	Negligible
R156	20	0.01	10.73	0.03	53.67	Negligible
R157	20	0.01	10.81	0.03	54.07	Negligible
R158	20	0.01	10.79	0.03	53.96	Negligible
R159	20	0.01	10.91	0.03	54.54	Negligible
R160	20	0.01	10.53	0.03	52.66	Negligible
R161	20	0.00	10.45	0.02	52.26	Negligible
R162	20	0.01	10.59	0.03	52.97	Negligible
R163	20	0.01	10.76	0.03	53.78	Negligible
R164	20	0.01	10.73	0.03	53.63	Negligible
R165	20	0.00	10.48	0.02	52.40	Negligible
R166	20	0.01	11.41	0.05	57.03	Negligible
R167	20	0.01	11.00	0.04	54.98	Negligible
R168	20	0.01	10.96	0.04	54.78	Negligible
R169	20	0.01	10.92	0.03	54.61	Negligible
R170	20	0.01	10.89	0.03	54.47	Negligible
R171	20	0.01	10.84	0.03	54.21	Negligible
R172	20	0.01	10.69	0.03	53.46	Negligible
R173	20	0.01	10.97	0.04	54.86	Negligible
R174	20	0.01	10.52	0.03	52.60	Negligible
R175	20	0.01	10.99	0.04	54.97	Negligible
R176	20	0.00	10.44	0.02	52.21	Negligible
R177	20	0.01	10.66	0.03	53.32	Negligible
R178	20	0.01	10.79	0.03	53.93	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R179	20	0.01	10.94	0.04	54.70	Negligible
R180	20	0.01	10.81	0.03	54.06	Negligible
R181	20	0.01	10.82	0.03	54.12	Negligible
R182	20	0.01	10.73	0.03	53.66	Negligible
R183	20	0.01	10.72	0.03	53.61	Negligible
R184	20	0.01	10.72	0.03	53.60	Negligible
R185	20	0.01	10.73	0.03	53.64	Negligible
R186	20	0.01	10.71	0.03	53.53	Negligible
R187	20	0.01	10.66	0.03	53.31	Negligible
R188	20	0.00	10.13	0.02	50.64	Negligible
R189	20	0.00	10.00	0.01	50.02	Negligible
R190	20	0.00	10.19	0.02	50.95	Negligible
R191	20	0.00	10.23	0.02	51.15	Negligible
R192	20	0.00	10.21	0.02	51.03	Negligible
R193	20	0.00	10.18	0.02	50.92	Negligible

1.4 Cowfold AQMA

Monitoring data

- 1.4.1 Suitable local monitoring data for the purpose of verification is available for annual mean nitrogen Oxides (NO_x)/Nitrogen dioxide (NO₂) concentrations as shown in **Table 1-10**. The monitoring locations presented were selected to provide suitable worst-case adjustment factors on local roads found with the Cowfold Air Quality Management Area (AQMA). Adjustment factors and RMSE was calculated for monitoring locations 21,35 and 44.

Table 1-10 Local monitoring data suitable for ADMS-Roads model verification

Location	Type	2019 Annual Mean NO ₂ (µgm ⁻³)	X OS Grid Ref	Y OS Grid Ref
21	Local	30.7	521267	122676
35	Local	22.5	521072	122708
44	Local	23.6	521355	122552

Verification calculations

1.4.2 The verification of the modelling output was performed in accordance with the methodology provided in LAQM.TG(22) (Department of Food, Environment and Rural Affairs, 2022). **Table 1-11** Table 1-3 shows that there was the systematic under prediction of monitored concentrations for all sites.

Table 1-11 Verification, modelled versus monitored

Location	2019 Modelled Annual Mean NO ₂ (µgm ⁻³)	2019 Monitored Annual Mean NO ₂ (µgm ⁻³)	% (Modelled-Monitored)/ Monitored
21	17.7	30.7	-42.2
35	15.5	22.5	-31.1
44	17.5	23.6	-25.7

1.4.3 **Table 1-12** shows the comparison of modelled road-NO_x, a direct output from the ADMS-Roads modelling, with the monitored road-NO_x, determined from the LAQM NO_x to NO₂ conversion tool.

Table 1-12 Comparison of modelled and monitored road NO_x to determine verification factor

Site	2019 Modelled Annual Mean Road NO _x (µgm ⁻³)	2019 Monitored Annual Mean Road NO _x (µgm ⁻³)	Ratio
21	14.0	40.2	2.9
35	9.8	23.3	2.4
44	13.4	25.5	1.9

- 1.4.4 The road-NO_x adjustment factor was determined as the slope of the best fit line between the 'measured' road contribution and the model derived road contribution, forced through zero (**Figure 19.1.2**). This factor was then applied to the modelled road-NO_x concentration for each monitoring site to provide adjusted modelled road-NO_x concentrations. The total nitrogen dioxide concentrations were then determined by inputting the adjusted modelled road-NO_x concentrations and the background NO₂ concentration into the NO_x to NO₂ calculator.
- 1.4.5 **Table 1-13** shows the comparison of the modelled NO₂ concentration calculated by multiplying the modelled road NO_x by the adjustment factor of 2.403 using the LAQM's NO_x to NO₂ conversion tool to calculate the total adjusted modelled NO₂. This factor was also used to adjust Particulate Matter (PM) concentrations. Both groups had same adjustment factor.

Figure 19.1.2 Comparison of Measured Road-NO_x with Unadjusted Modelled Road-NO_x

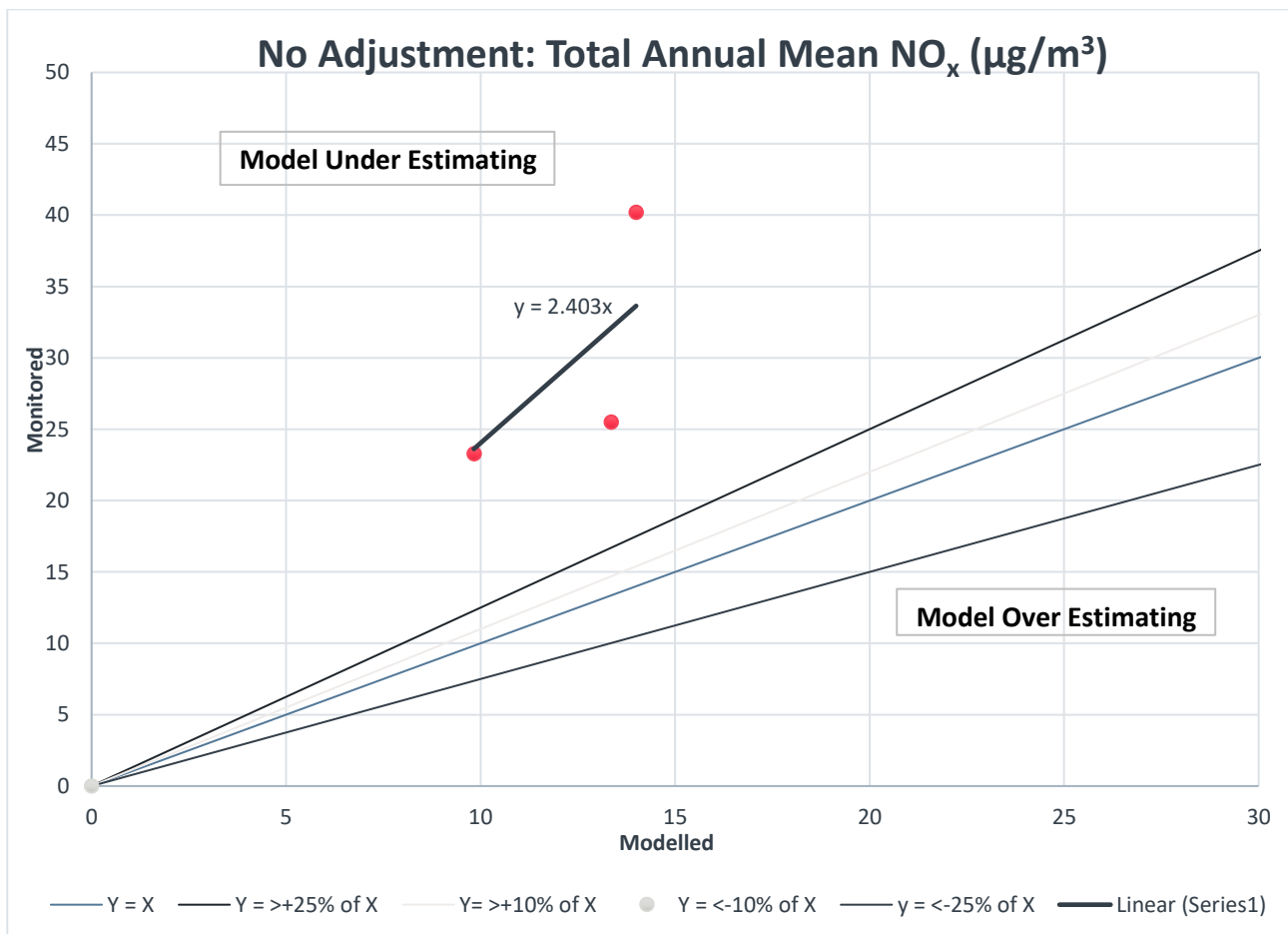


Table 1-13 Comparison of modelled and monitored road NO_x to determine verification factor

Site	2019 Background NO ₂ Concentration (µg ^m - ³)	2019 Adjusted Modelled Annual Mean NO ₂ (µg ^m - ³)	2019 Monitored Annual Mean NO ₂ (µg ^m - ³)	% (Adjusted Modelled-Monitored)/ Monitored
21	10.2	27.6	30.7	-10.2%
35	10.2	22.7	22.5	0.7%
44	10.2	26.9	23.6	13.8%

- 1.4.6 Prior to adjustment, the calculated RMSE was 9.20µg/m³. Following adjustment, this reduced to 2.60µg/m³. This is within the ideal range of 10% for model performance and well within the 25% range for acceptable performance. Therefore, in accordance with LAQM.TG22, the model predictions are considered robust.

ADMS-Roads model results

- 1.4.7 The traffic roads model considered receptors R1 to R50 and they represent residential properties or other locations of relevant exposure along the considered road links. **Table 1-7** to **Table 1-9** present modelled annual mean nitrogen dioxide (NO₂) and PM (PM₁₀ and PM_{2.5}) concentrations, along with the impact descriptor according to Institute of Air Quality Management (IAQM) (2017) guidance. Results are presented to several decimal places. This is to aid comparison against Air Quality Objectives (AQOs), between receptors and between the 'With Proposed Development' and 'Without Proposed Development' scenarios. The number of decimal places should not be interpreted as an indication of the accuracy of the results.
- 1.4.8 The table headers use terminology promulgated by the Environment Agency (2020) but widely used in air quality assessments. The Process Contribution (PC) is the contribution to the concentration of pollutant arising from the Proposed Development, in this case from road traffic generated by construction activity. The Predicted Environmental Contribution (PEC) is the total concentration, including the contribution from the Proposed Development plus the contribution from all other sources, including background sources and road traffic not associated with the Proposed Development.

Table 1-14 List of receptors where impacts due to construction traffic are modelled

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R1	Human	521021	122756	1.6	N/A	Yes

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R2	Human	521055	122735	1.6	N/A	Yes
R3	Human	521133	122688	1.6	N/A	Yes
R4	Human	521097	122670	1.6	N/A	Yes
R5	Human	521150	122655	1.6	N/A	Yes
R6	Human	521182	122659	1.6	N/A	Yes
R7	Human	521210	122661	1.6	N/A	Yes
R8	Human	521251	122693	1.6	N/A	Yes
R9	Human	521228	122685	1.6	N/A	Yes
R10	Human	521274	122696	1.6	N/A	Yes
R11	Human	521310	122650	1.6	N/A	Yes
R12	Human	521286	122654	1.6	N/A	Yes
R13	Human	521333	122667	1.6	N/A	Yes
R14	Human	521325	122608	1.6	N/A	Yes
R15	Human	521321	122578	1.6	N/A	No
R16	Human	521358	122586	1.6	N/A	Yes
R17	Human	521340	122627	1.6	N/A	Yes
R18	Human	521319	122558	1.6	N/A	No
R19	Human	521328	122522	1.6	N/A	No
R20	Human	521363	122542	1.6	N/A	Yes
R21	Human	521345	122534	1.6	N/A	Yes
R22	Human	521321	122500	1.6	N/A	No
R23	Human	521356	122481	1.6	N/A	No
R24	Human	521364	122441	1.6	N/A	No
R25	Human	521321	122451	1.6	N/A	No

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R26	Human	521360	122393	1.6	N/A	No
R27	Human	521349	122335	1.6	N/A	No
R28	Human	521317	122329	1.6	N/A	No
R29	Human	521341	122293	1.6	N/A	No
R30	Human	521309	122252	1.6	N/A	No
R31	Human	521322	122201	1.6	N/A	No
R32	Human	521294	122123	1.6	N/A	No
R33	Human	521211	122041	1.6	N/A	No
R34	Human	521161	121890	1.6	N/A	No
R35	Human	521409	122562	1.6	N/A	Yes
R36	Human	521380	122517	1.6	N/A	Yes
R37	Human	521403	122500	1.6	N/A	Yes
R38	Human	521412	122494	1.6	N/A	Yes
R39	Human	521443	122478	1.6	N/A	Yes
R40	Human	521463	122469	1.6	N/A	Yes
R41	Human	521489	122449	1.6	N/A	Yes
R42	Human	521583	122448	1.6	N/A	No
R43	Human	521604	122455	1.6	N/A	No
R44	Human	521642	122460	1.6	N/A	No
R45	Human	521688	122480	1.6	N/A	No
R46	Human	521932	122598	1.6	N/A	No
R47	Human	522002	122574	1.6	N/A	No
R48	Human	522073	122562	1.6	N/A	No
R49	Human	521331	122754	1.6	N/A	No

ID	Description	X coordinates	Y coordinates	Height (m)	Monitor classification	In AQMA?
R50	Human	521304	122784	1.6	N/A	No

Table 1-15 Modelled annual mean NO₂ impacts due to construction traffic

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R1	40	0.03	13.11	0.07	32.78	Negligible
R2	40	0.04	12.29	0.10	30.73	Negligible
R3	40	0.03	12.26	0.07	30.65	Negligible
R4	40	0.04	14.71	0.10	36.78	Negligible
R5	40	0.05	13.99	0.13	34.98	Negligible
R6	40	0.05	13.70	0.12	34.25	Negligible
R7	40	0.06	15.80	0.15	39.50	Negligible
R8	40	0.05	11.87	0.12	29.68	Negligible
R9	40	0.05	12.99	0.13	32.48	Negligible
R10	40	0.06	11.98	0.15	29.95	Negligible
R11	40	0.11	17.48	0.27	43.70	Negligible
R12	40	0.1	16.80	0.25	42.00	Negligible
R13	40	0.09	15.66	0.23	39.15	Negligible
R14	40	0.18	17.65	0.45	44.13	Negligible
R15	40	0.27	13.81	0.68	34.53	Negligible
R16	40	0.9	17.14	2.25	42.85	Negligible
R17	40	0.15	18.86	0.37	47.15	Negligible
R18	40	0.26	12.44	0.65	31.10	Negligible
R19	40	0.26	11.12	0.65	27.80	Negligible
R20	40	1.21	16.71	3.03	41.78	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R21	40	0.53	15.76	1.33	39.40	Negligible
R22	40	0.17	10.80	0.43	27.00	Negligible
R23	40	0.28	14.12	0.70	35.30	Negligible
R24	40	0.2	12.97	0.50	32.43	Negligible
R25	40	0.12	10.98	0.30	27.45	Negligible
R26	40	0.13	12.84	0.32	32.10	Negligible
R27	40	0.1	12.98	0.25	32.45	Negligible
R28	40	0.07	11.50	0.18	28.75	Negligible
R29	40	0.08	12.62	0.20	31.55	Negligible
R30	40	0.06	12.58	0.15	31.45	Negligible
R31	40	0.06	12.13	0.15	30.33	Negligible
R32	40	0.05	12.39	0.13	30.98	Negligible
R33	40	0.02	10.49	0.05	26.23	Negligible
R34	40	0.01	10.04	0.02	25.10	Negligible
R35	40	0.39	13.16	0.98	32.90	Negligible
R36	40	1.2	18.88	3.00	47.20	Negligible
R37	40	1.59	21.05	3.98	52.63	Negligible
R38	40	1.52	19.61	3.80	49.03	Negligible
R39	40	1.46	18.86	3.65	47.15	Negligible
R40	40	1.56	20.13	3.90	50.33	Negligible
R41	40	0.9	15.67	2.25	39.18	Negligible
R42	40	1.11	15.14	2.78	37.85	Negligible
R43	40	1.2	15.71	3.00	39.28	Negligible
R44	40	0.88	13.65	2.20	34.13	Negligible
R45	40	0.98	14.29	2.45	35.73	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R46	40	0.31	9.98	0.78	24.95	Negligible
R47	40	0.48	9.83	1.20	24.58	Negligible
R48	40	0.73	11.41	1.83	28.53	Negligible
R49	40	0.03	11.10	0.07	27.75	Negligible
R50	40	0.02	10.28	0.05	25.70	Negligible

Table 1-16 Modelled annual mean PM₁₀ impacts due to construction traffic

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R1	40	0.01	14.93	0.03	37.33	Negligible
R2	40	0.01	14.66	0.02	36.66	Negligible
R3	40	0.01	14.65	0.03	36.62	Negligible
R4	40	0.01	15.45	0.04	38.64	Negligible
R5	40	0.01	15.21	0.04	38.03	Negligible
R6	40	0.02	15.64	0.04	39.11	Negligible
R7	40	0.02	15.78	0.05	39.45	Negligible
R8	40	0.01	14.39	0.03	35.97	Negligible
R9	40	0.01	14.83	0.04	37.07	Negligible
R10	40	0.01	14.33	0.03	35.82	Negligible
R11	40	0.03	15.79	0.06	39.47	Negligible
R12	40	0.02	15.35	0.05	38.37	Negligible
R13	40	0.02	15.49	0.06	38.73	Negligible
R14	40	0.04	16.29	0.11	40.72	Negligible
R15	40	0.06	14.97	0.14	37.43	Negligible
R16	40	0.18	15.79	0.44	39.48	Negligible
R17	40	0.04	16.72	0.11	41.80	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R18	40	0.06	14.54	0.14	36.34	Negligible
R19	40	0.07	14.53	0.17	36.33	Negligible
R20	40	0.36	16.29	0.91	40.71	Negligible
R21	40	0.14	15.55	0.34	38.87	Negligible
R22	40	0.05	14.12	0.12	35.29	Negligible
R23	40	0.08	14.64	0.21	36.60	Negligible
R24	40	0.06	14.29	0.14	35.72	Negligible
R25	40	0.03	13.93	0.08	34.82	Negligible
R26	40	0.04	14.26	0.10	35.65	Negligible
R27	40	0.03	14.31	0.07	35.78	Negligible
R28	40	0.02	13.84	0.05	34.59	Negligible
R29	40	0.02	14.20	0.06	35.50	Negligible
R30	40	0.02	14.19	0.05	35.47	Negligible
R31	40	0.02	14.04	0.04	35.11	Negligible
R32	40	0.02	14.13	0.04	35.33	Negligible
R33	40	0.01	13.53	0.01	33.82	Negligible
R34	40	0.00	12.49	0.01	31.22	Negligible
R35	40	0.12	14.33	0.29	35.82	Negligible
R36	40	0.40	16.21	1.00	40.53	Negligible
R37	40	0.55	17.00	1.39	42.50	Negligible
R38	40	0.53	16.76	1.31	41.89	Negligible
R39	40	0.50	16.51	1.26	41.29	Negligible
R40	40	0.54	16.71	1.35	41.77	Negligible
R41	40	0.30	15.20	0.75	38.01	Negligible
R42	40	0.38	15.61	0.94	39.02	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R43	40	0.41	15.80	1.02	39.50	Negligible
R44	40	0.30	15.12	0.74	37.79	Negligible
R45	40	0.33	15.33	0.83	38.32	Negligible
R46	40	0.10	13.93	0.25	34.82	Negligible
R47	40	0.16	13.53	0.39	33.83	Negligible
R48	40	0.24	14.04	0.60	35.11	Negligible
R49	40	0.01	14.24	0.02	35.60	Negligible
R50	40	0.01	14.00	0.02	35.00	Negligible

Table 1-17 Modelled annual mean PM_{2.5} impacts due to construction traffic

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R1	20	0.01	9.73	0.03	48.64	Negligible
R2	20	0.01	9.58	0.03	47.89	Negligible
R3	20	0.01	9.57	0.03	47.85	Negligible
R4	20	0.01	10.02	0.04	50.09	Negligible
R5	20	0.01	9.88	0.04	49.41	Negligible
R6	20	0.01	10.13	0.05	50.63	Negligible
R7	20	0.01	10.20	0.05	51.01	Negligible
R8	20	0.01	9.43	0.03	47.14	Negligible
R9	20	0.01	9.67	0.04	48.36	Negligible
R10	20	0.01	9.40	0.03	46.98	Negligible
R11	20	0.01	10.22	0.07	51.11	Negligible
R12	20	0.01	9.98	0.06	49.92	Negligible
R13	20	0.01	10.05	0.06	50.24	Negligible
R14	20	0.02	10.49	0.12	52.44	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R15	20	0.03	9.75	0.16	48.77	Negligible
R16	20	0.10	10.22	0.49	51.09	Negligible
R17	20	0.02	10.73	0.12	53.65	Negligible
R18	20	0.03	9.51	0.16	47.56	Negligible
R19	20	0.04	9.51	0.19	47.54	Negligible
R20	20	0.20	10.48	1.00	52.42	Negligible
R21	20	0.08	10.08	0.38	50.40	Negligible
R22	20	0.03	9.27	0.13	46.37	Negligible
R23	20	0.05	9.57	0.23	47.83	Negligible
R24	20	0.03	9.37	0.16	46.84	Negligible
R25	20	0.02	9.17	0.09	45.83	Negligible
R26	20	0.02	9.35	0.11	46.76	Negligible
R27	20	0.02	9.38	0.08	46.91	Negligible
R28	20	0.01	9.12	0.05	45.58	Negligible
R29	20	0.01	9.32	0.06	46.59	Negligible
R30	20	0.01	9.31	0.05	46.57	Negligible
R31	20	0.01	9.23	0.05	46.16	Negligible
R32	20	0.01	9.28	0.04	46.41	Negligible
R33	20	0.00	8.94	0.02	44.71	Negligible
R34	20	0.00	8.10	0.01	40.49	Negligible
R35	20	0.06	9.39	0.32	46.95	Negligible
R36	20	0.22	10.44	1.09	52.20	Negligible
R37	20	0.30	10.88	1.51	54.38	Negligible
R38	20	0.29	10.74	1.43	53.70	Negligible
R39	20	0.27	10.60	1.37	53.02	Negligible

ID	AQO ($\mu\text{g m}^{-3}$)	PC ($\mu\text{g m}^{-3}$)	PEC ($\mu\text{g m}^{-3}$)	PC (% of AQO)	PEC (% of AQO)	Impact
R40	20	0.29	10.71	1.47	53.56	Negligible
R41	20	0.16	9.88	0.82	49.38	Negligible
R42	20	0.21	10.10	1.03	50.50	Negligible
R43	20	0.22	10.20	1.11	51.02	Negligible
R44	20	0.16	9.83	0.81	49.13	Negligible
R45	20	0.18	9.94	0.90	49.72	Negligible
R46	20	0.06	9.17	0.28	45.83	Negligible
R47	20	0.08	8.70	0.42	43.51	Negligible
R48	20	0.13	8.99	0.66	44.94	Negligible
R49	20	0.00	9.34	0.02	46.71	Negligible
R50	20	0.00	9.21	0.02	46.03	Negligible

2. Glossary of terms and abbreviations

Table 2-1 Glossary of terms and abbreviations

Term (acronym)	Definition
AQMA	Air Quality Management Area. If a Local Authority identifies any locations within its boundaries where the Air Quality Objectives are not likely to be achieved, it must declare the area as an AQMA. The area may encompass just one or two streets, or it could be much bigger. The Local Authority is subsequently required to put together a plan to improve air quality in that area — a Local Air Quality Action Plan.
AQO	Air Quality Objective. The Air Quality Objectives are policy targets generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances, within a specified timescale. The Objectives are set out in the UK Government's Air Quality Strategy for the key air pollutants.
Construction	Used both to refer to the whole construction phase of a project, and more specifically to refer to an activity involved in the provision of a new structure (building, road, etc.).
IAQM	Institute of Air Quality Management.
L_{MOmin}	Monin-Obukhov length (L _{MOmin}) provides a measure of stability of the atmosphere.
NO₂	Nitrogen dioxide.
OS	Ordnance Survey
PC	Process contribution.
PEC	Predicted environmental contribution.
PM	Particulate matter. Microscopic portions of solid matter suspended in air. This includes a wide range of particle sizes and different chemical constituents. It consists of both primary components, which are emitted directly into the atmosphere, and secondary components, which are formed within the atmosphere as a result of chemical reactions. Commonly used to refer to both PM ₁₀ and PM _{2.5} .
PM₁₀	Particulate matter smaller than 10 µm in diameter.

Term (acronym)	Definition
PM_{2.5}	Particulate matter smaller than 2.5 µm in diameter.
Proposed Development	The development that is subject to the application for development consent, as described in Chapter 4: The Proposed Development, Volume 2 of the ES (Document Reference: 6.2.4).
Receptor	These are as defined in Regulation 5(2) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and include population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and landscape that may be at risk from exposure to direct and indirect impacts which may arise as a result of the Proposed Development.

3. References

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