

TECHNICAL NOTE – AIR QUALITY

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Introduction

An air quality assessment was undertaken in April 2019 to support the planning application (MC/19/0765). This Technical Note has been produced following correspondence from the Environmental Protection Officer (EPO) at Medway Council (MC). The original assessment used emission factors from 2030 to assess the 'without development' and 'with development' scenarios. In the absence of any other official stance it was assumed that the vehicle fleet will improve in line with predictions made by Defra and Department for Transport (DfT) guidance. However, to account for uncertainty in the emission factors and future vehicle composition, a sensitivity test has now been undertaken.

Natural England have also requested clarification of cumulative schemes included within the assessment. We can confirm that the traffic modelling which provides the foundations of the air quality assessment is based on the Medway Strategic AIMSUM model and in particular what is understood to be the preferred Local Plan scenario. In addition to this, the modelling includes the prevailing committed development assumptions and in this regard, the traffic and air quality assessments fully take in to consideration the cumulative impact referred to by Natural England.

Operational Phase Impacts

A comparison of modelled and monitored data, as laid out in LAQM Technical Guidance 2016 (LAQM.TG(16)), was undertaken in the original assessment. This ensures that the assessment provides a more conservative estimate of pollution concentrations than using unadjusted modelling results. As the model was found to be under-predicting concentrations, an adjustment factor of 3.58 was applied to the model results.

Table 1 in this Addendum shows the predicted annual mean concentrations of NO₂ for the opening year traffic at the receptor points using 2025 emission factors.

Table 1: Predicted Annual Mean Nitrogen Dioxide Concentrations at Selected Receptors (µg/m³)

Receptor	2025 Emission Factors			
	2035 Base	2035 With Development	Change (as % of the AQAL)	Significance
R1	31.9	31.1	-2.0	-
R2	29.2	28.5	-1.7	-
R3	22.2	21.9	-0.9	-
R4	20.5	20.2	-0.6	-
R5	24.0	23.4	-1.4	-
R6	23.7	23.1	-1.6	-
R7	20.4	20.0	-1.1	-
R8	28.2	27.4	-1.9	-
R9	24.6	24.2	-1.1	-
R10	27.4	26.9	-1.4	-
R11	28.1	27.9	-0.4	-
R12	25.7	25.6	-0.4	-
R13	28.4	28.2	-0.5	-
R14	27.6	27.5	-0.3	-
R15	21.8	21.8	0.1	Low / Imperceptible
R16	31.4	31.2	-0.5	-
R17	27.3	27.3	-0.1	Low / Imperceptible
R18	19.7	19.8	0.1	Low / Imperceptible
R19	18.1	17.9	-0.4	-
R20	21.8	21.4	-0.9	-
R21	21.7	21.8	0.3	Low / Imperceptible
R22	22.1	22.3	0.3	Low / Imperceptible
R23	20.6	20.7	0.1	Low / Imperceptible
R24	19.7	19.6	-0.2	-
R25	17.7	17.8	0.1	Low / Imperceptible
R26	22.5	22.2	-0.8	-
R27	25.5	25.1	-1.0	-
R28	18.4	18.2	-0.4	-
R29	23.4	23.8	0.8	Low / Imperceptible

Receptor	2025 Emission Factors			
	2035 Base	2035 With Development	Change (as % of the AQAL)	Significance
R30	20.8	18.8	-5.2	-
R31	24.5	23.3	-3.2	-
R32	23.7	20.7	-7.6	-
R33	26.0	24.0	-5.0	-
R34	30.5	30.3	-0.4	-
R35	30.8	30.6	-0.3	-
R36	19.0	17.1	-5.0	-
R37	19.7	17.9	-4.6	-
R38	19.8	19.3	-1.1	-
R39	18.0	14.5	-9.0	-
R40	14.7	15.1	1.1	Medium
R41	17.2	18.4	3.1	Medium
R42	15.1	15.1	-0.1	Low / Imperceptible
R43	16.9	16.8	-0.1	-
R44	17.6	17.4	-0.5	-
R45	17.4	17.9	1.3	Medium
P1	-	19.8	-	-
P2	-	23.2	-	-

The data in Table 1 indicate that annual mean NO₂ concentrations are predicted to be below the 40µg.m⁻³ Air Quality Assessment Level (AQAL) at all receptors using 2025 emission factors.

The greatest change in annual mean NO₂ concentrations as a result of the Proposed Development is predicted at Receptor 41 using 2025 emission factors. A change of 3.1% with respect to the AQAL is predicted at this receptor. The significance of impact is considered to be Medium in accordance with the Kent and Medway Air Quality Partnership Air Quality Planning Guidance criteria. The overall impact of the Proposed Development on annual mean NO₂ concentrations is *Low/Imperceptible to Medium* in all of the above scenarios.

Within the Site itself (receptors P1 and P2) annual mean NO₂ concentrations are predicted to fall well below (less than 75%) the relevant AQAL. It is also expected that the hourly mean objective

level within the Site will be met. The impact with regards to new exposure is therefore also considered to be *low / imperceptible* using 2025 emission factors.

Discussions and Conclusions

The sensitivity test was undertaken to demonstrate the impact of various Defra/DfT emission factor variations from year to year. The emission factors are sourced from the emission factor Toolkit (EFT), provide emissions data from transport sources and contain projected factor changes as the fleet evolves from year to year. The EFT is based on DfT projections of fleet composition and the changes in number of vehicles in various Euro classes as well as the introduction of cleaner low emission vehicles such as electric vehicles and hybrids.

Emission factors change and reduce from vehicles yearly going forward as the fleet emissions improve as older vehicles are removed from the fleet and newer cleaner ones are introduced. This change in the EFT is reflected in lower emissions as the years progress, which results in lower predicted (modelled) concentrations for the opening year.

Results for the NO₂ sensitivity test using 2025 emission factors, as set-out in Table 1, show no exceedances of the AQAL when these emission factors are applied to opening year traffic projections. This is an extreme worst-case scenario, given the fleet composition in 2035 is unlikely to have the same number of older vehicles and more low emission vehicles in the fleet 10 years later.

Based on the results of the sensitivity test, it is unlikely that future occupants of the Proposed Development would be exposed to NO₂ concentrations above the objective levels, therefore the impact of the Proposed Development with regards new exposure to air quality is considered to be negligible. Additionally, predicted concentrations remain below the objective levels at all the selected receptors. Beneficial air quality impacts are also predicted at a number of existing receptor locations.

A damage cost calculation was undertaken in the original assessment. It is expected that the implementation of mitigation measures should further reduce the impact of emissions during operation of the Proposed Development. It is therefore considered that the Proposed Development is acceptable in terms of air quality.