

# Warrington Local Plan Examination

## Hearing Session Note

### Action 66

Matter 1(HRA) - Note setting out the final position in relation to the sensitivity test to model impacts agreed with National Highways.

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31st October 2022



## **1. Introduction**

- 1.1 This note has been prepared to address the point, raised in respect of Matter 1, to clarify the final position in relation to the sensitivity test to model impacts agreed with National Highways.

## **2. Information provided**

- 2.1 The note produced by the Council's consultants (AECOM) on the sensitivity study that has been undertaken in line with the recommendations provided by National Highways of the impact of air quality on Manchester Mosses Special Area of Conservation (SAC) is appended.
- 2.2 It should be noted that although the study uses a different methodology to that used in the Council's Habitat's Regulation Assessment (HRA), this does not make any significant change to the results.
- 2.3 It should be further noted that this study has been undertaken as a sensitivity. The Council is not relying on this study and it is not included in the Council's HRA.



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**Project name:**  
Warrington Local Plan - Air Quality Modelling

**Project ref:**  
60473226

**From:**  
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**Date:**  
26 September 2022

# Memo

**Subject:** Sensitivity Study

## Introduction

In the assessment of the impact of air quality on Manchester Mosses Special Area of Conservation (SAC) due to the submitted Warrington Local Plan, AECOM have undertaken a Sensitivity Study in line with recommendations provided by National Highways (9 September 2022).

## Methodology

Whilst the basic model setup remains unchanged from previous assessments (e.g. road layout, meteorological data and parameters), for this sensitivity test the ADMS-Roads model setup does not include plume depletion to represent the dry deposition of pollutants, nor any street canyon parameters to represent tree barriers.

National Highways' Speed Band Emission Factors (v4.3) has been used to estimate emissions of NO<sub>x</sub> (g/km/s) separately for light duty vehicles (LDV) and heavy-duty vehicles (HDV). This allows for the use of National Highways' own tool (draft, v3), developed to estimate ammonia concentrations from road traffic, and the subsequent calculation of nitrogen and acid deposition to the SAC.

Four model scenarios were run, using 2040 Speed Band Emission Factors for NO<sub>x</sub>. Scenarios allowed for impacts of the WBC and GMCA Local Plans to be considered both alone and in-combination:

1. 2040 Do Minimum (DM);
2. 2040 Do Minimum + Warrington Borough Council Local Plan (WBC LP);
3. 2040 Do Minimum + Greater Manchester Combined Authority Local Plan (GMCA LP);
4. 2040 Do Minimum + Warrington Borough Council Local Plan + Greater Manchester Combined Authority Local Plan (In-combination).

Traffic flows and calculated NO<sub>x</sub> emission rates are presented in Table 1. The WBC LP was assumed to increase traffic flows by 2,103 AADT and the GMCA LP by 1,489 AADT alone. The combined increase was 3,592 AADT.

**Table 1: Traffic data and emission factors used in the sensitivity study**

Scenario	Road / Type	Vehicle type	Traffic Flow (AADT)	%HDV	Speed Band	NOx g/km/s
DM	M62 / M'way	LDV	143,006	0	Free Flow	0.143
		HDV	21,731	100	Free Flow	0.029
WBC LP	M62 / M'way	LDV	144,823	0	Free Flow	0.145
		HDV	22,017	100	Free Flow	0.030
GMCA LP	M62 / M'way	LDV	144,389	0	Free Flow	0.144
		HDV	21,837	100	Free Flow	0.029
In-combination	M62 / M'way	LDV	146,206	0	Free Flow	0.146
		HDV	22,123	100	Free Flow	0.030
All scenarios	B5212 / Rural	LDV	1,718	0	Free Flow	0.002
		HDV	3	100	Free Flow	<0.001

The NOx concentrations calculated in each of the ADMS Roads models was multiplied by a factor of 1.5 before entering the data into the 'DRAFT – Highways England Ammonia N Deposition Tool\_v3.xlsx'. This verification factor is in-line with the factor previously applied by AECOM in the WBC LP assessments, based upon professional judgement, and Highways England's air quality assessment for the M62 Junctions 10 to 12 Smart Motorway (2018).

Background concentrations of NOx and nitrogen dioxide (NO<sub>2</sub>) were taken from Defra's 2018-based 1x1km maps for 2019 and 2030, with motorway and minor road contributions within the grid square removed to avoid double counting. 2040 background concentrations were estimated by assuming the same year-on-year trend calculated by the difference between 2019 and 2030.

For each scenario, the contribution to N deposition from road traffic-generated NO<sub>2</sub> was subsequently calculated and added to the calculated ammonia N deposition contribution generated by the tool.

## Results

Table 2, Table 3 and Table 4 respectively summarise the impacts of the WBC Local Plan alone, GMCA Local Plan alone, and the WBC and GMCA Local Plans in-combination at receptor R2\_90m. This location is where the maximum impacts occur along the transect, within the bog.

**Table 2 Modelled Results for transect R2 at 90m from the M62 for WBC Local Plan Alone in 2040**

Pollutant (lower critical level/load and units)	Do-Minimum (i.e future traffic growth but without any LP)	Future traffic growth with WBC LP added	Change in pollutant concentration or deposition rate due to WLP	Change due to WBC LP expressed as percentage of the critical level or load
NOx (30 µgm <sup>-3</sup> )	10.23	10.30	0.07	0.23
Ammonia (1 µgm <sup>-3</sup> )	3.14	3.15	0.009	0.93
Nitrogen deposition (5 kgN/ha/yr)	26.25	26.31	0.05	1.05
Acid deposition (0.564 keq/ha/yr)	1.875	1.879	0.004	0.67

**Table 3 Modelled Results for transect R2 at 90m from the M62 for GMCA Local Plan Alone in 2040**

Pollutant (lower critical level/load and units)	Do-Minimum (i.e future traffic growth but without any LP)	Future traffic growth with GMCA LP added	Change in pollutant concentration or deposition rate due to GMCA LP	Change due to GMCA LP expressed as percentage of the critical level or load
NOx (30 $\mu\text{gm}^{-3}$ )	10.23	10.28	0.05	0.16
Ammonia (1 $\mu\text{gm}^{-3}$ )	3.14	3.14	0.007	0.67
Nitrogen deposition (5 kgN/ha/yr)	26.25	26.29	0.04	0.75
Acid deposition (0.564 keq/ha/yr)	1.875	1.878	0.003	0.47

**Table 4 Modelled Results for transect R2 at 90m from the M62 for Warrington and GMCA Local Plans in-combination in 2040**

Pollutant (lower critical level/load and units)	Do-Minimum (i.e future traffic growth but without any LP)	Future traffic growth with WBC LP & GMCA LP added	In-combination change in pollutant concentration or deposition rate	In-combination change expressed as percentage of the critical level or load
NOx (30 $\mu\text{gm}^{-3}$ )	10.23	10.35	0.12	0.40
Ammonia (1 $\mu\text{gm}^{-3}$ )	3.14	3.15	0.016	<b>1.60</b>
Nitrogen deposition (5 kgN/ha/yr)	26.25	26.35	0.09	<b>1.83</b>
Acid deposition (0.564 keq/ha/yr)	1.875	1.882	0.007	<b>1.16</b>

The sensitivity test shows that, after having made the methodological changes we agreed, the results are very similar to the original modelling.