NORTH AND EAST MELTON MOWBRAY DISTRIBUTOR ROAD

Proof of Evidence LCC 09: Air Quality

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1. Introduction

Qualifications

- 1.1 My name is Anna Savage. I gained a First Class BSc Honours degree in Environmental Biology from the University of Birmingham in 1997 and an MSc (Distinction) in Environmental Sciences at the University of Nottingham in 1999.
- 1.2 I am a full member of the Institution of Environmental Sciences, Institute of Air Quality Management and a Chartered Scientist.

Relevant Experience

- 1.3 I have more than 20 years' experience in the field of air quality. I have worked in consultancy for 13 years and am currently an Associate in AECOM's air quality team after previously working at the Transport Research Laboratory. Prior to this I was an Air Quality Officer within the public sector for 7 years and I have conducted research into air quality at the University of Hertfordshire on the completion of my masters.
- 1.4 I am an AECOM accredited project manager and have been the air quality lead for more than 30 road schemes, where I am responsible for the monitoring, modelling and assessment of emissions to the air to determine impacts on air pollution concentrations at relevant receptor locations. Examples of some of the more recent road schemes that I have led include Didcot Garden Town Housing Infrastructure Fund and A40 Smart Corridor for Oxfordshire County Council, Abbey Barn Lane for Buckinghamshire Council, HS2 Phase 2B (Lot 2), and multiple road schemes for Transport for London. I also work directly with local authorities to help them pursue their Local Air Quality Management and Local Plan duties and I recently led the air quality assessment for the Portsmouth Clean Air Zone.
- 1.5 The evidence I am presenting relates to the North and East Melton Mowbray Distributor Road (NEMMDR), hereinafter referred to as the "Scheme".
- 1.6 My evidence relates to my involvement in the Scheme since 2017. I initially assisted AECOM's Air Quality Lead to prepare the air quality sections of scoping documents and to identify baseline air quality monitoring locations. I subsequently provided the final review of the air quality assessment for the Scheme ready for submission in 2018 when the Air Quality Lead was on maternity leave.
- 1.7 Since submission of the Environmental Statement (ES), I have provided assistance to AECOM's Environment Lead where required to help respond to any relevant queries relating to the Scheme air quality assessment. This has included whether any of the proposed amendments to the detailed design may affect air quality and discussions with residents on construction air quality monitoring. I have also provided advice on the best practice air quality mitigation measures to be included within the Construction Environmental Management Plan (CEMP).

Involvement with the Scheme

- 1.8 In my evidence, I will make references to the findings of the Scheme air quality assessment within Chapter 5 of the ES published in September 2018 Volume I and II including Appendices; 5.1 [P16], 5.2 [P19], 5.3 [P20] and 5.4 [P21].
- 1.9 I will provide evidence on the effect of the Scheme on air quality during construction and operation to demonstrate that the conclusions show that the Scheme effects are not significant with respect to air quality impacts.
- 1.10 I shall conclude that there are no detailed developments in design and changes to policy since permission was granted that change the conclusions of the ES for air quality.

2. Development of the Scheme

Development Since Planning Submission

- 2.1 Development of the Scheme since planning permission has been granted comprises detailed design development, for example in terms of vertical alignment, earthworks and landscaping. As there are no changes to the horizontal alignment, or speed limits, there is no predicted potential changes to the impacts on air quality.
- 2.2 I am aware that since the Scheme was considered for and granted planning permission that the National Planning and Policy Framework (NPPF)¹ [PPG8] has been replaced with a revised version dated 2021. I have examined the contents of that new version and I can confirm that the update does not alter the conclusions that I draw in respect of the Scheme itself. It does not introduce any new policies or change the fundamentals in respect of air quality considerations. I do however take the opportunity to indicate in this proof of evidence where the new NPPF references are different to those contained within the earlier documentation.

3. Assessment of Scheme Proposals

Introduction

- 3.1 This section summarises the air quality assessment undertaken for Scheme prepared in September 2018 which sets out:
 - National legislation and Planning Policy relevant to air quality and current at the time of the assessment.
 - Baseline air quality conditions around the Scheme area;
 - The air quality assessment methodology;
 - The potential effect of the Scheme on air quality;
 - Proposed mitigation measures for air quality;
 - The conclusions of the above assessment; and
 - Air quality legislation.
- 3.2 The UK national air quality strategy² sets out the requirements of the Environment Act 1995³ providing objective values for key pollutants as a tool for local authorities to manage air quality through the Local Air Quality Management (LAQM) regime, in accordance with the EU air quality framework. Objective values are provided within the Air Quality Regulations (amended in 2002)⁴.
- 3.3 Under the LAQM regime, local authorities have a duty to carry out regular assessments of air quality against the objective values. If it is unlikely that the objective values would be met in the given timescale, they must designate an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan with the aim of achieving the objective.
- 3.4 The air quality objective values relevant to this air quality assessment are given in Table 1. These are intended to protect human health or ecosystems. The UK's Clean Air Strategy published in 2019⁵ since the assessment does not amend any objectives.

¹ Ministry of Housing, Communities and Local Government 2021. National Planning Policy Framework.

² Department for Environment, Food and Rural Affairs (2011). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1).

³ H.M. Government (1995). The Environment Act.

⁴ H.M. Government (2002). The Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument No 3043, The Stationery Office.

⁵ Department for Environment, Food and Rural Affairs (2019). Clean Air Strategy 2019.

Table 1 UK Air Quality Objective Values

Pollutant	Averaging Period	Objective	Date for Achievement
Nitrogen dioxide (NO2) for human health	Annual average	40 μg/m ³	11 June 2010
	1 hour average	200 μg/m³not to be exceeded more than 18 times/year	11 June 2010
Particulate matter (PM_{10}) for human health	Annual average	40 μg/m³	11 June 2010
-	24 hour average	50 μg/m³not to be exceeded more than 35 times/year	11 June 2010

- 3.5 The UK's air quality action plan for NO2⁶ sets out measures to tackle areas where concentrations of NO2 are not meeting the EU limits. The government has invested in new measures to tackle this issue including providing a mandate to those local authorities where levels are exceeded to consider actions to achieve the limit in the shortest possible time. This includes considering measures such as clean air zones, investing in public transport or ultra low emission vehicles. Melton Borough Council is not one of the authorities that are failing to meet the limit.
- 3.6 The NPPF⁷ at the time of the assessment (dated July 2018) states in paragraph 103 "Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health."
- 3.7 Paragraph 181 of the NPPF states that: ""Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."
- 3.8 The Planning Practice Guidance (PPG)⁸ [PPG9] provides additional support to the NPPF to assist authorities to decide whether air quality is relevant to an application. For example, for developments such as this Scheme where traffic volumes are changed significantly.
- 3.9 The recent revision of the NPPF (dated July 2021) provides an update to these paragraph numbers, renumbered as paragraph 105 and 186 respectively. The revised NPPF does not introduce any new policy for air quality so does not alter any conclusions made in the ES.

Baseline air quality

3.10 There are no AQMAs in the air quality study area or within the Melton borough. There was one exceedance of the annual mean objective value for NO₂ in 2015 and 2016 at site DT12 (Nottingham Road) in Melton Mowbray town centre, but there have been no exceedances since this time.

⁶ Department for Environment, Food and Rural Affairs and Department for Transport (2017). UK plan for tackling roadside nitrogen dioxide concentrations, June 2017.

⁷ Department for Communities and Local Government 2012. National Planning and Policy Framework (NPPF), the National Archives.

⁸ Ministry of Housing, Communities and Local Government 2019. Planning Practice Guidance Air Quality.

Generally, baseline air quality levels around the Scheme are well below the objective values and air quality is considered to be good.

3.11 As there were a limited number of air quality monitoring sites near the Scheme, AECOM conducted a 6-month NO₂ monitoring survey during 2017-2018 at eight sites. The results of the survey showed that concentrations of NO₂ at all sites were below the annual mean objective value. These data were used to verify the performance of the air quality model.

Air quality methodology

- 3.12 The air quality assessment followed guidance within the Design Manual for Road and Bridges (DMRB) volume 11 Section 3 Part 1 Air Quality (HA207/07)⁹ and associated interim advice notes (IANs)^{10 11 12} ¹³published by Highways England (previously Highways Agency) available at the time of the assessment.
- 3.13 The modelling assessment considers affected road links (individually modelled sections of road) by comparing traffic data with the proposed Scheme (Do Something) and without the proposed Scheme (Do Minimum) against the local air quality screening criteria presented in DMRB HA207/07. These are set out below:
 - Road alignment will change by 5m or more; or
 - Annual average daily traffic (AADT) flows will change by 1,000; or
 - Heavy duty vehicles (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more; or
 - Daily average speeds will change by 10 km/hr or more; or
 - Peak hour speed will change by 20km/hr or more.
- 3.14 Local air quality was assessed up to 200 metres from the Scheme and affected routes at sensitive receptors. These are locations where members of the public may be exposed to and affected by air quality, such as houses and schools as well as designated ecological sites. Impacts are not considered beyond this distance as pollutants from road traffic reduces with distance from the road and beyond 200 metres, concentrations are likely to reduce to be equivalent to background levels. The regional assessment of operational impacts considers emissions rather than concentrations in the entire study area.
- 3.15 The assessment considered impacts on air quality during the construction and operational phases.

Scheme impact - Construction phase

- 3.16 The construction phase is programmed to last 26 months during which time there is the potential for temporary impacts due to dust emissions from construction activity and emissions from plant and heavy goods vehicles (HGVs) and changes in traffic flow to the site.
- 3.17 A qualitative assessment considered impacts up to 200 metres from construction works site boundary as details of the construction methodology, plant, equipment and footprint of the works was not known at the time of the assessment.

⁹ Highways Agency 2007. DMRB, Volume 11, Section 3, Part 1 'Air Quality' (HA 207/07)

¹⁰ Highways Agency 2012. Interim Advice Note 170/12 v3, Updated air quality advice on the assessment of future NOx and NO₂ projections for users of DMRB Volume 11, Section 3, Part 1 'Air Quality' (HA 207/07).

¹¹ Highways Agency 2013. Interim Advice Note 174/13 Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 'Air Quality' (HA 207/07).

¹² Highways Agency 2013. Interim Advice Note 175/13 Updated air quality advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for users of DMRB Volume 11, Section 3, Part 1 'Air Quality' (HA 207/07).

¹³ Highways Agency 2013. Interim Advice Note 175/13 Updated air quality advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for users of DMRB Volume 11, Section 3, Part 1 'Air Quality' (HA 207/07).

- 3.18 As there are a large number of sensitive receptors within 200 metres of the proposed construction works, it was recommended that as well as standard site best practice, additional specific mitigation measures would need to be included in the CEMP. Experience in the UK¹⁴ (IAQM, 2014) is that good site practice is capable of mitigating the impact of fugitive emissions of particulate matter effectively, so that in all but the most exceptional circumstances, effects at sensitive receptors can be controlled to ensure that effects are of negligible or slight adverse significance (i.e. 'not significant'). This process can be managed through the preparation and implementation of a CEMP which will be prepared for the Scheme before construction commences.
- 3.19 Information provided at the time of assessment showed that there were forecast to be between on average 100-115 HGVs per day during the construction period. These estimates are below the DMRB criteria as presented in paragraph 3.13. Therefore, no further assessment was required and air quality effects were not considered to be significant.

Scheme impact - Operational phase

Overview

- 3.20 A detailed local air quality modelling assessment of NO₂ and PM₁₀ was conducted for the current baseline (2018) and the 2021 opening year of the Scheme to understand the potential for any significant adverse effects at sensitive receptors close to the Scheme route and within a wider study area.
- 3.21 Impacts were modelled at 207 selected receptors relevant for public exposure (for example at houses and schools) and at the River Eye, an ecological Site of Special Scientific Interest (SSSI).
- 3.22 The assessment found that annual mean concentrations of PM₁₀ were predicted to be below the annual mean and 24 hour mean PM₁₀ objective values in the 2018 baseline year and 2021 opening year with or without the Scheme at all sensitive receptors.
- 3.23 The assessment found that annual mean NO₂ concentrations were predicted to exceed the annual mean objective value in the 2018 baseline year at seven receptors. In the 2021 opening year, three receptors were predicted to exceed the annual mean NO₂ objective value without the Scheme. All these receptors are within Melton Mowbray town centre. All other receptors were predicted to have concentrations below the annual mean NO₂ objective value with and without the Scheme.
- 3.24 The impacts on NO₂ due to the operation of the Scheme in the 2021 opening year are dealt with in turn across the air quality study in the following sub-sections.

Receptors close to the new road

- 3.25 The Scheme was predicted to lead to a reduction in annual mean NO₂ concentrations at four receptors to the west of roundabout 1 on the A606 Nottingham Road, with a maximum reduction at receptor R168 of 1.4 μ g/m³ (from 13.9 μ g/m³ to 12.5 μ g/m³). A medium increase in annual mean NO₂ concentrations of 3.2 μ g/m³ (from 10.2 μ g/m³ to 13.4 μ g/m³) was predicted at receptor R104 which is situated to the east of Nottingham Road approximately 18 metres from the new roundabout.
- 3.26 Receptor R178 at Scalford Road is located 70 metres from roundabout 2 to the north of Melton and was predicted to have a small increase in annual mean NO₂ concentrations of 1.1 μ g/m³ (from 8.2 μ g/m³ to 9.3 μ g/m³) with the Scheme.
- 3.27 There are no modelled receptors close to roundabouts 3 and 4. The nearest receptor (R165 on Saxby Road) is located around 160 metres from roundabout 5. There was a small increase in annual mean NO₂ concentrations of 0.7 μ g/m³ (from 9.5 μ g/m³ to 10.2 μ g/m³) predicted at this location with the Scheme.
- 3.28 South of roundabout 5, modelled annual mean NOx concentrations and nitrogen deposition increased with the Scheme at the River Eye SSSI due to a forecast increase in traffic flows of around 10,000 vehicles per day on the new road crossing the river. This watercourse is nutrient rich and has a low

¹⁴ Institute of Air Quality Management 2014. Guidance on the Assessment of Dust from Demolition and Construction.

sensitivity to nitrogen. The Scheme ecologists concluded that the results at this site are not significant for air quality.

3.29 At roundabout 6, the nearest receptors are R161 and R186 on the A606 Burton Road which are approximately 105 metres and 200 metres away respectively. A small increase in annual mean NO₂ concentrations was predicted at both receptors with the Scheme, with an increase of 1.2 μ g/m³ (from 14.1 μ g/m³ to 15.3 μ g/m³) at R161 and 1.0 μ g/m³ (from 13.5 μ g/m³ to 14.5 μ g/m³) at R186.

Receptors in Melton Mowbray town centre

- 3.30 The assessment also modelled the situation within Melton Mowbray town centre both with and without the Scheme. Annual mean NO₂ concentrations were predicted to be above the annual mean NO₂ objective value at three sensitive receptors within the centre of town without the Scheme in 2021; at R93 (A606 Burton Road), and R74 and R170 on the A606 Leicester Street. With the Scheme in place, medium to large improvements were predicted at all three receptors as a result of a forecast reduction in traffic flow in the town centre of up to 2,800 vehicles a day. The largest reduction of 5.3 μ g/m³ in annual mean NO₂ concentrations was predicted at R93 (40.4 μ g/m³ to 34.1 μ g/m³). At R170, a medium change of 3.3 μ g/m³ in annual mean NO₂ was predicted, reducing concentrations from 43.9 μ g/m³ to 40.6 μ g/m³ just above the 40 μ g/m³ in annual mean NO₂ concentrations was predicted (from 41.0 μ g/m³ to 38.0 μ g/m³).
- 3.31 The hourly mean NO₂ objective value was not predicted to be exceeded at any receptors.
- 3.32 Large and medium reductions (>2µg/m³) were also predicted at 52 receptor locations within the central area of Melton Mowbray that have concentrations below the objective value.

Receptors on the wider network

- 3.33 There were predicted improvements to air quality at receptor locations outside of the town centre due to forecast traffic reductions with the Scheme as vehicles use the distributor road. For example, along the A607 north east of the town, a medium reduction of 3.7 μ g/m³ in annual mean NO₂ concentrations was predicted at R129 (from 24.0 μ g/m³ to 20.3 μ g/m³) and a reduction of 2.8 μ g/m³ in annual mean NO₂ concentrations was predicted at R151 (from 21.1 μ g/m³ to 18.3 μ g/m³) on the A606 south of the town centre.
- 3.34 Within and parallel to the new distributor road, there were small predicted increases of less than 1 μ g/m³ on Norfolk Drive/Queensway between the A606 Burton Road and the B6047. For example, a small increase of 0.8 μ g/m³ in annual mean NO₂ concentrations was predicted at R22 (from 12.8 μ g/m³ to 13.6 μ g/m³) and at R162 (from 11.9 μ g/m³ to 12.7 μ g/m³).
- 3.35 There were small to medium increases in annual mean NO₂ concentrations in areas further out from the new road on the A606 Nottingham Road to the north west of Melton, on the A607 Melton Road to the north east of Melton, and the A606 Burton Road to the south. These roads have a forecast increase in traffic flow of 1,000-1,500 vehicles per day with the Scheme in place. The greatest changes in annual mean NO₂ concentrations were at R96, where there was a predicted increase of 2.0 μ g/m³ (from 13.0 μ g/m³ to 15.0 μ g/m³) and at R150, with a predicted increase of 1.4 μ g/m³ (from 17.2 μ g/m³ to 18.6 μ g/m³).

Plan Level Webtag

- 3.36 Alongside the local air quality assessment, a plan level WebTAG appraisal was conducted. This was part of the DMRB guidance at the time and is used to provide an indication of the overall change in air quality during operation of the Scheme.
- 3.37 The assessment considered changes in NO₂ and PM₁₀ at all residential properties within 200 metres of the affected road network. The plan level WebTAG appraisal found that the Scheme had a net improvement in NO₂ concentrations, with an overall reduction in concentration of 0.1%. A total of 4,100 properties were predicted to experience in improvement and 1,427 predicted to experience a deterioration in air quality in the opening year. This plan level WebTAG appraisal does not contribute

to the overall evaluation of the significance of Scheme air quality effects. The significance of air quality effects for the Scheme utilises the detailed air quality modelling assessment results.

Regional assessment

3.38 A regional assessment of changes in emissions across the study area was conducted based on emissions assumptions within the Emissions Factors Toolkit (v8)¹⁵. This was conducted for the 2021 opening year and future design year (2036) across the wider study area. Small increases in emissions due to the Scheme were predicted in the opening year and design year for NOx, PM₁₀ and carbon dioxide. These increases are due to the increase in vehicle km travelled on the new distributor road.

Scheme Mitigation Measures

3.39 The operation of the Scheme does not require any specific mitigation measures, but the means by which it will be constructed as controlled by the CEMP will benefit from further controls. As there are a large number of sensitive receptors within 200 metres of the proposed construction works, it was recommended that as well as standard site best practice, additional specific mitigation measures would need to be included in the CEMP.

4. Summary and Conclusion

- 4.1 An air quality assessment for the Scheme was prepared between 2017 and 2018. The ES for the Scheme was submitted in September 2018. The air quality assessment for the NEMMDR Scheme presented the information required within the NPPF.
- 4.2 The air quality assessment for the Scheme followed guidance within the DMRB Air Quality Guidance (HA207/07) and associated IANs published by Highways England (previously Highways Agency) available at the time of the assessment. Consistent with good practice the air quality assessment for the Scheme was supported by a baseline air quality survey. The air quality assessment considered the construction and operational phases of the Scheme.

Construction Phase

- 4.3 In the construction phase the air quality assessment considered temporary impacts due to dust emissions from construction activity and plant. Heavy goods vehicles (HGVs) and changes in traffic flows were also considered.
- 4.4 The air quality assessment determined that air quality effects in the construction phase were not significant with the implementation of a CEMP. The CEMP will be prepared for the Scheme before construction commences.

Operational Phase

- 4.5 In the operational air quality assessment impacts were modelled at 207 selected receptors relevant for public exposure (for example at houses and schools) and at the River Eye, an ecological Site of SSSI. The operational air quality assessment also included plan level WebTAG information and regional emissions consistent with HA207/07 Air Quality Guidance.
- 4.6 All receptors were predicted to experience annual average concentrations of PM₁₀ that were below the relevant air quality objective in the proposed Scheme opening year (2021), both with and without the Scheme.
- 4.7 Three receptors within Melton Mowbray town centre were predicted to exceed the annual mean objective for NO₂ without the Scheme in place in the 2021 opening year. However, with the Scheme in place, there were predicted benefits to air quality within the town centre with widespread medium to large improvements. Only one receptor was predicted to exceed the annual objective for NO₂ in the opening year with and without the Scheme.

¹⁵ Department for Environment, Food and Rural Affairs 2017. Emission Factor Toolkit (EFT v8.0).

- 4.8 All other receptors were predicted to have NO₂ concentrations well below the annual mean objective value.
- 4.9 There was an overall benefit in concentrations as demonstrated by the plan level WebTAG appraisal. However, there were small increases in regional emissions with the Scheme due to the additional distance travelled on the new distributor road.
- 4.10 Based on the DMRB guidance and associated IAN and taking account of professional judgement by the air quality lead, an overall evaluation of "not significant" was assigned to the Scheme operational air quality effects.

Overall Conclusion

4.11 I am satisfied that the outcomes of the air quality assessment are consistent with national and regional policy including recent changes to the NPPF and I agree with the conclusion that the air quality effects due to the Scheme are "not significant".

5. Statement of Truth

5.1 I can confirm that I am able to give evidence in light of my relevant experience as summarised above. I can confirm that the evidence I prepared is in accordance with the guidance of my professional institution and that the opinions given are my true professional opinions.

Signed



Date 25th August 2021