NORTH AND EAST MELTON MOWBRAY DISTRIBUTOR ROAD

Proof of Evidence LCC 10:
Noise and Vibration

Prepared by: Suzanne Scott

60542201-LCC-GEN-GEN_GEN_ZZ_Z-PE-LN-1000

Leicestershire County Council

Project number: 60542201

Date: August 2021

Quality information

Prepared by
Suzanne Scott
Associate Noise and Vibration

Revision History

Revision	Revision date
P01	27/08/2021

Prepared for:

Leicestershire County Council

Prepared by:

AECOM Infrastructure & Environment UK Limited
12 Regan Way
Chetwynd Business Park
Nottingham NG9 6RZ
United Kingdom

T: [redacted]
aecom.com

Table of Contents

1. Introduction

1.1 Qualifications

1.1.1 My name is Suzanne Scott and I am presenting a proof of evidence in relation to the North and East Melton Mowbray Distributor Road, on behalf of Leicestershire County Council. I am a Chartered Scientist and have been a full member of the Institute of Acoustics for over 18 years and a full member of the Institution of Environmental Sciences for over 17 years, with 24 years overall experience.

1.1.2 I hold a Diploma in Acoustics and Noise Control and a Masters Degree in Environmental Science. I have been employed by AECOM (and previous companies taken over by AECOM) since 2001, prior to which I spent four years in the Environmental Health Department at Sedgefield Borough Council.

1.1.3 I am currently an Associate Noise and Vibration Consultant at AECOM and have held this post for over 7 years. Within the AECOM Acoustics Team I am the Team Leader for Road Transport Acoustics.

1.2 Relevant Experience

1.2.1 During my career I have completed over 30 noise and vibration impact assessments of road schemes for Local Authorities, Highways England and Transport Scotland. This has included both construction and operational impacts.

1.2.2 I have been the noise expert witness for a number of schemes, most recently at the Development Consent Order (DCO) Issue Specific Hearings for A38 Derby Junctions in 2019/2020 and A303 Amesbury to Berwick Down (Stonehenge) in 2019.

1.2.3 I have provided peer review support to Highways England with regard to the noise and vibration section of the Design Manual for Roads and Bridges (DMRB), which is the UK standard methodology for assessing the noise and vibration impacts of road schemes. I have also completed a review of BS 5228 ‘Code of practice for noise and vibration control on construction and open sites’ on behalf of Defra, which is the key British Standard for assessing construction noise and vibration.

1.2.4 I have been involved in the North and East Melton Mowbray Distributor Road scheme (the ‘scheme’) since 2017. I am the person responsible for the preparation of the Noise and Vibration impact assessment for the 2018 Environmental Statement (ES), produced as part of the planning application for the scheme. Planning permission was granted in 2019. A key aspect of the noise and vibration assessment was the inclusion of relevant mitigation measures into the scheme design, for example, noise barriers.

2. Involvement with the Scheme and Contribution Made

2.1 Scope of Involvement

2.1.1 The evidence I present relates to the noise and vibration impacts of the scheme.

2.1.2 This Proof of Evidence sets out the noise and vibration impacts of the scheme and the relevant mitigation measures included in the Scheme.

2.1.3 As indicated above I am the person responsible for the preparation of the Noise and Vibration part of the ES which accompanied the planning application. The Noise and Vibration assessment was reported in chapter 11 of the ES, and was accompanied by Appendices 11.1-11.4 and Figures 11.1-11.9.

3. Development of the Scheme

3.1 Development Since Planning Submission

3.1.1 A number of refinements to the scheme design have occurred since planning permission was granted. The majority of these refinements have little potential to affect the noise and/or vibration impacts of the scheme as reported in the Environmental Statement, for example the development of ecology mitigation measures and finalisation of footpath diversions.

3.1.2 The main potential to affect the assessed impacts arising from the scheme, in particular the operational impacts, are changes to the route alignment. In this case, however those proposed alterations are all minor and they do not produce any significant change to the overall conclusions regarding the noise and vibration effects of the Scheme as reported in the Environmental Statement.

4. Planning Policy

4.1 Introduction

4.1.1 This section provides specific details of the policies that are of most relevance to the noise and vibration assessment.

4.2 National Planning Policy Framework (NPPF)

4.2.1 The NPPF has been updated in 2021, however, no change to the wording on noise has been made, and hence there is no reason to change the contents of the information within the ES or as contained within this evidence. The NPPF sets out the Government's planning policies for England and how these are expected to be applied. The NPPF states in paragraph 185 that planning policies and decisions should "ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum, potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."

4.2.2 With regards to 'adverse impacts' and 'significant adverse impacts', the NPPF refers to the Noise Policy Statement for England (NPSE).

4.3 Noise Policy Statement for England

4.3.1 The Explanatory Note within the NPSE introduces the following concepts to aid in the establishment of significant noise effects:

- No Observed Effect Level (NOEL): the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;
- Lowest Observable Adverse Effect Level (LOAEL): the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL): the level above which significant adverse effects on health and quality of life occur.

4.3.2 The NPSE sets out the governments Noise Policy Vision to: "Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development".

4.3.3 The long-term vision is supported by the Noise Policy Aims: "Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life."

4.3.4 The NPSE recognises that "it is not possible to have a single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations". The levels are likely to be different for different noise sources, for different receptors and at different times of the day.

4.3.5 Mitigation measures to reduce adverse impacts must be considered in the context of sustainable development. Other factors such as engineering practicality, cost versus benefit and other potential impacts such as landscape, visual or ecological impacts must be balanced against any noise benefits.

4.4 Planning Practice Guidance on Noise

4.4.1 The web-based resource Department for Communities and Local Government Planning Practice Guidance on Noise (PPG-N) supports the NPPF. The guidance provides some additional detail including example outcomes for the LOAEL and SOAEL:

- LOAEL - Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.
- SOAEL - The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.

5. Assessment of Scheme Proposals

5.1 Scheme Impact

Construction

5.1.1 The construction noise and vibration assessment was completed in accordance with BS 5228: 2009+A1: 2014 'Code of Practice for Noise and Vibration Control on Construction and Open Sites', including the prediction methodology and significant effect criteria. BS 5228 is the relevant UK standard for construction noise and vibration assessments.

5.1.2 The assessment of construction noise as reported in the Environmental Statement considered the potential impact at 12 receptors selected as being representative of those closest to the works. Typical construction noise levels are estimated for the various anticipated construction works.

5.1.3 The scheme is relatively remote from the main areas of population, approximately 84 residential properties are located within 100 m of the new carriageway and realigned connecting roads. 68 of which are on the A606 at the northern end of the scheme and nine of which are on the A606 at the southern end of the scheme. Only seven residential properties are located within 100m of the offline section of the Scheme and realigned connecting side roads. Therefore, typical daytime construction noise levels are anticipated to result in slight adverse effects (not significant) at the vast majority of receptors. When roundabout works are at the closest approach to the nearest receptors, there is the potential for higher construction noise levels than the typical levels reported, for short durations. Moderate adverse effects (significant) are anticipated at Grammar School Farm during the day, which is very close to the proposed scheme west of Scalford Road roundabout. As detailed in Section 5.2, specific additional mitigation in the form of site boundary solid hoarding is proposed at this location to reduce the significance of the daytime effect to slight (not significant).

5.1.4 Typical night time tie-in works at the new roundabouts are estimated to result in moderate or large adverse effects (significant) at the closest receptors. The solid hoarding proposed to screen Grammar School Farm for typical daytime works is anticipated to reduce the magnitude of the significant effect at this location from large to moderate. At the remaining receptors, as detailed in Section 5.2, temporary site hoarding around specific plant, combined with good communication with local residents, is proposed to minimise the effects over the 3-4 nights of works for each tie-in.

5.1.5 With regards to annoyance from construction vibration, the assessment reported in the Environmental Statement considered the minimum distance between the selected receptors and works which are a potentially significant source of vibration, and a typical distance during such works. When the works are at the very closest approach, a moderate adverse effect (significant) is anticipated at four of the selected receptors. No significant adverse effects are anticipated when the works are at a typical distance.

Operation

5.1.6 The operational traffic noise predictions were completed using the standard UK traffic noise prediction methodology (Calculation of Road Traffic Noise). The assessment of the impacts was carried out in accordance with the Design Manual for Roads and Bridges, the standard methodology for assessing road schemes in the UK.

5.1.7 The assessment of the operational traffic noise impacts of the scheme, as reported in the Environmental Statement, included traffic noise predictions at all identified potentially sensitive receptors within a 600 m study area from the scheme, existing routes through the centre of Melton Mowbray which are bypassed, and other existing 'affected routes' which undergo a potentially significant change in traffic noise. The assessment is based on the change in traffic noise levels due to the scheme at the façade of each receptor which experiences the worst case change. Consideration is also given to the absolute traffic noise levels relative to the LOAEL and the SOAEL. The assessment included the mitigation measures set out in Section 5.2, including noise barriers.

5.1.8 In the opening year large adverse effects (significant) are anticipated at three residential buildings and moderate adverse effects (significant) at 167 (2%) of residential buildings in the 600 m study area.

These significant adverse effects are concentrated at the small number of individual properties along the route, the south-east edge of Thorpe Arnold, the eastern edge of Melton closest to the scheme, the northern edge of Burton Lazars, and the new housing on the northern edge of Melton east of Scalford Road. However, the absolute traffic noise levels at the façade experiencing the large or moderate adverse effect at all of these residential buildings is low, at or below the LOAEL of 55 dB $L_{A10,18h}$(façade). Appendix A (reproduced from Appendix 11.1 of the Environmental Statement) provides a table of typical noise levels to provide additional context.

5.1.9 Slight adverse effects (not significant) are anticipated at 44% of residential buildings in the study area. Increases in traffic noise levels in the opening year are concentrated at the small number of individual properties along the route of the scheme, and residential areas in the south-east of Thorpe Arnold, Burton Lazars, the northern and south-eastern edges of Melton, plus affected routes to the south and west of Melton.

5.1.10 Neutral effects are anticipated at 9% of residential buildings in the 600 m study area. Slight beneficial effects (not significant) are anticipated at 45% of residential buildings. The beneficial effects are concentrated along the main roads through Melton including the A606 and A607 which experience high traffic noise levels. The scheme reduces the number of residential buildings experiencing traffic noise levels above the daytime SOAEL of 68 dB $L_{A10,18h}$(façade) from 741 to 535 in the opening year. Reductions in traffic noise levels are anticipated in the three Noise Important Areas designated in the centre of Melton Mowbray.

5.2 Scheme Mitigation Measures

5.2.1 Planning condition 2 requires the Scheme to be carried out in accordance with the Environmental Statement, which includes the mitigation measures set out below. In addition, some measures are specifically required by the planning conditions.

Construction

5.2.2 As required by planning condition 3, a Construction Environmental Management Plan (CEMP) will be prepared and implemented by the selected construction contractor. The CEMP would include a range of best practice measures associated with mitigating potential noise and vibration impacts - such measures may include:

- selection of quiet and low vibration equipment and methodologies;
- review of construction programme and methodology to consider low noise/low vibration methods (including non-vibratory compaction plant where required);
- optimal location of equipment on site to minimise noise disturbance;
- the provision of acoustic enclosures around static plant, where necessary;
- use of less intrusive alarms, such as broadband vehicle reversing warnings;
- localised use of solid site hoarding as required e.g. temporary hoarding for night-time tie-in works and long term site hoarding at Grammar School Farm;
- compliance with standard working hours, as recommended by Melton Borough Council, of 7 am-7 pm Monday-Friday and 8 am-1 pm Saturday for the vast majority of the works (required by planning condition 20); and
- no use of vibratory plant e.g. rollers at night.

5.2.3 During the Scheme construction phase appropriate mechanisms to communicate with local residents would be set up to highlight potential periods of disruption (e.g. web-based, newsletters, newspapers, and radio announcements). An information web-page would be provided and kept up-to-date on the Leicestershire County Council website to reflect construction and community liaison requirements. It is envisaged that the web-page would provide up-to-date information on the progress of the construction works, areas affected by construction, mitigation in place to reduce adverse effects, information regarding planned construction works (including any proposed works outside normal

hours, diversion routes etc.) and works recently completed. The communication strategy would minimise the likelihood of complaints. Residents would be provided with a point of contact for any queries or complaints.

Operation

5.2.4 Environmental considerations have been taken into account during the development of the proposed 3D Scheme design through the choice of horizontal and vertical alignment. Significant sections of the scheme are in cutting which will minimise the propagation of traffic noise. This includes: east of the disused railway line approaching the Melton Spinney Road roundabout, north of the Saxby Road roundabout, and the central part of the section between Saxby Road and the A606 Burton Road.

5.2.5 Mitigation has also been incorporated into the design in the form of low-noise surfacing across the extent of the proposed scheme (required by planning condition 22). Even though the DMRB assessment methodology does not allow the benefit of low noise surfacing to be applied to the traffic noise predictions at speeds below 75 km/hr, which applies to the majority of the length of the scheme, some noise reduction is anticipated, compared to standard hot rolled asphalt (HRA) surfacing.

5.2.6 Two sections of noise barrier are proposed within the scheme design:

- 180 m of 3 m barrier on the north side of the scheme on the approach to the Scalford Road roundabout to shield the adjacent property (Grammar School Farm); and
- 440 m of 3 m barrier on the south side of the scheme east of Scalford Road roundabout to shield the area of recently constructed housing to the south.

6. Summary and Conclusion

6.1 Scope and Methodology

6.1.1 The construction assessment considered construction noise impacts, and construction vibration impacts from the use of vibratory rollers. The construction noise and vibration assessment was completed in accordance with BS 5228: 2009+A1: 2014 'Code of Practice for Noise and Vibration Control on Construction and Open Sites', including the prediction methodology and significant effect criteria. BS 5228 is the relevant UK standard for construction noise and vibration assessments.

6.1.2 The main focus of the operational assessment was on changes in traffic noise levels. The operational traffic noise predictions were completed using the standard UK traffic noise prediction methodology (Calculation of Road Traffic Noise). The assessment of the impacts was carried out in accordance with the Design Manual for Roads and Bridges, the standard methodology for assessing road schemes in the UK.

6.2 Impacts - Construction

6.2.1 The scheme is relatively remote from the main areas of population, approximately 84 residential properties are located within 100 m of the new carriageway and realigned connecting roads. 68 of which are on the A606 at the northern end of the scheme and nine of which are on the A606 at the southern end of the scheme. Only seven residential properties are located within 100 m of the offline section of the Scheme and realigned connecting side roads. Therefore, significant adverse construction noise and/or vibration effects are limited to a small number of receptors when works are in close proximity and during short duration night time tie-in works. Mitigation measures and procedures to communicate with the public will be included in the Construction Environmental Management Plan (CEMP) prepared and implemented by the selected construction contractor.

6.3 Impacts - Operation

6.3.1 The operation of the MMDR scheme is anticipated to result in significant adverse effects at a number of individual properties along the route, the south-east edge of Thorpe Arnold, the eastern edge of Melton closest to the scheme, the northern edge of Burton Lazars, and the new housing on the northern edge of Melton east of Scalford Road. However, the absolute traffic noise levels at the façade experiencing the significant adverse effect at all of these residential buildings is low both with and without the scheme. Mitigation measures have been incorporated into the scheme design through the choice of alignment (vertical and horizontal), the use of low noise surfacing and the inclusion of noise barriers in key locations.

6.3.2 Beneficial effects in the 600 m study area are concentrated along the main roads through Melton including the A606 and A607 from which traffic re-routes onto the scheme, where traffic noise levels are high. Reductions in traffic noise levels are anticipated in the three Noise Important Areas designated in the centre of Melton Mowbray.

6.4 Conclusion

6.4.1 Mitigation measures have been incorporated into the construction and design of the scheme, however, some residual adverse effects will remain. This is acceptable within the context of sustainable development as factors including engineering practicality and cost versus benefit, must also be considered. On that basis it is concluded that the noise and vibration impact assessment of the scheme reported in the Environmental Statement and summarised herein demonstrates that, within the context of sustainable development, the scheme is compliant with the relevant national policies as set out in the NPPF and NPSE.

Appendix A – Typical Noise Levels

Table A.1 below lists the sound pressure level in dB(A) for common situations.

Table A.1: Sound Pressure Levels for a range of situations

Typical Noise Levels dB(A)	Example
0	Threshold of hearing
30	Rural area at night, still air
40	Public library Refrigerator humming at 2 m
50	Quiet office, no machinery Boiling kettle at 0.5 m
60	Normal conversation
70	Telephone ringing at 2 m Vacuum cleaner at 3 m
80	General factory noise level
100	Pneumatic drill at 5m
120	Discotheque - 1m in front of loudspeaker
140	Threshold of pain