East Midlands Gateway
Phase 2 (EMG2)

Document DCO 6.7/MCO 6.7

ENVIRONMENTAL STATEMENT

Main Statement

Chapter 7

Noise and Vibration

~~January~~ April 2026

07

The East Midlands Gateway Phase 2 and Highway Order 202X and The East Midlands Gateway Rail Freight and Highway (Amendment) Order 202X

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The East Midlands Gateway Phase 2 and Highway Order 202X and the East Midlands Gateway Rail Freight and Highway (Amendment) Order 202X

CHAPTER 7 – NOISE AND VIBRATION

(DOCUMENT DCO 6.7/MCO 6.7)

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7. Noise and Vibration

Contents

7.1. Introduction

7.1.1. This Chapter of the ES considers the potential significant noise and vibration impacts and effects that may arise from the construction and operation of the EMG2 Project. The assessment is based on the project description set out in **Chapter 3: Project Description** (**Document DCO 6.3/MCO 6.3**), including the development parameters set out in **Table 3.5** of that Chapter.

7.1.2. In brief, the EMG2 Project comprises three main components, as follows:

Table 7.1: The EMG2 Project Components

Main Component	Summary of Component	Works Nos.
DCO Application made by the DCO Applicant for the DCO Scheme		
EMG2 Works	Logistics and advanced manufacturing development located on the EMG2 Main Site south of East Midlands Airport and the A453, and west of the M1 motorway. The development includes HGV parking and a bus interchange. Together with an upgrade to the EMG1 substation and provision of a Community Park.	DCO Works Nos. 1 to 5 including relevant Further Works as described in the draft DCO (**Document DCO 3.1**). DCO Works Nos. 20 and 21 including relevant Further Works as described in the draft DCO (**Document DCO 3.1**).
Highway Works	Works to the highway network: the A453 EMG2 access junction works (referred to as the EMG2 Access Works); significant improvements at Junction 24 of the M1 (referred to as the J24 Improvements), works to the wider highway network including the Active Travel Link, Hyams Lane Works, Works to Long Holden, L57 Footpath Upgrade, A6 Kegworth Bypass/A453 Junction Improvements and Finger Farm Roundabout Improvements.	DCO Works Nos. 6 to 19 including relevant Further Works as described in the draft DCO (**Document DCO 3.1**).
MCO Application made by the MCO Applicant for the MCO Scheme		
EMG1 Works	Additional warehousing development on Plot 16 together with works to increase the permitted height of the cranes at the EMG1 rail-freight terminal, improvements to the public transport interchange, site management building and the EMG1 Pedestrian Crossing.	MCO Works Nos. 3A, 3B, 5A, 5B, 5C, 6A and 8A in the draft MCO (**Document MCO 3.1**).

7.1.3. In recognition that this chapter forms part of a single ES covering both the DCO Scheme and the MCO Scheme, it makes a clear distinction between the component parts and, consistent with the dual application approach**,** separately assesses the impacts arising from:

i. The DCO Scheme (Section 7.5);

ii. The MCO Scheme (Section 7.6);

iii. The EMG2 Project as a whole, comprising the DCO Scheme and MCO Scheme together (Section 7.7); and

iv. The EMG2 Project as a whole in combination with other planned development (i.e. the cumulative effects) (Section 7.8) using the list of projects identified in **Appendix 21B** to **Chapter 21: Cumulative Impacts (Document DCO 6.21B/MCO 6.21B)**.

7.1.4. The Chapter details the assessment scope and methodology, relevant policy and guidance, baseline conditions, and the likely significant noise and vibration effects during the construction and operational phases of the DCO Scheme, MCO Scheme and the EMG2 Project as a whole at the relevant sensitive receptors. Where necessary, potential mitigation measures are discussed, following which any residual effects that may remain are described.

7.1.5. The full list of supporting appendices and the corresponding DCO/MCO Document numbers is as follows:

- **Appendix 7A: Glossary of noise and vibration terms (Document DCO 6.7A/MCO 6.7A)**
- **Appendix 7B: Construction data (Document DCO 6.7B/MCO 6.7B)**
- **Appendix 7C: Operational data (Document DCO 6.7C/MCO 6.7C)**
- **Appendix 7D: Receptor plans (Document DCO 6.7D/MCO 6.7D)**
- **Appendix 7E: Monitoring plans (Document DCO 6.7E/MCO 6.7E)**
- **Appendix 7F: Monitoring equipment (Document DCO 6.7F/MCO 6.7F)**
- **Appendix 7G: Monitoring results and weather data (Document DCO 6.7G/MCO 6.7G)**

7.2. Scope and Methodology of the Assessment

7.2.1. The EMG2 Project is comprised of three interrelated component parts, as set out in **Chapter 3: Project Description (Document DCO 6.3/MCO 6.3)** and in Section 7.1 of this Chapter.

7.2.2. Although the primary approach for the assessments of the potential effects of the EMG2 Project is to consider the DCO Scheme and MCO Scheme separately, and then together, the traffic associated with the MCO Scheme is negligible, as set out in **Chapter 6: Traffic and Transport (Document DCO 6.6 / MCO 6.6**). Subsequently, it is not feasible to split out the traffic noise for the MCO Scheme from the traffic data provided for the EMG2 Project. This is further discussed in Limitations and Assumption at paragraph 7.2.54 of this Chapter.

7.2.3. The Scope and Methodology set out below is common to both the DCO Scheme and the MCO Scheme.

Scope

7.2.4. Regarding the potential generation of groundborne vibration, it is possible that there may be some associated effects during construction from certain vibration generating activities, which are considered as part of the assessment scope. Operational activity taking place at the EMG2 Works and MCO Scheme site is primarily associated with logistics facilities which do not typically involve activities that will produce any significant levels of groundborne vibration, although there is also provision for up to 20% of floorspace being advanced manufacturing. However, the nearest sensitive receptors are at least 100 m from the closest point to the areas where units could be built, which increases to at least 180 m when considering the nearest residential receptors (e.g., at Diseworth). At these distances, no significant effects from operational groundborne vibration are expected, and therefore consideration of operational vibration has been scoped out of the assessment. It should also be noted that no additional capacity for train movements is proposed at EMG1, and therefore any vibration from use of the railway would not change as a result of the EMG2 Project, over and above what has already been assessed as part of the EMG1 DCO approval.

7.2.5. Regarding the potential for groundborne vibration from the passage of vehicles on roads, this is not directly linked to the vehicles themselves or any change in their number during construction or operation of the EMG2 Project, and its component parts, but rather their passing over irregularities in the road surface. In terms of internal access roads, these would be newly constructed and free of irregularities and maintained as required. Similarly, the physical improvements associated with the Highway Works will be newly surfaced, and the wider road network will be maintained by the relevant highway authority. On this basis, no significant levels of groundborne vibration would occur, and consideration of vibration from the passage of vehicles has been scoped out of the assessment.

Consultation

Scoping Opinion

7.2.6. An EIA Scoping Report for the EMG2 Project was submitted to the Planning Inspectorate (PINS) in August 2024. A Scoping Opinion was adopted by PINS on the 24th of September 2024 **(Document DCO 6.1D/MCO 6.1D)**. **Table 7.2** summarises the relevant comments from the Scoping Opinion and provides commentary as required.

Table 7.2: Scoping Opinion comments and commentary

Originator	Summary of Scoping Opinion Comments	Response to Comments
PINS ID 3.5.1	Stated that no details of potential operational vibration had been provided and therefore matter could not be scoped out on that basis.	Further details have been provided demonstrating that significant effects resulting from operational vibration are unlikely to occur (see paragraphs 7.2.4 and 7.2.5).
PINS ID 3.5.2	Stated that limited details of construction works had been provided and therefore consideration of construction vibration could not be scoped out for sources other than piling and vibratory ground compaction.	Estimates of construction activities and plant have been provided and used as a basis for the assessment of noise and vibration. Further details have been provided in this Chapter demonstrating that significant effects resulting from construction vibration are unlikely to occur (see paragraphs 7.2.4 and 7.2.5).
PINS ID 3.5.3	Stated that the noise monitoring detailed only covered the area around the EMG2 Works, and that monitoring relating to the full EMG2 Project should be undertaken as required.	Additional noise monitoring has been undertaken with reference to the area around the EMG2 Works (see section on Baseline Conditions below).
PINS ID 3.5.4	Stated that the receptors detailed only covered the area around the EMG2 Works, and that receptors relating to the full extent of the EMG2 Project should be considered as required.	Additional receptors have been added to the assessment with reference to the Highway Works and EMG1 Works (see sub-section on Receptors below at paragraphs 7.2.45 to 7.2.51 and Table 7.12).
Kegworth Parish Council	Stated that an estimate of noise, likely significant effects, and details of any proposed mitigation measures associated with the expanded rail freight interchange should be included.	Noise associated with the EMG1 Works has been assessed in the Chapter. However, it should be noted that the rail freight interchange isn't proposed to be expanded, rather an increase to the permitted height of the cranes is proposed. For construction noise, see paragraph 7.6.18 to 7.6.20. For operational noise, see 7.6.24 to 7.6.30.
Leicestershire County Council	Stated that the Chapter should demonstrate how the EMG2 Project will contribute to noise in the area, including the consideration of cumulative effects.	Noise from the EMG2 Project has been assessed in Section 7.7, and cumulative effects are assessed in Section 7.8 of this Chapter.

Originator	Summary of Scoping Opinion Comments	Response to Comments
		For the DCO Scheme, construction noise is considered In Paragraph 7.5.21 to 7.5.25.
North West Leicestershire District Council (NWLDC)	Confirmed that the approach proposed in the Scoping Report, including the noise monitoring and receptor plans, were acceptable.	N/A.
UK Health Security Agency (UKHSA)	The Noise Policy Statement for England (NPSE) sets out the government's overall policy on noise. Its aims are to: • avoid significant adverse impacts on health and quality of life; • mitigate and minimise adverse impacts on health and quality of life; and • contribute to the improvement of health and quality of life. These aims should be applied within a broader context of sustainable development, where noise is considered alongside other economic, social and environmental factors. UKHSA expects such factors may include: • Ensuring healthy lives and promoting well-being for all at all ages; • promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; • building resilient infrastructure, promoting inclusive and sustainable industrialisation and fostering innovation; • reducing inequality; and • making cities and human settlements inclusive, safe, resilient and sustainable.	The importance of the NPSE and how it is reflected in other policy documents is recognised. The assessment will compare the expected impact with the policy requirements and propose mitigation, to be agreed with the LPA, where necessary, to comply with the policy.
	UKHSA's consideration of the effects of health and quality and life attributable to noise is guided by the recommendations in the Environmental Noise Guidelines for the European Region 2018 published by the World Health Organisation, and informed by high quality systematic reviews of the scientific evidence. In 2023 UKHSA and the University of Leicester published a spatial assessment of the attributable burden of disease due to transportation noise in England. The scientific evidence on noise and health is rapidly developing, and UKHSA's recommendations are also informed by relevant studies that are judged to be	It is acknowledged and agreed that the scientific evidence on noise and health is rapidly developing. This Chapter makes appropriate use of relevant robust evidence to determine the mitigation required to meet the national policy requirements.

Originator	Summary of Scoping Opinion Comments	Response to Comments
	scientifically robust and consistent with the overall body of evidence.	
	UKHSA believes that Nationally Significant Infrastructure Projects (NSIP) should not only limit significant adverse effects, but also explore opportunities to improve the health and quality of life of local communities and achieve more equitable health outcomes.	For noise, policy requires that significant adverse effects should be avoided in the context of Government policy on sustainable development. There is the associated requirement to "contribute to improvements in health and quality of life, where possible" both of which apply in the context of Government policy on sustainable development. The assessment of the impact and the identification of mitigation will meet these policy requirements. Mitigation measures for the DCO Scheme are identified in paragraphs 7.5.44 to 7.5.54 and for the MCO Scheme refer to paragraphs 7.6.31 to 7.6.32.
	Significance of Impacts Determining significance of impacts is an essential element of an Environmental Impact Assessment, and therefore significance needs to be clearly defined at the earliest opportunity by the Applicant. UKHSA recommends that the definition of significance is discussed and agreed with relevant stakeholders, including local authority environmental health and public health teams and local community representatives, through a documented consultation process. UKHSA recommends that any disagreement amongst stakeholders on the methodology for defining significance is acknowledged in the planning application documentation and could inform additional sensitivity analyses. For noise exposure, UKHSA expects assessments of significance to be closely linked to the associated impacts on health and quality of life in line with the NPSE [31], and not on noise exposure per se.	For noise, the thresholds for significance have been identified based on relevant evidence.
	For road traffic noise, the Design Manual for Roads and Bridges (DMRB) Table 3.49 LA111 includes proposed values for the Lowest Observable Adverse Effect Level (LOAEL) and Significant Observable Adverse Effect Level (SOAEL)3 for operational noise, and these values are likely to inform judgements on significance of impact. Whilst DMRB does not explicitly reference the underpinning evidence that informed these numbers, the night time LOAEL and SOAEL of 40 dB Lnight (outside, free-field) and 55 dB Lnight	Section 7.2.24 of this Chapter addresses road traffic noise. The Lden metric is an annual average. As it would be disproportionate to measure the baseline situation for one year, any use of Lden in the assessment would by definition be approximate and may not robustly relate to the evidence base. Where appropriate the numbers of people affected by different changes in noise exposure

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	(outside, free-field) respectively, correspond to the guideline value and interim target proposed in the WHO Night Noise Guidelines 2009. The Night Noise Guidelines emphasised that the interim target was "not a health-based limit value by itself. Vulnerable groups cannot be protected at this level". The daytime SOAEL of 68 dB LA10,18hr (facade) appears to be derived from the relative noise level in the Noise Insulation Regulations (NIR)[111, which is linked to the provision of enhanced noise insulation for new highway infrastructure. The NIR does not explicitly refer to the underpinning evidence on which the relevant noise level is based, and there is a lack of good quality evidence linking noise exposure expressed in the LA10 metric to health effects. Therefore, it is helpful to convert these levels to Lden and LAeq,16hr metrics, which are more widely used in the noise and health literature. Assuming motorway traffic, a level of 68 dB LA10,18hr (facade) is approximately equivalent to free-field outdoor levels of 69dB Lden or 64LAeq,16hr).	will be determined. The consequential health effects will be identified and compared with the health benefits expected from the scheme.
	With reference to the noise exposure hierarchy table in the Planning Practice Guidance (Noise), UKHSA is not aware of good quality scientific evidence that links specific noise levels to behavioural/attitudinal changes in the general population. Reactions to noise at an individual level are strongly confounded by personal, situational and environmental non-acoustic factors [16,17], and large inter-personal variations are observed in the reaction of a population to a particular noise level [18-21]. For these reasons UKHSA is not able to provide evidence-based general recommendations for SOAELs that are able to achieve the aims and objectives of the Noise Policy Statement for England and the Planning Practice Guidance on noise. DMRB allows for project specific LOAELs and SOAELs to be defined if necessary, and UKHSA recommends that the Applicant gives careful consideration of the following: i. The existing noise exposure of affected communities, including consideration of any designated Noise Important Areas identified in proximity to the scheme; ii. The size of the population affected - for example an effect may be deemed significant if a large number of people	As is common practice, the evidence available to assist with the noise assessment is for the most part based on the impact on the average person. There is no robust methodology for dealing with those with sensitivities. Furthermore, if there is a particular sensitive person potentially affected by the scheme, there is no guarantee that they will still be at their location when the scheme becomes operational. Therefore, the most appropriate approach is to consider the likely effect on the average person. Taking each point in turn: (i) Addressed by means of the baseline surveys (ii) Noted. Only a small population is affected in this instance (iii) Considered by means of noise modelling (iv) Not applicable to this scheme (v) Day and night impacts are considered (vi) Noted (vii) Noted.

Originator	Summary of Scoping Opinion Comments	Response to Comments
	are exposed to a relatively small noise change; iii. The relative change in number and type of road vehicle pass-bys; iv. The relative change in number and type of rolling stock movements; v. Changes in the temporal distribution of noise during day/evening/night, or between weekdays and weekends; vi. Soundscape and tranquillity, in particular the value that communities put on the lack of environmental noise in their area, or conversely, on the lack of public areas within walking distance that are relatively free from environmental noise; vii. Opportunities for respite (predictable periods of relief from noise), either spatially or temporally; viii. Cumulative exposure to other environmental risk factors, including other sources of noise and air pollution, ix. Local health needs, sensitivities and objectives.	(viii) Cumulative noise has been taken into account and assessed (ix) Health Impacts are assessed in **Chapter 17: Population and Human Health (Document DCO 6.17/MCO 6.17).**
	For operational noise, section 10.3 of the scoping report states it will be assessed using British Standard (BS) 4142:2014+A1 :2019, (BS 4142). UKHSA expects this will include an assessment of noise from fixed plant. BS4142 assesses the significance of the sound by rating the sound source compared to the background sound level. It does not assess health impacts. The applicant will need to establish a rationale for the chosen SOAEL etc and how these relate to impacts on health and quality of life.	At this stage of this type of scheme, there is not enough detail available regarding what fixed plant might be required. Instead target levels are proposed and Requirement 21 of the dDCO will regulate operational noise using a methodology approved by the LPA to demonstrate compliance with local and national policy. BS 4142 determines the likely degree of impact taking account of various factors. If there is a significant adverse impact once context is considered, that is regarded as a potentially significant adverse health impact and mitigation would be applied accordingly.
	For construction noise the latest revision of the DMRB makes reference to Section E3.2 and Table E.1 in Annex E (informative) of BS 5228-1:2009+A1:2014 [221for the definition of SOAELs. Table E.1 of BS 5228-1:2009+A1:2014 provides examples of threshold values in three categories, based on existing ambient values. Threshold values are higher when ambient noise levels are higher. Daytime (07:00-19:00, weekdays) thresholds can be traced back to principles promoted by the Wilson Committee in 1963 [231: "Noise from construction and demolition sites should not exceed the level at	Refer to Paragraph 7.2.12 for construction noise threshold values.

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	which conversation in the nearest building would be difficult with the windows shut". The Wilson Committee also recommended that "Noisy work likely to cause annoyance locally should not be permitted between 22.00 hours and 07.00 hours". BS 5228 states that these principles have been expanded over time to include a suite of noise levels covering the whole day/week period taking into account the varying sensitivities through these periods.	
	Health Outcomes UKHSA encourages the applicant to present population noise exposure data in terms of the Lden metric (in addition to Leq and L10), to facilitate interpretation by a broad range of stakeholders. This is because most recent scientific evidence on the health effects of environmental noise is presented in terms of Lden. UKHSA believes that quantifying the health impacts associated with noise exposure and presenting them in health-based metrics allows decision makers to make more informed decisions.	The Lden metric is an annual average. As it would be disproportionate to measure the baseline situation for one year, any use of Lden in the assessment would by definition be approximate and may not robustly relate to the evidence base. Where appropriate the numbers of people affected by different changes in noise exposure will be determined. The consequential health effects will be identified and compared with the health benefits expected from the scheme.
	For transportation sources, UKHSA recommends the quantification of health outcomes using the methodology agreed by the Interdepartmental Group on Costs and Benefits - Noise subgroup [IGCB(N) [251(currently under review), and more recent systematic reviews [1, 6• 71. For road noise UKHSA believes there is sufficient evidence to quantify the following health outcomes: long-term annoyance, sleep disturbance, ischaemic heart disease (IHD), and potentially stroke6 and diabetes7. For rail noise UKHSA believes there is sufficient evidence to quantify the following health outcomes: long-term annoyance and sleep disturbance7. Effects can be expressed in terms of number of people affected, number of disease cases, and Disability Adjusted Life Years (DALYs). The IGCB(N) guidance [251can also be used to translate these effects into monetary terms.	The approach to assessment of health impacts (quantitative or qualitative) will be dependent on the noise modelling outputs. A quantitative assessment will only be undertaken where it is proportionate to do so and will be determined at a later stage. Should a quantitative assessment be undertaken, the IGCB(N) methodology would be applied with impacts expressed across a range of health outcomes in terms of number of people affected. However, it is noted that the IGCB(N) approach is under review, raising a question of the validity of the approach currently set out. Furthermore, any such calculation must also be compared with the health benefits of this scheme arising from increased employment etc.
	Some health outcomes, namely annoyance and self-reported sleep disturbance, can be influenced by the local context and situation. In these cases, it would be preferable to use exposure-response functions (ERFs) / exposure-response relationships (ERRs) derived in a local context. However,	The preference for use of ERFs presented in the WHO-commissioned systematic reviews and the UKHSA update in 2022 and Vienneau et al 2019/UKHSA 2023 are noted and will be taken into consideration should it be considered proportionate to undertake a

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	UKHSA is not aware of any ERFs / ERRs for road or railway traffic being available for a UK context from data gathered in the last two decades. Therefore, in UKHSA's view the ERFs presented in the WHO-commissioned systematic reviews and the UKHSA update in 2022 offer a good foundation for appraisal of the health effects associated with road and rail traffic noise [2, 261. For metabolic outcomes, no ERF was published in the WHO ENG 2018 [11. A recent meta-analysis of five cohort studies of road traffic noise and incidence of diabetes was reported [271by both Vienneau et al. in 2019 and UKHSA in 2023[4]	quantitative health assessment in relation to changes in noise exposure. It is also noted that no such ERFs exist for operational noise from the site.
	Where schemes have the potential to impact many people, UKHSA expects the Applicant to carry out literature scoping reviews to ensure that the most robust and up-to-date scientific evidence is being used to quantify adverse effects attributable to the scheme.	The population and health assessment **Chapter 17: Population and Human Health (Document DCO 6.17/MCO 6.17)** uses the most robust and up to date scientific evidence to quantify adverse effects attributable to the scheme.
	UKHSA expects to see a clear and transparent methodology how the Applicant will take into consideration effects on health and quality of life when making judgement of significance, including a description of local circumstances and modifiers anticipated, and how reasonably foreseeable changes in these circumstances will be dealt with during the assessment process.	The assessment of significance in the context of population and health will be informed by the IEMA Guide to Determining Significance for Human Health in EIA.
	Identification and Consideration of Receptors The identification of noise sensitive receptors in proximity to the proposed scheme, or route options if relevant, is essential in providing a full assessment of potential impacts. Examples of noise sensitive receptors include but are not limited to: i. Noise Important Areas ii. Residential areas iii. Schools, hospitals and care homes iv. Community green and blue spaces and areas valued for their tranquillity, such as local and national parks v. Public Rights of Way (PRoWs)	Noted. The noise receptors relevant to this assessment are identified in **Appendix 7D: Receptor Plans (Document DCO 6.7D/MCO 6.7D)**.
	Noise Important Areas (NIAs) are areas with the highest levels of noise exposure at a national level and as such require	The applicable policy for this scheme is the National Networks National Policy Statement. At paragraph

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	very careful consideration in terms of protection from increased noise levels as well as opportunities for noise mitigation that can lead to an improvement in health and quality of life. For road traffic, DMRB requires a list of noise mitigation measures that the project will deliver in Noise Important Areas. UKHSA supports this requirement, which can be equally applied to railway noise. New infrastructure development should offer an opportunity to reduce the health burden of existing transport infrastructure, particularly for those worst affected. UKHSA would encourage this approach to extend beyond NIAs, in line with the third aim of NPSE [31.	5.238 there is a requirement to address noise issues associated with Important Areas as identified through the noise action planning process. Any NIAs potentially affected by the scheme are assessed as required. They are defined as Noise Sensitive Receptors (NSRs) in this Chapter.
	Baseline Sound Environment The greater the understanding of the baseline sound environment, the greater the potential for the assessment to reflect the nature and scale of potential impacts, adverse or beneficial, associated with the scheme. UKHSA recommends that traditional averaged noise levels are supplemented by a qualitative characterisation of the sound environment, including any particularly valued characteristics (for example, tranquillity) and the types of sources contributing to it [281.	During the baseline monitoring notes have been taken of any perceived relevant acoustic characteristics which will be taken into account as appropriate. The baseline for the DCO Scheme is reported in Section 7.5 of this Chapter. The baseline for the MCO Scheme is reported in Section 7.6.
	UKHSA recommends that baseline noise surveys are carried out to provide a reliable depiction of local diurnal noise variations for both weekdays and weekends, in a variety of locations, including the difference between day (07:00-19:00), evening (19:00-23:00) and night-time (23:00-07:00) periods. This is particularly important if there are areas within the scheme assessment boundary with atypical traffic day/evening/night distributions. Achieving these aims is likely to require long-term noise monitoring in multiple locations for a period greater than seven days. This information should be used to test the robustness of any conversions between noise metrics (e.g., converting from LA10,18hr to LAeq,2300-0700 and Lden).	The scope and duration of the baseline monitoring has been agreed with the LPA through pre-application consultation. See **Table 7.4**
	UKHSA suggests that a variety of metrics can be used to describe the sound environment with and without the scheme-for example, Lden and Lnight used in the WHO Guidelines 2018 [11, levels averaged over finer time periods, background noise levels expressed as percentiles, and number of event metrics	Lden and Lnight are annual averages, and it would be disproportionate to measure the baseline over one year. The metrics used to describe the baseline environment have been agreed with the LPA.

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	(e.g., N65 day, N60 night)-and that, where possible, this suite of metrics is used to inform judgements of significance. There is emerging evidence that intermittency metrics can have an additional predictive value over traditional long-term time-averaged metrics for road traffic noise [291.	
	Mitigation UKHSA expects decisions regarding noise mitigation measures to be underpinned by good quality evidence, in particular whether mitigation measures are proven to reduce adverse impacts on health and quality of life. For interventions where evidence is weak or lacking, UKHSA expects a proposed strategy for monitoring and evaluating their effectiveness during construction and operation.	Noted. Any post scheme monitoring, where necessary and proportionate, will be agreed with the LPA
	With regards to road traffic noise, low-noise road surfaces, acoustic barriers, traffic management and noise insulation schemes can all be considered. With regards to railway noise, rail and wheel roughness maintenance, track design, acoustic barriers, traffic management and noise insulation schemes can all be considered. Priority should be given to reducing noise at source, and noise insulation schemes should be considered as a last resort. UKHSA expects any proposed noise insulation schemes to take a holistic approach which achieves a healthy indoor environment, taking into consideration noise, ventilation, overheating risk, indoor air quality and occupants' preference to open windows. There is, at present, insufficient good quality evidence as to whether insulation schemes are effective at reducing long-term annoyance and self-reported sleep disturbance [3o1, and initiatives to evaluate the effectiveness of noise insulation to improve health outcomes are strongly encouraged.	Where possible, any mitigation required will be applied to the source. The other comments are noted.
	UKHSA notes the suggestion in DMRB methodology that post-construction noise monitoring cannot provide a reliable gauge for reference against predicted impacts of operational noise. The issues highlighted in DMRB relate to noise exposure, and not to health outcomes. UKHSA suggests that monitoring of health and quality of life can be considered pre and post operational phases, to ascertain whether mitigation	Health impacts are assessed in full in **Chapter 17: Population and Human Health (Document DCO 6.17/MCO 6.17)**. Any post scheme monitoring will, where necessary and proportionate, be agreed with the LPA

Originator	Summary of Scoping Opinion Comments	Response to Comments
	measures are having the desired effect for local communities.	
	UKHSA expects consideration of potential adverse effects due to noise and vibration during construction and recommends that a full and detailed Construction Environmental Management Plan (CEMP) is developed and implemented by the Applicant and/or the contractor responsible for construction. UKHSA recommends that the CEMP includes a detailed programme of construction which highlights the times and durations of particularly noisy works, the measures taken to reduce noise at source, the strategy for actively communicating this information to local communities, and procedures for responding effectively to any specific issues arising.	A CEMP has been prepared for the DCO Application and is included at **Appendix 3A (Document DCO 6.3A)**. The EMG1 Works within the MCO Application will be regulated by the existing construction management framework plan approved pursuant to the EMG1 DCO. Phase-specific CEMPs will be developed in agreement with the LPA prior to the commencement of construction activities.
	There is a paucity of scientific evidence on the health effects attributable to construction noise associated with large infrastructure projects where construction activities may last for a relatively long period of time. UKHSA recommends that the Applicant considers emerging evidence as it becomes available and reviews its assessment of impacts as appropriate.	Noted.
	Green Spaces and Private Amenity Areas UKHSA expects proposals to take into consideration the evidence which suggests that quiet areas can have both a direct beneficial health effect and can also help restore or compensate for the adverse health effects of noise in the residential environment. Research from the Netherlands suggests that people living in noisy areas appear to have a greater need for areas offering quiet than individuals who are not exposed to noise at home. Control of noise at source is the most effective mitigation for protecting outdoor spaces; noise insulation schemes do not protect external amenity spaces (such as private gardens and balconies or community recreation facilities and green spaces) from increased noise exposure. UKHSA expects consideration to be given to the importance of existing green spaces as well as opportunities to create new tranquil spaces which are easily accessible to those communities exposed to increased noise from the scheme. These spaces should be of a high design quality and have a	The impact on any formally identified area of tranquillity or designated local green spaces regarded as special because of its tranquillity that might be affected by the scheme will be determined and mitigation measures identified accordingly.

Originator	Summary of Scoping Opinion Comments	Response to Comments
	sustainable long-term management strategy in place.	
	Step-changes in Noise Exposure and the Change-effect The Applicant should take into consideration the "change-effect", i.e. the potential for a real or anticipated step-change in noise exposure to result in attitudinal responses that are greater or lower than that which would be expected in a steady state scenario [3o, 341. Where a perception of change is considered likely, UKHSA recommends that the change-effect is taken into account in the assessment for the opening year of the proposed development. For longer term assessments, the effects of population mobility need to be taken into consideration.	No material step-change is expected.
	Community Engagement and Consultation Feedback UKHSA recommends that public consultations carried out during the planning application process clearly identify the predicted changes to the sound environment during construction and operation of the scheme, the predicted health effects on neighbouring communities, proposed noise mitigation strategies and any proposed measures for monitoring that such mitigation measures will achieve their desired outcomes. Some individuals in local communities can encounter barriers preventing them from engaging in the NSIP process, for example time constraints, inability to attend meetings and difficulty navigating documentation. Failure to sufficiently engage with residents may lead to concerns and resistance to the project [351_ UKHSA encourages the Applicant to use effective ways of communicating with local communities. For example, immersive and suitably calibrated audio-visual demonstrations can help make noise and visual changes more intuitive to understand and accessible to a wider demographic. If the proposed scheme will have an impact over a relatively large geographical area, the Applicant should consider community-specific fact-sheets and/or impact maps, which are easily accessible to all individuals both in hard copy and online. If online, search functionality can potentially be included, for example, by postcode.	Full details of the public consultations that have been carried out and the information provided to consultees is contained in the Consultation Report (**Document DCO 5.1/MCO 5.**1) which accompanies both the DCO Scheme and the MCO Scheme. Relevant consultation responses relating to noise and vibration are also identified in this chapter at paragraphs 7.2.7 and in **Table 7.3**.

Consultation

7.2.7. A six-week period of statutory consultation was undertaken between Monday 3rd February 2025 and Monday 17th March 2025. This included the presentation of draft application material for the EMG2 Project and included draft ES Chapters. Additional consultation was undertaken between Tuesday 1st July and Tuesday 29th July 2025 on more advanced draft application material, including ES Chapters, which had taken on board comments received to the statutory consultation. **Table 7.3** summarises the relevant comments received from statutory consultees and provides commentary as required.

Table 7.3: Consultation comments and commentary

Originator	Summary of Consultation Comments	Response to Comments
Statutory Consultation		
North West Leicestershire District Council (NWLDC)	21/03/2025 (via email) Confirmed that the preliminary details provided are satisfactory (it being noted that the assessment of road traffic noise was not provided as it was not yet complete), and that the structure of the Chapter was acceptable.	N/A.
UK Health Security Agency (UKHSA)	17/03/2025 The UKHSA recommends that the results of this monitoring include the metrics referred to in its scoping response e.g., Lden and Lnight.	The Lden and Lnight metric is an annual average. As it would be disproportionate to measure the baseline situation for one year, any use of Lden in the assessment would by definition be approximate and may not robustly relate to the evidence base. Where appropriate the numbers of people affected by different changes in noise exposure will be determined. The consequential health effects will be identified and compared with the health benefits expected from the scheme.
	UKHSA encourages the Applicant to explain what its choice for LOAELs and SOAELs mean in health terms.	Noted.
Additional Consultation		
North West Leicestershire District Council (NWLDC)	29/07/2025 Given the reference to the use of HGVs which are mounted with chillers, has the use of electric hook-ups been considered.	It can be confirmed that the DCO will contain a requirement relating to warehouses providing electric hook-up facilities to be used by HGVs fitted with chiller units.~~As can be seen in **Appendix 7C** the receptors with the highest magnitude of change are R04 Radisson Blu Hotel (increase of +2.1 dB) and R11 Grimes Gate (increase of 3.4 dB).~~

Originator	Summary of Consultation Comments	Response to Comments
		~~Of these two receptors only R04 is on the SRN (refer to receptor plan in **Appendix 7D**).~~ ~~The increase of +1.6 dB stated in the National Highways response is in relation to construction traffic noise, which is assessed using DMRB LA111.~~
National Highways	29/07/2025 In the draft ES Chapter published for the additional consultation, Table 7.9 stated that the impact magnitude presented in Table 7.9 is based upon DMRB but modified to reflect the government noise policy. This modification relates to a significant effect only occurring when the effect level is above the Significant Observed Adverse Effect Level (SOAEL). DMRB LA111 does not say this, and the guidance is that a significant effect can occur at any effect level. Within DMRB LA111 the only reference to effect level in determining whether there is significant effect is the magnitude of noise change required at different effect level. It is acknowledged that emerging best practice may differ from DMRB LA111, but National Highways, as the network operator, would expect DMRB LA111 to be followed without modification when undertaking an assessment of impacts at receptors alongside the SRN. By not adopting the guidance within DMRB LA111 there is the potential for there to be more significant effects than has been reported. In the draft ES Chapter published for the additional consultation, paragraph 7.5.8 it is stated that an increase of up to 1.6 dB was calculated in a 'few places'. While these are not significant adverse effects, it would be useful for National Highways to understand where these 'few places' are and whether they are at receptors alongside the SRN. In addition, the duration of these likely increases would be useful to know to understand the potential impact	The results of calculations of the predicted increases in road traffic noise due to additional construction traffic on the roads alongside the relevant receptors have been reviewed (see **Table 7.12** for details of receptors). The results indicate that the maximum increase is 0.2 dB, which is considered to be a negligible impact with reference to **Table 7.6**, and therefore no significant or otherwise adverse effects are expected. This supersedes the initial results which indicated an increase of up to 1.6 dB due to the additional construction traffic.~~As can be seen in **Appendix 7C** the receptors with the highest magnitude of change are R04 Radisson Blu Hotel (increase of +2.1 dB) and R11 Grimes Gate (increase of 3.4 dB).~~ ~~Of these two receptors only R04 is on the SRN (refer to receptor plan in **Appendix 7D**).~~ ~~The increase of +1.6 dB stated in the National Highways response is in relation to construction traffic noise, which is assessed using DMRB LA111.~~

Additional Council Liaison

7.2.8. Direct liaison has been undertaken with the Environmental Protection Team at North West Leicestershire District Council (NWLDC), who are responsible for the administrative area where the EMG2 Project is located. **Table 7.4** details this liaison.

Table 7.4: Additional council liaison details

Details of communications to NWLDC	Response from NWLDC
26/04/2022 (via email) Provided details of the proposed receptors and representative noise monitoring locations around the EMG2 Works that would inform the assessment (note that at this time, the EMG2 Project was limited to the EMG2 Works).	06/05/2022 (via email) Confirmation that the information had been reviewed and that the proposed approach to the noise survey was acceptable.
01/11/2024 (via email) Provided updated details of proposed receptors and representative noise monitoring locations around the EMG2 Project that would inform the assessment. Also provided brief overview of the proposed scope of the assessment.	21/11/2024 (via email) Confirmation that the selection of receptors, monitoring approach and proposed locations, and elements to be considered within the assessment were all satisfactory.
03/02/2025 (via email) Confirmed that statutory consultation was taking place between 3rd February 2025 and Monday 17th March 2025 and provided link to consultation materials.	21/02/2025 (via email) Confirmed receipt of email and that contact would be made if there were any queries.
09/03/2025 (via email) Requested any comments on draft materials provided for statutory consultation, as well as structure of draft ES chapter in the context of it providing a basis for a Statement of Common Ground (SoCG) to be agreed.	14/03/2025 (via email) Confirmation that there are no comments at this preliminary stage, and that details provided for noise and vibration were satisfactory. Also confirmed that ES structure was acceptable.

Construction Assessment Methodology

Noise from construction activities

7.2.9. Noise from construction activities associated with the EMG2 Project, and its component parts, has been predicted at the relevant receptors, which are typically considered up to a distance of 300m from the works, using the methodologies described in Annex F of the British Standard BS 5228-1:2009+A1:2014[1] and the International Standard ISO 9613-2:2024[2] using the noise modelling software package IMMI. Where activities will take place at multiple locations, such as bulk earthworks for example, the activity has been modelled in several positions representing a reasonable worst-case relative to each receptor (i.e., in an area of the relevant site close to each receptor); that worst-case predicted activity noise level has then been used for the assessment at the corresponding receptor.

[1] BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sit45es, Part 1: Noise

[2] ISO 9613-2:2024 Acoustics - Attenuation of sound during propagation outdoors - Part 2: Engineering method for the prediction of sound pressure levels outdoors

7.2.10. Detailed information on construction techniques, plant etc is not yet available given the current stage of the development proposals, so the predictions are based on the preliminary information, methods and construction programme provided in **Chapter 3: Project Description** (**Document DCO 6.3/MCO 6.3**) and **Appendix 3A: Construction Environmental Management Plan (CEMP)** (**Document DCO 6.3A**) of this ES, together with experience from EMG1, to provide details of any works that are likely to overlap. The predicted construction noise levels have been combined based on overlapping works in terms of the available programme information, referred to as timeslices. To provide a clear and concise assessment of the worst-case, the timeslices representing the highest noise levels have been selected for assessment. In terms of the Highway Works, the works packages that could be expected to result in significant effects have been considered, i.e., not those comprising minor works (e.g., timeslices 1 to 3 include noise from the piling activity associated with the bridge works as part of the J24 improvements). Further details of the assumptions can be found in **Appendix 7B (Document DCO 6.7B/MCO 6.7B)**.

7.2.11. Most of the works are planned to take place during the daytime (core hours) and the primary assessment has been undertaken on this basis. However, regarding the Highway Works, there are expected to be some periods when out of hours and night working may be required due to highway constraints, e.g., where it is not practicable to close a section of road during the day. For core hours works, it can be assumed that all activities will take place along the full extent of works area. For other times, the likely impacts are dependent on multiple factors including the specific location of the works, the time they take place (as there are different thresholds depending on the time), and exactly what works need to be undertaken, which may be limited compared with those taking place during core hours. This level of detail is not available at this time and therefore out-of-hours works have been considered in high-level qualitative terms, on the basis that full details will be provided in the CEMP and P-CEMPs produced for each works package prior to them being undertaken.

7.2.12. The potential significance of effects associated with the predicted construction noise levels has been assessed using the thresholds set out in **Table 7.5**. The values are based on the guidance within Annex E of BS 5228-1:2009+A1:2014 and are expressed in terms of the effect level definitions found in current Government noise policy. The Lowest Observed Adverse Effect Level (LOAEL), above which adverse effects can be detected, and the Significant Observed Adverse Effect Level (SOAEL), above which significant adverse effects can occur. In line with the guidance contained within BS 5228-1:2009+A1:2014, a significant effect is indicated where the SOAEL is exceeded for a given period, as stated at the bottom of the table.

Table 7.5: Effect thresholds and significance criteria for construction noise

Effect level	Time period (T)	Threshold value (dB $L_{Aeq,T}$)[1,2]
LOAEL	**Core hours works:** • Mon-Fri, 07:00-19:00 (12hr); or • Sat, 07:00-16:00 (9hr).	65
	Out of hours works: • Mon-Fri, 19:00-23:00 (4hr); • Sat, 16:00-23:00 (7hr); or • Sun[3], 07:00-23:00 (16hr).	55
	Night works: • Mon-Sun, 23:00-07:00 (8hr).	45
SOAEL[4]	**Core hours works:** • Mon-Fri, 07:00-19:00 (12hr); or • Sat, 07:00-16:00 (9hr).	75
	Out of hours works: • Mon-Fri, 19:00-23:00 (4hr); • Sat, 16:00-23:00 (7hr); or • Sun[2], 07:00-23:00 (16hr).	65
	Night works: • Mon-Sun, 23:00-07:00 (8hr).	55

[1] The threshold values apply to residential receptors and those with a similar sensitivity to noise.
[2] Values apply to a location one metre from a building façade containing a window, including the effect of the acoustic reflection from that façade. Usually referred to as a façade level.
[3] And public holidays.
[4] A significant effect is predicted if the programme of works indicates that the SOAEL threshold is likely to be exceeded over a period of at least one month.

7.2.13. Where required, details of potential mitigation measures to avoid any significant effects and mitigate and minimise any adverse effects from construction noise have been provided, based on the principles of best practicable means (BPM).

Noise from construction road traffic

7.2.14. The prediction and assessment of noise from construction traffic on the road network around the EMG2 Project, and its component parts, follows the principles of the methodology described in document LA 111, part of the Design Manual for Roads and Bridges[3] (DMRB). Road traffic noise both with and without the presence of construction traffic (based on the peak period of construction traffic activity) has been calculated using the procedure described in the Calculation for Road Traffic Noise[4] (CRTN) for the relevant roads using information provided by the project transport consultant (BWB) (further details can be found in **Appendix 7B** (**Document DCO 6.7B/MCO 6.7B**).

7.2.15. The potential significance of effects associated with any predicted temporary increases in road traffic noise due to construction traffic has been assessed using the thresholds set out in **Table 7.6**, reflecting those included in LA 111. As stated at the bottom of the table, a

[3] LA 111 version 2, Design Manual for Roads and Bridges, National Highways (2020)
[4] Calculation of Road Traffic Noise, Department of Transport (1988)

significant effect is indicated where a moderate or major increase is predicted for a given period.

Table 7.6: Impact magnitudes and significance criteria for change in road traffic noise (construction traffic)

Magnitude of Impact	Increase in noise level (dB)
Major[1]	Greater than or equal to 5.0
Moderate[1]	Greater than or equal to 3.0 and less than 5.0
Minor	Greater than or equal to 1.0 and less than 3.0
Negligible	Less than 1.0
[1] Construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding: *1) 10 or more days or nights in any 15 consecutive days or nights;* *2) a total number of days exceeding 40 in any 6 consecutive months.*	

Vibration from construction activities

7.2.16. Where construction activity has been identified as having the potential to generate levels of vibration that could adversely affect receptors, i.e. the building occupants, and a receptor has been identified as within 100 m of the activity, potential levels of vibration have been considered based on the prediction methodologies and measured data provided in the British Standard BS 5228-2:2009+A1:2014[5]. These levels have been converted to the vibration dose value (VDV) metric as defined in the British Standard BS 6472-1:2008[6] for the day/night period using the method from the ANC guidelines[7].

7.2.17. With regard to the likelihood of the Highway Works taking place during the out of hours and night periods due to highway constraints, a similar approach has been taken as for noise (see paragraph 7.2.11 above).

7.2.18. The potential significance of effects associated with construction vibration has been assessed using the thresholds set out in **Table 7.7**. The values are based on the guidance within Annex B of BS 5228-2:2009+A1:2014 and current industry best practice on vibration[8], and are expressed in terms of the effect level definitions found in current national noise policy. While the policy only refers to noise exposure, it is helpful to adopt the same principles when assessing vibration impacts and effects.

[5] BS 5228-2:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites, Part 2: Vibration

[6] BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings, Part 1: Vibration sources other than blasting

[7] Association of Noise Consultants (2020), ANC Guidelines: Measurement & Assessment of Groundborne Noise & Vibration

[8] High Speed Two (HS2) Limited (2017), High Speed Two Phase One Information Paper E23: Control of construction noise and vibration

Table 7.7: Effect thresholds and significance criteria for construction vibration

Effect level	Time period (T)	Threshold value (VDV m/s$^{1.75}$)[1,2]
LOAEL	Day (07:00-23:00)	0.2
	Night (23:00-07:00)	0.1
SOAEL[3]	Day (07:00-23:00)	0.8
	Night (23:00-07:00)	0.4

[1] The threshold values apply to residential receptors and those with a similar sensitivity to vibration.
[2] Values apply to a location on the floor inside a building, near but not at the centre of any habitable room.
[3] A significant effect is indicated if the programme of works indicates that the SOAEL threshold value is likely to be exceeded for two or more consecutive days.

7.2.19. As well as considering potentially adverse effects on the occupants of buildings, consideration has also been given to potential damage to buildings and other structures from construction vibration. Based on best practice from BS 5228-2 and benchmark projects including HS2, a peak particle velocity (PPV) threshold of 3 mm/s, applicable to structurally sound, unsound and heritage receptors, has been selected to indicate the onset of potential damage. However, it should be noted that this threshold is precautionary and, in most cases, could be increased following further, specific investigation/condition surveys of the relevant structure where required.

Operational Assessment Methodology

Noise from operational road traffic

7.2.20. Traffic noise from the roads around the EMG2 Project, and its component parts, has been predicted at the relevant receptors both with and without the presence of vehicles associated with operation of the EMG2 Project, and the changes in road layouts associated with the Highway Works. The predictions use the procedure described in CRTN and have been undertaken with the noise modelling software package IMMI.

7.2.21. Predictions have been undertaken for the scenarios presented in **Table 7.8** using data supplied by the project transport consultant (BWB) ("do-minimum" refers to a scenario that doesn't include traffic/changes associated with the EMG2 Project, while a "do-something" scenario includes the EMG2 Project). Of note, and as explained in **Chapter 6: Traffic and Transportation (Document DCO 6.6/MCO 6.6)**, these scenarios represent a worst-case scenario that 100% of the development is operational by the opening year 2028. In reality, buildings will be built in accordance with market demand and likely to be spread over a longer period as per the phasing timescales set out within **Chapter 3: Project Description (Document DCO 6.3/MCO 6.3)**, and therefore the impacts in 2028 would be lower than has been predicted.

Table 7.8: Road traffic scenarios used for noise predictions

Traffic Scenario	Notes
Baseline year (2022)	Before construction of the EMG2 Project commences, used to verify predictions against noise survey results.
Do-minimum (2028)	Future year forecast for opening year of the EMG2 Project (inc. committed developments, adopted local plan allocations and draft local plan allocations).
Do-something (2028)	Future year forecast for opening year of the EMG2 Project (inc. committed developments, adopted local plan allocations, draft local plan allocations and the EMG2 Project).
Do-minimum (2038)	Future year forecast for the EMG2 Project operating at full capacity (inc. committed developments, adopted local plan allocations and draft local plan allocations).
Do-something (2038)	Future year forecast for the EMG2 Project operating at full capacity (inc. committed developments, adopted local plan allocations, draft local plan allocations and the EMG2 Project).

7.2.22. The four do-minimum/do-something scenarios listed in **Table 7.8** above include traffic associated with allocations from the Regulation 18 draft NWLDC local plan[9]. It is possible that by including these traffic flows, the noise impact of the EMG2 Project may be diluted (as the extra baseline traffic would mean that the addition of the EMG2 Project traffic results in a smaller increase in proportional terms). As the draft NWLDC local plan is not yet adopted, a second set of the four do-minimum/do-something scenarios which do not include traffic flows associated with the draft local plan allocations have also been assessed as a sensitivity test using the same method as the main scenarios (see below). Further details of the road traffic scenarios can be found in **Chapter 6: Traffic and Transportation (Document DCO 6.6/MCO 6.6)** of the ES.

7.2.23. The potential significance of effects associated with any predicted increases in road traffic noise due to operational traffic (i.e., the difference in predicted road traffic noise levels for the do-minimum and do-something scenarios) has been assessed by considering both the do-something noise exposure level and the magnitude of the change, described as follows.

7.2.24. Firstly, the predicted road traffic noise levels at the receptors for the do-something scenario have been compared to the thresholds presented in **Table 7.9**, expressed in terms of current Government noise policy (i.e., as LOAELs and SOAELs).

[9] North West Leicestershire District Council (2024), Draft North West Leicestershire Local Plan (2020 – 2040)

Table 7.9: Thresholds of potential effects from road traffic noise at residences[10]

Time period	Effect level	Noise exposure threshold value
Day (07:00–23:00)	LOAEL	50 dB $L_{Aeq,16hr}$ (free-field)[a,b]
	SOAEL	63 dB $L_{Aeq,16hr}$ (free-field)[a,c]
Night (23.00–07.00)	LOAEL	40 dB L_{night} (free-field)[d]
	SOAEL	55 dB L_{night} (free-field)[d]

Notes:
[a] The average daily value (07:00 – 23:00 hours) at a position one metre from a residential building façade containing a window, ignoring the effect of an acoustic reflection from that façade.
[b] equivalent to 55 dB $L_{A10,18hr}$ façade.
[c] equivalent 68 dB $L_{A10,18hr}$ façade
[d] The average nightly value (23:00 – 07:00 hours) at a position one metre from a residential building façade containing a window, ignoring the effect of an acoustic reflection from that façade.

7.2.25. Secondly, if a do-something scenario predicted road traffic noise level exceeds the LOAEL, the change between the results of the corresponding do-minimum and do-something scenario (i.e., for the same year) has been calculated for the relevant period (i.e., day or night). The change has then been compared to the magnitude of impact categories presented in **Table 7.10** depending on whether the do-something effect level is between LOAEL and SOAEL, or equal to or above the SOAEL.

Table 7.10: Impact magnitude and significance criteria for change in road traffic noise (operational traffic)[11]

Magnitude of Impact	Day (07:00–23:00)		Night (23.00–07.00)	
	Do-something noise exposure effect level (dB $L_{Aeq,T}$)		Do-something noise exposure effect level (dB L_{night})	
	Between LOAEL and SOAEL	SOAEL or greater	Between LOAEL and SOAEL	SOAEL or greater
	Change in road traffic noise level		Change in road traffic noise level	
No Change	0	0	0	0
Negligible	0.1 – 2.9 dB(A)	0.1 – 0.9 dB(A)	0.1 – 0.9 dB(A)	0.1 – 0.9 dB(A)
Minor	3.0 – 4.9 dB(A)	**1.0 – 2.9 dB(A)**	1.0 – 2.9 dB(A)	**1.0 – 2.9 dB(A)**
Moderate	5.0 – 9.9 dB(A)	**3.0 – 4.9 dB(A)**	3.0 – 4.9 dB(A)	**3.0 – 4.9 dB(A)**
Major	≥ 10.0 dB(A)	**≥ 5.0 dB(A)**	≥ 5.0 dB(A)	**≥ 5.0 dB(A)**

NOTE: If the result for any property falls in the categories shown by the shaded boxes with the values in bold, this indicates that the property is regarded as experiencing a significant adverse effect.

7.2.26. Where both the predicted road traffic noise level for the do-something scenario exceeds the relevant SOAEL from **Table 7.9**, and the change between the do-minimum and do-something scenarios is within the ranges shown in the shaded boxes with bold text from

[10] Values based on those used for the assessment of other schemes such as the A14 DCO and Northampton Gateway SRFI DCO, and those presented in the DMRB.

[11] Values based on those presented in the DMRB, modified to reflect Government noise policy; in particular, where road traffic noise levels are below the SOAEL, significant adverse effects would not generally be expected. This approach was adopted for the Northampton Gateway Strategic Rail Freight Interchange approved by the Secretary of State pursuant to The Northampton Gateway Rail Freight Interchange Order 2019 no.1358).

Table 7.10, then a significant effect is indicated for the relevant time period. Note that in line with Government policy on noise, reasonable steps should be taken to mitigate and minimise the non-significant adverse impacts which exceed the LOAEL but not the SOAEL, particularly those where the impact magnitude is moderate or major.

Noise from operational activity at the EMG2 Works and EMG1 Works

7.2.27. Noise from on-site operational HGV activity at the EMG2 Works and EMG1 Works has been predicted at the relevant receptors using the methodology described in ISO 9613-2:2024 and the noise modelling software IMMI, together with appropriate source levels from Vanguardia's library for HGVs pulling away from a standstill, reversing (inc. use of a reversing alarm), and being loaded or unloaded at the docking area, as well as travelling on the internal roads within the EMG2 Project, and trailer coupling. Furthermore, it has been assumed that 10% of the HGVs will be refrigerated, with noise from the associated sources (i.e., HGV mounted chillers) also considered.

7.2.28. The predictions of noise from operational HGV activity at the EMG2 Works are based on the submitted Illustrative Landscape Masterplans **(Documents DCO 2.6/MCO 2.6**) and the limits identified in the Parameters Plans (**Documents DCO2.5/MCO 2.5**), primarily focusing on the access roads and service yards. It is recognised that the submitted Illustrative Masterplans may not represent the final layout. Therefore, following a review with the project team, several adjustments have been made within the modelling in order to represent a reasonable worst-case in noise terms (relating to the orientation of several units within the EMG2 Works so that the service yards, which are the primary source of noise from HGV activities, are directed towards the EMG2 Works boundary and therefore sensitive receptors). Predictions will be made for both layouts (i.e. the submitted Illustrative Landscape Masterplan and the modelled worst-case layout), with the worst-case result for each relevant receptor assessed.

7.2.29. In addition, noise from the use of the gantry cranes proposed as part of the MCO Scheme has been predicted at the relevant receptors using the same method, based on measurements of similar units undertaken by Vanguardia.

7.2.30. Predictions have been undertaken for two scenarios based on information supplied by the project team: the peak (worst-case) hour of operations during the day (07:00-23:00) and the peak 15 minutes of operations during the night (23:00-07:00), both based on the EMG2 Works and MCO Scheme being complete and operating at full capacity. These periods were selected to align with the assessment periods from the British Standard BS 4142:2014+A1:2019[12]. Predictions have also been undertaken for individual noise events. Further details on the assumptions used for the predictions can be found in **Appendix 7C (Document DCO 6.7C/MCO 6.7C)**.

7.2.31. The potential significance of effects associated with the predicted on-site activity noise levels has been assessed based on the principles of the methodology described in BS 4142:2014+A1:2019 for the peak periods of operation during the day and night. This provides an initial estimate of impact based on the difference between the noise level being assessed (i.e. the HGV noise), including the addition of corrections if certain acoustic

[12] BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

features are present at the receptor location, which include tonality, impulsivity and intermittency (termed the rating level), and the typical background sound level at the receptor location for the relevant period, identified via measurement (see section on Baseline Conditions below).

7.2.32. When the typical background sound level is subtracted from the rating level, the resulting difference indicates the following initial estimate of impact:

- Around +10 dB[13] or more is likely to be an indication of a significant adverse impact, depending on the context;
- Around +5 dB is likely to be an indication of an adverse impact, depending on the context;
- Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context; and
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact.

7.2.33. Following the initial estimate of impact, the methodology states that the context in which the sound will occur must be considered to arrive at the final assessment of significance. This is specific to the situation, but can include factors such as the absolute level of the sound being introduced, particularly at night and/or in environments where existing background sound levels are low, and whether residential receptor buildings incorporate ventilation and/or cooling that reduces the need for their windows to be open.

7.2.34. Regarding the absolute level of the sound being assessed, the guideline values in BS 8233:2014[14] relating to residences have been referenced, both in terms of internal and external noise levels (note that consideration of internal noise levels may also take any ventilation measures installed at the residence into account, as discussed in the previous paragraph). These are summarised in **Table 7.11**.

Table 7.11: Summary of guideline sound levels for residences from BS 8233:2014

Location (activity)	Time period	Desirable sound level not to be exceeded
Inside Bedrooms and Living Rooms (resting)	Day (07:00-23:00)	35 - 40 dB $L_{Aeq,T}$
Inside Bedrooms (sleeping)	Night (23:00-07:00)	30 - 35 dB $L_{Aeq,T}$
Inside Dining Room/area (dining)	Day (07:00-23:00)	40 - 45 dB $L_{Aeq,T}$
External Amenity Space	Day (07:00-23:00)	50 - 55 dB $L_{Aeq,T}$

[13] BS 4142 states: *All the measurements and values used throughout this standard are "A"-weighted. Where "A" weighting is not explicit in the descriptor, it is to be assumed in all cases, except where it is clearly stated that it is not applicable, as in the case of tones.*

[14] BS 8233:2014: Guidance on sound insulation and noise reduction for buildings

7.2.35. The lower values shown in **Table 7.11** are generally regarding the LOAEL for steady external sound. If the sound being considered had certain acoustic features, it may be appropriate to consider a lower threshold, or incorporate a correction to the sound. For the assessment of on-site operational activity, the predicted rating levels have been used for this purpose where required, including the relevant correction for acoustic features as described in BS 4142:2014+A1:2019 (see above).

7.2.36. When considering noise from the MCO Scheme, context will also be considered by both comparing and combining the predicted rating levels with the measured residual sound level to take account of the existing operations at EMG1.

7.2.37. Following consideration of context, the final assessment of significance from on-site operational activity has been completed, based primarily on the result of the initial estimate of impact and the assessment of the absolute noise levels, with other contextual factors considered where relevant.

7.2.38. In addition to the prediction and assessment of on-site operational HGV activity using the methodology described in BS 4142:2014+A1:2019, the potential impacts of individual noise events from HGV activities have also been assessed. This type of noise typically represents the maximum level from a short-term noise event, rather than an average of noise levels over a period of time.

7.2.39. The World Health Organisation (WHO) document Guidelines for Community Noise states that for good sleep, indoor noise levels should not exceed around 45 dB L_{AFmax} more than 10-15 times a night, which is equated to a level outside the façade of 60 dB L_{AFmax} assuming a partially open window. This approach to external levels is considered a reasonable worst-case as use of an open window negates the sound insulation performance of any glazing or ventilation provision. It is generally accepted that this threshold represents the LOAEL for noise of this type. Regarding a corresponding SOAEL, a level outside the façade of 70 dB L_{AFmax} has been selected.

Noise from fixed plant at the EMG2 Works and EMG1 Works

7.2.40. It is anticipated that there will be fixed plant associated with the EMG2 Works and EMG1 Works, such as that used for ventilation, cooling and heating of buildings. However, prior to the occupants of the buildings and their requirements being known, information regarding the type, number, or location of the fixed plant units is not available and therefore any noise that may result from their operation cannot be assessed.

7.2.41. Therefore, appropriate target noise rating levels for fixed plant have been defined at the receptor locations based on the methodology described in BS 4142:2014+A1:2019 for the day and night periods, with reference to the measured typical background sound levels, and the predicted noise levels from on-site operational activity. These would also apply to substations.

7.2.42. It is proposed that as part of Requirement 21 of the draft DCO, prior to the installation of any fixed plant, details of the installation for each building will be submitted to the local planning authority for approval as part of the discharge of requirements process. As part of this process, sound from the proposed fixed plant installations will be predicted and fully

assessed using the BS 4142:2014+A1:2019 methodology with respect to the target noise rating levels.

7.2.43. Items of plant will be selected and located to minimise any noise that may result from their operation at the receptor locations as far as reasonably practicable and, if necessary, mitigated to avoid potentially significant effects occurring.

Cumulative Effects

7.2.44. Potential cumulative effects will be considered in primarily qualitative terms, for both construction and operational noise and vibration where relevant. This is considered at Section 7.8 of this Chapter.

Receptors

7.2.45. Sensitive receptors typically represent locations where human beings or other sensitive elements, such as wildlife, may be affected by noise and/or vibration from the construction and/or operation of the EMG2 Project.

7.2.46. The receptors selected for this assessment comprise a sample of those closest to the relevant sources of noise or vibration. Their proximity means that, in general, impacts at other locations that are further from the respective sources of noise and/or vibration would be no greater, and in most cases lower than those that have been assessed. Therefore, the assessment presents a worst-case.

7.2.47. The sensitivity of a receptor is a function of both its use and the type of noise or vibration being considered (e.g., construction noise, road traffic noise etc). This means that there are different thresholds of noise and/or vibration exposure that can indicate adverse or significant adverse effects depending on the type of receptor and type of noise source.

7.2.48. To identify the relevant sensitive receptors for the assessments, a review was undertaken of the area surrounding the EMG2 Project. Most of the noise and vibration sources associated with the development are located within the EMG2 Works and EMG1 Works and therefore the relevant receptors are around these areas. However, increases in road traffic noise may affect receptors further from the EMG2 Project, along the roads used by the additional vehicles.

7.2.49. The sensitive receptors selected for these assessments are listed in **Table 7.12**, which indicates their location, use, the relevant component/s of the EMG2 Project they are associated with (e.g., whether they are primarily exposed to the EMG2 Works etc), and what type of noise and/or vibration source has been considered.

7.2.50. The receptors are primarily private dwellings, but several are hotels; for these, potential significance has been assessed using the same thresholds of noise/or vibration as for residences in the first instance, though it should be noted that the hotel receptors are expected to employ mechanical ventilation as well as all guest rooms being air conditioned which is relevant to the consideration of potential operational noise impact (see above). In addition, two future receptors are included, representing residential developments on the west site of Kegworth that have planning permission but have not yet been implemented.

Liaison with the project ecologist (FPCR) has confirmed that no relevant ecological receptors with a sensitivity to noise or vibration have been identified. Plans showing the locations of the receptors is presented in **Appendix 7D (Document DCO 6.7D/MCO 6.7D)**.

Table 7.12: Receptor list and types of noise considered

Receptor ID		Type	Relevant scheme components[1]	Source of noise or vibration					
				Construction			Operational		
				Noise (works)	Vibration (works)[2]	Road traffic noise*	Noise (on-site)	Road traffic noise*	Fixed plant (on-site)[3]
R01	The Birches, Grimesgate	Resi	EMG2 Wks, RT	✓		✓	✓	✓	✓
R02	Leonardo Hotel East Midlands Airport	Hotel	EMG2 Wks, RT	✓	✓	✓	✓	✓	✓
R03	Premier Inn, Hunter Road	Hotel	EMG2 Wks, HW, RT	✓	✓	✓	✓	✓	✓
R04	Radisson Blu Hotel, Herald Way	Hotel	EMG2 Wks, HW, RT	✓	✓	✓	✓	✓	✓
R05	Travelodge, Moto Services	Hotel	EMG2 Wks, RT	✓	✓	✓	✓	✓	✓
R06	Woodnook Farm, West End	Resi	EMG2 Wks, RT	✓		✓	✓	✓	✓
R07	4 Langley Close	Resi	EMG2 Wks, RT	✓	✓	✓	✓	✓	✓
R08	17 Clements Gate	Resi	EMG2 Wks, RT	✓	✓	✓	✓	✓	✓
R09	2 Old Hall Court	Resi	EMG2 Wks, RT	✓	✓	✓	✓	✓	✓
R10	18 Grimes Gate	Resi	EMG2 Wks, RT	✓	✓	✓	✓	✓	✓
R11	Byland Cottage, Grimes Gate	Resi	EMG2 Wks, RT	✓		✓	✓	✓	✓
R12	Daleacre House, Lockington	Resi	EMG1 Wks	✓		~~✓~~	✓	~~✓~~	✓
R13	Hill Farm House, Lockington	Resi	EMG1 Wks	✓		~~✓~~	✓	~~✓~~	✓
R14	Hilton East Midlands Airport	Hotel	EMG1 Wks, HW	✓	✓	~~✓~~	✓		✓
R15	72 Pritchard Drive, Kegworth	Resi	EMG1 Wks	✓		~~✓~~	✓		✓
R16	24 Windmill Way, Kegworth	Resi	EMG1 Wks	✓		~~✓~~	✓		✓
R17	90 Ashby Road, Kegworth	Resi	EMG1 Wks	✓		~~✓~~	✓		✓
R18	Dowells Barn, Kegworth	Resi	HW	✓		~~✓~~			
R19	Long Lane Farm, Kegworth	Resi	HW	✓		~~✓~~			
R20	Derby Road, Kegworth	Resi	RT			✓		✓	
R21	Derby Road, Kegworth	Resi	RT			✓		✓	
R22	Main Street, Lockington	Resi	RT			✓		✓	
R23	Hemington Lane, Lockington	Resi	RT			✓		✓	
R24	Main Street, Hemington	Resi	RT			✓		✓	
R25	Rycroft Road, Hemington	Resi	RT			✓		✓	
R26	Walton Hill, Isley Walton	Resi	RT			✓		✓	
R27	High Street, Castle Donington	Resi	RT			✓		✓	
R28	Station Road, Castle Donington	Resi	RT			✓		✓	
R29	West End, Long Whatton	Resi	RT			✓		✓	

Receptor ID		Type	Relevant scheme components[1]	Source of noise or vibration					
				Construction			Operational		
				Noise (works)	Vibration (works)[2]	Road traffic noise*	Noise (on-site)	Road traffic noise*	Fixed plant (on-site)[3]
R30	West End, Long Whatton	Resi	RT			✓		✓	
R31	3 Grimes Gate, Diseworth	Resi	RT			✓		✓	
R32	2 Clements Gate, Diseworth	Resi	RT			✓		✓	
R33	6A Lady Gate, Diseworth	Resi	RT			✓		✓	
R34	14 Lady Gate, Diseworth	Resi	RT			✓		✓	
R35	23 The Green, Diseworth	Resi	RT			✓		✓	
R36	57 The Green, Diseworth	Resi	RT			✓		✓	
R37	7 The Bowley, Diseworth	Resi	RT			✓		✓	
R38	50 Hall Gate, Diseworth	Resi	RT			✓		✓	
F01	Derby Road, Kegworth (future)	Resi	EMG1 Wks	✓		✓	✓		✓
F02	Ashby Road, Kegworth (future)	Resi	EMG1 Wks	✓		✓	✓		✓
F03	Ashley Road, Isley Walton (future)	Resi	RT			✓		✓	

[1] Primary noise or vibration exposure from stated component; EMG2 Wks refers to EMG2 Works, EMG1 Wks refers to EMG1 Works, HW refers to Highway Works, RT refers to Road Traffic (on public network).
[2] Selection based on distance to Order Limits, i.e., up to 100 m.
[3] Target noise rating levels for fixed plant defined at selected receptors.
~~ [Selection of receptors for the assessment of changes in road traffic noise to be completed on receipt of traffic data].~~*

7.2.51. Regarding the predictions of noise at the relevant receptor locations, a height of 1.5 m above ground level has been used to represent ground (or ground floor) level and used for the daytime assessment period, with 4.5 m used to represent first floor bedroom windows for the night-time assessment period. Where the receptor is a hotel, additional heights have been predicted as required and the worst-case result has been selected for both the day and night.

Assumptions and Limitations

7.2.52. Throughout the assessment process, steps have been taken to minimise as far as possible any uncertainty relating to the identification of potentially significant noise and vibration effects from the EMG2 Project, and its component parts, and to produce a technically robust assessment. However, some assumptions have been made to facilitate the assessment, and there are some practical limitations to the methodology.

7.2.53. The primary assumptions used in the assessment are summarised as follows:

- As discussed above, predictions of noise from construction activities associated with the EMG2 Project and from on-site operational activity at the EMG2 Works and EMG1 Works have been predicted at the relevant receptors using the methodology described in ISO 9613-2:2024. This methodology assumes meteorological conditions favourable to propagation, i.e., downwind propagation, or propagation under a well-developed moderate ground-based temperature inversion, such as

commonly occurs in clear, calm nights. Therefore, the predictions are considered to represent a reasonable worst-case in terms of potential meteorological conditions;

- Detailed information on construction techniques, plant etc is not yet available, so the predictions are based on preliminary information and methods used in similar developments, together with an indicative construction programme to provide details of any works that are likely to overlap; further details of these assumptions can be found in **Appendix 7B (Document DCO 6.7B/MCO 6.7B)**;
- Several assumptions have been made in terms of the types, locations and intensity of the on-site operational activities, including the use of refrigerated HGVs, in conjunction with the transport consultant and the current operator of the EMG1 rail terminal (see above and **Appendix 7C (Document DCO 6.7C/MCO 6.7C)** for further details); and
- If considering internal noise levels at sensitive receptors, a typical attenuation for sound passing through a partially open window has been assumed, as detailed information regarding the specification of each receptor is not known.

7.2.54. The main limitations of the assessment are described as follows:

- It is impractical to predict and assess the potential noise effects from the various components of the EMG2 Project at every individual receptor. Instead, as is common practice, a sample set of receptors expected to be most exposed to noise from the EMG2 Project has been selected, therefore representing the worst-case of all the possible receptor locations;
- It is also impractical to measure the existing noise climate at every individual receptor. Similar to the previous point, noise has been monitored at a number of locations representative of different receptors which broadly experience the same exposure as the monitoring positions;
- Sufficient detail to undertake predictions of noise from fixed plant installations is not available, so target noise rating noise levels have been defined at the receptor locations that will be referenced when occupier fit-out requirements are being specified;
- The baseline noise survey was undertaken for a period of time considered sufficient to determine typical noise levels at the monitoring locations (see Baseline Conditions below) and was supplemented by short-term monitoring at additional locations. Longer duration surveys would have provided more data, but this was not considered proportionate; and
- As previously mentioned in this chapter, it has not been possible to separate the DCO Scheme and the MCO Scheme's traffic impacts due to the output of the transport modelling works, and this is in line with **Chapter 6: Traffic and Transport (Document DCO 6.6/MCO 6.6).** However as explained in full within Section 6.9 of **Chapter 6: Traffic and Transport** (**Document DCO 6.6/MCO 6.6**) traffic from the MCO Scheme alone would be negligible, at circa 53 two-way trips in the morning peak hour and 67 two-way trips in the evening peak hour. This equates to between 5.7% and 6.3% of the total EMG2 Project traffic and, on its own, would not result in

any adverse or substantial environmental impacts and would not trigger the need for an EIA from a traffic and transport perspective.

7.3. Policy, Guidance and Legislative Context

7.3.1. This section of the chapter is common to both the DCO Scheme and the MCO Scheme.

7.3.2. There are several pieces of national and local planning policy that make specific reference to the noise and vibration, discussed as follows.

National Networks National Policy Statement (March 2024)

7.3.3. The National Networks National Policy Statement (NPSNN) was updated in March 2024 and sets out the need for, and government's policies to deliver, development of NSIPs on the national road and rail networks in England. This includes national road, rail and strategic rail freight interchanges.

7.3.4. The NPSNN requires applicants to undertake a noise assessment where noise impacts are likely to arise from the proposed development. Paragraph 5.230 sets out specific guidance on the scope and content of such noise assessments.

7.3.5. The NPSNN notes at Paragraph 5.239 that due regard should be given to the Noise Policy Statement for England, the NPPF and the government's associated planning guidance on noise.

7.3.6. The NPSNN states at Paragraph 5.241 that development consent should not be granted unless the proposals meet the following aims, within the context of Government policy on sustainable development:

- *"avoid significant adverse impacts on health and quality of life from noise as a result of the new development*
- *mitigate and minimise other adverse impacts on health and quality of life from noise from the new development*
- *contribute to improvements to health and quality of life through the effective management and control of noise, where possible"*

National Planning Policy Framework (2024)

7.3.7. The National Planning Policy Framework (NPPF) sets out the Government's planning policy for England. Its central aim is to contribute to the achievement of sustainable development. The potential impacts of noise are addressed firstly in point e) of paragraph 187, as follows:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *...*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water*

quality, taking into account relevant information such as river basin management plans"

7.3.8. And secondly in point a) of paragraph 198, which also includes a reference to tranquil areas in point b), as follows:

"Planning policies and decisions should also 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"*

7.3.9. Point a) of Paragraph 198 closely aligns with the first two bullet points of Paragraph 5.241 from the NPSNN, as detailed above. Paragraph 198 also includes a direct reference to the Noise Policy Statement for England for further information on these policy aims.

Noise Policy Statement for England (2010)

7.3.10. The Noise Policy Statement for England (NPSE) sets out the Government's overall policy on the management of noise.

7.3.11. With respect to the potential onset of effects due to noise, it uses the established concepts of the No Observed Effect Level (NOEL) and Lowest Observed Adverse Effect Level (LOAEL), and extends these concepts by introducing the Significant Observed Adverse Effect Level (SOAEL), above which significant adverse effects on health and quality of life are likely to occur.

7.3.12. The NPSE states that it is not possible to identify a single object value for SOAEL that is applicable to all sources of noise in all situations; it is likely to be different for different noise sources, for different types of receptors, and at different times.

7.3.13. The NPSE sets out the following long-term vision of noise policy and supporting aims:

*"**Noise Policy Vision***

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

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."*

7.3.14. The second aim of the NPSE refers to noise impacts that lie somewhere between LOAEL and SOAEL; while these may be considered as adverse effects, they are not considered as significant. The NPSE asserts that, while all reasonable steps should be taken to mitigate and minimise adverse effects, this does not mean that such adverse effects cannot occur.

Planning Practice Guidance: Noise (2019)

7.3.15. The Government has published guidance on how planning can manage potential noise impacts in new development. The guidance provides a range of advice as answers to common questions regarding the consideration of noise as part of the planning process.

7.3.16. Regarding how it can be established whether noise is likely to be a concern, the guidance includes a noise exposure hierarchy table that provides qualitative descriptions of the outcomes where noise is present with reference to the effect levels referred to in the NPSE, e.g., where noise is above the NOEL, LOAEL or SOAEL, as well as the additional effect level of NOAEL. This table is reproduced in **Table 7.13**.

Table 7.13: Noise exposure hierarchy table

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level (NOEL)			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life	No Observed Effect	No specific measures required
No Observed Adverse Effect Level (NOAEL)			
Present and intrusive	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.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			

Response	Examples of outcomes	Increasing effect level	Action
Present and intrusive	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.	No Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	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.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

7.3.17. The guidance confirms that adverse effects (between LOAEL and SOAEL) should be mitigated and reduced to a minimum, and significant adverse effects (above SOAEL) should be avoided, taking account of the economic and social benefit of the activity causing the noise.

North West Leicestershire Local Plan 2011 to 2031 (2021)

7.3.18. The relevant Development Plan policy is currently provided by North West Leicestershire District Council's Local Plan. This was originally adopted in November 2017, and was adopted again in March 2021 following an amendment to the timescale for the Local Plan review. The potential effects of noise and vibration from new development are primarily addressed in point 2) of Policy D2 – Amenity, as follows:

> *"Proposals for development should be designed to minimise their impact on the amenity and quiet enjoyment of both existing and future residents within the development and close to it. As such, development proposals will be supported where:*
>
> *…*
>
> *2) They do not generate a level of activity, **noise**, **vibration**, pollution or unpleasant odour emission, which cannot be mitigated to an appropriate standard and so, would have an adverse impact on amenity and living conditions."*

Draft North West Leicestershire Local Plan 2020 to 2040

7.3.19. NWLDC consulted on the Regulation 18 draft Local Plan in February and March 2024. The potential effects of noise and vibration from new development are primarily addressed in point b) of Draft Policy AP2 – Amenity, which is similar to Policy D2 in the current Local Plan as detailed above:

> *"New development should be designed to minimise its impact on the amenity and quiet enjoyment of both future residents and existing residents in the vicinity of the development. Development proposals will be supported where:*
>
> *…*
>
> *(b) They do not generate a level of activity, noise, vibration, pollution or unpleasant odour emission, which cannot be mitigated to an appropriate standard and so, would have an adverse impact on amenity and living conditions."*

7.3.20. The draft Local Plan includes a second relevant policy, Draft Policy AP5 – Health and Wellbeing (Strategic Policy), which references noise and vibration at point f):

> *"Development that maintains and improves the health and wellbeing of our residents, encouraging healthy lifestyles by tackling the causes of ill health and inequalities will be supported. Health considerations will be embedded in decision making and the Council will support the creation of a high quality, accessible and inclusive environment.*
>
> *To achieve this, the Council will:*
>
> *…*
>
> *(f) Prevent negative impacts on residential amenity and wider public safety from noise, ground instability, ground and water contamination, vibration and air quality."*

7.4. Approach to Assessment of Applications

7.4.1. In recognition that this chapter forms part of a single ES covering both the DCO Application and the MCO Application (as explained in Section 7.1 and in full within **Chapter 1: Introduction and Scope, Document DCO 6.1/MCO 6.1**) it makes a clear distinction between the component parts and, consistent with the dual application approach, assesses the impacts arising from the DCO Application and MCO Application separately and then together as the EMG2 Project in combination. An assessment of the cumulative impacts of the EMG2 Project with other existing and, or approved developments, has also been completed using the list of projects identified in **Appendix 21B** to **Chapter 21: Cumulative Impacts** (**Document DCO 6.21B/MCO 6.21B**).

7.4.2. Accordingly, the remaining sections of this Chapter are structured as follows:

- An Assessment of the DCO Scheme within Section 7.5;
- An Assessment of the MCO Scheme within Section 7.6;
- An Assessment of the EMG2 Project as a whole, comprising the DCO Scheme and MCO Scheme together, within Section 7.7;
- An Assessment of the EMG2 Project as a whole in combination with other planned development (i.e. the cumulative effects), within Section 7.8; and
- An overall summary and conclusions of the above within Section 7.9.

7.5. Assessment of the DCO Application

7.5.1. As set out in Section 1 of this Chapter, and at **Table 7.1**, the DCO Scheme is comprised of the following component parts:

- The EMG2 Works: Logistics and advanced manufacturing development located on the EMG2 Main Site together with the provision of a community park, HGV parking, a bus interchange, and an upgrade to the EMG1 substation;
- The Highway Works**:** Works to the highway network: the A453 EMG2 access junction works; significant improvements at Junction 24 of the M1 (referred to as the J24 Improvements) and works to the wider highway network including active travel works

7.5.2. Within this Section, reference to EMG2 Works excludes the upgrade to the EMG1 Substation except where these works are specifically referenced.

Baseline Conditions

7.5.3. In the context of this assessment, the primary use of baseline condition data is as part of the assessment of noise from operational activity at the EMG2 Works, as well as the definition of target noise rating levels for fixed plant.

EMG2 Works

7.5.4. To characterise and quantify the existing baseline noise environment in the areas around the EMG2 Works, noise surveys were undertaken in May 2022.

7.5.5. The surveys comprised five static unattended monitoring locations and two locations where short-term attended measurements were undertaken. The locations were selected to be representative of the sensitive receptors in the area surrounding the proposed development. The measurement microphones were in the acoustic free-field and a height of 1.5 m above ground level at all positions.

7.5.6. A summary of the survey locations, start and end dates/times and observations of the main noise sources at each location are presented in **Table 7.14** for the unattended measurements and **Table 7.15** for the attended measurements. A plan showing the monitoring locations is presented in **Appendix 7E (Document DCO 6.7E)**.

Table 7.14: Summary of unattended noise monitoring around EMG2 Works

Unattended survey location		Dates		Observations of main noise sources
		Start	End	
L01	At NW corner of site boundary, representative of R01, R02 and R011	04/05/22	12/05/22	Road traffic noise on A453 dominant, occasional aircraft overhead
L02	Close to north of site boundary, representative of R03 and R04	04/05/22	12/05/22	Road traffic noise on A453 dominant, occasional aircraft overhead & at airport
L03		04/05/22	06/05/22*	

Unattended survey location		Dates		Observations of main noise sources
		Start	End	
	On E of site boundary, for correlation with S01	12/05/22	20/05/22	Service station noise dominant, road traffic noise on A42/M1, occasional aircraft overhead & at airport
L04	Adjacent to the road West End, representative of R06	04/05/22	12/05/22	Road traffic noise on A42 dominant, road traffic noise on M1
L05	At SW corner of site boundary, representative of R07 & R08, and for correlation with S02	04/05/22	12/05/22	Road traffic noise on A42/M1 & Clements Gate dominant, occasional aircraft overhead
** The original deployment of L03 suffered a technical fault at 18:18 on 06/05/22. As a result, it was redeployed on 12/05/22 to ensure that sufficient data was collected.*				

Table 7.15: Summary of attended noise monitoring around EMG2 Works

Attended survey location		Dates/times		Observations of main noise sources
		Date	Times	
S01	Close to R05, to correlate with L03	04/05/22	14:30 - 15:15	Road traffic noise on A42/M1, occasional aircraft overhead, service station noise
		12/05/22	10:30 - 11:15	
S02	Close to R09 and R10, to correlate with L05	04/05/22	12:45 - 13:30	Distant road traffic noise on A453/A42/M1, occasional aircraft at airport
		12/05/22	11:30 - 12:15	

7.5.7. A field calibration check was undertaken prior to and following each set of measurements and no significant drift in sensitivity was noted at any location. All the sound level meters (SLMs) and field calibrators used for the survey met the requirements of a Class 1 instrument. All SLMs were within two years of their last laboratory calibrator, and all calibrators within one year. Further details of the monitoring equipment used are given in **Appendix 7F (Document DCO 6.7F)**.

7.5.8. The results of the noise surveys are presented in **Appendix 7G (Document DCO 6.7G)**. Time history graphs have been produced for the unattended monitoring results, and tables have been provided summarising the measured noise levels at the short-term attended monitoring locations.

7.5.9. Regarding the monitoring of weather conditions during the noise surveys, wind speed, wind direction and rainfall rate data has been sourced primarily from the permanent weather station installed at the nearby East Midlands Airport. The area experienced some periods of precipitation and high winds during the survey. The weather data is summarised at the end of **Appendix 7G (Document DCO 6.7G)**.

7.5.10. In June 2024, additional noise measurements were undertaken at locations L01, L03, L04 and L05 over a period of approximately 24 hours to verify that the data measured in May 2022 remained representative of current conditions. The 2024 measurements indicated that the 2022 survey results remain valid and suitable for use as part of the assessment.

Highway Works

7.5.11. The primary use of the baseline noise survey results is to inform the assessment of on-site operational activity from the EMG2 Works. As discussed in the Scope and Methodology of Assessment section, the assessment of changes in road traffic noise associated with all relevant elements of the EMG2 Project, including the Highway Works, are based on a comparison of predicted road traffic noise levels from scenarios that do not include traffic/changes associated with the EMG2 Project with those from scenarios that do. The former type of scenarios, referred to as do-minimum scenarios, and the corresponding predictions at each relevant receptor represent a baseline situation for road traffic noise in the stated year.

Identification of background sound levels for operational noise assessment

7.5.12. As discussed in the assessment methodology section, the assessment of potential noise impacts from operational activity at the EMG2 Works site requires the identification of typical background sound levels at the relevant receptors for both the day and night-time periods. They are also needed for the definition of target noise rating levels for fixed plant.

7.5.13. The background sound level is the underlying level of sound over a period and is generally governed by continuous or semi-continuous sound, rather than transient or short-duration noise events. It is represented by the $L_{A90,T}$ metric, where T corresponds to the duration of the individual measurements. BS 4142:2014+A1:2019 states that the selected background sound levels should represent what is typical during the relevant period and that the duration of each measurement should usually be 15 minutes.

7.5.14. To identify the typical background sound levels, the noise survey results and weather data were reviewed and any measured sound levels that were likely to have been affected by high average wind speeds (above 5 m/s), precipitation, the dawn chorus, or other extraneous noise events were excluded from further analysis.

7.5.15. Next, for the unattended monitoring locations, the modal background sound level was identified for the day and night-time periods using statistical analysis, i.e., the most frequently occurring $L_{A90,15min}$ value during the relevant periods. The modal value is considered a good indicator of the typical background sound level.

7.5.16. However, at some locations, the different measured background sound levels are not evenly spread around the modal value and there can be a relatively high number of occasions when a lower value occurs, meaning that the modal value alone may not fully describe the typical level.

7.5.17. To address this possibility, the data for each monitoring location was analysed and the background sound level representing the lower quartile was identified for both the day and night-time periods. This is the value for which 75% of all the measured values were higher. Where this was 3 dB(A) or more below the modal value, this was considered an indication there was unevenness in the spread of the measured levels. In those cases, the lower quartile value has been used as a sensitivity test for the assessment, in addition to the modal value, to provide a more comprehensive and robust assessment.

7.5.18. Finally, the results were compared with the same analysis of the unedited dataset, i.e., the data with no exclusions for bad weather conditions etc, to ensure that the worst-case levels (i.e., the lowest) were identified.

7.5.19. Based on the results of this analysis, the typical background sound levels together with the sensitivity test background sound levels (where necessary) are presented in **Table 7.16** below for each receptor where operational activity has been assessed and target noise rating levels for fixed plant have been defined.

Table 7.16: Typical background sound levels for operational noise assessment

Receptor		Typical background sound level (dB $L_{A90,15min}$)			
		Modal value		Sensitivity test value	
		Day	Night	Day	Night
R01	The Birches[1]	47	46	42	42
R02	Leonardo Hotel[1]	47	46	42	42
R03	Premier Inn[2]	51	51	-	-
R04	Radisson Blu Hotel[2]	51	51	-	-
R05	Travelodge[3]	52	49	47	-
R06	Woodnook Farm[4]	59	53	-	50
R07	4 Langley Close[5]	44	44	-	-
R08	17 Clements Gate[5]	44	44	-	-
R09	2 Old Hall Court[6]	43	43	-	-
R10	18 Grimes Gate[6]	43	43	-	-
R11	Byland Cottage[1]	47	46	42	42
R12	Daleacre House[7]	45	44	-	-
R13	Hill Farm House[7]	45	44	-	-
R14	Hilton Hotel[8]	59	53	-	-
R15	72 Pritchard Drive[9]	60	55	54	51
R16	24 Windmill Way[10]	59	52	53	48
R17	90 Ashby Road[10]	59	52	53	48
F01	Derby Road[9]	60	55	54	51
F02	Ashby Road[10]	59	52	53	48

[1] Levels from L01 monitor
[2] Levels from L02 monitor
[3] Levels from L03 monitor minus 1 dB based on correlation with S01 monitor
[4] Levels from L04 monitor
[5] Levels from L05 monitor
[6] Levels from L05 monitor minus 1 dB based on correlation with S02 monitor
[7] Levels from L06 monitor
[8] Levels from L07 monitor
[9] Levels from L08 monitor
[10] Levels from L08 monitor minus 1 dB (day) and 3 dB (night) based on correlation with S04 monitor

Potential Impacts

Embedded Mitigation

7.5.20. When considering the potential impacts of the application, account has been taken of the relevant mitigation measures embedded into the design of the DCO Scheme. With respect

to noise and vibration from the EMG2 Works, this primarily relates to the attenuation of noise as a result of the buffers and landscape bunds created around the perimeter, particularly on the western side, due the resulting additional distance between the sources of noise and receptors, and by screening due to the height of the bunding above local ground level. Along the EMG2 Works's northern site boundary, a no building zone is proposed which would preclude any built development from being located in this area; however, car parking or service yards could be built in this location.

Construction Impacts

Noise from construction activities

7.5.21. The potential significance of construction noise associated with the EMG2 Works and Highway Works has been assessed by comparing predicted noise levels for a selection of timeslices (groups of activities taking place at the same time representing the worst-case in terms of construction noise) to the relevant effect level thresholds for the daytime (core hours), as well as considering the duration of the noise in terms of days if required.

7.5.22. The predicted noise levels for each construction noise timeslice associated with these activities at the relevant receptors and the subsequent assessment are presented in **Table 7.17** for core hours (see **Appendix 7B (Document DCO 6.7B)** for further details).

Table 7.17: Predictions of construction noise from EMG2 Works and Highway Works for selected timeslices and comparison to LOAEL/SOAEL assessment thresholds (core hours)

Receptor ID	Timeslice ID: predicted construction noise level (dB $L_{Aeq,T}$ façade)							>L[1]	>S[2]	Sig[3]
	1	2	3	4	5	6	7			
R01 The Birches	67	68	68	55	53	53	53	3	0	**No**
R02 Leonardo Hotel	74	74	74	61	61	61	61	3	0	**No**
R03 Premier Inn	75	75	75	71	70	70	70	7	0	**No**
R04 Radisson Blu	75	75	75	63	58	58	58	3	0	**No**
R05 Travelodge	73	74	74	65	64	64	64	3	0	**No**
R06 Woodnock Farm	59	60	60	52	49	49	49	0	0	**No**
R07 4 Langley Close	72	72	72	58	57	57	57	3	0	**No**
R08 17 Clements Gate	66	66	66	53	52	52	52	3	0	**No**
R09 2 Old Hall Court	67	67	67	53	52	52	52	3	0	**No**
R10 18 Grimes Gate	65	65	65	52	51	51	51	0	0	**No**
R11 14 Grimes Gate	64	64	64	52	51	51	51	0	0	**No**
R14 Hilton West	71	71	71	35	33	32	33	3	0	**No**
R18 Dowells Barn	57	57	57	16	15	14	15	0	0	**No**
R19 Long Lane Farm	60	60	60	30	28	28	28	0	0	**No**

[1] Indicates the number of timeslices that exceed the LOAEL at that receptor.
[2] Indicates the number of timeslices that exceed the SOAEL at that receptor, potentially indicating a significant effect depending on the duration of any exceedances.
[3] Indicates whether a significant effect has been predicted.

7.5.23. As can be seen in **Table 7.17**, none of the predicted construction noise levels for the selected timeslices exceed the SOAEL and therefore no significant effects are expected from construction activities associated with the EMG2 Works or Highway Works. There are exceedances of the LOAEL which indicate that some short-term temporary adverse effects may occur at the relevant receptors.

7.5.24. It should be noted that the higher predicted noise levels (e.g., above 70 dB(A) at receptors R02-R05, R07 and R14) are primarily due to the bulk earthworks activity at the EMG2 Works which, due to the worst-case assumptions, is assumed to be in an area of the site close to each receptor whenever they are active (i.e., in timeslices 1 to 3). In reality, the activity will move around the site, and the higher levels will occur for a relatively short amount of time.

7.5.25. As previously stated, it is likely that some Highway Works will need to take place outside of core hours due to highway constraints, but due to the level of detail required, it is not possible to undertake predictions of the likely effects at this time. Considering the predicted construction noise levels for the individual works packages for core hours as a worst-case, if the works packages taking place in locations close to sensitive receptors were to take place out of hours or during the night, then depending on the exact works being undertaken (which may be limited compared to core hours working) and what time they took place, then it is possible that both the relevant LOAEL and SOAEL thresholds for noise could be exceeded. Nevertheless, the duration of any such works (in terms of the number of days they may take place at the same location) is expected to be limited, and therefore it is considered that while short-term temporary adverse effects may occur in such situations, it is unlikely that they would be significant. Full details of such works will be provided in the relevant P-CEMP as an additional mitigation measure.

Noise from construction road traffic

7.5.26. The results of calculations of the predicted increases in road traffic noise due to additional construction traffic on the roads alongside the relevant receptors have been reviewed (see Table 7.12 for details of receptors). The results indicate that the maximum increase is 0.2 dB, which is considered to be a negligible impact with reference to Table 7.6, and therefore no significant or otherwise adverse effects are expected. ~~Initial calculations indicate that construction road traffic noise is likely to have a minor impact, with a calculated increase of up to 1.6 dB in a few areas. Noting the temporary nature of the construction road traffic, no significant effects are indicated.~~

Vibration from construction activities

7.5.27. As discussed in the Scope and Methodology of the Assessment section above, the potential significance of construction vibration has been considered in two ways: in terms of potential damage to buildings and other structures, as well as potential distance. Following a review of the construction plant to be used (see **Appendix 7B (Document DCO 6.7B)**), the use of vibratory compaction for the EMG2 Works and the Highway Works was identified as the only activity where potentially significant levels of vibration might be generated at receptors. Note that while it is anticipated that piling will be required for the bridge works as part of the J24 improvements, the piling method to be employed (i.e., auger based) generates low levels of vibration and the closest receptors will be over 100 m away from the activity, so no significant or otherwise adverse effects are expected due to vibration from piling.

7.5.28. The predicted vibration levels for both uses of vibratory compaction (the vibratory roller types are different) in terms of both PPV (for potential damage) and VDV (for disturbance) at the closest receptors are presented in **Table 7.18**.

Table 7.18: Predictions of construction vibration arising from the EMG2 Works and Highway Works

Receptor ID	Predicted construction vibration level from vibratory compaction			
	EMG2 Works (distance 70 m)		Highway Works (distance 45 m)	
	VDV[a] m/s$^{1.75}$	PPV[b] mm/s	VDV[a] m/s$^{1.75}$	PPV[b] mm/s
R03 Premier Inn	0.37	1.0	0.17	0.5
R04 Radisson Blu				

[a] Predictions include correction for potential amplification at upper floors, and incorporate assumed used of plant over day (e.g., on-time, area covered etc).
[b] Predictions at foundation level.

7.5.29. As can be seen in **Table 7.18**, the predicted levels of vibration using the PPV metric are well below the conservative threshold of 3 mm/s selected to indicate the onset of potential damage. On this basis, no significant effects are expected in terms of potential damage as a result of construction vibration.

7.5.30. With respect to disturbance, predicted VDV level due to vibratory compaction as part of the Highway Works is below the LOAEL for the day period and therefore no significant or otherwise adverse effects are expected. The predicted VDV level due to the EMG2 Works is above the day period LOAEL but below the SOAEL and therefore no significant effects are expected as a result, though some short-term temporary adverse effects may occur at the relevant receptors when vibratory compaction is taking place at the closest point to them.

7.5.31. As previously stated, it is likely that some Highway Works will need to take place outside of the day period hours due to highway constraints, but due to the level of detail required, it is not possible to undertake predictions of the likely effects at this time. Considering the predicted construction vibration levels in **Table 7.18** as a worst-case, if the works packages taking place in locations close to sensitive receptors were to take place out of hours or during the night, then depending on the exact works being undertaken (which may be limited compared to core hours working) and what time they took place, then it is possible that the relevant LOAEL threshold for vibration could be exceeded. On this basis, no significant effects are predicted, though some short-term temporary adverse effects may occur in such situations. Full details of such works will be provided in the relevant P-CEMPs.

Operational Impacts

Noise from operational road traffic

7.5.32. This section summarises the calculated change due to~~in~~ operational road traffic noise. Road traffic noise levels have been predicted at the relevant receptors for the baseline, DM and DS future year scenarios with and without local allocations (see paragraphs 7.2.21 to 7.2.22 and **Table 7.8** for further details). The relevant receptors are listed in **Table 7.12**.

7.5.33. The results of the predicted effect level and magnitude of impact during the day ($L_{Aeq,16hr}$) and night (L_{night}) period can be found in Tables 1 to 8 of **Appendix 7C (Document DCO 6.7C).**

7.5.34. For all scenarios modelled, operational traffic noise is predicted to have no significant effects at most receptors except for R04 Radisson Blu, where~~by~~ a significant effect is predicted during the day and night-time period in all scenarios. For the 2028 sensitivity test scenario only (without draft local plan allocations, see paragraph 7.2.22 for further details) and during the night only, significant effects are ~~A significant effect is also~~ predicted at R11 and R31-R34 which are on Grimes Gate and Lady Gate in Diseworth. ~~14 Grimes Gate during the night-time period only; however, this is only during 2028 scenario with no local allocations. Both are predicted to experience~~In all cases, only minor adverse impacts are predicted.

7.5.35. Although a predicted significant effect is indicated at R04 Radisson Blu, the hotel is adjacent to an airport and highly likely to be mechanically ventilated to achieve acceptable indoor ambient noise levels without opening the façade window; therefore, it is unlikely the effect would be significant in this context. S~~A s~~ignificant effects during the night are~~is~~ indicated at R11 ~~14 Grimes Gate~~and R31-R34 in Diseworth ~~only~~ in the 2028 scenario without local plan allocations only, which represents a worst-case sensitivity test assessment for the opening year. Only minor adverse impacts are predicted in this scenario, and significant effects are not predicted at these receptors in any 2038 scenario~~. Local plan developments around the area are expected to dilute operational impacts that are predicted in the noise modelling, again making a significant effect unlikely in context~~. Therefore, in context, these effects are not expected to be significant.

Noise from operational activity

7.5.36. The potential significance of noise associated with the operation of the EMG2 Works has been assessed based on the principles of the methodology described in BS 4142:2014+A1:2019 for the peak periods of operation during the day and night. The predicted noise is based on HGV activities.

7.5.37. In terms of applying a correction to the predicted noise levels if certain acoustic features are present at the receptor locations, it is noted that the surrounding area includes significant sources of road traffic noise (the M1, A42 and A453) and aircraft noise from East Midlands Airport. Nevertheless, the operational noise may have other sound characteristics that are readily distinctive against the residual acoustic environment. To account for this, when a predicted noise level is 5 dB or less below the typical background sound level, a penalty of +3 dB has been added to derive the rating level used for the assessment.

7.5.38. The predicted rating levels for operational noise from the EMG2 Works at the relevant receptors are presented in **Table 7.19** for the peak hour of the day and **Table 7.20** for the peak 15 minutes of the night, together with the typical and (where relevant) sensitivity test background sound level for each receptor and the differences between the values. **Table 7.20** also includes the predicted noise level from individual noise events. As previously noted, the results represent the worst-case (i.e., the highest) based on the layout options considered.

Table 7.19: Predictions of operational noise from EMG2 Works for day and comparison of rating levels with background sound levels

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	Sig[4]
R01	34	47	**-13**	42		**No**
R02	45	47	**-2**	42	**3**	**No**
R03	54	51	**3**	-	-	**No**
R04	42	51	**-9**	-	-	**No**
R05	44	52	**-8**	47	**-3**	**No**
R06	36	59	**-23**	-	-	**No**
R07	42	44	**-2**	-	-	**No**
R08	38	44	**-6**	-	-	**No**
R09	41	43	**-2**	-	-	**No**
R10	37	43	**-6**	-	-	**No**
R11	35	47	**-12**	42	**-7**	**No**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the day have been predicted at a height of 1.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] Indicates whether a significant effect has been predicted.

Table 7.20: Predictions of operational noise from EMG2 Works for night and comparison of rating levels with background sound levels

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	INEL[4], dB L_{AFmax} façade	Sig[5]
R01	33	46	**-13**	42	**-9**	**48**	**No**
R02	40	46	**-6**	42	**-2**	**56**	**No**
R03	53	51	**2**	-	-	**66**	**No**
R04	40	51	**-11**	-	-	**51**	**No**
R05	42	49	**-7**	-	-	**57**	**No**
R06	35	53	**-18**	50	**-15**	**45**	**No**
R07	43	44	**-1**	-	-	**54**	**No**
R08	38	44	**-6**	-	-	**50**	**No**
R09	36	43	**-7**	-	-	**47**	**No**
R10	35	43	**-8**	-	-	**46**	**No**
R11	33	46	**-13**	42	**-9**	**44**	**No**

[1] *RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.*
[2] *Rating levels for the night have been predicted at a height of 4.5 m, except for hotels where the levels represent the worst-case floor.*
[3] *BSL stands for background sound level.*
[4] *INEL stands for individual noise event level.*
[5] *Indicates whether a significant effect has been predicted.*

7.5.39. As can be seen in **Table 7.19** and **Table 7.20**, none of the predicted rating levels indicate a significant adverse impact (i.e., where the rating level exceeds the background sound level by around 10 dB), and, in **Table 7.20**, none of the predicted individual noise event levels exceed the SOAEL of 70 dB L_{AFmax}. Therefore, no significant effects are expected from operational noise associated with the EMG2 Works.

7.5.40. At R02 Leonardo Hotel, while the predicted daytime rating level is below the typical background sound level by 2 dB, it exceeds the sensitivity test background sound level by 3 dB which could indicate the potential for adverse effects. However, the predicted rating level is 45 dB $L_{Ar,Tr}$; hotels invariably have alternative methods of ventilation and cooling, particularly when adjacent to an airport, but assuming a partially open window as a worst-case, the corresponding internal level would be around 33 dB(A), including the +3 dB penalty. This is below the LOAEL for internal noise levels as stated in **Table 7.11**. On this basis, no adverse effects are expected at this receptor.

7.5.41. At R03 Premier Inn, the predicted daytime rating level exceeds the typical background sound level by 3 dB and the night-time typical background sound level by 2 dB, while the predicted individual noise event level exceeds the LOAEL by 6 dB. This indicates that long-term permanent adverse effects may occur at this receptor, although they are not considered significant.

7.5.42. It should be noted that the results for receptors R02 and R03 are due to the alternate layout considered, where the Units 5b and 6 as shown on the Illustrative Masterplan have been rotated so that the service yards are on the north side, facing the two hotels and representing a worst-case.

Noise from fixed plant at the EMG2 Works

7.5.43. Target noise rating levels for fixed plant at all relevant receptors are defined under the corresponding EMG2 Project heading below (the target levels do not change when considering the components separately).

Mitigation Measures

Construction

7.5.44. As described in the previous section, no significant effects as a result of construction noise or vibration associated with the DCO Scheme (EMG2 Works and Highway Works) are expected.

7.5.45. Nevertheless, some short-term temporary adverse effects are expected during the likely out of hours and night period working with respect to the DCO Scheme from the EMG2 Works

and Highway Works. Both the NPSNN and the NPPF state that new development should mitigate and reduce to a minimum potential adverse impacts resulting from noise (and vibration).

7.5.46. To facilitate the management of construction noise and vibration in general, good working practices during the construction of the DCO Scheme are being defined through a Construction Environmental Management Plan (CEMP) provided as **Appendix 3A (Document DCO 6.3A)**. Detailed phase-specific Construction Environmental Management Plans (P-CEMPs) will subsequently be developed and implemented for each relevant component of the DCO Scheme, serving as an additional mitigation measure where required. The specific noise and vibration controls included in the CEMP which will be confirmed when a detailed approach to the works has been finalised, will follow the principal of Best Practicable Means (BPM), and are expected to include the following measures where appropriate:

- Installation of perimeter hoarding to reduce noise at ground level from works taking place within the DCO Scheme;
- Phasing of earthworks to prioritise the construction of any bunding to provide screening of the subsequent works where practicable;
- Selection of appropriate equipment and construction methods, e.g., hydraulic plant will be used in preference to pneumatic plant, and electrically powered rather than internal combustion engine powered, where possible;
- Plant and equipment will be maintained in good working order and fitted with silencers and acoustic panels where appropriate;
- All plant will be switched off when not in use or throttled down between periods of use;
- Acoustic enclosures and temporary hoardings/screens around works will be used where required;
- Works will take place during agreed site hours and there will be appropriate management of working hours for noisier tasks;
- 'White noise' type reversing warnings should be used on mobile plant in preference to 'bleepers' to minimise intrusion;
- Site personnel instructed on BPM to reduce noise and vibration as part of their site induction training and as required prior to specific work activities;
- Liaison with residents in advance of works commencing and on an ongoing basis to provide information regarding the programme;
- Plant to be located as far as reasonably practicable from noise-sensitive receptors; and
- A noise and vibration monitoring regime may be implemented focusing on the nearest/most exposed receptors and including trigger levels to ensure significant levels of noise and vibration are avoided.

Operational

7.5.47. As discussed above, significant effects have been predicted initially as a result of operational road traffic noise associated with the DCO Scheme at ~~two~~ six receptors. However, when considered in context, as discussed in ~~Section~~ paragraph 7.5.35, no mitigation measures would be required.

7.5.48. With respect to operational activity noise, it is possible that, depending on the final layout of the EMG2 Works, long-term permanent adverse effects may occur at the receptors to the west and north, e.g., at R03 Premier Inn, although these effects are not considered significant in EIA terms.

7.5.49. Following the NPSNN and NPPF requirement for potentially adverse impacts resulting from noise to be mitigated and reduced to a minimum, options for additional mitigation have been tested.

7.5.50. By way of general mitigation, it is proposed that as part of Requirement 21 of the draft DCO, prior to the installation of any fixed plant, details of the installation for each building will be submitted to the local planning authority for approval as part of the discharge of requirements process. As part of this process, sound from the proposed fixed plant installations will be predicted and fully assessed using the BS 4142:2014+A1:2019 methodology with respect to the target noise rating levels.

7.5.51. In addition, it is proposed that as part of Requirement 21 of the draft DCO, occupiers will be required to use 'White noise' type reversing warnings unless there are specific health and safety implications of doing so.

7.5.52. With specific regard to Zone 5 within the EMG2 Works (as defined on the Parameters Plan (**Document DCO 2.5**), as detailed previously, the predicted adverse effects in this area arise from a scenario where the unit in this Zone has been rotated so that the service yard is on the north side, facing the receptor. The effect of 3 m high acoustic fencing along the northern boundary of the unit has been modelled. The revised predictions of operational noise are presented in **Table 7.21** and **Table 7.22** for the day and night periods respectively.

Table 7.21: Predictions of operational noise from EMG2 Works for day at R03 and comparison of rating levels with background sound levels inc. 3 m high northern barrier for rotated unit in Zone 5

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	Sig[4]
R03	51	51	**0**	-	-	**No**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the day have been predicted at a height of 1.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] Indicates whether a significant effect has been predicted.

Table 7.22: Predictions of operational noise from EMG2 Works for night at R03 and comparison of rating levels with background sound levels inc. 3 m high northern barrier for rotated unit in Zone 5

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	INEL[4], dB L_{AFmax} façade	Sig[5]
R03	50	51	**-1**	-	-	**61**	**No**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the night have been predicted at a height of 4.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] INEL stands for individual noise event level.
[5] Indicates whether a significant effect has been predicted.

7.5.53. As can be seen in **Table 7.21** and **Table 7.22**, the predicted rating levels have been reduced by 3 dB and the individual noise event level by 5 dB due to the implementation of the barrier. Neither the day nor night rating levels exceed the corresponding typical background sound levels and no longer indicates a potentially adverse effect. The individual noise event level exceeds the LOAEL by 1 dB; however, this is considered marginal and, considering the location of the hotel, it would certainly not rely on open windows to provide ventilation or cooling. Therefore, with the implementation of the barrier as further mitigation, no significant or otherwise adverse effects are expected from operational noise associated with the EMG2 Works.

7.5.54. As stated, this mitigation is based on a layout designed to represent a likely worst case in terms of potential operational noise effects from the EMG2 Works. It provides a demonstration of how effective mitigation can be implemented if required, and which can be finalised once the layout is confirmed.

Residual Effects

Construction

7.5.55. No significant effects from noise or vibration associated with the construction of the DCO Scheme have been predicted.

7.5.56. With the implementation of BPM through a P-CEMP, it is anticipated that the short-term temporary adverse effects from the works, including the likely out of hours and night period working with respect to the Highway Works, would occur less often and the resulting noise and vibration levels would be reduced. However, it is difficult to quantify the reduction that would be achieved at this stage of the development. Therefore, it is considered possible that some short-term temporary adverse effect would remain, though they will have been mitigated and minimised to comply with national policy and would not be significant in EIA terms.

Operational

7.5.57. Significant effects have been predicted initially at six~~two~~ receptors due to changes in road traffic noise, but when considered in context, these are considered very much a worst-case and no mitigation is required. Regarding operational activity noise, based on the layouts as assessed, with the implementation of a 3 m high barrier to the north of Zone 5 (where the unit has been rotated to represent a likely worst-case in terms of noise), no other adverse effects would occur.

7.6. Assessment of MCO Application

7.6.1. As set out in Section 1 of this Chapter, and at **Table 7.1**, the MCO Scheme comprises the EMG1 Works which in summary provide for additional warehousing development within Plot 16 of the EMG1 site together with works to increase the permitted height of the cranes at the EMG1 rail-freight terminal, improvements to the public transport interchange, site management building and the EMG1 Pedestrian Crossing.

Baseline conditions

7.6.2. In the context of this assessment, the primary use of baseline condition data is as part of the assessment of noise from operational activity at the MCO Scheme, as well as the definition of target noise levels for fixed plant.

7.6.3. To characterise and quantify the existing baseline noise environment in the areas around the MCO Scheme, noise surveys were undertaken in November/December 2024.

7.6.4. The surveys comprised three static unattended monitoring locations and two locations where short-term attended measurements were undertaken. The locations were selected to be representative of the sensitive receptors in the area surrounding the proposed development. The measurement microphones were in the acoustic free-field and a height of 1.5 m above ground level at all positions.

7.6.5. A summary of the survey locations, start and end dates/times and observations of the main noise sources at each location are presented in **Table 7.23** for the unattended measurements and **Table 7.24** for the attended measurements. A plan showing the monitoring locations is presented in **Appendix 7E (Document MCO 6.7E)**.

Table 7.23: Summary of unattended noise monitoring around EMG1 Works

Unattended survey location		Dates		Observations of main noise sources
		Start	End	
L06	Off Main Street on south side of Lockington, representative of R12 and R13	18/11/24	22/11/24*	Road traffic noise on A50/M1 dominant, occasional aircraft overhead
		25/11/24	03/12/24	
L07	On west side of Hilton Hotel next to car park, representative of R14	18/11/24	03/12/24	Road traffic noise on A50 dominant with M1 also contributing, occasional vehicle movements in car park
L08	East of Pritchard Drive on west side of Kegworth, representative of R15 & F01, and for correlation with S04	18/11/24	03/12/24	Road traffic noise on M1 dominant with Derby Road also contributing, occasional aircraft overhead
** The original deployment of L06 suffered a technical fault at 22:13 on 22/11/24. As a result, it was redeployed on 25/11/24 to ensure that sufficient data was collected.*				

Table 7.24: Summary of attended noise monitoring around EMG1 Works

Attended survey location		Dates/times		Observations of main noise sources
		Date	Times	
S03	Off Church Street on east side of Lockington	02/12/24	22:05 - 22:51	Road traffic noise on A50/M1 dominant, airport operational noise, EMG1 rail terminal occasionally just audible.
		03/12/24	03:11 - 03:57	
S04	Close to R16, R17 & F02, to correlate with L08	02/12/24	21:02 - 21:47	Landings at airport dominant, road traffic noise on M1 audible between landings, occasional bus pass on Ashby Road.
		03/12/24	02:15 - 03:00	

7.6.6. A field calibration check was undertaken prior to and following each set of measurements and no significant drift in sensitivity was noted at any location. All the sound level meters (SLMs) and field calibrators used for the survey met the requirements of a Class 1 instrument. All SLMs were within two years of their last laboratory calibrator, and all calibrators within one year. Further details of the monitoring equipment used are given in **Appendix 7F (Document MCO 6.7F)**.

7.6.7. The results of the noise surveys are presented in **Appendix 7G (Document MCO 6.7G)**. Time history graphs have been produced for the unattended monitoring results, and tables have been provided summarising the measured noise levels at the short-term attended monitoring locations.

7.6.8. Regarding the monitoring of weather conditions during the noise surveys, wind speed, wind direction and rainfall rate data has been sourced primarily from the permanent weather station installed at the nearby East Midlands Airport. The area experienced some periods of precipitation and high winds during the survey, particularly as a result of Storm Bert and Storm Conall. The weather data is summarised at the end of **Appendix 7G (Document MCO 6.7G)**.

Identification of background sound levels for operational noise assessment

7.6.9. As discussed in the assessment methodology section above, the assessment of potential noise impacts from operational activity at the MCO Scheme site requires the identification of typical background sound levels at the relevant receptors for both the day and night-time periods. They are also needed for the definition of target noise rating levels for fixed plant.

7.6.10. The background sound level is the underlying level of sound over a period and is generally governed by continuous or semi-continuous sound, rather than transient or short-duration noise events. It is represented by the $L_{A90,T}$ metric, where T corresponds to the duration of the individual measurements. BS 4142:2014+A1:2019 states that the selected background sound levels should represent what is typical during the relevant period and that the duration of each measurement should usually be 15 minutes.

7.6.11. To identify the typical background sound levels, the noise survey results and weather data were reviewed and any measured sound levels that were likely to have been affected by

high average wind speeds (above 5 m/s), precipitation, the dawn chorus, or other extraneous noise events were excluded from further analysis.

7.6.12. Next, for the unattended monitoring locations, the modal background sound level was identified for the day and night-time periods using statistical analysis, i.e., the most frequently occurring $L_{A90,15min}$ value during the relevant periods. The modal value is considered a good indicator of the typical background sound level.

7.6.13. However, at some locations, the different measured background sound levels are not evenly spread around the modal value and there can be a relatively high number of occasions when a lower value occurs, meaning that the modal value alone may not fully describe the typical level.

7.6.14. To address this possibility, the data for each monitoring location was analysed and the background sound level representing the lower quartile was identified for both the day and night-time periods. This is the value for which 75% of all the measured values were higher. Where this was 3 dB(A) or more below the modal value, this was considered an indication there was unevenness in the spread of the measured levels. In those cases, the lower quartile value has been used as a sensitivity test for the assessment, in addition to the modal value, to provide a more comprehensive and robust assessment.

7.6.15. Finally, the results were compared with the same analysis of the unedited dataset, i.e., the data with no exclusions for bad weather conditions etc, to ensure that the worst-case levels (i.e., the lowest) were identified.

7.6.16. Based on the results of this analysis, the typical background sound levels together with the sensitivity test background sound levels (where necessary) are presented in **Table 7.25** below for each receptor where operational activity has been assessed and target noise rating levels for fixed plant have been defined.

Table 7.25: Typical background sound levels for operational noise assessment

Receptor		Typical background sound level (dB $L_{A90,15min}$)			
		Modal value		Sensitivity test value	
		Day	Night	Day	Night
R01	The Birches[1]	47	46	42	42
R02	Leonardo Hotel[1]	47	46	42	42
R03	Premier Inn[2]	51	51	-	-
R04	Radisson Blu Hotel[2]	51	51	-	-
R05	Travelodge[3]	52	49	47	-
R06	Woodnook Farm[4]	59	53	-	50
R07	4 Langley Close[5]	44	44	-	-
R08	17 Clements Gate[5]	44	44	-	-
R09	2 Old Hall Court[6]	43	43	-	-
R10	18 Grimes Gate[6]	43	43	-	-
R11	Byland Cottage[1]	47	46	42	42
R12	Daleacre House[7]	45	44	-	-
R13	Hill Farm House[7]	45	44	-	-
R14	Hilton Hotel[8]	59	53	-	-

Receptor		Typical background sound level (dB $L_{A90,15min}$)			
		Modal value		Sensitivity test value	
		Day	Night	Day	Night
R15	72 Pritchard Drive[9]	60	55	54	51
R16	24 Windmill Way[10]	59	52	53	48
R17	90 Ashby Road[10]	59	52	53	48
F01	Derby Road[9]	60	55	54	51
F02	Ashby Road[10]	59	52	53	48

[1] Levels from L01 monitor
[2] Levels from L02 monitor
[3] Levels from L03 monitor minus 1 dB based on correlation with S01 monitor
[4] Levels from L04 monitor
[5] Levels from L05 monitor
[6] Levels from L05 monitor minus 1 dB based on correlation with S02 monitor
[7] Levels from L06 monitor
[8] Levels from L07 monitor
[9] Levels from L08 monitor
[10] Levels from L08 monitor minus 1 dB (day) and 3 dB (night) based on correlation with S04 monitor

Potential Impacts

Embedded Mitigation

7.6.17. When considering the potential impacts of the application, account has been taken of the relevant mitigation measures embedded into the design of the MCO Scheme. With respect to noise and vibration from the MCO Scheme, this primarily relates to the attenuation of noise as a result of the landscape bunds to be created around the proposed unit at Plot 16, which complement the existing bund to the north-west, by screening due to the height of the bunding above local ground level.

Construction Impacts

Noise from construction activities

7.6.18. As discussed in the Scope and Methodology of the Assessment section, the potential significance of construction noise associated with the MCO Scheme has been assessed by comparing predicted noise levels for a selection of timeslices (groups of activities taking place at the same time representing the worst-case in terms of construction noise) to the relevant effect level thresholds for the daytime (core hours), as well as considering the duration of the noise in terms of days if required.

7.6.19. The predicted noise levels for each construction noise timeslice associated with EMG1 Works activities at the relevant receptors and the subsequent assessment are presented in **Table 7.26** for core hours (see **Appendix 7B (Document MCO 6.7B)** for further details).

Table 7.26: Predictions of construction noise from EMG1 Works for selected timeslices and comparison to LOAEL/SOAEL assessment thresholds (core hours)

Receptor ID	Timeslice ID: predicted construction noise level (dB $L_{Aeq,T}$ façade)		>L[1]	>S[2]	Sig[3]
	2	3			
R12 Main Street	44	35	0	0	**No**
R13 Church Street	51	38	0	0	**No**
R14 Hilton West	50	40	0	0	**No**
R15 Pritchard Drive	48	34	0	0	**No**
R16 Windmill Way	50	35	0	0	**No**
R17 Ashby	46	32	0	0	**No**
F01 Derby Road	47	35	0	0	**No**
F02 Ashby Road	47	35	0	0	**No**

[1] Indicates the number of timeslices that exceed the LOAEL at that receptor.
[2] Indicates the number of timeslices that exceed the SOAEL at that receptor, potentially indicating a significant effect depending on the duration of any exceedances.
[3] Indicates whether a significant effect has been indicated.

7.6.20. As can be seen in **Table 7.26**, none of the predicted construction noise levels for the selected timeslices exceed the LOAEL and therefore no significant or otherwise adverse effects are expected from construction activities associated with the MCO Scheme. This is primarily due to the scale of the works, and the distance between them and the relevant receptors.

Noise from construction road traffic

7.6.21. As above, the results of calculations of the predicted increases in road traffic noise due to additional construction traffic on the roads alongside the relevant receptors have been reviewed (see Table 7.12 for details of receptors). The results indicate that the maximum increase is 0.2 dB, which is considered to be a negligible impact with reference to Table 7.6, and therefore no significant or otherwise adverse effects are expected. ~~Same as discussed above, initial calculations indicate that construction road traffic noise is likely to have a minor impact, with a calculated increase of up to 1.6 dB in a few areas. Noting the temporary nature of the construction road traffic, no significant effects are indicated.~~

Vibration from construction activities

7.6.22. No sensitive receptors have been identified as within 100 m of the MCO Scheme. On that basis, no significant or otherwise adverse effects are expected due to vibration due from the associated construction activities.

Operational Impacts

Noise from operational road traffic

7.6.23. As explained previously, Section 6.9 of **Chapter 6: Traffic and Transport** (**Document DCO 6.6/MCO 6.6**) explains that the traffic from the MCO Scheme alone would be negligible, at circa 53 two-way trips in the morning peak hour and 67 two-way trips in the evening peak

hour. This equates to between 5.7% and 6.3% of the total EMG2 Project traffic and, on its own, would not result in any adverse or substantial environmental impacts and would not trigger the need for an EIA from a traffic and transport perspective.

Noise from operational activity at the EMG1 Works

7.6.24. As discussed in the Scope and Methodology of the Assessment section, the potential significance of noise associated with the operation of the EMG1 Works has been assessed based on the principles of the methodology described in BS 4142:2014+A1:2019 for the peak periods of operation during the day and night. The predicted noise is based on HGV activities and use of the proposed gantry cranes.

7.6.25. In terms of applying a correction to the predicted noise levels if certain acoustic features are present at the receptor locations, it is noted that the surrounding area includes significant sources of road traffic noise (the M1, A50 and A453), aircraft noise from East Midlands Airport, as well as the existing EMG1 Strategic rail freight interchange. Nevertheless, the operational noise may have other sound characteristics that are readily distinctive against the residual acoustic environment. To account for this, when a predicted noise level is 5 dB or less below the typical background sound level, a penalty of +3 dB has been added to derive the rating level used for the assessment.

7.6.26. The predicted rating levels for operational noise from the MCO Scheme at the relevant receptors are presented in **Table 7.27** for the peak hour of the day and **Table 7.28** for the peak 15 minutes of the night, together with the typical and (where relevant) sensitivity test background sound level for each receptor and the differences between the values. **Table 7.28** also includes the predicted noise level from individual noise events.

Table 7.27: Predictions of operational noise from MCO Scheme for day and comparison of rating levels with background sound levels

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	Sig[4]
R12	28	45	**-17**	-	-	**No**
R13	32	45	**-13**	-	-	**No**
R14	38	59	**-21**	-	-	**No**
R15	32	60	**-28**	54	**-22**	**No**
R16	36	59	**-23**	53	**-17**	**No**
R17	33	59	**-26**	53	**-20**	**No**
F01	34	60	**-26**	54	**-20**	**No**
F02	36	59	**-23**	53	**-17**	**No**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the day have been predicted at a height of 1.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] Indicates whether a significant effect has been predicted.

Table 7.28: Predictions of operational noise from MCO Scheme for night and comparison of rating levels with background sound levels

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	INEL[4], dB L_{AFmax} façade	Sig[5]
R12	30	44	**-14**	-	-	**45**	No
R13	34	44	**-10**	-	-	**48**	No
R14	39	53	**-14**	-	-	**57**	No
R15	35	55	**-20**	51	**-16**	**51**	No
R16	37	52	**-15**	48	**-11**	**53**	No
R17	36	52	**-16**	48	**-12**	**51**	No
F01	37	55	**-18**	51	**-14**	**52**	No
F02	38	52	**-14**	48	**-10**	**52**	No

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the night have been predicted at a height of 4.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] INEL stands for individual noise event level.
[5] Indicates whether a significant effect has been predicted.

7.6.27. As can be seen in **Table 7.27** and **Table 7.28**, none of the predicted rating levels indicate an adverse impact (i.e., where the rating level exceeds the background sound level by around 5 dB), and, in **Table 7.28**, none of the predicted individual noise event levels exceed the LOAEL of 60 dB L_{AFmax}. Therefore, no significant or otherwise adverse effects are expected from operational noise associated with the MCO Scheme.

7.6.28. To provide further context to the potential impact of the MCO Scheme in combination with existing operations at EMG1, the predicted rating levels have been logarithmically summed with the existing noise levels and the increase calculated. To provide a worst-case assessment, the lowest measured existing noise levels for both the day and night periods have been used, so that the additional noise will result in the largest increase. The results of this are presented in **Table 7.29** for the day and **Table 7.30** for the night.

Table 7.29: Increase in noise level when adding predicted rating level for MCO Scheme to lowest measured existing noise level for day

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Lowest existing noise level, dB $L_{Aeq,15min}$	Sum of RL and existing level, dB $L_{Aeq,15min}$	Increase over lowest existing noise level, dB
R12	28	42	42.2	**0.2**
R13	32	42	42.4	**0.4**
R14	38	58	58.0	**0.0**
R15	32	49	49.1	**0.1**
R16	36	49	49.2	**0.2**
R17	33	49	49.1	**0.1**
F01	34	49	49.1	**0.1**

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Lowest existing noise level, dB $L_{Aeq,15min}$	Sum of RL and existing level, dB $L_{Aeq,15min}$	Increase over lowest existing noise level, dB
F02	36	49	49.2	**0.2**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the day have been predicted at a height of 1.5 m, except for hotels where the levels represent the worst-case floor.

Table 7.30: Increase in noise level when adding predicted rating level for MCO Scheme to lowest measured existing noise level for night

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Lowest existing noise level, dB $L_{Aeq,15min}$	Sum of RL and existing level, dB $L_{Aeq,15min}$	Increase over lowest existing noise level, dB
R12	30	41	41.3	**0.3**
R13	34	41	41.8	**0.8**
R14	39	54	54.1	**0.1**
R15	35	47	47.3	**0.3**
R16	37	47	47.4	**0.4**
R17	36	47	47.3	**0.3**
F01	37	47	47.4	**0.4**
F02	38	47	47.5	**0.5**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the night have been predicted at a height of 4.5 m, except for hotels where the levels represent the worst-case floor.

7.6.29. As can be seen in **Table 7.29** and **Table 7.30**, when considering operational noise from the MCO Scheme in the context of the existing noise levels, including current operations at EMG1, the worst-case increase is below 1 dB during both the day and night. This degree of change is not considered to be perceptible.

Noise from fixed plant at the EMG1 Works

7.6.30. Target noise rating levels for fixed plant at all relevant receptors are defined under the corresponding EMG2 Project heading below, paragraphs 7.7.16 to 7.7.18 and table 7.34 (the target levels do not change when considering the components separately).

Mitigation Measures

Construction

7.6.31. As described in the previous section, no significant or otherwise adverse effects as a result of construction noise or vibration associated with the MCO Scheme are predicted. Therefore, no consideration of additional mitigation measures is required. However, as part of the EMG1 DCO, a Construction Management Framework Plan was approved. To facilitate the management of construction noise and vibration in general, good working practices during the construction of the MCO Scheme all construction activities will be undertaken by a

competent contractor in accordance with this Construction Management Framework Plan approved pursuant to the original EMG1 DCO, and a phase specific CEMP to be approved thereafter.

Operational

7.6.32. As discussed above, no significant or otherwise adverse effects as a result of operational noise or vibration associated with the MCO Scheme are predicted. Therefore, no consideration of additional mitigation measures is required.

Residual Effects

Construction

7.6.33. No significant or otherwise adverse effects from noise or vibration associated with the construction of the MCO Scheme have been predicted.

Operational

7.6.34. No significant or otherwise adverse effects from noise or vibration associated with the operation of MCO Scheme.

7.7. Assessment of EMG2 Project

7.7.1. As set out in Section 1 of this Chapter, and at **Table 7.1**, the EMG2 Project as a whole is the combination of the DCO Scheme and the MCO Scheme which have been assessed in Sections 7.5 and 7.6 of this Chapter.

Baseline Conditions

7.7.2. The baseline conditions have been described at Section 7.5 in respect of the DCO Scheme and at Section 7.6 for the MCO Scheme. These are unchanged when considering the EMG2 Project as a whole.

Potential Impacts

Embedded Mitigation

7.7.3. The embedded mitigation has been described at Section 7.5, paragraph 7.5.20 in respect of the DCO Scheme and at Section 7.6, paragraph 7.6.17 for the MCO Scheme. These are unchanged when considering the EMG2 Project as a whole.

Construction impacts

Noise from construction activities

7.7.4. The potential significance of construction noise associated with the EMG2 Project as a whole has been assessed by comparing predicted noise levels for a selection of timeslices (groups of activities taking place at the same time representing the worst-case in terms of construction noise) to the relevant effect level thresholds for the daytime (core hours), as well as considering the duration of the noise in terms of days if required.

7.7.5. The predicted noise levels for each construction noise timeslice associated with EMG2 Project works activities at the relevant receptors and the subsequent assessment are presented in **Table 7.31** for core hours (see **Appendix 7B (Document DCO 6.7B)** for further details).

Table 7.31: Predictions of construction noise from EMG2 Project for selected timeslices and comparison to LOAEL/SOAEL assessment thresholds (core hours)

Receptor ID	Timeslice ID: predicted construction noise level (dB $L_{Aeq,T}$ façade)							>L[1]	>S[2]	Sig[3]
	1	2	3	4	5	6	7			
R01 The Birches	67	68	68	55	53	53	53	3	0	**No**
R02 Leonardo Hotel	74	74	74	61	61	61	61	3	0	**No**
R03 Premier Inn	75	75	75	71	70	70	70	7	0	**No**
R04 Radisson Blu	75	75	75	63	58	58	58	3	0	**No**
R05 Travelodge	73	74	74	66	65	65	65	4	0	**No**
R06 Woodnock Farm	59	60	60	52	49	49	49	0	0	**No**

Receptor ID	Timeslice ID: predicted construction noise level (dB $L_{Aeq,T}$ façade)							>L[1]	>S[2]	Sig[3]
	1	2	3	4	5	6	7			
R07 4 Langley Close	72	72	72	58	57	57	57	3	0	**No**
R08 17 Clements Gate	66	66	66	53	52	52	52	3	0	**No**
R09 2 Old Hall Court	67	67	67	53	52	52	52	3	0	**No**
R10 18 Grimes Gate	65	65	65	52	51	51	51	0	0	**No**
R11 14 Grimes Gate	64	64	64	52	51	51	51	0	0	**No**
R12 Main Street	50	51	50	35	33	33	33	0	0	**No**
R13 Church Street	57	58	57	35	33	32	33	0	0	**No**
R14 Hilton West	71	71	71	35	33	32	33	3	0	**No**
R15 Pritchard Drive	56	56	56	35	33	33	33	0	0	**No**
R16 Windmill Way	59	60	59	38	36	36	36	0	0	**No**
R17 Ashby	56	57	56	39	37	36	37	0	0	**No**
R18 Dowells Barn	57	57	57	16	15	14	15	0	0	**No**
R19 Long Lane Farm	60	60	60	30	28	28	28	0	0	**No**
F01 Derby Road	59	59	59	36	34	34	34	0	0	**No**
F02 Ashby Road	60	60	60	39	37	37	37	0	0	**No**

[1] Indicates the number of timeslices that exceed the LOAEL at that receptor.
[2] Indicates the number of timeslices that exceed the SOAEL at that receptor, potentially indicating a significant effect depending on the duration of any exceedances.
[3] Indicates whether a significant effect has been predicted.

7.7.6. As can be seen in **Table 7.31**, none of the predicted construction noise levels for the selected timeslices exceed the SOAEL and therefore no significant effects are expected from construction activities associated with the EMG2 Project. There are exceedances of the LOAEL which indicate that some short-term temporary adverse effects may occur at the relevant receptors.

7.7.7. Based on the selected timeslices, while there are some minor increases in predicted construction noise levels when comparing the combined EMG2 Project results to the separate results for EMG2 Works and Highways Works, no additional adverse effects are predicted.

7.7.8. As in the case of the EMG2 Works and Highway Works, the higher predicted noise levels (e.g., above 70 dB(A) and above at receptors R02-R05, R07 and R14) are primarily due to the bulk earthworks activity at the EMG2 Works which, due to the worst-case assumptions, is assumed to be in an area of the site close to each receptor whenever they are active (i.e., in timeslices 1 to 3). In reality, the activity will move around the site, and the higher levels will occur for a relatively short amount of time.

7.7.9. As the Highway Works is the only component expected to require works to take place outside of core hours due to highways constraints, the assessment as detailed for the EMG2 Works and Highway Works above remains unchanged when considering the EMG2 Project, i.e. that it is possible that both the relevant LOAEL and SOAEL thresholds for noise could be exceeded, but as the duration of such works is expected to be limited, it is considered that

while short-term temporary adverse effects may occur, it is unlikely that they would be significant. Full details of such works will be provided in the relevant P-CEMPs.

Noise from operational road traffic

7.7.10. As highlighted in Section 7.6, the traffic data is not disaggregated into separate contributions; therefore, predictions for the EMG2 Project are as detailed in Paragraphs 7.5.32-7.5.35.

Operational impacts

Noise from operational activity at the EMG2 Project

7.7.11. As discussed in the Scope and Methodology of the Assessment section, the potential significance of noise associated with the operation of the EMG2 Project as a whole has been assessed based on the principles of the methodology described in BS 4142:2014+A1:2019 for the peak periods of operation during the day and night.

7.7.12. The approach to applying a correction to the predicted noise levels if certain acoustic features are present at the receptor locations is the same as for the EMG2 Works and MCO Scheme assessments detailed above.

7.7.13. The predicted rating levels for operational noise from the MCO Scheme at the relevant receptors are presented in **Table 7.32** for the peak hour of the day and **Table 7.33** for the peak 15 minutes of the night, together with the typical and (where relevant) sensitivity test background sound level for each receptor and the differences between the values. **Table 7.33** also includes the predicted noise level from individual noise events. As previously noted, the results represent the worst-case (i.e., the highest) based on the layout options considered.

Table 7.32: Predictions of operational noise from the EMG2 Project for day and comparison of rating levels with background sound levels

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	Sig[4]
R01	33	47	**-14**	42	**-9**	**No**
R02	45	47	**-2**	42	**3**	**No**
R03	54	51	**3**	-	**-**	**No**
R04	42	51	**-9**	-	**-**	**No**
R05	42	52	**-10**	47	**-5**	**No**
R06	35	59	**-24**	-	**-**	**No**
R07	42	44	**-2**	-	**-**	**No**
R08	37	44	**-7**	-	**-**	**No**
R09	36	43	**-7**	-	**-**	**No**
R10	35	43	**-8**	-	**-**	**No**
R11	33	47	**-14**	42	**-9**	**No**
R12	28	45	**-17**	-	**-**	**No**

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	Sig[4]
R13	32	45	**-13**	-	**-**	**No**
R14	38	59	**-21**	-	**-**	**No**
R15	32	60	**-28**	54	**-22**	**No**
R16	36	59	**-23**	53	**-17**	**No**
R17	36	59	**-23**	53	**-17**	**No**
F01	34	60	**-26**	54	**-20**	**No**
F02	36	59	**-23**	53	**-17**	**No**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the day have been predicted at a height of 1.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] Indicates whether a significant effect has been predicted.

Table 7.33: Predictions of operational noise from the EMG2 Project for night and comparison of rating levels with background sound levels

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	INEL[4], dB L_{AFmax} façade	Sig[5]
R01	33	46	**-13**	42	**-9**	**48**	**No**
R02	40	46	**-6**	42	**-2**	**56**	**No**
R03	53	51	**2**	-	**-**	**66**	**No**
R04	40	51	**-11**	-	**-**	**51**	**No**
R05	42	49	**-7**	-	**-**	**57**	**No**
R06	35	53	**-18**	50	**-15**	**45**	**No**
R07	43	44	**-1**	-	**-**	**54**	**No**
R08	38	44	**-6**	-	**-**	**50**	**No**
R09	36	43	**-7**	-	**-**	**47**	**No**
R10	35	43	**-8**	-	**-**	**46**	**No**
R11	33	46	**-13**	42	**-9**	**44**	**No**
R12	30	44	**-14**	-	**-**	**45**	**No**
R13	34	44	**-10**	-	**-**	**48**	**No**
R14	39	53	**-14**	-	**-**	**57**	**No**
R15	35	55	**-20**	51	**-16**	**51**	**No**
R16	37	52	**-15**	48	**-11**	**53**	**No**
R17	36	52	**-16**	48	**-12**	**51**	**No**
F01	37	55	**-18**	51	**-14**	**52**	**No**
F02	38	52	**-14**	48	**-10**	**52**	**No**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the night have been predicted at a height of 4.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] INEL stands for individual noise event level.
[5] Indicates whether a significant effect has been predicted.

7.7.14. As can be seen in **Table 7.32** and **Table 7.33**, none of the predicted rating levels indicate a significant adverse impact (i.e., where the rating level exceeds the background sound level by around 10 dB), and, in **Table 7.33**, none of the predicted individual noise event levels exceed the SOAEL of 70 dB L_{AFmax}. Therefore, no significant effects are expected from operational noise associated with the EMG2 Project.

7.7.15. Regarding the predicted rating levels exceeding the background sound levels at R02 and R03, and the individual noise event level exceeding the LOAEL at R03, these remain exactly as discussed in the EMG2 Works section above at paragraphs 7.5.40 to 7.5.42, i.e., that no adverse effects are expected at R02, and long-term permanent effects may occur at R03, although they are not considered significant.

Noise from fixed plant at the EMG2 Project

7.7.16. Target noise rating levels for fixed plant and substations at all relevant receptors are presented in **Table 7.34** below. The values are cumulative rating levels, i.e., they represent the combined noise level as produced by all fixed plant associated with the EMG2 Project, including any corrections for acoustic features if required.

7.7.17. The target noise level has been defined as equal to the typical (or sensitivity test if this is present) background sound level at each receptor, which according to BS 4142:2014+A1:2019 is indication of a low (non-adverse) impact. Note that these are not proposed noise limits, and some exceedances of these values would still meet the requirements of noise policy, especially when context is considered.

Table 7.34: Target noise rating levels for fixed plant and substations

Receptor ID		Target noise rating levels for fixed plant and substations	
		Day (07:00 – 23:00), dB $L_{Ar,1hr}$	Night (23:00 – 07:00), dB $L_{Ar,15min}$
R01	The Birches	42	42
R02	Leonardo Hotel	42	42
R03	Premier Inn	51	51
R04	Radisson Blu Hotel	51	51
R05	Travelodge	47	49
R06	Woodnook Farm	59	50
R07	4 Langley Close	44	44
R08	17 Clements Gate	44	44
R09	2 Old Hall Court	43	43
R10	18 Grimes Gate	43	43
R11	Byland Cottage	42	42
R12	Daleacre House	45	44

Receptor ID		Target noise rating levels for fixed plant and substations	
		Day (07:00 – 23:00), dB $L_{Ar,1hr}$	Night (23:00 – 07:00), dB $L_{Ar,15min}$
R13	Hill Farm House	45	44
R14	Hilton Hotel	59	53
R15	72 Pritchard Drive	54	51
R16	24 Windmill Way	53	48
R17	90 Ashby Road	53	48
F01	Derby Road	54	51
F02	Ashby Road	53	48

7.7.18. It is proposed that prior the installation of any fixed plant, details of the installation for each building will be submitted to the local planning authority for approval as part of the discharge of requirements process (Requirement 21 of the draft DCO – **Document DCO 3.1** refers). As part of this process, sound from the proposed fixed plant installations will be predicted and fully assessed using the BS 4142:2014+A1:2019 methodology with respect to the target noise rating levels.

Mitigation Measures

Construction

7.7.19. As described in the previous section, no significant effects because of construction noise or vibration associated with the EMG2 Project overall have been predicted.

7.7.20. Nevertheless, some short-term temporary adverse effects are expected during the likely out of hours and night period working with respect to the DCO Scheme. Both the NPSNN and the NPPF state that new development should mitigate and reduce to a minimum potential adverse impacts resulting from noise (and vibration).

7.7.21. To facilitate the management of construction noise and vibration in general, good working practices during the construction of the DCO Scheme are being defined through a Construction Environmental Management Plan (CEMP) provided as **Appendix 3A (Document DCO 6.3A)**. An equivalent construction management framework plan was approved for the EMG1 DCO and will apply to the MCO Scheme. Detailed phase-specific Construction Environmental Management Plans (P-CEMPs) will subsequently be developed and implemented for each relevant component of the EMG2 Project, serving as an additional mitigation measure where required. The specific noise and vibration controls included in the CEMP which will be confirmed when a detailed approach to the works has been finalised, will follow the principal of Best Practicable Means (BPM), and are expected to include the following measures where appropriate:

- Installation of perimeter hoarding to reduce noise at ground level from works taking place within the EMG2 Project;
- Phasing of earthworks to prioritise the construction of any bunding to provide screening of the subsequent works where practicable;

- Selection of appropriate equipment and construction methods, e.g., hydraulic plant will be used in preference to pneumatic plant, and electrically powered rather than internal combustion engine powered, where possible;
- Plant and equipment will be maintained in good working order and fitted with silencers and acoustic panels where appropriate;
- All plant will be switched off when not in use or throttled down between periods of use;
- Acoustic enclosures and temporary hoardings/screens around works will be used where required;
- Works will take place during agreed site hours and there will be appropriate management of working hours for noisier tasks;
- 'White noise' type reversing warnings should be used on mobile plant in preference to 'bleepers' to minimise intrusion;
- Site personnel instructed on BPM to reduce noise and vibration as part of their site induction training and as required prior to specific work activities;
- Liaison with residents in advance of works commencing and on an ongoing basis to provide information regarding the programme;
- Plant to be located as far as reasonably practicable from noise-sensitive receptors; and
- A noise and vibration monitoring regime may be implemented focusing on the nearest/most exposed receptors and including trigger levels to ensure significant levels of noise and vibration are avoided.

Operational

7.7.22. As discussed above, significant effects have been predicted initially as a result of operational road traffic noise associated with the EMG2 Project, due to the DCO Scheme, at ~~two~~ six receptors. However, when considered in context, no additional mitigation measures would be required.

7.7.23. With respect to operational activity noise, it is possible that, depending on the final layout of the EMG2 Works, long-term permanent adverse effects may occur at the receptors to the west and north, e.g., at R03 Premier Inn, although these effects are not considered significant in EIA terms.

7.7.24. Following the NPSNN and NPPF requirement for potentially adverse impacts resulting from noise to be mitigated and reduced to a minimum, options for additional mitigation have been tested.

7.7.25. By way of general mitigation, it is proposed that as part of Requirement 21 of the draft DCO, prior to the installation of any fixed plant, details of the installation for each building will be submitted to NWLDC for approval as part of the discharge of requirements process. As part of this process, sound from the proposed fixed plant installations will be predicted and fully assessed using the BS 4142:2014+A1:2019 methodology with respect to the target noise rating levels.

7.7.26. In addition, it is proposed that as part of Requirement 21 of the draft DCO, occupiers will be required to use 'White noise' type reversing warnings unless there are specific health and safety implications of doing so.

7.7.27. With specific regard to Zone 5 within the EMG2 Works (as defined on the Parameters Plan (**Document DCO 2.5**), as detailed previously, the predicted adverse effects in this area arise from a scenario where the unit in this Zone has been rotated so that the service yard is on the north side, facing the receptor. The effect of 3 m high acoustic fencing along the northern boundary of the unit has been modelled. The revised predictions of operational noise are presented in **Table 7.35** and **Table 7.36** for the day and night periods respectively.

Table 7.35: Predictions of operational noise from EMG2 Works for day at R03 and comparison of rating levels with background sound levels inc. 3 m high northern barrier for rotated unit in Zone 5

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	Sig[4]
R03	51	51	**0**	-	-	**No**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the day have been predicted at a height of 1.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] Indicates whether a significant effect has been predicted.

Table 7.36: Predictions of operational noise from EMG2 Works for night at R03 and comparison of rating levels with background sound levels inc. 3 m high northern barrier for rotated unit in Zone 5

Receptor ID	Predicted RL[1,2], dB $L_{Ar,TR}$	Typical BSL[3], dB $L_{A90,15min}$	RL – Typical BSL	Sensitivity test (ST) BSL, dB $L_{A90,15min}$	RL – ST BSL	INEL[4], dB L_{AFmax} façade	Sig[5]
R03	50	51	**-1**	-	-	**61**	**No**

[1] RL stands for rating level; 3 dB has been added to derive the rating level where the predicted noise level is 5 dB or less below the typical background sound level.
[2] Rating levels for the night have been predicted at a height of 4.5 m, except for hotels where the levels represent the worst-case floor.
[3] BSL stands for background sound level.
[4] INEL stands for individual noise event level.
[5] Indicates whether a significant effect has been predicted.

7.7.28. As can be seen in **Table 7.35** and **Table 7.36**, the predicted rating levels have been reduced by 3 dB and the individual noise event level by 5 dB due to the implementation of the barrier. Neither the day nor night rating levels exceed the corresponding typical background sound levels and no longer indicates a potentially adverse effect. The individual noise event level exceeds the LOAEL by 1 dB; however, this is considered marginal and, considering the location of the hotel, it would certainly not rely on open windows to provide ventilation or cooling. Therefore, with the implementation of the barrier as further mitigation, no significant or otherwise adverse effects are expected from operational noise associated with the EMG2 Works, or the EMG2 Project as a whole.

7.7.29. As stated, this mitigation is based on a layout designed to represent a likely worst case in terms of potential operational noise effects from the EMG2 Works. It provides a demonstration of how effective mitigation can be implemented, and which can be finalised once the layout is confirmed.

Residual Effects

Construction

7.7.30. No significant effects from noise or vibration associated with the construction of the EMG2 Project have been predicted.

7.7.31. With the implementation of BPM through a P-CEMP, it is anticipated that the short-term temporary adverse effects from the works, including the likely out of hours and night period working with respect to the Highway Works, would occur less often and the resulting noise and vibration levels would be reduced. However, it is difficult to quantify the reduction that would be achieved at this stage of the development. Therefore, it is considered possible that some short-term temporary adverse effect would remain, though they will have been mitigated and minimised to comply with national policy and would not be significant in EIA terms**.**

Operational

7.7.32. Significant effects have been predicted initially at ~~two~~ six receptors due to changes in road traffic noise, but when considered in context, these are considered very much a worst-case and no mitigation is required. Regarding operational activity noise, based on the layouts as assessed, with the implementation of a 3 m high barrier to the north of Zone 5 (where the unit has been rotated to represent a likely worst-case in terms of noise) which is part of the EMG2 Works, no other adverse effects would occur.

7.8. Cumulative Effects

Intra Project Effects

7.8.1. As set out in the preceding paragraphs, the traffic data provided by the project's traffic consultants and as set out within **Chapter 6: Traffic and Transportation (Document DCO 6.6/MCO 6.6)** is integral to the assessment of road traffic noise within this Chapter, and the intra-project effects in combination with traffic are inherently considered in this assessment.

7.8.2. There is the potential for an interaction or combination of noise, dust and air quality on the same receptors during construction and operational phases. **Chapter 8: Air Quality** (**Document DCO 6.8/MCO 6.8**) considers the likely significant air quality effects of the EMG2 Project, and its component parts, on relevant receptors, including nearby residential receptors during the construction and operational phases. The assessments concludes that providing appropriate mitigation is incorporated, no significant effects are predicted. Therefore, any combined effects of noise and air quality on nearby receptors are predicted to be no worse than already identified in this chapter being not significant.

7.8.3. It is appreciated that noise can also have a potential impact on the built historic environment given the EMG2 Works close proximity to the Diseworth Conservation Area and the Church of St Michael and All Angels as designated heritage assets and their settings. An assessment of these potential cumulative effect has been undertaken as part of the Built Heritage Assessment which has been provided as **Appendix 12A (Document DCO 6.12A/MCO 6.12A)** as part of **Chapter 12: Cultural Heritage (Document DCO 6.12/MCO 6.12)**. This assessment concludes that there would be no significant effects on these heritage assets in combination with noise and vibration during the construction or operational phases.

Inter Project Effects

Construction

7.8.4. Based on a review of the list of existing and/or approved developments with respect to inter-project effects (see **Chapter 21: Cumulative Impacts** (**Document DCO 6.21/MCO 6.21**) for further details), the consented ground-mounted solar farm at Donington Park Service Area (development ID 10) adjacent to the EMG2 Works has been considered. The planning application for the scheme included a noise impact assessment, but this contains no reference to construction noise or vibration. It is, however, unlikely that construction of a solar farm would result in significant levels of noise or vibration and therefore no cumulative effects when considering this development are expected.

7.8.5. Regarding other committed development sites, development IDs 14 and 15, which are adjacent to Junction 24 of the M1, are draft allocations for Use Class B2 and small-scale Use Class B8 development in the NWLDC draft local plan. It is possible that construction of these schemes could overlap primarily with construction of the Highway Works in that area. Based on the results presented in **Table 7.31** at the closest receptors, it is considered unlikely that the combined construction noise would result in any additional significant effects, although some short-term temporary adverse effects may occur as a result.

Operation

7.8.6. In terms of operational activity noise, the noise impact assessment submitted with development ID 10 as discussed included predictions of operational noise at two receptors (similar to R04 and R07 as used in this assessment). Considering these predictions in combination with the predicted noise levels for the EMG2 Project presented in **Table 7.32** and **Table 7.33**, there would be no change in the effects as predicted in this assessment, primarily due to the relatively low levels of operational noise generated by a solar farm. It should also be noted that the buildings on the EMG2 Works will screen development ID 10 to both the west and south.

7.8.7. Regarding other committed development sites with respect to operational activity noise, the predicted operational noise levels for the EMG2 Project from **Table 7.32** and **Table 7.33** at the receptors in the area around development IDs 14 and 15 are significantly below the typical background sound level. It is therefore considered unlikely that the combination of operational noise from the EMG2 Project and these developments would result in any cumulative effects.

7.8.8. Development ID 16, located at the East Midlands Airport and Gateway (EMAGIC), has a freeport designation for logistics and advanced manufacturing space. The site is approximately 1 km from the EMG2 Works at the closest point; furthermore, the predicted operational activity noise levels for the EMG2 Project at the receptors between the site and development ID 16 are well under the typical background level. It is therefore considered unlikely that the combination of operational noise from the EMG2 Project and this development would result in any cumulative effects.

7.9. Summary of Effects and Conclusions

Introduction

7.9.1. This Chapter of the ES considers the potential significant noise and vibration impacts and effects that may arise from the construction and operation of the EMG2 Project. The effects of the DCO Scheme and the MCO Scheme have been considered separately, and in combination in terms of the overall EMG2 Project.

Baseline Conditions

7.9.2. The existing noise climate around the EMG2 Project has been quantified through the undertaking of a noise survey. During the survey, the baseline noise conditions in the areas around the EMG2 Project are generally, dominated by road traffic, primarily from the M1, A453, A42 and A50, with aircraft serving East Midlands Airport also contributing.

Likely Significant Effects

7.9.3. The predicted residual effects with mitigation in place are summarised in **Table 7.37.** Note that the effects summarise the EMG2 Project as a whole, but the receptors are separated in terms of the DCO Scheme, ~~and~~ MCO Scheme and road traffic only (relating to both schemes) as required.

Table 7.37: Summary of residual effects

Receptor ID		Significant effect indicated					
		Construction			Operational		
		Noise (works)	Vibration (works)	Road traffic noise	Noise (on-site)	Road traffic noise	Fixed plant (on-site)
DCO Application – EMG2 Works and Highway Works							
R01	The Birches, Grimesgate	No	N/A	No	No	No	No
R02	Leonardo Hotel East Midlands Airport	No	No	No	No	No	No
R03	Premier Inn, Hunter Road	No	No	No	No	No	No
R04	Radisson Blu Hotel, Herald Way	No	No	No	No	No	No
R05	Travelodge, Moto Services	No	No	No	No	No	No
R06	Woodnook Farm, West End	No	N/A	No	No	No	No
R07	4 Langley Close	No	No	No	No	No	No
R08	17 Clements Gate	No	No	No	No	No	No
R09	2 Old Hall Court	No	No	No	No	No	No

Receptor ID		Significant effect indicated					
		Construction			Operational		
		Noise (works)	Vibration (works)	Road traffic noise	Noise (on-site)	Road traffic noise	Fixed plant (on-site)
R10	18 Grimes Gate	No	No	No	No	No	No
R11	Byland Cottage, Grimes Gate	No	N/A	No	No	No	No
R18	Dowells Barn, Kegworth	No	N/A	N/A	N/A	N/A	N/A
R19	Long Lane Farm, Kegworth	No	N/A	N/A	N/A	N/A	N/A
MCO Application – EMG1 Works							
R12	Daleacre House, Lockington	No	N/A	No	No	No	No
R13	Hill Farm House, Lockington	No	N/A	No	No	No	No
R14	Hilton East Midlands Airport	No	No	No	No	N/A	No
R15	72 Pritchard Drive, Kegworth	No	N/A	No	No	N/A	No
R16	24 Windmill Way, Kegworth	No	N/A	No	No	N/A	No
R17	90 Ashby Road, Kegworth	No	N/A	No	No	N/A	No
F01	Derby Road, Kegworth (future)	No	N/A	No	No	N/A	No
F02	Ashby Road, Kegworth (future)	No	N/A	No	No	N/A	No
Road traffic noise only (both applications)							
R20	Derby Road, Kegworth	N/A	N/A	No	N/A	No	N/A
R21	Derby Road, Kegworth	N/A	N/A	No	N/A	No	N/A
R22	Main Street, Lockington	N/A	N/A	No	N/A	No	N/A
R23	Hemington Lane, Lockington	N/A	N/A	No	N/A	No	N/A
R24	Main Street, Hemington	N/A	N/A	No	N/A	No	N/A
R25	Rycroft Road, Hemington	N/A	N/A	No	N/A	No	N/A
R26	Walton Hill, Isley Walton	N/A	N/A	No	N/A	No	N/A

Receptor ID		Significant effect indicated					
		Construction			Operational		
		Noise (works)	Vibration (works)	Road traffic noise	Noise (on-site)	Road traffic noise	Fixed plant (on-site)
R27	High Street, Castle Donington	N/A	N/A	No	N/A	No	N/A
R28	Station Road, Castle Donington	N/A	N/A	No	N/A	No	N/A
R29	West End, Long Whatton	N/A	N/A	No	N/A	No	N/A
R30	West End, Long Whatton	N/A	N/A	No	N/A	No	N/A
R31	3 Grimes Gate, Diseworth	N/A	N/A	No	N/A	No	N/A
R32	2 Clements Gate, Diseworth	N/A	N/A	No	N/A	No	N/A
R33	6A Lady Gate, Diseworth	N/A	N/A	No	N/A	No	N/A
R34	14 Lady Gate, Diseworth	N/A	N/A	No	N/A	No	N/A
R35	23 The Green, Diseworth	N/A	N/A	No	N/A	No	N/A
R36	57 The Green, Diseworth	N/A	N/A	No	N/A	No	N/A
R37	7 The Bowley, Diseworth	N/A	N/A	No	N/A	No	N/A
R38	50 Hall Gate, Diseworth	N/A	N/A	No	N/A	No	N/A
F03	Ashley Road, Isley Walton (future)	N/A	N/A	No	N/A	No	N/A

7.9.4. Using worst-case assumptions, construction noise and vibration associated with the EMG2 Project has been predicted and assessed at the relevant receptors. The assessment concluded that no likely significant effects were indicated, and that while some short-term temporary adverse effects may occur, primarily at the hotels directly to the north of the EMG2 Works as well as the residences close to the south-west corner, these could be mitigated and minimised using measures detailed in the CEMP (and secured through a detailed P-CEMP to be produced once final details of the relevant works are known), and are not considered as significant in EIA terms.

7.9.5. Noise from operation of the EMG2 Project has also been predicted and assessed at the relevant receptors. Regarding road traffic noise, significant effects have been predicted initially at ~~two~~ six receptors, but when considered in context, these are considered very much a worst-case and no mitigation is required.

7.9.6. Regarding operational activity noise, the assessment shows that the only potential area of significant impact is in Zone 5 within the EMG2 Works. In this zone if the buildings are orientated as per the illustrative masterplan there are no significant effects. However, based on a worst-case layout with north facing yards, some long-term permanent adverse effects were indicated at the Premier Inn to the north of the EMG2 Works. The assessment has demonstrated how these could be mitigated using a 3 m high barrier along the northern boundary of Zone 5, at the north of the EMG2 Works which will need to be allowed for when considering final detailed design. With this in place, no significant adverse effects were expected.

Conclusion

7.9.7. Based on the results of the assessment with the identified mitigation, it is concluded that:

- There are no likely significant effects for the DCO Scheme;
- There are no likely significant effects for the MCO Scheme;
- There are no likely significant effects for the EMG2 Project as a whole; and
- The DCO Scheme and the MCO EMG2 Project as a whole complies with the relevant national and local planning policy with respect to noise and vibration.