Lucion
Protecting people and planet

Noise Impact Assessment

Atlas Park Development, Manchester

Presented to: Aviva Life and Pensions UK Limited

Issued: September 2026

Lucion Contract Reference: 30414.667943

Report Details

Client	Aviva Life and Pensions UK Limited
Report Title	Noise Impact Assessment
Site Address	Atlas Park Development, Manchester
Contract Reference	130414.667943
Lucion Contact	Rob Kirkaldy (rob.kirkaldy@luciongroup.com)

Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
1	Draft	17th September 2026	-	Martyn Parker Principle Acoustic Consultant	John Goodwin Director	Rob Kirkaldy Associate Director
2	Revision 1	27th August 2026	-	John Goodwin Director	Martyn Parker Principle Acoustic Consultant	Rob Kirkaldy Associate Director
3	Final	17th September 2026	-	Martyn Parker Principle Acoustic Consultant	John Goodwin Director	Rob Kirkaldy Associate Director
4	Final	28th September 2026	-	Martyn Parker Principle Acoustic Consultant	John Goodwin Director	Rob Kirkaldy Associate Director

About Us

Lucion Delta-Simons is part of Lucion, a technology-led environmental services company dedicated to protecting people and the planet. With expert advice, guidance, and a comprehensive array of services, we support you at every stage of your asset lifecycle, helping you mitigate regulatory impact, improve business practices, and ensure safety and environmental protection.

As part of Lucion's group of companies, we can support you with a broader range of holistic services. Through our pool of multidisciplinary experts, we help you navigate complex regulatory frameworks, saving you time and money.

Being part of your sustainable supply chain is a key goal for our team. As a member of the UN Global Compact and a commitment to sustainability, we are the partner of choice for businesses looking to make informed decisions and mitigate risks across your portfolio.

Lucion is carbon neutral. We annually measure and report our Scope 1, Scope 2 and specified Scope 3 carbon emissions, and offset 100% of residual emissions through verified carbon credits, supporting carbon reduction and prevention projects overseas. We are taking steps to reduce our carbon emissions and have committed to setting and achieving near-term and Net Zero Science-Based carbon reduction targets in line with the goals of the Paris Agreement to limit global warming to 1.5°C above pre-industrial levels. Lucion is a signatory of Pledge to Net Zero and Members of the United Nations Global Compact.

If you would like support in understanding your carbon emissions, or those of your supply chain, please get in touch with your Lucion contact above who will be happy to help.

Lucion
Protecting people and planet

Executive Summary

Site and Report Context	Lucion Delta-Simons Ltd ('Lucion') was instructed by Aviva Life and Pensions UK Limited (the 'Client') to prepare a Noise Impact Assessment in support of a planning application for a number of warehouse and office buildings (the 'Proposed Development') located at Atlas Business Park off Simonsway in Wythenshawe, Manchester M22 5PR (the 'Site'). This assessment has been undertaken to identify the key noise sources associated with the proposal and which may have the potential to impact the closest sensitive residential dwellings. Accordingly, this assessment has been completed with due regard to: • National Planning Policy Framework (NPPF); • Planning Policy Guidance (PPG); and • BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'.
Summary	This assessment has been informed by a noise survey to quantify the existing background noise environment at the sensitive receptors. An indicative operational phase assessment has been undertaken and plant noise limits are also provided for any new proposed plant associated with the development. The operational assessment results have shown that the rated level of noise, falls below the typical daytime and night-time background sound levels at the closest receptors and therefore no mitigation would be required. This assessment has set noise limits for fixed plant items at the closest receptors. Provided the noise emission at receptor locations from fixed plant on the Site does not exceed the proposed limits, the impacts from fixed plant would be **negligible.** The assessment of the maximum noise level shows the highest predicted L_{AFmax} at all receptors. It is shown that internal night-time criteria would not be exceeded, assuming a partially open window will provide -13dB attenuation.
Recommendations	Noise levels from fixed plant should not exceed the levels set out in this report.
This is intended as a summary only. Further detail and limitations of the assessment are provided within the main body of the Report.	

Table of Contents

1.0 INTRODUCTION 1
1.1 Appointment 1
1.2 Site Location and Context 1
2.0 LEGISLATION AND POLICY 2
2.1 Planning Policy 2
2.2 Local Planning Policy 4
2.3 Guidance 4
3.0 SCOPE AND METHODOLOGY 9
3.1 Local Authority Consultation 9
3.2 Scope 9
3.3 Identification of Sensitive Receptors 9
3.4 Operational Noise 10
3.5 Plant Noise Emission Limits 11
3.6 Night-Time L_{AFmax} Event 11
4.0 BASELINE NOISE SURVEY 12
4.1 Measurement Locations 12
4.2 Survey Equipment 12
4.3 Weather Conditions 12
4.4 Survey Summary Results 13
5.0 ASSESSMENT 14
5.1 Operational Noise 14
5.2 Plant Noise Emission Limits 15
5.3 Night-Time L_{AFmax} Event 16
5.4 Change in Network Road Traffic Noise Levels 16
6.0 MITIGATION 18
6.1 Operational Site Noise 18
7.0 SUMMARY AND CONCLUSIONS 19
7.1 General 19
7.2 Operational Site Noise 19
7.3 Fixed Plant Noise 19
7.4 Night-time L_{AFmax} 19

Figures

Figure 1 – Site Location, Sensitive Receptor Locations, and Measurement Locations
Figure 2 – Proposed Site Layout
Figure 3 – Noise Contour: Daytime
Figure 4 – Noise Contour: Night-time
Figure 5 – Noise Contour: L_{AFmax}

Appendices

Appendix A – Limitations
Appendix B – Glossary
Appendix C – Background Sound Level

1.0 Introduction

1.1 Appointment

1.1.1 Lucion Delta-Simons Ltd ('Lucion') was instructed by Aviva Life and Pensions UK Limited (the 'Client') to prepare a Noise Impact Assessment to support an outline planning application for the development of a number of warehouse and office buildings (the 'Proposed Development'), located at Atlas Business Park off Simonsway in Wythenshawe, Manchester M22 5PR (the 'Site').

1.2 Site Location and Context

1.2.1 The Site is located within Atlas Business Park, an established commercial area that accommodates a range of existing office and industrial uses. To the south of the Site lies an industrial estate and a large long-stay car park serving Manchester Airport. The western boundary is defined by the Metrolink tram line, which runs adjacent to Shadowmoss Road. Beyond Shadowmoss Road are a number of residential properties. To the north, the Site is bounded by Simonsway, with further residential dwellings situated on the opposite side of the road. Open land is located to the east of the Site, together with a car park accessed from Styal Road.

1.2.2 The existing sound climate at the Site is influenced by a number of transportation and commercial noise sources. The M56 motorway is located approximately 700 m to the south of the Site and contributes to the prevailing background noise environment. The Site is also affected by aircraft movements associated with Manchester Airport, including aircraft overflights during take-off and landing operations. In addition, existing commercial and industrial activities within Atlas Business Park and the surrounding area contribute to the local sound environment.

1.2.1 The table below sets out the sensitive receptors identified around the Site.

Table 1 – Sensitive Receptors and Distances

ID	Receptor	Direction from Site	Approximate Distance from Site boundary (m)
{%tr for item in receptors %}			
R1	Patchcroft Road	North	40
R2	Shadowmoss Road	West	40
R3	Cunningham Drive	East	300
{%tr endfor %}			

1.2.2 The soundscape around the Site is believed to be dominated by:

- The M56 motorway located 700m to the south;
- Aircraft movements associated with Manchester Airport, including aircraft overflights during take-off and landing operations;
- Local road traffic on Shadowmoss Road and Simonsway, as well as the carparks
- Existing commercial sound at the nearby industrial estate.

1.2.3 The proposal has the potential to operate during 7 Days a week over an 24 hour period.

1.2.4 The closest noise sensitive receptors (NSRs) are situated to the north and west approximately 40m away.

1.2.5 Reference should be made to Figure 1 for a map of the Site and surrounding area.

1.2.6 The standard limitations associated with this assessment are presented in Appendix A.

1.2.7 A glossary of terms used in this report is provided in Appendix B.

2.0 Legislation and Policy

2.1 Planning Policy

2.1.1 A summary of the national and local planning policy relevant to the Proposed Development is provided below.

National Planning Policy Framework and Planning Practice Guidance

2.1.2 The Government updated the National Planning Policy Framework (NPPF) on 17th August 2026 and its associated National Planning Practice Guidance (NPPG) on 14th February 2024. Together, the NPPF and NPPG set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments.

2.1.3 Policy P1 'Planning for clean and safe places' within Section 17 of the NPPF 'Pollution, public protection and security' states the following with regards to noise:

'...

b) Consider any wider opportunities to reduce air, water, soil, noise or other forms of pollution, and contribute to compliance with national and local environmental targets and objectives, through the spatial strategy and policies for specific parts of the plan area (such as by identifying opportunities for strategic nature-based solutions)'

2.1.4 Policy P3 'Living Conditions & Pollution' states the following with regards to noise:

a) 'Provide healthy living conditions for occupiers and users in terms of adequate access to light and avoiding exposure to levels of air, noise, artificial light or other sources of pollution which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions;

b) 'Not give rise to, or contribute to, an unacceptable level of access to daylight and sunlight for neighbouring residents and occupiers, or unacceptable levels of air, noise, artificial light, water, soil or other forms of pollution on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce pollution affecting the wider area (such as through traffic and travel management or improved external lighting)'

...

c) d)'Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason)'

2.1.5 The PPG adds further context to the NPPF and it is intended that the two documents should be read together.

2.1.6 Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment, including cumulative effects. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

2.1.7 Local planning authorities' plan-making and decision making should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

2.1.8 In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

2.1.9 The Observed Effect Levels are as follows:

- Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
- Lowest observed adverse effect level: This is the level of noise exposure above which adverse effects on health and quality of life can be detected; and
- No observed effect level: This is the level of noise exposure below which no effect at all on health or quality of life can be detected.

2.1.10 **Table 2** summarises the noise exposure hierarchy, based on the likely average response.

Table 2 - Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Adverse Effect Level			
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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 perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, 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 Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.2 Local Planning Policy

2.2.1 A summary of relevant local policies for Manchester's Local Development Framework Core Strategy Development Plan Document is outlined below:

2.2.2 Policy DM1 : Development Management states the following:

> *'Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise'*

Manchester City Council

2.2.3 The following correspondence was submitted to the Environmental Health Officer (EHO) at Manchester City Council in July 2026:

> *We have been appointed by a client to undertake a Noise Impact Assessment for proposals including the development of a number of warehouse and office buildings located at Atlas Business Park off Simonsway in Wythenshawe, Manchester M22 5PR*
>
> *We will undertake the required noise surveys as follows:*
>
> *Background Sound Survey: A background sound survey will be completed on Site in the absence of any commercial sound over a full weekday and weekend period. The background sound survey will be completed for the dwellings off Simonsway and Shadowmoss Rd.*
>
> *The following assessments will be undertaken:*
>
> *Commercial Noise: An assessment will be completed for any proposed mechanical plant based on the criteria presented in BS4142:2014+A1:2019.*
>
> *We will advise on appropriate and reasonable noise mitigation measures, where required.*
>
> *If you have any comments, then please do advise at your earliest convenience.*

2.2.4 At the time of issue issuing the report, no response has been received.

2.3 Guidance

BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

2.3.1 This Standard (hereafter referred to as 'BS 4142') describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.

2.3.2 The procedure detailed in the Standard compares the measured or predicted noise level 'the specific noise level' from any of the above detailed noise sources with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is 'typical'.

2.3.3 The specific noise level also acknowledges the following reference time intervals depending upon whether the noise source operates during daytime or night-time periods:

- Daytime (07:00 - 23:00): 1 hour; and
- Night-time (23:00 - 07:00): 15 minutes.

2.3.4 There are a number of 'character corrections' which can be attributed to the specific sound level, either subjectively or objectively, depending upon the 'acoustic features' of the sound level under investigation. These character corrections vary in their weighting depending upon the severity of the acoustic feature, as follows (with regards to the subjective method):

Table 3 - BS 4142 Subjective Character Correction

Acoustic Feature	Correction (dB)	Comments
Tonality	+2	Where the tonality is just perceptible
	+4	Where the tonality is clearly perceptible
	+6	Where the tonality is highly perceptible
Impulsivity	+3	Where the impulsivity is just perceptible
	+6	Where the impulsivity is clearly perceptible
	+9	Where the impulsivity is highly perceptible
Intermittency	+3	Where the intermittency is readily distinctive against the acoustic environment
Other sound characteristics	+3	Where a sound exhibits characteristics that are neither tonal nor impulsive, though is readily distinctive against the acoustic environment at the receptor

2.3.5 Where the assessment is carried out using the objective method, the tonality character correction is either 0dB or 6dB and the impulsivity character correction can range from 0dB up to 9dB in increments of 1dB, depending on the level of impulsivity identified.

2.3.6 BS 4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.

2.3.7 Assessment of the rating level relative to the background noise level can yield the following commentary:

- Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of impact;
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5dB is likely to be an indication of an adverse 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. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

2.3.8 Whilst the Standard does make various references to it not being intended to assess noise impacts at indoor locations, Section 1.1 of the Standard does state:

> *'The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident'.*

2.3.9 Example 6 in the Standard states:

'In addition to the rating/background sound level comparison shown in Table A.6, the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows. Other guidance, such as BS 8233, might also be applicable in this instance'.

2.3.10 Furthermore, Example 8, which considers night-time commercial noise impacts at a dwelling, states:

'BS 8233 indicates that 40 dBA sound level from the plant, equating to an internal level of around 30 dBA or possibly lower, but with some acoustically distinguishing characteristics, may not be suitable for a bedroom.'

2.3.11 With the above in mind, and for a clear need to ensure that any potential commercial or industrial noise impacts do not give rise to sleep disturbance in bedrooms, this assessment will ensure that the predicted rating level (specific sound level including any character corrections) does not exceed 30dB in bedrooms.

BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

Noise Criteria Limits

2.3.12 The scope of this Standard is the provision of recommendations for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

2.3.13 The Standard suggests suitable internal noise levels within different types of buildings, including dwellings, as shown in **Table 4**.

Table 4 - BS 8233:2014 Internal Target Noise Levels

Criterion	Typical Situation	Design $L_{Aeq,T}$ (dB)
Suitable resting/sleeping conditions	Living Room	35
	Bedroom*	30
*For a Reasonable standard in bedrooms at night, individual noise evens (measured with fast time weighting) should not exceed 45dB L_{max}		

2.3.14 BS 8233 goes on to recommend noise levels for gardens as follows:

'It is desirable that the external noise level does not exceed 50dB LAeq,T, with an upper guideline value of 55dB LAeq,T which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors might be warranted'.

2.3.15 BS 8233 goes on to say:

'In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited'.

Ventilation Requirements

2.3.16 Where a partially open window cannot be relied upon to provide an adequate level of façade sound insulation performance, it is necessary to consider alternative ventilation for habitable rooms. Section 8.4.5.4 within BS 8233 states:

'The Building Regulations' supporting documents on ventilation [48, 49, 50] recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used, and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice.

Alternatively, acoustic ventilation units (see 7.7.2 [of the Standard] below) are available for insertion in external walls. These can provide sound reduction comparable with double glazed windows. However,

ducted systems with intakes on the quiet side of the building might be required in very noisy situations, or where appearance rules out through-the-wall fans.'

2.3.17 Section 7.7.2 of the Standard states:

'NOTE 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.'

Design Manual for Roads & Bridges

2.3.18 DMRB LA111 'Noise and Vibration' describes methodology and guidance for the assessment road traffic noise in the UK. Guidance best reflects EIA methodology as applied to highways projects and assessment of noise impacts due to road traffic. It includes a method of the classification of magnitude of change, assessment of and determination of significance.

2.3.19 DMRB LA111 provides guidance for comparisons that should be made to assess the impact of changes in road traffic noise. The traffic noise change is based on noise levels associated with Do Minimum (that is, without the Proposed Development) and Do-something (that is, with the Proposed Development) and for the opening year and a design year that is usually 15 years later but can be a shorter interval where appropriate.

Table 5 – DMRB Short-term Thresholds for Road Traffic Noise

Magnitude of Change	Change in Noise Level, dB ($L_{Aeq,18hr}$)
Moderate	Greater than or equal to 5.0
Major	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	Less than 1.0
No change	0

Calculation of Road Traffic Noise

2.3.20 The Calculation of Road Traffic Noise (CRTN) provides procedures for predicting noise levels for a given flow of road traffic at sensitive receptors. These methodologies are used in the determination of entitlement under the Noise Insulation Regulations and for traffic noise change assessments undertaken in accordance with the DMRB assessment methodology.

3.0 Scope and Methodology

3.1 Local Authority Consultation

3.1.1 A consultation exercise was undertaken with the Manchester City Council on the 11th July to discuss noise monitoring locations and assessment methodology.

3.1.2 The following correspondence was submitted to the Environmental Health Officer (EHO) at Manchester City Council in July 2026:

> *We have been appointed by a client to undertake a Noise Impact Assessment for proposals including the development of a number of warehouse and office buildings located at Atlas Business Park off Simonsway in Wythenshawe, Manchester M22 5PR*
>
> *We will undertake the required noise surveys as follows:*
>
> *Background Sound Survey: A background sound survey will be completed on Site in the absence of any commercial sound over a full weekday and weekend period. The background sound survey will be completed for the dwellings off Simonsway and Shadowmoss Rd.*
>
> *The following assessments will be undertaken:*
>
> *Commercial Noise: An assessment will be completed for any proposed mechanical plant based on the criteria presented in BS4142:2014+A1:2019.*
>
> *We will advise on appropriate and reasonable noise mitigation measures, where required.*
>
> *If you have any comments, then please do advise at your earliest convenience.*

3.1.3 No response had been received at the time of this report.

3.2 Scope

3.2.1 The scope of the assessment has been determined in the following way:

- Analysis of the Site and the surrounding area was completed using available aerial photography in order to identify the location of the closest existing noise sensitive receptors to the Site;
- A Baseline Noise Survey has been undertaken to establish the existing background sound environment at the closest Noise Sensitive Receptors (NSRs); and
- Measured sound levels have informed and assessment in line with BS 4142:2014+A1:2019 whereby the rated level of noise is compared against the background sound level at the closest noise sensitive receptor to the Site.

3.3 Identification of Sensitive Receptors

3.3.1 Using online mapping services, the following sensitive receptors have been identified and subsequently assessed. The table below also states the time periods where each receptor is sensitive to noise.

3.3.2 The location of these receptors is shown in Figure 1.

Table 6 - Sensitivity of Receptors

ID	Receptor	Direction and Distance from Site	Sensitive Time Period
R1	Patchcroft Road	North	Garden Area Daytime / 1st floor window Night-Time
R2	Shadowmoss Road	West	Garden Area Daytime / 1st floor window Night-Time
R3	Cunningham Drive	East	Garden Area Daytime / 1st floor window Night-Time

3.4 Operational Noise

3.4.1 An assessment of operational sound impacts has been undertaken using guidance and methodologies set out in BS 4142. This methodology compares the rated sound level of the operating plant against the existing background sound levels to determine the level of impact. Calculated rating sound levels are compared against the existing background levels to determine the magnitude of impact,

3.4.2 **Table 7** below sets out the assessment criteria for the operational phase.

Table 7 - Operational Assessment Magnitude of Impact

Magnitude of Impact	Difference between rating level and background sound levels, dB
Significant Adverse Impact	+10
Adverse Impact	+5
Low Impact	<0

3.4.3 This assessment considers an $L_{Aeq,1hr}$ reference time for the daytime period which assumes that all of the fixed plant is operational during this period and for the night period considers $L_{Aeq,15min}$ reference time, also assuming continuous operation.

3.4.4 In order to assess the noise levels associated with the proposed development at the closest receptors, spreadsheet calculations have been undertaken.

3.4.5 To determine the impact of noise levels that could be produced from the proposed operations of the Site, the assessment has been undertaken using methods from BS 4142: 2014+A1:2019. The specific noise levels of the operational processes are assessed against the background noise level at the identified receptors.

3.4.6 This assessment considers a 1-hour reference time for the daytime period, and a 15 minute reference time period for night-time.

3.4.7 It is assumed that the main noise source associated with the developing will be that of HGV deliveries, which includes a pass by, reversing and unloading. The following table details the library data used to inform the assessment of the operational phase:

Table 8 – External Operations

Event	Measurement Distance, m	Measured dB $L_{Aeq,T}$
HGV Unloading	2.5	67.1
HGV pass by	2.5	68.1
HGV reversing	2.5	71.8

3.5 Plant Noise Emission Limits

3.5.1 Details of fixed plant associated with the Proposed Development are not available at this stage. Rating limit levels for fixed plant have been set at receptor locations such that the magnitude of impacts are Very Low or Negligible, as set out in Table 17.

3.6 Night-Time L_{AFmax} Event

3.6.1 Maximum noise events associated with deliveries during the night-time period attributable to doors shutting, clicks, and bangs are also considered within the assessment.

3.6.2 The following table details the LAFmax noise level associated with vehicle door slams as measured set out in Bayerisches Landesamt für Umwelt Parking Area Noise (2007):

Table 9 – Door Slam Source Noise Level

Event	Measurement Distance, m	Measured dB L_{AFmax}
Vehicle door slam	7.5	72.1

3.6.3 WHO Community Noise Guidelines recommend that individual noise events should not exceed 45dB LAFmax internally more than 10-15 times at night.

3.6.4 It is widely accepted that a partially open window will provide around 15dB noise attenuation, and therefore internal noise levels are predicted at the receptor locations.

4.0 Baseline Noise Survey

4.1 Measurement Locations

4.1.1 Measurements were undertaken at the following locations

Table 10 - Measurement Locations

Measurement Location	British National Grid Coordinates		Date and Time	Observations
	X	Y		
NMP1	53.371900	-2.246440	10:45 03/07/2026 to 11:15 06/07/2024	Sound climate dominated by vehicle movement son local roads as well as the distant M56. As well as intermittent Aircraft movements
NMP2	53.371300	-2.250170	11:00 03/07/2026 to 11:30 06/07/2024	

4.1.2 Measurement locations are shown in **Figure 1.**

4.2 Survey Equipment

4.2.1 The following noise monitoring equipment was used throughout the survey. Measurements were taken in general accordance with BS 7445-1:2003 'The Description and Measurement of Environmental Noise: Guide to quantities and procedures.

Table 11 – Noise Measurement Equipment

Measurement Location	Equipment	Model Type	Serial Number	Calibration Expiry Date
NMP1	Sound Level Meter	01dB Fusion	15676	12 April 2028
	Pre-amplifier	01dB PRE22	2343059	
	Microphone	GRAS 40CD	606283	
	Calibrator	CR:515	104057	12 April 2027
NMP2	Sound Level Meter	01dB Fusion	11755	28 June 2028
	Pre-amplifier	01dB PRE22	1707173	
	Microphone	GRAS 40CD	291693	
	Calibrator	CR:515	84086	9 July 2027

4.2.2 The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice. Calibration certificates for which are available on request.

4.3 Weather Conditions

4.3.1 Weather conditions during the survey were generally considered suitable to obtain representative baseline noise indices.

4.4 Survey Summary Results

4.4.1 The LAeq levels presented in the tables below are the logarithmic average of each measurement period. The LA90 and LA10 are the arithmetic average for each measurement period. The modal average LA90,1h and LA90,15min have also been calculated for the daytime and night-time periods respectively.

Table 12 – Background Survey Summary Results

Measurement Location	Period	Measured Levels, dB				
		$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A10,T}$	$L_{A90,T}$	Modal $L_{A90,T}$
NMP1	Daytime	59.7	75.7	58.5	47.5	46
	Night-time	56.7	70.8	53.4	42.6	44
NMP2	Daytime	56.6	74.0	58.0	45.8	44
	Night-time	54.2	70.5	53.1	43.3	42

4.4.2 The results of the measurements conducted during the survey presented in the table above. The main noise source identified during the site survey set up at both locations was that of the M56.

5.0 Assessment

5.1 Operational Noise

5.1.1 To provide a worst-case assessment the closest receptors to the Site are chosen, as identified in Table 1.

5.1.2 Table 13 &

5.1.3 **Table** 14 calculates the sound power levels for inclusion in the noise model for the vehicle movements operating externally. The sound power level has been calculated based on the reference periods in BS4142:2014+A1:2019 which is 1-hour for the daytime period and 15 minute for the night-time.

5.1.4 At the time of the completing the assessment, no traffic data was available to inform the assessment of HGV movement noise within the service yard. In order to represent a worst case assessment, the assessment considered that all the bays at each unit will be in use in any given 1-hour daytime and 15 minute night-time period.

Table 13 – Calculated Sound Power Level for External Operations - Daytime

Event	Measured dB $L_{Aeq,T}$	Measurement Distance, m	Calculated Sound Power Level, LwA (dB)	Number of Movements	On-time for B4142 Assessment (mins)	Reference Period in B4142 (mins)	Calculated Time-corrected Sound Power Level, LwA (dB)
HGV Unloading	67.1	2.5	79.1	1	45 (day)	60	77.8
HGV pass by	68.1	2.5	80.1	4	1 (day)	60	68.3
HGV reversing	71.8	2.5	83.8	4	1 (day)	60	72.0

Table 14 – Calculated Sound Power Level for External Operations -Night-Time

Event	Measured dB $L_{Aeq,T}$	Measurement Distance, m	Calculated Sound Power Level, LwA (dB)	Number of Movements	On-time for B4142 Assessment (mins)	Reference Period in B4142 (mins)	Calculated Time-corrected Sound Power Level, LwA (dB)
HGV Unloading	67.1	2.5	79.1	1	15 (night)	15	79.1
HGV pass by	68.1	2.5	80.1	4	1 (night)	15	74.3
HGV reversing	71.8	2.5	83.8	4	1 (night)	15	78.0

5.1.5 For the daytime and night-time scenario, it has been assumed that there will be 4 HGV movements per unit per assessment period. It is also assumed that all bays will be in use across the development in refence to the unloading activities.

5.1.6 In order to calculate an accurate overall specific sound pressure level at the closest residential receptors, a noise model has been built using CadnaA and the following inputs have been included in the model:

- Proposed Scheme Layout;
- Site elevations have been taken as existing using 1m DTM Lidar height data;
- A point sources have been used for the unloading activities at each of the bay areas;
- A line source has been used for the HGV pass by driving into the yard. A line sources have been used to represent a HGV reversing to the bay area of the Site;
- A ground absorption of 0.5 has been used. A reflection order of 2 has been used in all calculations; and
- Noise levels generated using ISO 9613-1 and ISO 9613-2 "Acoustics - Attenuation of sound during propagation outdoors" as incorporated into CadnaA software.

5.1.7 **Table 15** allocates character corrections to the various specific noise sources.

Table 15 - Operational Noise - Allocation of Character Corrections

Noise Source	Tonality Penalty dB	Impulsivity Penalty dB	Intermittency Penalty dB	Other sound characteristics Penalty dB
Site Operations	2	0	3	0
Total Overall Penalty	5			

5.1.8 **Table 16** completes the BS 4142 Assessment for both the daytime and night-time periods.

Table 16 - BS 4142 Assessment: Operational Site Noise

Receptor	Period	Specific Noise Level at Receptor, $L_{Aeq,T}$ (dB)	Total Acoustic Character Correction (dB)	Calculated Rating Level (dB)	Measured Modal Background Sound Level, $L_{A90,T}$ (dB)	Difference +/- (dB)
R1	Daytime	37.7	5	42.7	46	-3.3
	Night-time	38.9	5	43.9	44	-0.1
R2	Daytime	30.1	5	35.1	44	-8.9
	Night-time	33.5	5	38.5	42	-3.5
R3	Daytime	19.9	5	24.9	46	-21.1
	Night-time	23.5	5	28.5	44	-15.5

5.1.9 The assessment indicates that, during daytime periods, the rated level of sound will be below the estimated background sound level at sensitive receptors. Figure 3 shows the propagation of noise from the Site during daytime hours.

5.1.10 The assessment indicates that, during night-time periods, the rated level of sound will be below the estimated background sound level at sensitive receptors. Figure 4 shows the propagation of noise from the Site during night-time hours.

5.2 Plant Noise Emission Limits

5.2.1 The details of the fixed plant associated with the Site were not available at the time of assessment. Therefore, the assessment below determines plant noise limits that the development must not exceed at the NSRs to avoid adverse noise impacts.

5.2.2 The table below presents the rating limits at the NSRs for both daytime and night-time periods, inclusive of any acoustic character corrections.

Table 17 – Site Rating Noise Limits

Receptor	Period	Modal Background Sound Level, dB $L_{A90,T}$	Rating Noise Limits $L_{Ar,T}$, at Receptor
R1 & R3	Daytime	46	41
	Night-time	44	39
R2	Daytime	44	39
	Night-time	42	37

5.2.3 Provided the Rating Noise Level at the NSRs do not exceed levels shown in the table above, there would be no adverse impact.

5.2.4 To avoid adverse impacts at R1 & R3, the Site should not exceed 41dB LAr,1hour in the daytime and 39dB LAr,15min at night-time. For R2 the Site should not exceed 39dB LAr,1hour in the daytime and 37dB LAr,15min at night-time.

5.3 Night-Time L_{AFmax} Event

5.3.1 A typical LAFmax noise event is assumed to occur when the Site is operational and would typically be attributable to vehicle door slams. The assessment uses the LAFmax noise event level set out in **Table 19** and calculates the internal noise level from this. It has been assumed that all doors will be slammed shut simultaneously, with an HGV occupying each service bay.

Table 18 – Calculated Sound Power Level for External Operations -Nigh-Time – Maximun

Event	Measured dB $L_{Aeq,T}$	Measurement Distance, m	Calculated Sound Power Level, LwA (dB)
Car Door Slamming	72.1	7.5	88.9

5.3.2 **Table 19** calculates the internal noise level based on the LAFmax noise event level.

Table 19 - Highest Predicted L_{AFmax} Noise Level

Receptor	External L_{AFmax} noise event level dB	Attenuation for partially open window dB	WHO Internal noise level criteria L_{AFmax}	Calculated internal noise level (dB L_{AFmax})	Difference dB
R1	47.4	13	45	34.4	-10.6
R2	42.8	13	45	29.8	-15.2
R3	32.6	13	45	19.6	-25.4

5.3.3 The table above shows the highest predicted LAFmax at all receptors. It is shown that internal night-time criteria would not be exceeded, assuming a partially open window will provide -13dB attenuation.

5.3.4 Figure 5 shows the propagation of LAFmax noise from the Site.

5.4 Change in Network Road Traffic Noise Levels

5.4.1 The existing and predicted traffic flows on roads surrounding the Site have been provided by the project transport consultant.

5.4.2 Basic Noise Level (BNL) calculations have been undertaken for the without scheme (Do Minimum) and with Proposed Development (Do Something) scenarios. BNLs have not been corrected for any gradients, barriers, or road surface types.

5.4.3 The results of the change in Basic Noise Level (BNL) calculations are shown in **Table 20.**

Table 20 – Change in Basic Noise Level With & Without Development

Road	Basic Noise Level, LA10,18hr (dB)		Change in Noise Level (dB)
	Do Minimum	Do Something	
Simonsway (adj. Atlas Park)	65	65.7	+0.7
Simonsway (east of M56)	67.2	67.3	+0.1
Styal Rd (north of Simonsway)	64.5	64.5	0
Styal Rd (south of Simonsway)	65.8	65.8	0
Finney Lane	65.7	65.3	-0.4
A555 East of Styal Rd	70.8	70.8	0
Airport Relief Rd (East of Outwood Lane)	67.3	67.3	0
Airport Relief Rd (West of Outwood Lane)	71.3	71.3	0
M56 (North of Simonsway	76.7	76.7	0
M56 (North of Airport Relief Rd)	76.3	76.3	0
M56 (South of Airport Relief Rd)	76.5	76.5	0

6.0 Mitigation

6.1 Operational Site Noise

6.1.1 The previous section has indicated that noise mitigation measures are not required.

7.0 Summary and Conclusions

7.1 General

7.1.1 Lucion Delta-Simons Ltd ('Lucion') was instructed by Aviva Life and Pensions UK Limited (the 'Client') to prepare a Noise Impact Assessment to support an outline planning application for the development of a number of warehouse and office buildings located at Atlas Business Park off Simonsway in Wythenshawe, Manchester M22 5PR.

7.1.2 This assessment has been undertaken to identify the key noise sources associated with the proposal and which may have the potential to impact upon the closest sensitive residential dwellings. Accordingly, this assessment has been completed with due regard:

- National Planning Policy Framework (NPPF);
- Planning Policy Guidance (PPG); and
- BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'.

7.1.3 This assessment has been informed by a noise survey to quantify the existing background noise environment at the sensitive receptors.

7.2 Operational Site Noise

7.2.1 An indicative operational phase assessment has been undertaken and plant noise limits are also provided for any new proposed plant associated with the development.

7.2.2 The operational assessment results have shown that the rated level of noise, falls below the typical daytime and night-time background sound levels at the closest receptors and therefore no mitigation would be required.

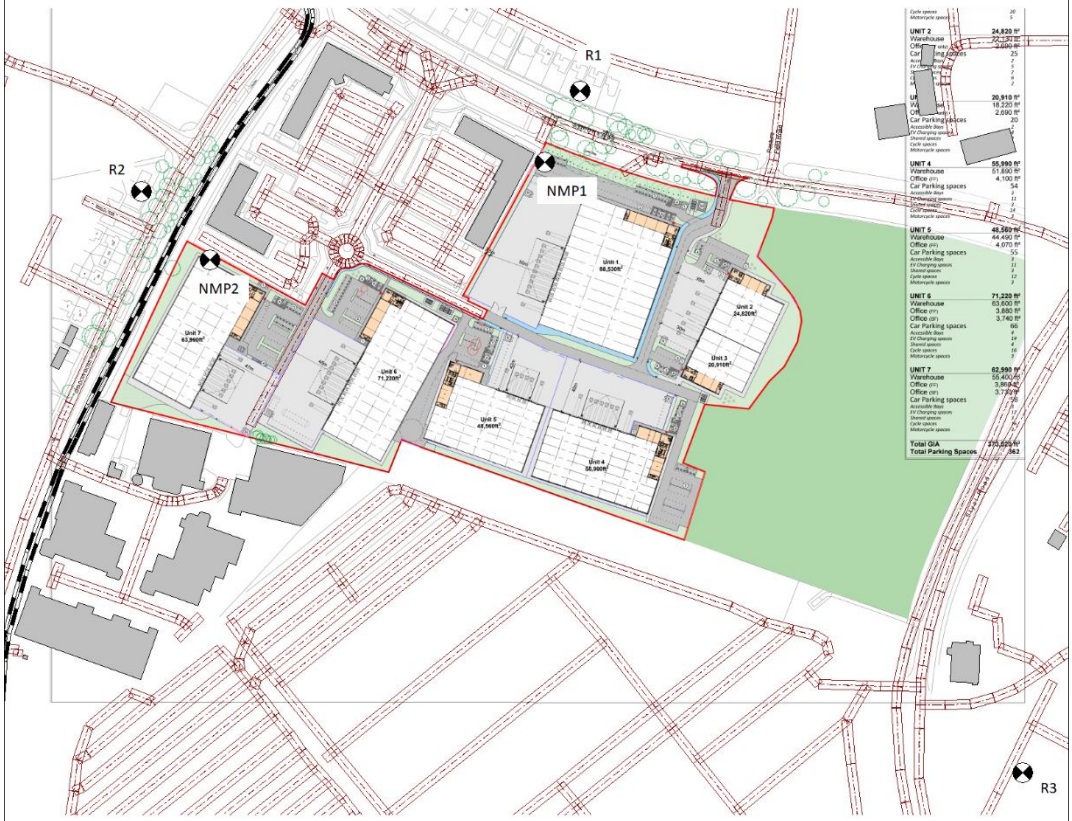
7.3 Fixed Plant Noise

7.3.1 This assessment has set noise limits for fixed plant items at the closest receptors. Provided the noise emission at receptor locations from fixed plant on the Site does not exceed the proposed limits, the impacts from fixed plant would be negligible.

7.4 Night-time L_{AFmax}

7.4.1 The assessment of the maximum noise level shows the highest predicted LAFmax at all receptors. It is shown that internal night-time criteria would not be exceeded, assuming a partially open window will provide -13dB attenuation.

Figure 1 – Site Location, Sensitive Receptor Locations, and Measurement Locations



Title : Site Location and Noise Measurement Positions	Figure 1	Built by: MP
	Date : 17/09/2026	Checked by: JG

Lucion
Protecting people and planet

Lucion

Protecting people and planet

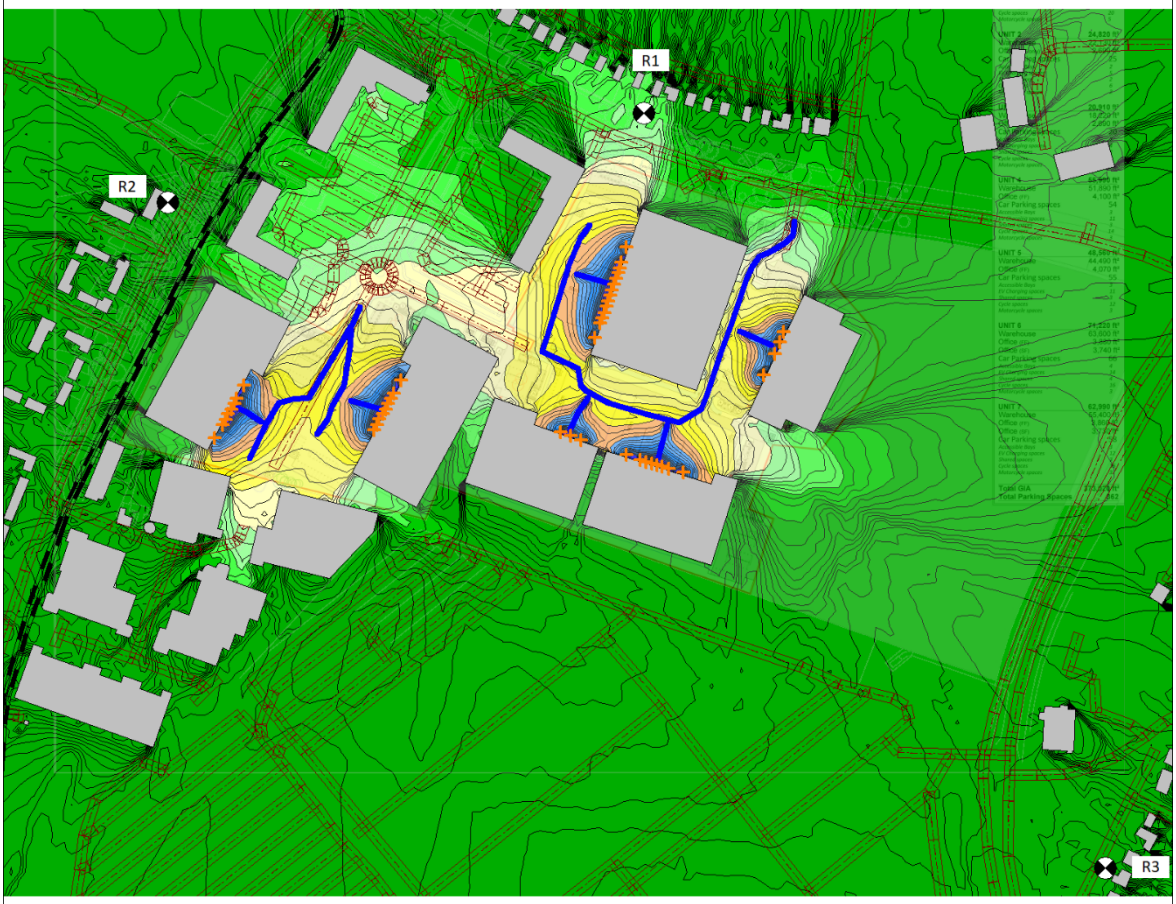
Figure 2 – Proposed Site Layout



Lucion

Protecting people and planet

Figure 3 – Noise Contour: Daytime

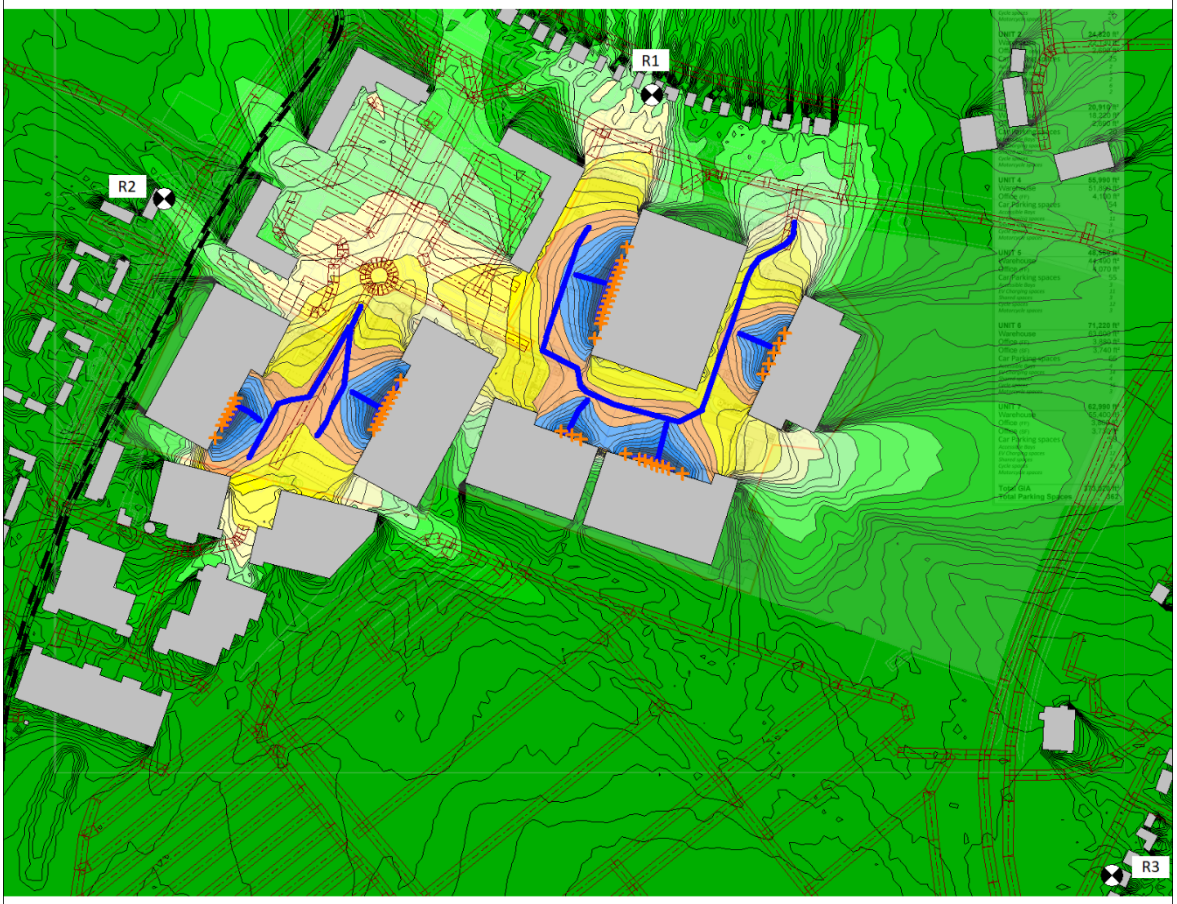


Noise Map Objects	Level LAeq 1hr in dB(A)		
Point Source	... < 31.0	Title : Daytime Grid Noise Map 1.5m above ground level Commercial Noise	Built by: MP
Line Source	31.0 <= ... < 34.0		Checked by: JG
Road	34.0 <= ... < 37.0		
Railway	37.0 <= ... < 40.0		
Building	40.0 <= ... < 43.0		
Receiver	43.0 <= ... < 46.0		
Calculation Area	46.0 <= ... < 49.0		
	49.0 <= ... < 52.0		
	52.0 <= ... < 55.0		
	55.0 <= ... < 58.0		
	58.0 <= ... < 61.0	Date : 17/09/2026	
	61.0 <= ... < 64.0		
	64.0 <= ...		

Lucion

Protecting people and planet

Figure 4 – Noise Contour: Night-time



Noise Map Objects

- Point Source
- Line Source
- Road
- Railway
- Building
- Receiver
- Calculation Area

Level LAeq 15min
in dB(A)

- ... < 31.0
- 31.0 <= ... < 34.0
- 34.0 <= ... < 37.0
- 37.0 <= ... < 40.0
- 40.0 <= ... < 43.0
- 43.0 <= ... < 46.0
- 46.0 <= ... < 49.0
- 49.0 <= ... < 52.0
- 52.0 <= ... < 55.0
- 55.0 <= ... < 58.0
- 58.0 <= ... < 61.0
- 61.0 <= ... < 64.0
- 64.0 <= ...

Title :
Night-Time Grid Noise Map
4.5m above ground level
Commercial Noise

Date : 17/09/2026

Built by: MP

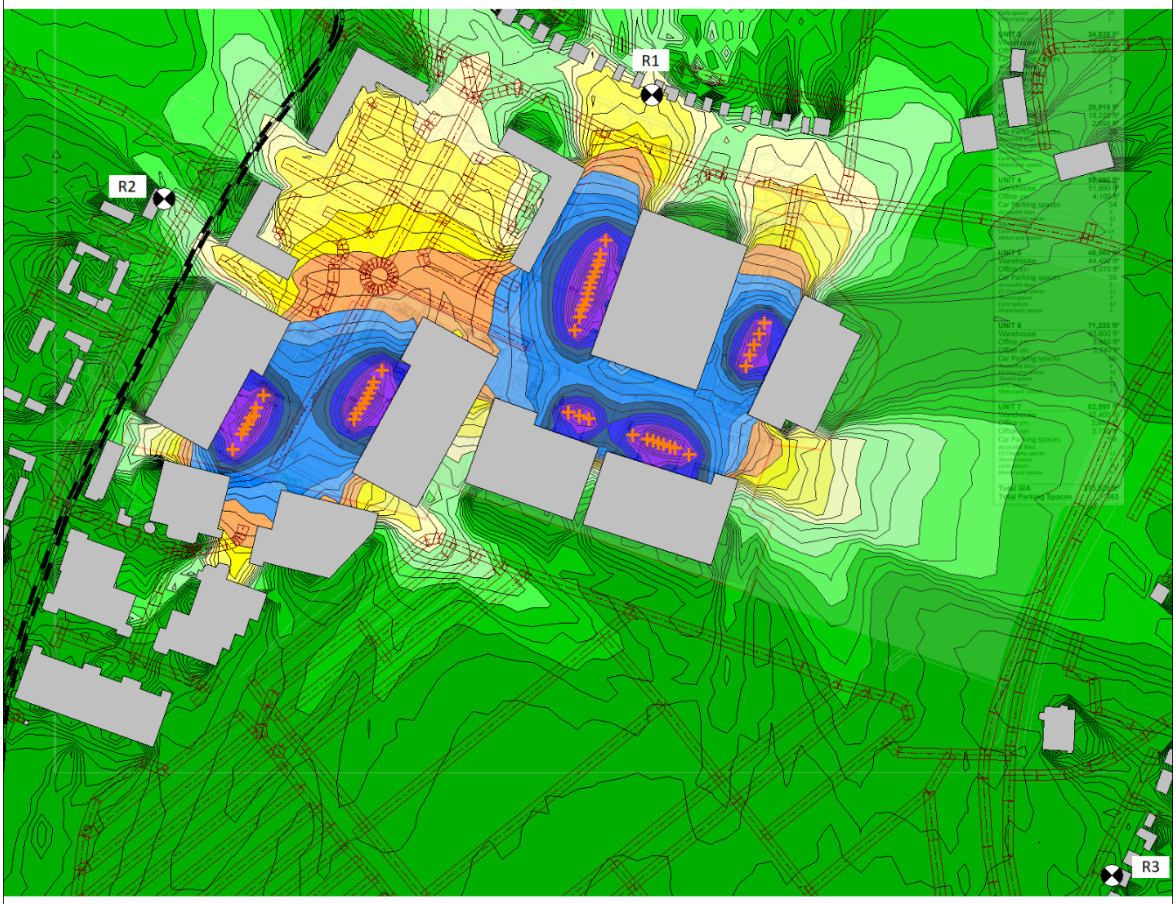
Checked by: JG

Lucion
Protecting people and planet

Lucion

Protecting people and planet

Figure 5 – Noise Contour: L_{AFmax}



Noise Map Objects

- Point Source
- Line Source
- Road
- Railway
- Building
- Receiver
- Calculation Area

Level LAF Max
in dB(A)

- ... < 37.5
- 37.5 <= ... < 40.0
- 40.0 <= ... < 42.5
- 42.5 <= ... < 45.0
- 45.0 <= ... < 47.5
- 47.5 <= ... < 50.0
- 50.0 <= ... < 52.5
- 52.5 <= ... < 55.0
- 55.0 <= ... < 57.5
- 57.5 <= ... < 60.0
- 60.0 <= ... < 62.5
- 62.5 <= ... < 65.0
- 65.0 <= ...

Title :
Night-Time Grid Noise Map
4.5m above ground level
Maximum Noise Levels

Date : 17/09/2026

Built by: MP

Checked by: JG

Lucion
Protecting people and planet

Lucion

Protecting people and planet

Appendix A – Limitations

Limitations

The recommendations contained in this Report represent Lucion's professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Lucion does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Lucion obtained, reviewed and evaluated information in preparing this Report from the Client and others. Lucion's conclusions, opinions and recommendations has been determined using this information. Lucion does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Lucion has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Lucion for the sole and exclusive use of the Client and for the specific purpose for which Lucion was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Lucion, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Lucion does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Lucion from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Appendix B – Glossary

Glossary

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the following table.

Table B1 - Typical Sound Pressure Levels

Sound Pressure Level (dB)	Location/Example
0	Threshold of hearing
20 - 30	Quiet bedroom at night
30 - 40	Living room during the day
40 - 50	Typical office
50 - 60	Inside a car
60 - 70	Typical high street
70 - 90	Inside factory
100 - 110	Burglar alarm at 1 m away
110 - 130	Jet aircraft on take off
140	Threshold of pain

Table B2 - Terminology

Descriptor	Explanation
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ($2x10^{-5}$Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq, T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L_{10} & L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Fast	A time weighting used in the root mean square section of a sound level meter with a 125 millisecond time constant.
Slow	A time weighting used in the root mean square section of a sound level meter with a 1000 millisecond time constant.

Lucion

Protecting people and planet

Appendix C – Background Sound Level

Table C 1 – Background Sound Level at NMP1

Period Start	LAeq, 15min (dB)	L90, 15min
03/07/2026 10:45	59.1	46
03/07/2026 11:00	58.2	46
03/07/2026 11:15	59.6	47
03/07/2026 11:30	62.1	46
03/07/2026 11:45	57.8	46
03/07/2026 12:00	61.2	46
03/07/2026 12:15	59.9	47
03/07/2026 12:30	60.5	47
03/07/2026 12:45	57.7	46
03/07/2026 13:00	59.2	48
03/07/2026 13:15	58.2	47
03/07/2026 13:30	61	48
03/07/2026 13:45	61	47
03/07/2026 14:00	61.5	48
03/07/2026 14:15	61.5	48
03/07/2026 14:30	60.9	49
03/07/2026 14:45	61.2	47
03/07/2026 15:00	56.6	46
03/07/2026 15:15	59.5	47
03/07/2026 15:30	56.8	48
03/07/2026 15:45	59.7	47
03/07/2026 16:00	61.3	48
03/07/2026 16:15	64	49
03/07/2026 16:30	61.2	48
03/07/2026 16:45	55.3	46

03/07/2026 17:00	57.3	47
03/07/2026 17:15	59.7	47
03/07/2026 17:30	59.1	46
03/07/2026 17:45	62.7	46
03/07/2026 18:00	60.3	47
03/07/2026 18:15	58.4	47
03/07/2026 18:30	55.3	46
03/07/2026 18:45	60	49
03/07/2026 19:00	60.4	48
03/07/2026 19:15	62.1	51
03/07/2026 19:30	60.5	49
03/07/2026 19:45	56	48
03/07/2026 20:00	59.3	48
03/07/2026 20:15	54.3	51
03/07/2026 20:30	55.2	49
03/07/2026 20:45	58.3	49
03/07/2026 21:00	54.7	47
03/07/2026 21:15	55	46
03/07/2026 21:30	59.9	46
03/07/2026 21:45	55.4	45
03/07/2026 22:00	58.3	44
03/07/2026 22:15	58.9	43
03/07/2026 22:30	57	42
03/07/2026 22:45	58.8	46
03/07/2026 23:00	57.1	43
03/07/2026 23:15	60.4	44
03/07/2026 23:30	58.1	43
03/07/2026 23:45	58.8	45

04/07/2026 00:00	58.3	46
04/07/2026 00:15	57.7	44
04/07/2026 00:30	60.2	44
04/07/2026 00:45	60.2	45
04/07/2026 01:00	53.9	43
04/07/2026 01:15	50.7	43
04/07/2026 01:30	58.3	44
04/07/2026 01:45	58	43
04/07/2026 02:00	58.1	44
04/07/2026 02:15	57.9	44
04/07/2026 02:30	58.9	44
04/07/2026 02:45	56.4	41
04/07/2026 03:00	56.3	39
04/07/2026 03:15	54.9	38
04/07/2026 03:30	55.4	40
04/07/2026 03:45	44.1	40
04/07/2026 04:00	43.3	39
04/07/2026 04:15	52.3	39
04/07/2026 04:30	43	39
04/07/2026 04:45	42.9	39
04/07/2026 05:00	51	40
04/07/2026 05:15	41.8	39
04/07/2026 05:30	44.7	40
04/07/2026 05:45	54.7	40
04/07/2026 06:00	46.6	42
04/07/2026 06:15	58.5	45
04/07/2026 06:30	47.5	44
04/07/2026 06:45	57.8	44

04/07/2026 07:00	56.2	43
04/07/2026 07:15	57.7	44
04/07/2026 07:30	58	43
04/07/2026 07:45	60.7	45
04/07/2026 08:00	58.7	45
04/07/2026 08:15	58.9	46
04/07/2026 08:30	59.3	48
04/07/2026 08:45	56.5	48
04/07/2026 09:00	61.7	48
04/07/2026 09:15	59.7	48
04/07/2026 09:30	60.8	48
04/07/2026 09:45	61.9	50
04/07/2026 10:00	57.9	47
04/07/2026 10:15	59.4	48
04/07/2026 10:30	59.9	47
04/07/2026 10:45	60.1	48
04/07/2026 11:00	59.1	46
04/07/2026 11:15	59.2	49
04/07/2026 11:30	56.4	48
04/07/2026 11:45	59.8	48
04/07/2026 12:00	62.4	51
04/07/2026 12:15	61	50
04/07/2026 12:30	58.1	49
04/07/2026 12:45	61.8	51
04/07/2026 13:00	63.1	51
04/07/2026 13:15	57.9	49
04/07/2026 13:30	60.7	51
04/07/2026 13:45	61.7	51

04/07/2026 14:00	61.2	50
04/07/2026 14:15	61.6	49
04/07/2026 14:30	61.3	49
04/07/2026 14:45	61.7	51
04/07/2026 15:00	58.8	48
04/07/2026 15:15	57.2	51
04/07/2026 15:30	61.3	50
04/07/2026 15:45	60.3	52
04/07/2026 16:00	58.4	50
04/07/2026 16:15	60	51
04/07/2026 16:30	61.7	54
04/07/2026 16:45	62.8	52
04/07/2026 17:00	60.7	51
04/07/2026 17:15	60	49
04/07/2026 17:30	57.2	49
04/07/2026 17:45	60.9	51
04/07/2026 18:00	58.7	49
04/07/2026 18:15	59.2	51
04/07/2026 18:30	61.2	51
04/07/2026 18:45	61.9	52
04/07/2026 19:00	61.8	51
04/07/2026 19:15	61.4	52
04/07/2026 19:30	56.9	50
04/07/2026 19:45	59.9	50
04/07/2026 20:00	56.9	50
04/07/2026 20:15	56.8	50
04/07/2026 20:30	58.4	48
04/07/2026 20:45	50.3	45

04/07/2026 21:00	60.6	48
04/07/2026 21:15	59.9	47
04/07/2026 21:30	57.2	49
04/07/2026 21:45	56.6	44
04/07/2026 22:00	57.4	44
04/07/2026 22:15	56.4	44
04/07/2026 22:30	60	45
04/07/2026 22:45	57.5	44
04/07/2026 23:00	58.3	44
04/07/2026 23:15	59.1	43
04/07/2026 23:30	61.2	46
04/07/2026 23:45	55.4	41
05/07/2026 00:00	55.8	41
05/07/2026 00:15	60.8	43
05/07/2026 00:30	54.7	41
05/07/2026 00:45	57.8	42
05/07/2026 01:00	56.9	41
05/07/2026 01:15	58.7	40
05/07/2026 01:30	59	42
05/07/2026 01:45	59.2	43
05/07/2026 02:00	61.2	41
05/07/2026 02:15	59.1	39
05/07/2026 02:30	52.9	39
05/07/2026 02:45	59.7	41
05/07/2026 03:00	54.9	39
05/07/2026 03:15	57.7	39
05/07/2026 03:30	58.4	40
05/07/2026 03:45	45	40

05/07/2026 04:00	53.6	41
05/07/2026 04:15	56.7	40
05/07/2026 04:30	51.7	40
05/07/2026 04:45	44.9	40
05/07/2026 05:00	47.2	40
05/07/2026 05:15	45.5	40
05/07/2026 05:30	53.7	43
05/07/2026 05:45	53.3	43
05/07/2026 06:00	58.3	46
05/07/2026 06:15	54.3	51
05/07/2026 06:30	57.5	51
05/07/2026 06:45	54.2	48
05/07/2026 07:00	61.9	52
05/07/2026 07:15	60.2	49
05/07/2026 07:30	60.3	50
05/07/2026 07:45	61.2	51
05/07/2026 08:00	62.1	52
05/07/2026 08:15	60.1	52
05/07/2026 08:30	60.8	52
05/07/2026 08:45	59.1	52
05/07/2026 09:00	56.3	52
05/07/2026 09:15	57.8	51
05/07/2026 09:30	61.5	52
05/07/2026 09:45	60.8	52
05/07/2026 10:00	59.7	51
05/07/2026 10:15	58.6	46
05/07/2026 10:30	58.8	48
05/07/2026 10:45	59.6	48

05/07/2026 11:00	56	47
05/07/2026 11:15	56	48
05/07/2026 11:30	57.8	47
05/07/2026 11:45	59	47
05/07/2026 12:00	61.6	49
05/07/2026 12:15	61.1	48
05/07/2026 12:30	63.7	49
05/07/2026 12:45	61.1	47
05/07/2026 13:00	60.7	47
05/07/2026 13:15	60.8	46
05/07/2026 13:30	61.8	46
05/07/2026 13:45	60.3	46
05/07/2026 14:00	60.2	45
05/07/2026 14:15	59.2	45
05/07/2026 14:30	59.4	45
05/07/2026 14:45	58.6	48
05/07/2026 15:00	61.9	49
05/07/2026 15:15	58.2	48
05/07/2026 15:30	59.1	47
05/07/2026 15:45	60	47
05/07/2026 16:00	59.7	46
05/07/2026 16:15	60.6	45
05/07/2026 16:30	60.4	46
05/07/2026 16:45	60.8	45
05/07/2026 17:00	59.3	46
05/07/2026 17:15	61.6	44
05/07/2026 17:30	60.6	45
05/07/2026 17:45	59	46

05/07/2026 18:00	59.4	46
05/07/2026 18:15	59.9	46
05/07/2026 18:30	59	44
05/07/2026 18:45	58	46
05/07/2026 19:00	59.8	49
05/07/2026 19:15	61.5	49
05/07/2026 19:30	61	48
05/07/2026 19:45	59.2	46
05/07/2026 20:00	58.9	46
05/07/2026 20:15	55.2	42
05/07/2026 20:30	58.4	43
05/07/2026 20:45	58.7	44
05/07/2026 21:00	57.4	44
05/07/2026 21:15	55.5	45
05/07/2026 21:30	59.9	43
05/07/2026 21:45	57.6	43
05/07/2026 22:00	57.6	41
05/07/2026 22:15	54.6	43
05/07/2026 22:30	58.7	43
05/07/2026 22:45	55.3	41
05/07/2026 23:00	45.7	42
05/07/2026 23:15	57.8	43
05/07/2026 23:30	60.6	44
05/07/2026 23:45	61.1	45
06/07/2026 00:00	58.8	44
06/07/2026 00:15	54.6	41
06/07/2026 00:30	58.4	41
06/07/2026 00:45	59.1	43

06/07/2026 01:00	56.9	40
06/07/2026 01:15	55.2	42
06/07/2026 01:30	44	40
06/07/2026 01:45	60.4	42
06/07/2026 02:00	58.5	41
06/07/2026 02:15	55.2	38
06/07/2026 02:30	55.1	40
06/07/2026 02:45	58.5	42
06/07/2026 03:00	55.3	41
06/07/2026 03:15	52.7	44
06/07/2026 03:30	53.9	43
06/07/2026 03:45	44.8	42
06/07/2026 04:00	51.4	43
06/07/2026 04:15	53.1	44
06/07/2026 04:30	49.3	44
06/07/2026 04:45	52.6	44
06/07/2026 05:00	54.7	45
06/07/2026 05:15	52.3	45
06/07/2026 05:30	47.5	45
06/07/2026 05:45	52.1	47
06/07/2026 06:00	57.9	52
06/07/2026 06:15	60.9	50
06/07/2026 06:30	58.9	49
06/07/2026 06:45	58	49
06/07/2026 07:00	55.9	50
06/07/2026 07:15	60.2	51
06/07/2026 07:30	59.4	50
06/07/2026 07:45	59.1	49

06/07/2026 08:00	60.1	48
06/07/2026 08:15	57.5	48
06/07/2026 08:30	58.7	48
06/07/2026 08:45	54.9	47
06/07/2026 09:00	56.1	46
06/07/2026 09:15	61.2	46
06/07/2026 09:30	59.5	47
06/07/2026 09:45	59.3	45
06/07/2026 10:00	57.1	46
06/07/2026 10:15	56.3	46
06/07/2026 10:30	57.8	45
06/07/2026 10:45	54.5	46
06/07/2026 11:00	57.6	46

Table C 2 – Background Sound Level at NMP2

Period Start	LAeq, 15min (dB)	L90, 15min
03/07/2026 11:00	55.5	43
03/07/2026 11:15	57.4	44
03/07/2026 11:30	59.1	45
03/07/2026 11:45	55.1	44
03/07/2026 12:00	58.5	45
03/07/2026 12:15	57.8	46
03/07/2026 12:30	57.2	44
03/07/2026 12:45	55.2	44
03/07/2026 13:00	56	45
03/07/2026 13:15	55	45
03/07/2026 13:30	58	46
03/07/2026 13:45	57.9	45
03/07/2026 14:00	58.2	46
03/07/2026 14:15	58	47
03/07/2026 14:30	58.3	46
03/07/2026 14:45	57.5	45
03/07/2026 15:00	53.3	44
03/07/2026 15:15	55.4	46
03/07/2026 15:30	54.2	46
03/07/2026 15:45	57	45
03/07/2026 16:00	57.3	45
03/07/2026 16:15	60.9	46
03/07/2026 16:30	58.2	45
03/07/2026 16:45	53	44
03/07/2026 17:00	55.3	44
03/07/2026 17:15	58.1	44

03/07/2026 17:30	55.7	44
03/07/2026 17:45	60.7	44
03/07/2026 18:00	57.4	46
03/07/2026 18:15	56.1	46
03/07/2026 18:30	53.8	45
03/07/2026 18:45	57	46
03/07/2026 19:00	57.3	46
03/07/2026 19:15	58.5	47
03/07/2026 19:30	57.1	46
03/07/2026 19:45	53.6	46
03/07/2026 20:00	56.9	46
03/07/2026 20:15	54.4	49
03/07/2026 20:30	53.9	45
03/07/2026 20:45	55.5	46
03/07/2026 21:00	54.1	43
03/07/2026 21:15	52.3	42
03/07/2026 21:30	56.4	45
03/07/2026 21:45	54.9	43
03/07/2026 22:00	55	41
03/07/2026 22:15	55.8	42
03/07/2026 22:30	54.7	41
03/07/2026 22:45	55.8	43
03/07/2026 23:00	54.2	42
03/07/2026 23:15	57.4	44
03/07/2026 23:30	55.2	42
03/07/2026 23:45	56.1	43
04/07/2026 00:00	54.1	41
04/07/2026 00:15	55.2	42

04/07/2026 00:30	57.3	43
04/07/2026 00:45	56.9	42
04/07/2026 01:00	52.3	40
04/07/2026 01:15	49.8	40
04/07/2026 01:30	54.5	41
04/07/2026 01:45	54	40
04/07/2026 02:00	54	42
04/07/2026 02:15	55.3	41
04/07/2026 02:30	55.5	43
04/07/2026 02:45	52.1	41
04/07/2026 03:00	52.7	40
04/07/2026 03:15	51.3	41
04/07/2026 03:30	57.1	41
04/07/2026 03:45	50.5	42
04/07/2026 04:00	56.3	42
04/07/2026 04:15	53	42
04/07/2026 04:30	43	41
04/07/2026 04:45	44.2	41
04/07/2026 05:00	48.9	43
04/07/2026 05:15	44	42
04/07/2026 05:30	46.7	42
04/07/2026 05:45	53.8	43
04/07/2026 06:00	50	45
04/07/2026 06:15	56.7	47
04/07/2026 06:30	50.4	47
04/07/2026 06:45	55.1	45
04/07/2026 07:00	53.4	43
04/07/2026 07:15	54.9	44

04/07/2026 07:30	55.1	44
04/07/2026 07:45	57.1	46
04/07/2026 08:00	55.8	47
04/07/2026 08:15	56.1	46
04/07/2026 08:30	56	47
04/07/2026 08:45	55	47
04/07/2026 09:00	57.7	47
04/07/2026 09:15	56.7	46
04/07/2026 09:30	56.6	46
04/07/2026 09:45	58	47
04/07/2026 10:00	52.3	46
04/07/2026 10:15	56.4	46
04/07/2026 10:30	56.5	45
04/07/2026 10:45	56.4	46
04/07/2026 11:00	55.9	46
04/07/2026 11:15	54.7	47
04/07/2026 11:30	53.3	47
04/07/2026 11:45	56	47
04/07/2026 12:00	58.5	49
04/07/2026 12:15	57	50
04/07/2026 12:30	54.8	48
04/07/2026 12:45	58.1	49
04/07/2026 13:00	58.1	49
04/07/2026 13:15	55.3	48
04/07/2026 13:30	56.3	48
04/07/2026 13:45	56.5	48
04/07/2026 14:00	57.1	47
04/07/2026 14:15	57.8	47

04/07/2026 14:30	57.5	47
04/07/2026 14:45	57.7	48
04/07/2026 15:00	55.5	47
04/07/2026 15:15	54	47
04/07/2026 15:30	57.5	48
04/07/2026 15:45	57.7	50
04/07/2026 16:00	54.7	47
04/07/2026 16:15	57.8	50
04/07/2026 16:30	59.5	53
04/07/2026 16:45	60.3	52
04/07/2026 17:00	57.9	50
04/07/2026 17:15	57.7	48
04/07/2026 17:30	55.6	48
04/07/2026 17:45	58.5	50
04/07/2026 18:00	56.9	48
04/07/2026 18:15	56.3	49
04/07/2026 18:30	58.7	51
04/07/2026 18:45	59.3	51
04/07/2026 19:00	58.8	51
04/07/2026 19:15	58.1	52
04/07/2026 19:30	55.4	49
04/07/2026 19:45	57.9	50
04/07/2026 20:00	55.1	48
04/07/2026 20:15	55.9	49
04/07/2026 20:30	55.2	45
04/07/2026 20:45	49.7	44
04/07/2026 21:00	57.3	47
04/07/2026 21:15	56.7	47

04/07/2026 21:30	56.3	48
04/07/2026 21:45	54.3	44
04/07/2026 22:00	54.5	43
04/07/2026 22:15	53.2	44
04/07/2026 22:30	57	45
04/07/2026 22:45	54.4	43
04/07/2026 23:00	56.2	45
04/07/2026 23:15	56	43
04/07/2026 23:30	57.8	46
04/07/2026 23:45	52.9	42
05/07/2026 00:00	53	41
05/07/2026 00:15	57.5	42
05/07/2026 00:30	52.2	42
05/07/2026 00:45	55.1	42
05/07/2026 01:00	54.7	42
05/07/2026 01:15	57.7	42
05/07/2026 01:30	56.3	44
05/07/2026 01:45	54.7	42
05/07/2026 02:00	56.8	41
05/07/2026 02:15	55	41
05/07/2026 02:30	49.3	40
05/07/2026 02:45	56.2	42
05/07/2026 03:00	49.4	40
05/07/2026 03:15	54	41
05/07/2026 03:30	54.6	42
05/07/2026 03:45	43.5	41
05/07/2026 04:00	51.4	42
05/07/2026 04:15	49.6	41

05/07/2026 04:30	43.5	41
05/07/2026 04:45	43.8	42
05/07/2026 05:00	44.1	42
05/07/2026 05:15	45	43
05/07/2026 05:30	50.7	44
05/07/2026 05:45	53.5	45
05/07/2026 06:00	56.7	47
05/07/2026 06:15	54.9	52
05/07/2026 06:30	56.3	51
05/07/2026 06:45	55.6	47
05/07/2026 07:00	57.9	49
05/07/2026 07:15	57.2	49
05/07/2026 07:30	57.4	50
05/07/2026 07:45	59.3	50
05/07/2026 08:00	59	52
05/07/2026 08:15	57.7	51
05/07/2026 08:30	57.9	52
05/07/2026 08:45	56.7	51
05/07/2026 09:00	55.1	50
05/07/2026 09:15	55.3	50
05/07/2026 09:30	59	52
05/07/2026 09:45	57.8	52
05/07/2026 10:00	56.4	50
05/07/2026 10:15	54.8	45
05/07/2026 10:30	56	45
05/07/2026 10:45	56.6	44
05/07/2026 11:00	52.8	44
05/07/2026 11:15	51.2	44

05/07/2026 11:30	54.2	44
05/07/2026 11:45	55.1	45
05/07/2026 12:00	57.6	46
05/07/2026 12:15	57.2	44
05/07/2026 12:30	60.7	46
05/07/2026 12:45	58.2	42
05/07/2026 13:00	57.1	43
05/07/2026 13:15	57.2	44
05/07/2026 13:30	58.5	43
05/07/2026 13:45	57.1	43
05/07/2026 14:00	56.7	42
05/07/2026 14:15	55.1	43
05/07/2026 14:30	55.4	43
05/07/2026 14:45	55.4	44
05/07/2026 15:00	58.2	46
05/07/2026 15:15	54.6	45
05/07/2026 15:30	55.1	44
05/07/2026 15:45	55.9	44
05/07/2026 16:00	56.3	44
05/07/2026 16:15	56.7	43
05/07/2026 16:30	55.5	42
05/07/2026 16:45	56.9	43
05/07/2026 17:00	56.3	43
05/07/2026 17:15	58.1	43
05/07/2026 17:30	56.6	43
05/07/2026 17:45	56.4	43
05/07/2026 18:00	56.2	44
05/07/2026 18:15	56.1	44

05/07/2026 18:30	55.5	42
05/07/2026 18:45	54.6	44
05/07/2026 19:00	56.6	46
05/07/2026 19:15	58.4	48
05/07/2026 19:30	58.1	46
05/07/2026 19:45	56.2	44
05/07/2026 20:00	55.8	43
05/07/2026 20:15	51.8	42
05/07/2026 20:30	55.4	42
05/07/2026 20:45	54.8	40
05/07/2026 21:00	54.7	43
05/07/2026 21:15	53.4	43
05/07/2026 21:30	56.4	43
05/07/2026 21:45	55.5	41
05/07/2026 22:00	54.7	41
05/07/2026 22:15	52.6	43
05/07/2026 22:30	56	43
05/07/2026 22:45	55.2	43
05/07/2026 23:00	49.2	43
05/07/2026 23:15	55.2	44
05/07/2026 23:30	57.5	45
05/07/2026 23:45	58.3	47
06/07/2026 00:00	55.9	44
06/07/2026 00:15	52.1	43
06/07/2026 00:30	55.1	43
06/07/2026 00:45	56.4	44
06/07/2026 01:00	53.5	42
06/07/2026 01:15	51.9	42

06/07/2026 01:30	43.2	41
06/07/2026 01:45	56.9	43
06/07/2026 02:00	55.2	43
06/07/2026 02:15	52.1	40
06/07/2026 02:30	52.1	41
06/07/2026 02:45	55.6	43
06/07/2026 03:00	52.2	41
06/07/2026 03:15	50.3	43
06/07/2026 03:30	50.7	43
06/07/2026 03:45	45.4	43
06/07/2026 04:00	49.9	44
06/07/2026 04:15	50.6	45
06/07/2026 04:30	46.4	45
06/07/2026 04:45	51.1	46
06/07/2026 05:00	52.6	47
06/07/2026 05:15	52.9	47
06/07/2026 05:30	50	47
06/07/2026 05:45	53.1	48
06/07/2026 06:00	58.7	53
06/07/2026 06:15	58.6	52
06/07/2026 06:30	57.1	51
06/07/2026 06:45	56.1	51
06/07/2026 07:00	55.9	52
06/07/2026 07:15	58.1	52
06/07/2026 07:30	56.8	50
06/07/2026 07:45	56.7	48
06/07/2026 08:00	57	47
06/07/2026 08:15	54.9	47

06/07/2026 08:30	55.8	46
06/07/2026 08:45	52.3	44
06/07/2026 09:00	53.2	44
06/07/2026 09:15	57.7	45
06/07/2026 09:30	56.4	45
06/07/2026 09:45	56.5	45
06/07/2026 10:00	54.7	44
06/07/2026 10:15	52.8	45
06/07/2026 10:30	54.7	45
06/07/2026 10:45	51.8	45
06/07/2026 11:00	54.8	44
06/07/2026 11:15	57.6	46