



Azymuth Acoustics UK

Professional Acoustic Services

Approved by: Matthew Gibson
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Noise Impact Assessment Report

Ref: AA0239

Traveller Site

Every Street

Bury

BL9 5BL

For

Bury Council

Town Hall

Knowsley Street

Bury

Lancashire

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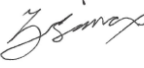
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1.0 Introduction

Azymuth Acoustics UK is appointed by Bury Council to provide a noise impact assessment for a traveller site located at Every Street, Bury. The development consists of new build facilities and provisions for mobile homes across 12 plots.

The site is bounded by a waste recycling centre to the north, and a cement factory to the northeast. Every Street follows the perimeter of the site to the east and north. Various industrial units are located to the south and west of site.

This report provides information relating to potential noise levels affecting the site as required by Bury Council to support the detailed planning application. In particular, the report sets out the following details:

- The results of a baseline noise survey undertaken at the proposed development site.
- The appropriate assessment criteria and guidance relating to noise in the environment as associated with this kind of development.
- An assessment of the appropriate level of protection against noise that should be provided as part of the development.

On basis of the information provided above, and to provide an appropriate noise impact assessment, Azymuth Acoustics UK will establish a robust estimation of baseline conditions with use of on-site baseline measurements, with additional mitigation for a potential increase in noise levels following the pandemic social distancing measures.

2.0 Baseline Noise Survey

2.1 Measurement Procedures

The instrumentation used for the noise impact assessment consisted of a SvanTek 959 type 1 precision sound level meter. The equipment was calibrated before and after the noise measurements. The sound level meters measured A-weighted (fast response) noise levels as well as octave bands noise levels for all measurement records.

The long-term survey was undertaken between 15:20hrs on Wednesday 25th August 2021, and 09:20 on Thursday 26th August 2021. Additional attended measurements of Every Street were undertaken between 13:35 and 14:25 on Friday 20th August 2021.

Weather conditions during the survey time (including daytime and night-time) were dry, wind speeds remained below 5 m/s throughout the survey.

The measurement locations on the site are as follows:

- Position F1: Unattended measurements
- Position A1: Attended measurements

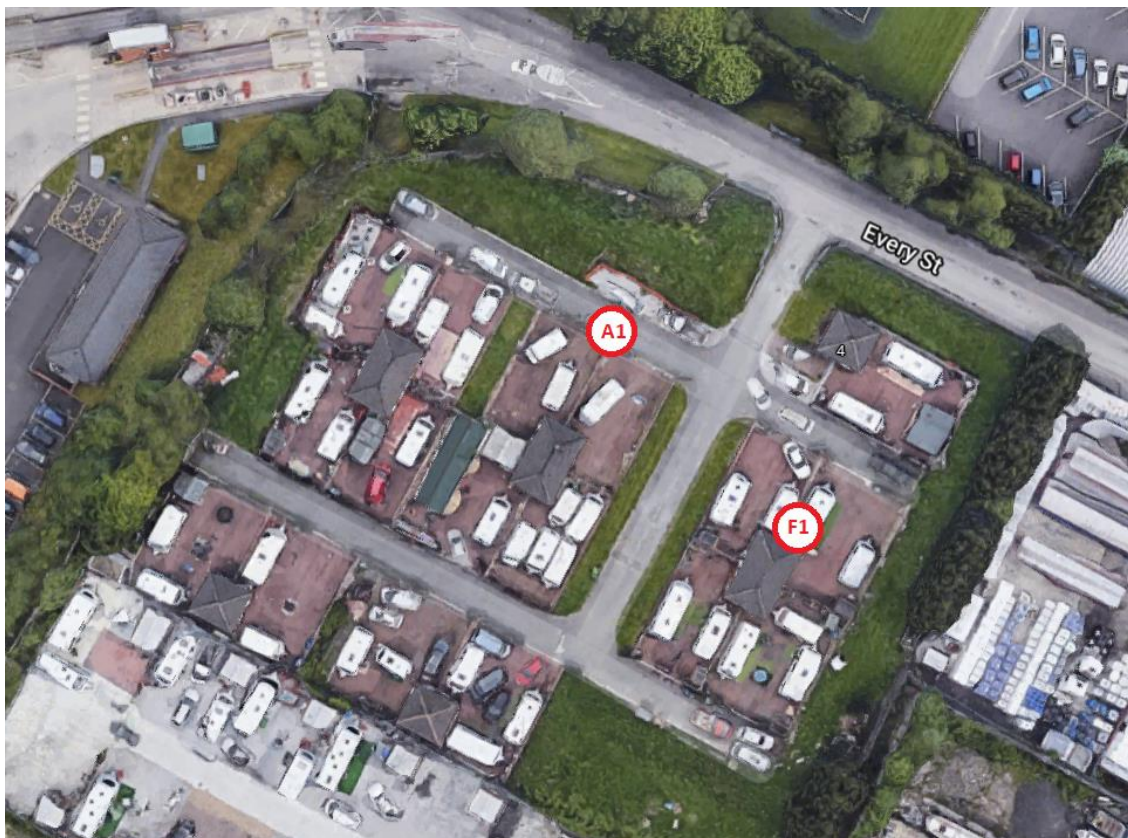


Figure 1: noise Measurement Positions

2.2 Results of Noise Measurements

Full results of the noise levels recorded during the survey are included in Appendix B.

Table 1 summarises the results of the noise measurements undertaken at the proposed site in terms of the average daytime (07:00 to 23:00 hours) and night-time (23:00 to 07:00 hours) statistical noise levels. The L_{Amax} values are summarised by the 90th percentile of instantaneous sound pressure level during the total measurement period. This level is likely to be matched or exceeded approximately 10 times in the measurement period.

Location	Period	L_{Amax}	L_{Aeq}	L_{A10}	L_{A50}	L_{A90}
A1 – Northern site boundary	Day	73	51	53	48	46
F1 –Eastern site boundary	Day	94	60	57	47	42
F1 –Eastern site boundary	Night	71	38	40	34	31

Table 1: Results of Azymuth Acoustics UK noise measurements, August 2021.

It should be noted that during the daytime period, several dogs were continuously barking on the traveller site. This noise with other domestic noise significantly affected the L_{Aeq} sound levels as well as the daytime L_{Amax} . Therefore, the L_{A50} levels have been determined as a more reasonable average environmental sound level for assessment purposes (the L_{A50} tends to exclude instantaneous levels such as dogs barking).

2.3 Description of Noise Climate

During all time periods the dominant noise source across site is traffic noise from Every Street. Noise of HGV / refuse vehicle movements in and around the Recycling plant and Cement factory were also audible. General industrial noise was also audible across the site; however, it was not possible to determine the specific sources of the noise.

3.0 Assessment Criteria

In order to assess the extent of any measures required in order to comply with suitable conditions relating to potential noise sources, Azymuth Acoustics UK has reviewed various guidance documents and standards, these include:

- ProPG: Professional Practice Guidance on Planning and Noise (New residential development)
- National Planning Policy Framework (NPPF) 2018
- British Standard 8233: 2014
- World Health Organisation Guidelines on Community Noise
- British Standard 4142:2014

3.1 ProPG: Planning and Noise - May 2017

This Professional Practice Guidance on Planning and Noise (ProPG) has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England. The National Planning Policy Framework (NPPF) encourages improved standards of design. The CIEH, IOA and the ANC have worked together to produce this guidance which encourages better acoustic design for new residential development and aims to protect people from the harmful effects of noise.

The Professional Practice Guidance on Planning and Noise States ‘The recommended approach is intended to give the developer, noise practitioner, and decision maker an early indication of the likely initial suitability of

the site for new residential development from a noise perceptive and the extent of acoustic issues that would be faced'. It is important that acoustic design is reviewed at an early stage of the development process.

3.2 National Planning Policy Framework (NPPF) 2018

The NPPF provides guidance to local authorities taking into account noise in making planning decisions. Paragraph 180 of the National Planning Policy Framework (NPPF) states that planning policies and decisions should aim to:

- Avoid noise giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions.

The National Planning Policy Framework states that the planning system should 'prevent both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability'.

3.3 British Standard 8233: 2014

BS 8233 provides a code of practice for the sound insulation of a variety of building types affected by general environmental noise. It provides recommendations for control of noise in and around buildings and suggests appropriate internal ambient noise level criteria / limits for a variety of different situations including residential properties.

The following table summarises the noise limits suggested by BS 8233 applying to residential properties:

Activity	Room	Good Design Range $L_{Aeq, T}$ dB	
		07:00-23:00hrs	23:00-07:00hrs
Resting	Living rooms	35	-
Dining	Dining room / area	40	-
Sleeping (daytime resting)	Bedroom (at night)	35	30

Table 4: Noise Limits for Residential Properties Suggested in BS 8233.

3.4 World Health Organisation Environmental Noise Guidelines (ENG) 2018

The main purpose of the 2018 WHO guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from the following sources: transportation (road traffic, railway and aircraft), wind turbines and leisure activities.

The guidelines set out to define recommended exposure levels for environmental noise in order to protect population health. Exposure limits are average levels defined over a period of one year, measured outdoors in free field at the most exposed façade. It should be noted that the document does not provide guideline limit values for multiple noise sources in combination.

The 2018 guidelines supersede the Community Noise Guidelines from 1999. Nevertheless, the document recommends that all CNG indoor guideline values and any values not covered by the current guidelines should remain valid. As such, the following guidance would remain appropriate:

For protection against sleep disturbance inside dwellings, night-time noise levels should not exceed 30dB L_{Aeq}



for continuous noise and 45dB L_{Amax} for single sound events.

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise (interpreted as noise from all sources combined) should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas.

It should be noted that exposure levels defined in ENG and CNG are for guidance purposes as relates potential adverse health impacts and should not be interpreted as absolute limits or regulations.

3.5 British Standard 4142:2014

British Standard 4142: 2014 “Methods for assessing and rating industrial sound” describes methods for rating and assessing sound of an industrial and/or commercial nature. 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.

- a) Typically, the greater this difference, the greater the magnitude of the impact.
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- d) 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 or a significant 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, depending on the context.

BS 4142 notes that: *Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.*

3.6 Acoustics Ventilation and Overheating Residential Design Guide 2020

The Acoustics, Ventilation and Overheating Guide (AVO) is intended to be used by acoustics practitioners as well as all those involved in the planning, development, design and commissioning of new dwellings.

It recommends an approach to acoustic assessments for new residential development that take due regard of the interdependence of provisions for acoustics, ventilation, and overheating. Application of the AVO Guide is intended to demonstrate good acoustic design as described in the ProPG, when considering internal noise level guidelines.

3.7 Recommended Noise Assessment Criteria

Based on the guidance above it is recommended that the following criteria would be reasonable with the aim of minimising the impact of the environmental noise on the proposed new residential accommodation:

- Daytime noise levels not to exceed 35dB $L_{Aeq, 16 \text{ hr}}$ in living rooms.
- Daytime noise levels not to exceed 40dB $L_{Aeq, 16 \text{ hr}}$ in dining room / kitchen.
- Daytime noise levels in bedrooms not to exceed 35dB $L_{Aeq, 16 \text{ hr}}$.
- Night-time noise levels in bedrooms not to exceed 30dB $L_{Aeq, 8 \text{ hr}}$.
- Night-time individual noise events in bedrooms shall not normally exceed 45dB $L_{Amax, F}$ more than 15 times.

Table 4, Note 5 of BS 8233:2014 states: ‘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. If applicable, any room should have adequate ventilation (e.g. trickle ventilators should be open) during assessment.'

4.0 Assessment of Noise Levels

4.1 Noise Risk Assessment (ProPG)

The risk assessment is based on survey data and incorporates a worst-case approach to potential adverse effects. Predicted noise levels at each noise sensitive façade has been calculated using SoundPLAN v8.2 sound modelling software, calibrated by the attended and unattended noise measurements undertaken on site. Adverse effect risk levels affecting the site are summarised in Table 3.

Façade Location	Noise Level Range (free field) dBA		Risk of Adverse Effect
	DAY	NIGHT	
North-eastern boundary	57-60	45-48	Low
South-eastern boundary	54-57	36-39	Low
North-western boundary	45-48	26-29	Low
South-western boundary	42-45	29-31	Low

Table 5: Pro PG Stage 1 risk assessment across site.

The boundary directly onto Every Street would represent the highest risk in terms of potential adverse impact.

All facades represent a low noise risk during all time periods. This is due to heavy screening of traffic noise from the surrounding grass mounds, and from proposed fences.

The noise levels incident on the facades of the proposed development would suggest that opening windows for the primary mitigation of overheating would not result in adverse effect under the level 1 risk assessment of the AVO guidance, for all facades.

4.2 Noise Impact Assessment

Noise levels across site indicate low risk in terms of potential adverse effect on the proposed site for daytime, and night-time periods. This risk will be mitigated by following a good acoustic design process. Traffic along Every Street are generally low during night-time periods. The daytime traffic noise is the determining noise source for mitigation measures at all dwellings.

Industrial Noise is dominated by vehicle movements in the recycling centre and cement factory, with the occasional noise breakout from industrial units in the form of dropping / moving materials, and the use of hand tools.

On the basis of the measured noise levels, it is estimated that a minimum noise reduction of 25dB would be required through façades fronting Every Street and overlooking the recycling centre in order to achieve satisfactory conditions inside habitable areas.

5.0 Recommendations for Noise Mitigation

This section sets out the recommended minimum noise mitigation measures required to ensure satisfactory acoustic conditions inside habitable rooms as part of fixed buildings/structures throughout the scheme (but excluding caravans and other mobile homes).

5.1 Glazing Specifications

The recommended glazing specifications for the new site based on the current proposed layout are summarised in Table 6. Location plans are shown in figure 2.

Location (Bedrooms, Living Rooms, Dining Rooms)	Glazing Acoustic Specifications	Suggested Glazing Types
All Facades	Airborne sound insulation min. R_w 28dB and R_w+C_{tr} 25dB	Standard double glazing

Table 6: Recommended glazing specifications for Every Street site

5.2 Ventilation Specifications

The recommended ventilation strategy based on the current proposed layout are summarised in Table 7 and figure 2.

Location (Bedrooms, Living Rooms, Dining Rooms)	Suggested Ventilation Specifications	Window slot vent trickle ventilation
Zone B (YELLOW): generally, facades fronting the recycling centre and Every Street	Passive Ventilation via standard trickle vents	$D_{n,e,w}$ (open) ≥ 28 dB
Zone B (GREEN): generally, all other façades	Passive Ventilation via standard trickle vents or opening window generally acceptable	$D_{n,e,w}$ (open) ≥ 28 dB

Table 7: Recommended ventilation specifications for Every Street site.



Figure 2: Façade Noise map of Every Street Site.

5.3 Other Elements of New Building Houses Envelope

Other elements of the building envelope of fixed buildings/structures throughout the scheme (but excluding caravans and other mobile homes) should have the following minimum sound insulation performance:

- **External Walls:** minimum sound insulation R_w 45 dB. This minimum will be significantly exceeded by a blockwork façade. It is unlikely that this will be exceeded by mobile home walls.
- **Roof:** minimum sound insulation R_w 45 dB. This minimum will be exceeded by a well-insulated timber roof. It is unlikely that this will be exceeded by mobile home roofs.



6.0 Conclusions

Azymuth Acoustics UK has undertaken a noise impact assessment for 12 no. plots at a Traveller site located off Every Street, Bury.

The noise climate in the area periods is dominated by road traffic using Every Street, the surrounding local roads, and industrial noise from the near-by recycling centre, and cement factory. Domestic noise was also audible throughout the surveys.

Daytime noise levels would indicate a low risk in terms of potential adverse effect across the site. Night-time noise levels would indicate a low risk in terms of potential adverse effect across the site.

The fixed buildings/structures formed as part of the traveller site should be protected by noise mitigation measures including:

- Standard thermal double glazing ($R_w + C_{tr} \geq 25$ dB) with;
- Zone A - standard trickle vents ($D_{n,e,w} \geq 28$ dB open)
- Zone B - standard trickle vents ($D_{n,e,w} \geq 28$ dB open), or open windows as primary source of ventilation



Appendix A – Glossary of Terms

Decibel (dB)

this is the unit used to measure sound. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro Pascal to 100 Pascal).

dB (A)

This is a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. A-weighting) to compensate for the sensitivity of the human ear to sound of different frequencies. The A-weighting curve is implemented in sound level meters using an electronic filter that approximately corresponds to the frequency response of the ear.

Octave Band Noise Level

The human ear is sensitive to sound over a range of frequencies between approximately 20 Hz to 20 kHz. The ear is also generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum can be divided into frequency bands. The most commonly used frequency bands are octave bands, in which the mid-frequency of each band is twice that of the band below it.

L_{Aeq}

this is the equivalent steady sound level in dB (A) containing the same acoustic energy as the actual fluctuating sound level over a given time period.

Reverberation Time (RT or sometimes T₃₀ or T₆₀)

This is the time taken for the reverberant sound energy in an enclosure to decay one millionth of its equilibrium value, i.e. by 60 dB, after the source has been switched off, is known as the reverberation time. The reverberation time is frequency dependent and it is customary to measure its value in octave or one-third octave bands. Reverberation occurs when sound waves are repeatedly reflected from each surface of the room.

Sound Reduction Index (SRI)

Difference measured between the amount of energy flowing towards the wall in the source room and the total amount of energy flowing towards the wall in the source room and the total amount of energy entering the receiving room (usual range 100 - 3150 Hz for one third octave band values). The SRI varies with frequency and is measured in a laboratory in either octave or one-third octave bands.

$$SRI = L_1 - L_2 + 10 \log (S/A)$$

Where: L₁ = Noise level in the source room

L₂ = Noise levels in the receiving room

S = Surface area of test specimen

A = Equivalent acoustic absorption area in the receiving room

Weighted Sound Reduction Index (R_w)

this is a weighted single figure descriptor of the sound insulation performance of a partition measured under laboratory conditions. The procedure used to quantify the R_w is to compare the sound reduction index (SRI) in each of the one-third octave bands from 100Hz to 3150Hz against a set of standard reference curves.

Appendix B – Full Results of Noise Measurement Survey

Date & Time	L _{Amax}	L _{Aeq}	L _{A1}	L _{A10}	L _{A50}	L _{A90}
Attended Measurements						
20/08/2021 13:36	68.7	51.6	60.4	53.7	50.0	47.0
20/08/2021 13:41	59.6	47.5	56.6	48.8	45.9	44.3
20/08/2021 13:46	74.4	51.6	62.6	53.1	46.9	45.2
20/08/2021 13:51	72.7	57.3	69.6	59.5	50.7	47.1
20/08/2021 13:56	71.1	52.2	63.1	52.8	47.7	45.4
20/08/2021 14:01	66.3	49.9	59.4	51.3	47.5	45.8
20/08/2021 14:06	67.1	49.7	57.6	52.4	47.4	45.5
20/08/2021 14:11	66	50.1	59.2	52.4	47.2	45.2
20/08/2021 14:16	56.1	48.9	54.2	50.8	48.2	46.1
20/08/2021 14:21	68.7	49.9	57.8	51.7	47.1	45.1
Unattended Measurements						
25/08/2021 15:20	88.1	64.7	79.9	59.3	49.4	44.0
25/08/2021 16:20	89.3	63.1	77.0	57.0	48.3	43.6
25/08/2021 17:20	93.8	64.9	79.3	60.1	47.7	39.9
25/08/2021 18:20	87.7	61.7	74.8	58.1	47.7	43.0
25/08/2021 19:20	88.4	61.9	74.2	56.1	45.0	41.2
25/08/2021 20:20	94.6	62.1	73.2	61.0	48.2	42.0
25/08/2021 21:20	83.6	57.9	71.5	54.9	43.6	41.2
25/08/2021 22:20	74.7	46.0	55.4	47.6	42.7	40.7
25/08/2021 23:20	73.3	52.1	61.8	57.7	42.3	39.7
26/08/2021 00:20	70.6	40.1	49.9	41.2	35.7	32.6
26/08/2021 01:20	50.7	33.2	39.9	37.2	30.6	28.3
26/08/2021 02:20	63.6	35.8	42.9	36.3	32.0	27.8
26/08/2021 03:20	54.1	30.9	39.0	32.3	28.4	25.7
26/08/2021 04:20	50.2	32.7	38.7	34.9	31.7	28.9
26/08/2021 05:20	64.5	33.8	39.3	35.5	32.0	29.0
26/08/2021 06:20	67.2	41.7	49.2	45.3	39.3	33.8
26/08/2021 07:20	71.6	46.7	54.2	48.6	45.1	43.2
26/08/2021 08:20	89.6	58.5	67.2	50.6	46.7	44.0

Appendix C – Distributed Grid Noise Map of Site

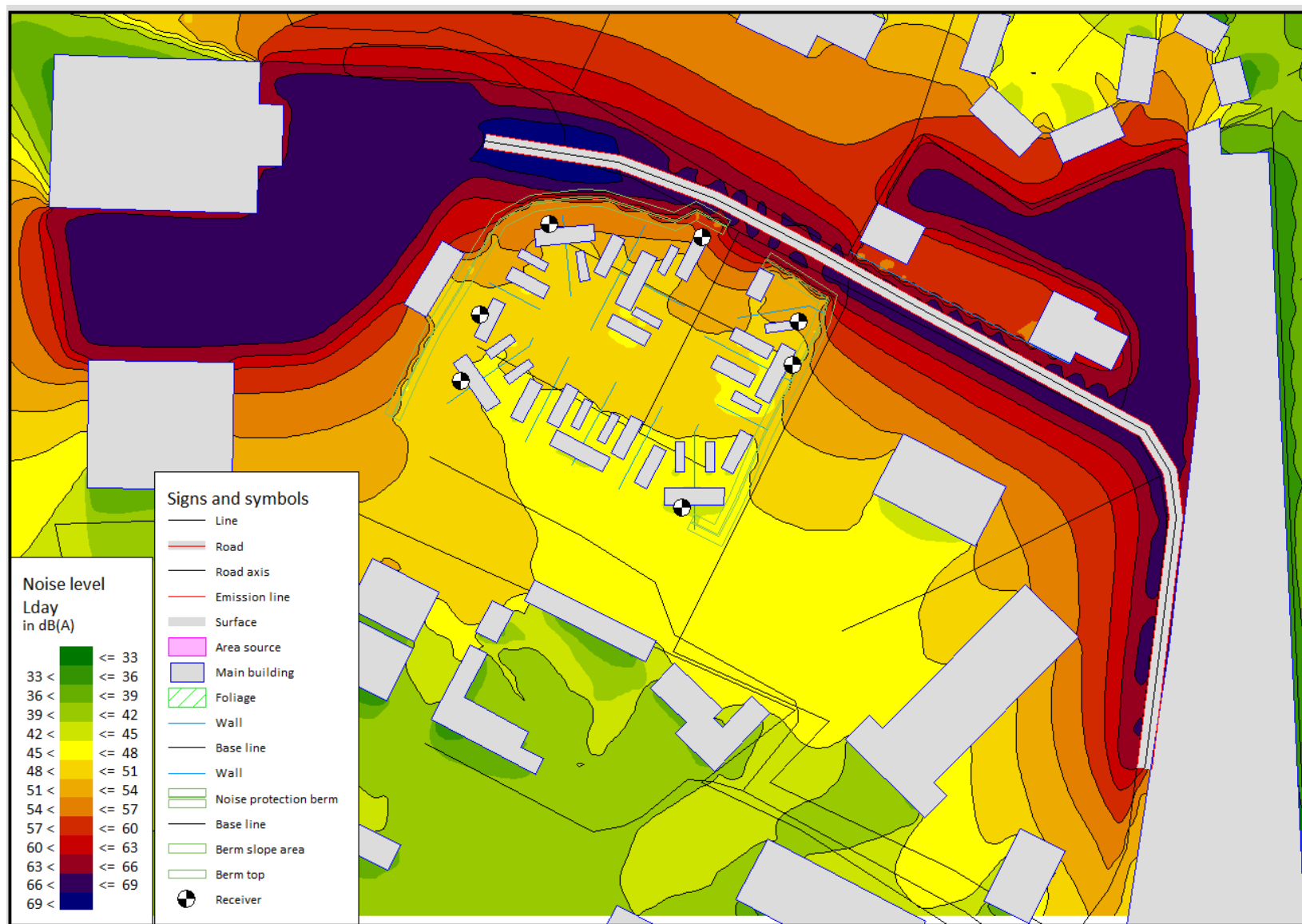


Figure C.1 Calculated Noise Distribution of Daytime Sound Levels at 1.5 m height

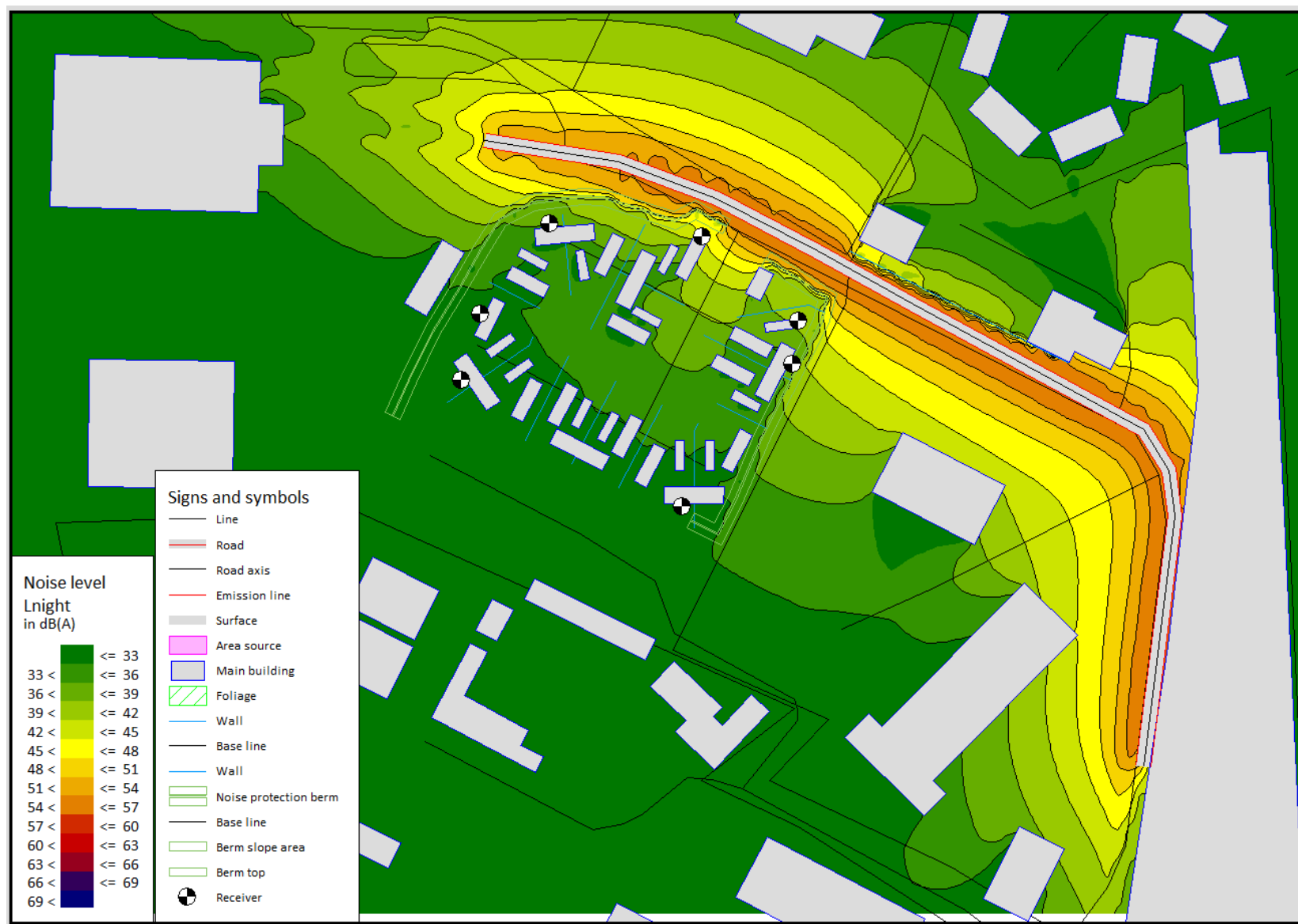


Figure C.2 Calculated Noise Distribution of Night Time Sound Levels at 1.5 m height