

NOISE AND VIBRATION IMPACT ASSESSMENT

Site: Chatburn Road, Clitheroe

References: 52-348

Date: 02 October 2026

Client: Oakmere Homes Limited





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QUALITY ASSURANCE

Report references

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EXECUTIVE SUMMARY

Site Address	Land North of Chatburn Road, Clitheroe, BB7 4UB
Grid Reference	E 375388, N 443109
Proposed Development	Full planning application for the erection of 39 dwellings with associated access roads, landscaping and drainage infrastructure.
Surveys Completed	E3P have undertaken an unattended noise and vibration survey to quantify the levels of noise and vibration associated with the railway line situated in the north of the site and blasting operations associated with Tarmac Clitheroe Asphalt Plant. An unattended road noise survey was also conducted to measure the levels of noise associated with road traffic along Pimlico Link Road and Chatburn Road. E3P have also undertaken attended measurements to quantify the levels of noise associated with Tarmac Clitheroe Asphalt Plant during day- and night-time periods.
Assessments Completed	A 3D noise model has been constructed to assess train pass-bys and road traffic noise across the site and incident upon facades. Road and rail traffic is assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019. Noise associated with Tarmac Clitheroe Asphalt Plant is assessed in accordance with government guidelines on noise associated with mineral extraction.
Mitigation Recommended	Acoustic barriers along rear gardens of plots 1 and 6 are proposed to reduce noise levels experienced within the external amenity areas associated with these plots.
Conclusions and Discussions	With mitigation measures in place, no adverse impact is predicted.



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1. INTRODUCTION

1.1. BACKGROUND

E3P was commissioned by Oakmere Homes to undertake a Noise and Vibration Impact Assessment for a proposed residential development at a site at Chatburn Road in Clitheroe, to be referred to hereafter as the 'Site'.

The proposed development comprises 39 residential dwellings with associated access roads, parking, landscaping and drainage infrastructure.

During determination of planning application 3/2026/0315, Tarmac submitted representations in respect of the proximity of the proposed residential development to the existing Bankfield Quarry and associated asphalt plant. The representations raise concerns regarding the potential effects of the existing mineral operations upon future residential receptors and, conversely, the potential for the introduction of additional noise-sensitive receptors to place future constraints upon the operation of the quarry and asphalt plant.

Tarmac's representations raise concerns about noise from mineral extraction, crushing, screening and processing activities, asphalt production and associated HGV movements, together with vibration from blasting. Tarmac also specifically refers to the out-of-hours operation of the asphalt plant permitted under planning permission LCC/2018/0060 and the requirements of the Agent of Change principle.

Accordingly, this assessment has been undertaken to establish the prevailing noise and vibration environment at the Site, assess the suitability of the proposed residential development from a noise and vibration perspective, determine appropriate mitigation where required, and provide evidence in response to the noise and vibration matters raised within Tarmac's representations.

Tarmac's objection specifically describes mineral extraction, crushing, screening, processing, asphalt production, HGV movements and blasting, and raises the Agent of Change concern that future residents could place pressure on established lawful operations.

1.2. REPORT OBJECTIVES

The objectives of this report are as follows:

- ✿ Establish and measure the existing sound levels across the Site during daytime and night-time periods.
- ✿ Consider the existing sources of sound affecting the Site, including road traffic, railway traffic, Bankfield Quarry and the associated asphalt plant.
- ✿ Assess internal and external noise levels associated with road and railway traffic in accordance with the criteria given in BS 8233.
- ✿ Consider noise associated with existing mineral extraction, mineral processing and asphalt production activities, including the permitted operation of Bankfield Quarry and the associated asphalt plant.
- ✿ Assess the potential for vibration associated with blasting operations at Bankfield Quarry to affect the proposed development.
- ✿ Consider the noise and vibration matters raised within Tarmac's consultation response, including the Agent of Change principle and the out-of-hours operation permitted by planning permission LCC/2018/0060.

- ### 1.3. PROPOSED DEVELOPMENT

A snapshot of the proposed development layout is indicated in Figure 1.

Hand-drawn site plan for the proposed Amherst Plan at Oakmere. The plan shows a residential development with a central road, parking areas, and various building footprints. A north arrow is located in the upper right corner. A legend in the bottom right corner provides project details.

Legend:

REV	DATE	DESCRIPTION
A	01/06/20	Bin stores removed for plots 10-29

Project Title: OAKMERE ROAD NORTH, CLUTHA

Drawing Title: Proposed Amherst Plan

Drawing Number: 1000000000

Date: 12/06/20

Scale: 1:5000

Revisions:

REVISION	DATE	DESCRIPTION
1	12/06/20	Bin stores removed for plots 10-29



2. ASSESSMENT METHODOLOGY

2.1. NATIONAL PLANNING POLICY FRAMEWORK (2026)

2.1.1. POLLUTION, PUBLIC PROTECTION AND SECURITY

P3: Living conditions and pollution

Development proposals should be appropriate for their location, taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, whether these effects are on or off-site; and whether this is as a result of the development itself or the product of preexisting conditions in its vicinity. In assessing the potential effects of pollution, consideration should be given to the potential sensitivity of the site, and its intended occupiers and users, as well as that of the environment and population in the surrounding area (including where certain groups could be particularly vulnerable to its effects, such as children and older people).

Within this context development proposals should:

- 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. Sustain and contribute to compliance with relevant limit values or national objectives and targets for air pollutants including PM2.5. Development proposals should take account of Air Quality Management Areas and be consistent with the objectives of relevant Air Quality Action Plans, Clean Air Plans and Local Air Quality Strategies;
- 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);
- e. Limit any adverse impact from artificial light on local amenity, intrinsically dark landscapes (those areas entirely, or largely, uninterrupted by artificial light) and nature; and
- f. Assess and mitigate impacts where the development could have an unacceptable adverse effect on water quality, especially in relation to sensitive water bodies such as chalk streams.

In applying this policy, it should be assumed, unless there is clear evidence to the contrary, that separate regulatory regimes for the control of pollution will operate effectively, as set out in policy DM7. This means that it will be appropriate to take into account emissions limits set through those other regimes.

P4: Impact of development on existing activities

Existing businesses, community facilities, public services and defence and security activities should not have unreasonable restrictions placed on their current or permitted operation as a result of development being approved after they were established. This means that development proposals should be capable of being integrated effectively with existing business, community and public service activities and infrastructure in their vicinity (including, but not limited to, uses such as pubs, music venues, places of worship, sports clubs, blue light services, defence, electricity network infrastructure and industrial and waste sites).



Where the operation of an existing activity could have a significant adverse effect on a proposed new development in its vicinity, development proposals should:

- a. Identify the nature of the potential impacts, informed where necessary by early discussions between the applicant (i.e. the 'agent of change') and those existing uses which could be affected by the proposal to inform the scope for mitigation; and 81
- b. Be able to demonstrate that suitable mitigation can be provided before first occupation of the development, if it is to be acceptable. Planning conditions or obligations should be used to secure agreed mitigation measures.

This policy applies to new development involving changes of use of land and property, as well as to new construction, and includes situations where new development may interfere with the operation of electronic communications networks. Both lawful current and permitted levels of operation of existing activities should be taken into account when applying this policy.

2.2. NATIONAL PLANNING PRACTICE GUIDANCE

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

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

In line with the explanatory note of the NPSE, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase, where 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.

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.
- ✿ 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.

Table 2.1 summarises the noise exposure hierarchy, based on the likely average response.



Table 2.1 Noise Exposure Hierarchy

PERCEPTION	EXAMPLES OF OUTCOMES	INCREASING EFFECT LEVEL	ACTION
Not Applicable	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			
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, or having to close windows for some of the time because of the noise where there is no alternative ventilation. 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, having to keep windows closed most of the time because of the noise where there is no alternative ventilation. 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 (auditory and non-auditory).	Unacceptable adverse effect	Prevent

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any situation. These factors include the following:



- ✿ The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day. The adverse effect can also be greater simply because there is less background noise at night.
- ✿ For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise can be important.
- ✿ The spectral content of the noise and the general character of the noise. The local topology and topography should also be considered along with the existing and, where appropriate, the planned character of the area.

More specific factors to consider when relevant:

- ✿ Where applicable, the cumulative impacts of more than one source should be considered along with the extent to which the source of noise is intermittent and of limited duration.
- ✿ Consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases, a suitable alternative means of ventilation is likely to be necessary.
- ✿ If external amenity spaces are an intrinsic part of the overall design, then the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

2.3. BUILDING REGULATION: APPROVED DOCUMENT F – VOLUME 1: DWELLINGS (JUNE 2022)

Approved document F Volume 1: Dwellings (ADF) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to means of ventilation within dwellings. The ventilation strategy specified within the ADF are as follows.

1.9 The ventilation strategy in this approved document relies on a combination of all of the following.

a. Extract ventilation from rooms where water vapour or pollutants are likely to be released (e.g. bathrooms and kitchens), to minimise their spread to the rest of the building. Ventilation fans may be either intermittent operation or continuous operation.

b. Whole dwelling ventilation to provide fresh air to the building and to dilute, disperse and remove water vapour and pollutants not removed by extract ventilation.

c. Purge ventilation to remove high concentrations of pollutants and water vapour. Purge ventilation is used intermittently and required only for pollutants produced by occasional activities (e.g. fumes from painting).

1.10 Ventilation may be delivered through natural ventilation, mechanical ventilation or a combination of both.

1.11 The ventilation systems in this approved document are examples of systems that comply with Part F of the Building Regulations. Other ventilation systems may be acceptable if they can be shown to meet an equal level of performance.



Within the ADF there are three system specific ventilation systems that can be utilised to provide sufficient ventilation. These methods are as follow.

1. Natural ventilation with background ventilators and intermittent extract fans (guidance suitable only for less airtight dwellings) - Ventilation provided by thermal, wind or diffusion effects through doors, windows or other intentional openings without the use of mechanically driven equipment. For the purposes of this approved document, natural ventilation refers to a ventilation strategy using background ventilators and intermittent extract ventilation.

2. Continuous mechanical extract ventilation - Mechanically driven ventilation that continuously extracts indoor air and discharges it to the outside.

3. Mechanical ventilation with heat recovery - A mechanically driven ventilation system that both continuously supplies outdoor air to the inside of the dwelling and continuously extracts indoor air and discharges it to the outside. For the purposes of this approved document, the guidance for mechanical ventilation with heat recovery applies to centralised or decentralised supply and extract systems, with or without heat recovery.

2.4. BUILDING REGULATIONS: APPROVED DOCUMENT O – OVERHEATING (JUNE 2022)

Approved document O - Overheating (ADO) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to the mitigation of overheating. In relation to noise the ADO provides the following guidance.

3.2 In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).

b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am).

3.4 Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants'

Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.

NOTE: Guidance on reducing the passage of external noise into buildings can be found in the National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021) and the Association of Noise Consultants' Acoustics, Ventilation and Overheating: Residential Design Guide (2020)

2.5. APPROVED DOCUMENT PART O NOISE GUIDE (2024)

This guide sets out a method to demonstrate compliance to the Building Control Body of the noise constraints in AD-O. This guide aims to provide clarity for practitioners and regulators so that assessments can be carried out consistently, and the outcome is repeatable and reliable.



Any assessment of overheating, in relation to noise, follows this guidance. Importantly, the guide, based on research and typical assumptions, provides the resulting outside-to-inside level difference for window openings necessary to satisfy the simplified method of AD-O which are expected to be:

- ✿ 5 dB for 'high risk' locations; and
- ✿ 10 dB for 'medium risk' locations.

With reference to paragraph 3.3 of AD-O, this implies the following limiting external free-field levels above which external noise precludes the use of the simplified method, and dynamic thermal modelling should be used to demonstrate compliance.

The guide also recommends that $L_{Amax,fast}$ measurement and assessment should be based on a sampling period of 2 minutes.

2.6. BRITISH STANDARD BS 8233:2014+A1:2019 – GUIDANCE OF SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

The scope of this standard is the provision of recommendations for the control of noise in and around buildings including residential dwellings. 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.

The standard suggests suitable internal noise levels within different types of buildings, including residential dwellings, as shown in Table 2.2.

Table 2.2 BS 8233:2014 Recommended Internal Noise Level

CRITERION	TYPICAL SITUATION	DESIGN CRITERION $L_{Aeq,T}$ (dB)
Suitable resting and sleeping conditions	Living Room	35
	Bedroom	30

BS 8233 goes on to recommend noise levels for gardens:

It is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ 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.

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.



3. SURVEY RESULTS

E3P have undertaken an unattended noise and vibration survey to quantify the levels of noise and vibration associated with the railway line situated in the north of the site and blasting operations associated with Tarmac Clitheroe Asphalt Plant. An unattended road noise survey was also conducted to measure the levels of noise associated with road traffic along Pimlico Link Road and Chatburn Road. Attended measurements were also conducted to quantify the levels of noise associated with Tarmac Clitheroe Asphalt Plant during day- and night-time periods.

The noise measurement positions used for the surveys are detailed in Figure 2.

Figure 2 Noise Measurement Positions





3.1. AMBIENT NOISE AND VIBRATION SURVEY

E3P has conducted a Background and Ambient Noise & Vibration Survey to quantify the levels of noise and vibration associated with the railway line situated in the north of the site and blasting operations associated mineral extraction, north of the site. The survey was also conducted to measure the levels of sound at the Site. The survey was conducted over the following period:

📅 11:00 Wednesday 16th to 11:00 Thursday 24th September 2026.

The following noise measurement position was chosen for the survey:

📍 Noise Measurement Position 1 (NMP1): Located approximately 65 m from the nearside rail of the railway line to the north of the Site and 130 m from the nearside boundary edge of the northern mineral extraction site. The microphone was located at a height of 1.4 m above ground level and in free-field conditions. The acoustic climate was dominated by noise associated with road and rail traffic.

A summary of the measured sound pressure levels from the Ambient Noise Survey are presented in Table 3.1.

Table 3.1 Ambient Noise Measurement

DATE	PERIOD	MEASURED SOUND PRESSURE LEVEL (dB)			
		$L_{Aeq,T}$	10 th Highest $L_{Amax, fast}$	Range of Measured $L_{A90, T}$	Median Measured $L_{A90, T}$
16/09/2026	Daytime	52.2	N/A	41.3-50.0	48.3
	Night-time	52.4	70.0	40.9-54.5	44.6
17/09/2026	Daytime	54.6	N/A	44.4-52.5	51.1
	Night-time	47.6	62.0	40.2-44.4	43.6
18/09/2026	Daytime	56.2	N/A	47.7-57.9	51.3
	Night-time	52.4	68.1	49.9-51.1	50.2
19/09/2026	Daytime	54.6	N/A	47.5-52.8	51.0
	Night-time	48.2	60.7	44.5-47.2	46.7
20/09/2026	Daytime	50.7	N/A	40.4-49.1	47.1
	Night-time	46.1	60.5	40.8-49.1	42.9
21/09/2026	Daytime	51.4	N/A	39.4-48.5	46.2
	Night-time	45.0	61.2	35.5-42.5	41.1
22/09/2026	Daytime	51.1	N/A	36.7-47.8	45.1
	Night-time	45.6	61.7	36.8-44.3	39.4
23/09/2026	Daytime	51.9	N/A	37.1-50.8	46.9
	Night-time	45.2	61.8	36.4-43.1	39.6
24/09/2026	Daytime	52.9	N/A	49.6-47.3	47.4



As highlighted in Table 3.1, the maximum measured daytime $L_{Aeq,16h}$ and night-time $L_{Aeq,8h}$ is 56.2 dB and 52.4 dB respectively. The largest 10th highest measured nighttime $L_{AFmax,2min}$ is 70.0 dB and the lowest measured median daytime and night-time $L_{A90,T}$ is 45.1 and 39.4 dB, respectively.

As such, the ambient noise levels are used to calibrate surrounding traffic routes within the 3D noise model, and the background sound levels are used to inform assessments undertaken in Section 5.

3.2. VIBRATION SURVEY

E3P has implemented vibration monitoring at a location considered representative of the proposed dwellings situated closest to the quarry. The vibration monitor was installed and configured in blasting mode. The monitoring equipment recorded PPV values associated with vibration trigger events occurring during the survey period. The survey was conducted over the following period:

📅 11:00 Wednesday 16th to 11:00 Thursday 24th September 2026.

The following measurement position was chosen:

📍 Vibration Measurement Position 1 (VMP1): Located approximately 65 m from the nearside rail of the railway line to the north of the Site and approximately 130 m from the nearside boundary of the mineral extraction site to the north. The vibration monitor was positioned beneath the microphone tripod at NMP1.

Five vibration events were captured during the monitoring period. The measured PPV values are presented in Table 3.2.

Table 3.2 Vibration Survey Results

Event	Date	Time	L PPV (mm/s)	V PPV (mm/s)	T PPV (mm/s)	Maximum PPV (mm/s)	Notes
1	16/09/2026	10:56:48	0.6	0.6	0.5	0.6	Approximate time of installation
2	16/09/2026	10:57:24	0.7	0.7	0.7	0.7	
3	16/09/2026	10:58:48	0.8	0.8	0.8	0.8	
4	16/09/2026	10:59:20	0.7	0.5	0.5	0.6	
5	24/09/2026	10:37:27	0.7	0.6	0.7	0.7	Approximate time of collection

As detailed in Table 3.2, the only events triggered on the vibration monitor occurred during the approximate time of installation and collection. No other events were logged throughout the measurement period, i.e. where vibration levels exceeded 0.3 mm/s.

Therefore, the unattended vibration survey did not identify any vibration events that could reasonably be attributed to blasting operations at the nearby quarry. As such, there is therefore no evidence of significant blast-induced ground vibration affecting the Site during the measurement period.



3.3. ROAD TRAFFIC NOISE MEASUREMENT – CHATBURN ROAD AND PIMLICO LINK ROAD

E3P have undertaken an unattended road traffic noise measurement over a 24-hour period to quantify the levels of noise associated with traffic along Chatburn Road and Pimlico Link Road. The survey was conducted over the following period:

📅 11:00 Wednesday 16th to 10:00 Thursday 17th September 2026.

The following noise measurement position was chosen for the survey:

📍 Noise Measurement Position 2 (NMP2): Positioned approximately 6 m from the nearside kerb edge of Chatburn Road and 48 m from the nearside kerb edge of Pimlico Link Road at a height of 1.4 m above local ground level under free-field conditions. The acoustic climate was dominated by traffic along Chatburn Road and Pimlico Link Road.

A summary of the measured sound pressure levels is detailed in Table 3.3.



Table 3.3 Road Traffic Noise Measurement

MEASUREMENT START TIME	MEASURED SOUND PRESSURE LEVELS (dB)	
	L _{Aeq,1hr}	10TH HIGHEST L _{Amax, Fast}
16/09/2026 11:00	62.9	N/A
16/09/2026 12:00	61.5	
16/09/2026 13:00	60.9	
16/09/2026 14:00	61.5	
16/09/2026 15:00	61.1	
16/09/2026 16:00	61.0	
16/09/2026 17:00	61.4	
16/09/2026 18:00	59.2	
16/09/2026 19:00	60.0	
16/09/2026 20:00	59.7	
16/09/2026 21:00	54.8	
16/09/2026 22:00	52.8	
16/09/2026 23:00	51.3	72.7
17/09/2026 00:00	48.7	
17/09/2026 01:00	46.2	
17/09/2026 02:00	46.0	
17/09/2026 03:00	50.7	
17/09/2026 04:00	51.9	
17/09/2026 05:00	55.1	
17/09/2026 06:00	58.4	N/A
17/09/2026 07:00	61.7	
17/09/2026 08:00	62.8	
17/09/2026 09:00	61.5	

The derived day- and night-time noise levels at NMP2 are thus 60.7 dB and 53.0 dB, respectively.

3.4. ATTENDED QUARRY AND ASPHALT PLANT NOISE SURVEY

E3P has conducted attended noise measurements to investigate noise associated with Bankfield Quarry and the associated asphalt plant, situated to the north and north-west of the proposed development. Potential operational sources include mineral extraction, crushing, screening and processing activities, mobile plant and HGV movements, together with asphalt production. The surveys were conducted over the following periods:

- 🌞 06:17 to 10:27 Thursday 17th September 2026.
- 🌞 10:30 to 14:40 Thursday 24th September 2026.



The following noise measurement positions were chosen for the mineral extraction noise surveys:

- ☛ Noise Measurement Position 3 (NMP3): Positioned approximately 147 m south of the mineral extraction site boundary edge at a height of 1.4 m above ground level under free-field conditions. The acoustic climate was dominated by noise associated with surrounding traffic routes.
- ☛ Noise Measurement Position 4 (NMP4): Positioned approximately 135 m south of the mineral extraction site boundary edge at a height of 1.4 m above ground level under free-field conditions. The acoustic climate was dominated by noise associated with surrounding traffic routes.

Table 3.4 details the results of the attended noise surveys.

Table 3.4 Measured Sound Pressure Levels of Mineral Extraction Site

PERIOD	NMP	MEASURED SOUND LEVEL, $L_{Aeq,T}$ (dB)	NOTES
06:17-07:17 17/09/2026	3	51.0	Noise climate dominated by road traffic on the A671 and Pimlico Road, including frequent HGV movements. Railway noise was intermittent and generally masked by road traffic. No clearly identifiable impact, crushing or other operational noise characteristic of mineral extraction activities was audible from the extraction site during the measurement period. Occasional distant plant/vehicle noise was noted to the north but was generally low-level, substantially masked by the intervening transport noise and could not be confidently attributed to the mineral extraction site.
07:20-08:20 17/09/2026	4	54.5	
08:24-09:24 17/09/2026	3	53.2	
09:27-10:27 17/09/2026	4	54.2	
10:30-11:30 24/09/2026	3	53.2	
11:35-12:30 24/09/2026	4	52.9	
12:35-13:35 24/09/2026	3	54.6	
13:40-14:40 24/09/2026	4	52.5	

Attended noise measurements were undertaken to establish whether noise associated with Bankfield Quarry and the associated asphalt plant was identifiable at positions representative of the proposed noise-sensitive receptors. During the attended observations undertaken across two survey dates, the acoustic environment was consistently dominated by road traffic on Chatburn Road and Pimlico Road, including frequent HGV movements, with railway noise also intermittently audible.

3.5. COMMENTARY ON TARMAC SITE

Planning permission LCC/2018/0060 permits the continuation of mining operations at Bankfield Quarry until 31st December 2033, followed by restoration of the quarry site. The planning permission controls the normal hours of quarrying operations and additionally contains specific provisions relating to mineral processing, blasting and the production and export of coated roadstone. Quarrying operations are permitted between 05:00 and 22:00 hours Monday to Friday and between 05:00 and 13:00 hours on Saturdays. Blasting is restricted to between 10:00 and 18:00 hours Monday to Friday.



Condition 13 of planning permission LCC/2018/0060 additionally permits the production and export of coated roadstone outside the normal quarry operating hours, including on Saturdays and Sundays, provided that such out-of-hours operation does not exceed 150 occurrences in any calendar year.

The planning permission also contains controls relating specifically to operational noise. Condition 21 specifies a daytime site noise limit of 55 dB LAeq,1hr, free-field, at identified existing noise-sensitive receptors, including Park House and Clitheroe Hospital. More stringent limits apply during out-of-hours periods under Condition 23, including a limit of 42 dB(A) during specified night-time and weekend periods.

The permission also contains controls relating to blasting vibration, including requirements for blast vibration monitoring and limits on peak particle velocity.

The permitted ability of the asphalt plant to operate outside the normal quarry hours has therefore been explicitly taken into account when considering the suitability of the proposed development and the potential for future Agent of Change considerations.

It is also noted that a Noise Impact Assessment was prepared in support of planning permission LCC/2018/0060. Information subsequently published in relation to this assessment identifies a highest predicted daytime quarry noise level of 49 dB LAeq,1hr at Clitheroe Community Hospital.

Clitheroe Community Hospital is located immediately to the southeast of the proposed development, on the opposite side of Chatburn Road. The predicted noise level at the hospital therefore provides particularly relevant contextual information regarding the magnitude of quarry operational noise in the immediate vicinity of the Site.

Whilst the hospital receptor is not coincident with the proposed residential development and the predicted level cannot therefore be directly adopted as a noise level at the proposed dwellings, it provides a useful indication of the contribution from Bankfield Quarry relative to the prevailing acoustic environment measured by E3P.

During the surveys, ambient sound levels at the Site were generally controlled by surrounding road and railway traffic, with noise associated with Bankfield Quarry and the asphalt plant either inaudible or only faintly and intermittently perceptible. This supports the conclusion that noise from the quarry makes only a limited contribution to the overall acoustic environment at the proposed development.

Given the relatively low quarry noise levels predicted at Clitheroe Community Hospital as part of the assessment supporting planning permission LCC/2018/0060, together with the attended survey observations which found quarry and asphalt plant noise to be either inaudible or only faintly and intermittently perceptible, noise associated with the Tarmac operations is considered likely to be substantially masked by the prevailing road and railway traffic noise environment. Accordingly, no further detailed assessment of noise from Bankfield Quarry and the associated asphalt plant is considered necessary.

Weather conditions were conducive to the measurement of environmental noise throughout. The equipment outlined in Table 3.5 was used for the noise survey.

Table 3.5 Noise Measurement Equipment and Calibration Dates

MEASUREMENT POSITION	EQUIPMENT DESCRIPTION	MANUFACTURER AND TYPE NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE AT TIME OF SURVEY
NMP1	Sound Level Meter	Cirrus Optimus Green CR:171A	G303884	13/04/2027
	Pre Amp	Cirrus MV:200F	12731F	



	Microphone	Cirrus MK:224	215899D	
	Calibrator	Cirrus CR:515	99403	13/04/2027
NMP2 to NMP4	Sound Level Meter	01dB Fusion	14616	06/06/2028
	Pre Amp	01dB Pre22	20951	
	Microphone	GRAS 40CD	494264	
	Calibrator	Cirrus CR:515	99206	06/06/2027
VMP1	Vibration Meter	Vibrocheck V9000	2392	14/04/2027

The sound level meters were field calibrated before and after measurements with no significant drift witnessed.



4. NOISE IMPACT ASSESSMENT

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2026 MR1, to determine the impact of noise from road and rail traffic sound.

The following inputs have been included in the model:

- ✿ Proposed Site Plan – Reference 26_0315_Proposed_Site_Layout – Dated 12/03/2026.
- ✿ The railway line north of the site is calibrated using NMP1
- ✿ Chatburn Road and Pimlico Link Road are calibrated using NMP2.
- ✿ Site elevations have been taken as existing by way of a 2 m grid Digital Terrain Model (DTM) which contains public sector information licensed under the Open Government License v3.0.
- ✿ Existing buildings are included.
- ✿ A reflection order of 2 has been used in all calculations.
- ✿ Noise levels generated using ISO 9613-2:2024 “Acoustics – Attenuation of sound during propagation outdoors” as incorporated into CadnaA software.

Figures 3 and 4 determine the noise levels across the Site during the daytime and night-time periods, respectively, due to road and rail traffic sound.

4.1. EXTERNAL AMENITY AREA NOISE LEVEL ASSESSMENT

The noise model has been used to predict noise levels in rear garden areas to be used for relaxation. The predicted levels range between 45 dB and up to 63 dB.

As such, it is predicted that the No Observed Adverse Effect Level (NOAEL) is achieved in most rear garden areas with the following commentary:

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.

Accordingly, no action is required for these areas.

However, some gardens adjacent to Chatburn Road in the south of the site and the railway line in the north of the site are exposed to noise levels in excess of 55 dB. As such, barriers are required in order to control external noise. Section 5.0 details the locations and required heights.

4.2. INTERNAL NOISE LEVEL ASSESSMENT

With regard to internal noise levels, E3P has assumed a standard glazing specification of 4 mm glass/20 mm air space/4 mm glass affords sound insulation performance in the order of 32 dB however this is for a pink noise spectrum. The same unit, weighted for road and rail traffic noise, has a sound insulation performance value of approximately 28 dB and 31 dB respectively so the lowest value, 28 dB for road traffic, has been used to calculate internal noise levels for noise break in to inform a worst-case assessment.

The model has been used to predict façade noise levels at ground, first and second floors. In order to determine any requirements for mitigation, E3P has added the reduction provided by the glazing (28 dB) to the relevant criterion for day (35 dB) and for night (30 dB). As such, any facades subject to noise



levels higher than 63 dB during the day and/or 58 dB during the night will require higher specification glazing.

As can be seen from the figures, no facades have levels that exceed this criterion and therefore standard glazing will be sufficient across the site.

Consideration must also be given to maximum noise levels generated by road traffic. The 10th highest maximum noise level has been used and distance corrected to the closest plot. Internal maximum noise levels of 45 dB L_{Amax} should also not be exceeded. The sound insulation performance achieved by standard glazing (32 dB) has been added to the 45 dB maximum internal noise level limit. As, such facades subject to maximum noise levels above 77 dB will require higher specification glazing.

The maximum noise level at the worst affected facades in the north and south of the Site is calculated to be 72 dB and 65 dB, respectively. Therefore, standard specification glazing is sufficient to mitigate against maximum noise levels generated by road traffic from the south and railway traffic from the north. Accordingly, no facades require glazing that outperforms standard.

4.2.1. VENTILATION CONDITION

When considering a partially open window for ventilation purposes, E3P has assumed that a Building Regulations ADF compliant system would be installed as part of the development, in all plots, as it is unlikely the plots are suitable for natural ventilation.

Therefore, the only consideration in relation to noise will be the performance of any window mounted or through walls vents in relation to the passage of external to internal noise.

This is discussed in the mitigation section.

4.2.2. OVERHEATING CONDITION

E3P has considered the requirements of ADO in relation to opening windows at night to mitigate the potential for overheating, which at this stage is assumed to be required. Therefore, external noise levels at affected facades apply. Any plots that experience noise levels below these limits will be able to have openable windows to mitigate any overheating. Those that exceed these limits will be subject to an Overheating Assessment by a suitably qualified professional.

It is noted that the site is within a medium risk area and, as such, an outside-to-inside level difference for window openings for the simplified method is noted to be 10 dB.

As such, the allowable façade noise levels are 50 dB averaged over the 8 hour night time period and 65 dB $L_{Amax,fast,2min}$ during the night.

As can be seen from Figure 5, certain facades of properties along the boundary with the railway line and surrounding road traffic routes are subject to higher night-time noise levels than the limits above. As such, an overheating assessment in accordance with ADO is required that considers these highlighted bedroom windows as closed. The exact facades and plots are highlighted in Figure 5.



5. MITIGATION

5.1. EXTERNAL AMENITY AREA – BS 8233

As shown in Section 4, certain garden areas would experience an exceedance of the 55 dB criterion in rear garden areas. As such, an additional noise model has been run to determine the required barrier height needed to achieve levels of 55 dB and below.

As shown in Figure 6, barriers for the following plots are required:

- ✳ Plot 6 (communal gardens – Southern and Western boundary) – 1.8 m high barrier.
- ✳ Plot 1 (communal gardens – Northern and Western boundary) – 2.2 m high barrier.

The barriers can be a wooden fence or brick wall construction but must be free from holes, be sealed at the base and have a minimum mass of 10kg/m². Locations of the barriers can be found on Figure 6 in the appendix of the report.



6. CONCLUSIONS AND DISCUSSION

E3P was commissioned by Oakmere Homes to undertake a Noise and Vibration Impact Assessment for the proposed development of 39 residential dwellings at Chatburn Road in Clitheroe. The assessment has also considered the noise and vibration matters raised by Tarmac in its consultation response to planning application 3/2026/0315.

E3P has undertaken unattended noise and vibration monitoring together with attended observations on two separate dates. The attended surveys found the acoustic environment to be predominantly influenced by surrounding road and railway traffic, with noise associated with Bankfield Quarry and the asphalt plant either inaudible or only faintly and intermittently perceptible. No vibration events attributable to quarry blasting were identified during the monitoring period.

Planning permission LCC/2018/0060, including the permitted out-of-hours production and export of coated roadstone, has also been considered. The assessment has therefore had regard to both the existing acoustic environment and the current and permitted operation of Bankfield Quarry and the associated asphalt plant.

E3P has undertaken 3D noise modelling to assess road and railway traffic noise across the Site. The assessment determined that standard specification glazing is sufficient across the development. A whole dwelling ventilation system is assumed in accordance with Approved Document F, with an overheating assessment required for identified plots. Acoustic barriers are also required to external amenity areas associated with Plots 1 and 6.

Subject to implementation of the mitigation measures detailed within this report, the proposed development is considered capable of coexisting with the current and permitted operations at Bankfield Quarry and the associated asphalt plant from a noise and vibration perspective. The assessment has not identified a requirement for additional restrictions to be placed upon these existing operations as a result of the proposed development.

As such, the proposed development is not expected to place additional constraints on the operation of Bankfield Quarry or the associated asphalt plant. No Agent of Change conflict has been identified in respect of noise and vibration. With the proposed mitigation measures in place, no adverse impact from surrounding road and rail traffic is predicted at the proposed development.

END OF REPORT

Appendix I: Limitations





GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P "Terms of Business" or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.
3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.
4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

NOISE AND VIBRATION IMPACT ASSESSMENTS

5. Where a noise or vibration survey is required to inform an assessment, E3P will endeavour to ensure that all noise and vibration measurements taken are robust, representative and reliable in order to inform an accurate assessment.
6. Where mitigation measures are specified in this report, it should be noted that these measures are relative to a specific sound or vibration source, both in terms of the measured sound pressure and vibration level and the character of the sound source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, E3P cannot be held responsible for any subsequent variations in the proposed mitigation performance.
7. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.
8. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.
9. E3P does not warrant work/data undertaken/provided by others.

Appendix II: Glossary





NOISE

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 LAeq, LA90 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 A Typical Sound Pressure Levels

SOUND PRESSURE LEVEL	LOCATIONS/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 a factory
100-110	Burglar alarm at 1 m away
110-130	Jet aircraft on take off
140	Threshold of pain



ACOUSTIC TERMINOLOGY

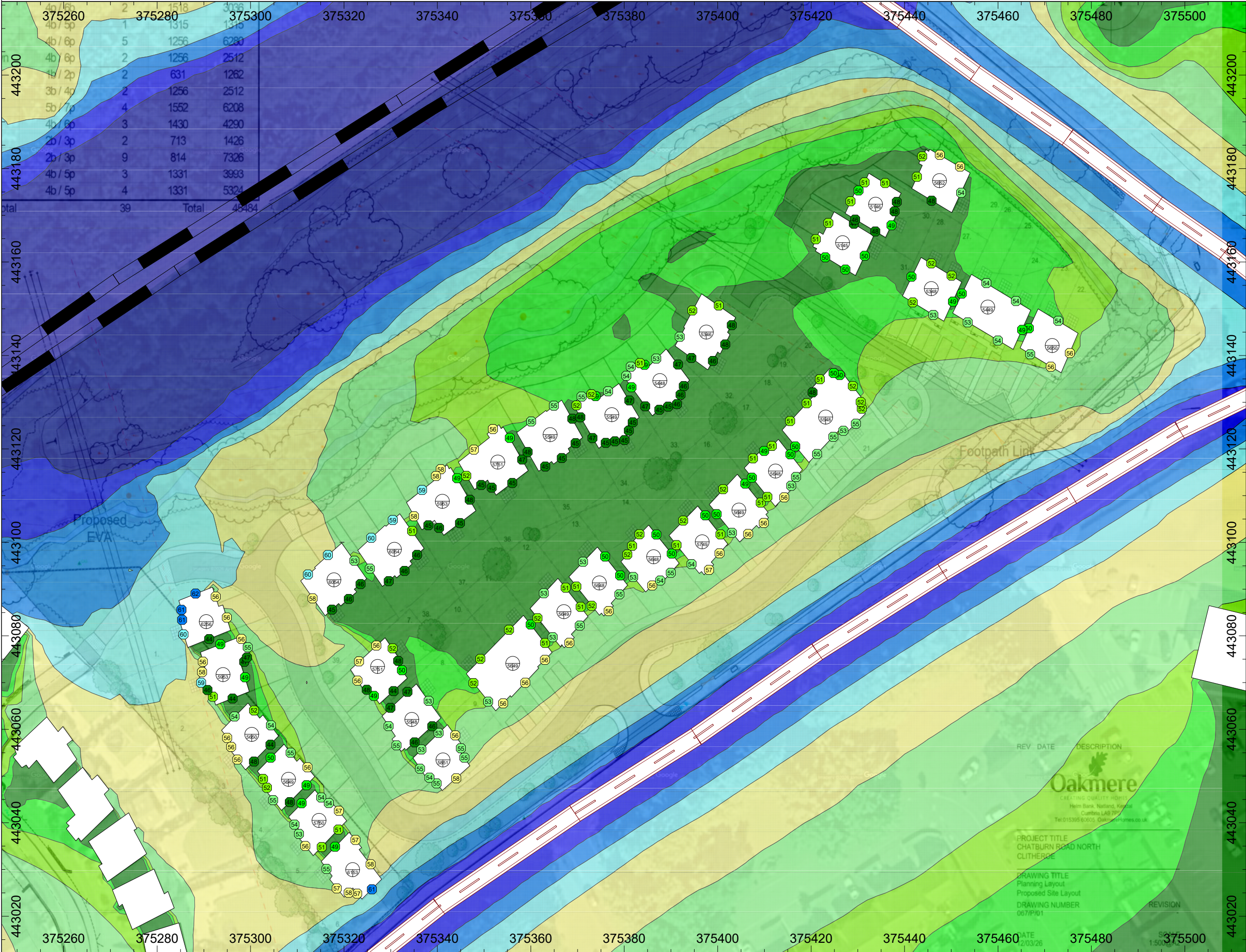
Table B Terminology

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 (2E-05 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.
LAeq, T	LAeq 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.
LAmix	LAmix is the maximum A-weighted sound pressure level recorded over the period stated. LAmix is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the "fast" sound level meter response.
L10 and L90	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 L10 is the level exceeded for 10% of the time and as such can be regarded as the "average maximum level". Similarly, L90 is the "average minimum level" and is often used to describe the background noise. It is common practice to use the L10 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.
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 (2E-05 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.

Appendix III: Figures



Figure 3 - Daytime Grid Noise Map - Calculation at 1.5m above ground level

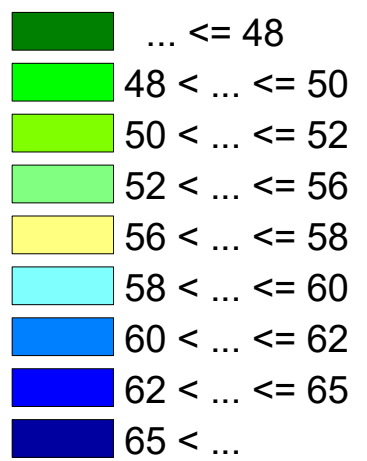


Project:
Chatburn Road, Clitheroe

Project-No:
52-342

Client:
Oakmere Homes Limited

Predicted Noise Level,
LAeq,T (dB)



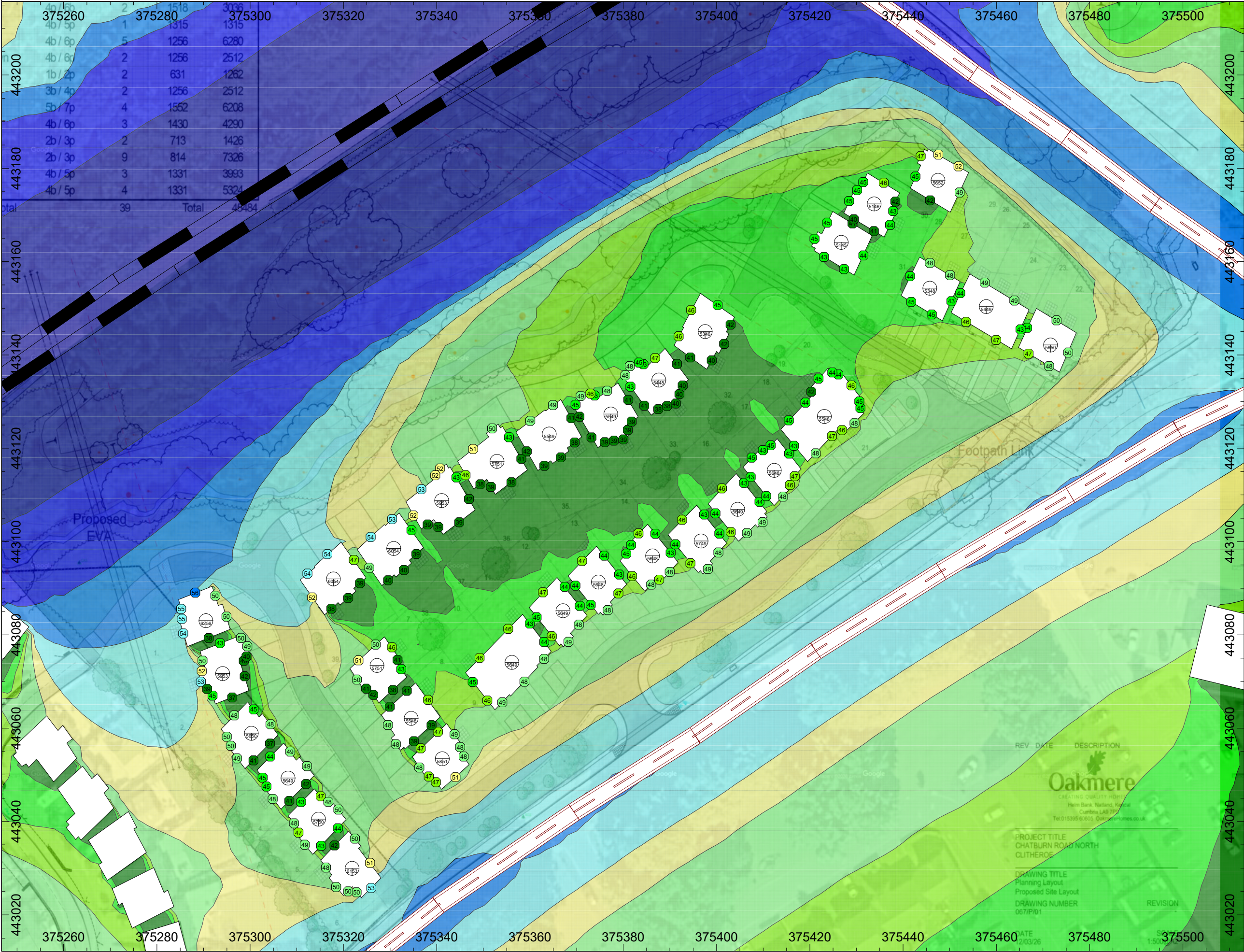
Noise Map Objects

- Road
- Railway
- Building
- Bridge
- Building Evaluation
- Calculation Area



Project Engineer: Ollie Harrison
Date: 25/09/2026

Figure 4 - Nighttime Grid Noise Map - Calculation at 4.0m above ground level



Project:
Chatburn Road, Clitheroe

Project-No:
52-342

Client:
Oakmere Homes Limited

Predicted Noise Level,
LAeq,T (dB)

- ... <= 42
- 42 < ... <= 45
- 45 < ... <= 47
- 47 < ... <= 50
- 50 < ... <= 52
- 52 < ... <= 55
- 55 < ... <= 57
- 57 < ... <= 60
- 60 < ...

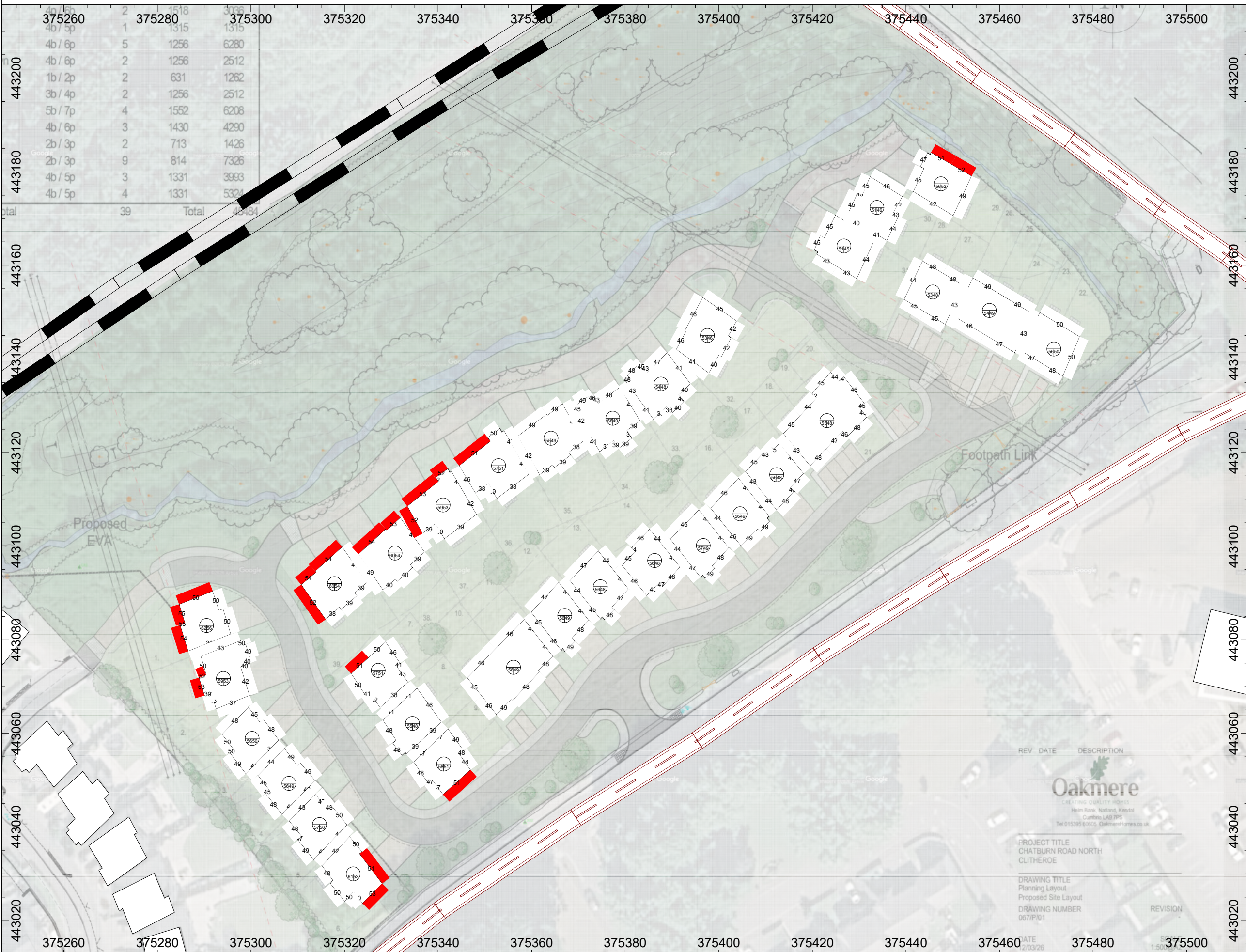
Noise Map Objects

- Road
- Railway
- Building
- Bridge
- Building Evaluation
- Calculation Area



Project Engineer: Ollie Harrison
Date: 25/09/2026

Figure 5 - Nighttime Overheating Risk Assessment - Calculation at 4.0m above ground level



Project:
Chatburn Road, Clitheroe

Project-No:
52-342

Client:
Oakmere Homes Limited

Predicted Noise Level,
LAeq,T (dB)

... <= 50.0
50.0 < ...

Noise Map Objects

- Road
- Railway
- Building
- Bridge
- Building Evaluation
- Calculation Area



Project Engineer: Ollie Harrison
Date: 25/09/2026

REV	DATE	DESCRIPTION
1	25/09/2026	Planning Layout
2	25/09/2026	Proposed Site Layout
3	25/09/2026	DRAWING NUMBER
4	25/09/2026	0677/P01

Figure 6 - Daytime Grid Noise Map with Mitigation - Calculation at 1.5m above ground level

