BRADGATE BAKERY, LEICESTER

NOISE IMPACT ASSESSMENT FOR ENVIRONMENTAL PERMIT

Acoustics Report A2382 R01a

02/04/2026

Report for:	Bradgate Bakery Attention: Katharine Nethercot
Issued to:	EC Consulting Services Ltd Attention: Lucinda Hall
Prepared by: Mark Harrison BSc (Hons) MIOA Principal Consultant	Checked by: Gavin Irvine BSc MIOA Director
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Ion Acoustics Ltd
Georges House
9 – 10 Bath Street
BRISTOL
BS1 6HL

www.ionacoustics.co.uk

0117 911 3765
mail@ionacoustics.co.uk

Consultants in Acoustics Noise & Vibration
Registered in England & Wales No. 5920418

Contents

1 Introduction

Ion Acoustics has been appointed by Samworth Brothers to undertake a noise impact assessment as part of a variation to their environmental permit for the food processing facility at Bradgate Bakery, off Bennion Road, Leicester.

A noise survey has been undertaken to measure baseline noise levels in the vicinity of the site and to derive operational noise limits at any noise-sensitive receptors. Computer noise modelling has been used to predict the future operational noise levels at the receptors. The results are compared with the limits derived from the noise survey and in accordance with British Standard BS 4142.

This report sets out the details of the assessment and the calculated noise impact of the site at the identified noise sensitive receptors.

1.1 Author and Reviewer's Qualifications

This assessment has been prepared by Mark Harrison BSc (Hons), MIOA. Mr Harrison has a degree in Music Technology and a post graduate diploma in Acoustics and Noise Control. Mr Harrison has over 18years experience in environmental acoustics working on a range of projects including environmental permit applications.

This report has been reviewed by Gavin Irvine BSc (Hons), MIOA. Mr Irvine is a director at Ion Acoustics and has a degree in Engineering, Acoustics and Vibration from the University of Southampton. Mr Irvine has worked in acoustic consultancy for over 35 years and has given presentations at international conferences and lectured in acoustics.

2 Site Location and Scheme Details

2.1 Site Location

Bradgate Bakery is situated over two site locations: Madeline Road (SK 57326 08841) and Ashton Green (SK 57761 09060). Both sites are jointly involved in food production activities, which primarily consist of the production of sandwiches, wraps, pastas, salads and snack pots, for exporting to major supermarkets and convenience stores throughout the UK. Processes include salad preparation with washing, cooking of dried carbohydrates and vegetables, ingredient preparation (chopping, slicing, dicing and mixing), filling, chilling, packaging and dispatch. Whilst food production takes place across both sites, food prepared at the Madeline Road site is subsequently transferred to the Ashton Green site for final packaging prior to onwards distribution.

The sites form part of a larger industrial estate which accommodates a number of other, large (unrelated) industrial units. The Ashton Green site is at the northern end of the industrial estate, to the east of Ashton Green Road. The Madeline Road site is more central to the industrial estate, to the south of Bennion Road.

Both sites operate in some capacity 24 hours per day, 7 days per week, 364 days per year with a partial shutdown on Christmas Day.

The permit application boundary and noise monitoring location are presented in Figure 1 below. For reference, the two sites are labelled for consistency with the rest of the permit application.

Figure 1: Approximate Permit Boundary and Noise Sensitive Receptors (©Google)

2.2 Existing Permit

With regards noise, the existing environmental permit, reference EPR/CP3430WV, states the following:

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3 Proposed Scheme

The application is for a retrospective variation to the existing environmental permit for the food processing facility. The changes under the variation relate to the Ashton Green site and include the following measures:

- Installation of up to six new production lines, increasing the overall throughput of the facility; and,

- Changes to the effluent treatment plant located within a new building.

Externally, the variation to the site would see the following external plant added to the site:

- Effluent Treatment Plant;
- 2no. Dry Air Coolers located on the plant room building;
- 2no. air compressor units housed in an outbuilding; and,
- An additional blast chiller unit.

In addition, the flue of the steam boiler has been extended due to the height of the surrounding buildings. No change to the site boundaries is proposed.

The revised layout of the Ashton Green site is presented in Figure 2 below:

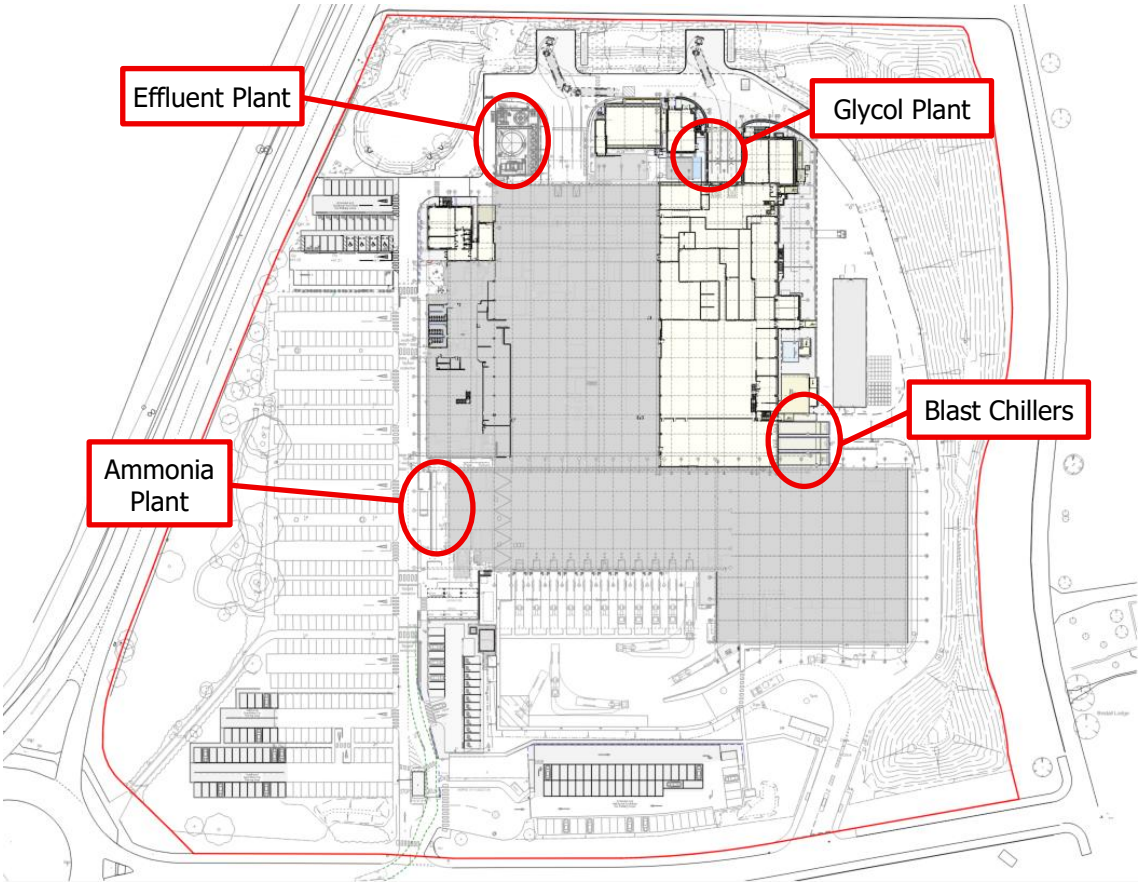


Figure 2: Revised Site Plan

2.4 Noise Sensitive Receptors – Assessment Locations

The assessment positions (AL01 etc) detailed below have been chosen to represent the closest noise-sensitive receptors to the site. Table 1 below defines the receptors, along with an OS grid reference and approximate distance to the boundary of the site. Note, one receptor point is identified for each location even though multiple dwellings may be in that vicinity.

Table 1: Noise Assessment Locations

Assessment Location	Description	Type	Easting	Northing	Approx. Distance to site boundary (m)
AL01	George Hythe House	Care Home	457442	308982	75
AL02	8 Edgbaston Close	Residential	457612	309060	25
AL03	2 Crabtree Cottage	Residential	457838	309444	250
AL04	Birstall Lodge	Residential	457932	308986	45

Note, the distances quoted above are relative to the nearest boundary of either site.

While there are a number of other commercial and industrial receptors in the vicinity, they are not considered particularly sensitive to noise as they are located within an industrial / commercial estate area and often themselves a source of noise. These premises have therefore been screened out of the assessment.

3 Relevant Policy and Guidance on Noise

3.1 Environment Agency Guidance. Noise and Vibration Management

The Environment Agency's online guidance on noise and vibration assessment replaces the older Horizontal Guidance for Noise (H3) parts 1 and 2, providing the information on how the Agency assess noise from some industrial processes.

The Agency require an assessment is noise is audible at a number of locations including:

- Residential properties;
- Schools;
- Hospitals;
- Offices;
- Public recreation areas and other noise sensitive receptors; and,
- Noise sensitive habitats.

The guidance identifies a four-stage approach, starting with a desktop risk assessment and progressing to and assessment in accordance with BS4142:2014. Where noise impacts are identified, Best Available Techniques (BAT) are required to ameliorate the impact.

The guidance goes on to details how factors such as the context of the noise, uncertainty and the soundscape affect the assessment outcomes.

3.2 BS4142: 2014 +A1: 2019 – Assessment Principles

The standard method for assessing noise of a commercial or industrial nature affecting housing, is British Standard BS 4142 "Method for rating and assessing industrial and commercial sound". A BS 4142 assessment is typically made by determining the difference between the industrial noise under consideration and the background sound level as represented by the L_{A90} parameter, determined in the absence of the industrial noise. The L_{A90} parameter is defined as the level exceeded for 90% of the measurement time, representing the underlying noise in the absence of short duration noise events such as dog barks or individual cars passing.

The industrial noise under consideration is assessed in terms of the ambient noise level, L_{Aeq}, but a character correction penalty can be applied where the noise exhibits certain characteristics such as distinguishable tones, impulsiveness or, if the noise is distinctively intermittent. The ambient

noise level, L_{Aeq} is defined as the steady-state noise level with the same energy as the actual fluctuating sound over the same time period. It is effectively the average noise level during the period. The industrial noise level (L_{Aeq}) with the character correction (if necessary) is known as rating level, L_{Ar}, and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The standard then states:

a) *"Typically, the greater the difference, the greater the magnitude of the impact.*

b) *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*

c) *A difference of around +5dB 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 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."*

The standard outlines a number of methods for defining appropriate 'character corrections' to determine the rating levels to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency.

The standard also highlights the importance of considering the context in which a sound occurs. The standard indicates that factors including the absolute sound level, the character of the sound, the sensitivity of the receptor and the existing acoustic character of the area should be considered when assessing the noise impact.

3.3 Environment Agency Method Implementation Document (MID) for BS 4142

The MID for BS4142 has the stated aim of ensuring that the standard is followed consistently. The EA's MID for BS4142 applies to BS4142:2014 +A1:2019 and provides detailed guidance on presenting a noise impact assessment in a format suitable for submission with an environmental permit application. This guidance has been adopted within this report.

4 Noise Survey

4.1 Survey details

An environmental noise survey was undertaken from Thursday 20th to Monday 24th November 2025 to determine the baseline noise levels at a location representative of the nearest noise sensitive receptors. The survey was undertaken by means of continuous, unattended monitoring at the location indicated on Figure 1 above.

A Rion NL52 sound level meter with a Type WS-15 windshield was used for the survey, set up to log various noise indices (L_{Aeq}, L_{AMax} and L_{A90} etc) in consecutive 15-minute periods. The monitoring station was time synchronised to Greenwich Mean Time.

The microphone and windshield were mounted at a height of approximately 1.7m above local ground level. Field calibrations were performed at set up and at collection using a Rion NC-75 sound level calibrator with no significant deviation recorded. The field calibration results are detailed in Table 2 below:

Table 2: Calibration Summary

Equipment	Serial Number	Microphone Serial Number	Field Calibration Results		Difference, dB
			Before, dB	After, dB	
Rion NL52 Sound Level Meter	876021	11551	94.0	94.0	0.0
Rion NC-75 Acoustic Calibrator	34745901	--	--	--	--

All equipment used in the survey were within their appropriate calibration window. Calibration certificates are included in Appendix A.

Due to the nature of the business, it was not possible to shut down either bakery site during the survey period. The monitoring location used in the survey was chosen as being representative of the nearest noise-sensitive receptors while minimising any noise from either Bradgate facility.

4.2 Measurement Locations

The location of the noise monitoring equipment is identified in Figure 1 above and Table 3 below. Photographs of the monitoring location are presented in Appendix B.

The sound level meter was set up as an unattended monitoring station, running for approximately 117 hours from 20th to 25th November 2025.

The monitoring station was set up in an external amenity area of the care home, to the south of the main care home building. The amenity area was surrounded by a large (approximately 2m) brick wall which completely enclosed the space. Given the height of the perimeter wall, the microphone was set up to 1.7m above local ground to minimise the screening afforded. Some noise from the care home was audible though given the time of year, windows were generally closed and no external fixed plant or equipment was observed in the area.

Table 3: Noise Monitoring Location

Location	Distance to application boundary, m	Approximate OS Co-ordinates	
		Easting	Northing
M01	75	457418	308992

Additional noise monitoring was attempted to the rear of the site, in the vicinity of Thurcaston Road (receptor AL04) however, access to the area could not be found due to blocked roads and fly-tipping.

The noise levels in this area are likely to be lower due to the proximity to the surrounding roads however, the receptor is already exposed to noise from the existing industrial estate, so it is unlikely to be particularly tranquil.

An earlier survey was carried out BWB Consulting Limited in October 2021. Their results indicate the background sound level in this location was around L_{A90} 40dB to 42dB during the daytime and L_{A90} 39dB to 40dB during the night. It is noted that this survey was undertaken during the COVID pandemic and the levels may be markedly lower than typical for the area due to reductions in operations at the industrial estate and in road traffic volumes.

Extracts from the BWB report are presented in Appendix C.

4.3 Meteorological Conditions

The survey period was selected with a forecast of suitable weather conditions. The nature of the monitoring location, being in the lea of a building and surrounded by a perimeter wall, did not lend itself to localised weather monitoring. In addition, no secure, comparable weather monitoring location was available. As such, publicly available weather data has been used to highlight periods of adverse weather conditions. The weather monitoring location was approximately 1km to the south of the site, in the vicinity of Beaumont Leys Lane[1].

During the initial set up period, the weather was noted to be dry and cold, with an ambient air temperature of 4°C. with a light breeze. Cloud cover was noted at 90%.

During the unattended period the available weather data indicates that the prevailing conditions were generally dry and calm, with maximum wind speeds rarely exceeding a 15min average of 2.4m/s. The prevailing wind direction was from the south-west, which was recorded for more than 50% of the survey period. The ambient air temperature reached a maximum of 8.5°C during the daytime period and overnight lows of -2.5°C.

During the collection period, the prevailing weather conditions were again cold and dry, with an ambient air temperature of 3°C. Wind speeds were low, with no overall direction recorded at the monitoring location.

Overall, the recorded weather conditions were conducive to noise monitoring.

4.4 Environmental Sound Climate

The noise climate at the monitoring location was governed by road traffic noise from Bennion Road which, while close to the roundabout, was considered to be free flowing and with a relatively steady speed.

No noise from either Bradgate facility was audible at the monitoring location. Indeed, no noise of an industrial nature was audible, including any of the other operators in the vicinity.

Analysis of the recorded audio files indicates that traffic noise is a significant factor during both the daytime and night-time periods, with frequent vehicle movements being noted at all times of the day and night. Other notable noise sources include some low-level activity noise at the monitoring location, specifically an audible warning 'beep' considered to be from a health monitoring machine within the care home. This was only audible during lulls in other environmental noise sources. Other extraneous noise includes a duck / goose quack causing an elevated spike in noise during one night-time period, though this does not affect the background sound level.

A comprehensive site walk over indicates noise from both Bradgate sites is largely localised within the immediate vicinity of the sites and barely, if ever, audible beyond the perimeter of the sites. Certainly not on any of the public footpaths accessed during the walkover.

With specific reference to the time history charts in Appendix D, the transient events around 15:00hrs on the 24th November relate to activities outside of the care home site. The audio files indicate this was landscaping work i.e. lawn mowing or ground clearance on the verges and footpaths in the vicinity.

[1] https://www.wunderground.com/dashboard/pws/ILEICE80

4.5 Survey Results

Table 4 below presents a summary of the survey data at the unattended monitoring location. For the ambient level (dB L_{Aeq}), the results in the assessment periods have been logarithmically averaged. For the maximum events (L_{Amax}), the highest recorded events during the assessment period are presented. For the background sound level (L_{A90}), the arithmetic average and mode (most common integer value) are presented. Time history charts showing the variation in the 15-minute L_{Aeq}, L_{AMax} and L_{A90} noise levels and the distribution histograms used to determine the modal value are shown in Appendix D.

Table 4: Summary of Noise Survey Results – M01

Location	Period, T	Duration Hh:mm	$L_{Aeq, T}$, dB	L_{Amax}, dB	Background Sound Level, L_{A90}, dB	
					Mean	Mode
M01	Daytime 07:00 to 23:00	78:00	61.5	101.9	49	51
	Night-time 23:00 to 07:00	40:00	51.4	99.1	44	47

In terms of the L_{Aeq} parameter, the daytime ambient sound level is 10dB higher than during the night. This is considered to reflect the reduction in road traffic flow during the night-time period.

The background sound level (L_{A90}) generally follows the L_{Aeq} parameter, with reasonable consistency. There are periods where the L_{Aeq} displays spikes though these appear to be short duration events, which do not affect the L_{A90}.

There is a difference between the mean and mode values of the L_{A90} during both the daytime and night. This is largely due to the range of L_{A90} values and the occurrence of the mean value falling below the most common integer (mode).

4.6 Noise Data Analysis

As indicated above, the existing facility operates 24 hours per day, 7 days per week with no significant shut down periods. To that end, it was not possible to arrange for a shutdown of the facility during the survey period. As such, it is not possible to derive the specific noise levels of the existing operations from the measured data. As indicated above though, noise from the facility was not readily audible outside of the site boundary.

4.7 Background Sound Level Analysis and Noise Targets

The distribution of $L_{A90, 15min}$ values during the daytime period demonstrates a modal peak at 51dB while the mean is 49dB. Overall, the daytime modal value is towards the upper end of the range of values, with approximately 65% of the survey period falling below the 51dB level. Given this, the mean value of 49dB is considered typical for this assessment.

During the night-time period, there are two modal peaks, the first at L_{A90} 39dB and a second at 47dB. The lower peak largely relates to the overnight period between 20th and 21st November when background sound levels were lower. This is likely a result of winds being from the north whereas the wind was from the south / south-west for the majority of the survey. It is noted that south westerly winds are considered typical for the UK. Notwithstanding this, the lower value of L_{A90} 39dB is taken as being typical for the purposes of this assessment.

At receptor AL04, to the east of the site, the background sound level has been informed by the baseline noise data presented in the BWB report. Though these are not considered to be particularly representative of current noise levels, it is still considered a useful steer on the likely noise climate during quieter portions of the day and night.

In this regard, a background sound level of L_{A90} 41dB has been used during the day and L_{A90} 39dB during the night. Selecting these value will ensure a conservative assessment.

4.8 Attended Noise Measurements

In addition to the environmental survey detailed above, a shorter duration, attended noise survey was undertaken in the vicinity of the existing site to quantify noise from the operational facility. The noise measurements were made in close proximity to a range of noise sources; typically, 1m from the source, for period of up to 2 minutes.

The measurements were made using the following equipment:

Table 5: Calibration Summary – Attended Measurements

Equipment	Serial Number	Microphone Serial Number	Field Calibration Results		Difference, dB
			Before, dB	After, dB	
Norsonic 140	1403242	79574	94.0	94.0	0.0
Rion NC-75 Acoustic Calibrator	34745901	--	--	--	--

The measured noise levels are summarised in Table 6 below. The full survey data is presented in Appendix D.

Table 6: Attended Measurement Results

Noise Source	Description	Sound Pressure Level, dB
Ashton Green Site		
Chiller Units	3no. Mitsubishi, top venting chiller units located to the north of the building towards Ashton Green Rd	72.7dB at 1m
Effluent Pump	1no effluent pump located at ground level in a partially screened, enclosed area.	74.5dB at 1m
Ammonia Plant Room (Louvred Outlet)	Noise levels measured at approx. 0.5m from the louvred outlet of the Ammonia plant room on the western elevation.	66.2dB at 0.5m
Blast Chillers	Measured at approx. 1m from the louvred outlet of the blast chillers located to the east of the site. Noise profile includes a start-up period where sound levels 'ramp up' to operating levels and a slowdown period after operation.	88.9dB at 1m (average) 90.9dB at 1m (highest)
Glycol Flow Pump	Operational pumps located to the northeast of the building, enclosed on 3 sides by high buildings.	77.3dB at 1m
Madeline Road Site		
Plant Enclosure	Noise levels measured at approximately 0.5m outside an operational plant enclosure. The enclosure is formed by a 'hit and miss' style fence and a line of sight can be established through to the plant from certain angles.	75.8dB at 0.5m

Noise Source	Description	Sound Pressure Level, dB
Refrigeration Plant Room Outlet	Noise Levels measured at approx. 0.5m outside the louvred outlet of the refrigeration plant room in the south-western corner of the site.	78.9dB at 0.5m
Refrigeration Plant Pump	Noise Levels measured at approx. 1m from the closest refrigeration plant pump in the south-western corner of the site, adjacent to the plant room.	83.0dB at 1m

Subjectively, the plant items observed demonstrated no tonal content. The refrigeration plant pumps at the Madeline Road site were slightly tonal however, they are well removed from any noise sensitive third-party receptor.

5 Operational Noise Predictions

5.1 Noise Modelling Details

A model has been constructed using IMMI noise modelling software to predict noise levels to the identified receptor locations. Within the modelling software, propagation of noise has been calculated in accordance with BS ISO 9613-2[2] with the following input parameters:

- Downwind propagation (noise levels under crosswind and upwind conditions will be less);
- Mixed ground between the noise source and the receiver locations (G = 0.5);
- Ambient air temperature of 10°C and 70% Relative Humidity;
- Order of reflection set to 2;
- Barrier and screening influence calculated in accordance with BS ISO 9613-2; and,
- Topographical data from Ordinance Survey.

The noise modelling assessment detailed in this report centres on the external plant items observed during the site visit and the reported number of vehicle movements.

Further detail on the sources used in the modelling is provided below.

5.2 Noise Sources

During the site visit a range of noise sources were observed around the site. All noise was considered to emanate from external noise sources i.e. no noise was considered to be transmitted through the fabric of the building. The exception to this being louvred outlets, principally those on the western façade of the Ammonia Plant Room. Noise from the external sources was generally localised around the source and rarely propagated as far as the site boundary.

Where practical, noise measurements were made of the identified sources as reported in section 4.8 above. These measurements are detailed in Appendix D and have been used to inform the noise modelling assessment.

The majority of noise sources were input as point sources at the relative heights above ground level. The exception being the louvred outlets of the Ammonia Plant Room, which were input as vertical area sources on the building facades. All noise sources are considered to be operating at 100% capacity for the entire period.

2 BS ISO 9613-2:2024 Acoustics. Attenuation of sound during propagation outdoors. Engineering method for the prediction of sound pressure levels outdoor

5.3 Vehicle Movements

Information provided by the operators indicates that each site receives the following vehicle movements:

- Ashton Green – 85 to 90 vehicles per day (approximately 6 - 7 vehicles per hour);
- Madeline Road – 30 vehicles per day (approximately 8 vehicles per hour).

Within the noise modelling assessment, vehicle movements have been modelled as a line source in accordance with the haul road methodology detailed in BS5228-1. In this instance, the noise source level was 105.5dB and was modelled at a height of 0.5m above local height. Only vehicle movements within the application boundary have been considered in this assessment. It is assumed that there are no deliveries or dispatches during the night-time period.

5.4 Inherent Noise Mitigation Measures

The site is within an existing, operational industrial estate and is surrounded by large commercial / industrial buildings and fences, screening noise generated at the application site from nearby receptor locations. In addition, the surrounding industrial / commercial estate provides a degree of masking noise and by extension, contributes to a degree of habituation of nearby residents to industrial / commercial noise sources.

With specific regard to the Ashton Green site, the bulk of the noise generating plant are located on the eastern side of the site, utilising the mass of the building as a barrier to propagation towards Ashton Green Road and the dwellings located here. In addition to this, an earth bund is located along the eastern boundary providing a degree of screening in this direction.

Noise associated with internal plant and the new processing lines is attenuated by the building envelope. The cladding is an insulated cladding product, affording a significant reduction in building break out noise.

6 Operational Assessment

The principal assessments presented below consider the potential noise impact of the sources detailed in the variation application in line with the methodology detailed in BS4142.

6.1 Rating Noise Level Corrections

Subjectively, the noise sources observed at both sites were not tonal in nature. There was some tonal content from the refrigeration pumps at the Madeline Road site however these are well removed from any third-party noise sensitive receptors and were not a significant contributor to the overall noise emissions from the facility.

Both sites are located within an existing, operational industrial area of Leicester with a number of large manufacturing facilities in the area. As a result, noise from industrial processes including fixed plant and large vehicle movements is not out of keeping with the general noise climate in the area and a degree of habituation is likely at all nearby receptors.

Given the above, no weighting has been applied in the derivation of the rating noise levels.

6.2 Noise Impact Assessment

The noise model has been used to calculate specific noise levels from the additions to the permit, to the identified receptor locations. Noise contour plots demonstrating the propagation of noise from the site are presented in Appendix E.

Table 6 below presents the prediction results and daytime noise impact at the identified receptor positions, with noise levels calculated to ground (1.5m) and first (4m) floor heights relative to local ground level.

Table 7: BS4142 Noise Impact Assessment - Daytime

Assessment Position	Assessment Location	Specific Level, L_{As}, dB	Rating Level, L_{Ar} dB	Background Sound Level, L_{Ar} dB	Difference, dBA
AL01 - George Hythe House	Ground	36	36	49	-13
	First	37	37		-12
AL02 - 8 Edgbaston Close	Ground	37	37		-12
	First	38	38		-11
AL03 - 2 Crabtree Cottage	Ground	36	36		-13
	First	36	36		-13
AL04 – Birstall Lodge	Ground	39	39	41	-2
	First	41	41		+/-0

For receptors AL01 to AL03, the predicted noise levels fall more than 10dB below the measured background sound level. This indicates that the cumulative noise, from both Bradgate sites, does not govern the noise climate at these receptors. Furthermore, the masking provided by the existing noise climate would render noise from the Bradgate sites, inaudible at these locations. This mirrors the experience on site, where no industrial / commercial noise was perceived outside of the site boundaries for both the Madeline Road and Ashton Green sites.

The predicted rating noise level at AL04 is between 2dB below and parity with the background sound level. It is reiterated that the background sound level at this location was established during the COVID pandemic therefore is likely to be significantly lower than would be typical during 'normal' times. In either case, the predicted rating noise level does not exceed the background sound level and is considered to give a 'low noise impact' in accordance with BS4142.

The night-time assessment is provided in Table 7 below with the results compared with the night-time background sound level. In this instance, the assessments are made to first floor level, assuming occupants would be indoors, in bedrooms rather than outside dwellings.

Table 8: BS4142 Noise Impact Assessment - Night

Assessment Position	Assessment Location	Specific Level, L_{As}, dB	Rating Level, L_{Ar} dB	Background Sound Level, L_{Ar} dB	Difference, dBA
AL01 - George Hythe House	First	36	36	39	-3
AL02 - 8 Edgbaston Close	First	37	37		-2
AL03 - 2 Crabtree Cottage	First	36	36		-3
AL04 – Birstall Lodge	First	39	39		+/-0

During the night-time period the rating noise levels do not exceed the typical background sound levels in the area. This is again, indicative of a low noise impact in accordance with BS4142.
Given the assessment outcomes for both the daytime and night-time periods, there is no need for additional mitigation or further BAT measures.

6.3 Discussion

As indicated above, it was not possible to undertake a baseline noise survey during a period in which the Bradgate Bakery sites were shut down. The only day in the year when the facility does shut down in any way, is Christmas and measuring over this period would not give 'typical' background sound levels due to reduced traffic flows etc. Given this, care was taken to select a proxy monitoring location where noise from either site was not readily audible, or a significant influence on the prevailing noise climate.

The assessments presented in this report are made for the plant and equipment detailed in the variation application. The operations consented under the extant permit has been operating for many years at this site and has not been modelled or included in the calculations detailed above. This approach is consistent with BS 4142 for which only the new plant and activity would need to be considered.

The assessment indicates that the predicted specific noise levels do not exceed the prevailing background sound level at any location, during both the daytime and night-time periods. This would not be a perceptible level of change under normal listening conditions. As such, assuming residents in the area are habituated to the existing background sound level, they are unlikely to perceive any change in the noise climate.

6.4 Uncertainty and Context

BS4142 requires an assessment of uncertainty and context. The prediction methodology in BS ISO 9613-2 is considered accurate to ±3dB, but further uncertainty can occur in the source noise levels. In this case, the predictions are based on noise levels measured at this site, and comparable Samworth sites. The predictions assume that all equipment is running at 100% during the assessment periods.

The baseline survey is also subject to uncertainty. However, longer duration measurements were made to provide a greater dataset of values. The typical background noise is derived from statistical analysis of the dataset to ensure a conservative assessment is provided.

Given the above, the assessment is considered to represent a worst-case assessment and uncertainty in the calculations and noise survey is not considered to impact the assessment outcomes significantly.

The context of the area is that the nearest housing to the facility is reasonably well removed from the facility and is already exposed to noise from the wider industrial estate. Noise from traffic and from other industrial / commercial premises is already a feature of the noise climate.

7 Summary

A noise impact assessment has been undertaken in support of an application to vary the environmental permit for the Bradgate Bakery site, off Bennion Road, Leicester.

A baseline noise survey has been undertaken in the vicinity of the site from which, typical background sound levels have been derived for both the daytime and night-time periods. As it was not possible to programme in a shutdown period, measures were taken to ensure any noise from the existing facility was inaudible at the chosen monitoring location.

Computer modelling has been used to determine noise levels generated by the new plant items at the nearest noise sensitive receptor locations. The calculations indicate that operational noise from the facility would not exceed the background sound level during both the daytime and night-time assessment periods, which will ensure a low impact with regard to BS 4142.

Given the above, it is considered that there are no noise-related issues associated with the variation to the environmental permit at the Bradgate Bakery facility.

Appendix A – Calibration Certificates

Rion 3 – S/N 876021

ANV MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

Date of Issue: 29 August 2024

Certificate Number: TCRT24/1673

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer	Ion Acoustics Ltd Georges House 9-10 Bath Street Bristol BS1 6HL
Order No.	Warranty Repair
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00876021
Rion	Firmware		2.1
Rion	Pre Amplifier	NH-25	76138
Rion	Microphone	UC-59	11551
Rion	Calibrator	NC-75	34334830
	Calibrator adaptor type if applicable		NC-75-022

Performance Class	1
Test Procedure	TP 10. SLM 61672-3:2013
	Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2013	Yes
	If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013
Date Received	22 August 2024 ANV Job No. TRAC24/08374
Date Calibrated	29 August 2024

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	03 January 2023	TCRT23/1001	ANV Measurement Systems

Appendix A – Calibration Certificates

CERTIFICATE OF CALIBRATION

Certificate Number
TCRT24/1673
Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1		
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion
Date provided or internet download date	19 March 2021		

	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Uncertainties provided	Yes	Yes	Yes

Total expanded uncertainties within the requirements of IEC 61672-1:2013	YES		
Specified or equivalent Calibrator	Specified		
Customer or Lab Calibrator	Lab Calibrator		
Calibrator adaptor type if applicable	NC-75-022		
Calibrator cal. date	13 August 2024		
Calibrator cert. number	UCRT24/2101		
Calibrator cal cert issued by Lab	0653		
Calibrator SPL @ STP	94.00	dB	Calibration reference sound pressure level
Calibrator frequency	1000.00	Hz	Calibration check frequency
Reference level range	Single	dB	

Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)
Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.

Environmental conditions during tests	Start	End	
Temperature	23.61	23.48	± 0.30 °C
Humidity	52.1	52.9	± 3.00 %RH
Ambient Pressure	100.85	100.86	± 0.03 kPa

Indication at the Calibration Check Frequency				
Initial indicated level	94.0	dB	Adjusted indicated level	94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±				0.10 dB

Self Generated Noise

Microphone installed -	Less Than	18.2	dB	A Weighting	
Microphone replaced with electrical input device -				UR = Under Range indicated	

Weighting	A			C			Z		
	13.8	dB	UR	18.7	dB	UR	23.5	dB	UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with the Guide to the Expression of Uncertainty in Measurement published by ISO.

Additional Comments

Prior to calibration the instrument's main PCB was replaced and the meter was realigned.

..... END .....

Calibrated by: C. Hirlav R 3

Appendix A – Calibration Certificates

Calibrator – S/N 34745901

CERTIFICATE OF CALIBRATION

Date of Issue: 10 September 2025 **Certificate Number: TCRT25/1682**

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer	Ion Acoustics Ltd Georges House 9-10 Bath Street Bristol BS1 6HL
Order No.	ION250903
Test Procedure	Procedure TP 14 Calibration of Sound Calibrators (60942:2017)
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-75	34745901
Public evidence of Type Approval		Yes	Approved by PTB	

The calibrator has been tested as specified in Annex B of IEC 60942:2017. As public evidence was available, from a testing organisation responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2017, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2017.

ANV Job No.	TRAC25/09396
Date Received	04 September 2025
Date Calibrated	10 September 2025
Previous Certificate	*Dated* Initial Calibration *Certificate No.* *Laboratory*

Appendix A – Calibration Certificates

CERTIFICATE OF CALIBRATION

Certificate Number
TCRT25/1682
Page 2 of 2 Pages

Measurements

The sound pressure level generated by the calibrator (averaged over a 20 to 25 second period) in its WS2 configuration was measured five times (rotating the calibrator on the microphone each time) by the Insert Voltage Method using a microphone as detailed below. The mean of the results obtained is shown below.

The frequency of the sound from the calibrator was measured five times over a 20 to 25 second period and the average frequency calculated.

The total distortion + noise of the sound from the calibrator was measured, using a rejection filter distortion factor meter, five times over a 20 to 25 second period and the average distortion + noise calculated.

Test Microphone	*Manufacturer*	*Type*
	Brüel & Kjær	4134

Nominal Setting dB / Hz	Mean Level dB rel 20 µPa	Frequency	Distortion + Noise
94 / 1000	93.99 ± 0.10	1000.00 ± 0.12Hz	(0.17 ± 0.05) %

Environmental conditions during tests	Start	End		
Temperature	23.54	23.50	± 0.30	°C
Humidity	57.5	52.3	± 3.0	%RH
Ambient Pressure	98.892	98.883	± 0.030	kPa

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with the Guide to the Expression of Uncertainty in Measurement published by the International Organisation for Standards (ISO).

The uncertainties refer to the measured values only with no account being taken of the ability of the instrument to maintain its calibration.

A small correction factor may need to be applied to the sound pressure level quoted above if the device is used to calibrate a sound level meter which is fitted with a free-field response microphone. See manufacturers handbook for details.

Note: Calibrator adjusted prior to calibration? NO

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

Calibrated by: TK R 1

..... END .....

Appendix A – Calibration Certificates

Norsonic 3 – S/N 1403242

CERTIFICATE OF CALIBRATION

ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Date of Issue: 01 August 2025

Certificate Number: TCRT25/1596

Page 1 of 3 Pages

Approved Signatory

K. Mistry

CUSTOMER	Ion Acoustics Ltd Georges House 9 - 10 Bath Street Bristol BS1 6HL
ORDER No	PO250729JC
Job No	TRAC25/07351
DATE OF RECEIPT	30 July 2025
PROCEDURE	Calibration Engineer's Handbook, section 25
IDENTIFICATION	Sound level meter Norsonic type 140 serial No 1403242 connected via a preamplifier type 1209 serial No 12198 to a half-inch microphone type 1225 serial No 79574.
CALIBRATED ON	01 August 2025

Appendix A – Calibration Certificates

CERTIFICATE OF CALIBRATION

Certificate Number
TCRT25/1596

The sound level meter was set up using a type 4231 sound calibrator supplied by the laboratory; it was set to frequency weighting A, and initially read 114.4 dB. It was then adjusted to read 113.9 dB (corresponding to 113.9 dB at standard atmospheric pressure). This reading was derived from the certified output level of the calibrator and manufacturers' information on the free-field response of the sound level meter. The calibration check frequency was 1kHz. The final microphone sensitivity calculated and stored by the meter was -26.4 dB.

Procedures based on IEC 61672-3:2006 (BS EN 61672-3:2006) were used to perform the periodic tests.

RESULTS

The sound level meter submitted for testing has successfully completed the class 1 periodic tests carried out, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2 : 2003 (BS EN 61672-2 : 2003), to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1 : 2002 (BS EN 61672-1 : 2003), the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1 : 2002 (BS EN 61672-1 2003).

The self-generated noise recorded with the microphone replaced by the electrical input device was:

9.3 dB (A) 15.3 dB (C) 24.3 dB (Z, normal) 44.1 dB (Z, wide)

The measured C-weighted self-generated noise exceeds the expected value published by the manufacturer.No expected maximum noise level has been published for Z (wide) weighting.

The environmental conditions recorded at the start and end of testing were:

Start: 22 to 23 °C, 48 to 58 %RH and 100.6 to 100.7 kPa
End: 22 to 23 °C, 49 to 59 %RH and 100.6 to 100.7 kPa

Technical information including adjustment data specified in the manufacturers' User Guide dated February 2017 and additional manufacturer's information has been used to carry out this verification. No information on the uncertainty of measurement, required by 11.7 of IEC 61672-3:2006 (BS EN 61672-3:2006), of the adjustment data given in the instruction manual was made available by the manufacturer. The uncertainty of measurement of the adjustment data has therefore been assumed to be numerically zero for the purpose of this periodic test. If these uncertainties are not actually zero, there is a possibility that the frequency response of the sound level meter may not conform to the requirements of IEC 61672-1:2002 (BS EN 61672-1:2003).

Publicly-available evidence has been found that the Norsonic 140 sound level meter design has successfully undergone pattern evaluation in accordance with IEC 61672-2:2002 (BS EN 61672-2:2003) by Physikalisch-Technische Bundesanstalt (PTB), an independent testing organisation responsible for pattern approvals.

All measurement data are held at ANV Measurement Systems for a period of at least six years.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with the *Guide to the Expression of Uncertainty in Measurement* published by the International Organisation for Standards (ISO).

Appendix A – Calibration Certificates

CERTIFICATE OF CALIBRATION

Certificate Number
TCRT25/1596

Page 3 of 3 Pages

NOTES

1 The instrument was running firmware version 2.1.670

2 It should be noted that the meter is not equipped with an under-range indicator, and care should therefore be taken to restrict measurements to the linearity ranges specified in the User Guide.

3 The correction filters were set as follows during testing:

	Random	Windscreen	Preamp	Self-noise
Status	OFF	OFF	ON	N/A
Screen marker			G	

4 Typical case reflection factors specified by the manufacturer have been used for this verification.

5 No suitable microphone frequency response information was supplied with the instrument. It was therefore measured by this laboratory using the electrostatic actuator method.

END

R 3

Appendix B – Photos of Noise Monitoring Locations

Location M01

Appendix B – Photos of Noise Monitoring Locations

Environmental Statement Addendum (May 2024)
Leicester City Council

10.3Baseline Noise Survey

Summary

10.2 A baseline noise survey has been undertaken to determine the prevailing noise climate at locations representative of noise sensitive receptors in proximity to the proposed development site. Baseline noise monitoring has been undertaken at the measurement locations identified in **Figure 3.1.**

Figure 10.3.1: Baseline Noise Measurement Locations

Survey Methodology

10.3 Noise monitoring was undertaken at Measurement Location 1 (ML1) from 15:00 on Friday 22nd October 2021 until 12:00 on Tuesday 26th October 2021. Measurement equipment was established in free-field conditions at 1.5 m above local ground level and circa. 18 m from the nearside kerb edge of Ashton Green Road to the west. The noise climate at ML1 was noted to be dominated by road traffic on Ashton Green Road. Noise levels measured at ML1 are considered representative of those experienced at residential properties located at the junction of Greengate Lane and Ashton Green Road to the north of the development site.

10.4 Noise monitoring was undertaken at Measurement Location 2 (ML2) from 23:00 on Friday 22nd October 2021 until 07:00 on Tuesday 26th October 2021. Measurement equipment was established in free-field conditions at 1.5 m above local ground level and circa. 60 m from the nearside kerb edge of Thurcaston Road the west. It should be noted that Thurcaston Road was not yet operational at the time of the survey. The daytime noise climate at ML2 was noted to be dominated by farming activities (tractor movements etc), distant road traffic and underlying mechanical noise from the nearby commercial units to the east of Thurcaston Road. Noise levels measured at ML2 are considered representative of those experience at the farmhouse to the south of the proposed development site.

Measurement Equipment

10.5 The baseline noise survey was undertaken using the Class 1 specification noise measurement equipment detailed in **Table 3.1**. The equipment was calibrated using a portable calibrator immediately before and after the measurements with no significant drift in calibration observed. The sound level meters, pre-amplifiers and microphones were calibrated to traceable standards within the 24 months prior to the measurements. The portable calibrators were calibrated within the 12 months preceding the date of the survey.

Table 10.3.1: Noise Measurement Equipment

Position	Equipment	Make and Model	Serial Number	Calibration Due Date
ML1	Sound Level Meter	01 dB Fusion	11327	18/06/2023
	Microphone	Grass 40CE	259479	
	Pre-amp	01 dB PRE 22	1605201	
ML2	Sound Level Meter	Larson Davis NXT	0001957	26/08/2023
	Microphone	PCB37B02	LW133276	
	Pre-amp	PCB PRMLxT1	12248	
ML1 & 2	Calibrator	01dB-Stell Cal 21	34675335	19/11/2021

Weather Conditions

10.6 The weather was generally conducive to environmental noise measurement, it being dry with negligible winds during all survey periods (<5 ms^{-1}).

Measurement Results

10.7 A summary of measured sound pressure levels at ML1 and ML2 is presented in **Table 10.3.2** and **10.3.3**

Table 10.3.2: Summary of measured sound pressure levels at ML1

Period	Start Time	Period (T)	dB $L_{Aeq,T}$	dB $L_{A90,T}$[1]	dB L_{AFmax}[2]
Friday Day	22/10/2021 15:00	8-hours	54	49	-
Friday Night	22/10/2021 23:00	8-hours	44	41	60
Saturday Day	23/10/2021 07:00	16-hours	52	46	-
Saturday Night	23/10/2021 23:00	8-hours	45	41	61
Sunday Day	24/10/2021 07:00	16-hours	50	46	-
Sunday Night	24/10/2021 23:00	8-hours	46	42	61
Monday Day	25/10/2021 07:00	16-hours	53	48	-
Monday Night	25/10/2021 23:00	8-hours	46	42	60
Tuesday Day	26/10/2021 07:00	5-hours	54	50	-

[1] arithmetic average $L_{A90,15mins}$ during measurement period,
[2] 10th Percentile L_{AFmax} noise levels during measurement period

Table 10.3.3: Summary of measured sound pressure levels at ML2

Period	Start Time	Duration	dB $L_{Aeq,T}$	dB $L_{A90,T}$[1]	dB L_{AFmax}[2]
Friday Night	22/10/2021 23:00	8-hours	42	40	52
Saturday Day	23/10/2021 07:00	16-hours	51	43	-
Saturday Night	23/10/2021 23:00	8-hours	42	40	52
Sunday Day	24/10/2021 07:00	16-hours	47	41	-
Sunday Night	24/10/2021 23:00	8-hours	41	39	50
Monday Day	25/10/2021 07:00	16-hours	47	42	-

Appendix C – BWB Noise Survey Excerpt

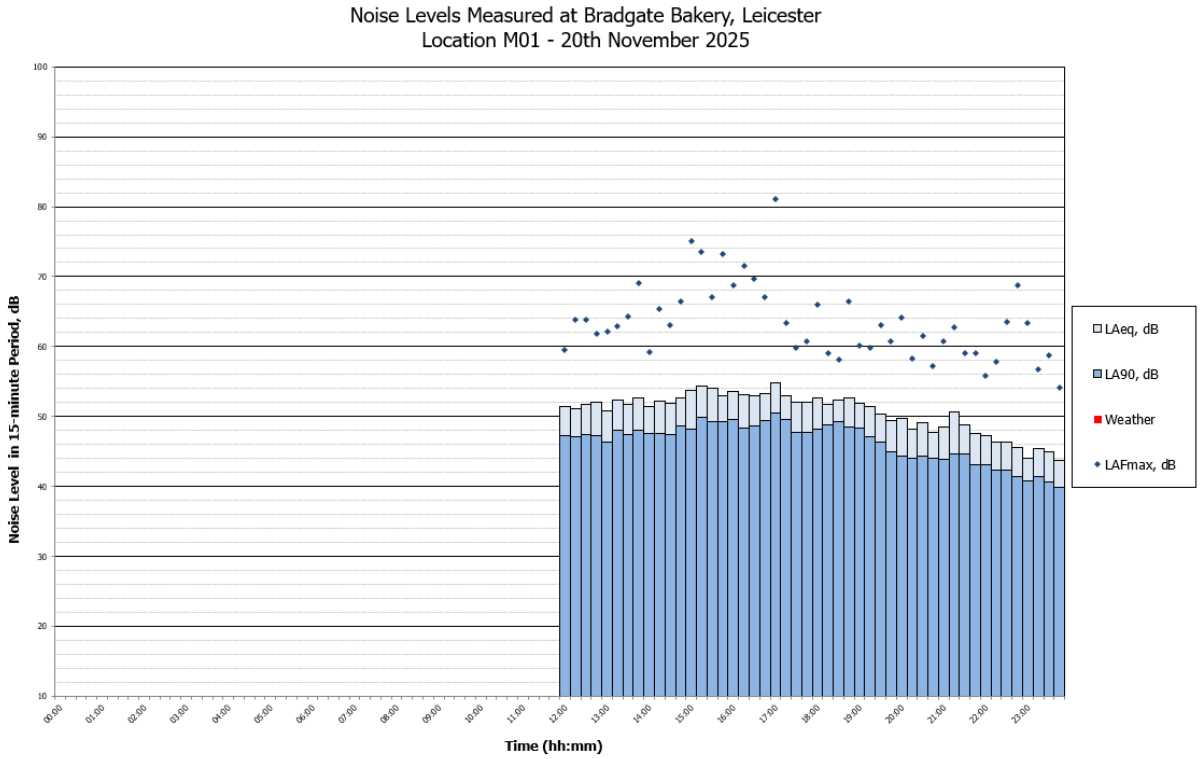
Environmental Statement Addendum (May 2024)
Leicester City Council

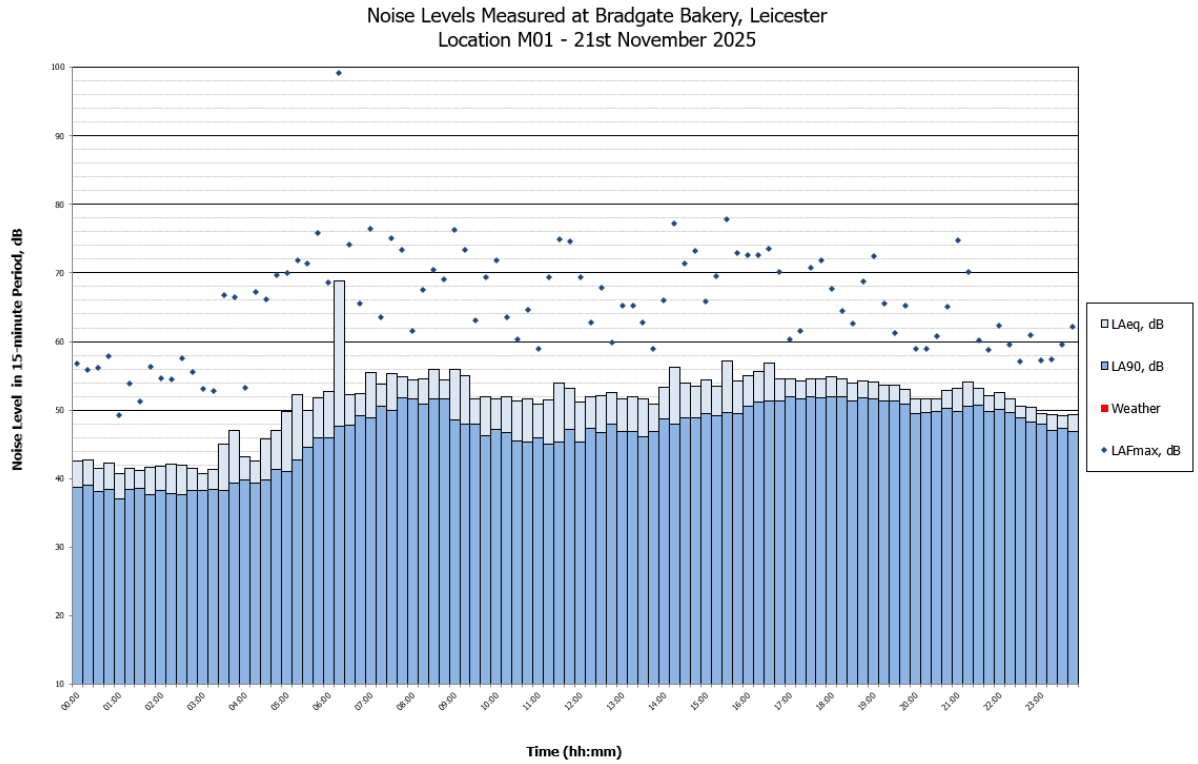
Period	Start Time	Duration	dB $L_{Aeq,T}$	dB $L_{A90,T}$ [1]	dB L_{AFmax} [2]
Monday Night	25/10/2021 23:00	8-hours	42	40	52

[1] arithmetic average $L_{A90,15mins}$ during measurement period,
[2] 10th Percentile L_{AFmax} noise levels during measurement period

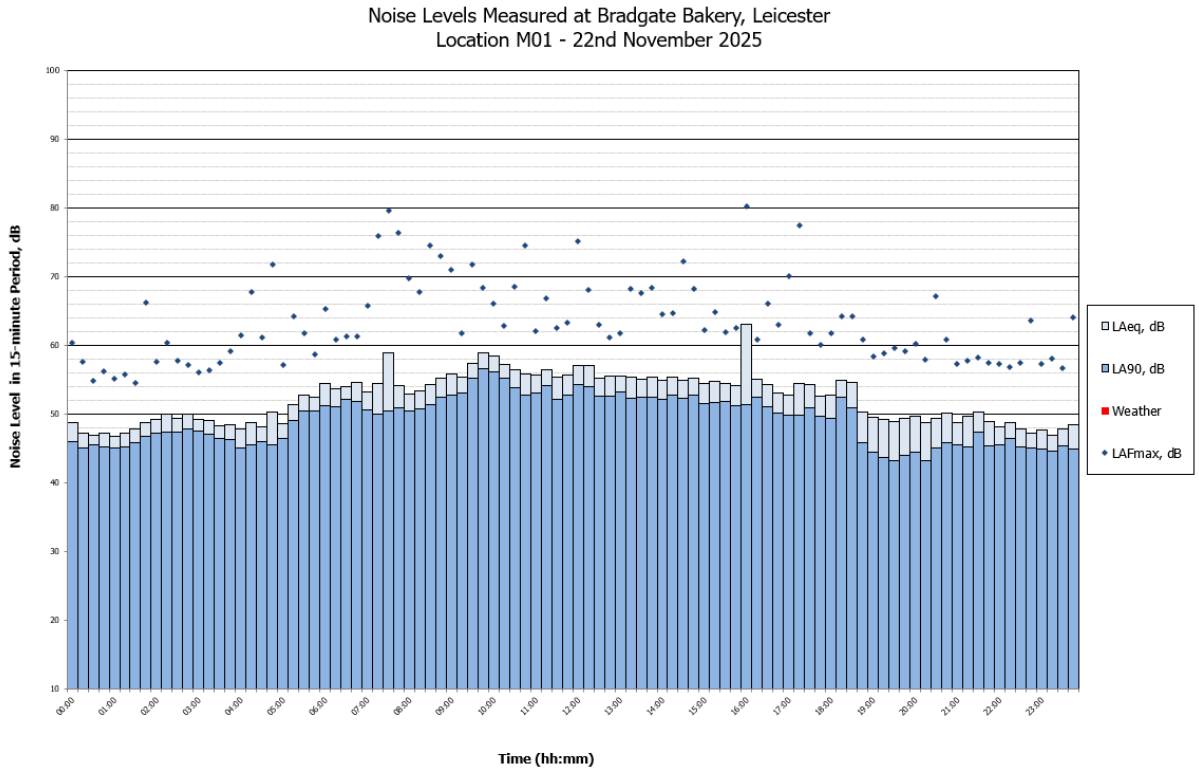
Appendix D – Survey Data

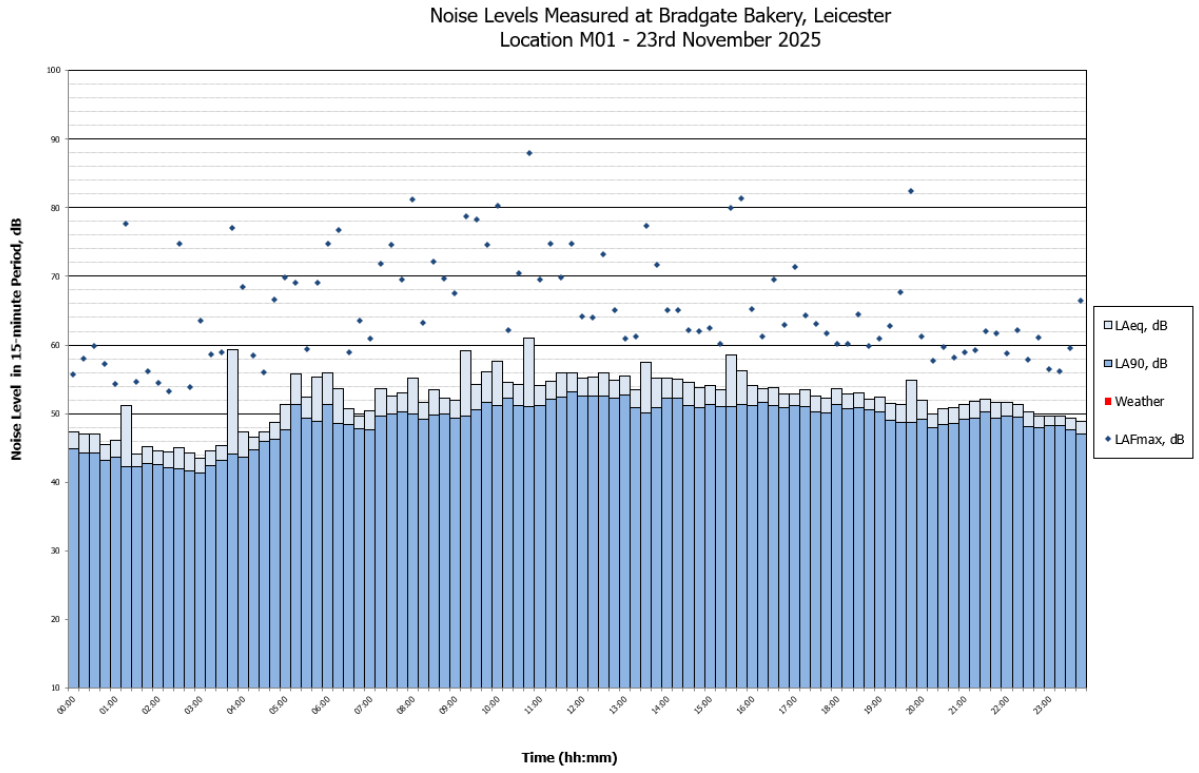
Location M01



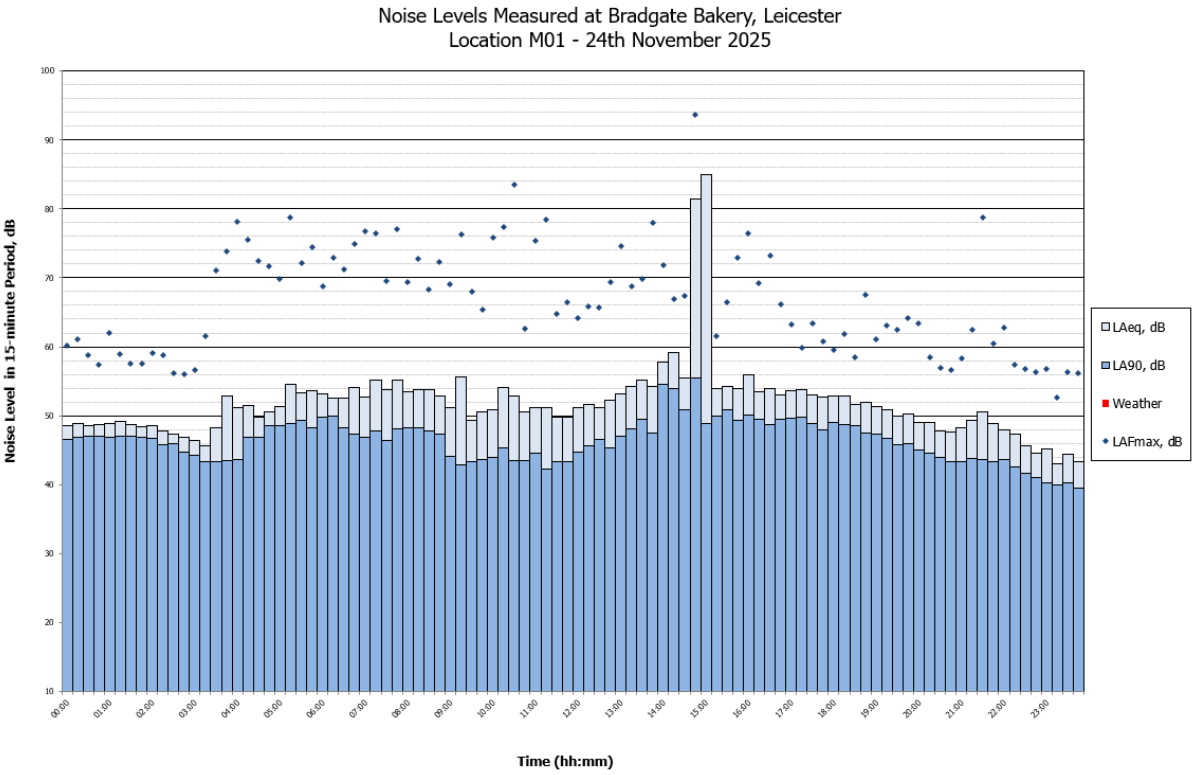


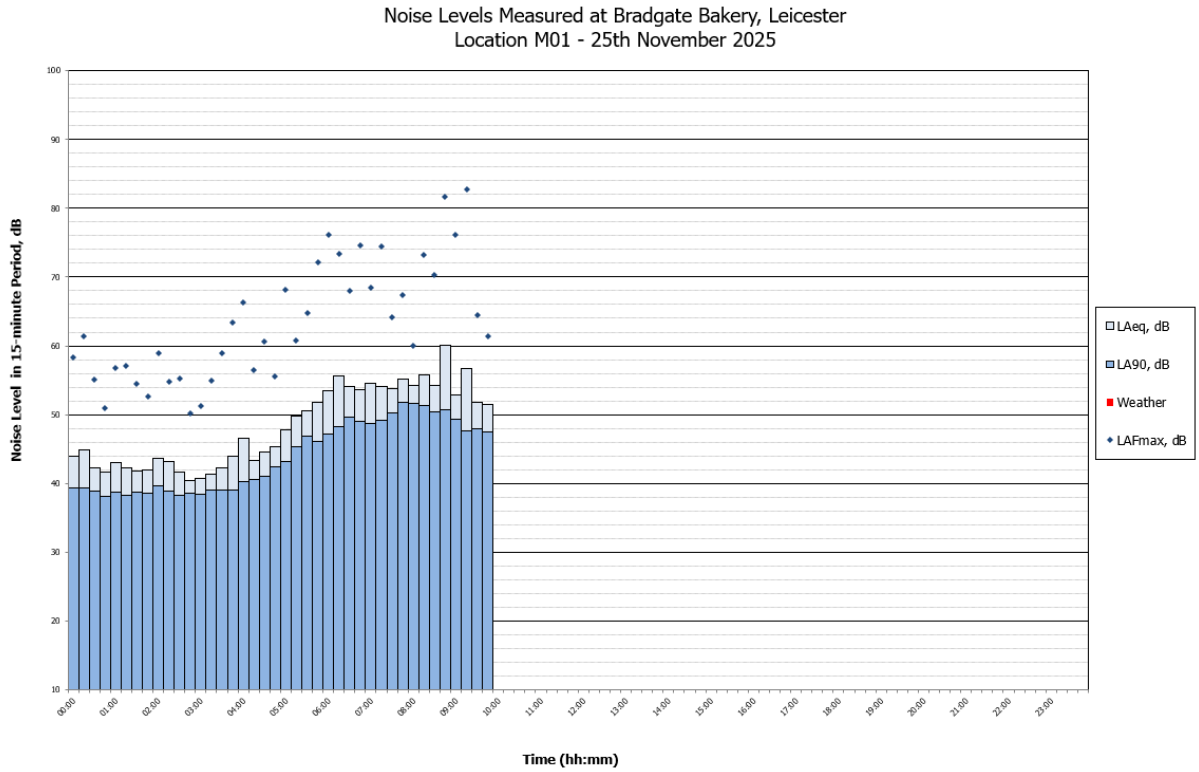
Appendix D – Survey Data



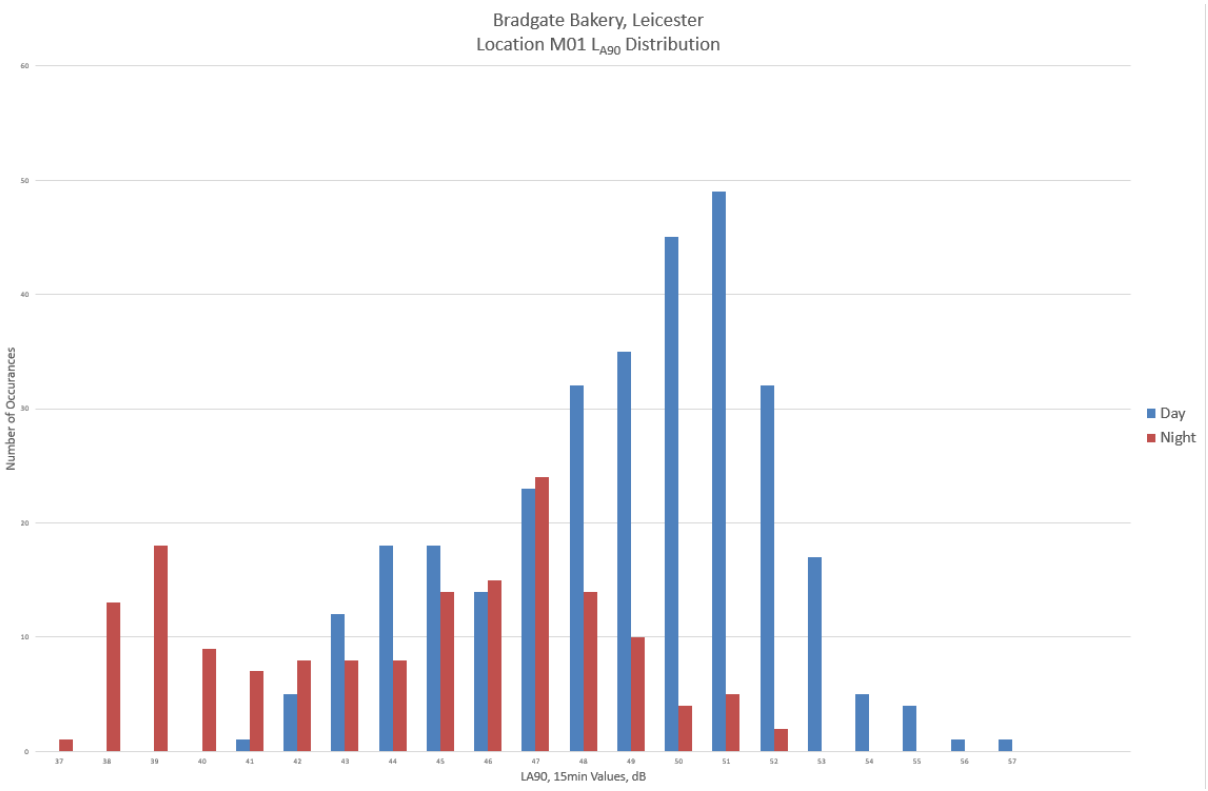


Appendix D – Survey Data





Appendix D – Survey Data



Appendix D – Survey Data

Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
20/11/2025 12:00	51.4	59.5	47.3	21/11/2025 08:00	54.4	61.6	51.7	22/11/2025 04:00	47.9	61.4	45.1	23/11/2025 00:00	47.3	55.7	44.8
20/11/2025 12:15	51.2	63.9	47.1	21/11/2025 08:15	54.5	67.6	50.9	22/11/2025 04:15	48.8	67.7	45.6	23/11/2025 00:15	47.1	58.0	44.3
20/11/2025 12:30	51.7	63.8	47.4	21/11/2025 08:30	55.9	70.5	51.6	22/11/2025 04:30	48.2	61.1	46.0	23/11/2025 00:30	47.0	59.9	44.2
20/11/2025 12:45	52.1	61.9	47.3	21/11/2025 08:45	54.4	69.0	51.6	22/11/2025 04:45	50.3	71.8	45.6	23/11/2025 00:45	45.5	57.3	43.2
20/11/2025 13:00	50.8	62.2	46.4	21/11/2025 09:00	55.9	76.3	48.5	22/11/2025 05:00	48.6	57.1	46.5	23/11/2025 01:00	46.1	54.3	43.6
20/11/2025 13:15	52.4	62.9	48.1	21/11/2025 09:15	55.0	73.4	47.9	22/11/2025 05:15	51.4	64.2	49.1	23/11/2025 01:15	51.2	77.7	42.3
20/11/2025 13:30	51.7	64.3	47.4	21/11/2025 09:30	51.6	63.0	47.9	22/11/2025 05:30	52.7	61.8	50.5	23/11/2025 01:30	44.1	54.7	42.2
20/11/2025 13:45	52.7	69.0	48.0	21/11/2025 09:45	52.0	69.3	46.2	22/11/2025 05:45	52.5	58.7	50.4	23/11/2025 01:45	45.2	56.2	42.7
20/11/2025 14:00	51.5	59.2	47.6	21/11/2025 10:00	51.7	71.8	47.2	22/11/2025 06:00	54.4	65.3	51.2	23/11/2025 02:00	44.6	54.5	42.5
20/11/2025 14:15	52.2	65.4	47.6	21/11/2025 10:15	51.9	63.6	46.7	22/11/2025 06:15	53.7	60.8	51.1	23/11/2025 02:15	44.4	53.2	42.1
20/11/2025 14:30	51.9	63.1	47.4	21/11/2025 10:30	51.4	60.3	45.5	22/11/2025 06:30	54.0	61.3	52.1	23/11/2025 02:30	45.0	74.8	42.0
20/11/2025 14:45	52.7	66.4	48.6	21/11/2025 10:45	51.6	64.6	45.3	22/11/2025 06:45	54.6	61.3	51.8	23/11/2025 02:45	44.2	53.9	41.6
20/11/2025 15:00	53.8	75.1	48.2	21/11/2025 11:00	50.8	59.0	45.9	22/11/2025 07:00	53.3	65.8	50.6	23/11/2025 03:00	43.5	63.5	41.3
20/11/2025 15:15	54.3	73.6	49.9	21/11/2025 11:15	51.5	69.4	45.1	22/11/2025 07:15	54.5	75.9	50.0	23/11/2025 03:15	44.5	58.6	42.4
20/11/2025 15:30	54.1	67.1	49.3	21/11/2025 11:30	54.0	74.9	45.4	22/11/2025 07:30	58.9	79.6	50.4	23/11/2025 03:30	45.4	58.9	43.2
20/11/2025 15:45	53.0	73.3	49.3	21/11/2025 11:45	53.2	74.6	47.2	22/11/2025 07:45	54.2	76.4	50.9	23/11/2025 03:45	59.3	77.1	44.1
20/11/2025 16:00	53.6	68.7	49.6	21/11/2025 12:00	51.2	69.4	45.4	22/11/2025 08:00	53.0	69.8	50.5	23/11/2025 04:00	47.3	68.4	43.7
20/11/2025 16:15	53.1	71.5	48.4	21/11/2025 12:15	51.9	62.7	47.3	22/11/2025 08:15	53.4	67.8	50.8	23/11/2025 04:15	46.6	58.5	44.7
20/11/2025 16:30	52.9	69.7	48.6	21/11/2025 12:30	52.1	67.9	46.7	22/11/2025 08:30	54.3	74.6	51.4	23/11/2025 04:30	47.4	56.0	45.9
20/11/2025 16:45	53.3	67.0	49.5	21/11/2025 12:45	52.6	59.8	47.9	22/11/2025 08:45	55.2	73.0	52.5	23/11/2025 04:45	48.7	66.6	46.2
20/11/2025 17:00	54.9	81.1	50.5	21/11/2025 13:00	51.7	65.2	46.8	22/11/2025 09:00	55.9	71.0	52.7	23/11/2025 05:00	51.4	69.9	47.7
20/11/2025 17:15	52.9	63.3	49.6	21/11/2025 13:15	52.0	65.3	46.8	22/11/2025 09:15	55.4	61.8	53.1	23/11/2025 05:15	55.8	69.1	51.4
20/11/2025 17:30	52.0	59.9	47.7	21/11/2025 13:30	51.7	62.8	46.1	22/11/2025 09:30	57.4	71.8	55.2	23/11/2025 05:30	52.4	59.4	49.3
20/11/2025 17:45	52.1	60.8	47.8	21/11/2025 13:45	50.9	58.9	46.8	22/11/2025 09:45	58.9	68.4	56.6	23/11/2025 05:45	55.3	69.0	48.9
20/11/2025 18:00	52.7	66.0	48.2	21/11/2025 14:00	53.3	66.0	48.7	22/11/2025 10:00	58.5	66.1	56.2	23/11/2025 06:00	55.9	74.7	51.3
20/11/2025 18:15	51.8	59.0	48.8	21/11/2025 14:15	56.2	77.2	48.0	22/11/2025 10:15	57.2	62.9	55.2	23/11/2025 06:15	53.6	76.7	48.5
20/11/2025 18:30	52.3	58.2	49.3	21/11/2025 14:30	53.9	71.4	48.9	22/11/2025 10:30	56.4	68.6	53.8	23/11/2025 06:30	50.7	59.0	48.4
20/11/2025 18:45	52.6	66.4	48.5	21/11/2025 14:45	53.5	73.2	48.9	22/11/2025 10:45	55.9	74.5	52.7	23/11/2025 06:45	49.7	63.5	47.8
20/11/2025 19:00	51.9	60.1	48.4	21/11/2025 15:00	54.4	65.8	49.5	22/11/2025 11:00	55.7	62.1	53.1	23/11/2025 07:00	50.4	61.0	47.7
20/11/2025 19:15	51.4	59.9	47.2	21/11/2025 15:15	53.5	69.6	49.2	22/11/2025 11:15	56.5	66.9	54.2	23/11/2025 07:15	53.6	71.9	49.7
20/11/2025 19:30	50.4	63.1	46.3	21/11/2025 15:30	57.2	77.8	49.7	22/11/2025 11:30	55.4	62.6	52.2	23/11/2025 07:30	52.5	74.6	49.9
20/11/2025 19:45	49.5	60.8	45.0	21/11/2025 15:45	54.2	72.9	49.5	22/11/2025 11:45	55.7	63.3	52.8	23/11/2025 07:45	53.0	69.6	50.2
20/11/2025 20:00	49.7	64.2	44.3	21/11/2025 16:00	55.0	72.6	50.6	22/11/2025 12:00	57.0	75.1	54.3	23/11/2025 08:00	55.2	81.2	50.0
20/11/2025 20:15	48.2	58.3	44.1	21/11/2025 16:15	55.6	72.6	51.2	22/11/2025 12:15	57.1	68.1	54.0	23/11/2025 08:15	51.7	63.3	49.1
20/11/2025 20:30	49.1	61.6	44.4	21/11/2025 16:30	56.9	73.5	51.4	22/11/2025 12:30	55.3	63.0	52.6	23/11/2025 08:30	53.4	72.1	49.8
20/11/2025 20:45	47.8	57.2	44.0	21/11/2025 16:45	54.6	70.1	51.4	22/11/2025 12:45	55.5	61.2	52.6	23/11/2025 08:45	52.3	69.7	49.9
20/11/2025 21:00	48.5	60.7	43.9	21/11/2025 17:00	54.6	60.3	52.0	22/11/2025 13:00	55.5	61.8	53.2	23/11/2025 09:00	51.9	67.5	49.3
20/11/2025 21:15	50.7	62.7	44.6	21/11/2025 17:15	54.2	61.5	51.7	22/11/2025 13:15	55.4	68.2	52.3	23/11/2025 09:15	59.2	78.8	49.7
20/11/2025 21:30	48.8	59.0	44.7	21/11/2025 17:30	54.6	70.8	52.0	22/11/2025 13:30	55.0	67.6	52.4	23/11/2025 09:30	54.2	78.3	50.6
20/11/2025 21:45	47.6	59.0	43.1	21/11/2025 17:45	54.6	71.8	51.8	22/11/2025 13:45	55.4	68.4	52.4	23/11/2025 09:45	56.1	74.6	51.6
20/11/2025 22:00	47.3	55.9	43.1	21/11/2025 18:00	54.8	67.7	52.0	22/11/2025 14:00	54.9	64.6	52.2	23/11/2025 10:00	57.6	80.3	51.2
20/11/2025 22:15	46.4	57.9	42.3	21/11/2025 18:15	54.5	64.4	52.0	22/11/2025 14:15	55.4	64.7	52.7	23/11/2025 10:15	54.5	62.1	52.2
20/11/2025 22:30	46.4	63.6	42.3	21/11/2025 18:30	54.0	62.6	51.3	22/11/2025 14:30	54.9	72.2	52.3	23/11/2025 10:30	54.3	70.4	51.2
20/11/2025 22:45	45.6	68.7	41.5	21/11/2025 18:45	54.3	68.8	51.8	22/11/2025 14:45	55.3	68.3	52.7	23/11/2025 10:45	61.0	87.9	51.0
20/11/2025 23:00	44.1	63.4	40.8	21/11/2025 19:00	54.1	72.4	51.7	22/11/2025 15:00	54.4	62.3	51.5	23/11/2025 11:00	54.1	69.5	51.2
20/11/2025 23:15	45.5	56.7	41.5	21/11/2025 19:15	53.7	65.6	51.4	22/11/2025 15:15	54.7	64.9	51.7	23/11/2025 11:15	54.7	74.8	52.1
20/11/2025 23:30	45.0	58.8	40.6	21/11/2025 19:30	53.7	61.3	51.3	22/11/2025 15:30	54.5	61.9	51.8	23/11/2025 11:30	56.0	69.8	52.4
20/11/2025 23:45	43.8	54.2	39.9	21/11/2025 19:45	53.0	65.3	50.8	22/11/2025 15:45	54.2	62.5	51.2	23/11/2025 11:45	56.0	74.8	53.1
21/11/2025 00:00	42.6	56.8	38.7	21/11/2025 20:00	51.7	58.9	49.5	22/11/2025 16:00	63.0	80.3	51.4	23/11/2025 12:00	55.2	64.1	52.5
21/11/2025 00:15	42.7	55.8	39.1	21/11/2025 20:15	51.7	58.9	49.6	22/11/2025 16:15	55.0	60.9	52.4	23/11/2025 12:15	55.3	64.0	52.6
21/11/2025 00:30	41.5	56.1	38.1	21/11/2025 20:30	51.7	60.7	49.8	22/11/2025 16:30	54.3	66.1	51.1	23/11/2025 12:30	56.0	73.2	52.6
21/11/2025 00:45	42.3	57.8	38.5	21/11/2025 20:45	52.8	65.1	50.3	22/11/2025 16:45	53.1	63.0	50.1	23/11/2025 12:45	54.8	65.1	52.3
21/11/2025 01:00	40.7	49.3	37.0	21/11/2025 21:00	53.1	74.8	49.8	22/11/2025 17:00	52.8	70.0	49.8	23/11/2025 13:00	55.5	60.9	52.7
21/11/2025 01:15	41.5	53.8	38.5	21/11/2025 21:15	54.1	70.2	50.6	22/11/2025 17:15	54.5	77.4	49.8	23/11/2025 13:15	53.4	61.2	50.9
21/11/2025 01:30	41.2	51.2	38.6	21/11/2025 21:30	53.1	60.1	50.7	22/11/2025 17:30	54.3	61.8	50.9	23/11/2025 13:30	57.4	77.3	50.1
21/11/2025 01:45	41.7	56.3	37.7	21/11/2025 21:45	52.1	58.7	49.8	22/11/2025 17:45	52.6	60.1	49.7	23/11/2025 13:45	55.1	71.6	50.8
21/11/2025 02:00	41.8	54.7	38.3	21/11/2025 22:00	52.5	62.3	50.1	22/11/2025 18:00	52.8	61.7	49.4	23/11/2025 14:00	55.1	65.1	52.2
21/11/2025 02:15	42.1	54.4	37.8	21/11/2025 22:15	51.7	59.6	49.7	22/11/2025 18:15	54.9	64.2	52.5	23/11/2025 14:15	55.0	65.0	52.2
21/11/2025 02:30	41.9	57.5	37.7	21/11/2025 22:30	50.6	57.1	48.9	22/11/2025 18:30	54.6	64.2	51.0	23/11/2025 14:30	54.6	62.1	51.2
21/11/2025 02:45	41.5	55.5	38.2	21/11/2025 22:45	50.4	61.0	48.3	22/11/2025 18:45	50.3	60.8	45.9	23/11/2025 14:45	53.8	62.0	50.8
21/11/2025 03:00	40.8	53.1	38.2	21/11/2025 23:00	49.5	57.2	47.9	22/11/2025 19:00	49.5	58.4	44.4	23/11/2025 15:00	54.1	62.5	51.3
21/11/2025 03:15	41.4	52.8	38.4	21/11/2025 23:15	49.3	57.4	47.1	22/11/2025 19:15	49.2	58.9	43.7	23/11/2025 15:15	53.5	60.1	51.0
21/11/2025 03:30	45.1	66.7	38.2	21/11/2025 23:30	49.1	59.5	47.3	22/11/2025 19:30	48.9	59.6	43.2	23/11/2025 15:30	58.5	79.9	51.0
21/11/2025 03:45	47.0	66.5	39.4	21/11/2025 23:45	49.4	62.2	46.8	22/11/2025 19:45	49.4	59.2	44.0	23/11/2025 15:45	56.2	81.3	51.3
21/11/2025 04:00	43.2	53.2	39.8	22/11/2025 00:00	48.7	60.4	46.0	22/11/2025 20:00	49.7	60.2	44.4	23/11/2025 16:00	54.1	65.2	51.1
21/11/2025 04:15	42.6	67.2	39.4	22/11/2025 00:15	47.2	57.6	45.1	22/11/2025 20:15	48.8	57.9	43.2	23/11/2025 16:15	53.6	61.2	51.6
21/11/2025 04:30	45.8	66.2	39.8	22/11/2025 00:30	47.0	54.8	45.5	22/11/2025 20:30	49.4	67.1	45.1	23/11/2025 16:30	53.8	69.5	51.2
21/11/2025 04:45	47.1	69.7	41.4	22/11/2025 00:45	47.3	56.3	45.3	22/11/2025 20:45	50.1	60.8	45.9	23/11/2025 16:45	52.9	62.9	50.8
21/11/2025 05:00	49.8	70.0	41.1	22/11/2025 01:00	46.7	55.1	45.1	22/11/2025 21:00	48.7	57.3	45.5	23/11/2025 17:00	52.9	71.3	51.1
21/11/2025 05:15	52.2	71.8	42.8	22/11/2025 01:15	47.3	55.7	45.2	22/11/2025 21:15	49.7	57.8	45.3	23/11/2025 17:15	53.4	64.3	51.0
21/11/2025 05:30	49.9	71.3	44.5	22/11/2025 01:30	47.9	54.5	45.9	22/11/2025 21:30	50.3	58.2	47.4	23/11/2025 17:30	52.5	63.1	50.3
21/11/2025 05:45	51.8	75.8	46.0	22/11/2025 01:45	48.8	66.2	46.7	22/11/2025 21:45	48.9	57.5	45.4	23/11/2025 17:45	52.3	61.7	50.1
21/11/2025 06:00	52.7	68.6	46.0	22/11/2025 02:00	49.3	57.6	47.3	22/11/2025 22:00	48.2	57.3	45.5	23/11/2025 18:00	53.6	60.2	51.3
21/11/2025 06:15	68.8	99.1	47.6	22/11/2025 02:15	50.0	60.4	47.4	22/11/2025 22:15	48.7	56.9	46.5	23/11/2025 18:15	52.8	60.2	50.7
21/11/2025 06:30	52.2	74.2	47.8	22/11/2025 02:30	49.4	57.7	47.4	22/11/2025 22:30	47.8	57.5	45.3	23/11/2025 18:30	53.0	64.5	50.8
21/11/2025 06:45	52.4	65.6	49.2	22/11/2025 02:45	50.0	57.2	47.9	22/11/2025 22:45	47.3	63.6	45.1	23/11/2025 18:45	52.1	59.9	50.5
21/11/2025 07:00	55.5	76.5	48.9	22/11/2025 03:00	49.2	56.0	47.5	22/11/2025 23:00	47.7	57.3	45.0	23/11/2025 19:00	52.4	60.9	50.3
21/11/2025 07:15	53.8	63.5	50.6	22/11/2025 03:15	49.1	56.4	47.1	22/11/2025 23:15	47.0	58.1	44.6	23/11/2025 19:15	51.5	62.8	49.0
21/11/2025 07:30	55.3	75.0	50.0	22/11/2025 03:30	48.3	57.4	46.4	22/11/2025 23:30	47.9	56.7	45.4	23/11/2025 19:30	51.4	67.7	48.7
21/11/2025 07:45	54.8	73.3	51.8	22/11/2025 03:45	48.4	59.1	46.3	22/11/2025 23:45	48.5	64.1	45.0	23/11/2025 19:45	54.9	82.5	48.7

Appendix D – Survey Data

Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
23/11/2025 20:00	52.0	61.3	49.2	24/11/2025 16:00	55.9	76.5	50.1
23/11/2025 20:15	50.0	57.7	47.9	24/11/2025 16:15	53.4	69.2	49.5
23/11/2025 20:30	50.7	59.7	48.4	24/11/2025 16:30	53.9	73.2	48.7
23/11/2025 20:45	50.9	58.1	48.6	24/11/2025 16:45	53.0	66.1	49.5
23/11/2025 21:00	51.3	59.0	49.2	24/11/2025 17:00	53.6	63.2	49.7
23/11/2025 21:15	51.8	59.2	49.4	24/11/2025 17:15	53.8	59.8	49.8
23/11/2025 21:30	52.1	62.0	50.2	24/11/2025 17:30	53.0	63.4	48.9
23/11/2025 21:45	51.7	61.7	49.4	24/11/2025 17:45	52.7	60.8	47.9
23/11/2025 22:00	51.7	58.7	49.6	24/11/2025 18:00	52.8	59.5	49.0
23/11/2025 22:15	51.3	62.2	49.5	24/11/2025 18:15	52.8	61.9	48.7
23/11/2025 22:30	50.3	57.9	48.1	24/11/2025 18:30	51.7	58.4	48.5
23/11/2025 22:45	49.6	61.1	47.9	24/11/2025 18:45	51.9	67.6	47.5
23/11/2025 23:00	49.7	56.4	48.2	24/11/2025 19:00	51.3	61.1	47.4
23/11/2025 23:15	49.7	56.2	48.2	24/11/2025 19:15	50.8	63.0	46.7
23/11/2025 23:30	49.4	59.5	47.7	24/11/2025 19:30	50.0	62.5	45.8
23/11/2025 23:45	48.9	66.5	47.0	24/11/2025 19:45	50.2	64.2	46.0
24/11/2025 00:00	48.6	60.1	46.5	24/11/2025 20:00	49.0	63.4	45.0
24/11/2025 00:15	48.9	61.1	46.8	24/11/2025 20:15	49.0	58.4	44.6
24/11/2025 00:30	48.6	58.7	47.0	24/11/2025 20:30	47.8	56.9	44.0
24/11/2025 00:45	48.7	57.4	47.1	24/11/2025 20:45	47.6	56.7	43.3
24/11/2025 01:00	48.8	62.0	46.9	24/11/2025 21:00	48.2	58.3	43.3
24/11/2025 01:15	49.1	59.0	47.0	24/11/2025 21:15	49.4	62.5	43.8
24/11/2025 01:30	48.7	57.6	47.1	24/11/2025 21:30	50.6	78.8	43.7
24/11/2025 01:45	48.4	57.5	46.8	24/11/2025 21:45	48.8	60.4	43.4
24/11/2025 02:00	48.6	59.1	46.7	24/11/2025 22:00	47.9	62.7	43.7
24/11/2025 02:15	47.8	58.8	45.8	24/11/2025 22:15	47.3	57.4	42.6
24/11/2025 02:30	47.4	56.2	45.9	24/11/2025 22:30	45.7	56.8	41.7
24/11/2025 02:45	46.9	56.0	44.7	24/11/2025 22:45	44.6	56.3	41.0
24/11/2025 03:00	46.4	56.7	44.2	24/11/2025 23:00	45.2	56.8	40.2
24/11/2025 03:15	45.7	61.6	43.3	24/11/2025 23:15	43.0	52.7	40.0
24/11/2025 03:30	48.2	71.0	43.3	24/11/2025 23:30	44.4	56.3	40.2
24/11/2025 03:45	52.9	73.9	43.5	24/11/2025 23:45	43.4	56.1	39.5
24/11/2025 04:00	51.2	78.2	43.6	25/11/2025 00:00	43.9	58.3	39.4
24/11/2025 04:15	51.5	75.5	46.9	25/11/2025 00:15	44.8	61.4	39.3
24/11/2025 04:30	49.8	72.4	46.9	25/11/2025 00:30	42.2	55.1	38.9
24/11/2025 04:45	50.6	71.7	48.5	25/11/2025 00:45	41.7	50.9	38.1
24/11/2025 05:00	51.4	69.9	48.5	25/11/2025 01:00	43.0	56.8	38.8
24/11/2025 05:15	54.5	78.7	48.8	25/11/2025 01:15	42.3	57.1	38.3
24/11/2025 05:30	53.3	72.2	49.4	25/11/2025 01:30	41.8	54.5	38.7
24/11/2025 05:45	53.7	74.4	48.3	25/11/2025 01:45	42.0	52.6	38.6
24/11/2025 06:00	53.1	68.7	49.8	25/11/2025 02:00	43.6	59.0	39.7
24/11/2025 06:15	52.6	72.9	49.9	25/11/2025 02:15	43.2	54.8	38.9
24/11/2025 06:30	52.5	71.2	48.2	25/11/2025 02:30	41.6	55.3	38.3
24/11/2025 06:45	54.1	74.9	47.3	25/11/2025 02:45	40.4	50.1	38.6
24/11/2025 07:00	52.7	76.7	46.9	25/11/2025 03:00	40.7	51.2	38.4
24/11/2025 07:15	55.2	76.5	47.8	25/11/2025 03:15	41.4	55.0	39.0
24/11/2025 07:30	53.8	69.6	46.4	25/11/2025 03:30	42.3	58.9	39.0
24/11/2025 07:45	55.2	77.0	48.1	25/11/2025 03:45	44.0	63.4	39.0
24/11/2025 08:00	53.4	69.3	48.3	25/11/2025 04:00	46.6	66.3	40.2
24/11/2025 08:15	53.8	72.8	48.3	25/11/2025 04:15	43.4	56.4	40.5
24/11/2025 08:30	53.8	68.3	47.8	25/11/2025 04:30	44.5	60.6	41.0
24/11/2025 08:45	52.8	72.3	47.3	25/11/2025 04:45	45.4	55.5	42.4
24/11/2025 09:00	51.2	69.0	44.1	25/11/2025 05:00	47.8	68.1	43.2
24/11/2025 09:15	55.6	76.3	42.9	25/11/2025 05:15	49.8	60.8	45.4
24/11/2025 09:30	49.4	68.0	43.3	25/11/2025 05:30	50.6	64.7	46.8
24/11/2025 09:45	50.5	65.4	43.6	25/11/2025 05:45	51.8	72.2	46.1
24/11/2025 10:00	50.9	75.9	44.0	25/11/2025 06:00	53.5	76.1	47.2
24/11/2025 10:15	54.1	77.3	45.3	25/11/2025 06:15	55.7	73.4	48.3
24/11/2025 10:30	52.8	83.5	43.5	25/11/2025 06:30	54.1	68.0	49.6
24/11/2025 10:45	50.6	62.6	43.5	25/11/2025 06:45	53.6	74.6	49.0
24/11/2025 11:00	51.1	75.3	44.6	25/11/2025 07:00	54.5	68.5	48.7
24/11/2025 11:15	51.2	78.5	42.3	25/11/2025 07:15	54.1	74.4	49.2
24/11/2025 11:30	49.8	64.7	43.3	25/11/2025 07:30	53.8	64.1	50.3
24/11/2025 11:45	49.8	66.5	43.4	25/11/2025 07:45	55.1	67.4	51.8
24/11/2025 12:00	51.1	64.2	44.7	25/11/2025 08:00	54.2	60.0	51.7
24/11/2025 12:15	51.7	65.9	45.6	25/11/2025 08:15	55.8	73.2	51.3
24/11/2025 12:30	51.2	65.7	46.5	25/11/2025 08:30	54.2	70.3	50.4
24/11/2025 12:45	52.2	69.4	45.4	25/11/2025 08:45	60.1	81.6	50.7
24/11/2025 13:00	53.2	74.6	47.1	25/11/2025 09:00	52.8	76.1	49.4
24/11/2025 13:15	54.2	68.7	48.1	25/11/2025 09:15	56.7	82.7	47.7
24/11/2025 13:30	55.1	69.8	49.5	25/11/2025 09:30	51.8	64.4	47.9
24/11/2025 13:45	54.2	78.0	47.5	25/11/2025 09:45	51.5	61.4	47.5
24/11/2025 14:00	57.8	71.9	54.6	25/11/2025 10:00	0.0	0.0	0.0
24/11/2025 14:15	59.2	66.9	53.9	25/11/2025 10:15	0.0	0.0	0.0
24/11/2025 14:30	55.4	67.4	50.8	25/11/2025 10:30	0.0	0.0	0.0
24/11/2025 14:45	81.4	93.6	55.4	25/11/2025 10:45	0.0	0.0	0.0
24/11/2025 15:00	85.0	101.9	48.9	25/11/2025 11:00	0.0	0.0	0.0
24/11/2025 15:15	54.0	61.6	49.9	25/11/2025 11:15	0.0	0.0	0.0
24/11/2025 15:30	54.2	66.4	50.8	25/11/2025 11:30	0.0	0.0	0.0
24/11/2025 15:45	54.0	72.9	49.3	25/11/2025 11:45	0.0	0.0	0.0

Chiller Units – Ashton Green

The bulk of the external plant associated with the Ashton Green site is cooling / chilling plant. The majority of these are roof mounted chiller units though there are some ground mounted units, specifically on the northern elevation of the site, near the effluent plant. In this location, 3no. floor mounted, top venting condenser units are located. Figure D1 below shows the chiller units.

Figure D1: Chiller Units

All units were operational during the measurements and were subjectively considered to generate no tonal, impulsive or intermittent noise. The measured sound pressure level, in octave bands, is presented in Table D1 below.

Table D1: Attended Measurement Results – Floor Mounted Chillers

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
3no. floor mounted chiller units	1	81.5	73.0	73.1	70.9	67.0	63.5	59.4	72.7

The measured noise level above represents all three chiller units operating at one time and are at typical operating duty.

Roof Mounted Cooler Condenser Plant

During the site walkover, a number of roof mounted condenser units were noted at roof level on various parts of the building, including above the ammonia plant room and towards the northern portion of the building. In addition, similar units were noted on the roof of the Madeline building and at ground level on the western side of the building.

Access to the roof spaces could not be arranged during the survey therefore proxy measurements for comparable units have been used in this assessment. These are from a different Samworth Brothers site and are considered to be a reasonable proxy for the observed condenser units. Figure D2 shows the cooler condenser units at the proxy location. Note this is not on the Bradgate Bakery site.

Figure D2: Cooler Condenser Units

Table D2: Roof Mounted Condenser Units

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Roof Condensers	1	80.0	82.1	82.0	77.3	75.1	69.0	63.5	79.9

The above units were considered to generate broadband noise, with no distinguishable tones, impulses or intermittent qualities.

Effluent pump – Ashton Green

The effluent pump is located at the base of the effluent silo, on the northern elevation of the building, in a bunded compound, adjacent to the pond in the north western corner of the site.

Figure D3 shows this below:

Figure D3: Effluent Pump

The pump was considered to generate broadband noise, with no distinguishable tones or intermittency. The bund was topped by a 'hit and miss' style fence which obscured the line of sight to the site boundary. The measured sound pressure level, in octave bands, is presented in Table D3 below.

Table D3: Attended Measurement Results – Effluent Pump

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Effluent Pump	1	73.6	69.3	68.1	67.4	71.4	69.4	65.8	75.3

It is noted that the measurements were made on the 'inside' of the bunded enclosure therefore no attenuation for the surrounding screen is included in the measured levels.

Ammonia Plant Room – Ashton Green

The ammonia plant room is located broadly centrally within the site as indicated on Figure 2 above. All the plant is located within the building envelope however there are a number of louvred openings and doors within the western façade, facing towards Ashton Green Road. Figure D4 below shows the louvred opening in the façade.

Figure D4: Ammonia Plant Room

Noise levels were measured at a distance of 0.5m from the louvred opening of the plant room where plant noise was audible and other, extraneous noise was minimised.

Table D4: Attended Measurement Results – Ammonia Plant Room

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Ammonia Plant Room	0.5	67.4	66.3	67.6	61.4	58.8	56.4	56.8	65.5

Again, the noise source was considered to be broadband in nature, with no readily identifiable characteristics.

The rest of the façade of the ammonia plant room was noted to be clad in a metal faced cladding product which was assumed to be internally lined etc. Noise was only evident through the louvred openings, with nothing evident through the cladding.

Blast Chillers – Ashton Green

The blast chillers are located on the eastern elevation of the building, tucked into a corner of the site, partially screened to the south by the mass of an existing building structure.

During the site visit, the noise from two blast chillers was measured though three were present on site. It is considered that the third is a 'standby' unit. The blast chillers were noted to 'start up' with a gradual increase in noise as the chillers reached operating capacity. The chillers then operated at a steady rate for a period of a few minutes before they ramped down.

The measured sound pressure levels are presented in Table D5 below. These present the 'start-up' period, the steady operational level and the 'warm down' level.

Table D5: Attended Measurement Results – Blast Chillers

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Start-up	1	74.4	76.3	77.9	86.8	77.0	71.6	64	84.8
Steady Operation	1	77.7	76.8	81.6	93.1	81.1	79.2	69.3	90.9
Warm Down	1	77.0	77.2	80.4	87.8	76.9	77.0	67.5	86.2

In the noise modelling assessment, the 'steady operation' noise level has been used as a worst-case scenario.

Figure D5: Blast Chiller

Glycol Pumps – Ashton Green

The Glycol pumps are located on the northern elevation of the building, enclosed on three sides by high buildings. The pumps are located at ground level, with ducting running up and away from the pumps.

Figure D6: Glycol Pumps

Table D6: Attended Measurement Results – Glycol Pumps

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Glycol Pumps	1	76.3	71.0	76.4	73.5	67.2	64.0	73.4	77.3

Stationery Refrigerated trucks

There are a number of loading bays around both the Ashton Green and Madeline Road sites, though the principal (and largest), is located on the southern elevation of the Ashton Green building.

The service yard is slightly lower than the rest of the site, estimated to be approximately 1.5m below typical ground level. There is a robust fence along a portion of the western side of the yard, estimated to be 2.5m tall. Overall, the loading bays and portion of the yard where vehicles may be stationary for any period of time, is afforded a high degree of screening along the western side. Figure D7 below shows the service yard and the difference in ground height.

Figure D7: Service Yard

It was not possible to measure noise from the vehicles in the loading bay at the time of the survey therefore comparable data for a Samworth refrigerated truck has been used in the noise model. This data is summarised in Table D7 below.

Table D7: Refrigerated Truck

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Refrigerated Truck	2	72.0	72.7	70.2	69.5	77.9	80.0	78.1	84.5

There are nine loading bay access doors in this loading bay area though it is unlikely that all bays would operate at any given time. As such, three bays are considered to be occupied in the noise model with the cooling plant operating.

Plant enclosure – Madeline Road

On the eastern side of the Madeline Road site is a plant enclosure surrounded by a 'hit and miss' style fence. The plant enclosure contains a number of cooler / condenser units which serve the adjacent building.

Figure D8: Plant Enclosure

The measured noise levels detailed in Table D8 below report the sound pressure level measured at a distance of 0.5m outside the hit and miss fence. It was not apparent how many of the condenser units were operating though it was certainly more than one.

Table D8: Plant Enclosure

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Plant Enclosure	0.5	76.8	72.9	71.2	68.3	69.9	72.4	57.3	75.9

Refrigerated Plant Room Louvred Outlet – Madeline Road

The ammonia plant for the Madeline Road site is housed in a building located in the south western portion of the site, adjacent to Madeline Road. The building envelope included louvred outlets in the southern elevation, facing towards Knights Road.

The noise levels measured at 0.5m from the louvred outlets are presented in Table D9 below.

Table D9: Ammonia Room Louvred Outlet

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Louvred Outlet	0.5	74.9	75.8	73.2	75.7	71.3	71.7	71.5	78.6

Figure D9: Ammonia Plant Room

Refrigeration Plant Pumps – Madeline Road

Immediately adjacent to the ammonia plant room are a number of floor mounted pumps with associated ducting and pipe work. The pumps are understood to serve the plant in the adjacent building and operate concurrently.

During the survey, measurements were made at a distance of 1m from the closest pump though two pumps were operating at the time (approximately 2m to the second pump). Figure XX below presents the SLM in relation to the closest pump.

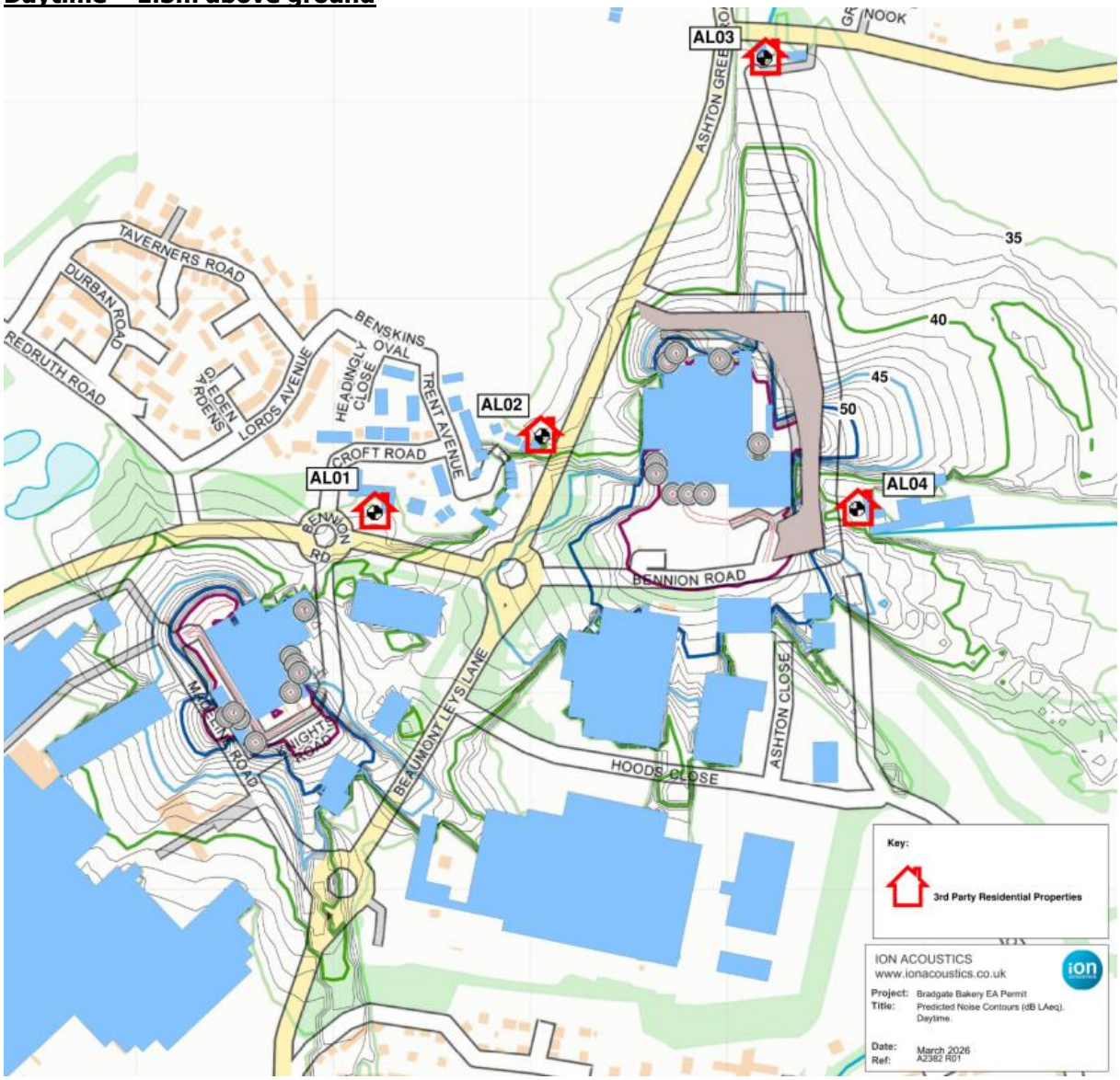
Figure D10: Refrigeration Pumps

Table D10: Refrigeration Pumps

Noise Source	Reference distance, m	Measured Sound Pressure level (dB) in octave bands, Hz							Overall, L_p, dB
		63	125	250	500	1k	2k	4k	
Refrigeration Pumps	1	73.2	69.8	71.2	75.8	72.1	75.1	79.5	82.8

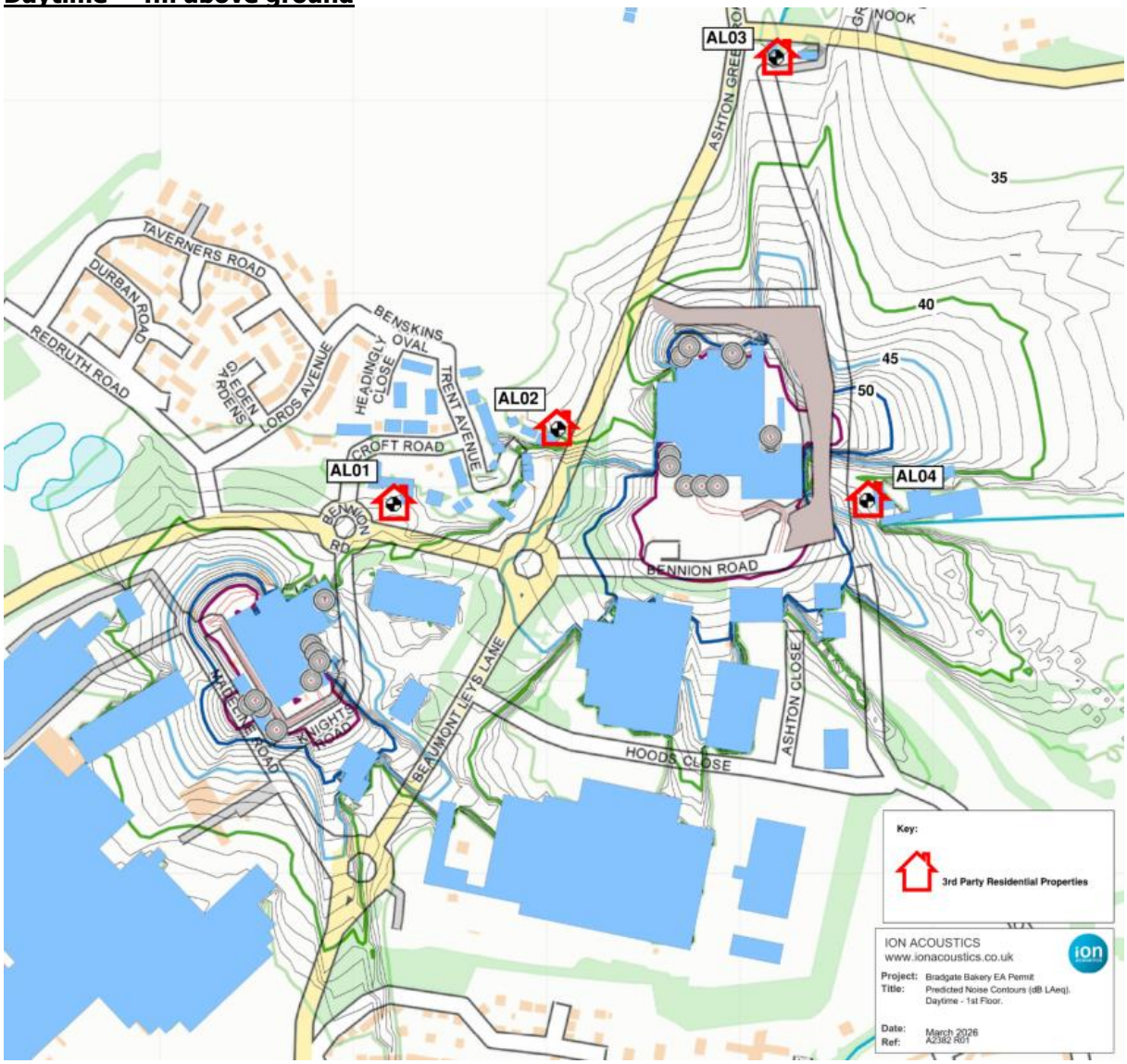
Appendix E – Noise Contour Plots

Daytime – 1.5m above ground



Appendix E – Noise Contour Plots

Daytime – 4m above ground



Appendix E – Noise Contour Plots

Night – 4m above ground