



New Bakery facility at Kelbrook Road, Openshaw, Manchester M11:

Noise Assessment

GH Sheldon Bakers

6 June 2025

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EXECUTIVE SUMMARY

The results of a noise measurement survey and desk-based assessment of noise are presented, with respect to the proposed operation of a new bakery/factory unit on land at Kelbrook Road, Openshaw, Manchester M11.

The assessment shows that the surrounding area is subject to general urban and traffic noise, including the frequent passage of emergency vehicles and occasional, intermittent contributions of day time noise from other adjacent commercial operations.

Principal sources of noise from the proposed site are associated with the movement of delivery vehicles during the day and early morning, at the southern end of the building, and day time-only filling of flour silos on the northern side of the factory.

The assessment predicts that there will be little or no likelihood of adverse impact in the context of current ambient noise in the surrounding area and, where appropriate, defines appropriate rating sound levels for the operation of fixed plant equipment, to be achieved at nearby noise sensitive receptors.

The assessment concludes, therefore, that the site can be operated with minimal impact on surrounding residents and that noise need not be a significant cause for concern.

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1. INTRODUCTION

- 1.1 EnviroSolution Ltd was commissioned by GH Sheldon Bakers to undertake an assessment of environmental noise associated with the construction of a new Bakery unit at Kelbrook Road, Openshaw, Manchester M11. The company currently operates at an adjacent site accessed from Stainburn Road.
- 1.2 The proposed site is brownfield land in a mixed-use area with existing residential properties at its north-western corner, to the west and to the south; the assessment addresses potential noise from the new facility, as it affects the potentially noise sensitive residential properties. The site in the context of its surroundings is presented in Figure 1.

Figure 1: Application site and surroundings



- 1.3 Figure 2 presents the preliminary site layout.

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2. GUIDANCE

Noise – national and local policy guidance

- 2.1 Planning policies are set at both a national and local level. With respect to national policy, assessment of the suitability of a site for residential development is guided by the National Planning Policy Framework (NPPF), issued in March 2012 and amended in 2018, 2019, 2021, 2023 and 2024.
- 2.2 With regard to noise, the NPPF (“the Framework”) does not provide specific noise policies or defined noise limits, but rather is intended to enable the planning system to support the Government’s aims and objectives with respect to sustainable development, and provides “*a framework within which locally-prepared plans for housing and other development can be produced*”.
- 2.3 None of the current local or national planning policies preclude residential development of the site.
- 2.4 Additional national planning guidance is provided in the Government’s Noise Policy Statement for England (NPSE – “the Noise Policy”), to which the Framework makes specific reference as the main source of national guidance specifically on planning and noise.
- 2.5 The Noise Policy has a long term vision to “*Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development*”. The vision is supported by three key aims intended to promote sustainable development with respect to noise so that “*Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*
- *avoid significant adverse impacts on health and quality of life;*
 - *mitigate and minimise adverse impacts on health and quality of life; and*
 - *where possible, contribute to the improvement of health and quality of life”.*
- 2.6 Health is defined by the World Health Organisation as “*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, and recognises the enjoyment of the highest attainable standard of health as one of the fundamental rights of every human being*” and the Noise Policy makes “*a distinction between ‘quality of life’ which is a subjective measure that refers to people’s emotional, social and physical well being and ‘health’ which refers to physical and mental well being*”.
- 2.7 However, the Noise Policy recognises that it is not currently possible to define a single objective noise level having specific effects on people, hence the emphasis on “promoting” improvements to health and quality of life through effective management of noise, considered in the context of the wider environment and factors other than noise.
- 2.8 Local planning policy is provided within Manchester City Council’s Core Strategy (CS) Development Plan Document (DPD) 2012 -2027, adopted by the Council in July 2012.
- 2.9 Policy DM 1 - **Development Management** states:
- “*All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:*
- *....Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation”.*

2.10 Citywide Development Control Policy 26 - **Development and Noise** states:

“DC26.1 The Council intends to use the development control process to reduce the impact of noise on people living and working in, or visiting, the City. In giving effect to this intention, the Council will consider both:

a) the effect of new development proposals which are likely to be generators of noise...

DC26.3 Developments likely to result in unacceptably high levels of noises will not be permitted:

a) in residential areas;

b) near schools, hospitals, nursing homes and similar institutions; and

c) near open land used frequently for recreational purposes.

DC26.4 Where the Council believes that an existing noise source might result in an adverse impact upon a proposed new development, or where a new proposal might generate potentially unacceptable levels of noise, it will in either case require the applicant to provide an assessment of the likely impact and of the measures he proposes to deal satisfactorily with it. Such measures might include the following:

a) engineering solutions, including reduction of noise at source, improving sound insulation of sensitive buildings or screening by purpose-built barriers;

b) layout solutions, including consideration of the distance between the source of the noise and the buildings or land affected by it and screening by natural barriers or other buildings or noncritical rooms within a building; and

c) administrative steps, including limiting the operating times of the noise source, restricting activities allowed on the site or specifying an acceptable noise limit. Any or all of these factors will be considered appropriate for inclusion in conditions on any planning permission.

DC26.5 The Council will control noise levels by requiring, where necessary, high levels of noise insulation in new development as well as noise barriers where this is appropriate”.

2.11 Additional guidance is given in the Planning Practice Guidance Note (PPG) on noise, issued in March 2014, alongside the NPPF and updated in 2018 and July 2019. This “*advises on how planning can manage potential noise impacts in new development*”. The PPG suggests the following noise exposure hierarchy, based on average responses to noise:

Table 1: PPG noise exposure and response hierarchy

Perception	Examples of outcomes	Increasing effect level	Action
<i>No Observed Effect Level (NOEL)</i>			
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
<i>Lowest Observed Adverse Effect Level (LOAEL)</i>			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
<i>Significant Observed Adverse Effect Level (SOAEL)</i>			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non- auditory	Unacceptable Adverse Effect	Prevent

2.10 Beyond this, however, the guidance is relatively generic. It avoids specifying 'acceptable' environmental noise levels as the acceptability of a source of is both subjective and context-dependant.

- 2.11 Quantitative methods for assessing noise are, therefore, provided in various technical guidance documents.

Noise – technical guidance

Manchester City Council - Planning and noise: Technical Guidance.

- 2.12 This document, issued in October 2022, is the Council's technical guidance document; with respect to industrial / commercial development, the document references **British Standard (BS) 4142: 2014 + A1: 2019 Methods for rating and assessing industrial and commercial sound** which is outlined below.

- 2.13 With respect to industrial / commercial development, the Council's guidance states:

“ The development should be designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.”

Where this criterion cannot be achieved, the various noise control measures considered as part of the assessment should be fully explained (i.e. relocation of noise sources, use of quieter equipment, enclosures, screening, restriction of the hours of operation) and the achievable noise level should be identified. This information will allow a judgement to be made concerning the application and its likely impact on the surrounding area.

In addition to the above, maximum noise levels should also be adequately controlled. Where particular uses generate high noise levels of a short duration (e.g. loud bangs) on a regular basis, these should aim to be controlled so as not to exceed 60 dB (L_{Amax}) at the façade of noise sensitive premises nearby in accordance with the recommendations of the WHO.

Deliveries and collections are usually controlled by restricting operational hours but depending on the extent of these activities, a Noise Management Plan (NMP) may be requested, which would include an assessment of noise. This would usually involve assessing the noise upon arrival, loading/unloading period and then departure.

The NMP may also need to include controls such as acoustically sealed delivery bays, and restrictions on vehicle mounted refrigeration units and audible alarm systems. Where applicable, the noise assessment will take account of multiple noise sources operating simultaneously and report the cumulative impact”.

- 2.14 With respect to noise from fixed plant equipment, the guidance requires that *“Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location”.*

British Standard (BS) 4142: 2014 + A1: 2019 Methods for rating and assessing industrial and commercial sound.

- 2.15 This provides a method for determining the noise arising from an industrial or commercial site, defined as the site's 'specific' sound level (dB L_{Aeq}) to which is added a correction for tonal, impulsive or intermittent elements, to provide the site's 'rating' sound level (dB $L_{A,r,Tr}$). The rating sound level is then compared with the background (dB L_{A90} or 90th percentile) sound level as measured or calculated outside a building, usually a residential property.
- 2.16 The standard applies a 'penalty' to tonal, impulsive and intermittent sounds, as separate entities. The simplest method is a subjective assessment with a sliding scale of up to +6 dB for tonal sound, up to +9 dB for impulsive sound and +3 dB for intermittency. The objective methods provided only allow for the assessment of tonal sound.

- 2.17 The standard indicates significance of sound according to varying degrees of “adverse impact”: a difference between the background noise and industrial (‘rating’ sound) of +10 dB “is likely to be an indication of a significant adverse impact, depending on the context”, whilst “a difference of around +5dB is likely to be an indication of an adverse impact, depending on the context” and that “the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context”.
- 2.18 The Standard includes a specific requirement that assessments should take account of “context” in determining the significance of any predicted impact, which is critical in providing a reasoned and pragmatic assessment, avoiding rigid adherence to limit values at the exclusion of any other considerations.

3. METHODOLOGY

Survey methodology

- 3.1 The assessment incorporated 2 separate noise measurement surveys: the first was a baseline survey, undertaken between 10:45am on Monday 3 June and 10:15am on Tuesday 4 June 2024, at 2 positions in close proximity to the nearest potentially noise sensitive receptors (NSRs), as indicated in Figure 3; the second was a short-duration measurement, undertaken between 9:40am and 9:56am on the morning of Friday 14 February 2025, of noise specifically from flour silo filling on the existing site.
- 3.2 The baseline survey utilised 2 sound level meters, located at 2 positions adjacent the closest potentially noise sensitive properties, as presented in Figure 3: position 1 was at the rear of 116 Clayton Lane, adjacent the site's north-western corner (data gathered were free-field levels); position 2 was at the front façade of 5 Clayton Lane, immediately to the south-west of the site (data gathered were façade levels). The meters were left to record continuous, consecutive 1-minute and 15-minute sound pressure levels. Additionally, the meter at position 1 stored a continuous audio recording throughout the survey.
- 3.3 The 2025 survey utilised a single meter, located so as to measure the arrival and manoeuvring of the flour delivery vehicle and commencement of flour silo filling; the meter was 4 metres from the delivery vehicle engine during filling (the filling is driven by a pump adjacent and connected to the engine) and 14 metres from the silo fill-connection point (the data gathered were free-field levels). Additionally, the meter stored a continuous audio recording throughout the survey. The delivery activity typically lasts for approximately 60 minutes and is dominated by the pump noise.
- 3.4 The measurement positions and images of the meters are presented in Figures 3 to 7.

Figure 3: Baseline noise measurement positions, June 2024



Figure 4: Baseline Position 1 (microphone circled)



Figure 5: Baseline Position 2, 5 Clayton Ln (microphone circled)



Figure 6: 2025 silo measurement position



Figure 7: Silo filling measurement position, 2025 (/microphone circled)



- 3.5 The June 2024 baseline measurements were undertaken using an NTI XL2 Class 1 (IEC 61672: 2013) integrating, averaging sound level meter at position 1 and a CEL 633C Class 1 (IEC 61672: 2013) integrating, averaging sound level meter at position 2. These were placed

in locked, weatherproof cases with the microphone mounted on tripods at a height of approximately 1.5 metres above the ground

- 3.6 The February 2025 silo off-load measurements were undertaken using an NTI XL2 Class 1 (IEC 61672: 2013) integrating, averaging sound level meter with the microphone mounted on a tripod at a height of approximately 1.5 metres above the ground.
- 3.7 In all cases, the meters were field-calibrated before and after the surveys and no significant variation in calibration tone was observed.
- 3.8 The weather during the 2024 survey was dry with light to moderate winds, occasionally gusting to approximately 8 mph. During the 2025 survey, the weather was cold, with a light easterly wind, less than 6 mph.

Source noise data

- 3.9 The principal noise associated with the new facility will be:
- Delivery and filling of flour silos at the site's northern end. The filling of the silos, driven by a pump/motor located by the delivery vehicle's engine (approximately 1m above the ground) is the single loudest activity that occurs on site. Data for this activity was gathered in February 2025.
 - Deliveries in and out entailing the movement and manoeuvring of heavy goods vehicles and delivery vans in the delivery yard to the south of the building. These are generally modern vehicles, all fitted with broadband/white noise manoeuvring alarms. Data for this activity was gathered in February 2025.
 - Fixed plant equipment such as cooling fans, air handling equipment, local extract ventilation fans, bakery cooker extracts etc. From qualitative observations on site, these sources do not generate a significant amount of noise. No detailed location or source noise data were available for these sources at the time of the assessment.

4 DATA, RESULTS, ASSESSMENT & DISCUSSION

Survey results

- 4.1 The baseline survey data recorded in June 2024, for the day time (7:00am to 11:00pm) and night time (11:00pm to 7:00am) periods, are summarised in Table 2, along with the data for the period between 5:00am and 7:00am at Position 2 – the reason for this will become apparent subsequently. The 2 partial day time data sets, at each position, were consolidated to produce a single day time data set for each. The façade data at Position 2 were adjusted to free-field levels by the subtraction of 3 dB. The night time maximum level (for the full night time period), generally attributable to road traffic and/or emergency vehicle sirens, is the 10th highest and the 90th percentile (dB L_{A90}) was the modal (most frequently occurring) 15-minute value for the day and night time periods. The 1-second and 15-minute data are too numerous to present in this report in tabular format but are available on request, as are the audio recordings.

Table 2: Measurement data¹

Position	Period	Measured noise (dB)		
		L _{A90}	L _{Aeq}	L _{AFmax}
1	07:00 - 23:00	44.4	51.7	-
	23:00 - 07:00	41.5	46.0	62.7
2	07:00 - 23:00	46.0	61.4	-
	23:00 - 07:00	39.5	53.8	75.5
	05:00 - 07:00	41.5	57.0	72.0

* 10th highest level

- 4.2 The flour delivery data recorded in February 2025, measured at a distance of 4 metres from the pump over a period of approximately 15 minutes, are presented graphically in Table 3 and Figure 8.

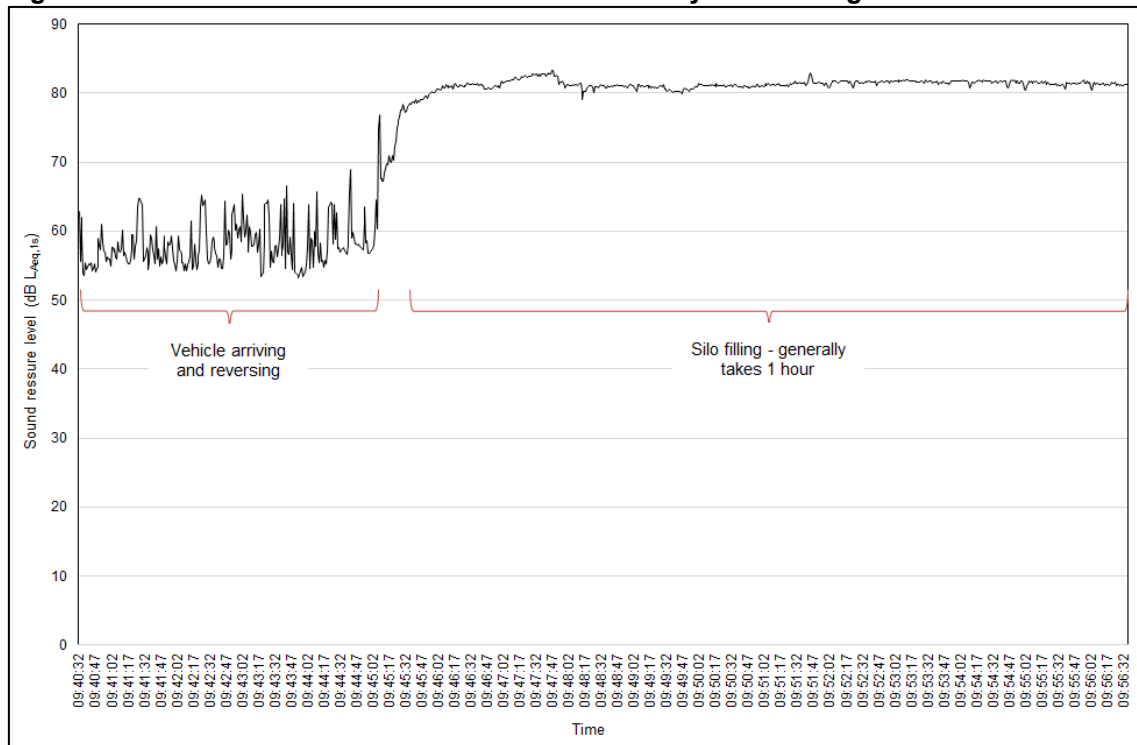
Table 3: Silo delivery/filling noise data

Activity	Measured noise (dB)	
	L _{Aeq}	L _{AFmax}
Manoeuvring @ 20 – 4m (2m 30s)	59.3	75.9
Filling @ 4m (10m 50s)	81.3	84.7

- 4.3 The delivery vehicle arrival and manoeuvring lasted approximately 5 minutes in total and the data were, conservatively, taken to be an average level of **59 dB L_{Aeq}** at an average distance of 12m; the data in Tables 2 and 3 and all calculations, were undertaken to one decimal place whilst the subsequent assessment presents data rounded to the nearest whole value, for ease of reference and reading – the use of ‘centibels’ (decibels to 1 decimal place) implies an improbable level of accuracy in measurement and calculation of environmental noise.
- 4.4 The off-loading/pump noise data were, conservatively, taken to be an average level of **81 dB L_{Aeq}** (81.3 dB L_{Aeq}, rounded) at a distance of 4m.

¹ With the exception of Tables 2 and 3, data are presented to the nearest whole value, but all calculations were carried out with data to 1 decimal place.

Figure 8: 1-second measurement data for flour delivery & silo filling



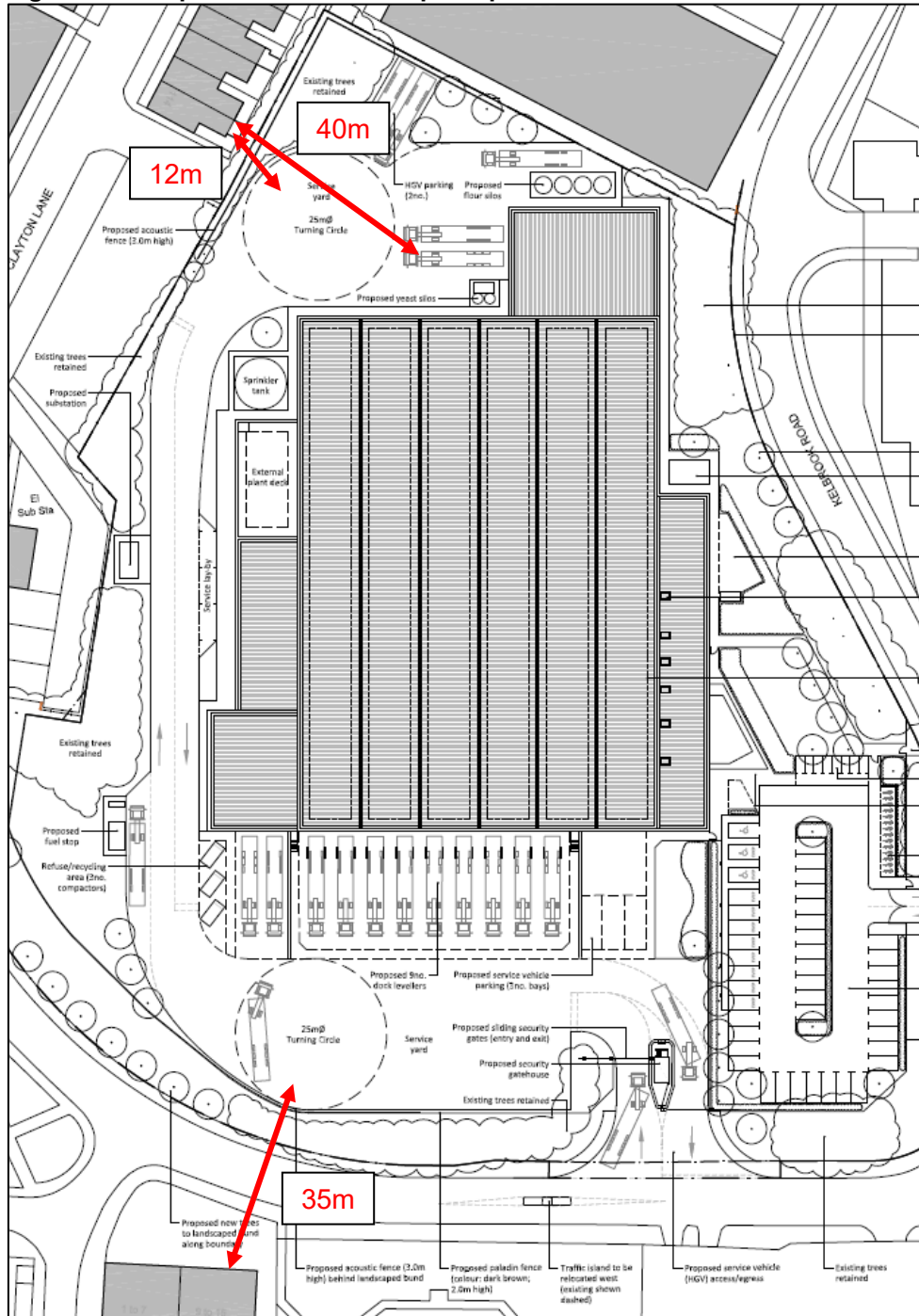
- 4.5 The silo delivery operates at a relatively continuous/non-varying level for approximately 60 minutes although measurements were recorded over a representative period of approximately 10 minutes; the level of a continuous, non-varying sound is the same whether it is measured for 1 minute or 60 minutes. During the measurement period, all other activities in the yard were stopped.
- 4.6 Qualitatively, the ambient noise situation near the residential properties is dominated by a steady background of general urban and road traffic noise. Additional, intermittent noise contributions comprise vehicle movements on Clayton Lane and Parkhouse Street, including the passage of delivery vehicles/heavy goods vehicles and emergency vehicles, miscellaneous percussive and impulsive noise from the surrounding commercial uses, most significantly during the day time, and local domestic noise from the residents of the houses or passers-by in the street.
- 4.7 There is also a general, continuous 'hum' from commercial equipment, most likely a combination of cooling fans, air handling units and the bakery extracts associated with the existing Sheldon operation and from the nearby Greggs Bakery.
- 4.8 During the night time, the continuous commercial equipment sound underlies the ambient noise situation, with intermittent vehicle movements on the surrounding roads and, with respect to position 1, in particular, significant bird song from early in the morning (dawn).
- 4.9 It appears that Sheldon's and the Greggs Bakery are the only commercial operations in the immediate vicinity that operate 24 hours per day.
- 4.10 The proprietary data download and manipulation software supplied with the Nti meter, is able to analyse the measurement data to identify potential 'tones', in accordance with the objective method for tonal analysis provided in BS 4142: no tones were identified in the baseline ambient/commercial noise recorded in 2024; however, the flour silo filling activity was found

to contain a tone at 87.9 Hertz (Hz) which was calculated to warrant the addition of a 6 dB 'character correction'.

BS4142 assessment

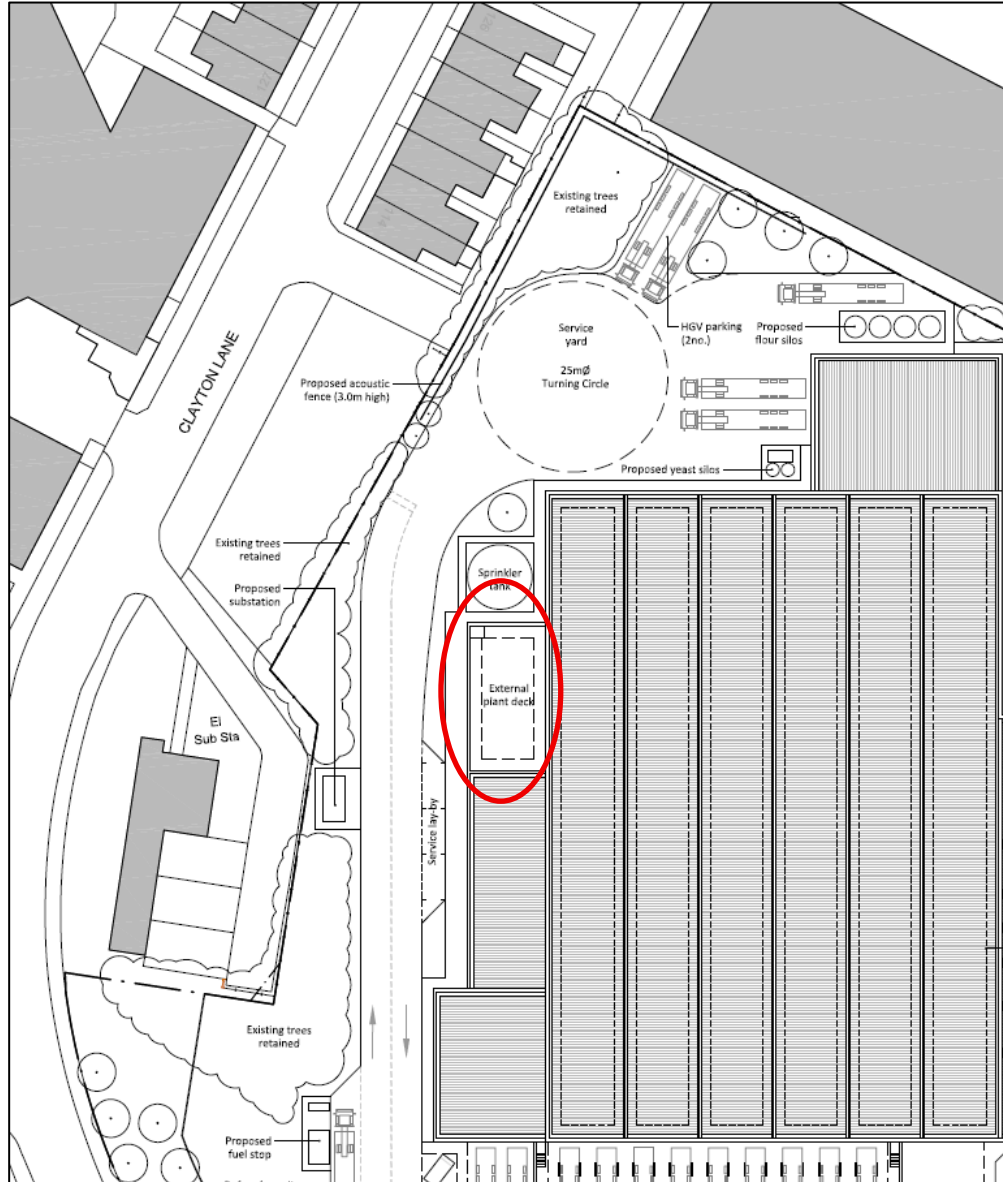
- 4.11 The BS 4142 assessment utilises the 90th percentile data from Table 2 and the activity sound from Table 3 and paragraph 4.3:
- Background sound level (rounded to the nearest whole integer, as recommended in BS 4142):
 - 44 dB $L_{A90, 1h}$ (day) and 42 dB $L_{A90, 15min}$ (night) at rear 116 Clayton Lane.
 - 46 dB $L_{A90, 1h}$ (day) and 40 dB $L_{A90, 15min}$ (night) at 5 Clayton Lane.
 - 42 dB $L_{A90, 15min}$ between 5:00am and 7:00am at 5 Clayton Lane.
 - Vehicle arrival/manoeuvring: 59 dB $L_{Aeq, 5min}$ at an average of 12m.
 - Silo filling: 81 dB $L_{Aeq, 1h}$ at 4m.
- 4.12 The assessment is based on the preliminary plan (Figure 9) which indicates that the distances between the nearest residential properties and the assessed activities are:
- Delivery vehicle movement: at their closest approach, 35m from the closest houses on Parkhouse Street and 12m from rear of 116 Clayton Lane.
 - Flour silo filling: approximately 40m from rear of 116 Clayton Lane.
 - Operation of fixed plant equipment on the proposed plant deck, alongside general site operations; there is currently little information regarding the plant deck equipment other than it will be screened by a parapet wall. This equipment is likely to operate continuously throughout the day and night and will be approximately 55 metres from the rear of 116 Clayton Lane. Other sources of general noise emission will be from modern equipment and, where appropriate, sound-reducing extraction outlets.

Figure 9: Receptor distances from principal activities



- 4.13 Additionally, a plant deck for miscellaneous air handling/cooling plant equipment is to be placed above the sprinkler plant room, towards the building's north-western corner, as indicated in Figure 10.

Figure 10: Proposed plant deck location above sprinkler plant room



Delivery vehicle movements – south side of building

- 4.14 The assessment used traffic data from Eddisons, presented at Appendix B. The data show no vehicle movements occur between 9:00pm and 5:00am.
- 4.15 During the night time (5:00am to 7:00am), the lowest 30-minute vehicle movement is 6 (6:00am to 6:30am), equivalent to 3 movements over a 15-minute assessment period, and the highest is 17 (5:30am to 6:00am), equivalent to 9 movements over a 15-minute assessment period.
- 4.16 During the day time (7:00am to 11:00pm), the lowest 60-minute vehicle movement is 3 (7:00pm to 9:00am) and the highest is 44 (2:30pm to 3:30pm).
- 4.17 It has been established that one 5-minute vehicle movement generates a sound pressure level of 59 dB L_{Aeq} at a distance of 12 metres; this level must be adjusted to determine the 'on-time' of the vehicle noise; a 5-minute activity averaged over a 15-minute assessment period would give rise to a level 4.7 dB lower i.e. 58 dB L_{Aeq} . Conversely, six 5-minute movements over the same assessment period would give rise to a level 3 dB higher i.e. 66 dB L_{Aeq} . The calculation

is logarithmic.

- 4.18 Applying this calculation to the data in paragraphs 4.15 and 4.16 produces the following results:
- Night time (15-minute assessment period): 64 dB $L_{Aeq, 15 \text{ min}}$ to 72 dB $L_{Aeq, 15 \text{ min}}$.
 - Day time (1-hour assessment period): 64 dB $L_{Aeq, 1h}$ to 76 dB $L_{Aeq, 1h}$.
- 4.19 These calculations relate to deliveries occurring on the southern side of the building and are calculated at 12 metres from the vehicle. As the nearest receptors on Parkhouse Street are 35 metres from the point of a vehicles closest approach within the delivery yard, this level must be adjusted to account for the reduction in noise with distance; the reduction is 9.3 dB.
- 4.20 Additionally, a 1.8 metre acoustic fence will be constructed along the site boundary between the delivery yard and the houses; this would provide a minimum of 10 dB of sound attenuation.
- 4.21 Thus, distance and screening would provide a further 19.3 dB of sound attenuation to the values calculated in paragraph 4.18, as follows:
- Night time (15-minute assessment period): 45 dB $L_{Aeq, 15 \text{ min}}$ to 52 dB $L_{Aeq, 15 \text{ min}}$.
 - Day time (1-hour assessment period): 45 dB $L_{Aeq, 1h}$ to 56 dB $L_{Aeq, 1h}$.
- 4.22 These are the 'specific' (BS 4142) free-field sound levels outside the closest properties on Parkhouse Street. As the delivery sound contains no significant audibly characteristic features, no 'character correction' is necessary and the rating sound levels, therefore, are:
- Night time (15-minute assessment period): 45 dB $L_{Ar, 15 \text{ min}}$ to 52 dB $L_{Ar, 15 \text{ min}}$.
 - Day time (1-hour assessment period): 45 dB $L_{Ar, 1h}$ to 56 dB $L_{Ar, 1h}$.
- 4.23 Relative to the 'background' (dB L_{A90}) sound levels presented in paragraph 4.11, these values are:
- 1 dB less to 10 dB greater than the day time background sound level.
 - 3 dB to 10 dB greater than the night time background sound level recorded between 5:00am and 7:00am.
- 4.24 With respect to the BS 4142 significance criteria, these would be taken to be:
- An indication of **little likelihood of adverse impact** to an indication of a likelihood of **significant adverse impact** during the night time period between 5:00am and 7:00am, depending on the context.
 - An indication of a likelihood of **significant adverse impact** during the day time (7:00am to 11:00pm), depending on the context.
- 4.25 The context in this instance is that this is a busy urban setting with a significant amount of transport infrastructure and a significant number of commercial uses nearby; examination of the 15-minute measurement data for Position 2 shows that night time ambient (dB L_{Aeq}) noise levels increase markedly from 3:00am onwards as people start traveling to work. Additionally, these levels are below the existing ambient noise levels measured outside 5 Clayton Lane.
- 4.26 There will be minimal noise from the factory throughout most of the night and the data show the occurrence of numerous elevated noise level events through the night time, associated, most likely, with the passage of noisy cars and emergency vehicles along Clayton Lane; the area is not particularly 'tranquil'. It is probable that, where possible, noise-sensitive residents sleep in rooms to the rear of the house whilst those sleeping in front rooms may, generally,

be less sensitive to noise.

- 4.27 With respect to loading and unloading, delivery vehicles will reverse up to elevated docking bays and all loading/unloading will take place within the new building; there will be no routine movement of mobile plant equipment or loading/unloading activities occurring in the external yard areas.
- 4.28 In light of these factors, it is reasonable to infer that there is little likelihood of any significant adverse effect arising from the operation of the new factory.

Delivery vehicle movements – north side of building

- 4.29 The only routine deliveries to the northern side of the building will be flour deliveries to the silos; it has been confirmed with the Applicant that 1 to 2 deliveries per week will be required, and these will be between the hours of 9:00am and 5:00pm.
- 4.30 It has been established that one 5-minute vehicle movement generates a sound pressure level of 59 dB L_{Aeq} at a distance of 12 metres; this is the distance between the closest part of the delivery route on this side of the building and the rear façade of 116 Clayton Lane.
- 4.31 However, it is intended that a 1.8 metre acoustic fence will be constructed which will reduce noise by at least 10 dB; the resultant receptor noise level was, therefore, calculated to be 49 dB L_{Aeq} during the 5-minute vehicle movement period. When averaged over a full hour, this is further reduced to 38 dB $L_{Aeq, 1h}$. This is 6 dB below the day time background sound level recorded at the rear of 116 Clayton Lane and indicates little to no likelihood of adverse impact, particularly in light of its occurrence only once or twice per week. This level also complies with the Council's requirement that the noise be 5 dB below the background level.

Silo filling noise

- 4.32 It has been established that the silo filling activity generates a sound level of 81 dB $L_{Aeq, 1h}$ at a distance of 4 metres, this being generated by the pump adjacent the delivery vehicle's engine.
- 4.33 The distance to the closest façade (rear of 116 Clayton Lane) is 40 metres and the distance plus barrier screening were calculated to reduce the sound level to 51 dB $L_{Aeq, 1h}$. This is the 'specific' sound level outside the rear of 116 Clayton Lane; as the silo filling activity sound has no significantly characteristic features, no 'character correction' is necessary and the rating level is determined to be 51 dB $L_r, 1h$.
- 4.34 This is 7 dB greater than the measured background sound level, commensurate with an indication of a likelihood of adverse impact, depending on the context.
- 4.35 The context is that this is a very limited activity, occurring only once or twice a week during the day time. The sound in question is free of unusual audible characteristics and is non-varying; additionally, it is no greater than the 16-hour daytime ambient sound level presented in Table 2. Given the urban nature of the area, and the limited occurrence and duration of the activity, it is reasonable to conclude that this activity will have little or no adverse impact for the local residents.

Plant deck and general site noise

- 4.36 There is currently very limited information available regarding the proposed plant deck and equipment to be installed; further detailed assessment will be required. However, the provision of a parapet wall and acoustically-absorbent material on the inside face of the plant deck bay, will help to reduce noise transmission from this equipment.

Based on the data in paragraph 4.11, it will be necessary for the plant equipment to achieve a rating sound level of 37 dB $L_{Ar, Tr}$ outside the rear of 116 Clayton Lane; this is 5 dB below the measured night time background sound level in at this location.

- 4.37 The site will contain numerous items of plant equipment, cooking equipment extracts etc, many of which, individually, generate very little adverse noise. There is insufficient source sound data available to enable a quantitative, predictive assessment of the noise from these items of equipment but it would be expected that the site will use modern equipment with the provision, where appropriate, of sound-reducing extraction outlets.
- 4.38 Based on the background sound levels presented in Table 2 and paragraph 4.11, and the requirements of the Council's guidance, a general site rating sound limit value can be set, as determined outside the nearest residential façade, can be set at 5 dB below background, namely:
- 39 dB $L_{Ar, 1h}$ during the day time and 37 dB $L_{Ar, 15min}$ during the night time, at the rear of 116 Clayton Lane.
 - 41 dB $L_{Ar, 1h}$ during the day time and 35 dB $L_{Ar, 15min}$ during the night time, at 5 Clayton Lane and properties on Parkhouse Street.
- 4.39 Compliance with these values means that the general operation of the site is unlikely to give rise to adverse impacts.

Summary

- 4.40 The assessment has shown that the day time movement of delivery vehicles and filling of flour silos, is likely to have little or no significant adverse impact on local residents adjacent the site, given the context of the local area.
- 4.41 There will be no significant activity occurring in the delivery yards as vehicles will reverse up to elevated docking bays with closed loading bay doors; all loading and unloading of materials will take place inside the building.

5 CONCLUSION

- 5.1 The assessment has examined the potential impacts from the proposed new factory building, on residential properties closest to the site boundary.
- 5.2 The ambient sound in the vicinity is associate with general urban and road traffic noise with frequent contributions of noise from passing emergency vehicles and day and night time noise from other adjacent commercial operations.
- 5.3 Principal sources of noise from the proposed site are associated with the movement of delivery vehicles during the day and early morning and day time-only filling of flour silos on the northern side of the factory.
- 5.4 The assessment has shown little or no likelihood of adverse impact due to day time activities, particularly in the context of current ambient noise in the surrounding area.
- 5.5 With respect to general site noise, associated with the operation of numerous fixed plant equipment sources and extracts, including the proposed plant deck, no quantitative assessment has been undertaken but a 'permissible' receptor sound level, at the nearest residential properties, has been calculated. Further detailed assessment will be required.
- 5.6 The assessment concludes, therefore, that the site can be operated with minimal impact on surrounding residents and that noise need not be a significant cause for concern.

APPENDIX A: Glossary of acoustic terms

Ambient noise: the noise from all sources, both near and far, at any given time. Conventionally defined using the A-weighted equivalent continuous noise level (L_{Aeq}) [see below].

Background noise level (dB L_{A90}): In the UK, the 90th percentile noise level (L_{A90}) is generally used to define 'background' noise. This is a statistical parameter describing the noise level that is exceeded for 90% of the measurement or assessment time. Its value lies in the fact that it is a statistical value, towards the lower end of a measured range of data, and which is relatively 'stable' i.e. not adversely affected by occasional high-energy noise events.

Decibel (dB): a unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20 micro-Pascals (μPa), the threshold of normal hearing is in the region of 0 dB, and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.

dB(A) / A-weighting: decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change (in steady noise) of 3 dB(A) is the minimum perceptible under normal conditions and a change of 10 dB(A) corresponds roughly to halving or doubling the *loudness* of a sound. The background noise level in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).

$L_{Aeq,T}$: the equivalent continuous sound level - the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T). L_{Aeq} is used to describe many types of noise and can be measured directly with an integrating sound level meter.

L_{Amax} : the maximum single-event noise level attained during a measurement period.

Noise: any audible sound. Often defined as unwanted sound. Can be damaging to hearing if it is too loud or can be just annoying if it interferes with the normal enjoyment of others.

Sound / sound pressure: a fluctuation in air pressure over the static ambient pressure.

Sound pressure level: the sound pressure relative to a standard reference pressure of 20 μPa (20×10^{-6}) on the decibel scale.

APPENDIX B: Eddisons traffic data

Time period	Arrivals	Deps	2-way
05:00-05:30	10	0	10
05:30-06:00	16	0	17
06:00-06:30	4	2	6
06:30-07:00	13	3	16
07:00-07:30	10	1	12
07:30-08:00	9	2	11
08:00-08:30	9	2	11
08:30-09:00	8	2	10
09:00-09:30	5	2	7
09:30-10:00	5	3	8
10:00-10:30	3	2	6
10:30-11:00	4	3	7
11:00-11:30	3	3	6
11:30-12:00	3	2	5
12:00-12:30	4	4	7
12:30-13:00	3	4	8
13:00-13:30	4	5	9
13:30-14:00	5	4	9
14:00-14:30	5	4	10
14:30-15:00	12	20	32
15:00-15:30	6	6	12
15:30-16:00	3	10	13
16:00-16:30	2	9	11
16:30-17:00	1	10	11
17:00-17:30	1	9	10
17:30-18:00	2	6	8
18:00-18:30	2	4	6
18:30-19:00	1	3	4
19:00-19:30	0	1	2
19:30-20:00	0	1	1
20:00-20:30	0	2	2
20:30-21:00	0	1	1