

Proposed Service Station Bakery Pod
Littleborough Service Station, Church
Street, Littleborough OL15 8JA



Noise Impact Assessment

TECHNICAL REPORT

42663-R1

Proposed Service Station Bakery Pod

Noise Impact Assessment

Prepared for: JMS Planning Limited, Build Studios, 203 Westminster Bridge Road, London SE1 7FR

Site location: Littleborough Service Station, Church Street, Littleborough OL15 8JAer

Table of Contents

1	INTRODUCTION	4
2	NOISE CRITERIA	5
	NATIONAL PLANNING POLICY FRAMEWORK (NPPF)	5
	NOISE POLICY STATEMENT FOR ENGLAND (NPSE)	6
	NATIONAL PLANNING PRACTICE GUIDANCE (PPG)	7
	BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND	8
3	ENVIRONMENTAL SURVEY SUMMARY	10
	BACKGROUND AND RESIDUAL SOUND LEVELS.....	10
4	NOISE IMPACT ASSESSMENT	11
	PREDICTED SPECIFIC SOUND LEVELS	11
	INDICATIVE BS 4142 ASSESSMENT.....	14
	STATEMENT OF UNCERTAINTY	15
5	NOISE LIMITING LEVELS	17
6	CONCLUSIONS.....	18
Appendix A:	Glossary of Acoustic Terms.....	I
Appendix B:	Annotated Location Plan	II
Appendix C:	Scheme Design.....	III
Appendix D:	Environmental Survey Summary	VII
Appendix E:	Calculations.....	XI
Appendix F:	Acousticians Qualifications and Status	XII



Cornwall Suite, Dencora Business Centre, Whitehouse Road, Ipswich IP1 5LT
 Tel: 01473 464 727 | info@sscm.co.uk | www.soundsolutionconsultants.co.uk
 VAT No. 844 9267 90 | Registration No. 5651834
 Registered Address: 2 Lemons Hill, Tattingstone, Ipswich, Suffolk IP9 2NH

PROJECT NUMBER:	42663	DOCUMENT REFERENCE:	42663-R1
ORIGINATED		CHECKED	
D. Attwell BEng. (Hons) MIOA Senior Acoustic Consultant		L. Denson BSc. (Hons) MSc MIOA Principal Acoustic Consultant	
RELEASE	DATE	CHANGE DESCRIPTION	
1	30/07/2025	Original release.	

Sound Solution Consultants Limited (SSC) do not accept any liability in the event of technical reports being used outside of their intended purpose detailed within our terms of engagement or if the report is being relied upon by a third party without direct consent or contract with SSC.

1 INTRODUCTION

- 1.1 A commercial development has been proposed at Littleborough Service Station, Church Street, Littleborough OL15 8JA (hereinafter, “The Site”). A plan highlighting the boundary of The Site has been provided in Appendix B with development proposal drawings in Appendix C.
- 1.2 This document has been prepared to support a planning application at an existing fuel service station comprising the removal of a “PowerFoam Jet Wash” building to incorporate a commercial “Bakery Pod” serving hot food and drink.
- 1.3 Concern has been noted to the potential noise impact and loss of amenity of nearby receptors due to the proposed plant required to serve the development building. This report has been prepared to inform of commercial noise impacts accordingly.
- 1.4 The area surrounding The Site has been noted to be mixed residential and commercial, with Church Street (A58) bounding the site to the north/northwest.
- 1.5 The nearest noise sensitive receptors to the development proposals have been noted as the residential dwellings along Charles Street and Box Street, located to the southwest and southeast of The Site.
- 1.6 The proposal has been considered in line with potential operating periods:
 - “Daytime” (07:00 – 23:00); and
 - An additional “Early Morning” (06:00 – 07:00) period has been considered to account for the proposed bakery opening hours/potential baking time (considered a “night-time” period under British Standards).
- 1.7 The proposal has been assessed in accordance with National Planning Guidance and BS 4142:2014+A1:2019.
- 1.8 A Glossary of Acoustic Terms has been provided in Appendix A that may assist with the terminology used within this report.



2 NOISE CRITERIA

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

- 2.1 The Department for Communities and Local Government introduced the National Planning Policy Framework (NPPF) in March 2012, latest revision of the NPPF dated December 2024.
- 2.2 The Framework replaced most planning policy, circulars and guidance including Planning Policy Guidance 24: Planning and Noise (1994). The NPPF defines the Government's planning policies for England and sets out the framework, within which local authorities must prepare their local and neighbourhood plans, reflecting the needs and priorities of their communities. The Government's stated purpose in producing the NPPF was to streamline policy, so the planning process is less restrictive, to give a more easily understood framework for delivering sustainable development.
- 2.3 Under the heading of "Conserving and Enhancing the Natural Environment", specific noise pollution aims are detailed in Section 15 of the NPPF. It is stated that planning policies and decisions should contribute to and enhance the natural and local environment by:
- "preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of ... noise pollution..."*
- 2.4 Considering "Ground Conditions and Pollution" it is also stated in paragraph 198 of the NPPF that planning policies and decisions should also ensure that any new development is appropriate for its location considering the likely effects of pollution on health, living conditions, the natural environmental, sensitivity of the site and wider area and impacts that could arise from the development. The aims in doing so should:
- *"mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life".*
 - *"identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*
- 2.5 Planning policies and decisions should also ensure that any new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). The applicant (or 'agent of change') is required to provide suitable mitigation to avoid significant adverse effects, to avoid established businesses/facilities having unreasonable restrictions placed upon them as a result of the new permitted development.
- 2.6 It is stressed that the above references to noise should not be considered in isolation and that the theme, referred to as the "golden thread" of sustainability that runs through the NPPF is integral to noise. The NPPF acknowledges that there is a host of existing sources of national and international guidance which can be used, in conjunction with the Framework, to inform the production of Local Plans and decision making.



NOISE POLICY STATEMENT FOR ENGLAND (NPSE)

2.7 The Noise Policy Statement for England (NPSE) was published in March 2010. It sets out the long-term vision of government noise policy, which is fundamentally to: “Promote good health and good quality of life through the effective management and control of noise within the context of Government policy on sustainable development”. The vision is supported by three key aims:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and reduce to a minimum, other adverse impacts on health; and
- Where possible, contribute to the improvement of health and quality of life.

2.8 The NPSE should apply to all forms of noise including environmental noise, neighbour noise and neighbourhood noise but does not apply to noise in the workplace. The NPSE adopts the following concepts, to help consider whether noise is likely to have “significant adverse” or “adverse” effects on health and quality of life:

SOAEL – Significant Observed Adverse Effect Level.

This is the level above which significant adverse effects on health and quality of life occur.

LOAEL – Lowest Observed Adverse Effect Level.

This is the level above which adverse effects on health and quality of life can be detected.

NOEL – No Observed Effect Level.

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

2.9 The NPSE emphasises that:

“It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available (Defra, 2010).”



NATIONAL PLANNING PRACTICE GUIDANCE (PPG)

2.10 Revised Planning Practice Guidance was released in March 2014 to support the NPPF and last updated in July 2019. The Guidance stipulates that Local Planning Authorities' plan making and decision making should take account of the acoustic environment and in doing so consider:

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

2.11 The table below is in the Guidance to assist recognising “when noise could be a concern”.

Perception	Examples of Outcomes	Increasing Effect Level	Action
Unnoticeable	No Effect	NOEL	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	
		LOAEL	
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 sleep disturbance. Affects acoustic character of the area and creates a perceived change in quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
		SOAEL	
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

Table 1 – Planning Practice Guidance to Support National Planning Policy Framework.

BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

- 2.12 The British Standard BS 4142:2014 +A1:2019 “Methods for Rating and Assessing Industrial and Commercial Sound” describes methods for rating and assessing sound of an industrial or commercial nature. The scope of the standard includes relevant topics for commercial development, such as sound from fixed installations (mechanical and electrical plant and equipment). The standard is applicable to the determination of rating levels for sources of sound as well as ambient, background and residual levels. The Standard was amended in June 2019.
- 2.13 Certain acoustic features can increase the significance of impact that might be expected from a comparison of the specific sound level to the background sound level where these features are likely to affect perception and response. Where such features are present at the assessment location, a character correction (or penalty) to the specific sound level is made to obtain the rating level. This can be approached from subjective, objective and reference methods.
- + Tonality: A correction of 0dB to +6dB for sound ranging from not tonal to prominently tonal.
 - + Impulsivity: A correction of up to +9dB can be applied for sound that is impulsive.
 - + Intermittency: A penalty of +3dB can be applied if on/off conditions are readily distinctive within the reference time interval over the period of the greatest amount of on-time.
 - + Other characteristics: A penalty of +3dB can be applied in the absence of all other defined characteristics, where the specific sound contains a distinctive feature in the residual acoustic environment.
- 2.14 Character corrections are normally added arithmetically where more than one feature is present, however, if any single feature is dominant to the exclusion of others, then it may be appropriate to reduce the correction or apply a zero correction for the minor characteristics. The rating sound level is equal to the specific sound level if there are no acoustic features present or expected to be present.
- 2.15 The significance of sound depends upon both the margin by which the rating level exceeds the background sound level and the context in which the sound occurs. An initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level. The context of the development is important in assessing the impact.
- Typically, the greater this difference, the greater the magnitude of the impact.
 - A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context. A difference of around + 5 dB is likely to be an indication of an adverse impact, depending on the context.
 - 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 significant adverse



impact. Where the rating level does exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

- 2.16 The scope of the Standard recognises that human response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic. The significance of its impact can depend on various factors such as the exceedance to the background level, its absolute level, time of day and change in environment, as well as local attitudes to the source of sound and character of the neighbourhood.



3 ENVIRONMENTAL SURVEY SUMMARY

3.1 An environmental survey has been undertaken between Wednesday 9th to Friday 11th July 2025 to quantify sound levels at the nearest noise sensitive receptors (NNSRs) in accordance with BS 4142. Details of the study have been provided in Appendix D with results summarised herein this section.

BACKGROUND AND RESIDUAL SOUND LEVELS

3.2 Baseline sound measurements were taken over a typical 24-hour midweek period to be representative of the underlying noise climate before the development proposals have been instated; used to evaluate the environmental noise impact for the development.

3.3 The residual sound field was notably made up by near-constant road traffic on the Church Street (A58) and operations on the existing service station forecourt, including vehicle movements, fixed plant operations and use of the Power Foam Jet Wash (to be replaced by the proposed Bakery Pod).

3.4 The 'typical' background and residual sound levels have been reported in this section in accordance with BS 4142, as established from histograms of the recorded dB $L_{A90, 15min}$ and $L_{Aeq, 15min}$ data at Position 1, shown in Appendix D. The measurement location has been used to describe the underlying climate at the boundary of The Site, representative of the closest sensitive receptors along Box Street and Charles Street.

3.5 In line with Section 8.1.4 of BS 4142, the monitoring duration should reflect the range of sound levels for the period assessed. In practice, there is no single level for background or residual sound as these are fluctuating parameters, although a representative value of the period should be used. Note that this is not either the lowest or mean average values of dB $L_{A90, 15min}$ / $L_{Aeq, 15min}$.

Measurement Data			Background Sound Level	
			Free Field Sound Pressure Level, dB $L_{A90, T}$ re. 20 μ Pa	
Position	Period	Time HH:MM	Range	Representative
1	Day	07:00 – 23:00	39 - 59	56
	Early Morning	06:00 – 07:00	44 - 51	49

Table 2 – Background sound level summary, dB $L_{A90, T}$.

Measurement Data			Residual Sound Level	
			Free Field Sound Pressure Level, dB $L_{Aeq, T}$ re. 20 μ Pa	
Position	Period	Time HH:MM	Range	Representative*
1	Day	07:00 – 23:00	58 - 71	63
	Early Morning	06:00 – 07:00	61 - 65	62

* Representative values of residual have been noted at times of representative background sound.

Table 3 – Residual sound level summary, dB $L_{Aeq, T}$.

4 NOISE IMPACT ASSESSMENT

- 4.1 The proposed development would comprise the erection of a “Bakery Pod” building serving hot food and drink, located along the southern site boundary, as depicted in architectural drawings in Appendix C. The proposal would include the decommissioning of existing “PowerFoam Jet Wash” unit within the existing building structure, as shown in Appendix B.
- 4.2 The proposed development building is scheduled to be occupied by Greggs bakery chain and would be served by external mechanical services equipment such as A/C condensers and a ventilation extract unit. Based on previous Greggs developments, it is assumed that this would comprise up to 2no. A/C condensers and kitchen extract plant.
- 4.3 The recognised methodology for assessment has been taken from BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* which includes consideration of sound from fixed plant installations.
- 4.4 In the absence of specific equipment specifications/siting, an indicative BS 4142 assessment has been provided below, based on typical (indicative) Greggs plant data (provided in Appendix C) with limiting levels outlined in Section 5, to minimise the potential for noise impact at the nearest sensitive receptors.

PREDICTED SPECIFIC SOUND LEVELS

- 4.5 The impact of commercial/industrial sound from the proposed development on the surrounding environment would depend on several factors, including (but not limited to) the time of day, frequency of occurrence and nature of sound source. Development activities naturally pose a greater risk of impact where they are permissible during noise sensitive periods, where the likelihood of annoyance or sleep disturbance increases.
- 4.5.1 The precise operating hours of the proposed building have yet to be confirmed, however, it is understood that, in a worst case, the business would only have patron visitation within daytime hours (07:00 – 23:00).
- 4.5.2 It is, however, conceivable that certain operations may take place within the building before this time, such as food preparation works, and for this reason the night-time period has also been assessed in this report, specifically the earliest hour of the morning when kitchen extract / building services plant might be in operation (06:00 – 07:00).
- 4.6 An indicative assessment using standard Greggs services plant has been provided below to inform the feasibility of the development in the absence of specified equipment for The Site.
- 4.7 Kitchen extract plant is typically ducted up to the roof of Greggs units, with illustrative inlet sound power level data provided in Figure C4 in Appendix C.



4.8 The outlet sound power level from the standard kitchen extract plant has been calculated based upon the methods provided by CIBSE¹ and ISO 9613 and information presented in the supplier's HVAC Extract Specification sheet (Figure C4).

4.8.1 The CIBSE calculation process comprises four components, the sound level from the extract outlet and (where relevant) extract duct breakout, supply inlet and supply breakout. In this case, only the extract outlet needs to be considered where ducting would largely be internal.

4.8.2 Following initial calculations (shown in Table E1 in Appendix E), it was established that additional sound attenuation would be required for the fan unit at this site.

4.8.3 A 600 mm circular silencer has been recommended with the following attenuation loss performance:

Recommended Silencer Sound Reduction, dB						
125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
5	8	16	25	19	14	15

Table 4 – Insertion loss of recommended 600 mm, circular silencer

4.8.4 The following outlet sound power level has been calculated, based on a 2.0 m duct length:

Procedure	Sound Level over octave band centre frequencies, dB							dB(A)
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Plant In-duct sound power level, L _w	74	83	88	91	88	82	75	94
Outlet sound power level, L _w (no silencer)	65	75	82	87	84	78	71	90
Silencer attenuation	5	8	16	25	19	14	15	-
Outlet sound power level (with silencer), L_w	60	67	66	62	65	64	56	71

Table 5 – Summary of extract outlet calculations (using CIBSE calculation process).

4.9 2no. Mitsubishi A/C plant items are generally installed at Greggs development sites: 1no. *PUZ-ZM71VHA* and 1no. *PUZ-ZM140VKA* (sound data provided in Appendix C, Figure C4). Based on the scheme layout plans in Appendix C, it is likely that these units would be sited within the Compound area, located directly west of the Bakery Pod building.

4.10 Based on elevation drawings, this compound would be surrounded by a 2.0 m screen.

4.11 Initial calculations have been based on non-acoustic compound screens (i.e. perforate, non-solid structures). These results have been provided in Appendix E, Table E2, demonstrating that further attenuation would be required to protect the nearest sensitive receptors.

4.11.1 To ensure that the compound is acoustically effective, it is recommended that compound screens be solid and imperforate with a minimum surface density of 10 kgm².

4.12 The nearest noise sensitive receptors (NNSRs) have been identified as 1 Charles Street and 4 Box Street. Given the location of the proposed plant compound, and existing solid screening along the southeast of The Site, 1 Charles Street has been considered the worst-case receptor for the purposes of this assessment.

¹ Noise and vibration control for building services equipment. CIBSE Guide B4:2016. The Chartered Institution of Building Services Engineers CIBSE, 2016.



4.13 There are two key receptors at 1 Charles Street (as illustrated in Appendix B, Figure B1):

- Receptor 1: East-facing first floor window
- Receptor 2: North-facing ground floor window

4.13.1 To inform a worst-case, it has been considered that both these windows could be connected to daytime or night-time habitable rooms (such as living rooms or bedrooms).

4.14 The cumulative specific sound levels from the commercial sources have been predicted at the NNSRs based on the above listed assumptions, accounting for distances and reflections between source and receptors, and incorporating recommended/existing mitigation measures. Calculations for emission have been made in accordance with ISO 9613, describing an industry standard method for environmental noise prediction as applicable to commercial operations.

4.15 Calculations of specific sound levels to the NNSRs have been summarised in Table 6 and Table 7 below, incorporating the recommended silencer attenuation and solid compound screening.

Calculation procedure of indicative Greggs services plant to NNSR (1 Charles Street - 1F West-Facing Window) - Including Recommended Silencer and Imperforate Compound Screening							
Unit / Source	Sound pressure level (L_p) at 1 m from source, dB	Distance to nearest noise sensitive receptor, m	Distance attenuation, dB	Reflections, dB	Screening attenuation, dB	On-time correction (assumed 50% in period), dB	Specific sound level at receptor, dB
Kitchen HVAC Extract	63	9	-19	3	-5	-3	39
PUZ - M71VHA	49	8	-18	3	-10	-3	21
PUZ - ZM140VKA	52	8	-18	3	-10	-3	24
						Sum at receptor:	39

Table 6 – Calculation procedure to Receptor 1 (east-facing 1F window) with recommended silencer and imperforate compound screening included

Calculation procedure of indicative Greggs services plant to NNSR (1 Charles Street - GF South-Facing Window) - Including Recommended Silencer and Imperforate Compound Screening							
Unit / Source	Sound pressure level (L_p) at 1 m from source, dB	Distance to nearest noise sensitive receptor, m	Distance attenuation, dB	Reflections, dB	Screening attenuation, dB	On-time correction (assumed 50% in period), dB	Specific sound level at receptor, dB
Kitchen HVAC Extract	63	10	-20	3	-10	-3	33
PUZ - M71VHA	49	3	-10	6	-10	-3	32
PUZ - ZM140VKA	52	3	-10	6	-10	-3	35
						Sum at receptor:	39

Table 7 – Calculation procedure to Receptor 2 (north-facing GF window) with recommended silencer and imperforate compound screening included

4.16 The highest cumulative specific sound level at both receptors has been predicted as 39 dB $L_{A,T}$ during the daytime and night-time (early morning) assessment periods.



INDICATIVE BS 4142 ASSESSMENT

4.17 The following numerical assessments have been provided in accordance with BS 4142 to provide a comparison between the rating sound level of the proposal against the background sound level existing prior to development.

4.18 A precautionary character correction of + 5 dB has been applied where plant may contain just perceptible tonal features and identifiable on/off conditions (intermittency).

BS 4142 Numerical Assessment – Nearest Sensitive Windows of 1 Charles Street			
Result	Daytime 07:00 – 23:00	Early Morning 06:00 – 07:00	Commentary
Background sound level, dB $L_{A90, T}$	56	49	Estimated as representative from histogram of background sound levels in Figure D2 in Appendix D.
Residual sound level, dB $L_{Aeq, T}$	63	62	Representative based on the underlying range of measured levels in Figure D3 in Appendix D.
Reference time interval	1-hour	15-minute	Relevant time interval for assessment period from BS 4142.
Specific sound level, dB $L_{Aeq, T}$	39	39	As derived above in Table 6 and Table 7.
Acoustic feature correction, dB	5	5	Precautionary 5 dB character correction, as defined in 4.18 above.
Rating level, dB $L_{Ar, Tr}$	44	44	The rating level is equal to the specific sound level plus acoustic feature corrections.
Excess of rating level over background sound level	-12	-5	
Assessment indicates likely indication of: *depending on the context	Low Impact	Low Impact	Where the rating level does not exceed the background sound level during any period of operation, this is an indication of the specific sound source having a low impact, depending on the context.
Uncertainty of the assessment	Low		See Statement of Uncertainty.

Table 8 – Numerical assessment in accordance with BS 4142 at nearest receptor windows



- 4.19 The numerical assessment in the above table have highlighted a low impact at the nearest noise sensitive receptors during all periods of potential operation, where the rating sound level has been predicted to fall below the representative background sound level.
- 4.20 It has been acknowledged that the numerical assessment must be considered in context, following the requirements of BS 4142. The concept of “context” has been notably emphasised in Section 11 of BS 4142 when considering numerical impacts established from applying the standard.
- 4.21 It should be noted that the existing noise climate is dominated by road traffic noise and operations associated with the existing service station (including existing mechanical plant operations around the sales building). The proposal would also involve the decommissioning of the PowerFoam Jet Wash unit and may even reduce the overall sound level emissions at certain receptors.
- 4.21.1 Where the existing site already comprises mechanical plant operations, the precautionary character correction in the above table may be considered an overestimation, and the development is unlikely to alter the existing character of the sound climate.
- 4.22 Where the predicting noise rating level lies ≥ 10 dB below the representative residual sound levels, significant masking is likely to be afforded. Due to the large level difference between the residual and proposed activities, it has been further reviewed in context that these development activities would be largely indistinguishable for the majority of the time and would not increase the overall ambient sound level at The Site.
- 4.23 The consideration of context relevant to the assessed sound sources has been viewed to support the notion of a “low impact” assessment in accordance with BS 4142, subject to solid compound screening and suitable silencer selection (as recommended above).
- 4.24 Where any commercial sound remains audible, as might be possible during periods of operation, then it has been considered possible in context for some very minor level of effect.

STATEMENT OF UNCERTAINTY

- 4.25 Uncertainty inevitably limits the accuracy associated with all steps of any noise assessment, including measurement, calculation, or prediction. Factors include, but are not limited to:
- The inherent accuracy limitation of methodology in Standards and guidance.
 - Variability in meteorological conditions.
 - The accuracy of sound source input data of a calculation.
- 4.26 It is imperative to minimise the uncertainty to a level commensurate with the intention of the assessment objective. The following measures have been considered to reduce uncertainty to a level considered not to have any significance to the outcome of this assessment:



- Baseline sound levels have been measured over a reasonably long period and therefore provide a good indication of representative background and residual sound levels.
- Sound level measurements were undertaken in accordance with recognised Standards, using a tall environmental windshield and were undertaken during reasonable weather conditions e.g. acceptably low wind speeds and precipitation.
- A direct measurement location was used and is considered to provide a representative basis for background noise levels at the nearest receiver locations to the development.
- Field calibration checks were undertaken before and after measurements to record very low levels of equipment drift.
- The sound source data for the assessment has been based on equipment specifications from similar Greggs development sites (including manufacturer test data).
- The calculations have been conservative as not to under-predict the resulting impacts.



5 NOISE LIMITING LEVELS

5.1 An indicative BS 4142 assessment has been provided in Section 4 based on equipment specifications at similar Greggs developments. In case the ultimate scheme deviates from the above assumptions/equipment selections, suitable noise limit levels have been derived in this Section.

5.2 During the day, the representative background sound level relative to the nearest residential receptors has been established as 56 dB $L_{A90, T}$ and during the critical early morning (night-time) hour, 49 dB $L_{A90, T}$ (as shown in Table 2 above).

5.3 In accordance with BS 4142, where a rating level is predicted to be equal to or below the existing background sound level this is an indication that the commercial sound source(s) would have a low impact at the receptor. A robust initial limit on commercial noise should therefore be below the representative background sound level in the day and night-time period, by at least 1 dB.

5.3.1 A precautionary 5 dB correction has been included within the below calculations to account for a character which could be perceived at the receptor; resulting in a sound pressure level at the receptor 6 dB below the representative background sound level.

5.3.2 To illustrate a realistic worst-case, it has been assumed that all develop net operations could operate simultaneously and coherently throughout the assessment period (worst-case 1-hour in the day and 15-minutes in the night).

5.4 The recommended rating level noise emission limits at 1 m from the nearest noise sensitive window has been stipulated in the below table:

Time Period	Representative background sound level, dB $L_{A90, 15min}$	Recommended plant noise emissions limits (BS 4142)		Difference between Rating Level and Background, dB
		Specific Level, dB $L_{Aeq T}$	Rating Level*, dB $L_{Ar, Tr}$	
Daytime (07:00 – 23:00)	56	50	55	-1
Early Morning (06:00 – 07:00)	49	43	48	-1

* Accounting for precautionary 5 dB correction for noise character perceptible at the receptor(s).

Table 9 – Recommended plant noise emissions limits expressed as BS 4142 “Specific Level” and “Rating Level” at 1 m from nearest noise sensitive receptor.

5.5 The above noise limits should be readily achievable by careful selection equipment, duct silencer(s) and imperforate compound screening (as demonstrated in Section 4 above).

6 CONCLUSIONS

- 6.1 An assessment of environmental sound levels has been carried out for a proposed development at Littleborough Service Station, Church Street, Littleborough OL15 8JA. Environmental sound levels have been taken from a site survey at the boundary of the development site.
- 6.2 A noise impact assessment has been carried out in line with BS 4142 methodology. Cumulative rating sound levels have been predicted at the nearest residential receptors, based on illustrative manufacturer sound data and operations defining the development emission of proposed use.
- 6.3 The numerical assessment in Section 4 has predicted rating levels below the background sound level during the daytime and early morning periods of operation, which indicates the likelihood of a low impact at the closest receptors, verified by a contextual review of the site.
- 6.4 In the absence of detailed proposals for external mechanical services equipment, a cumulative plant noise limit for undefined building services plant has been set out in Section 5. The indicative assessment in Section 4 (based on equipment used at similar Greggs developments) has shown that the proposed rating noise limit can be met through careful plant selection, silencer attenuation, and boundary mitigation.
- 6.5 It has been concluded from the findings of this assessment that noise should not present reasonable grounds for planning refusal. The likely acoustic effects have been established about the LOAEL threshold of the NPSE, such that noise may be heard but does not cause any change in behaviour or attitude. The development is unlikely to significantly alter the acoustic character of the area.
- 6.6 Where it is deemed appropriate to grant approval of the proposed development, commensurate noise mitigation and management can be controlled by: limiting the opening hours of the proposed Bakery Pod to 06:00 – 23:00; through appropriate selection and installation of kitchen extract silencer(s); and through solid compound screening.
- 6.7 In the absence of specific equipment selections, the local authority may wish to condition noise limits on the proposed development. It is recommended that the cumulative noise rating level should not exceed the following limits (at 1 m from the nearest habitable residential window(s)):

- **55 dB $L_{Ar, Tr}$ in the day (07:00 – 23:00)**
- **48 dB $L_{Ar, Tr}$ in the early morning (night-time) hour (06:00 – 07:00)**

It is recommended that the final proposals are reviewed by a suitably qualified acoustician.

Appendix A: Glossary of Acoustic Terms

'A' weighting dB(A): Correction applied to the frequency range of a noise in order to approximate the response of the human ear. Noise measurements are often A-weighted using an electronic filter in the sound level meter.

Attenuation: Sound reduction, measured in decibels (dB).

Ambient Sound: The totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far. Note: The ambient sound comprises the residual sound and the specific sound when present.

Background sound level: A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.

Calibration: A check of the function of a sound level meter by comparing the meter reading with a known sound pressure level.

Decibel (dB): The unit of sound level and noise exposure measurement. The range of audible sound pressures is approximately 0 dB to 140 dB.

Frequency (Hz): The pitch of the sound, measured in Hertz.

L_{Aeq,T}: The A-weighted equivalent continuous sound pressure level during a period. It is the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period, T.

Octave-bands: A division of the frequency range into recognised bands.

Rating level, L_{Ar,Tr}: The specific sound level plus any adjustment for the character of the sound.

Residual sound: Ambient sound remaining in the absence of the specific sound or that it is suppressed as not to contribute to the ambient sound level.

Residual sound level, L_r or L_{eq,T}: The equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given reference time interval, T.

Sound pressure level (SPL): The basic measure of sound, expressed in decibels, usually measured with an appropriate frequency weighting (e.g. the A-weighted SPL in dB(A)).

Sound power level (L_w): The sound energy radiated per unit time by a sound source measured in watts (W). Sound power can be weighted (e.g. A-weighted) and is not influenced by environmental or physical factors such as weather or distance.

Specific sound: Sound source being assessed.

Specific sound level, L_s or L_{eq,T}: The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval, T.



Appendix B: Annotated Location Plan

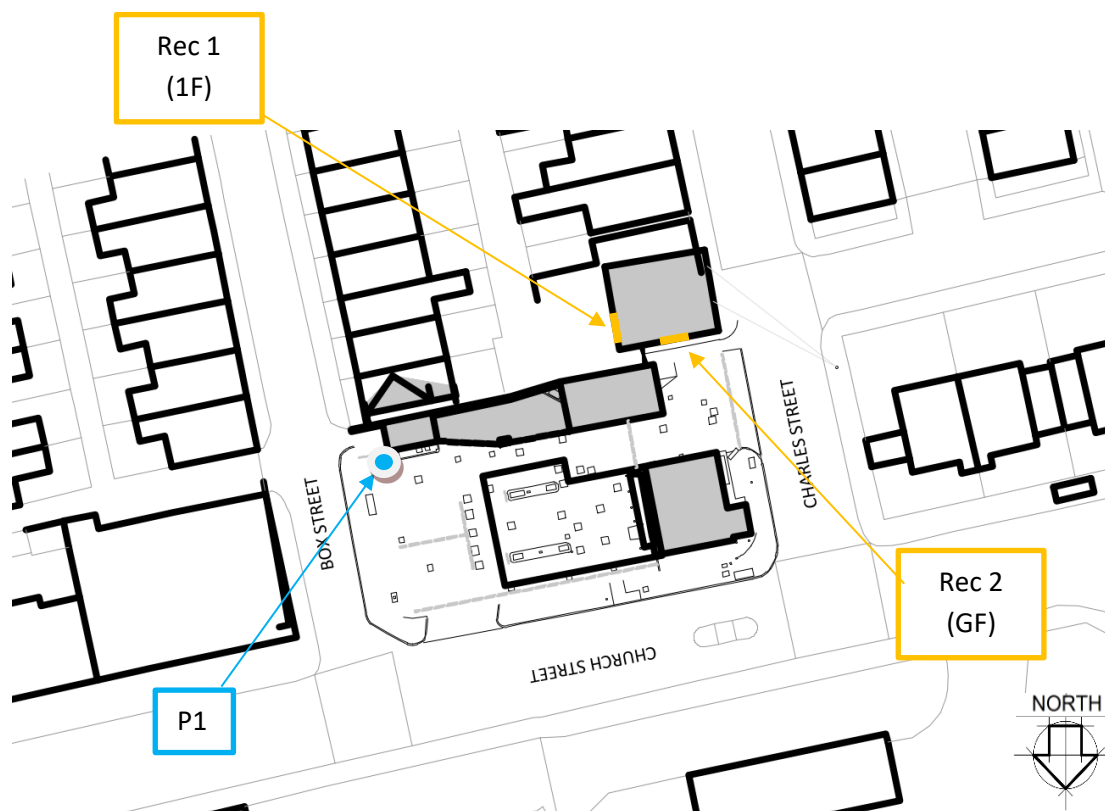


Figure B1 – Location Plan (red-line around site extents), with measurement position and worst-case receptors at 1 Charles Street annotated

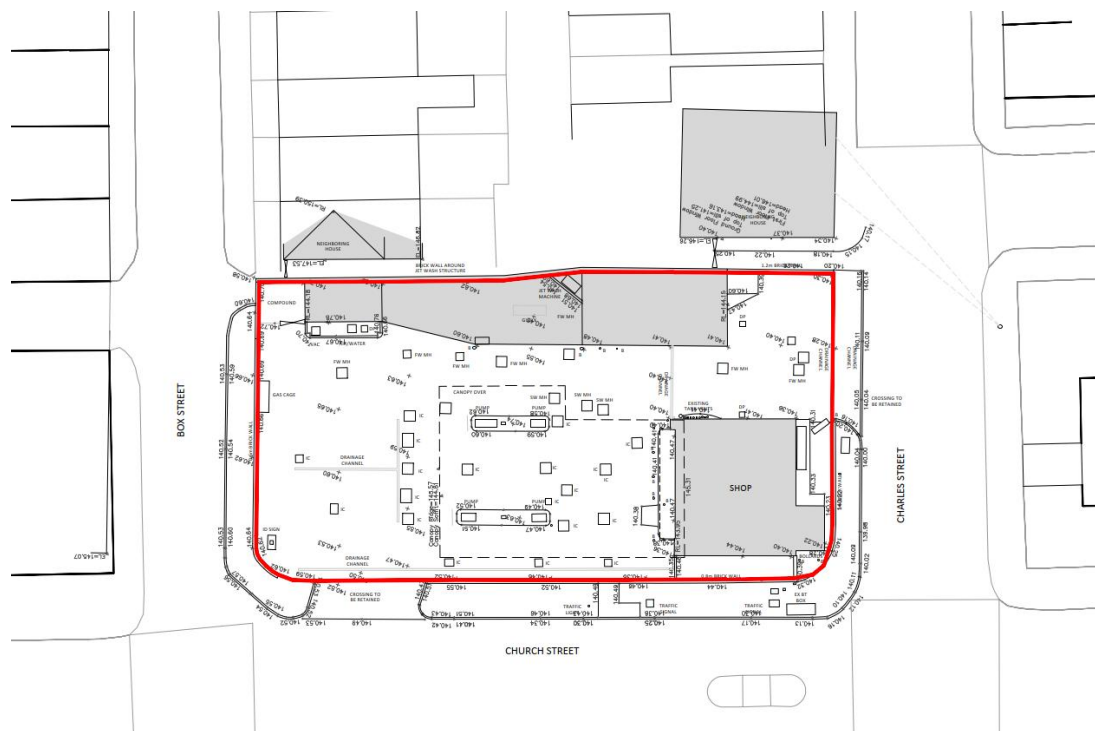


Figure B2 – Existing building layout

Appendix C: Scheme Design

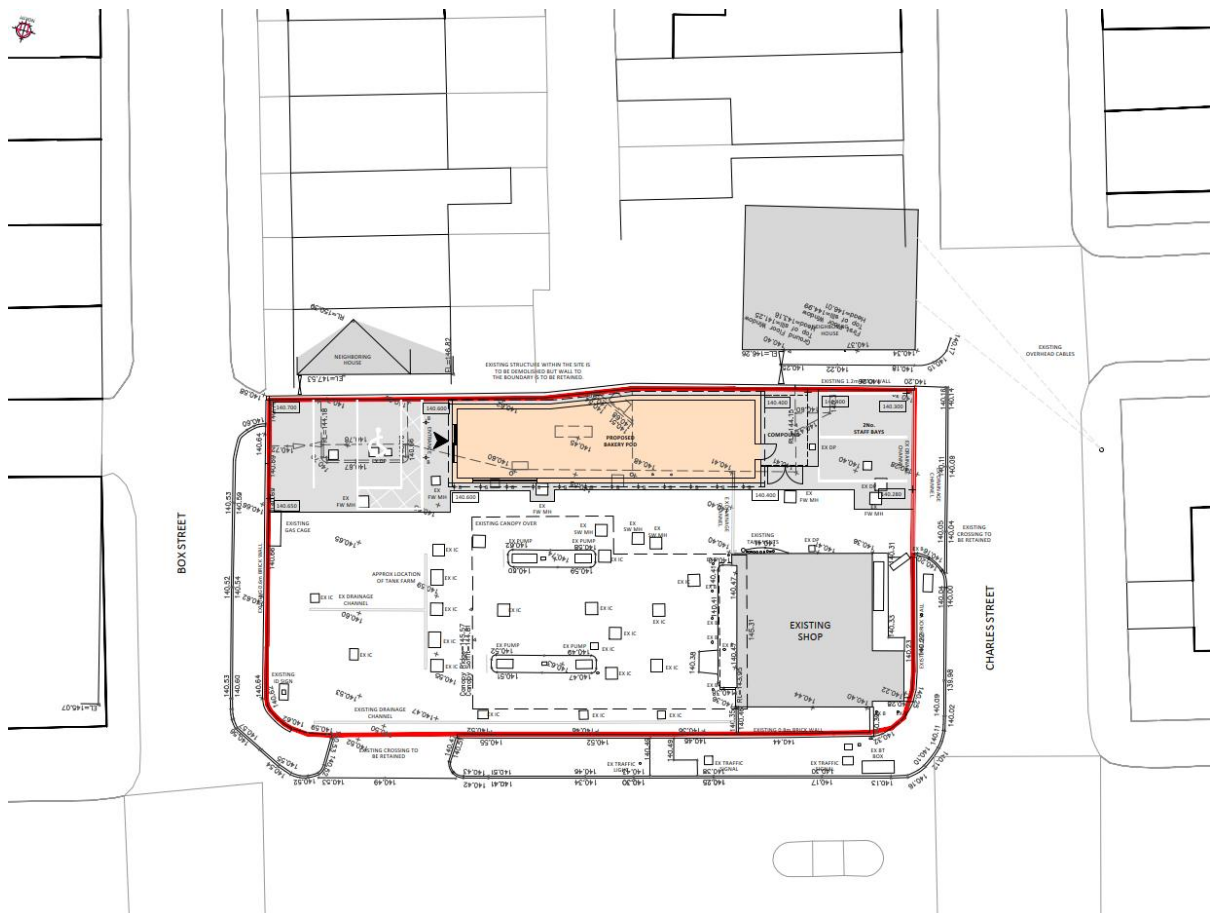


Figure C1 – Proposed development site plan

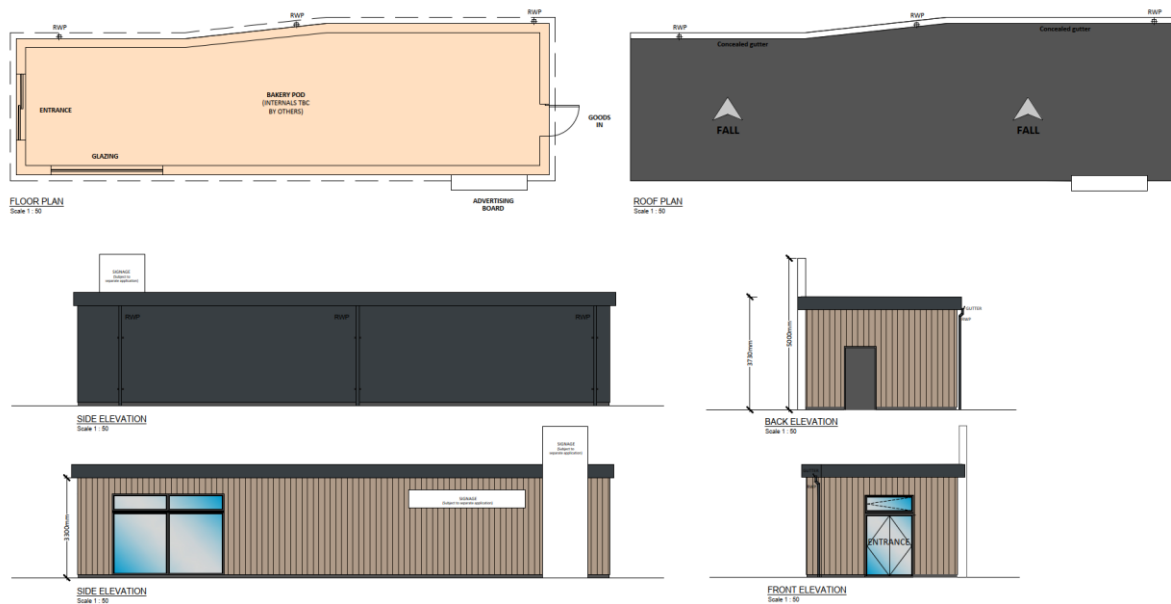


Figure C2 – Proposed building elevations

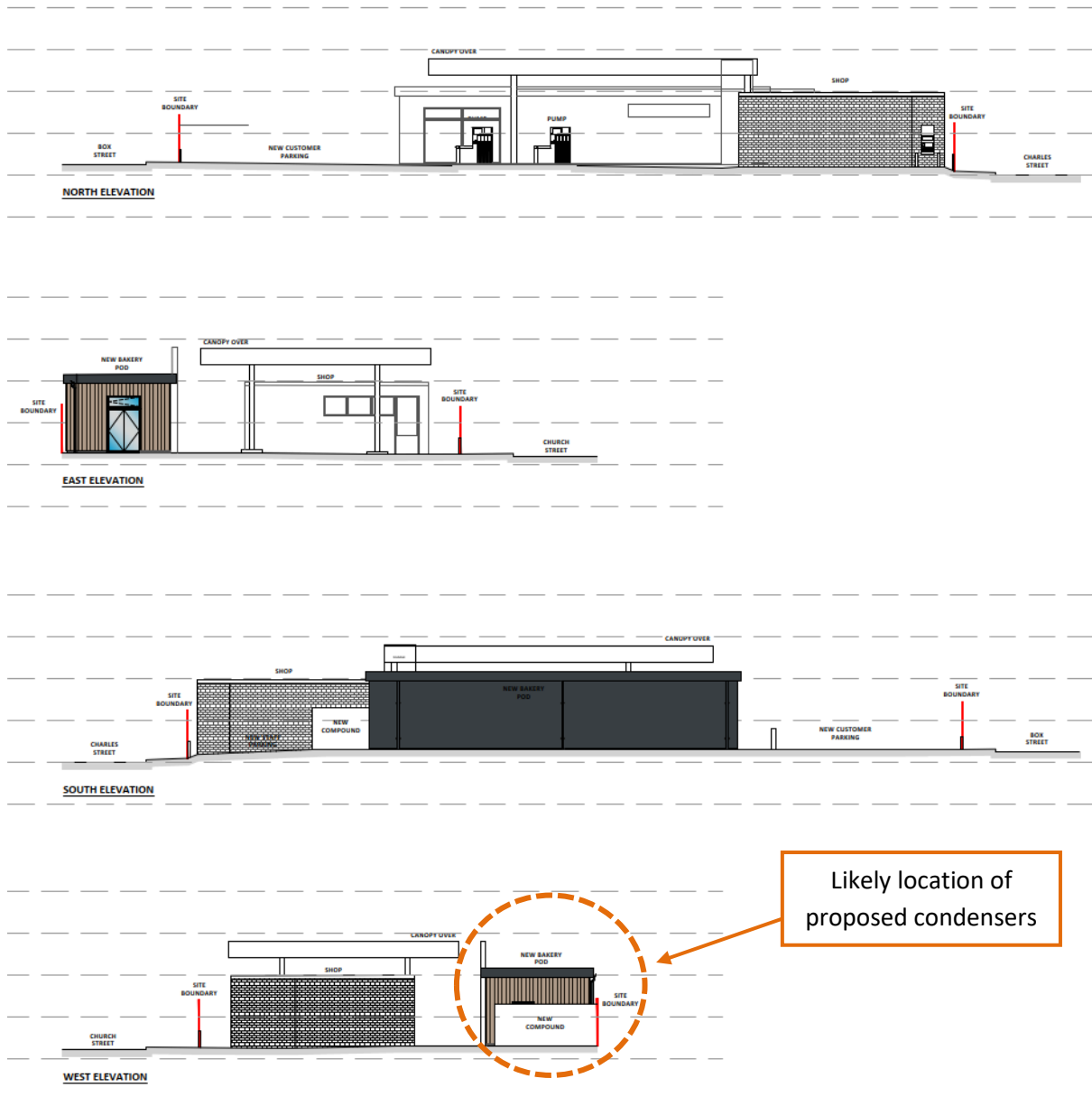
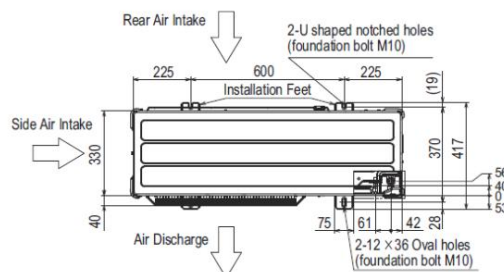
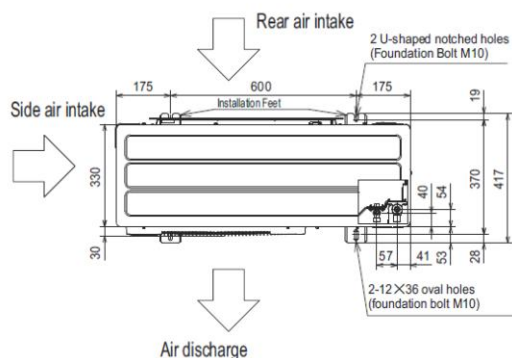


Figure C2 – Proposed development elevations and details

GREGGS HVAC Specification – Issue 1

Air Conditioning**Typical Arrangement**

Generally there will be two outdoor condensing units, one double (PUZ-ZM140VKA) and one single (PUZ-ZM71VHA) arranged side by side and situated ideally at ground level to accommodate safe maintenance.

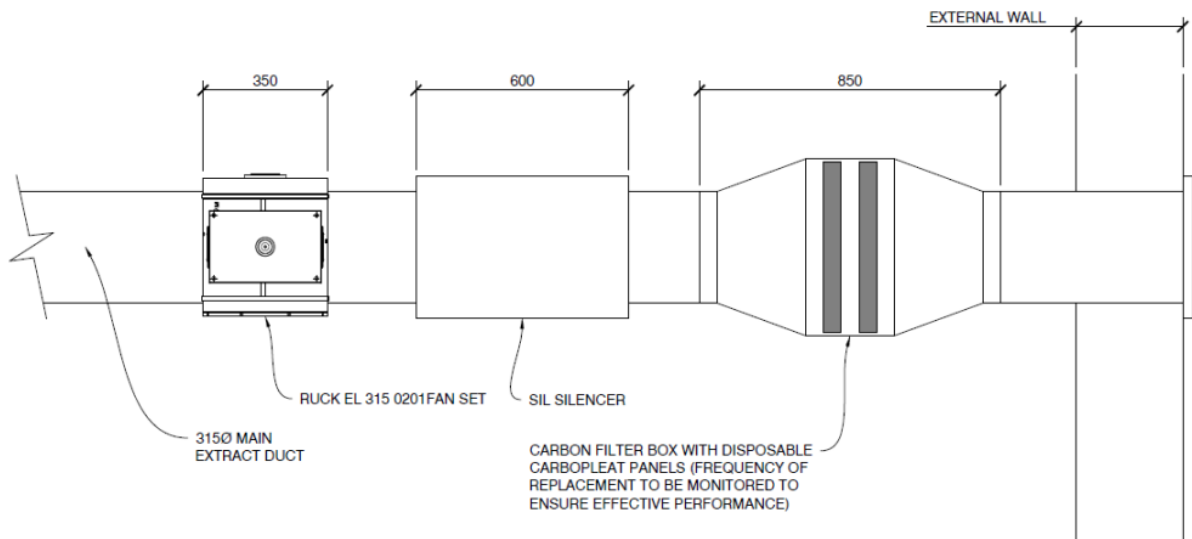
Double (PUZ-ZM140VKA)**Upper View****Single (PUZ-ZM71VHA)****Upper View**

PUZ-ZM - OUTDOOR UNITS		PUZ-ZM71VHA	PUZ-ZM140VKA
SOUND PRESSURE LEVEL (dBA)	Heating/Cooling	49 / 47	52 / 50
SOUND POWER LEVEL (dBA)	Cooling	67	70
WEIGHT (kg)		70	118
DIMENSIONS (mm)	Width x Depth x Height	950 x 330 + 25 x 943	1050 x 330 + 40 x 1338
ELECTRICAL SUPPLY		220-240v, 50Hz	220-240v, 50Hz
PHASE		Single	Single
SYSTEM POWER INPUT (kW)	Heating/Cooling (nominal)	1.818 / 1.651	4.312 / 3.772
	Heating/Cooling (UK)	1.61 / 1.39	3.83 / 3.15
STARTING CURRENT (A)		6.0	13.0
SYSTEM RUNNING CURRENT (A)	Heating/Cooling [MAX]	7.79 / 7.06 [19.3]	18.41 / 15.88 [28.7]
FUSE RATING (BS88) - HRC (A)		25	40
MAINS CABLE NO. CORES		3	3
MAX PIPE LENGTH (m)		55	100
MAX HEIGHT DIFFERENCE (m)		30	30
CHARGE REFRIGERANT (kg) / CO ₂ EQUIVALENT (t)	R32 (GWP 675) - 30m	2.80 / 1.89	4.00 / 2.70
MAX ADDITIONAL REFRIGERANT (kg) / CO ₂ EQUIVALENT (t)	R32 (GWP 675)	0.80 / 0.54	2.80 / 1.89

Figure C3 – Illustrative condenser plant items to serve new building

Extract

Typical Arrangement



SPL outlet	L _{outlet}	dB(A)	1	94	-	74	83	88	91	88	82	75
			2	90	-	65	75	82	87	84	78	71
			3	87	-	52	66	77	85	81	74	67
			4	89	-	54	68	79	86	82	76	69
			5	92	-	54	69	82	90	85	79	73

**Description**

The silencers are usually supplied with SPIRAL® system sealing. Diameters $d_1 > 315$ mm require additional NSL couplings to be ordered, which should be installed in the silencer prior to installation. These male ends are not silencer parts, and they should be ordered separately.

Glass mineral wool inside with thickness:

50 mm dla SIL-50 - depending on the dimension of the outer casing

100 mm dla SIL-100 - depending on the dimension of the outer casing

Example identification

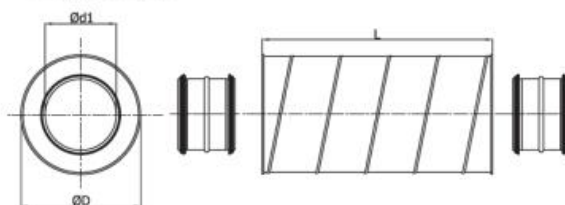
Product code: SIL - iii - aaa - bbb

type

insulation thickness

$\varnothing d_1$

L

Dimensions

Cross-section for individual types: SIL,
SIRL, $d_1 > 315$ mm

SIL-50 - 50 mm thickness insulation

Description	$\varnothing d_1$ nom [mm]	D nom [mm]	L [mm]	attenuation [dB] for frequency [Hz]								[kg]
				125	250	500	1000	2000	4000	8000		
315-600	315	400	600	5	8	16	25	19	14	15	12	

Figure C4 – Illustrative extract ducting specification and in-duct silencer

Appendix D: Environmental Survey Summary

The equipment used conforms to BS EN 61672-1:2003 (Class 1) for sound level meters and BS EN 60942 (Class 1) for sound calibrators; with at least traceable calibration history valid; no greater than two years for sound level meters and one year for sound calibrators, relevant to the times of the site assessment.

Position No.	Manufacturer	Model No.	Description	Serial No.
1	Larson Davis	LxT (ST)	3 rd octave band sound level meter	6519
	Larson Davis	PRMLxT1L	Microphone preamplifier (low range)	42418
	Larson Davis	337B02	½" electret microphone	105554
Both	Larson Davis	CAL200	Sound level calibrator	8121

Table D1 – Sound monitoring equipment.

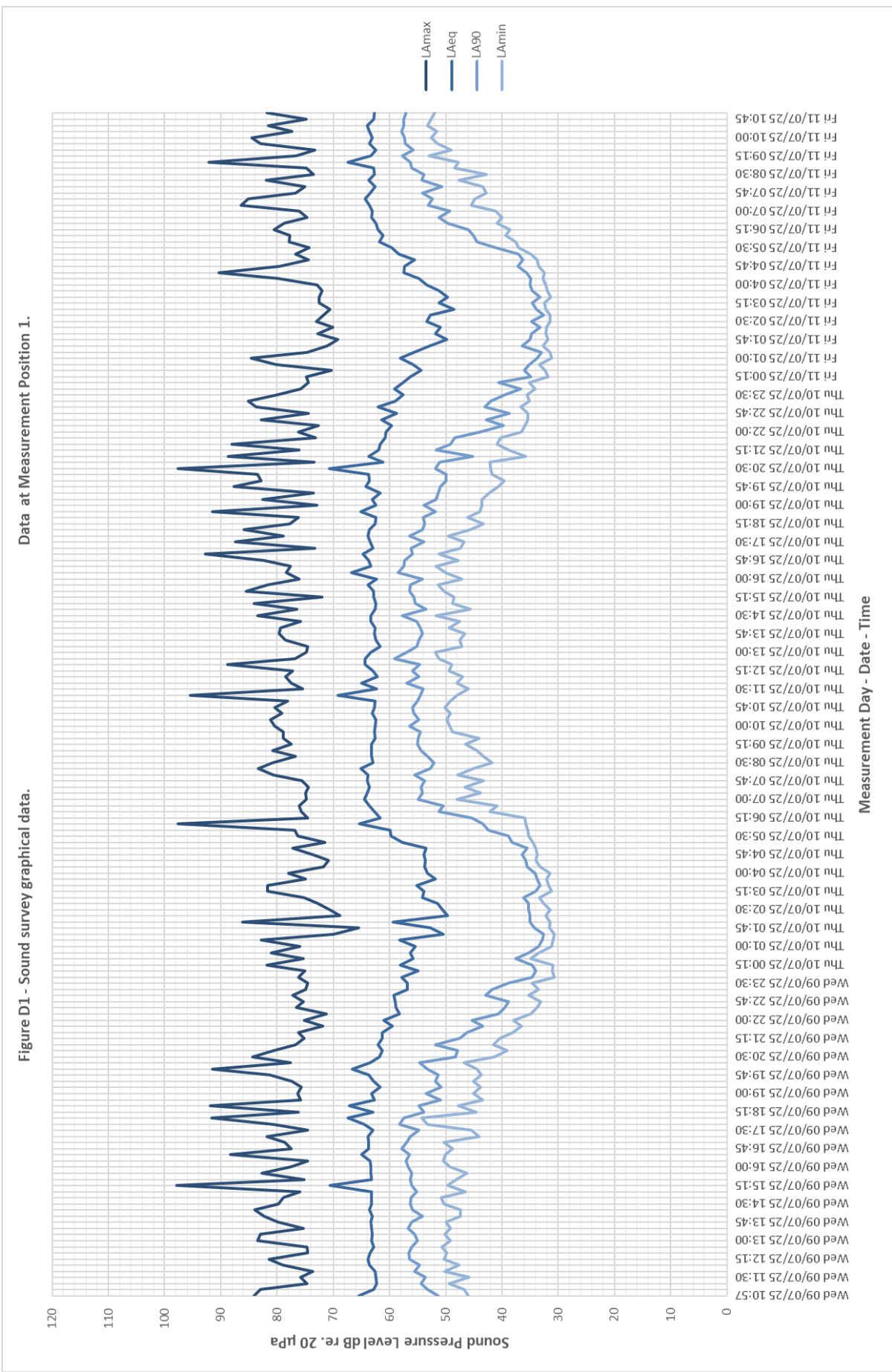
Validation checks at the end of the survey demonstrated acceptable drift across all parts of the study, across the sound level measurement equipment used, of ≤ 0.20 dB. Interval data was recorded at the measurement location at 1-minute and 15-minute periods, time synchronised to GMT. Weather conditions at the times of site attendance were deemed acceptable for surveying, with the exception of Wednesday 2nd, in which adverse wind speeds were noted. For this reason, all measurements captured over this period have been disregarded from the assessment.

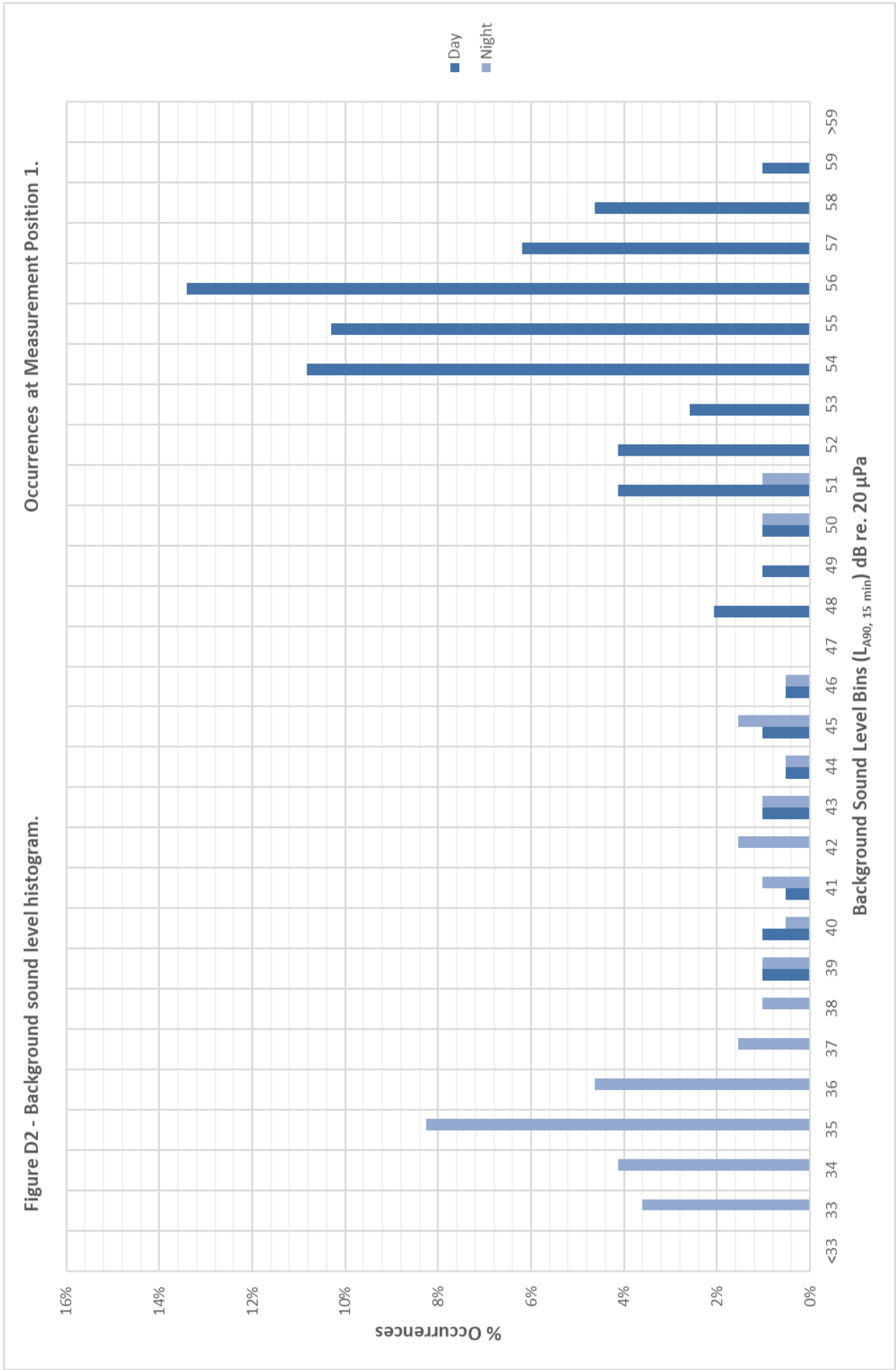
Weather conditions	09/07/2025	10/07/2025	11/07/2025	Additional comments
Wind velocity	< 3 m/s average	< 2 m/s average	< 2 m/s average	None
Wind direction	W	SW	N	
Cloud cover/rain	100 %, no rain	50 %, no rain	50 %, no rain	
Temperature	21 °C	23 °C	24 °C	

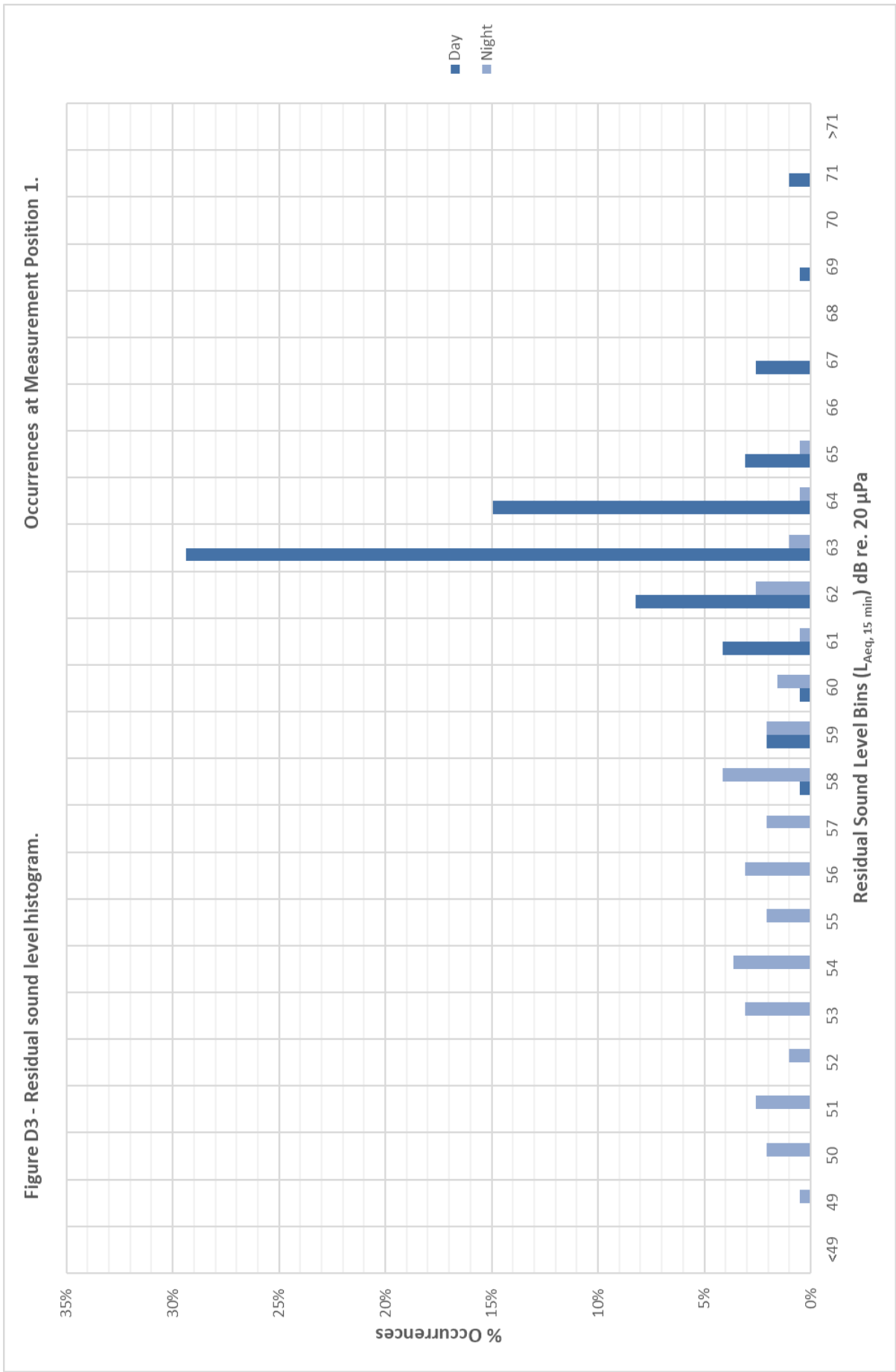
Table D2 – Recorded weather conditions.

A brief description of the measurement position has been provided below:

Position 1) A free-field long term measurement position set at a height of 3.0 m AGL along the southeastern boundary of The Site. The measurement position was chosen to be representative of the nearest noise sensitive receptor, identified as the residential dwellings along Box Street and Charles Street. Incident sound was observed predominantly from the road traffic along Church Street, vehicular/commercial activity associated with the existing fuel station and mechanical plant emissions.







Appendix E: Calculations

Calculation procedure of indicative Greggs services plant to NNSR (1 Charles Street - 1F West-Facing Window) - No Silencer							
Unit / Source	Sound pressure level (L_p) at 1 m from source, dB	Distance to nearest noise sensitive receptor, m	Distance attenuation, dB	Reflections, dB	Screening attenuation, dB	On-time correction (assumed 50% in period), dB	Specific sound level at receptor, dB
Kitchen HVAC Extract	82	9	-19	3	-5	-3	58
PUZ - ZM71VHA	49	8	-18	3	-10	-3	21
PUZ - ZM140VKA	52	8	-18	3	-10	-3	24
						Sum at receptor:	58

Table E1 – Calculation procedure to Receptor 1 (east-facing 1F window) no silencer included

Calculation procedure of indicative Greggs services plant to NNSR (1 Charles Street - GF South-Facing Window) - No Compound Screening							
Unit / Source	Sound pressure level (L_p) at 1 m from source, dB	Distance to nearest noise sensitive receptor, m	Distance attenuation, dB	Reflections, dB	Screening attenuation, dB	On-time correction (assumed 50% in period), dB	Specific sound level at receptor, dB
Kitchen HVAC Extract	63	8	-18	3	-10	-3	35
PUZ - ZM71VHA	49	3	-10	6	0	-3	42
PUZ - ZM140VKA	52	3	-10	6	0	-3	45
						Sum at receptor:	47

Table E2 – Calculation procedure to Receptor 2 (north-facing GF window) with silencer but with non-acoustic (perforate) compound screening.

Appendix F: Acousticians Qualifications and Status

Dominic Attwell BEng. (Hons) MIOA

Position Held: Senior Acoustic Consultant.

Qualifications: BEng. (Hons) Audio Acoustics.

Affiliations: Member of the Institute of Acoustics.

Acoustics Experience: 9 years.

Lee Denson BSc. (Hons) MSc. MIOA

Position Held: Principal Acoustic Consultant.

Qualifications: BSc. (Hons) Music Technology.
MSc. Music Technology.

Institute of Acoustics Diploma in Acoustics and Noise Control.

Affiliations: Member of the Institute of Acoustics.

Acoustics Experience: 11 years.

