

MILLER GOODALL
ACOUSTICS AND AIR QUALITY

NOISE ASSESSMENT

on behalf of

MILL HILL DEVELOPMENTS LIMITED

for the site at

FAIRBURN BUILDING, 55 HENRY ST, MANCHESTER

REPORT DATE: 10TH AUGUST 2018

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Summary

A noise assessment was undertaken to predict the potential impact from new plant, extended delivery times and opening hours at Fairburn Building, 55 Henry St, Manchester. This was requested by the Local Authority to support a planning application for the development.

Measurements were made at the location of the nearest residential dwellings to the site to identify the pre-development background noise levels. This data was subsequently used to predict the potential impact of noise from likely activities associated with the proposed development when in use.

A noise model has been assembled for the proposed development site, the results from which are provided within this report. The assessment finds that noise from operation of the new plant and restaurant should not be considered as a significant impact.

Record of changes

Prepared By	Matt Wilson MIOA	Reviewed By	Colin Foster MIOA
Signed		Signed	
Date	10th August 2018	Date	10th August 2018

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1 Introduction

1.1 Miller Goodall Ltd has, on behalf of Mill Hill Developments Limited, undertaken a noise assessment in respect of the impact of plant noise, operational noise and delivery noise associated with a restaurant on the ground floor of the Fairburn Building, Henry Street, Ancoats, Manchester.

2 Site Description

2.1 The site is located on the ground floor of the Fairburn Building, 55 Henry St, Manchester. The site location is shown in Appendix 1

2.2 The site occupies the north west portion of ground floor of the Fairburn Building in Ancoats Manchester. The main entrance faces onto Blossom Street, with a portion of frontage onto Cotton Street and a plant room and delivery door onto Henry Street. The area is mixed use in nature with much of the neighbouring plots recently or in the process of redevelopment to a mixture of office, retail and residential usage.

2.3 The closest sensitive receptors are determined as being the flats occupying the 4th and 5th floors of the Fairburn Building, separated from the site by an internal carpark occupying the 1st, 2nd and 3rd floors of the building.

3 Proposed Development

3.1 The proposed development is a refit of an existing restaurant. The proposals will include the following elements which are to be assessed for potential noise impact:

- New Industrial Plant – changes will be made to the plant in the internal plant room with new extract points onto Henry Street at ground floor level.
- Changes to consented delivery times – existing times consented are proposed to be extended to allow deliveries to the site from 0700 to 2200 daily (previously 0800 – 2200 Monday to Friday, 0900 – 2200 Saturday and Sunday).
- Changes to opening times - existing times consented are proposed to be extended to allow operation of the site up to 2300 Sunday – Thursday, 0030 Friday and Saturday (previously up to 2200 at all times).

4 Policy Context

4.1 Noise Policy Statement for England

4.1.1 The Noise Policy Statement for England (NPSE[1]), published in March 2010, sets out the long-term vision of Government noise policy. The Noise Policy aims, as presented in this document, are:

[1] Noise Policy Statement for England, Defra, March 2010

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse effects on health and quality of life;
- mitigate and minimise adverse effects on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life."

4.1.2 The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as the level above which significant adverse effects on health and the quality of life occur.

4.1.3 The first aim of the NPSE is to avoid significant adverse effects, taking into account the guiding principles of sustainable development (as referenced in Section 1.8 of the Statement). The second aim seeks to provide guidance on the situation that exists when the potential noise impact falls between the LOAEL and the SOAEL, in which case:

"…all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development".

4.1.4 Importantly, the NPSE goes on to state:

"This does not mean that such adverse effects cannot occur".

4.1.5 The Statement does not provide a noise-based measure to define SOAEL, acknowledging that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question. NPSE advises that:

"Not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available"

4.1.6 It is therefore likely that other guidance will need to be referenced when applying objective standards for the assessment of noise, particularly in reference to the SOAEL, whilst also taking into account the specific circumstances of a proposed development.

4.2 National Planning Policy Framework

4.2.1 The National Planning Policy Framework (NPPF[2]) initially published in March 2012, was updated in July 2018. One of the documents that the NPPF replaces is Planning Policy Guidance Note 24 (PPG 24) "Planning and Noise"[3].

[2] National Planning Policy Framework, Ministry of Housing, Communities and Local Government, July 2018

[3] Planning Policy Guidance 24: Planning and Noise, DCLG, September 1994

4.2.2 The revised NNPF advises that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives). One of these is an environmental objective which is described in par. 8 (c):

"to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

4.2.3 At par. 170 we are advised that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

4.2.4 Par. 180 goes on to state:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) 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;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

4.3 Planning Practice Guidance – Noise

4.3.1 As of March 2014, a Planning Practice Guidance[4] for noise was issued which provides additional guidance and elaboration on the NPPF. It advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- 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.

4.3.2 In line with the Explanatory Note of the NPSE, the PPG goes on to reference the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges that:

[4] Planning Practice Guidance – Noise, http://planningguidance.planningportal.gov.uk/blog/guidance/noise/, 06 March 2014

"…the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation".

4.3.3 Examples of these factors include:

- The source and absolute noise level of the source along with the time of day that it occurs;
- Where the noise is non-continuous, the number of noise events and pattern of occurrence;
- The frequency content and acoustic characteristics of the noise;
- The effect of noise on wildlife;
- The acoustic environment of external amenity areas provided as an intrinsic part of the overall design;
- The impact of noise from certain commercial developments such as night clubs and pubs where activities are often at their peak during the evening and night.

4.3.4 The PPG also provides general advice on the typical options available for mitigating noise. It goes on to suggest that Local Plans may include noise standards applicable to proposed developments within the Local Authority's administrative boundary, although it states that:

"Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed".

4.3.5 The PPG was amended in December 2014 to clarify guidance on the potential effect of noise from existing businesses on proposed new residential accommodation. Even if existing noise levels are intermittent (for example, from a live music venue), noise will need to be carefully considered and appropriate mitigation measures employed to control noise at the proposed accommodation.

4.4 Local Planning Policy

4.4.1 Manchester City Council Technical Guidance on Planning and Noise (2015) determines that the rating levels from plant, as determined using BS4142 methodology, should be 5dB below the baseline L_{A90} background noise level. This criteria will be applied to delivery and services noise from the service area on Henry Street.

4.4.2 Noise breakout from the operational restaurant will be assessed using criteria set out by the same document which states that a planning application for an entertainment venue should demonstrate that the music noise levels are inaudible inside a residential property with windows open as defined by:

'Entertainment noise (L_{Aeq}) should be controlled to 10dB below the background noise level (L_{A90}) without the entertainment noise present, in each octave band at the nearest noise sensitive location'.

5 Acoustic Standards and Guidance

5.1 BS 4142: 2014 'Methods for rating and assessing industrial and commercial sound'

5.1.1 BS 4142: 2014[5] provides guidance on the assessment of the likelihood of complaints relating to noise from industrial sources. It replaced the 1997 edition of the Standard in October 2014. The key aspects of the Standard are summarised below.

5.1.2 The standard presents a method of assessing potential noise impact by comparing the noise level due to industrial sources (the Rating Level) with that of the existing background noise level at the nearest noise sensitive receiver in the absence of the source (the Background Sound Level).

5.1.3 The Specific Noise Level - the noise level produced by the source in question at the assessment location - is determined and a correction applied for certain undesirable acoustic features such as tonality, impulsivity or intermittency. The corrected Specific Noise Level is referred to as the Rating Level.

5.1.4 In order to assess the noise impact, the Background Sound Level is arithmetically subtracted from the Rating Level. The standard states the following:

- *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 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.*

5.1.5 In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014 edition places emphasis upon an appreciation of the context, as follows:

> *An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.*

The 2014 edition of BS 4142 also introduces a requirement to consider and report the uncertainty in the data and associated calculations and to take reasonably practicable steps to reduce the level of uncertainty.

[5] BS 4142:2014 Methods for rating and assessing industrial and commercial sound

6 Noise Survey

6.1 Measurements of Existing Noise Sources

6.1.1 Noise measurements were undertaken at a location within the 3rd floor of the car park, 1.0 m from the open façade of the building in accordance with BS 7445-1: 2003[6] by Matt Wilson of Miller Goodall Ltd. The calibration of the sound level meter was checked before and after measurements with negligible deviation (<0.1 dB). Details of the equipment used are shown in Table 1, below.

Table 1: Noise monitoring equipment

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Class 1[7],[8] Integrating Real Time 1/3 Octave Sound Analyser	NOR 140	Norsonic	1406017	23/05/17	03238/2
Microphone	NOR 1225	Norsonic	151206	23/05/17	03238/2
Class 1 Calibrator[9]	Type 4231	Brüel & Kjær	2478249	13/07/18	03885/1
Outdoor microphone housing	NOR 1217	Norsonic	12175146	N/a	N/a

6.1.2 Specific, background and ambient noise monitoring was undertaken at the times specified in Table 2, below. Weather conditions were determined both at the start and on completion of the survey. It is considered that meteorological conditions were appropriate for environmental noise measurements. Measurement locations are shown in Appendix 1.

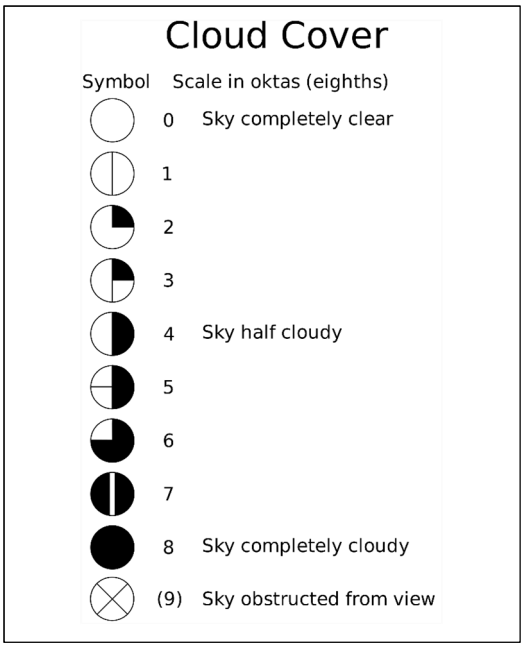
[6] BS 7445-1: 2003 Description and measurement of environmental noise - Part 1: Guide to quantities and procedures

[7] IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

[8] IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

[9] IEC 60942 (2003) Electroacoustics – Sound calibrators

Table 2: Dates, times and weather conditions during noise measurements

Measurement Locations	Date/Time	Weather conditions		
		Description	At Start of Survey	On Completion
P1	20/07/18, 12:00 to 24/07/18, 07:45	Temperature:	24 ºC	21 ºC
		Precipitation:	Dry	Dry
		Cloud cover (oktas – see opposite):	1	2
		Any fog/snow/ice?	No	No
		Any damp roads/wet ground?	No	No
		Wind speed:	None	None
		Wind direction:	None	
		Any conditions that may cause temp. inversion (e.g. calm nights with no cloud):	No	No

6.1.3 Measurements were made approximately 1m from the façade of the building, at 3rd floor height, immediately below the identified receptor on Henry Street.

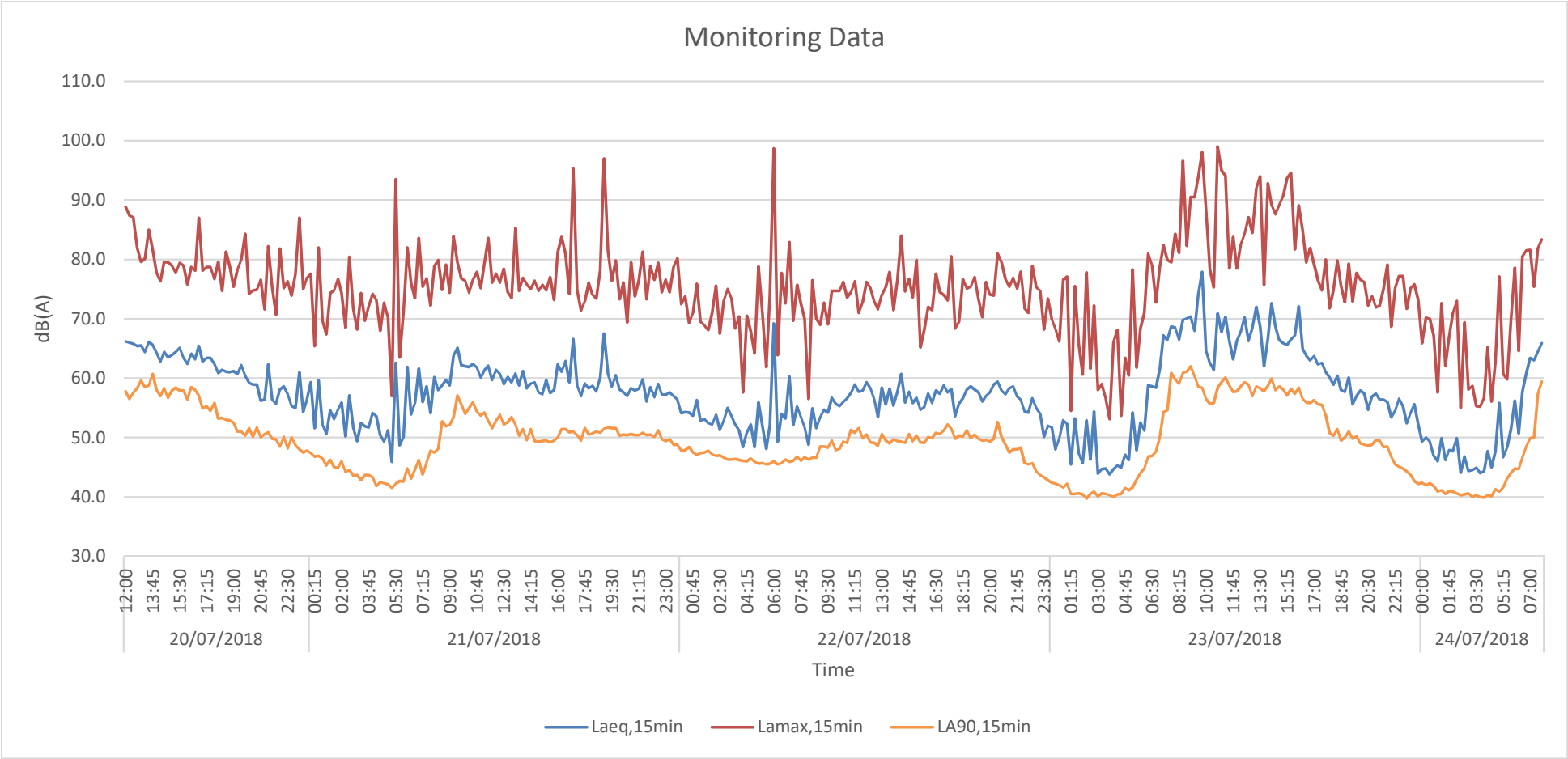
6.1.4 The noise sources within the vicinity of the measurement location were noted to include steady traffic from the surrounding road network, daytime construction noise, people talking and collections from existing bin stores on Henry Street. The noise environment was typical of a busy city centre location.

6.2 Monitoring Results

6.2.1 Survey data for the monitoring period is shown in Chart 1 below. Peak noise events during daytime are from existing construction noise in a nearby building. A peak noise event at approximately 06:05 on Sunday morning was due to emptying of bins.

6.2.2 Full breakdown of 15 minute resolution data is kept on file and is available on request.

Chart 1: Time trace of ambient noise data

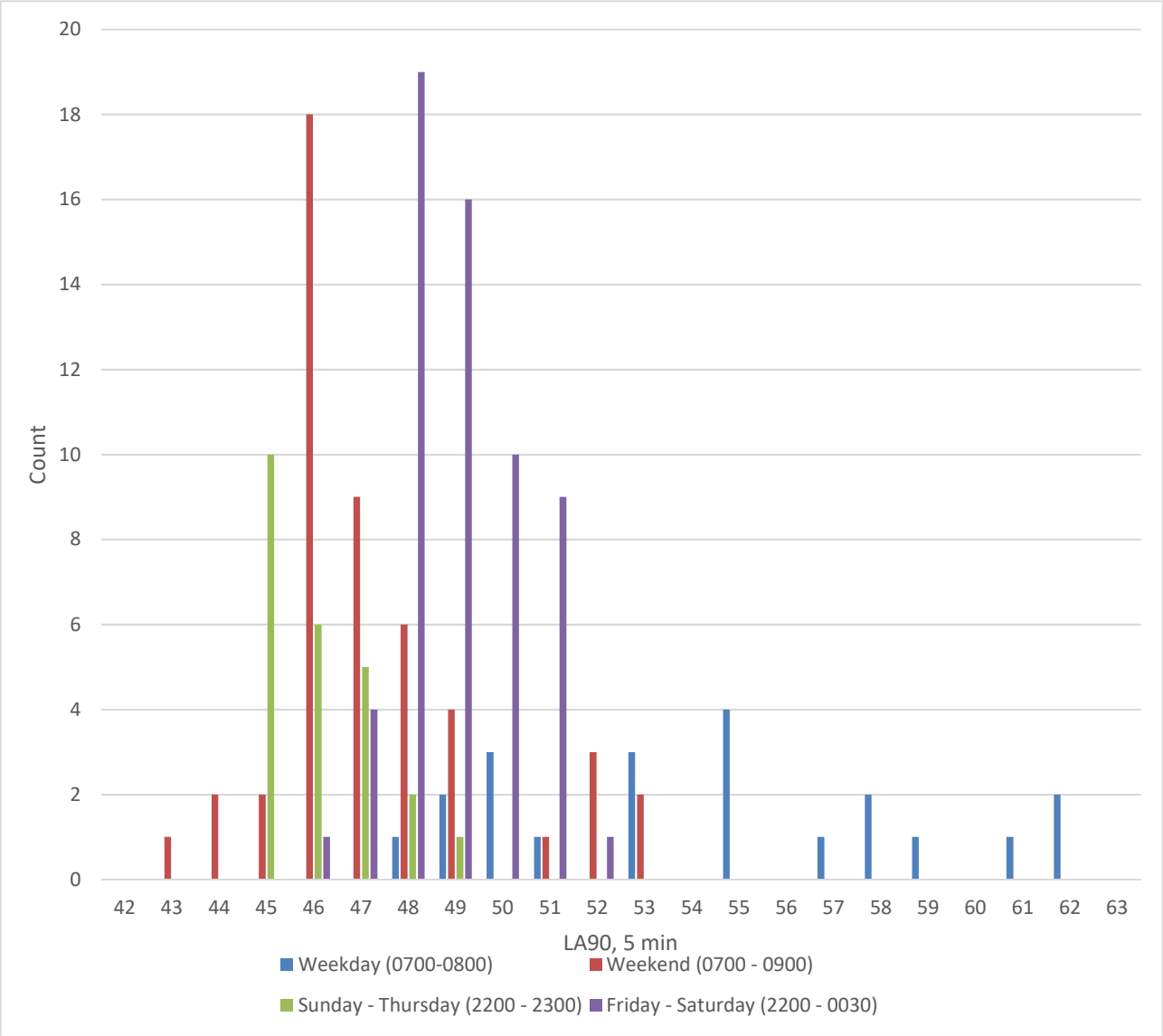


6.2.3 Chart 2 below shows a histogram of the $L_{A90,5min}$ values from the appropriate time periods monitored. 5 minute periods have been chosen to determine the appropriate background level due to the relatively short time periods to be assessed.

6.2.4 For the purposes of this assessment, the modal L_{A90}, for each period will be as follows:

- Weekday Morning (0700 – 0800): 55 dB(A)
- Weekend Morning (0700 – 0900): 46 dB(A)
- Sunday – Thursday Evening (2200 – 2300) 45 dB(A)
- Friday & Saturday Evening (2200 – 0030) 48 dB(A)

Chart 2: Modal $L_{A90,5min}$



7 Impact of Noise from the Proposed Development

7.1 Computer Modelling

7.1.1 The proposed development will potentially impact on the ambient noise levels due to operation of plant noise, delivery noise and breakout of music from the operational restaurant. The source noise levels and prediction methodology are detailed below.

7.1.2 Predictions of proposed noise levels on the existing receptors have also been undertaken using the CadnaA noise modelling package. Specific model parameters were applied as follows:

- Propagation of noise using algorithms within ISO 9613: 1993 *Acoustics - Attenuation of sound during propagation outdoors*.
- Default ground absorption G = 0.0 (equivalent to built-up areas and consistent with the dominant ground cover at the site).
- Buildings are reflective
- Ground attenuation: spectral all sources, Two orders of reflection
- Source noise levels from manufacturers data, existing literature and measured data is shown in Table 3.

Table 3: Specific Sound Power Levels

Source	63	125	250	500	1000	2000	4000	8000	Total dB(A)
Kitchen Extract Fan[10] dB(A)	66	63	56	46	33	31	32	29	68
Kitchen Inlet Fan[11] dB(A)	56	53	46	36	23	21	22	19	58
VRF System[12] dB	77	68	66	61	56	54	51	44	64
Toilet Extract Fan[13] dB(A)	No Spectral Data								55
Boiler dB(A)	No Spectral Data								54
Busy Restaurant[14] Internal L_{eq} dB	60	70	75	75	75	75	70		80
Unloading Noise[15] dB	71	70	70	70	70	68	65	61	75

[10] Systemair MUB/T 062 630 D4 IE2 + MUB 062 SIL Multibox Silencer + 90º Directionality

[11] Systemair MUB/T 062 560 D4 IE2 + MUB 062 SIL Multibox Silencer + 90º Directionality

[12] PURY-P500YNW-A (Standard Level)

[13] Jetflow HIT250 + SJ250A Silencer (600mm) + 90º Directionality

[14] DEFRA NANR92 (2005) & Vanguardia

[15] Measured Data

7.2 BS 4142: 2014 Assessment – Delivery noise

7.2.1 A BS 4142 noise impact assessment has been undertaken in order to assess the potential noise impact due to early morning delivery noise at the closest residential receptor on the 4th floor of the Fairburn building, above the site location. It has been confirmed that deliveries to the site will occur on Henry Street and that multiple vehicle types will be utilised, depending on the supplier. Deliveries are expected to be daily and occasionally multiple deliveries will be made on any one day.

7.2.2 For the purpose of this report, it is assumed that a HGV vehicle will be parked on Henry Street for 15 minutes in any one hour. Unloading noise data has been obtained by Miller Goodall in previous assessments of convenience store deliveries and is utilised in this report as a worst case scenario.

7.2.3 It is assumed that the loading noise events will be just perceptible at the receptor location and possibly not identifiable amongst the ambient noise climate of the site. A conservative rating penalty of +3dB is therefore applied using the subjective method in BS4142:2014. Based on the above assumptions, the BS 4142 assessment of noise impact at the most affected location of the proposed development site is shown in Table 4 and 5 below:

Table 4: BS 4142:2014 Noise Impact Assessment: Delivery Noise – Weekday (0700 – 0800)

Results		Relevant Clauses of BS 4142:2014	Commentary
Background Sound Level	$L_{AF90,1hr}$ = 55 dB	8.1.2 8.3	Modal $L_{A90,5min}$ for 0700 - 0800
Assessment made during the day-time, so the reference interval is 1-hour		7.2	
Specific Sound Level	$L_{Aeq,1hr}$ = 49 dB	7	Prediction from Modelling
Acoustic feature correction	+3 dB	9.2	Noise expected to be just identifiable
Rating Level	(49 + 3) dB = 52 dB		
Excess of Rating Level over Background Sound Level	(52 – 55) dB = -3 dB		
Assessment indicates that the proposed delivery noise will not have an adverse impact at the existing receptor location		11	
Context		11 8.5	Deliveries to a site of this size will be relatively infrequent between 0700 and 0800 as will be spread between 0700 and 2200
Uncertainty of the assessment		10	Delivery noise or duration not directly measured for a similar site so conservative estimate used

7.2.4 Predictions of likely noise levels at the existing noise receptor on the upper floors of the building show that whilst the noise levels from deliveries from 0700 – 0800 on a weekday are not 5dB or more below the baseline L_{A90} background noise levels, it is relatively unlikely that deliveries will be made to the site during this time period. Weekday mornings around the site in this area of Manchester are busy with traffic on the streets immediately surrounding the site and as such unloading and delivery operations are unlikely to result in a significant impact when they do occur in the assessed time period.

Table 5: BS 4142:2014 Noise Impact Assessment: Delivery Noise – Weekend (0700 – 0900)

Results		Relevant Clauses of BS 4142:2014	Commentary
Background Sound Level	$L_{AF90,1hr}$ = 46 dB	8.1.2 8.3	Modal $L_{A90,5min}$ for 0700 - 0900
Assessment made during the day-time, so the reference interval is 1-hour		7.2	
Specific Sound Level	$L_{Aeq,1hr}$ = 49 dB	7	Prediction from Modelling
Acoustic feature correction	+3 dB	9.2	Noise expected to be just identifiable
Rating Level	(49 + 3) dB = 52 dB		
Excess of Rating Level over Background Sound Level	(52 – 46) dB = +6 dB		
Assessment indicates that the proposed delivery noise will not have an adverse impact at the existing receptor location		11	
Context		11 8.5	Deliveries to a site of this size will be relatively infrequent between 0700 and 0900 as will be spread between 0700 and 2200 during the week. Existing collections of waste glass occur at similar times so short term deliveries would not be out of character for the area
Uncertainty of the assessment		10	Delivery noise or duration not directly measured for a similar site so conservative estimate used

7.2.5 Predictions of likely noise levels at the existing noise receptor on the upper floors of the building show that whilst the noise levels from deliveries from 0700 – 0900 on a weekend are potentially at a level of adverse impact, it is relatively unlikely that deliveries will be made to the site during this time period. Weekend mornings around the site in this area of Manchester are busy with traffic on the streets immediately surrounding the site and as such unloading and delivery operations are unlikely to result in a significant impact when they do occur in the assessed time period, early morning refuse collections were also noted at around 0600 on a Sunday morning, resulting in a $L_{Aeq,1h}$ of 63dB in excess of the worst case delivery noise.

7.2.6 All deliveries assessed are based on measured data for a full HGV unloading process associates with a food retail store for a full 15 minute period, in reality deliveries to the site will be short term are likely to be from small delivery vans and no longer than 5 minutes.

7.2.7 BS4142:2014 identifies a difference of around +5dB as an indication of adverse impact, however considering the context detailed above, the identified impact from delivery noise should not be considered adverse in this case.

7.3 BS 4142: 2014 Assessment – Plant noise

7.3.1 A BS 4142 noise impact assessment has been undertaken in order to assess the potential noise impact of plant noise in the extended evening opening hours at the closest residential receptor on the 4th floor of the Fairburn building, above the site location. It has been confirmed that all plant will be situated in the plant room and be emitted into Henry Street.

7.3.2 For the purpose of this report, it is assumed that all plant is operating for 100% of the time on full power up-to the closing time of the premises.

7.3.3 It is assumed that the plant will be just perceptible at the receptor location, and not have any intermittent, tonal or impulsive characteristics. It is likely that the plant will have other characteristics, such as a broadband hum or hiss, that could make it distinctive above the residual environment. A rating penalty of +3dB is therefore applied using the subjective method in BS4142:2014.

7.3.4 Based on the above assumptions, the BS 4142 assessment of noise impact at the most affected location of the proposed development site is shown in Table 6 and Table 7 below.

Table 6: BS 4142:2014 Noise Impact Assessment: Plant Noise – Sunday to Thursday

Results		Relevant Clauses of BS 4142:2014	Commentary
Background Sound Level	$L_{AF90,1hr}$ = 45 dB	8.1.2 8.3	Modal $L_{A90,5min}$ for 2200 - 2300
Assessment made during the day-time, so the reference interval is 1-hour		7.2	
Specific Sound Level	$L_{Aeq,1hr}$ = 37 dB	7	Prediction from Modelling
Acoustic feature correction	+3 dB	9.2	Due to the high level of noise from existing plant in the service yard, the proposed plant is not expected to be identifiable
Rating Level	(37 + 3) dB = 40 dB		
Excess of Rating Level over Background Sound Level	(40 – 45) dB = -5 dB		
Assessment indicates that the proposed plant will be below the level of significance		11	
Context		11 8.5	Kitchen extract plant will likely be turned off before closing time
Uncertainty of the assessment		10	Plant noise data obtained from manufacturers, uncertainty is low

Table 7: BS 4142:2014 Noise Impact Assessment: Plant Noise – Friday and Saturday

Results		Relevant Clauses of BS 4142:2014	Commentary
Background Sound Level	$L_{AF90,15min}$ = 48 dB	8.1.2 8.3	Modal $L_{A90,5min}$ for 2200 - 0030
Assessment made during the evening / night, so the reference interval is 15-min		7.2	
Specific Sound Level	$L_{Aeq,15min}$ = 37 dB	7	Prediction from Modelling
Acoustic feature correction	+3 dB	9.2	Due to the high level of noise from existing plant in the service yard, the proposed plant is not expected to be identifiable
Rating Level	(37 + 3) dB = 40 dB		
Excess of Rating Level over Background Sound Level	(40 – 48) dB = -8 dB		
Assessment indicates that the proposed plant will be below the level of significance		11	
Context		11 8.5	Kitchen extract plant will likely be turned off before closing time
Uncertainty of the assessment		10	Plant noise data obtained from manufacturers, uncertainty is low

7.3.5 The calculations undertaken show that plant noise from the plant room will be more than 5dB below the baseline $L_{A90,T}$ at the existing receptor.

7.4 Internal Noise Breakout

7.4.1 For the purpose of this report it is assumed that the main source of noise breakout will be through the main entrance on Blossom Street. It is assumed that the door will be closed for the majority of the time however for the purpose of this assessment it is assumed that the door is open for 20% of the time. Table 8 below shows the difference between the predicted internal noise levels and the measured baseline $L_{A90,T.}$

7.4.2 Breakout noise levels have been predicted using a noise model at 1.0m from the façade of the residential receptor immediately above the entrance on the 4th floor of the building.

7.4.3 Due to the separation between the ground floor site and receptor on the 4th floor, transmission of noise through the building structure has not been considered in this report.

Table 8: Restaurant Noise Breakout

	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	dB(A)
				dB(A)				
Predicted level at facade	-2	18	30	36	39	40	34	44
Open window attenuation	-15	-15	-15	-15	-15	-15	-15	
Internal noise level	-17	3	15	21	24	25	19	29
L_{A90} , Sun - Thurs	24	33	36	39	41	37	28	45
Difference	-41	-30	-21	-18	-17	-12	-9	
L_{A90} , Fri - Sat	28	39	37	42	44	39	30	48
Difference	-45	-36	-22	-21	-20	-14	-11	

7.4.4 The results in Table 8 show that when a conservative assessment is undertaken for the site, with the main front door open for 20% of the time, the predicted internal levels at the nearest receptor are below the existing L_{A90}. The predicted levels are generally well below the criteria of 10dB below the baseline L_{A90} in each octave band, only the 4kHz octave band is not, at 9dB below the baseline level.

7.4.5 The critical octave bands for music from the site (63Hz and 125Hz) will be inaudible inside the receptor.

7.4.6 The breakout broadband noise is predicted to be below 30dB(A) and should not be considered as a constraint to the development.

8 Mitigation Measures

8.1 General Site Mitigation

8.1.1 No further mitigation measures are proposed for the plant room noise or restaurant noise breakout. Best practice measures should be taken to minimise noise from the site through appropriate use and maintenance of the plant.

8.1.2 When the restaurant is open, care should be taken to ensure all external doors are kept closed when not in use in the evening time.

8.1.3 Delivery noise cannot be mitigated through design, however the short term nature and similarity to existing noise sources in the area should ensure they do not give rise to significant impacts.

9 Conclusions

9.1 A noise assessment was undertaken to assess the potential impact of extended opening hours and new plant room equipment on the ground floor of the Fairburn Building, Henry Street, Manchester. The site is an existing restaurant to be refitted with new kitchen air handling plant and extended delivery and opening times.

9.2 Background noise measurements have been taken at a location representative of the closest residential receptor on the 4th floor of the Fairburn Building.

9.3 Noise breakout from the operational restaurant after 22:00 has been assessed as being at least 10dB below the baseline L_{A90} in the majority of octave bands. This should be considered as acceptable for the site.

9.4 Plant noise from the new equipment in the plant room has been assessed at being at least 5dB below the baseline noise levels during the extended opening times. This is in line with the criteria issued by Manchester City Council.

9.5 The site expects to receive at least one delivery per day during the proposed operational hours. Whilst the predicted noise levels from a large HGV would not meet the criteria of 5dB below the baseline L_{A90} background noise level, in the context of other noise events occurring around the site during weekday and weekend periods short term deliveries on Henry Street would not be considered a significant impact.

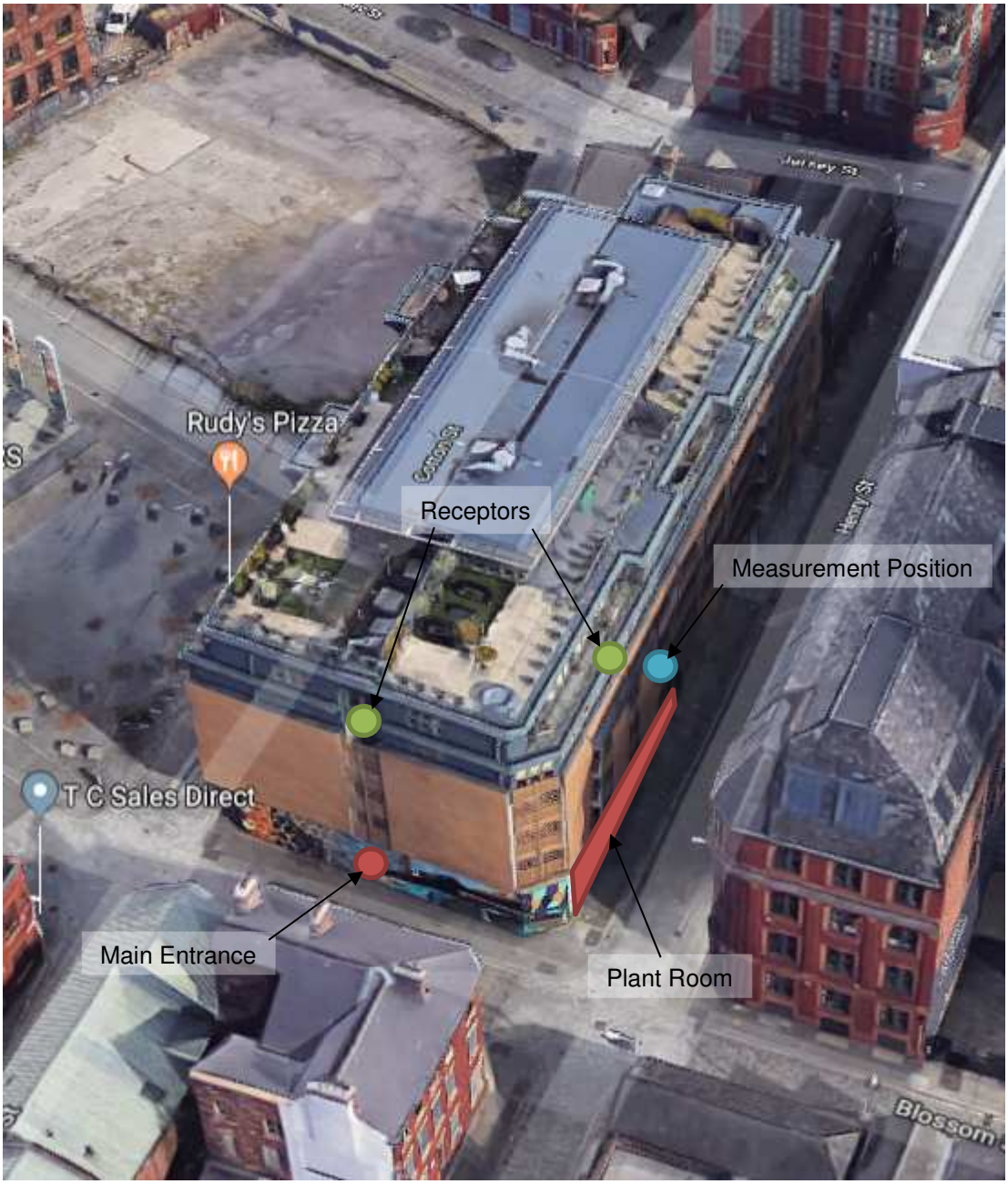
9.6 It should also be noted that deliveries to the site during the extended morning opening times applied for would not be an exceptional event rather than a daily occurrence.

9.7 Considering the above assessment, the impact of noise from the site should not be considered a restriction on the planning application.

APPENDICES

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Appendix 1: Site Location and Measurement Positions



Glossary of Terms

Decibel (dB) The unit used to quantify sound pressure levels; it is 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 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 usually only perceptible under controlled conditions.

dB L_A 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 L_A broadly agree with an individual's assessment of loudness. A change of 3 dB L_A is the minimum perceptible under normal conditions, and a change of 10 dB L_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 L_A; normal conversation about 60 dB L_A at 1 meter; heavy road traffic about 80 dB L_A at 10 meters; the level near a pneumatic drill about 100 dB L_A.

$L_{A90,T}$ The A weighted noise level exceeded for 90% of the specified measurement period (T). In BS 4142: 1997 it is used to define background noise level.

$L_{Aeq,T}$ 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). $L_{Aeq,T}$ is used to describe many types of noise and can be measured directly with an integrating sound level meter.

L_{Amax} The highest A weighted noise level recorded during the time period. It is usually used to describe the highest noise level that occurred during the event.

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ACOUSTICS AND AIR QUALITY