

SHARPS REDMORE

ACOUSTIC CONSULTANTS



Report

**Unit 2 SEGRO Park Hart
Lane, Tottenham**
Environmental Noise
Assessment of a Proposed
Industrial Development

Prepared by
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Project No 2523325



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Contents

- 1.0 Introduction
- 2.0 Assessment Methodology and Criteria
- 3.0 Survey Methodology, Details and Results
- 4.0 Noise Assessment
- 5.0 Conclusions

Appendices

- Appendix A Plans
- Appendix B Acoustic Data
- Appendix C Acoustic Terminology

This report has been prepared with all reasonable skill, care and diligence commensurate with an acoustic consultancy practice under the terms and brief agreed with our client at that time. Sharps Redmore provides no duty or responsibility whatsoever to any third party who relies upon its content, recommendations or conclusions.

1.0 Introduction

- 1.1 Sharps Redmore Limited (SR) has been instructed to undertake an environmental noise assessment to accompany a non-material amendment (NMA) application to amend approved application ref. HGY/2025/2675 at SEGRO Park, Tottenham. The NMA application is to install two supply fans at high level and two pressure relief louvres at Unit 2, SEGRO Park, White Hart Lane, Tottenham by Allpress coffee roasters.
- 1.2 The proposed amendment would seek to substitute the approved Elevation Plan with a revised Elevation Plan showing the proposed fans and louvres. This is shown at Appendix A. The purpose of this assessment is to assess noise from any mechanical services or plant on site which has the potential to impact off-site which consists of external vents for two coffee roasters and a dust filter vent. Two low speed supply fans are now added to this.
- 1.3 The site is located immediately to the north of White Hart Lane within existing warehousing, industrial use, and storage facilities consented by LB Haringey in 2020.
- 1.4 Section 2 discusses the Government's Planning Policy and relevant guidance and standards relevant to the case.
- 1.5 A noise survey has been undertaken at the site for the 2020 application for the site and is considered valid for the purposes of this application and the gathered data has been used in this assessment. The details of the survey methodology are in Section 3 and the results are discussed in Section 4.
- 1.6 Consideration has been given to the nearest noise sensitive properties on Thetford Close and Norfolk Avenue to the rear and across White Hart Lane to the front of the proposal.
- 1.7 The assessment is contained in Section 5 where predicted levels are compared to existing levels at the nearest noise sensitive premises including the residential properties to the north and to the south.
- 1.8 Plans showing the site location is shown at Appendix A, Acoustic data provided by the applicants is shown at Appendix B, and Appendix C gives a glossary of acoustic parameters.

2.0 Assessment Methodology and Criteria

- 2.1 The National Planning Policy Framework (NPPF), August 2026, sets out the Government's planning policies for England and these policies articulate the Government's vision of sustainable development. In respect of noise, Section 17, Policy "P3: Living conditions and pollution" on page 79, states:

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

2. *Within this context development proposals should:*

- a. Provide healthy living conditions for occupiers and users in terms of avoiding exposure to levels of noise which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions.*
- b. Not give rise to, or contribute to unacceptable levels of noise on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree.....*
- d. Mitigate and reduce to a minimum, potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason)."*

- 2.2 In summary the primary aim of the NPPF is the avoidance of unacceptable or significant adverse impacts and where adverse impacts occur to mitigate and reduce these to provide acceptable living conditions. This does not mean that adverse effects cannot occur. The NPPF reinforces the March 2010 DEFRA publication, "Noise Policy Statement for England" (NPSE), which states three policy aims, as follows:

"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."

- 2.3 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

“... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur.”

- 2.4 The WHO guideline values are appropriate to what are termed “critical health effects”. This means that the limits are at the lowest noise level that would result in any psychological, physiological or sociological effect. They are, as defined by NPSE, set at the Lowest Observed Adverse Effect Level (LOAEL), but do not define the level above which effects are significant (the SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.
- 2.5 The WHO guideline noise values are summarised in the following table:

Table 2.1: WHO guideline noise values

Document	Level	Guidance
World Health Organisation “Community Noise 2000”	$L_{AeqT} = 55 \text{ dB}$	Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)
	$L_{AeqT} = 50 \text{ dB}$	Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).
	$L_{AeqT} = 35 \text{ dB}$	Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)
	$L_{AeqT} = 30 \text{ dB}$	Sleep disturbance, night-time (indoors)
	$L_{AMAX} = 60 \text{ dB}$	Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level).
	$L_{AMAX} = 45 \text{ dB}$	Sleep disturbance at night (Noise peaks inside bedrooms, internal level)

- 2.6 For L_{AeqT} criteria the time base (T) given in the documents is 16 hours for daytime limits and 8 hours for night time limits.
- 2.7 British Standard 4142 2014 +A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound (BS 4142:2014) was revised in November 2014, and is the relevant standard to determine impact from sound from industrial and manufacturing processes, sound from fixed installations which comprise mechanical and electrical plant and equipment and sound from the unloading and loading of goods and materials at industrial and/or commercial premises.

- 2.8 The revised BS 4142:2014 document was published following extensive consultation with industry and local authorities. Amongst the changes to the Standard, the concepts of certainty in results and the consideration of context of measured values was introduced. In particular, the assessment of impacts reinforces and expands on the concept of context and a commentary is available in Chapter 11 of the Standard, which is reproduced in part below. Further changes include the replacement of 'likelihood of complaint' with the 'likelihood of adverse impact or serious adverse impact'. This is consistent with the approach in the Noise Policy Statement for England (NPSE), also reproduced in part above in 2.2. The character and level of the residual sound compared to the character and level of the specific sound has been considered, together with an assessment of uncertainty of the measured values.

"The significance of sound of an industrial nature depends on both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be undertaken 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."

- 2.9 BS 4142: 2014 comments further in Chapter 11 (Assessment of impacts) on the derivation of the impact of the specific sound by subtracting the measured background level from the rating level and gives consideration to the following:
- a) Typically, the greater this difference, the greater the magnitude of the impact.
 - b) A difference of around +10 dB or more is likely to be an indication of significant adverse impact depending on context.
 - c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
 - d) The lower the rating level is relative to the measured background level, the less likely it is that the specific sound source will have an adverse or significant adverse impact. Where the rating level does not exceed the background level, this is an indication that the specific sound source will have a low impact, depending on context.
- 2.10 BS 4142:2014 comments further with reference to low levels in section 11 in the assessment of impacts and context. It maintains that where background and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true for night time or where daytime levels are also low.

Changes in Level

- 2.11 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dBA are equivalent to a doubling of loudness. This guidance has been accepted by inspectors, at inquiry, to encompass changes in noise levels in the index L_{AeqT} .
- 2.12 The following table shows the response to changes in noise (known as a Semantic Scale):

Table 2.2: Response to changes in noise

Change in noise level L _{AeqT} dB	Response	Impact
<3	Imperceptible	None
3 – 5	Perceptible	Slight
6 – 10	Up to a doubling	Significant
11 – 15	More than a doubling	Substantial
>15	-	Severe

Ref: Manning “Criteria for the Environmental Assessment, Planning and Mitigation of Railway Noise” Proc. IOA Vol. 20 Part 1 (1998) pp 195 – 202.

2.13 Taking into account the above the following assessment methods are recommended:

- Noise from mechanical services plant – BS 4142:2014 +A1: 2019
- The sensitivity of the receptors – BS 4142:2014 +A1:2019 /WHO Guidelines

3.0 Survey Methodology, Details and Results

- 3.1 Unattended monitoring was undertaken for approximately a 24-hour period over 3rd -4th January 2019 at a location at the northern boundary of the proposed development site bordering the nearest residential property to the north of the site on Thetford Close and shortened manned representative survey to the south at existing residential properties along White Hart Lane. This has provided data to represent the existing ambient and background levels at both boundaries and accompanied the earlier application for the site as a whole. This data is considered valid for the purposes of this application.
- 3.2 The microphone to the north was sited in free field at a height of approximately 7 metres and shown below as MP1. The survey was largely unattended but during the setting up and ending of the survey it was noted that the noise climate was dominated by road traffic noise from White Hart Lane. Other on-site activity was evident in the form of test borehole drilling during the late morning and early afternoon. This has been excluded from the survey as non-typical. Manned surveys were undertaken as shown below at MP2.

Figure 3.1 Monitoring positions for survey:



- 3.3 The instrumentation used to carry out the long term noise survey was as follows.
- Norsonic 118 type 1 precision sound level meters (SLM)
 - Norsonic 1250 acoustic calibrators
- 3.4 The SLMs were set to measure the following “A” weighted parameters: L_{Aeq} , L_{A10} , L_{A90} and L_{Amax} . The measurement sample period was 15 minutes. Immediately before and after the measurements were carried out, the SLMs were calibrated using the acoustic calibrator with no noticeable drift.
- 3.5 The weather during the survey was dry with temperatures of around 5°C with a gentle breeze of around 3 mph.

- 3.6 The noise survey established the measured noise levels at the measurement location is summarised below in Tables 3.1 and 3.2. Full survey data is available if required.

Table 3.1: Long Term Survey Noise Levels- Northern Boundary: MP1

Measurement Period	Measured Free-Field Noise Level, dB			
	L _{Aeq,T}	L _{A10,15m} (range)	L _{A90,15m} (range)	L _{Amax} (typical)
Daytime	51 dB	46-63 dB	40-56 dB Typical 44 dB	75 dB
Night Time (2300-0700)	43 dB	40-49 dB	35-44 dB Typical 38 dB	71 dB

Table 3.2: Short Term Survey Results- White Hart Lane: MP2

Measurement Period	Measured Free-Field Noise Level, dB			
	L _{Aeq,T}	L _{A10,15m} (range)	L _{A90,15m} (range)	L _{Amax} (typical)
Daytime	72 dB	74-76 dB	63-67 dB Typical 64 dB	85 dB

4.0 Noise Assessment

Noise from Site Activities

- 4.1 The site noise is restricted to seven external vents which serve two coffee roasters and a dust filter and two high level supply fans proposed for the variation. Mechanical plant is located within the structure of the building and will be attenuated by the structure of the building itself. Large intervening warehouse type buildings to the rear of the site together with a distance of over 150m provide screening reasonably taken to be 15 dB. The most noise sensitive residential properties to the rear of the site are at approximately 150m providing in the region of 44 dB attenuation over distance.
- 4.2 The proposal is to install the following: Supply fans x2 and pressure relief louvres x2. An elevational plan showing their location is provided at Appendix A. Low level louvres are effectively screened by other buildings and intervening warehouses.
- 4.3 The following indicative noise levels shown in table 4.1 are predicted at 1m from the nearest residential property as required by the condition. This a worst-case prediction with all units operating simultaneously in worst case mode. Sound pressure levels are shown, normalised to 1m distances from the data supplied by the applicants shown at Appendix B. No correction has been applied given existing ambient levels in the area and the absolute low levels of the resultant cumulative SPL.

Table 4.1: Predicted noise levels at rear residential properties at 150m

	Day (0700-2300)	Night (2300-0700)
Auto Jet Filter (SPL 85dba @1m)	85 dBA	85 dBA
Side Channel Blowers (SPL 76dBA @1m) x4	80 dBA	80 dBA
Roasters (SPL 85dba @1m) x2	88 dBA	88 dBA
High level supply fans (typical LWA 75dBA) x2	78 dBA	78dBA
Cumulative SPL @1m	90 dBA	90 dBA
Distance correction from 1m to 150m to nearest property at rear.	-44	-44
Screening by intervening warehouses	-15	-15
Total predicted SPL at residential property	31 dBA	31 dBA
Typical Background LA90	44 dBA	38 dBA
Difference	-13	-7
BS4142 impact	Low	Low
Planning criteria (5dB below background)	39	33
Planning criteria to be met (5 dB below background)	YES	YES

- 4.4 As mentioned in the introduction LB Hackney granted consent for the site as a whole in December 2020 under planning reference HGY/2020/0635. A number of conditions were imposed as part of the decision notice including Condition 25 which refers to noise from plant and is shown below in italics:

25. The design and installation of new items of fixed mechanical plant shall be such that, when in operation, the cumulative noise level LAeq 15 min arising from the proposed plant, measured or predicted at 1m from the facade of nearest residential premises shall be a rating level of at least 5dB(A) below the background noise level LAF90. The measurement and/or prediction of the noise should be carried out in accordance with the methodology contained within BS4142:2014 +A1:2019. Upon request by the local planning authority a noise report shall be produced by a competent person and shall be submitted to and approved by the local planning authority to demonstrate compliance with the above criteria.

Reason: In order to protect the amenities of nearby residential occupiers consistent with Policy 7.15 of the London Plan 2016 and Policy DM1 of The Development Management DPD 2017.

- 4.5 The predicted cumulative levels in worst-case mode at the noise sensitive premises to the rear enable this condition to be complied with.
- 4.6 In terms of context, the proposal is within an existing industrial estate and will not introduce a noticeable new noise source. Overall absolute resultant levels are low. The predictions are based on a worst-case operation with all units operating simultaneously.

5.0 Conclusions

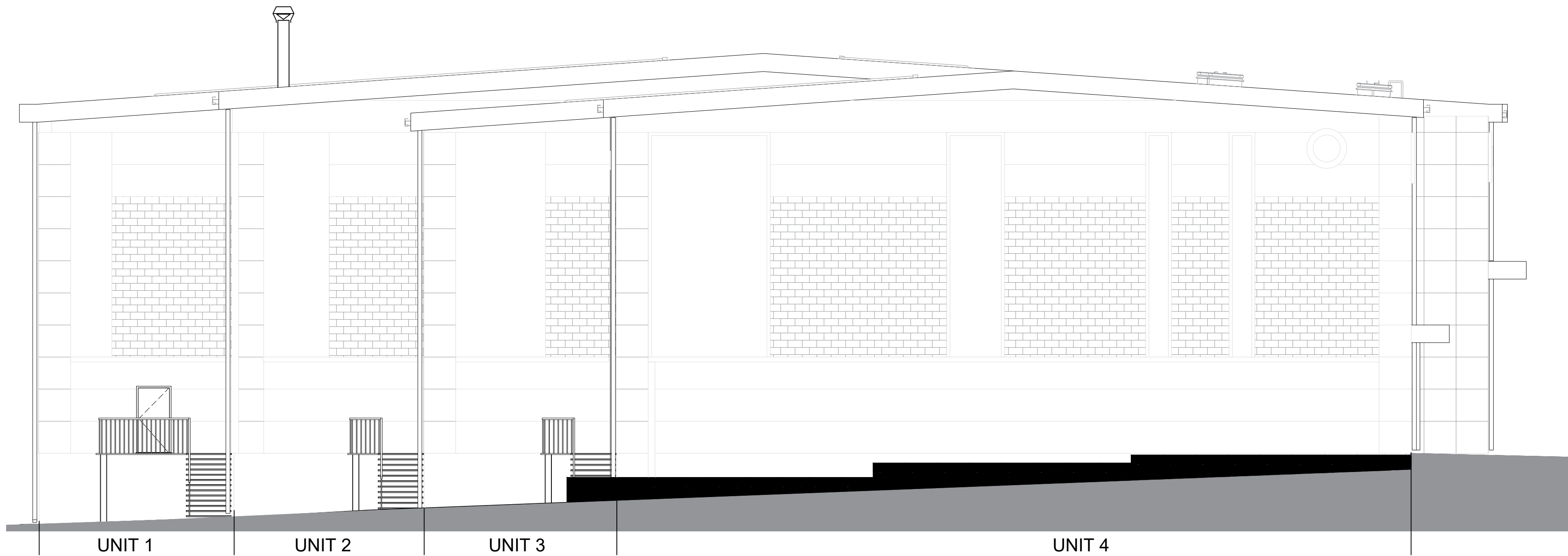
- 5.1 An assessment of the existing ambient and background noise levels has been undertaken at the boundary to the nearest residential properties to the north and south of the proposal.
- 5.2 Consideration has been given to the likely noise levels associated with this type of proposal and the levels predicted at the nearest most noise sensitive property.
- 5.3 The impact from operation of the proposal has been assessed against national guidance and existing noise levels. Conclusions indicate that the proposal and could operate without further mitigation or restrictions in operating hours.
- 5.4 It is concluded that the variation will not increase noise levels and continue to operate below existing levels at the boundaries with the nearest residential properties as proposed and will not cause adverse impact on the health and life of local residents in accordance with the national policy aims contained within the NPPF, NPSE and in accordance with noise guideline values contained in BS 8233:2014, BS 4142:2014 and World Health Organisation Guidelines for Community Noise 1999 together with local aims.

APPENDIX A

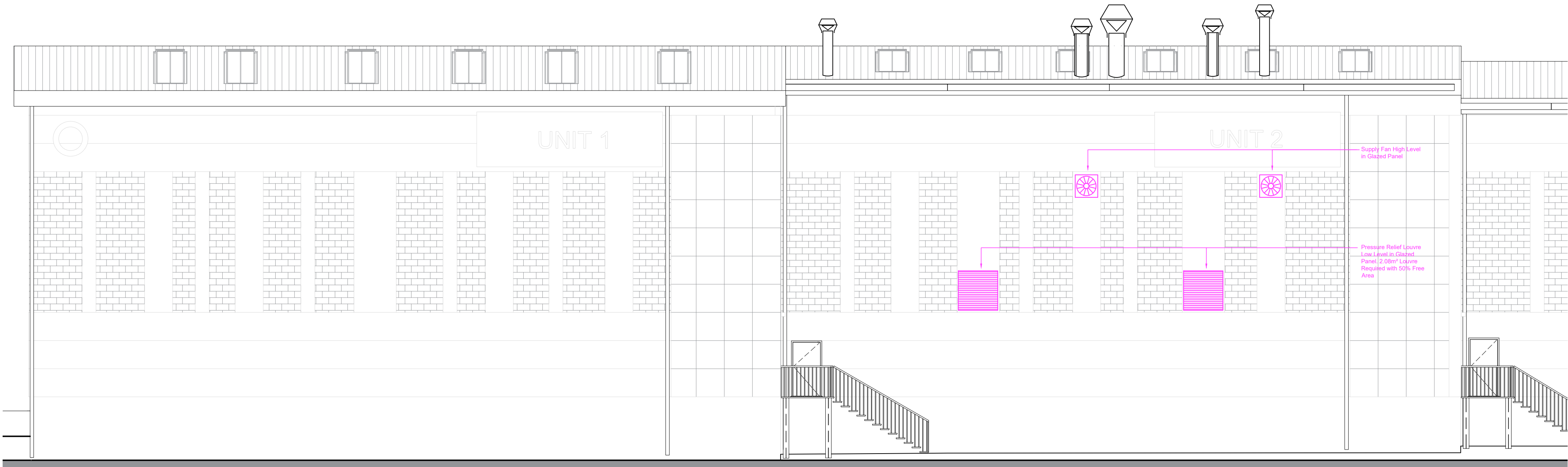
PLANS



1 UNITS 1-2 NORTH ELEVATION
1:100



2 UNITS 1-4 EAST ELEVATION
1:100



3 UNITS 1-2 SOUTH ELEVATION
1:100

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LEGEND:

VENTILATION LOUVRE DETAIL
ADDED 02/09

-	18/09/2025	First Issue	GB	AC
REV	DATE	NOTES	DRAWN	CHECKED



11 PLATO PLACE ST DIONIS ROAD LONDON SW6 4TU
CHARTERED ARCHITECTS 020 7736 6162 WWW.MSA-ARCHITECTS.CO.UK

PROJECT TITLE
SEGRE PARK, TOTTENHAM

CLIENT
ALLPRESS ESPRESSO

DOCUMENT TITLE
PROPSOED UNIT 2 ELEVATIONS

SCALE
1:100 @ A1

DATE | 24/09/2026
DRAWN | GB
CHECKED | AC

DOCUMENT NUMBER
31171-MSA-PL-0202

STATUS
PLANNING

REV
A



APPENDIX B

ACOUSTIC DATA



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MACHINES AND PLANTS FOR COFFEE INDUSTRY AND SIMILAR PRODUCTS

NOISE EMISSION POINTS

Work order: 202405047 **of:** 22/052024

Customer: ALLPRESS - UK

Reference drawing ALLPRESS UK - 2405047-NOISE EMISSION POINTS-R00

The noise level of the system depends on the machines layout and the type and size of the rooms. The noise level of the system cannot be estimated in advance, but IMF provides the noise level for each machine.

The definitive noise mapping must be carried out by the customer once the system has started up in accordance with the regulations in force.

MACHINES AND PLANTS FOR COFFEE INDUSTRY AND SIMILAR PRODUCTS

NOISE EMISSION POINT 1 – AUTOMATIC JET FILTER

3.6 Noise level

Type	kW	Air flow m³/h		Equivalent noise level L _{peq} dB (A) max
		MIN	MAX	
A	0.75	500	800	75
A	1.1	800	1000	75
B	1.5	1300	1780	77
C	2.2	1700	2800	81
C	3	2800	3500	81
 D	4	3500	4500	84
D	5.5	4500	5500	84
E	7.5	4200	5300	87
E	9.2	4800	7000	87
E	11.0	5500	8000	87

ALL DATA INDICATED IN THE TABLE REFER TO THE STANDARD WAM® TESTS:

FILTERS MOUNTED ON PT HOPPERS L = 3000 MM SUCTION PIPES AND L = 2000 MM OUTLET PIPES.

The noise levels of the WAM® fans expressed in dB(A) are obtained by readings in the open field, at maximum performance, at the 4 cardinal points at a distance of 1.5 m from the fan which is, in turn, placed 1.5 m off the ground. During the test, the fan is ducted in accordance with Standards UNI 7179-73P.

The user may obtain values different from those indicated, depending on the environment in which the machine is placed. It is always recommended to isolate the fan using vibration-damping supports and couplings from the ground and ducting. Avoid placing the fan in corners, near walls or on encased metal structures.

MACHINES AND PLANTS FOR COFFEE INDUSTRY AND SIMILAR PRODUCTS

NOISE EMISSION POINT 2 – SIDE CHANNEL BLOWER

Technical Specifications

17.5 [445] Dimensions in inches [mm] 18.8 [478]

Model No.	HP	Hz	Open Flow (cfm)	Max Pressure in. H ₂ O	Max Vacuum in. H ₂ O	Efficiency	Voltage	FLA	Starting Current Ratio ¹	dB(A) ²	Weight (lb)
SCL e08-MS-5.5-3	5.5	60	394	40	40	88.5%	208-230/460	14.6-15.1/7.55	11.1	76.8	143.3
		50	331	70	70	88.1%	200/400	17.7/8.86		72.1	
SCL e08-MS-5.5-3-575	5.5	60	394	40	40	88.5%	575	5.31	10.9	76.8	143.3
➔ SCL e08-MS-7.5-3	7.5	60	394	70	80	89.5%	208-230/460	19.8-19.5/9.75	13.7	76.8	167.6
		50	331	110	110	89.2%	200/400	22.2/11.1		72.1	
SCL e08-MS-7.5-3-575	7.5	60	394	70	80	89.5%	575	7.21	13.5	76.8	167.6
SCL e08-MS-10-3	10	60	394	110	110	90.2%	208-230/460	26.1-25/12.5	13	76.8	194.0
		50	331	150	120	90.1%	200/400	28.6/14.3		72.1	
SCL e08-MS-10-3-575	10	60	394	110	110	90.2%	575	10	12.9	76.8	194.0
SCL e08-MS-15-3	15	60	394	170	130	91.0%	208-230/460	38.2-37.3/18.7	12.5	76.8	207.3
		50	331	170	120	91.0%	200/400	43.4 / 21.7		72.1	
SCL e08-MS-15-3-575	15	60	394	170	130	91.0%	575	13.9	11	76.8	207.3

Motors include normally closed thermal protector, 1.15 S.F. (60 Hz), tropicalized windings, Class F (B) insulation, and are suitable for use with a VFD (Contact FPZ for pneumatic and speed limits when used with a VFD).

¹Starting current ratio x fla = starting current

²Noise level measured at a distance of 1 m with inlet and outlet ports piped in accordance to ISO 3744

Data is subject to change without notice.

NOISE EMISSION POINT 3 – ROASTER RM120

NOISE EMISSION POINT 5 – ROASTER RM120

IT

RUMORE

- La macchina è stata progettata e costruita per ridurre al minimo l'inquinamento acustico e comunque il livello di pressione sonora. Il valore rilevato nei posti previsti per gli operatori è inferiore ai **85 dBA**



ATTENZIONE: si consiglia l'utilizzo di dispositivi di protezione dell'udito (cuffie, tappi).

- La Ditta **I.M.F.** è disponibile a fornire assistenza nell'analisi e ricerca delle soluzioni ai problemi che possono insorgere nei confronti del rischio rumore.

EN

NOISE

- The machine has been designed and built to minimise noise pollution and in any case, the sound pressure level. The value found in the locations provided for the operators is lower than **85 dBA**



WARNING: We recommend the use of hearing protection devices (headphones, earplugs).

- The Company **I.M.F.** is available to provide assistance in the analysis and search for solutions to the problems that may arise relating to noise risk.

MACHINES AND PLANTS FOR COFFEE INDUSTRY AND SIMILAR PRODUCTS

NOISE EMISSION POINT 4 – SIDE CHANNEL BLOWER

NOISE EMISSION POINT 6 – SIDE CHANNEL BLOWER

NOISE EMISSION POINT 7 – SIDE CHANNEL BLOWER

DG75AFAUT				
Power	kW	7,5		8,6
Voltage	Volts	400		460
Frequency	Hz	50		60
Max. vacuums rate	mm H ₂ O	4.000		2.700
Max. air flow rate	m ³ /h	700		845
Noise level (*)	dB (A)	76		74

(*) Noise level

Noise level readings were taken in accordance with the provisions of *Machine Directive 2006/42/CE* standards.

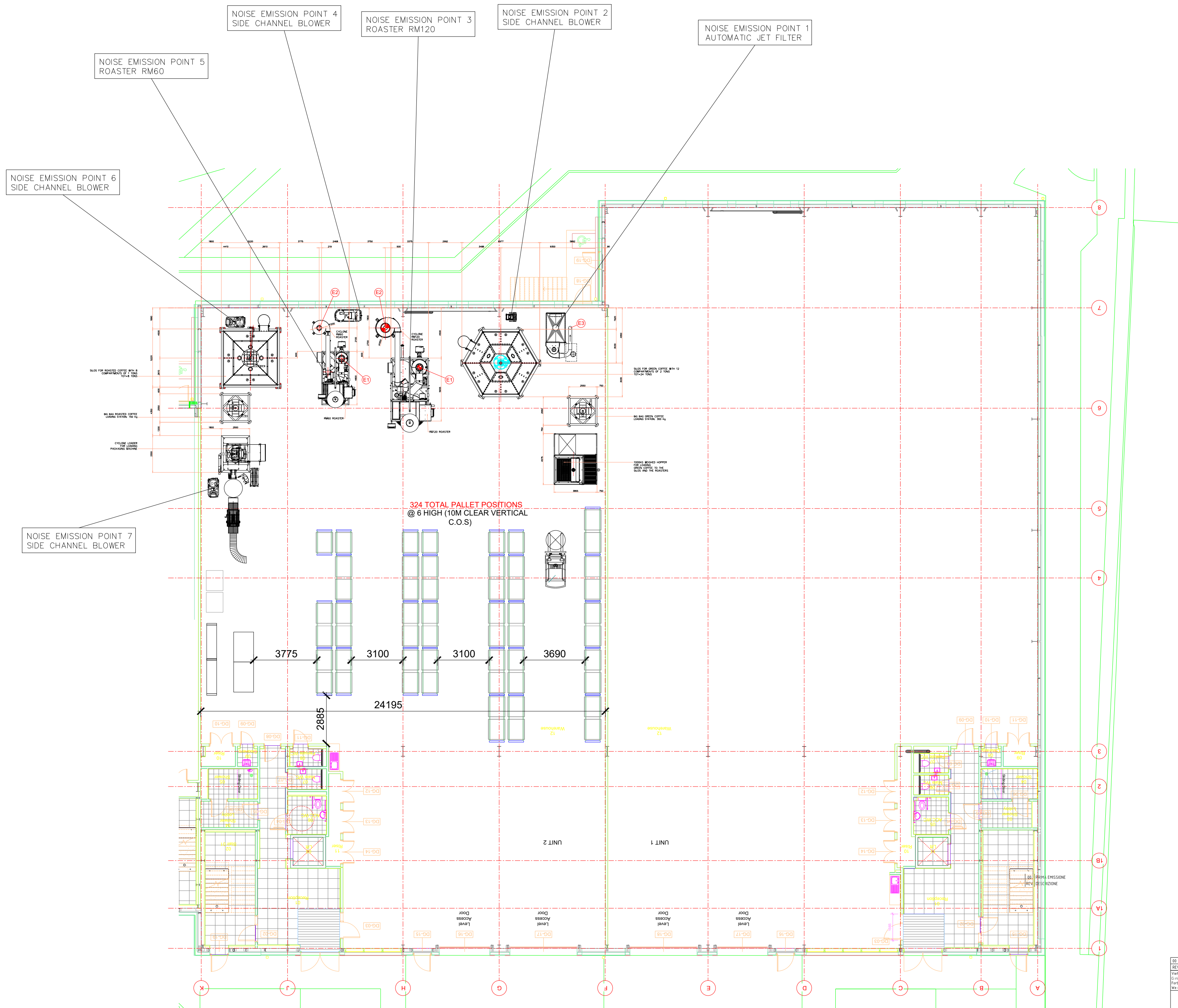
Sound tests performed on this specific vacuum cleaner model have been taken from a distance of 1 meter and from a height of 1,60 meters, showing an acoustic pressure no higher than the one indicates in the table.

The vibrations transmitted by the machine are lower than 2,5 m²/s.

Attention!

Pursuant to articles L.D. 81/08, workers exposed to sound pressure levels above 85 dB (A) must be protected by special individual protection devices.

It is therefore necessary, if such working conditions exist, to provide workers with such approved individual protection devices and to inform them of the risks relating to noise exposure.



00	PRIMA EMISSIONE	BALBONI GP	05-09-2025
REV	Descrizione	Dis. / Draw	DATA
Vietata la riproduzione e la Trasmissione Totale o parziale. Vietata l'accessibilità a terzi. Già riservato di modificare questo disegno in qualsiasi momento. Forbidden reproduction and complete or partial transmission. Forbidden access to third parties. We reserve the right to modify this design at any time.		Approv. / Approv	Peso / Weight
		09/09/2025	L. Mosca
		Contr. / Check	Qtà / Qty
		09/09/2025	L. Mosca
		Dis. / Draw	Foglio / Sheet
		09/09/2025	1/1
		Com.sa / Order	
		09/09/2025	BALBONI GP
		Cod. Dis. / Draw. Code	202405047
		Rev.	00
Formato / Format	A0	Descrizione / Description	IMPIANTO TOSTATRICE RM120 E RM60
Tattamento / Treatment	1:100	NOISE EMISSION POINTS	

APPENDIX C

ACOUSTIC TERMINOLOGY

Acoustic Terminology

1. Noise, defined as unwanted sound, is measured in units of decibels, dB. The range of audible sound is from 0 dB to 140 dB. Two equal sources of sound, if added together will result in an increase in level of 3 dB, i.e. $50\text{ dB} + 50\text{ dB} = 53\text{ dB}$. A 10 dB increase in sound is perceived as a doubling of loudness.
2. Frequency (or pitch) of sound is measured in units of Hertz. 1 Hertz = 1 cycle/second. The range of frequencies audible to the human ear is around 20 Hz to 18000 Hz (or 18 kHz). The capability of a person to hear higher frequencies will reduce with age. The ear is more sensitive to medium frequency than high or low frequencies.
3. To take account of the varying sensitivity of people to different frequencies a weighting scale has been universally adopted called "A-weighting". The measuring equipment has the ability to automatically weight (or filter) a sound to this A scale so that the sound level it measures best correlates to the subjective response of a person. The unit of measurement thus becomes dBA (decibel, A-weighted).
4. The second important characteristic of sound is amplitude or level. Two units are used to express level a) sound power level - L_w , and b) sound pressure level - L_p . Sound power level is an inherent property of a source whilst sound pressure level is dependent on surroundings/distance/directivity etc. The sound level that is measured on a meter is the sound pressure level, L_p .
5. External sound levels are rarely steady but rise or fall in response to the activity in the area - cars, voices, planes, birdsong, etc. A person's subjective response to difference noises has been found to vary dependent on its temporal distribution (i.e. its variation with time). For this reason, a set of statistical indices have been developed.
6. There are four main statistical indices in use in the UK:
 - L_{A90} The sound level (in dBA) exceeded for 90% of the time. This unit gives an indication of the sound level during the quieter periods of time in any given sample. It is used to describe the "background noise level" of an area.
 - L_{AeqT} The equivalent continuous sound level over a period of time, T. this unit may be described as "the notional steady noise level that would provide, over a period, the same energy as the varying noise in question" (In other words, the energy average level). This unit is now used to measure a wide variety of different types of noise of an industrial or commercial nature, as well as road traffic, aircraft and trains.
 - L_{A10} The sound level (in dBA) exceeded for 10% of the time. This level gives an indication of the sound level during the noisier periods of time in any given sample. It has been used over many years to measure and assess road traffic noise.
 - L_{AMAX} The maximum level of sound, i.e. the peak level of sound measured in any given period. This unit is used to measure and assess transient noises, i.e. gun shots, individual vehicles, etc.