HOLLAND & HOLLAND - ARTISAN GUN MAKING WORKSHOP

Plant Noise Impact Assessment Report

Reference: 14125.RP02.PNA.2
Prepared: 03 March 2026
Revision Number: 2

Holland & Holland
Ducks Hill Rd
Harefield
Northwood
HA6 2ST

Plant Noise Impact Assessment Report

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Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	24 November 2025	Martin Raisborough	Torben Andersen
1	Updated with latest proposals	03 February 2026	Martin Raisborough	Torben Andersen
2	Final for Planning	03 March 2026	Martin Raisborough	Torben Andersen

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Contents

1.0 INTRODUCTION

RBA Acoustics has been appointed by Holland & Holland to undertake a noise impact assessment in relation to the proposal to construct a new gun manufacturing facility close to the existing Holland and Holland shooting ground at Ducks Hill Rd in Northwood, north west London. The new manufacturing facility is proposed just south of the existing facility and is proposed to be built, around an existing barn structure which is to be retained and refurbished.

This report has been prepared to support a planning application for the new units in order to demonstrate that the Local Authority's plant noise emission requirements may be satisfied such that there will be no adverse impact upon the nearby affected noise sensitive properties.

This report presents the details and results of an environmental noise monitoring survey undertaken at the site between Friday 26th and Wednesday 1st October 2025 to quantify existing prevailing background sound levels at the nearby noise sensitive properties. On the basis of the minimum background sound levels measured during the survey, plant noise emission limits may be recommended based upon the requirements of the Local Authority (the London Borough of Hillingdon) and national planning guidelines, including British Standard 4142.

Subsequent to the above, this report presents the details and outcomes of a noise impact assessment based on the proposed plant items in order to determine the impact of noise upon the nearby identified noise sensitive receptors.

This report occasionally employs technical acoustic terminology. In order to assist the reader, a brief description of the acoustic parameters used in this report is included within Appendix A.

2.0 SITE DESCRIPTION

The proposed gun making workshop is to be located at Ashby Farm in Northwood, north west London. The existing buildings on the site are to be mainly demolished to make way for a new two storey building, around an existing barn structure which is to be retained and refurbished.

The site lies approximately 150 metres to the east of Ducks Hill Road which runs between the towns of Ruislip and Northwood. To the north of the site is the main Holland and Holland shooting grounds, approximately 200 metres distant, while to the south of the site is Young Wood farm, also approximately 225 metres distant. The intervening land is greenfield.

To the west of the site is undeveloped greenfield land, while to the east of the site, beyond Ducks Hill Road is Ruislip Woods.

The nearest noise sensitive properties to the site likely to affected by noise from the new facility are located to the east, namely 1 Ashby Cottage to the north east of the site along Ducks Hill Road, approximately 185 metres from the site, and those at Young Wood Farm to the south east of the site.

A plan of the site, including the building location and the nearest identified receptors, are shown in Figures A and B in Appendix B.

3.0 ASSESSMENT CRITERIA

3.1 Hillingdon Council

The London Borough of Hillingdon (LBH) usually applies the following criteria for noise from fixed plant items

> *"The rating level of noise emitted from the plant and/or machinery hereby approved shall be at least 5dB below the existing background noise level. The noise levels shall be determined at the nearest residential property. The measurements and assessment shall be made in accordance with British Standard 4142."*

The above requirements will be considered in the setting of plant noise criteria for this project.

3.2 National Planning Policy Framework (NPPF)

The NPPF determines the government's planning policy for England. The NPPF states that, with respect to noise, planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise from a new development, including through the use of conditions;
- Recognise that development will often create some noise and existing business wanting to develop in continuance of their business should not have unreasonable restrictions put upon them because of changes in nearby land uses since they were established; and
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

The guidance contained within the NPPF further determines that consideration should be given to the Noise Policy Statement for England (DEFRA, March 2010).

3.3 Noise Policy Statement for England (NPSE, March 2010)

The NPSE attends to three types of noise;

- "Environmental noise" which includes noise from transportation sources;
- "Neighbour noise" which includes noise from inside and outside people's homes; and
- "Neighbourhood noise", which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.

In line with the aims determined in the NPPF, the NPSE determines three aims;

1. Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development;
2. Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development; and,
3. Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

The guidance detailed within the NPSE relates a number of key phrases with regards to adverse effects which can be applied to noise impacts as used by the World Health Organisation.

- **NOEL – No Observed Effect Level** - The level below which no health effect or detrimental impact on the quality of life is observed.
- **LOAEL – Lowest Observed Adverse Effect Level** - The level at which adverse effects on health and quality of life can be detected
- **SOAEL – Significant Observed Adverse Effect Level** - The level above which significant adverse effects on health and quality of life occur.

The guidance indicates that it is not possible to have a single objective noise based measure that defines SOAEL, and as such the SOAEL is likely to be different for different noise sources and receptors. The document indicates that further research is required to establish what may constitute a significant adverse impact on health and quality of life from noise.

While the NPSE determines the NOEL, LOAEL and SOAEL descriptions, the document indicates that, unlike other environmental disciplines, there are currently no European or national noise limits which have to be met although the NPSE states that "there can be specific local limits for specific developments" allowing for negotiation.

3.4 Planning Practice Guidance - Noise

The Planning Practice Guidance for noise (updated December 2014) broadly considers the same issues as demonstrated within both the NPPF and the NPSE with regards to noise within the planning realm.
The information detailed within the PPG indicates that noise should be considered when:

- New developments may create additional noise; and/ or,
- New developments would be sensitive to the prevailing acoustic environment.

The guidance indicates that Local Planning Authorities 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.

The impact of noise is rated within the policy document in terms of the relative 'Observed Effect Level', defined in line with the criteria summarised within paragraph 3.4.3 above. Based upon this the Planning Practice Guidance provides the following matrix of likely average response:

Table 1 – PPG Observer Effect Levels

Perception	Example of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
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	Observed Adverse Effect	Mitigate and reduce to a minimum

	windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.		
Significant Observed Adverse Effect Level			
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 character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/ or an ability 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

3.5 BS 4142 'Method for Rating and Assessing Industrial & Commercial Sound'

BS 4142 is the generally adopted method for assessing industrial and commercial noise emissions affecting residential areas and is also specified by the majority of local authorities for such instances.

The BS 4142 Standard describes methods for rating and assessing the following:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

The methods use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

If appropriate, the specific sound level of the source ($L_{Aeq,T}$) is corrected, by the application of one or more corrections for acoustic features such as tonal qualities and/or distinct impulses, to give a 'rating' level ($L_{Ar,Tr}$).The Standard effectively compares and rates the difference between the rating level of the specific sound and the typical background sound level ($L_{A90,T}$) in the absence of the specific sound.

The Standard advises that the time interval ('T') of the background sound measurement should be sufficient to obtain a representative or typical value of the background sound level at the time(s) the source in question operates or is proposed to operate in the future.

Comparing the rating level with the background sound level, BS 4142 states:

- "Typically, the greater this difference, the greater the magnitude of 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."

This standard and methodology will be used to assess the impact of sound from the condenser units on the nearby identified noise sensitive properties.

3.6 Criteria to be Adopted for This Assessment

Considering the above requirements and guidance documents, it is recommended that the assessment of noise impact from the operation of the condenser units on the adjacent dwelling be undertaken in accordance with British Standard 4142.

From the guidance provided by The London Borough of Hillingdon, and that within BS 4142, it is recommended that the rating noise level from the combined operation of the new proposed plant at the façade of the adjacent noise sensitive properties do not exceed a level of at least 5dB below the otherwise background sound level. This would correspond to a 'low impact' according to the guidance within BS 4142.

Notwithstanding the above, however, we suggest that imposing a noise emission limits below 30dBA is unnecessary to achieve acceptable conditions at the nearest existing noise-sensitive properties, We therefore propose a noise emission limit of 30dBA (daytime and night-time) would be appropriate and proportionate. For example, Section 1 of (the now superseded) BS 4142: 1997, states

"The method is not suitable for assessing the noise measured inside buildings or when the background and rating noise levels are both very low…For the purposes of the standard, background noise levels below about 30dB…are considered to be very low"

Under such circumstances, we propose that a rating level of 30dBA is a realistic minimum target to work to at the nearest residential receptors where background sound levels are very low (<30dBA). Notwithstanding this, all reasonable efforts should be made to reduce noise levels as much as is reasonably practicable.

In relation to the adverse effect levels in the NPSE, and with regard to the context of this site (it being in a rural environment), it is considered that a difference of +5dB or more would correspond to a 'Significant Observed Adverse Effect Level', a +0dB difference would correspond to a 'Lowest Observed Adverse Effect Level', while a difference of --5dB or less would correspond to a 'No Observed Effect Level'. As such, adopting the above criterion would correspond with No Observed Effect Level' according to the NPSE.

Also, where background noise levels are very low (<30dBA) a rating level of 30dBA would also correspond with 'No Observed Effect Level' according to the NPSE.

4.0 ENVIRONMENTAL NOISE SURVEY

4.1 Survey Methodology

Monitoring of the prevailing background noise levels was undertaken between approximately 13:00 on Friday 26th September and 08:00 on Wednesday 1st October 2025. The equipment was installed and collected by Martin Raisborough (BEng, hons, MIOA) of RBA Acoustics.

As the survey was unattended it is not possible to comment with certainty regarding meteorological conditions throughout the entire survey period. However, based on observations during the site visits and weather reports for the area, conditions were generally considered suitable for obtaining representative noise measurements, being predominantly dry with little wind.

Measurements were made of the L_{A90} noise levels over sample periods of 15 minutes.

4.2 Measurement Locations

To determine the existing noise climate near to the identified noise sensitive receptors to the site, environmental noise measurements were undertaken at the following locations:

- **Measurement Position 1** – The microphone was attached to an extension pole, itself attached to a fence, positioned on the boundary of the access road to the existing Holland & Holland shooting ground of the site overlooking Church Road. The Microphone was approximately 2 metres from ground level in free field conditions and was approximately 35 metres from Ducks Hill Road. The measurements at this position are considered representative of those on the rear façade of 1 Ashby Cottage (Noise sensitive receptor 1).

- **Measurement Position 2** – The microphone was attached to an extension pole, itself attached to a fence, positioned within the yard of Ashby Farm. The Microphone was approximately 2 metres from ground level in free field conditions and was approximately 70 metres from Ducks Hill Road. The measurements at this position are considered representative of those on the rear façade of the dwelling at Young Wood Farm (Noise sensitive receptor 2).

The measurement position is also illustrated on the site plan attached in in Figure A (Appendix B).

4.3 Instrumentation

For information regarding the equipment used for the measurements please refer to Appendix C.

The sound level meters were calibrated both prior to and on completion of the survey with no significant calibration drift observed.

4.4 Results

The noise levels measured are shown as time-histories on the attached Graphs in Appendix D. The typically lowest $L_{A90,\,15\,minute}$ noise levels measured throughout the survey are summarised in Table 2, based on the 90th percentile of the L_{A90} dataset during the daytime and night time periods.

Table 2 – Lowest measured background sound levels

Measurement Position / Receptor	Measurement Period	Typical Minimum $L_{90,\ 15\ minutes}$ (dBA)
Position 1 (1 Ashby Cottage)	Daytime (07:00 – 23:00)	37
	Night-time (23:00 – 07:00)	26
Position 2 (Young Wood Farm)	Daytime (07:00 – 23:00)	39
	Night-time (23:00 – 07:00)	24

5.0 PLANT NOISE IMPACT ASSESSMENT

5.1 Plant Noise Emission Limits

Based on the adopted plant noise emission criteria within Section 3.6 of this report, and the minimum background sound levels measured during the environmental noise survey, as presented in Table 2, the following noise emission limits are recommended at 1 metre from the window façade of the nearest noise sensitive properties.

Table 3 – Plant Noise Emission Limits

Measurement Position / Receptor	Measurement Period	BS4142 Rating Noise Level (dBA)
Position 1 (1 Ashby Cottage)	Daytime (07:00 – 23:00)	32 $L_{Ar,\ 1\ hour}$
	Night-time (23:00 – 07:00)	30 $L_{Ar,\ 15\ mins}$
Position 2 (Young Wood Farm)	Daytime (07:00 – 23:00)	34 $L_{Ar,\ 1\ hour}$
	Night-time (23:00 – 07:00)	30 $L_{Ar,\ 15\ mins}$

If the plant noise emission limits are achieved at these receptors, then they will be considered to be achieved at all other nearby receptors also due to the increased distance.

The above criteria are applicable to the cumulative noise impact from the simultaneous operation of all condenser units.

5.2 Plant Details

The full details of all the plant scheme are not yet defined at this stage of the project. As such we have undertaken an initial assessment of the noise impact from the main noise generating plant items considered to present the most risk of noise impact on the nearby receptors. There plant items are identified within the plant noise schedule in Appendix E of this report.

These units provide heating and cooling to the various internal spaces and are proposed to be located in the plant compound at the eastern end of the building at ground level, as indicated in Figure B of Appendix B. the plant compound is proposed top be constructed with hit and miss brickwork so as to allow ventilation to the space, and will have an open roof.

The majority of the plant items are proposed to operate during the daytime only, between 07:00 and 23:00 hours, although some of the plant items are required to run 24 hours. In our assessments we have assumed that all plant will operate 24 hours as worst case.

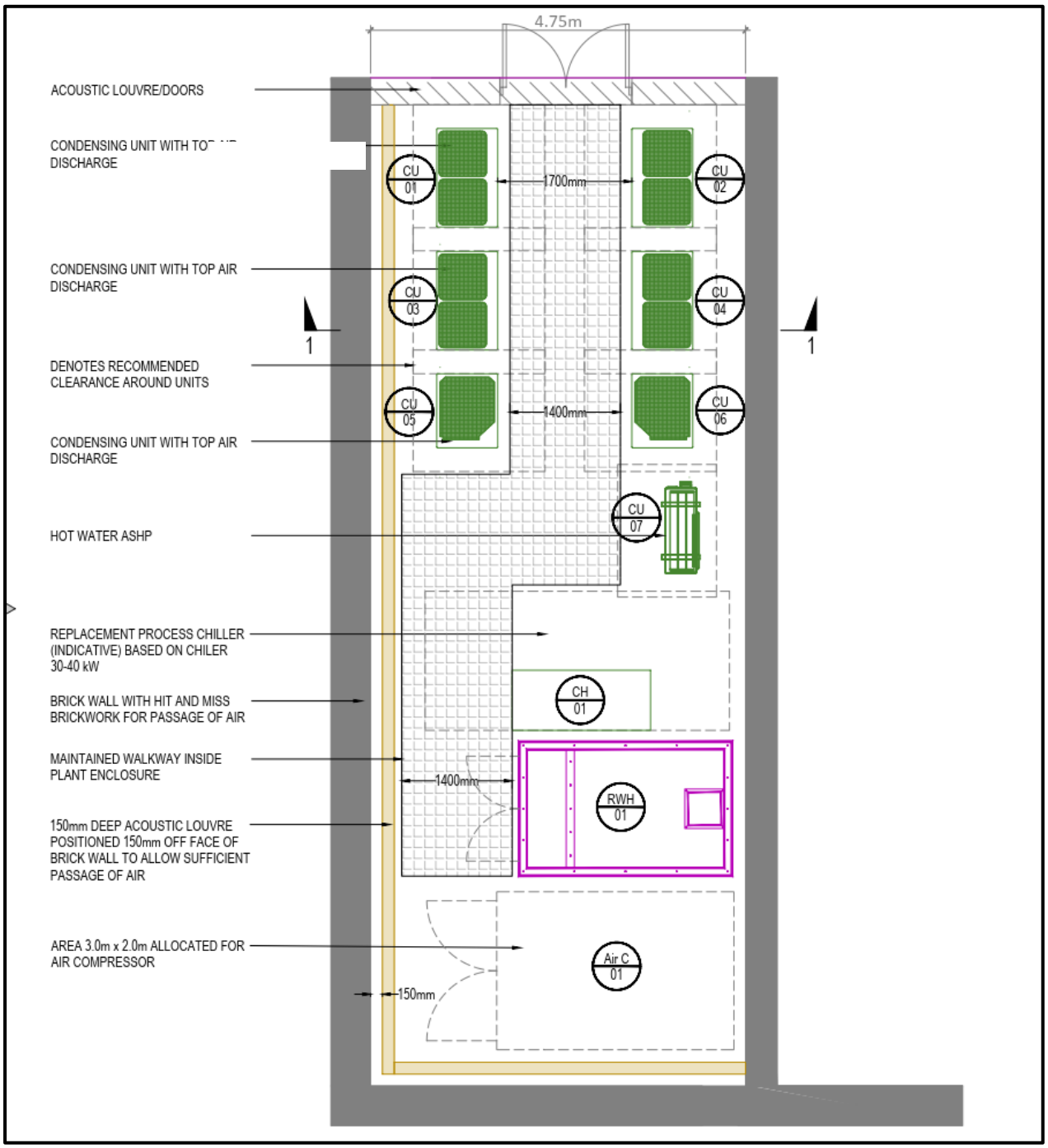
The noise details of these plant items are presented within the plant noise schedule in Appendix E of this report.

The proposed condenser units are fitted with inverter drivers so as there is a smooth and gradual ramp up and down of fan speeds depending on the heating and cooling demands placed on them. The noise spectrum shape is also broadband in nature. As such, it is not considered that there will be any attention-grabbing noise characteristics associated with the operation of these units audible at the nearest noise sensitive properties such that a rating correction would need to be applied in accordance with BS 4142 methodology.

5.1 Mitigation Recommendations

It is recommended that the external plant enclosure includes acoustic louvres behind the brickwork to control noise breakout from the plant area to the environment. The extent of the acoustic louvres is shown in Figure 1 below.

Figure 1 – Extent of Acoustic Louvres around External Plant Compound



The louvres should achieve the following insertion losses as a minimum:

Table 4 – Acoustic Louvres Specification

Attenuator Serving	Dynamic Insertion Loss (dB) @ Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Acoustic Louvres (Typically achieved using 150mm deep, acoustic louvres)	4	5	7	12	16	16	16	18

The plant enclosure should extend a minimum of 3 metres in height from the level of the compound floor. The roof of the compound may remain open to the environment.

5.1.1 Air Compressors

Two air compressors are proposed within the plant compound, to be housed within an enclosure. The compressors will generate the following noise levels:

- 2 No. compressors TIS L07-L11/10/CE - 70dBA each

The enclosure is expected to provide a sound insulation performance of at least 15dB. The internal walls or ceiling of the compressor should be lined with an acoustic absorbent material, such as those supplied by CMS Danskin.

It is expected that the compressors will not operate for more than 15 minutes in any 1-hour period. Our assessment has been undertaken on this basis.

5.2 Noise Impact Assessment – Receptor 1

Table 5 below presents the BS 4142 assessment for the impact of noise from the condenser units at 1 Ashby Cottage.

Table 5 – Cumulative Noise Impact Assessment at Receptor 1

Units	Sound Pressure Level (dB re $20x10^{-6}$ Pa.) @ Octave Band Centre Frequency (Hz) @ 1metre								dBA
	63	125	250	500	1k	2k	4k	8k	
Total Rating Noise Level at 1 Ashby Cottage ($L_{Ar,\ 1\ hour}$)	30	28	25	20	11	6	6	0	21
Plant noise emission limit									30
Total Excess									0

The above assessment suggests that the rating noise level from the operation of the condenser plant will be comfortably within the adopted plant noise emission limit at 1 Ashby Cottage.

5.3 Noise Impact Assessment – Receptor 2

Table 6 below presents the BS 4142 assessment for the impact of noise from the condenser units at Young Wood Farm.

Table 6 – Cumulative Noise Impact Assessment at Receptor 2

Units	Sound Pressure Level (dB re $20x10^{-6}$ Pa.) @ Octave Band Centre Frequency (Hz) @ 1metre								dBA
	63	125	250	500	1k	2k	4k	8k	
Total Rating Noise Level at Young Wood Farm ($L_{Ar, 1\ hour}$)	25	24	20	15	6	1	2	0	19
Plant noise emission limit									30
Total Excess									0

The above assessment suggests that the rating noise level from the operation of the condenser plant will be comfortably within the adopted plant noise emission limit at Young Wood Farm.

5.4 Uncertainty

Uncertainty is an unavoidable feature of measurements in the field, which can be subject to many factors; the weather typically being the most significant of which with respect to the measurement of sound. Uncertainty is also unavoidable in the prediction of sound levels, where naturally, before the scenario being considered becomes a reality, a number of assumptions need to be relied upon. There is also the uncertainty of people's reactions, which can be influenced by a number of factors, not just the magnitude or character of the sound in question.

In keeping with the scale of each project, therefore, it is the aim of RBA Acoustics to minimise uncertainty at each stage as far as reasonably practicable. With this is mind, RBA Acoustics follow the best practise methodologies based on the guidance within BS 4142:2014 and our experience in undertaking assessments of these nature.

Crucially, it has been determined that environmental noise measurements have been undertaken by suitably qualified acousticians, using in calibration equipment, and avoiding adverse weather conditions.

The predictions have also been undertaken by suitably qualified staff, whilst using the best available information, an industry standard calculation method, and the most applicable calculation procedures.

Notwithstanding this, naturally some uncertainty remains. Given the sheer number of factors involved, however, it is not feasible to place a value on the level of uncertainty, without resulting in an unhelpful range of possible outcomes. It is the professional position of RBA Acoustics that uncertainty has been kept to a realistic minimum and that the outcome of this assessment is sufficiently representative.

6.0 CONCLUSIONS

RBA Acoustics has been appointed by Holland & Holland to undertake a noise impact assessment in relation to the proposal to construct a new gun manufacturing facility close to the existing Holland and Holland shooting ground at Ducks Hill Rd in Northwood, north west London. The new manufacturing facility is proposed just south of the existing facility and is proposed to be built, around an existing barn structure which is to be retained and refurbished.

This report has been prepared to support a planning application for the new units in order to demonstrate that the Local Authority's plant noise emission requirements may be satisfied such that there will be no adverse impact upon the nearby affected noise sensitive properties.

Based on guidance published by the Hillingdon Council for the control of noise from industrial and commercial developments affecting noise sensitive residential properties, and the methodology within British Standard 4142 'Method for Rating and Assessing Industrial & Commercial Sound', plant noise emission criteria have been recommended that correspond with a 'a 'low impact' according to the guidance within BS 4142. And the requirements of the Local Authority.

From baseline environmental sound monitoring undertaken by RBA Acoustics between Friday 26th and Wednesday 1st October 2025, the lowest background sound levels have been established at the nearest affected noise sensitive properties, namely 1 Ashby Cottage to the north east of the site along Ducks Hill Road, approximately 185 metres from the site, and those at Young Wood Farm to the south east of the site. From this background survey data, and the adopted plant emission criteria, plant noise emission limits have been recommended.

At this stage of the project, the full details of all the plant items are not yet known. As such an initial assessments of the noise impact from the main noise generating plant items considered to present the most risk of noise impact on the nearby receptors have been undertaken to understand the impact of noise on the nearest affected noise sensitive properties.

Our assessments have determined that the plant noise emission limits will be achieved, although acoustic louvres should be installed around the external plant compound, as detailed in Section 5.1 of this report.

APPENDICES

Appendix A – Acoustic Terminology

dB	Decibel - Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.
dB(A)	The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level. Because of being a logarithmic scale noise levels in dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) is just perceptible.
L_{eq}	L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (1 hour).
L_{Aeq}	The level of notional steady sound which, over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measured over that period.
L_{An} (e.g L_{A10}, L_{A90})	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during the measurement period, T. It is commonly used to measure the effect of very short duration bursts of noise, such as for example sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the general level of, say, traffic noise, but because of their very short duration, maybe only a very small fraction of a second, may not have any effect on the L_{eq} value.
Noise Rating (NR)	A standardised set of curves relating octave-band sound pressure level to the centre frequency of the octave bands, each of which is characterised by a 'noise rating' (NR), which is numerically equal to the sound pressure level at the intersection with the ordinate at 1kHz.

Appendix B –Site Plans

HOLLAND & HOLLAND - ARTISAN GUN MAKING WORKSHOP
Site Location Plan
Project 14125

Figure A
03 March 2026
Not to Scale

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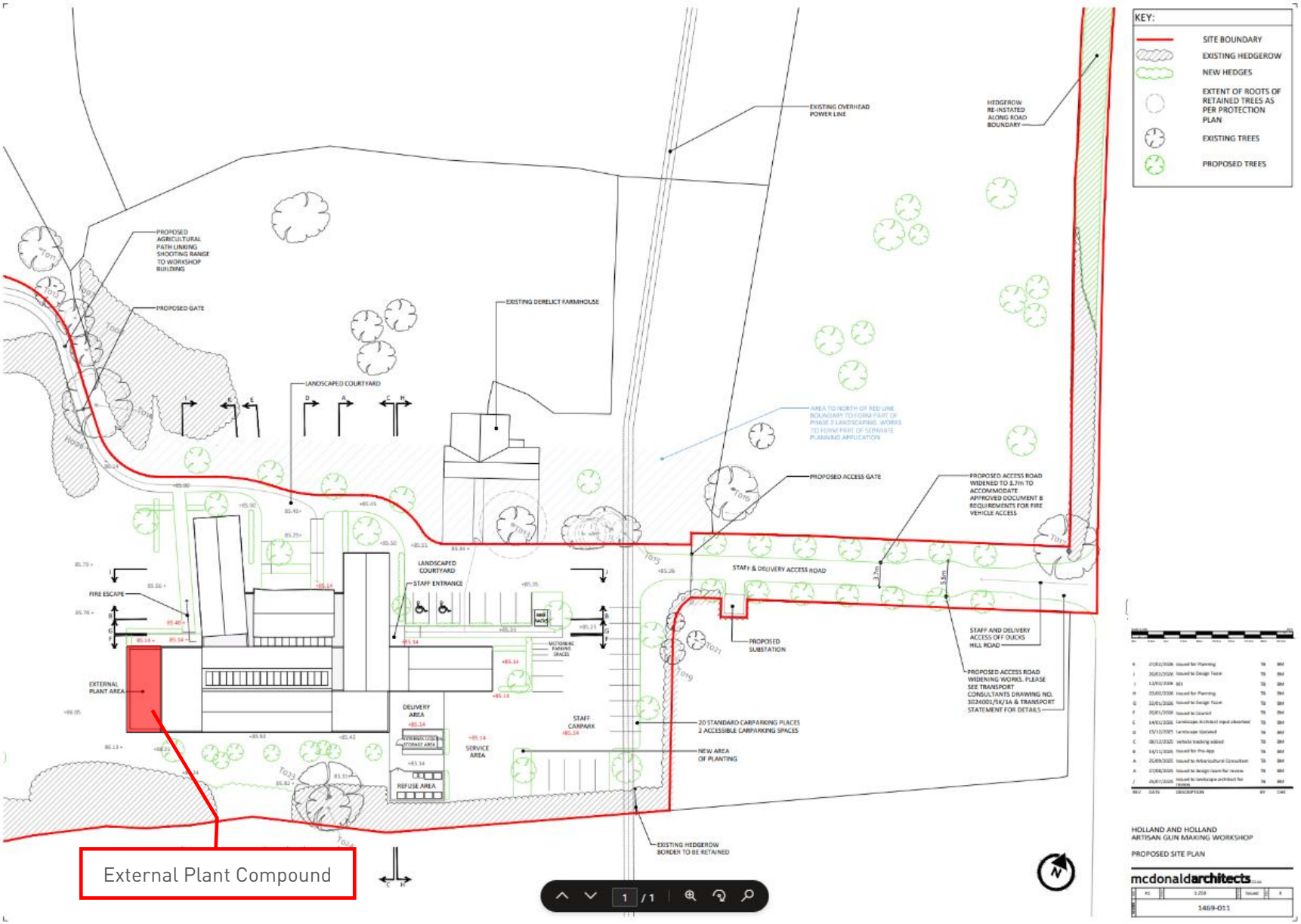

External Plant Compound

HOLLAND & HOLLAND - ARTISAN GUN MAKING WORKSHOP
Site Plan
Project 14125

Figure B
03 March 2026
Not to Scale

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Appendix C – Calibration Details

Table E1 – Calibration Details

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1407477	UCRT25/2548	3 November 2027
Norsonic Pre Amplifier	1209	22341		
Norsonic ½" Microphone	1225	358196		
Norsonic Sound Calibrator	1255	125525259	UCRT25/2542	31 October 2027

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1406262	UCRT25/1646	24 April 2027
Norsonic Pre Amplifier	1209	20487		
Norsonic ½" Microphone	1225	469005		
Norsonic Sound Calibrator	1251	34429	UCRT25/1638	22 April 2027

Appendix D – Time History Graphs

Holland & Holland

L_{Aeq} Time History

Position 1

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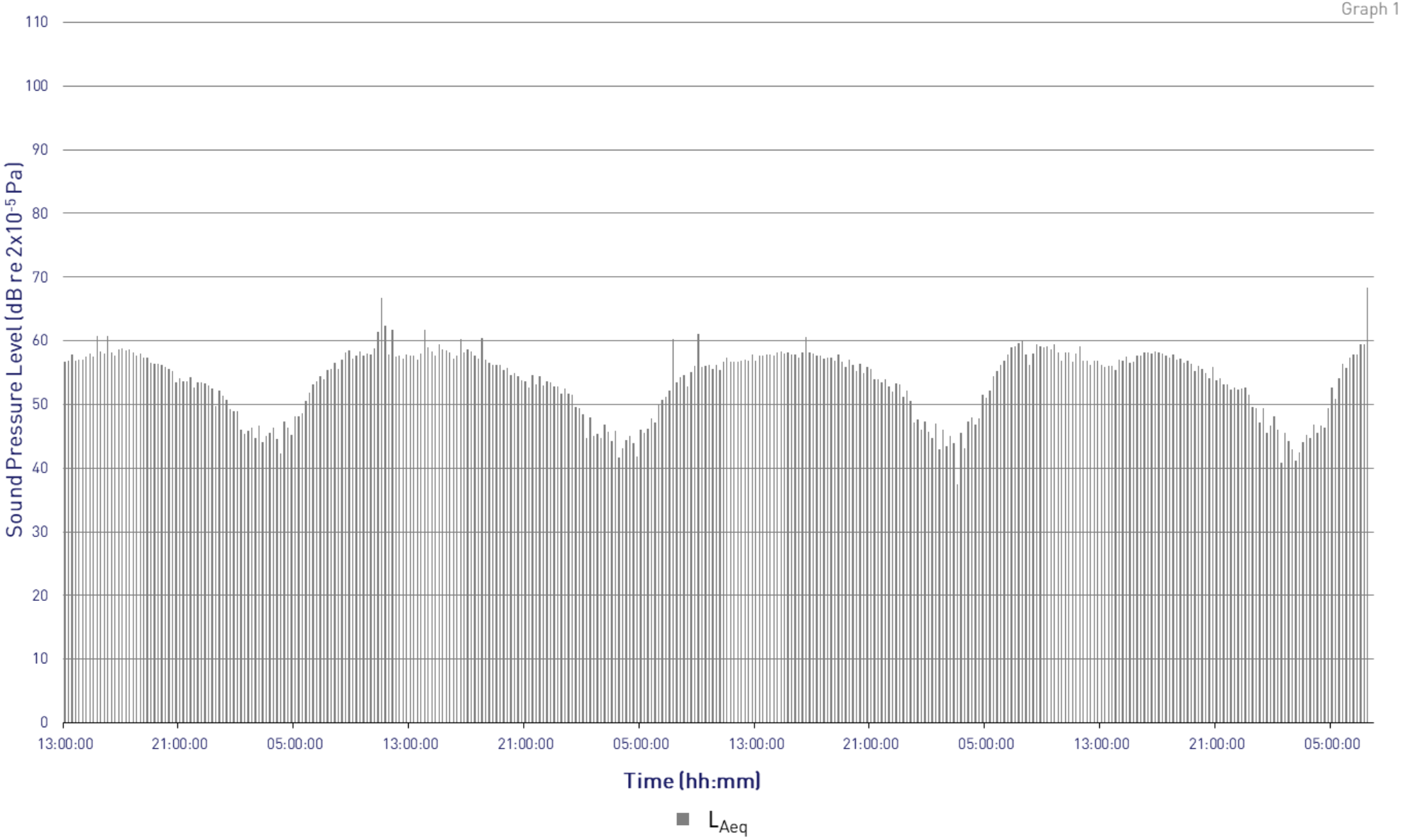
Project: 14125

Graph 1



Holland & Holland

$L_{Amax,f}$ and L_{A90} Time History

Position 1

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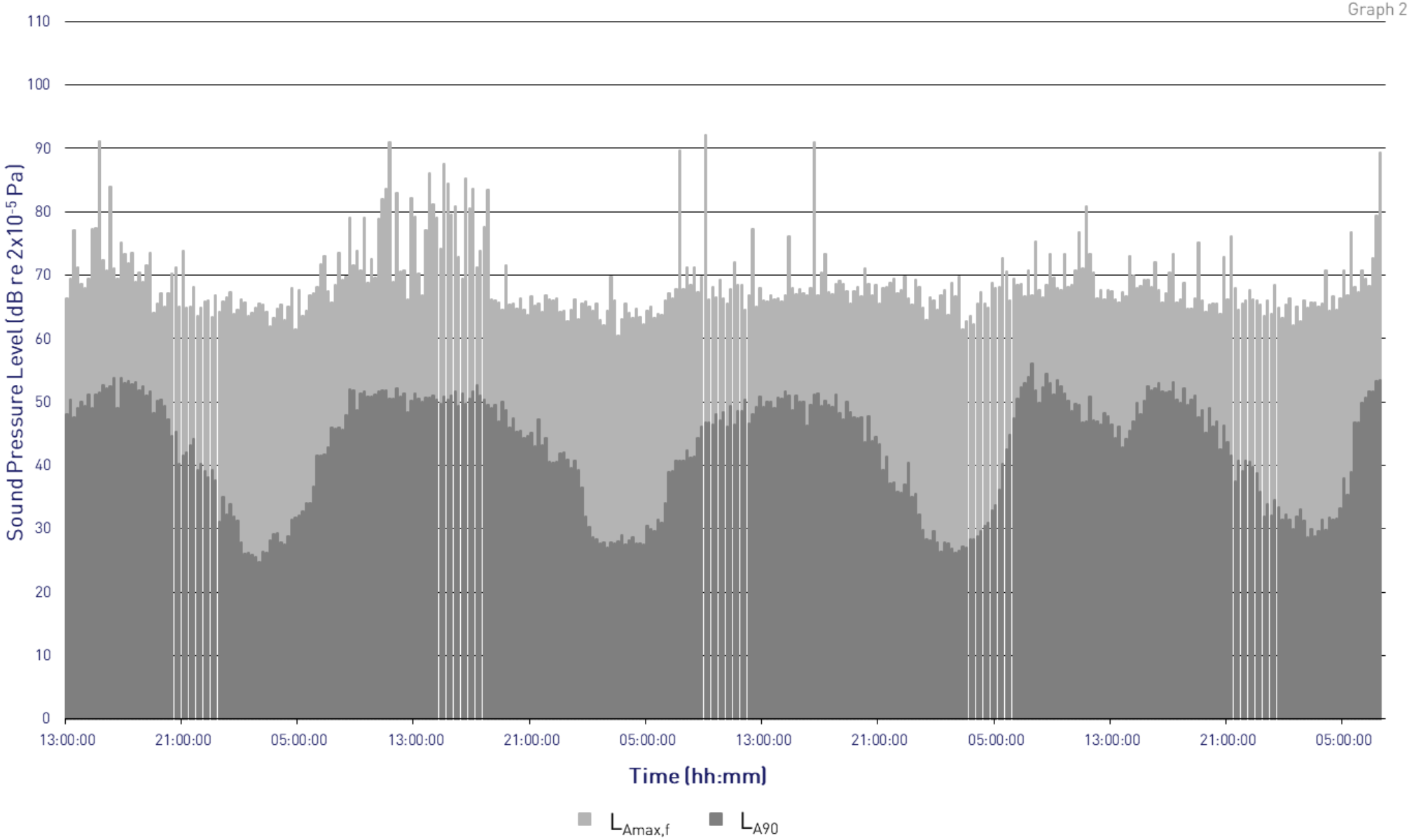
Project: 14125

Graph 2



Holland & Holland

L_{Aeq} Time History

Position 2

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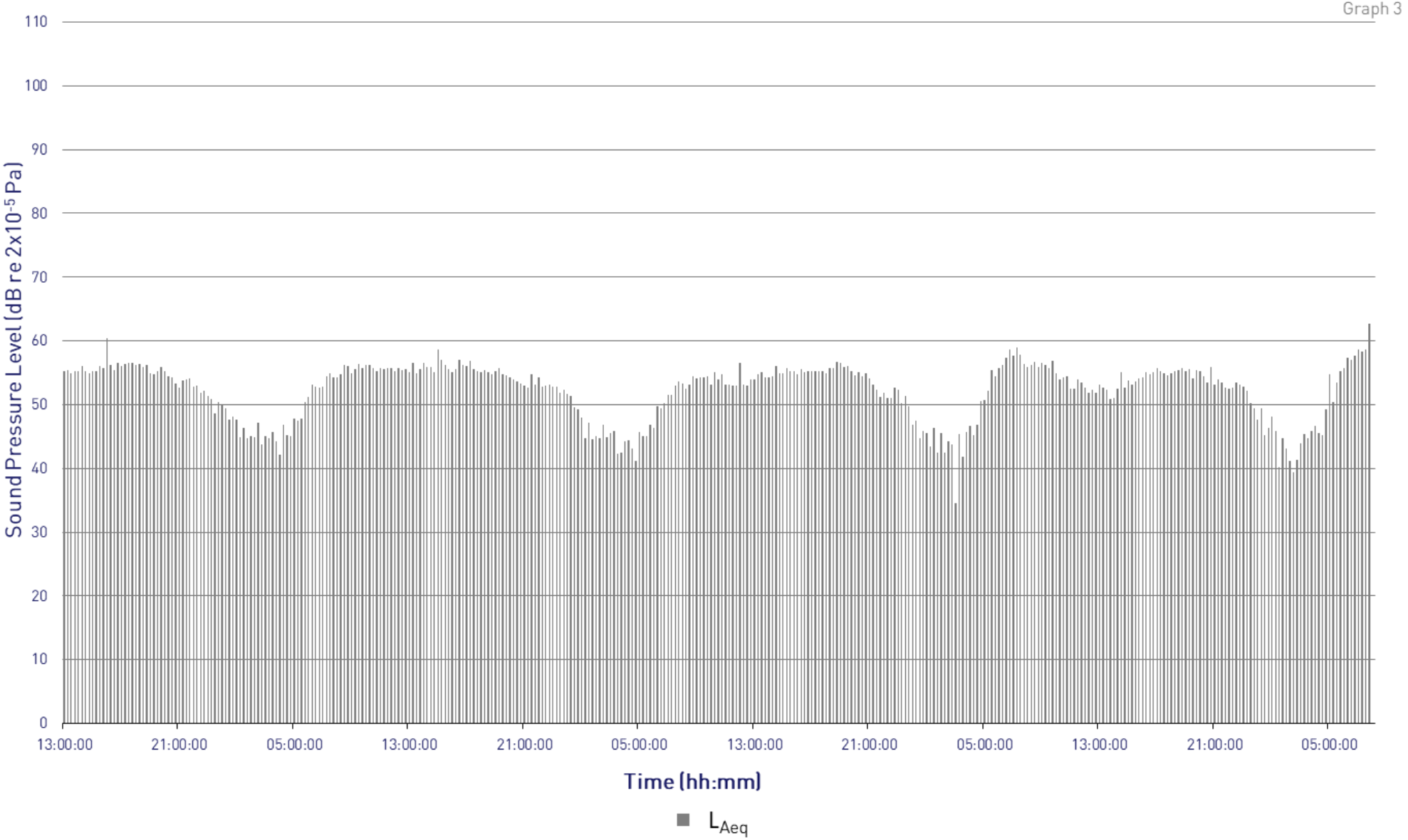
Project: 14125

Graph 3



Holland & Holland

$L_{Amax,f}$ and L_{A90} Time History

Position 2

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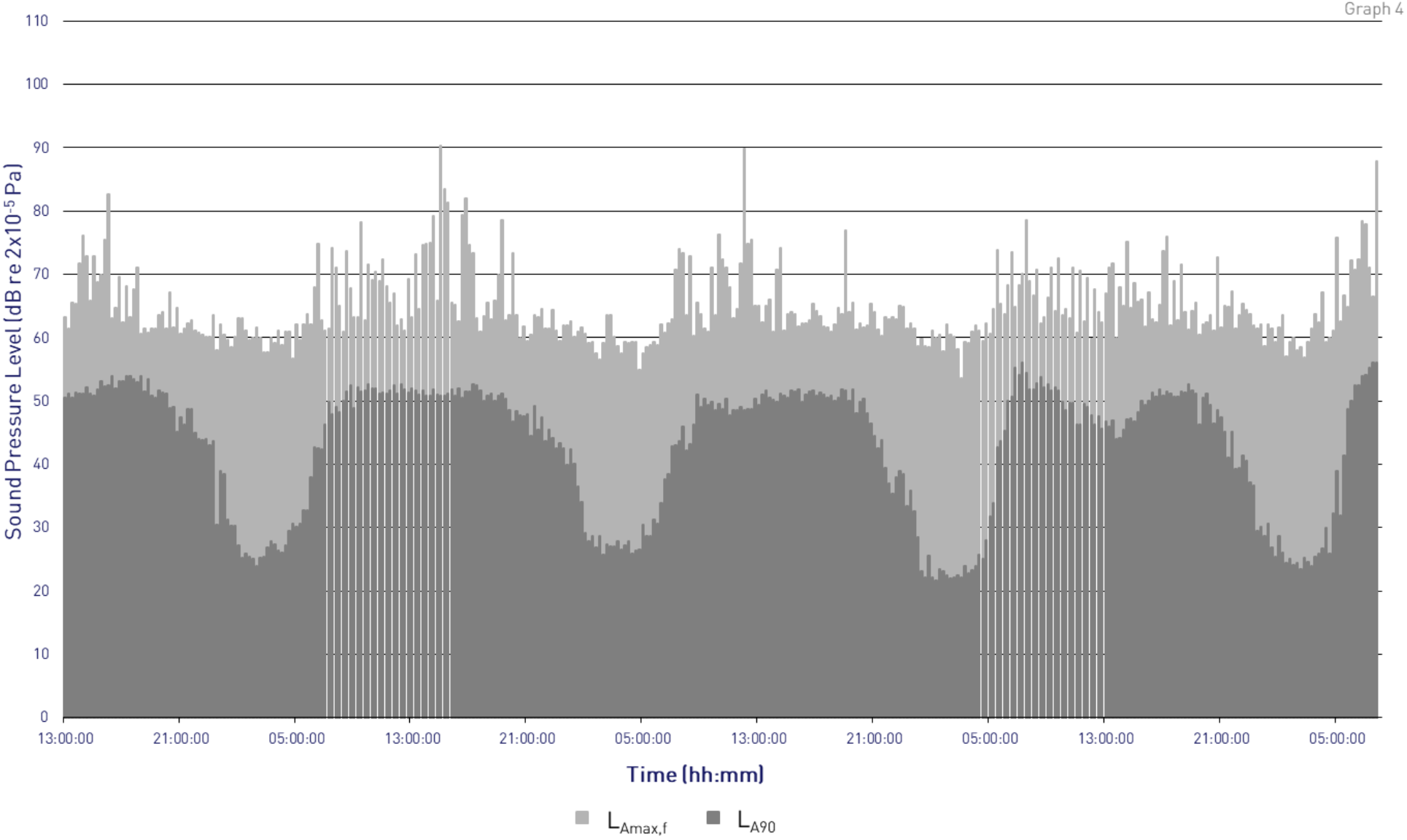
Project: 14125

Graph 4



Appendix E – Plant Noise Schedule

Plant Noise Schedule

Plant Description		Details						Octave Band Noise Level (dB)								dBA
Plant Ref.	Description	Space Served	Mfr/Emp Data	SWL / SPL	Power (kW)	Vol (m^3/s)	ESP (Pa.)	63	125	250	500	1K	2K	4K	8K	
CU-01	Daikin REYA20A		Mfr	SPL @ 1m				72	67	66	67	60	57	60	51	
CU-02	Daikin REYA20A		Mfr	SPL @ 1m				72	67	66	67	60	57	60	51	
CU-03	Daikin REYA14A		Mfr	SPL @ 1m				65	64	60	60	54	52	53	45	
CU-04	Daikin REYA14A		Mfr	SPL @ 1m				65	64	60	60	54	52	53	45	
CU-05	Daikin REYA12A		Mfr	SPL @ 1m				68	67	60	57	57	54	53	45	
CU-06	Daikin REYA8A		Mfr	SPL @ 1m				58	63	61	55	51	50	45	38	
CU-07	Mitsubishi PUZ-WZ120V/YAA		Mfr ▲	SPL @ 1m				52	45	39	38	34	31	26	25	
CH-01	Machine Room Chiller (large)		Site	SPL @ 1m				65	70	70	68	63	59	57	48	
CH-02	Machine Room Chiller (small)		Site	SPL @ 1m				65	70	70	68	63	59	57	48	
Comp	Compressors (2No.)		Mfr	SPL @ 1m												70

Comments:
Mfr: Manufacturer
Emp: Empirical
SWL: Sound Power Level
SPL: Sound Pressure Level
ESP: Extenal Static Pressure

▲ Manufacturer does not provide spectral data for this unit.
Spectrum shape is based on similar Mitsubishi product to maintain 40dBA @ 1 metre

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