The Old Vinyl Factory Pressing Plant Hayes

Environmental Noise Survey and Noise Impact Assessment Report

22178/NIA1-Rev1

07 September 2016

For: Beadmans 2nd Floor 5-11 Worship Street London EC2A 2BH



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Document Control

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1.0 Introduction

It has been proposed to develop the existing Pressing Plant building and the surrounding land into two residential apartment blocks (including a health centre and bar) and a commercial cinema (also including a bar, café, restaurant and exhibition space).

This report presents the methodology and findings of our noise survey and assessment in the context of the National Planning Policy Framework (NPPF) and the requirements of the Local Authority.

2.0 Objectives

To establish, by means of fully automated environmental noise monitoring, the existing A-weighted (dBA) L_{90} , L_{eq} and L_{max} environmental noise levels at selected accessible positions during a forty-eight hour period.

Based upon the results of the noise survey, the relevant guidance and the requirements of the Local Authority, to undertake a noise assessment to assess the suitability of the proposed development for residential use.

Based on the results of the survey and the requirements of the Local Authority, to propose plant noise emission criteria which new items of plant on site should not exceed at nearby noise sensitive properties.

3.0 Site Description

3.1 Location

The site is located at The Old Vinyl Factory Pressing Plant, Blyth Road and falls within the London Borough of Hillingdon's jurisdiction. See Location Map below.



Location Map (Map data ©2016 Google)

3.2 Description

The current site is the disused Pressing Plant located on Blyth Road which is presently bounded by Blyth Road to the north, construction works to the east and west to form new residential units and railway to the south.

The surrounding buildings (both proposed and existing) are a mix of both commercial premises and residential blocks.

Subjectively, the noise and vibration climate is dominated by train pass-bys which include both passenger and freight on multiple lines located at approximately fourteen metres from the proposed building façade.



Site Plan (Map data ©2016 Google)

4.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

5.0 Methodology

Hann Tucker Associates

The survey was undertaken by Richard P Booth MSc, BSc(Hons), MIOA.

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 12:30 hours on 20 July 2016 to 14:00 hours on 22 July 2016.

Owing to the nature of the survey, i.e. unmanned, it is not possible to accurately comment on the weather conditions throughout the entire survey period. However at the beginning and end of the survey period the wind conditions were calm and the sky was generally clear. We understand that generally throughout the survey period the weather conditions were similar to this.

Measurements were taken continuously of the A-weighted (dBA) L_{90} , L_{eq} and L_{max} sound pressure levels over 15 minute periods.

5.1.1 **Measurement Positions**

The noise level measurements were undertaken at two positions around the development site. The measurement positions are described in the table below.

Position No	Description
1	The microphone was located on the north-east boundary of the site at a height of approximately four metres from ground level. This microphone was located approximately two metres from the road side of Blyth Road.
2	The microphone was located to the south of the site at a height of approximately three metres from ground level. This microphone was located approximately eight metres from the site boundary and fifteen metres from the nearest rail track.



Plan Showing Unmanned Measurement Positions (Imagery ©2016 Bluesky, DigitalGlobe, Getmapping plc, InfoTerra Ltd & Bluesky, The GeoInformation Group, Map Data ©2016 Google)

5.1.2 Instrumentation

The instrumentation used during the survey is presented in the table below:

Description	Manufacturer	Туре	Serial Number	Calibration
Position 1 Type 1 Data Logging Sound Level Meter	Larson Davis	824	3802	LD calibration on 11/07/2016
Position 1 Type 1 ½" Condenser Microphone	РСВ	377B02	107040	LD calibration on 11/07/2016
Position 2 Type 1 Data Logging Sound Level Meter	Larson Davis	824	3443	LD calibration on 21/01/2016
Position 2 Type 1 ½" Condenser Microphone	РСВ	377A02	107842	LD calibration on 21/01/2016
Type 1 Calibrator	Larson Davis	CAL200	3082	LD calibration on 09/06/2016

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the survey. No significant changes were found to have occurred (no more than 0.2 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a windshield.

6.0 Results

The results have been plotted on Time History Graphs 22178/TH1.1 to 22178/TH2.1 enclosed presenting the 15 minute A-weighted (dBA) L_{90} , L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

	Measured Noise Level (dBA re 2x10 ⁻⁵ Pa)			
Position	Parameter	Daytime (07:00-23:00 hours)	Night time (23:00-07:00 hours)	
	L _{Aeq,T}	65	57	
1	Highest Measured L_{max}	96	83	
	Lowest Measured LA90,15min	42	36	
	L _{Aeq,T}	69	64	
2	Highest Measured L _{max}	101	97	
	Lowest Measured LA90,15min	43	41	

A summary of the noise levels measured during the survey is presented in the table below:

6.1 Leq Noise Levels

In order to compare the results of our survey with suitable guidelines it is necessary to convert the measured $L_{Aeq(15 \text{ minute})}$ noise levels into single figure daytime $L_{Aeq(16 \text{ hour})}$ (07:00-23:00 hours) and night-time $L_{Aeq(8 \text{ hour})}$ (23:00-07:00 hours) levels.

The daytime $L_{Aeq(16-hour)}$ and night-time $L_{Aeq(8-hour)}$ noise levels for each position are presented in the tables below.

Position	Daytime L _{Aeq(16-hour)}	Night-Time L _{Aeq(8-hour)}
1	64 dB	57 dB
2	66 dB	61 dB

N.B. The above levels have been corrected for façade reflections where appropriate, for comparison with the free field levels.

7.0 Discussion Of Noise Climate

Owing to the nature of the survey, i.e. unmanned, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. At the beginning and end of the survey period, however, the dominant noise sources were noted to be road traffic noise on Blyth Road, nearby construction noise and rail traffic to the south of the site.

8.0 Planning Policy/Guidance for Residential Units

8.1 National Planning Policy Framework (NPPF)

The following paragraph is from the NPPF:

"123.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 new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on 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."

8.2 BS 8233

British Standard 8233: 2014 "*Guidance on sound insulation and noise reduction for buildings*" provides guidance for the control of noise in and around buildings.

Section 7.7.2 "Internal ambient noise levels for dwellings" states:

In general for steady external noise sources, it is desirable that internal ambient noise levels do not exceed the following guideline values:

Λοτινίτα	Location	Desirable Internal Ambient Criteria		
Activity	Location	07:00 – 23:00	23:00 to 07:00	
Resting	Living Rooms	35 dB LAeq, 16hour	-	
Dining	Dining Room/Area	40 dB LAeq,16hour	-	
Sleeping (Daytime Resting)	Bedroom	35 dB L _{Aeq,16hour}	30 dB L _{Aeq,8hour}	

Note 7 states:

"Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved".

Section 7.7.3.2 "Design criteria for external noise" states:

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited".

8.3 Proposed Criteria

On the basis of the above we would propose the following internal noise levels be adopted as <u>minimum</u> design targets in the <u>worst</u> affected dwellings.

Activity	Location	Desirable Internal Ambient Criteria		
Activity	Location	07:00 - 23:00	23:00 to 07:00	
Resting	Living Rooms	35 dB L _{Aeq,16hour}	-	
Dining	Dining Room/Area	40 dB LAeq,16hour	-	
Sleeping (Daytime Resting)	Bedroom	35 dB LAeq,16hour	30 dB L _{Aeq,8hour}	

Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

9.0 Residential Mitigation Measures

Provision exists to provide additional sound insulation as required. The following noise mitigation measures are proposed:

- The external envelope of the proposed residences will incorporate suitably specified glazing, so as to achieve the proposed criteria summarised above.
- Suitable acoustically treated ventilation will be provided within the proposed dwellings to ensure the achievement of the proposed internal noise criteria would not be compromised.

At this stage of the design scheme the precise types of window to be used is not known. Nor have selections of acoustic ventilation requirements.

The Local Planning Authority could expect to be provided with details of the sound insulation treatments when available. Therefore in granting consent it could be appropriate for planning condition(s) to be imposed along the following lines:

"Construction work shall not begin until a scheme for protecting the dwellings against noise from road traffic and rail noise has been submitted to and approved by the Local Planning Authority; for each applicable dwelling all works which form part of the scheme for that dwelling shall be completed before the dwelling is occupied.~"

10.0 Achievable Residential Internal Noise Levels

We have predicted the levels that would be achievable in the worst-case dwellings.

Although the National Planning Policy Framework (March 2012) replaces Planning Policy Guidance 24: *Planning and Noise* (3 October 1994), much of this document remains relevant. Annex 6 of PPG24 states the following:

The following table indicates "Typical noise reduction of a dwelling façade with windows set in brick/block wall."

Difference Between External and Internal Noise Levels				
Noise Source	Single Glazing	Thermal Double Glazing	Secondary Glazing	
Road Traffic	28dBA	33dBA	34dBA	
Civil Aircraft	27dBA	32dBA	35dBA	
Military Aircraft	29dBA	35dBA	39dBA	
Diesel Train	28dBA	32dBA	35dBA	
Electric Train	30dBA	36dBA	41dBA	

We have predicted the levels that would be achievable in the worst-case dwellings closest to the dominant noise source.

Our assessment is based upon the proposed façade achieving a minimum performance of R_w 41dB, which could be achieved using typical secondary glazing comprising 4mm glass, 18mm cavity and 6mm glass.

Our assessment indicates the following noise levels may be expected within the proposed worst case dwellings of both Block A and B.

Façade	Daytime LAeq(16-hour)	Night-time LAeq(8-hour)
North	32 dBA	25 dBA
South	34 dBA	29 dBA

11.0 Noise Breakout from the Proposed Cinema Block (The Pressing Plant)

The L_{AMax} noise breakout level from the proposed cinema should be mitigated such that it does not exceed the lowest fifteen minute L_{90} noise level at any octave band outside the nearest noise sensitive window during the cinema block's hours of operation. The external building fabric of this block should, therefore, be designed and/or upgraded to meet this criteria during the design stages.

If elements of the existing glazing systems within the bar/restaurant are to be retained then in order to meet the above criterion consideration should be given to increased acoustic performance (such as secondary glazing) during the detailed design stage.

It is unlikely that any glazing system will allow for the above criterion to be met within cinema auditoria.

Noise from activities and processes of the Pressing Plant must limited. To that end please find attached our *Draft Form of Words for Inclusion in Tenant's Handbook Regarding Acoustics*.

12.0 Noise Breakout from the Proposed Block A Bar

The L_{AMax} noise breakout level from the proposed Block A bar should be mitigated such that it does not exceed the lowest fifteen minute L_{90} noise level outside the nearest noise sensitive window during the Block A bar hours of operation. The external building fabric of this bar should, therefore, be designed to meet this criteria.

In order to reduce the noise transfer from the bar to the residential properties above, mitigation measures during fit-out may be required. These may include the use of lobbied doors, uprated or mass-barrier ceilings, independent wall linings, limiting noise levels etc.

Noise from activities and processes of the Block A bar must be limited. To that end please find attached our *Draft Form of Words for Inclusion in Tenant's Handbook Regarding Acoustics*.

13.0 Conclusions

A detailed environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate around the site.

Appropriate residential internal noise criteria have been proposed. These are achievable using conventional constructions.

The environmental noise impact upon the proposed dwellings has been assessed in the context of the NPPF. Mitigation advice to reduce to a minimum the adverse impact on health and quality of life arising from environmental noise have been recommended.

Noise breakout from the Pressing Plant and the Block A bar must also be controlled. Appropriate breakout noise criteria have been proposed and mitigation measures suggested.

Appendix A

The acoustic terms used in this report are defined as follows:

- dB Decibel Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).
- dBA The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The _A subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

- $L_{90,T}$ L_{90} is the noise level exceeded for 90% of the period T (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.
- $L_{eq,T}$ $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.
- L_{max} L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.
- L_p Sound Pressure Level (SPL) is the sound pressure relative to a standard reference pressure of 2 x 10⁻⁵ Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).
- L_w Sound Power Level (SWL) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10⁻¹² W).

The Old Vinyl Factory, Pressing Plant	LAmax
Position 1	
L _{Aeq} , L _{Amax} and L _{A90} Noise Levels	∎LAeq
Wednesday 20 July 2016 to Friday 22 July 2016	LA90



Date and Time

22178/TH1.1

The Old Vinyl Factory, Pressing Plant	LAmax
Position 2	
L _{Aeq} , L _{Amax} and L _{A90} Noise Levels	∎LAeq
Wednesday 20 July 2016 to Friday 22 July 2016	LA90



Date and Time

22178/TH2.1



THE OLD VINYL FACTORY

DRAFT FORM OF WORDS FOR INCLUSION IN TENANT'S HANDBOOK REGARDING ACOUSTICS

X ACOUSTICS

All designs, works, materials, installations and tolerances are to be fully in accordance with the following:

- Building Regulations
- British Standard BS 8233 "Guidance on sound insulation and noise reduction for buildings".
- British Standard BS 4142 "Methods for rating and assessing industrial and commercial sound".
- CIBSE Guides issued by the Chartered Institution of Building Services Engineers.
- Planning Conditions and other requirements of the Local Authority.
- Statutory noise nuisance legislation.
- Manufacturer's installation instructions, particularly those relating to acoustic matters.
- Other relevant British Standards and Codes of Practice.

Where more than one standard is applicable, the more onerous shall be achieved.

Any relaxation of the acoustic criteria described herein must be agreed in writing by the Landlord or his Acoustic Consultant.

Tenants are warned that in some cases the acoustic criteria contained herein will be difficult to achieve. Tenants are advised to engage an acoustic consultant at an early stage to identify and address the implications of these acoustic criteria.

X.2 Atmospheric Noise Emissions

Tenants shall control noise from all of their sources (including mechanical services, amplified speech/music and activities) such that the total noise emissions from the development:

- a) Do not cause a statutory noise nuisance.
- b) Comply with the planning conditions and other requirements of the Local Authority.
- c) When measured in terms of L_{Aeq(5minutes)} they are at least the following amount below the prevailing background L_{A90(15minutes)} noise level at any time:

		Criterion LAeq(5minutes)		
Location	Assessment Location	All Plant (i.e. combined)	Individual Tonal or Intermittent mechanical service, amplified speech/music and activities.	Emergency Plant Tested up to 1hour/week between 09:00 and 17:00 hours Monday to Friday or 09:00 to 13:00 Saturday
Residential	1m outside any openable noise sensitive window	L _{A90} -5dB	L _{A90} -10dB	As per statutory requirements. See above
Office	1m outside any openable noise sensitive window	52dB or L _{A90} -3dB, whichever is higher	50dB or L _{A90} -5dB, whichever is higher	60dB or L _{A90} +5dB, whichever is higher
Pavement	1m from façade, 1.8m above ground level	55dB or L_{A90} +5dB, whichever is higher		60dB or L _{A90} +10dB, whichever is higher

Note: Planning condition may be more onerous than above criteria.

All of the above criteria relate to the total noise levels from all sources within the development. Tenants shall therefore make appropriate allowances for contributing noise from all sources within the development. In the case of noise from amplified music and activities this shall be calculated according to the tenant's demise area relative to the total relevant tenant areas, unless otherwise agreed. In the case of mechanical services this shall be calculated on a prorata basis according to the tenant's plant/louvre area relative to the total plant/louvre area, unless otherwise agreed.

The tenant shall employ an acoustic consultant to assess their design and shall make a full submittal of the acoustic performance of the proposed installation for landlord approval prior to commencing installation.

X.3 Noise and Vibration Transfer to Internal Areas

Tenants shall control noise and vibration transfer from all of their sources (including mechanical services, amplified speech/music and activities) to internal areas beyond their demise such that:

- a) It does not cause a nuisance, disturbance or annoyance.
- b) It does not exceed any acoustic criteria specifically agreed between the Landlord and other Tenants.
- c) It does not exceed the following Noise Rating (NR) levels.

Area	Criteria for Mechanical Services L _{eq}	Criteria for Music & Activities L _{max(fast)}	
Residential	At least 5dB below the minimum L ₉₀ in each octave band across the audible frequency range.		
Offices/Management Suite	NR30	NR35	
Retail Units, Restaurants, Bars, Circulation Areas, Landlord's Areas and Other Occupied Areas	NR35	NR40	
Car Park ,service yards/Loading bays	NR50	NR55	

NR refers to Noise Rating curves as defined in ISO R 1996.

- d) It does not give rise to audible tones or rattles.
- e) Vibration transfer from M&E services to internal occupied areas shall not exceed 0.01m.s⁻² peak based on the W_b weighting as defined within BS 6472-1: 2008 "Guide to Evaluation of Human Exposure to Vibration in Buildings".

Criterion (a) is ultimately the overriding requirement. Provided (a) is complied with in full, some relaxation of (b) (c) (d) and (e) may be permissible, but only at the Landlord's discretion. Compliance with (b) (c) (d) and (e) would however, in most cases, be considered as evidence tending to demonstrate compliance with a).

X.4 Emergency Plant

Relaxation of the above criteria may be permissible for emergency or standby plant, subject to agreement in writing with the Landlord or his Acoustic Consultant.

X.5 Construction Noise & Vibration

Construction work shall not cause unacceptable nuisance to other occupants of the building or nearby buildings.

Construction work which is likely to cause nuisance to local residents should not take place outside Monday to Friday 08:00 to 18:00 hours except with the approval of the Local Authority and the Landlord.