Philip Acoustics Ltd.

Consultants in Noise and Vibration

REPORT TITLE: NOISE SURVEY & ASSESSMENT FOR A PROPOSED RESIDENTIAL FLAT CHANGE OF USE PERMITTED DEVELOPMENT AT 28C NEW BROADWAY, HILLINGDON, LONDON UB10 0LLJ

REPORT REF: 18055-002

ISSUED TO: Kamboj Associates Ltd
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DATE: June 2019

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CONTENTS

SUMMARY

- A noise survey and assessment has been carried out by Philip Acoustics for a proposed residential flat development at 28C New Broadway, Hillingdon, London UB10 0LL. The flat is to be formed by the conversion (change of use) of an existing office use building.

- The noise assessment is to accompany a Permitted Development rights Prior Approval application to the Local Planning Authority which is London Borough of Hillingdon.

- Details of the noise assessment are provided in this report, including noise survey carried out plus noise assessment methodology and criteria. In accordance with the requirements of London Borough of Hillingdon Supplementary Planning Document: *Noise* April 2006 (referred to as Noise SPD), the noise criteria are set with reference to the guidance of British Standard BS8233:2014 *"Guidance on Sound Insulation and Noise Reduction for Buildings".*

- On site observations and results of a partly attended six day noise survey show noise levels at the development site are predominantly due to frequent / busy road traffic passing in either direction along the nearby A4020 Uxbridge Road which includes some traffic all through the night. There is also some noise contribution from local traffic on the adjacent Denziloe Avenue. No commercial and/or industrial type noise was observed at the development site from commercial use premises, as above the prevailing dominant noise of road traffic or as generally noticeable, either from general activity or from industrial / commercial type plant and equipment.

- Noise levels at the development site are relatively low for this type of urban location (due to being significantly screened from the nearby A4020 Uxbridge Road), follow a normal diurnal profile with relatively steady (albeit fluctuating) levels throughout much of the day, then with levels gradually reducing during the evening and into the night (lowest during the middle of the night) before rising again in the morning.

- There is no Permitted Development rights Prior Approval requirement to consider noise from road traffic. Notwithstanding this, assessment of noise to the proposed change of use residential flat development in this report unavoidably includes noise from road traffic as dominant affecting the site. This is provided as good practice, for completeness and as informative to the developer.

- The noise survey and assessment shows noise levels are not at such a level that would preclude the site from the proposed change of use residential development and that there would be no adverse impact on intended occupiers of the development specifically with regard to noise from commercial premises.

- The noise survey and associated assessment shows the existing building envelope structure to be retained (including existing double glazing and passive type ventilators) readily provides a sufficient scheme of noise insulation (mitigation) measures for the proposed change of use residential flat to comply with noise criteria as per the guidance of British Standard BS8233:2014 and protect future occupiers against noise.

1. INTRODUCTION

Philip Acoustics has been commissioned to undertake a noise survey and assessment for a proposed change of use residential flat development at 28C New Broadway, Hillingdon, London UB10 0LL.

The noise assessment is to accompany a Permitted Development rights Prior Approval application to the Local Planning Authority which is London Borough of Hillingdon.

The Prior Approval application is with reference to Schedule 2: *Permitted Development rights* of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended 2016); Part 3: *Change of Use*; Class O: *Offices To Dwellinghouses*.

This report presents results of the noise assessment and includes:

- Description of the proposed development and surrounding area;
- Noise assessment methodology and criteria; with reference to London Borough of Hillingdon noise policy and guidance plus relevant British Standards;
- Details of the noise survey carried out at the development site and subjective observations;
- Noise survey results and assessment.

As forward to this noise assessment report it is noted that the Permitted Development rights requirement to consider noise relates only to impacts of noise specifically from commercial premises. "Commercial premises" is defined within the GPDO 2015 (as amended 2016) as meaning any premises normally used for the purpose of any commercial or industrial undertaking which existed on the date of the Prior Approval application, and includes any premises licensed under the Licensing Act 2003(a) or any other place of public entertainment.

There is no Permitted Development rights requirement to consider noise from infrastructure type noise sources such as from road traffic, aircraft or railways. Notwithstanding this, measurement and assessment of noise to the proposed change of use residential flat development at 28C New Broadway as contained within this report unavoidably includes contributions of noise from road traffic on the nearby A4020 Uxbridge Road (dual carriageway) and adjacent Denziloe Avenue as being the principal and dominant source of noise to the development site.

2. DEVELOPMENT DESCRIPTION

The proposed development is for a residential flat unit to be formed by the change of use (conversion) of an existing vacant Class B1 office use building 28C New Broadway. The flat is to have a private external amenity space (currently yard area) secured by a conventional new 2m high timber panel boundary fence.

The existing vacant building at 28C New Broadway is constructed as a single storey extension / addition to the rear of 28 New Broadway, which is a three storey building comprising office use space at ground floor and with residential flats over upper floors (first and second floor levels).

The development site (and New Broadway) is located to the northern side of the A4020 Uxbridge Road, approximately 200m south-east from the traffic lights controlled junction of the A4020 with the A437 Long Lane. The site is accessed from Denziloe Avenue, which is a residential street, leading to several other residential streets beyond.

The adjacent A4020 Uxbridge Road is a main route dual carriageway with frequent / busy traffic and including with some traffic flow throughout the night. Noise from passing vehicles on this road is dominant and underling at the development site.

However, because the development site is at ground floor level to the rear of 28 New Broadway, it is substantially screened (both visually and acoustically) from passing traffic on Uxbridge Road by the “barrier block” of buildings fronting New Broadway and the A4020 Uxbridge Road. Thus noise from traffic to the development site is substantially lower than to properties fronting New Broadway / A4020 Uxbridge Road.

A site location aerial image, site location plan and proposed layout plan drawing for the development are provided in Appendix A.

It is noted the development site is circa 6.5km due north of Heathrow Airport and is circa 3.5km south-west of RAF Northolt. Therefore, and unlike some other areas / districts within London Borough of Hillingdon closer to these airports and/or more aligned to the runway orientations and associated aircraft noise contours, the development site is not especially or significantly noise affected specifically by aircraft.

The area around the development site is mixed use, with various smaller size commercial/retail premises principally at ground floor fronting New Broadway / A4020 Uxbridge Road, some community use premises, and with multiple existing residential dwellings all around including flats above commercial/retail premises plus houses along New Broadway / A4020 Uxbridge Road, and houses all along the adjacent Denziloe Avenue and other streets beyond.

Specifically regarding commercial premises; the nearest commercial/retail premises to the development site are at ground floor level within the “building block” 27 to 30 New Broadway (directly overlooking the A4020 Uxbridge Road), comprising two small independent convenience type retail shops and offices.

3. NOISE ASSESSMENT GUIDANCE, METHODOLOGY & CRITERIA

Details of the Local Planning Authority noise policy, noise related government Permitted Development policy, and British Standards as considered potentially relevant / applicable to the proposed residential development are provided in the following sections.

3.1 London Borough of Hillingdon Noise Policy

Policy EM8: *Land, Water, Air & Noise* plus associated supporting paragraphs from Section 8: *Core Policies – Environmental Improvement* of London Borough of Hillingdon document Hillingdon Local Plan: *Part 1 – Strategic Policies* (adopted November 2012) includes reference to noise associated with development proposals.

The noise element of Policy EM8 is reproduced below, the third paragraph relates to development proposals:

Policy EM8: Land, Water, Air and Noise

Noise

The Council will investigate Hillingdon's target areas identified in the Defra Noise Action Plans, promote the maximum possible reduction in noise levels and will minimise the number of people potentially affected.

The Council will seek to identify and protect Quiet Areas in accordance with Government Policy on sustainable development and other Local Plan policies.

The Council will seek to ensure that noise sensitive development and noise generating development are only permitted if noise impacts can be adequately controlled and mitigated.

Neither Policy EM8 nor its associated supporting paragraphs provide any noise assessment guidance, methodology or criteria (noise limits) as applicable to development proposals including for new or change of use residential dwellings.

However, and although not referenced by Policy EM8, London Borough of Hillingdon Supplementary Planning Document: *Noise* April 2006 (referred to as Noise SPD) covers in detail noise issues relating to a wide range of planning scenarios and is commonly referenced / used by the Council and acoustic consultants for the noise assessment of proposed residential developments within the Borough.

Section 5.0: *Environmental Protection Unit Advice* of the Noise SPD provides details of the standards the Council use in assessing noise levels for various types of development, including British Standard BS4142 and also British Standard BS8233 as potentially applicable for the proposed residential flat change of use development at 28C New Broadway.

British Standards BS4142 and BS8233 both have updated editions now in use (since issue of the Noise SPD) and are referenced by many Local Planning Authorities with regard noise criteria for proposed new residential development.

Comment on the applicability of these referenced British Standards to the proposed change of use residential flat development at 28C New Broadway is provided in Section 3.3 and Section 3.4 on the following pages.

3.2 Permitted Development Rights Noise Assessments

The Prior Approval application is with reference to Schedule 2: *Permitted Development rights* of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended 2016); Part 3: *Change of Use*; Class O: *Offices To Dwellinghouses*.

The noise assessment mechanism for Part 3: *Change of Use*; Class O: *Offices To Dwellinghouses* is specifically Condition O.2 (1) (d) which states *"impacts of noise from commercial premises on the intended occupiers of the Development".*

"Commercial premises" is defined within Part 3: *Change of Use*; Class O: *Offices To Dwellinghouses* as meaning *"….any premises normally used for the purpose of any commercial or industrial undertaking which existed on the date of application under paragraph O.2(1), and includes any premises licensed under the Licensing Act 2003(a) or any other place of public entertainment"*.

Therefore, the noise assessment mechanism relates only to potential impacts of noise specifically from commercial premises and does not require consideration or assessment of noise from infrastructure type noise sources such as from road traffic, railways or aircraft.

3.3 British Standard BS4142:2014

For the scenario of a proposed residential development site affected by a specific, dominant and/or otherwise significant commercial and/or industrial type noise then it is generally appropriate to consider assessment of the noise source using BS4142:2014 "*Methods for rating and assessing industrial and commercial sound"*.

However, and as described in Section 4.3 *Survey Results & Observations* of this Report, noise levels to development site are due to road traffic, rather than from any activity or sources associated with commercial premises in the vicinity.

Therefore, it is not necessary or appropriate in this instance to undertake any separate assessment under the provisions of BS4142:2014, and instead noise assessment criteria for the change of use residential flat is set as good practice with reference to the guidance of BS8233:2014 as detailed in Section 3.4.

3.4 British Standard BS8233:2014

British Standard BS8233:2014 *"Guidance on Sound Insulation and Noise Reduction for Buildings"* provides guidance for noise levels to residential properties. The guidance for noise into residential dwellings is contained within Table 4 in Section 7.7.2 *Internal ambient noise levels for dwellings* of BS8233:2014 as reproduced below. This guidance is appropriate and applicable for the proposed flat in the context of applying current noise assessment methodologies and criteria, and that noise to the site is from road traffic.

Activity	Location	07:00 to 23:00 (day period)	23:00 to 07:00 (night period)
Resting	Living rooms	≤35dB $L_{Aeq,16hour}$	-
Dining	Dining rooms / areas	≤40dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedrooms	≤35dB $L_{Aeq,16hour}$	≤30dB $L_{Aeq,8hour}$

Note 4 to Table 4 in Section 7.7.2 *Internal ambient noise levels for dwellings* of BS8233:2014 advises that regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance and that a guideline value may be set in terms of SEL or L_{Afmax} depending on the character and number of events per night.

Although the development site is not adversely affected during the day or night period from noise of aircraft or trains, it is nevertheless considered appropriate to apply a L_{Afmax} criterion for bedrooms during the night period for the development, albeit where the night period noise source is road traffic.

BS8233:2014 does not provide any specific guidance limit for night period L_{Afmax} values of noise in bedrooms, the L_{Afmax} guidance for bedrooms contained within the previous edition BS8233:1999 is removed from BS8233:2014. Notwithstanding this, the noise assessment in this report uses a criterion L_{Afmax} 45dB for bedrooms during the night period, as per the guidance of BS8233:1999 (previous edition) and also as per the guidance of other documents including London Borough of Hillingdon's Noise SPD.

In accordance with normal acoustic design practice the criterion is applied on the basis that individual noise events should not regularly exceed L_{Afmax} 45dB in the bedroom at night, defined as occurring generally more than 10 times a night or several times in any one hour during the night. It is not intended that the requirement be applicable to infrequent night period very high noise level events such as the sirens of emergency vehicles, occasional noisy motorcycles or sounding of vehicle horns etc.

In applying the above as noise criteria, then in accordance with normal acoustic design practice and definition as applicable to the proposed change of use residential flat, it is taken that:

- The internal noise level criteria are applicable to all external noise sources cumulatively affecting the development, which although is predominantly noise from road traffic, also includes noise from other albeit non-dominant sources;
- The internal noise level criteria are to be achieved inside unoccupied but completed and normally furnished rooms of the flat;
- The combined living area / bedroom of the flat is classed as a "living room" or "bedroom" during the day period and as a "bedroom" during the night period. The combined kitchen / dining area of the proposed flat is classed as a "dining room / area", with the noise criterion only applicable for the day period.

BS8233:2014 also provides guidance regarding noise to external amenity spaces associated with residential dwellings such as gardens, patios and terrace areas etc.

The general guidance of BS8233:2014 in terms of noise limit criteria applicable for traditional external areas as amenity spaces is reproduced below and typically applicable for the day period (07:00-23:00):

> "*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 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments".*

4. NOISE SURVEY

Details of the noise survey carried out at the development site are provided in the following sections.

4.1 Survey Details & Procedure

A partially attended noise survey has been carried out at the development site using logging type sound level meters over a six day period from Thursday 16 May 2019 through Tuesday 21 May 2019 so as to include sample weekdays and also a full weekend. The weather included dry and light wind conditions during the day and also the night periods of the survey.

The noise survey comprised continual measurements at two primary locations internally within the building for the full six day survey period, plus multiple shorter term sample measurements external to the building as detailed below.

4.1.1 Internal Noise Survey

Noise levels for the assessment of new and change of use (conversion) residential development sites are typically measured externally at between 1.2m and 1.5m above ground level, either on cleared land at the development site or external to an existing building's façade.

The externally measured noise data is then used in rigorous method building envelope composite calculations to determine noise from outside to inside through the building's structure (including via glazing and walls etc.) into rooms of the proposed dwellings and thus help establish a scheme for noise insulation measures for the development. The scheme for noise insulation specifies the required acoustic performance for elements of the overall building envelope (including glazing).

However, for this proposed change of use residential flat development it was considered appropriate / necessary to primarily measure noise levels internally within the building (i.e. within rooms of the proposed residential flat) for the following multiple reasons:

- The building envelope is to be unchanged and remain as existing, including with retained double glazing (windows) and associated conventional window head passive type ventilators;
- Because ground floor of the adjoining (attached) building 28 New Broadway is to be unchanged / retained office use space, then any internal noise sources associated with this retained use (i.e. day to day operational noise within the office) that potentially transmits into the proposed residential flat would not be captured / assessed by an external noise survey;
- Similarly to the above, any internal noise from the adjoining (attached) office use ground floor level rear part of the building at 29 New Broadway that potentially transmits into the proposed residential flat would also not be captured / assessed by an external noise survey;
- External access around the development building is at ground floor level and as existing is accessible to third parties / general public, such that external positions around the building are not secure enough to leave expensive noise survey instrumentation unattended.

Two primary measurement positions for the six day internal noise survey within the building were selected as described below and are as indicated on the proposed layout plan drawing in Appendix A:

- Position A: Within the Living Area / Bedroom of the proposed flat;
- Position B: Within the Kitchen / Dining Area of the proposed flat.

The noise survey at both positions was carried out in general accordance with The Association of Noise Consultants (ANC) guidelines document ANC-9801 – Noise Measurements in Buildings Part 2: *Noise from external sources (e.g. traffic noise) within buildings*. Windows and doors of the building were closed but with all ventilators set in the fully open position. The measurements at both positions were at 1.2m above floor level recorded principally in terms of 5 minute samples of L_{Aeq} and L_{Afmax} values for the full survey duration.

4.1.2 External Noise Survey

To supplement the internal noise measurements as detailed in Section 4.1.1, and enable assessment of noise to the proposed external amenity space of the flat, a fully attended external noise survey was also concurrently carried out to the two different external elevations of the building during the day period (mornings) of Thursday 16 May 2019 and also Tuesday 21 May 2019.

The external noise survey was at 1.5m above ground level at positions indicated on the proposed layout plan drawing in Appendix A. Noise levels measured externally were recorded in terms of multiple 5 minute samples of L_{Aeq} and L_{Afmax} values.

4.2 Instrumentation

Details of the noise survey instrumentation used are provided in Appendix B. The sound level meters were calibration verified before and after the survey measurements using the UKAS certified calibrator.

4.3 Survey Results & Observations

Complete raw data results for the primary measurement position internal six day noise surveys in terms of L_{Aeq} and L_{Afmax} values are provided in graphical format in Appendix C.

Noise to the development is predominantly due to frequent / busy road traffic passing in either direction along the nearby A4020 Uxbridge Road which includes some traffic all through the night. There is also some noise contribution from local traffic on the adjacent Denziloe Avenue.

Noise levels at the development site follow a normal diurnal profile as typical for this type of urban location affected by noise from a nearby busy major route A road (dual carriageway) with relatively steady (albeit fluctuating) levels throughout much of the day, then with levels gradually reducing during the evening and into the night (lowest during the night period between around 1am to 4am) before rising again in the morning.

There is occasional noise to the development site from aircraft; however the contribution of noise from these is not significant as compared with the overall predominant underlying noise from road traffic.

No commercial and/or industrial type noise was observed at the development site from commercial use premises, as above the prevailing predominant noise of road traffic or as generally noticeable, either from general activity or from industrial / commercial type plant and equipment.

Summary overall L_{Aeq} results in terms of the separate day and night periods for the completed whole days of the six day internal survey at both measurement positions are shown in Table 1.

Description		Period $L_{Aeq,T}$
Position A: **Noise levels within the proposed Living Area / Bedroom of the flat**		
24 Hour Period: Friday 17 May 2019	Day period 07:00-23:00	21dB (16 hour)
	Night period 23:00-07:00	18dB (8 hour)
24 Hour Period: Saturday 18 May 2019	Day period 07:00-23:00	21dB (16 hour)
	Night period 23:00-07:00	18dB (8 hour)
24 Hour Period: Sunday 19 May 2019	Day period 07:00-23:00	22dB (16 hour)
	Night period 23:00-07:00	18dB (8 hour)
24 Hour Period: Monday 20 May 2019	Day period 07:00-23:00	23dB (16 hour)
	Night period 23:00-07:00	18dB (8 hour)
Position B: **Noise levels within the proposed Kitchen / Dining Area of the flat**		
24 Hour Period: Friday 17 May 2019	Day period 07:00-23:00	23dB (16 hour)
	Night period 23:00-07:00	19dB (8 hour)
24 Hour Period: Saturday 18 May 2019	Day period 07:00-23:00	23dB (16 hour)
	Night period 23:00-07:00	18dB (8 hour)
24 Hour Period: Sunday 19 May 2019	Day period 07:00-23:00	23dB (16 hour)
	Night period 23:00-07:00	18dB (8 hour)
24 Hour Period: Monday 20 May 2019	Day period 07:00-23:00	24dB (16 hour)
	Night period 23:00-07:00	19dB (8 hour)

Table 1: Internal $L_{Aeq,T}$ noise levels for day and night periods within the proposed residential flat

For the night period 23:00 to 07:00, typical highest regularly occurring L_{Afmax} values (occurring generally more than 10 times a night or several times in any one hour during the night) for survey Position A within the proposed living area / bedroom of the flat are between 35 to 37dB. However, during most of the night period, average typical/normal L_{Afmax} values within the proposed living area / bedroom of the flat are below 30dB.

Sample noise levels measured externally to the building show the following day period noise levels:

- Noise levels external to the side elevation of the building within the yard area (proposed as private external space for the flat) are in the range $L_{Aeq,1hour}$ 54 to 56dB;
- Noise levels external to the rear elevation of the building are in the range $L_{Aeq,1hour}$ 55 to 58dB. Noise to here is slightly higher than to the side elevation as it is slightly less screened from occasional traffic on Denziloe Avenue.

The sample measured external noise levels confirm that noise to the development site is relatively low for this type of urban location in the vicinity of a major route A road dual carriageway. This is consistent with the author's subjective observations (including when inside the building) and is principally because the site is substantially screened from the A4020 Uxbridge Road by intervening buildings and the directly adjacent Denziloe Avenue serves a residential area and has less traffic.

5. NOISE ASSESSMENT

As forward to the noise assessment for the proposed development, it is important to note that the Permitted Development rights requirement to consider noise impact relates only to noise from commercial premises. There is no Permitted Development rights requirement to consider infrastructure noise from such as road traffic as being the dominant source of noise to the development site.

Thus, because road traffic is the dominant noise source, then the noise assessment as provided in this report is carried out as good practice, for completeness and as informative to the developer with reference to the protection of future occupants of the proposed development against noise in general, rather than being as required under Permitted Development legislation to protect against any noise from commercial premises.

In terms of a general and qualified subjective observation based noise assessment, noise levels at the development site are predominantly due to road traffic, follow a normal diurnal pattern and are considered relatively low. Although the site is noise affected by traffic on the nearby A4020 Uxbridge Road and also the adjacent Denziloe Avenue, it is not affected by exceptional or high noise levels of magnitude that would preclude residential development.

In overall planning context, noise levels to the development site are relatively low as compared with the majority of residential development sites in other urban (or sub-urban) areas or town/city centre locations and/or those closer to (less screened from) roads and/or railway lines etc.

It is the author's experience that the majority of residential development sites granted approval by Local Planning Authorities (albeit often with a condition relating to noise mitigation), are exposed to noise levels higher than, and often much higher than, those to the proposed development at 28C New Broadway.

Specifically with regard to Permitted Development legislation, results of the noise survey and subjective observations provide a positive indication there would be no adverse impact of noise on intended occupiers of the proposed change of use residential flat development with regard to commercial premises. Any noise contribution to the development from commercial premises is not significant and not generally noticeable as compared with noise from road traffic.

5.1 Noise Levels Internally Within The Proposed Residential Flat

A technical noise assessment of the six day internal noise survey results by comparison against the BS8233:2014 noise criteria is provided in Table 2.

Description	Noise Survey Raw Data Measured Internal Noise Levels			Noise Criterion *(guidance noise standards of BS8233:2014)*			Noise Assessment Outcome
	Day Period *(7am-11pm)* $L_{Aeq,16hr}$	Night Period *(11pm-7am)* $L_{Aeq,8hr}$	L_{Afmax}	Day Period *(7am-11pm)* $L_{Aeq,16hr}$	Night Period *(11pm-7am)* $L_{Aeq,8hr}$	L_{Afmax}	
Living / Bedroom	21 to 23dB	18dB	35 to 37dB	≤35dB	≤30dB	≤45dB	Complies
Kitchen / Dining	23 to 24dB			≤40dB			Complies

Table 2: Assessment of internal noise levels within the proposed residential flat

The technical noise assessment in Table 2 confirms that internal noise levels to within rooms of the proposed residential flat will comfortably comply with the BS8233:2014 noise criteria as detailed in Section 3.4 of this report and therefore comfortably comply with London Borough of Hillingdon's noise policy and the Noise SPD requirements as detailed in Section 3.1 of this report.

The assessment also confirms the author's subjective impression that noise levels to within the building are low, and that the existing building envelope to be retained (including existing double glazing and passive type ventilators) readily provides a sufficient scheme of noise insulation (mitigation) measures for the proposed change of use residential flat to protect future occupiers against noise.

5.2 Noise Levels To External Amenity Space Of The Proposed Residential Flat

Results of the external noise survey shows day period noise levels to the side elevation of the building within the yard area (proposed as private external space for the flat) are in the range $L_{Aeq,1hour}$ 54 to 56dB.

Therefore, results of the survey indicate noise levels as existing to within the side elevation area to the building proposed as external amenity space broadly complies with the BS8233:2014 guideline value $L_{Aeq,T}$ 55dB as detailed in Section 3.4 of this report, albeit with a marginal excess (by 1dB) for the upper range of the measured noise levels.

However, this assessment is based on noise survey results within the side elevation yard area as existing, with some direct line of sight to passing traffic on the adjacent Denziloe Avenue (via metal railing type gates and other openings to an existing brick boundary wall) and also with some occasional noise from vehicles to/from the rear of 28 New Broadway parking in the yard area itself.

When the development is competed and with the yard area as private external space for the flat secured by a conventional new 2m high timber panel boundary fence (as indicated on the proposed development layout drawing in Appendix A), then noise levels into the external amenity space will reduce slightly:

- Due to the yard area not then being used by third parties for vehicle parking;
- Due to increased screening of the space from passing traffic on the adjacent Denziloe Avenue by the 2m high timber panel fence.

Therefore, with the development competed it is expected that noise levels to within the side elevation external amenity space for the residential flat will more readily / comfortably comply with the BS8233:2014 guideline value $L_{Aeq,T}$ 55dB.

APPENDIX A

Site Location Aerial Image, Plan & Proposed Layout Drawing For The Development

Site: 28C New Broadway, Hillingdon, London UB10 0LL

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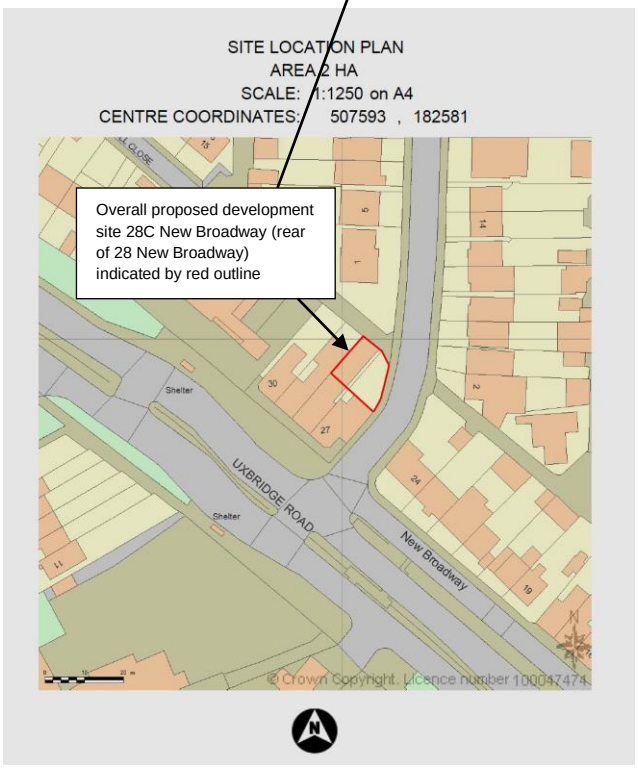
Date: June 2019

SITE LOCATION AERIAL IMAGE & SITE LOCATION PLAN



Site: 28C New Broadway, Hillingdon, London UB10 0LL

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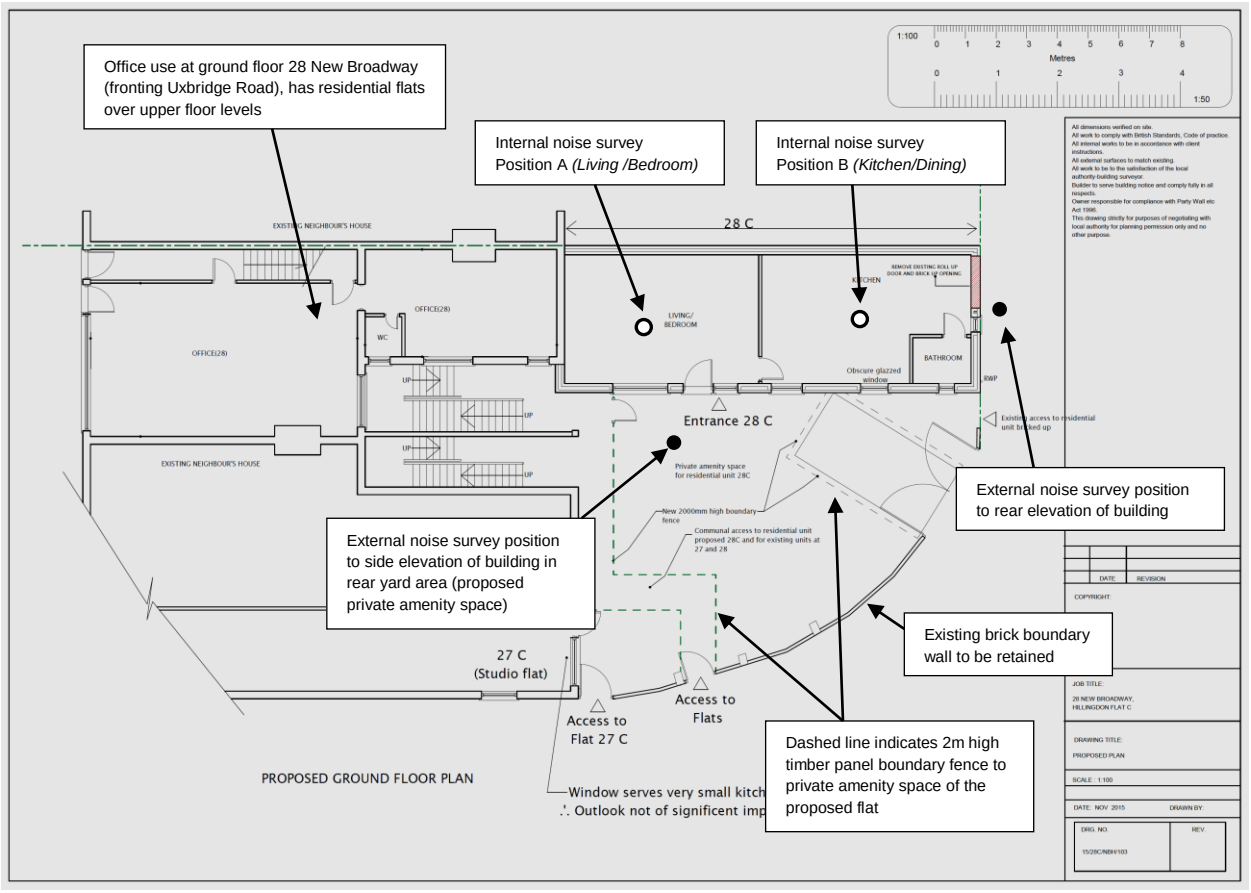
Date: June 2019

PROPOSED LAYOUT DRAWING FOR THE DEVELOPMENT



APPENDIX B

Noise Survey Instrumentation

Site: 28C New Broadway, Hillingdon, London UB10 0LL

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Date: June 2019

NOISE SURVEY INSTRUMENTATION

Six Day Internal Noise Survey At Measurement Position A *(within the Living Area / Bedroom of the proposed flat)*:

- Rion sound level meter type NL-31 Class 1 serial number 00773045, with Rion preamplifier type NH-21 serial number 25056 and Rion microphone type UC-53A serial number 313002, Rion microphone windshield type WS-10, Rion microphone extension cable type EC-04A and tripod arrangement;
- Bruel & Kjaer calibrator type 4231 serial number 2326801 (UKAS certified).

Six Day Internal Noise Survey At Measurement Position B (*within the Kitchen / Dining area of the proposed flat)*:

- Rion sound level meter type NL-31 Class 1 serial number 01193690, with Rion preamplifier type NH-21 serial number 31316 and Rion microphone type UC-53A serial number 317534, Rion microphone windshield type WS-10, Rion microphone extension cable type EC-04A and tripod arrangement;
- Bruel & Kjaer calibrator type 4231 serial number 2326801 (UKAS certified).

External Measurement Positions Noise Survey Samples:

- Bruel & Kjaer sound level meter type 2260 Class 1 serial number 2311656 plus PCB microphone type 377B02 serial number 143228 with Bruel & Kjaer standard 100mm windshield, plus tripod, microphone extension lead and tripod arrangement;
- Bruel & Kjaer calibrator type 4231 serial number 2326801 (UKAS certified).

Weather Conditions Data *(for attended parts of survey)*:

- Speedtech Instruments Skymaster model SM-28 serial number 19370.

APPENDIX C

Noise Survey Results

Site: 28C New Broadway, Hillingdon, London UB10 0LL

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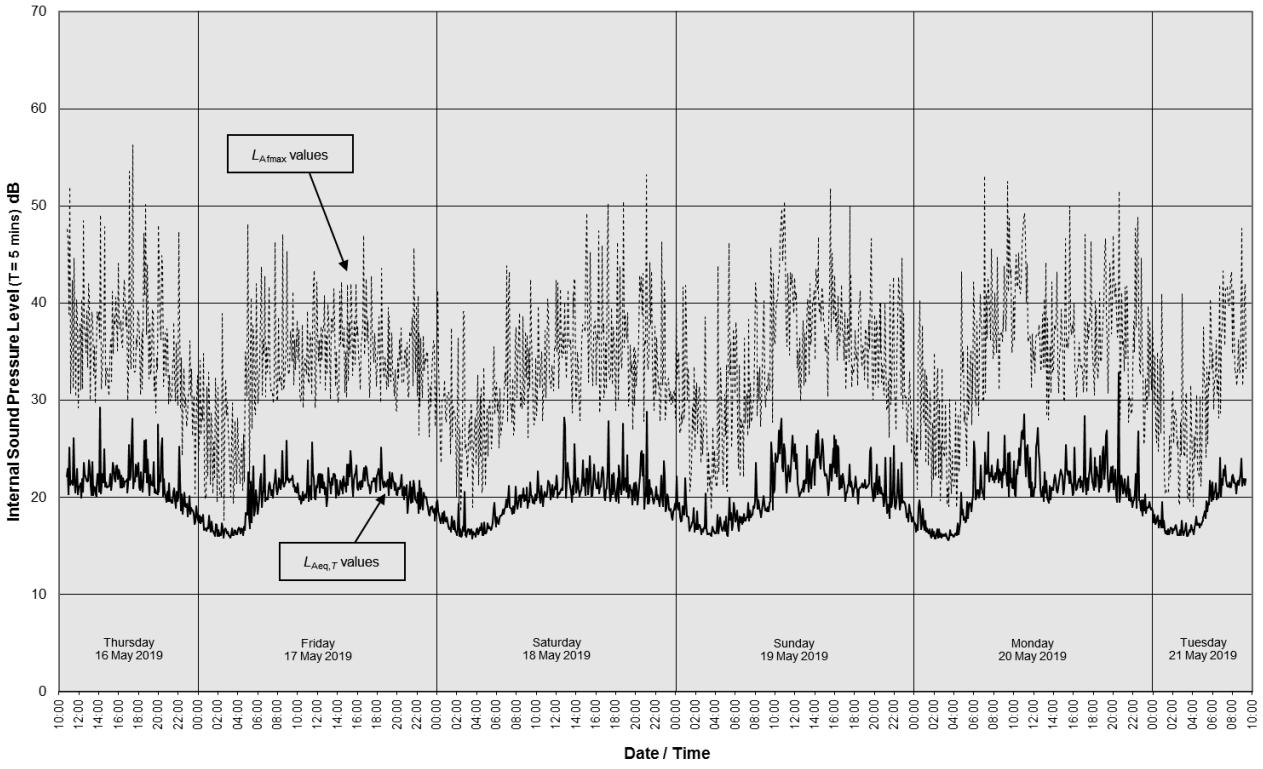
Date: June 2019

NOISE SURVEY RESULTS

Six Day Internal Noise Survey At Measurement Position A *(within the Living Area / Bedroom of the proposed flat)*:



Site: 28C New Broadway, Hillingdon, London UB10 0LL

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Date: June 2019

NOISE SURVEY RESULTS

Six Day Internal Noise Survey At Measurement Position B (*within the Kitchen / Dining area of the proposed flat)*: