

38 Heath Drive London

EXTERNAL BUILDING FABRIC REPORT 20977/EBF1

For :

MR Partnership
41 Foley Street
London
W1W 7TS

23 July 2015

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Revision No.	Date	Description
-	23/07/2015	First Issue

1.0 INTRODUCTION

A residential development has been proposed on land located at 38 Heath Drive in Hampstead, NW3.

An environmental noise survey has, therefore, been undertaken by ourselves, to establish the existing airborne noise levels due to road traffic, aircraft and other environmental sources of airborne noise around the proposed development.

The data obtained has subsequently been used to undertake a detailed acoustic analysis to determine the sound insulation requirements of the external building fabric elements in order to control the aforementioned environmental airborne noise levels in line with appropriate internal acoustic design criteria. Our findings and recommendations are presented herein.

2.0 OBJECTIVES

To specify the required internal acoustic design criteria which the levels of airborne road traffic, aircraft and other noise intrusion should not exceed.

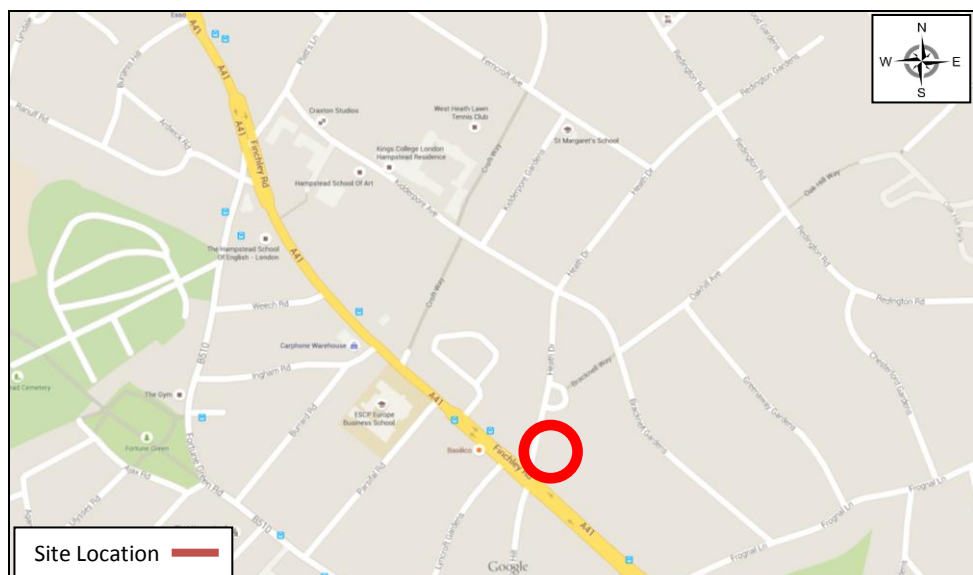
To undertake detailed acoustic analysis of the aforementioned environmental noise intrusion into the building through the external building fabric.

To subsequently prepare sound reduction performance specifications for the external building fabric in order to control airborne noise intrusion in line with the specified internal acoustic design criteria.

3.0 SITE DESCRIPTION

3.1 Location

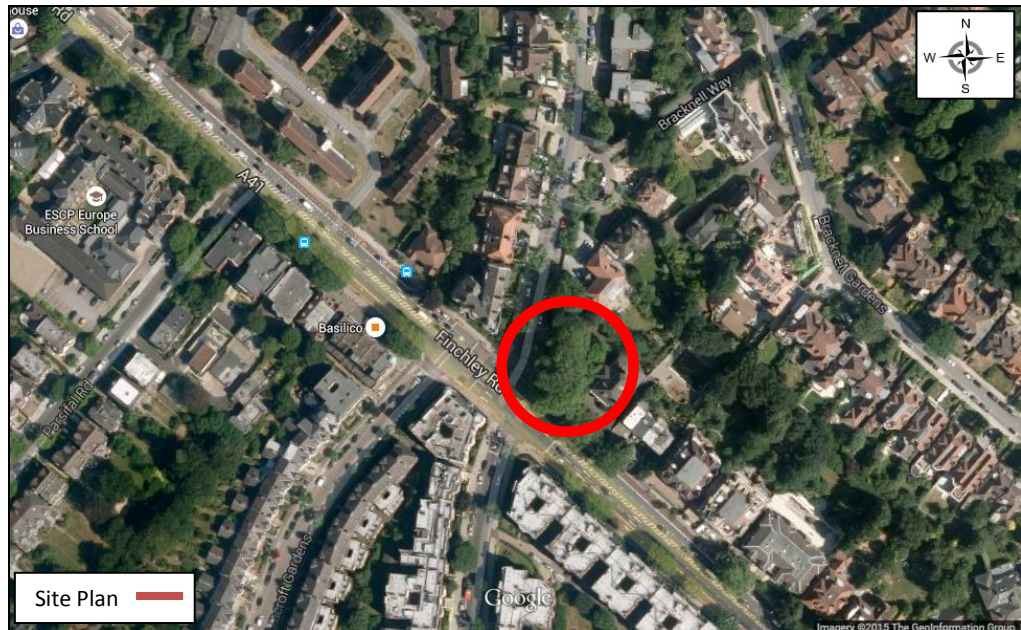
The Site is located on the southern corner of Heath Drive as it adjoins Finchley Road and is in Camden Borough Council's jurisdiction. See location map below:



Location Map (maps.google.co.uk)

3.2 Description

The Site comprises a parcel of land within a predominantly residential area. The site is bounded by Heath Drive to the west, existing residential dwellings to the north and east and the A41 (Finchley Road) to the south. See Site Plan below.



Site Plan (maps.google.co.uk)

4.0 ACOUSTIC TERMINOLOGY

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

5.0 METHODOLOGY

The survey was undertaken by John Gibbs MIOA, MSEE CEnv

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 12:30 hours on Wednesday 15 July 2015 to 12:15 hours on Thursday 16 July 2015.

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. These conditions are considered suitable for obtaining representative measurement results.

Measurements were taken continuously of the A-weighted (dBA) L_{eq} sound pressure level over 15 minute periods.

5.2 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 northern boundary of the development site approximately two metres from ground level on the proposed southern building façade location.
2	The microphone was located on the southern boundary of the development site approximately two metres from ground level on the proposed northern building façade location.

These positions were selected in order to assess typical noise levels incident at the building façade for subsequent use in calculating the acoustic requirements of the external building fabric. Both of these positions is shown on the plan on the following page.



Plan Showing Unmanned Measurement Position (maps.google.co.uk)

5.3 Instrumentation

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

Description	Manufacturer	Type	Serial Number	Calibration
Position 1 Type 1 Data Logging Sound Level Meter	Larson Davis	824	3533	LD calibration on 29/01/2015
Position 1 Type 1 ½" Condenser Microphone	PCB	377B02	106047	LD calibration on 29/01/2015

Position 2 Type 1 Data Logging Sound Level Meter	Larson Davis	824	3541	LD calibration on 16/12/2013
Position 2 Type 1 ½" Condenser Microphone	PCB	377B02	139312	LD calibration on 16/12/2013
Type 1 Calibrator	Larson Davis	CAL200	3082	LD calibration on 18/03/2014

The sound level meters, including their extension cables, were calibrated prior to and on completion of the surveys. No significant change was found to have occurred (no more than 0.2 dB).

The sound level meters were located in environmental cases with the microphone connected to the sound level meter via an extension cable. The microphones were fitted with a windshield.

6.0 RESULTS

The results have been plotted on Time History Graphs 20977/TH1.1 and 20977/TH1.2 enclosed presenting the 15 minute A-weighted (dBA) L_{eq} level at both measurement positions throughout the duration of the survey.

The following table summarises the Measured $L_{Aeq,t}$ levels from our survey.

Position	Measured $L_{Aeq,t}$ (dBA) Sound Pressure Level (re 20×10^{-6} Pa)	
	Daytime (07:00hours – 23:00hours)	Night-Time (23:00hours – 07:00hours)
1	62	56
2	71	67

7.0 DISCUSSION OF NOISE CLIMATE

Due 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. However at the beginning and end of the survey period the dominant noise source was noted to be road noise traffic on nearby Finchley Road.

8.0 ARCHITECTURAL ASSUMPTIONS

8.1 Room Finishes

In our calculations we have assumed bedrooms and living areas will have typical furnishings including beds, sofas, chairs etc.

8.2 Drawings

Our calculations have been based on the following drawings:

Drawing Number	Drawing Title	Date	Revision
2979 100	Proposed Lower Ground Floor Plan	Nov 14	-
2979 101	Proposed Ground Floor Plan		
2979 102	Proposed First Floor Plan		
2979 103	Proposed Second Floor Plan		
2979 104	Proposed Third Floor Plan		
2979 105	Proposed Fourth Floor Plan		
2979 106	Proposed Roof Plan		

9.0 ACOUSTIC DESIGN CRITERIA

BS 8233: 2014 “Guidance on sound insulation and noise reduction for buildings”

British Standard 8233: 2014 “Guidance on sound insulation and noise reduction for buildings” states that it is desirable that internal ambient noise levels do not exceed the following guideline values:

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

BS8233: 2014 also 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 5dB and reasonable internal conditions still achieved.”

The above guidance is not mandatory unless imposed in a planning condition.

Summary

On the basis of the above we propose the following internal acoustic design criteria which the levels of road traffic, aircraft and other noise intrusion should not exceed.

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

10.0 SPECIFICATION FOR GLAZING

The composite acoustic performance required of any portion of the building envelope will depend on its location relative to the principal noise sources around the site and the nature of the spaces behind it (noise criteria, size, room finishes etc).

The levels of noise incident upon each façade of the building are different. Consequently, each façade therefore has its own unique sound insulation requirement. In our experience, however, it is not appropriate to prepare numerous performance specifications. In this instance we have prepared an individual specification with different performance levels for each of the dwellings, each of which corresponds to appropriate notional glazing configurations.

The enclosed Acoustic Specification for Glazing to Residential Facades details our recommended minimum octave band sound reduction indices. In all cases, it is essential that the system is tested in accordance with BS EN ISO 10140-2:2010 and that the quoted minimum sound reduction specifications are met by the system as a whole, including frames, ventilators etc as appropriate - not just the glass.

Where structural glass or non-vision spandrel panels are proposed, they should provide sound reduction performance at least equal to that required of the cladding in order to maintain the acoustic integrity of the building envelope.

In order to comply with Building Regulations (Part F), it is necessary to provide background ventilation to habitable rooms (living rooms and bedrooms). It is our understanding that the development will be mechanically ventilated throughout.

11.0 CONSTRUCTION GUIDANCE FOR GLAZING AND VENTILATION

It is essential that prospective cladding system suppliers can demonstrate compliance with the acoustic performance detailed in our specification rather than simply offering a generic glazing configuration. However, we would suggest that the following configurations could typically be expected to provide the required levels of noise insulation.

Type	Dwellings	Example Glazing Configuration	Type of Vent
A	2 4 (Living, Kitchen, Dining, Bedroom 3 only) 5 6 8 9 (Living, Kitchen, Dining only) 10 11 13 14 (Living, Kitchen, Dining only) 15 17 (Bedrooms 1 and 2 only) 18 (Living, Kitchen, Dining, Bedroom 1 only) 19 (Living, Kitchen, Dining, only) 20 21 (Kitchen, Dining, Bedrooms 2 and 3 only)	10/16/6	Mechanical

Type	Dwellings	Example Glazing Configuration	Type of Vent
B	1 3 4 (Bedrooms 1 and 2 only) 7 9 (Bedrooms only) 12 14 (Bedrooms only) 17 (Living, Kitchen, Dining only) 18 (Bedroom 2 only) 19 (Bedrooms only) 21 (Living, Bedroom 1 only)	3/16/4	Mechanical

N.B. The above guidance is given on the understanding that 3/16/4 is the minimum required for non-acoustic reasons and that mechanical ventilation is proposed for the development. Please advise if this is not the case.

12.0 CONCLUSION

The existing environmental noise levels due to traffic and other environmental sources have been established and presented herein.

Suitable environmental noise intrusion criteria have been proposed on the basis of BS 8233: 2014.

Detailed acoustic analysis has been undertaken to assess the sound insulation requirements of the external cladding and ventilators.

This has enabled a sound reduction performance specification for the glazing to be prepared, along with advice to be given on types of constructions we would typically expect to provide the required acoustic performance.

We would stress however, that the proposed glazing system (including frames) must comply with the relevant enclosed performance specifications.

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Checked by
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HANN TUCKER ASSOCIATES

38 HEATH DRIVE

ACOUSTIC SPECIFICATION FOR GLAZING TO RESIDENTIAL FACADES

SOUND REDUCTION PERFORMANCE

The complete cladding system shall achieve the following minimum sound reduction indices when tested in accordance with BS EN ISO 10140-2:2010.

Type	Dwellings
A	2 4 (Living, Kitchen, Dining, Bedroom 3 only) 5 6 8 9 (Living, Kitchen, Dining only) 10 11 13 14 (Living, Kitchen, Dining only) 15 17 (Bedrooms 1 and 2 only) 18 (Living, Kitchen, Dining, Bedroom 1 only) 19 (Living, Kitchen, Dining, only) 20 21 (Kitchen, Dining, Bedrooms 2 and 3 only)
B	1 3 4 (Bedrooms 1 and 2 only) 7 9 (Bedrooms only) 12 14 (Bedrooms only) 17 (Living, Kitchen, Dining only) 18 (Bedroom 2 only) 19 (Bedrooms only) 21 (Living, Bedroom 1 only)

Type	Façade/Zone	Minimum Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)				
		125	250	500	1k	2k
A	South, West	26	27	34	40	38
B	North, East,	20	22	28	32	33

TEST DATA

Fully detailed test reports from independent acoustic test authorities shall be supplied. All test reports shall be in English or, a full English translation.

Test data should include the $\frac{1}{3}$ octave band results from 100Hz to 3150Hz inclusive, together with the corresponding octave band results from 125Hz to 4000Hz inclusive.

The test report shall be provided for test samples which are representation of the complete system for the relevant facades - including frames, joints, seals, spandrel panels and opening lights and trickle vents (as appropriate). The samples proposed should be approved by Hann Tucker Associates.

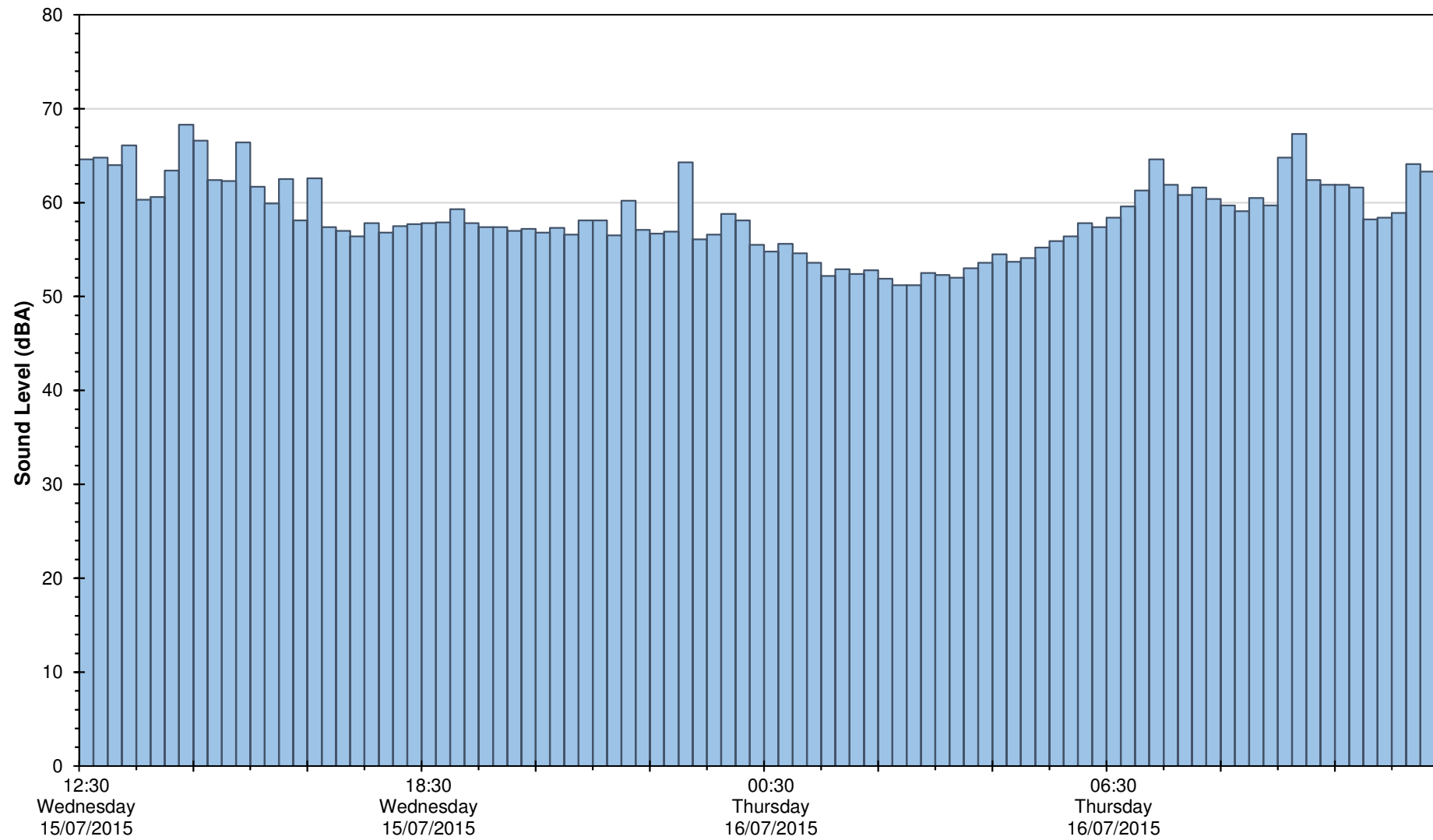
38 Heath Drive

Position 1

L_{Aeq} Noise Levels

■ L_{Aeq}

Wednesday 15 July 2015 to Thursday 16 July 2015



Date and Time

20977/TH1.1

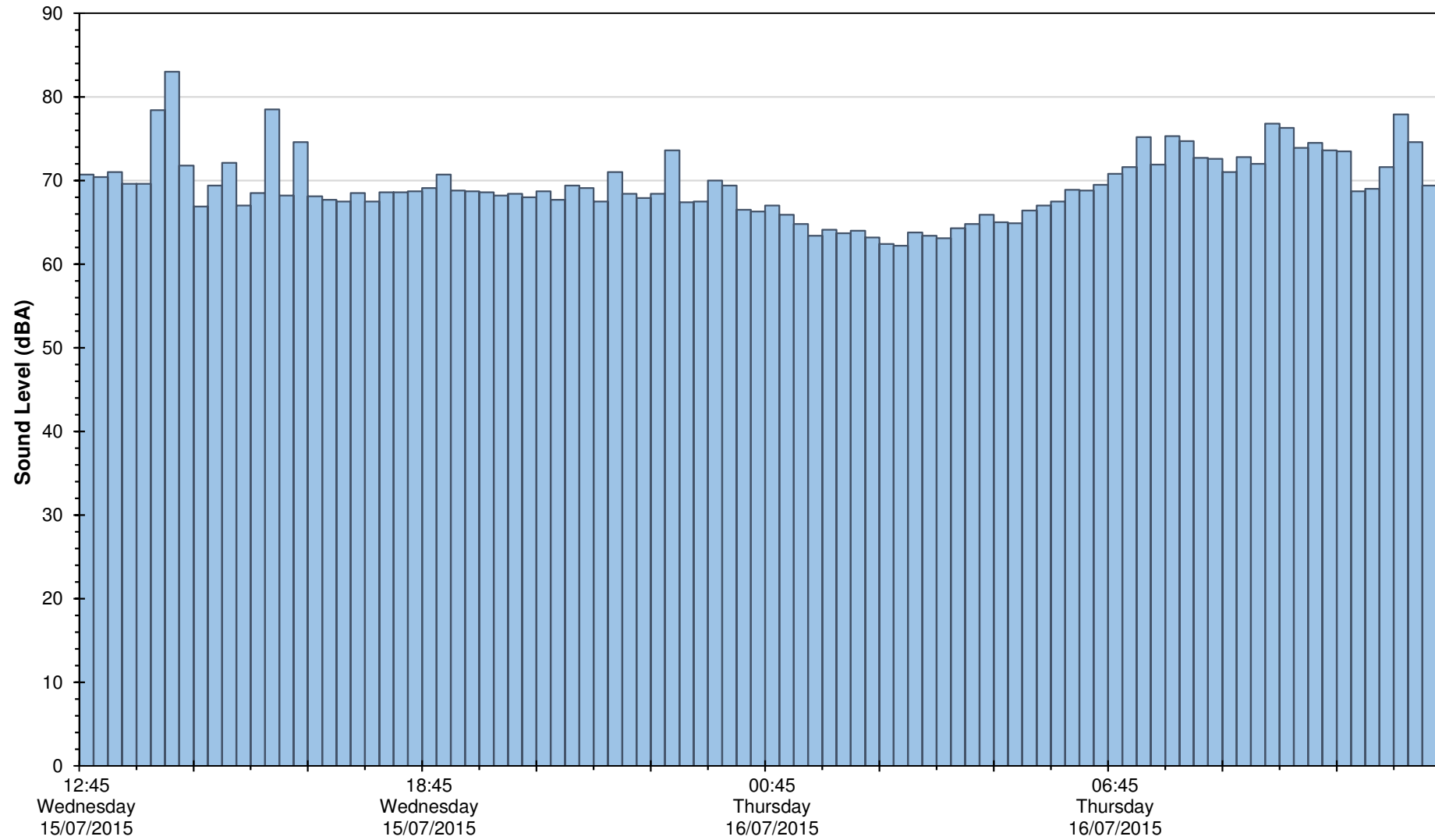
38 Heath Drive

Position 2

L_{Aeq}

■ L_{Aeq}

Wednesday 15 July 2015 to Thursday 16 July 2015



Date and Time

20977/TH1.2