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Jewish Museum development project

Environmental noise assessment,
Revision 1

1 Introduction

The Jewish Museum currently occupies two London locations, one at 129-131 Albert Street in Camden Town and one at the Sternberg Centre, 80 East End Road, Finchley. It is proposed to extend the Camden site and consolidate the two parts of the museum at a single location. The extension will convert an existing building located immediately adjacent, to the south-west of the current Jewish Museum's Camden site.

The development will include the installation of a new Chiller at rooftop level on the extension and a number of AHUs to be located within the new extension.

Sandy Brown Associates have been commissioned to undertake a noise survey at the Camden site to assist in the design of the proposed extension.

The purpose of the survey is to establish the existing background noise levels in the vicinity of nearby residential buildings.

Background noise levels enable appropriate limits to be set regarding noise emission from proposed building services plant.

This report presents the survey method, results of the environmental noise survey, and a discussion of acceptable limits for noise emission from building services plant.

Sound power limits for the roof top Chiller have been determined.

2 Site description

2.1 The site and its surroundings

Figure 1shows the site and its surrounds, the location of the noise logger is also indicated.

The Museum fronts onto Albert Street, a relatively quiet road bordering the site to the east. Residential properties lie to the north and south of the current Museum, along Albert Street. Mixed use properties on Parkway (commercial at ground level with residential above) border the site to the north. Many of these properties have outdoor space at ground floor level or on the rooftops of ground floor extensions. An office building lies to the south-west of the proposed extension, this is currently occupied by Sheppard Robson Architects.

The Proposed extension to the museum will convert an existing four storey former industrial building lying immediately adjacent, to the south-west of the current site.

The relative heights of the Chiller and nearest residential/office windows are indicated in Figure 2.

2.2 Noise sources

During the survey, the dominant noise sources at the site were road traffic traveling along Parkway, approximately 30m north-west of the site. Contributions to the measured noise level were also may from occasional aircraft flying overhead.

Noise emissions from existing extract fans associated with commercial properties fronting onto Parkway were clearly audible at the site. One of these fans, serving a take-away food restaurant approximately 15m from the microphone, was clearly at the noise monitoring position. Another of these fans, serving a public house, was clearly audible at the office building adjacent to the proposed extension, but did not appear to be audible at the noise monitoring position.

We understand that a new Carrier 30RA 040-240 "B" Chiller will be located at rooftop level on the new extension, surrounded by a 2 m high screen on all sides. The Chiller will run 24 hours per day; under loads approaching %100 during the Museum opening hours (0900-1700hrs Sunday-Thursday) and at reduced load (10-15%) outside of the Museum opening hours.

In addition, a number of AHUs will be located within the new extension.

3 Noise survey

Details of the noise survey (including the methodology, time history, photographs and diagrams of the measurement position) are presented in the appendix to this report.

The lowest background noise level has been determined for two time periods; during the opening hours of the Museum (0900-1700hrs Sunday-Thursday) and outside the opening hours of the Museum.

A summary of the minimum background noise levels measured over the duration of the survey are presented in Table 1.

Table 1 Minimum background noise levels

Date	Day	Lowest background noise level for time period $L_{A90,5mins}$ dB	
		Opening hours (0900-1700hrs)	Outside opening hours (1700-0900hrs)
7 June 2006	Wednesday	47	39
8 June 2006	Thursday	44	42
9 June 2006	Friday	46	44
10 June 2006	Saturday	45	39
11 June 2006	Sunday	40	40
12 June 2006	Monday	45	37
13 June 2006	Tuesday	45	

4 Environmental noise criteria

4.1 Plant noise limits for residential property

Through consultations with John Anani of Camden Council we understand that a plant noise limits of 5 dB below background for non-tonal noise sources and 10 dB below background for tonal noise sources will apply to this project. This is consistent with the guidance in BS4142: 1997 *'Rating industrial noise affecting mixed residential and industrial areas'* which provides guidance on the likelihood of complaints.

The minimum background noise levels that were measured over the duration of the survey and corresponding plant noise limits are presented in Table 2.

Table 2 Plant noise limits at nearest residential property

Timer period	Lowest measured background noise level, L_{A90} (dB)	Plant noise limit, L_{Aeq} (dB)	
		Tonal noise	Non-tonal noise
Opening hours (0900-1700hrs)	40	30	35
Outside opening hours (1700-0900hrs)	37	27	32

4.2 Plant noise limit for office buildings

We recommend that plant noise should not exceed a noise limit of NR30 inside any office with partially opened windows.

5 Noise control treatments

5.1 Treatments to AHUs

We understand that a number of new AHUs will be located within the proposed extension. We anticipate that these will require atmospheric side attenuators as appropriate. Exact requirements will be determined at a later stage in the project once AHU selection has been finalised.

5.2 Chiller noise limits

It is intended to install a Carrier 30RA 040-240 "B" Chiller at roof top level on the proposed extension (approximately 17m above ground level). The Chiller is 1329mm high and will be mounted no more than 100mm above the roof top. A 2m high barrier will surround the Chiller on all sides.

The Chiller will run at up to 100% load during the Museum opening hours (0900-1700hrs Sunday-Thursday) and at no more than 15% load outside the museum opening hours (1700-0900hrs).

In order to achieve the local authority environmental noise limit and the office building plant noise limit, the Chiller should conform to the sound power limits for both operating loads (100% and 15%) as specified in Table 3.

Table 3 Chiller sound power limits, Lw

Time period	Chiller load	Octave band centre frequency							
		63	125	250	500	1k	2k	4k	Hz
Opening hours (0900-1700hrs)	100%	86	86	82	80	80	79	79	dB
Outside opening hours (1700-0900hrs)	15%	83	83	79	77	77	76	76	dB

In addition to achieving the above sound power criteria, the noise emission from the Chiller should be free from any significant tonal components.

The screen walls should be constructed from a material with > 10 kg/m^2 surface density, be free of any cracks or gaps and well sealed to the deck. Any access doors or panels must also have > 10 kg/m^2 surface density and achieve a good perimeter seal with the screen to ensure that the sound insulation performance is not degraded. The inside face of the well should be lined with an acoustically absorbent material. 50mm thick rockwool with a perforated metal facing (20% minimum open area) would be suitable for this purpose.

6 Summary

The findings of this report are summarised below:

- It is proposed to extend the Jewish Museum's current Albert Street site.
- The proposed extension will include a Chiller to be located at roof top level, surrounded by a 2m high screen.
- New AHUs will be located within the proposed extension.
- A long term environmental noise survey has been conducted at the site of the proposed extension.
- Minimum background noise levels have been established (L_{A90} 37-40 dB depending on the time period).
- Plant noise limits at surrounding residential properties have been determined based on the background noise level and the local authority's requirements.
- Chiller sound power limits have been determined to ensure that noise emissions from the Chiller achieve the local authority requirements and the office building plantnoise limit.

Appendix

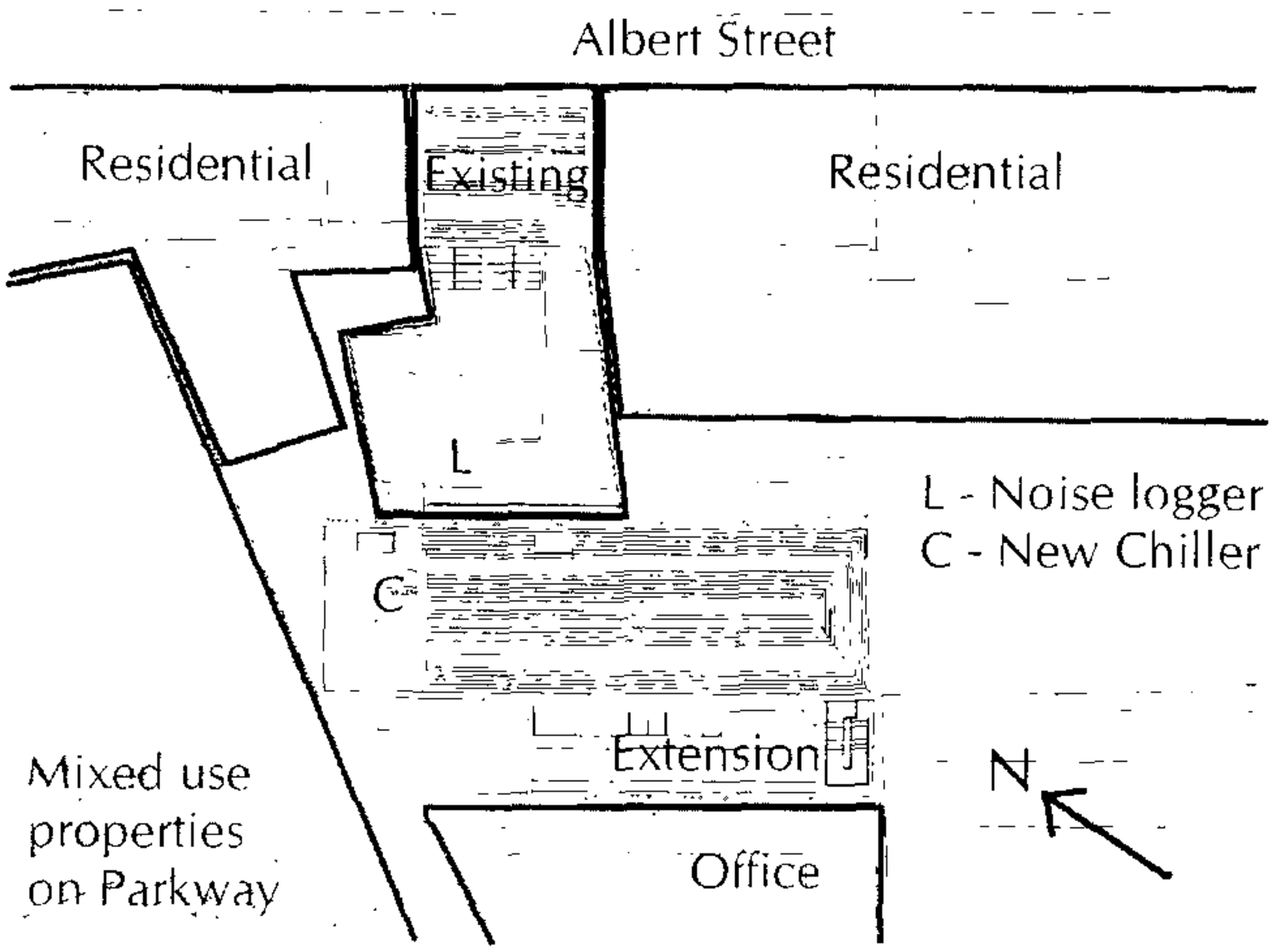

Figure 1 Site plan and measurement position

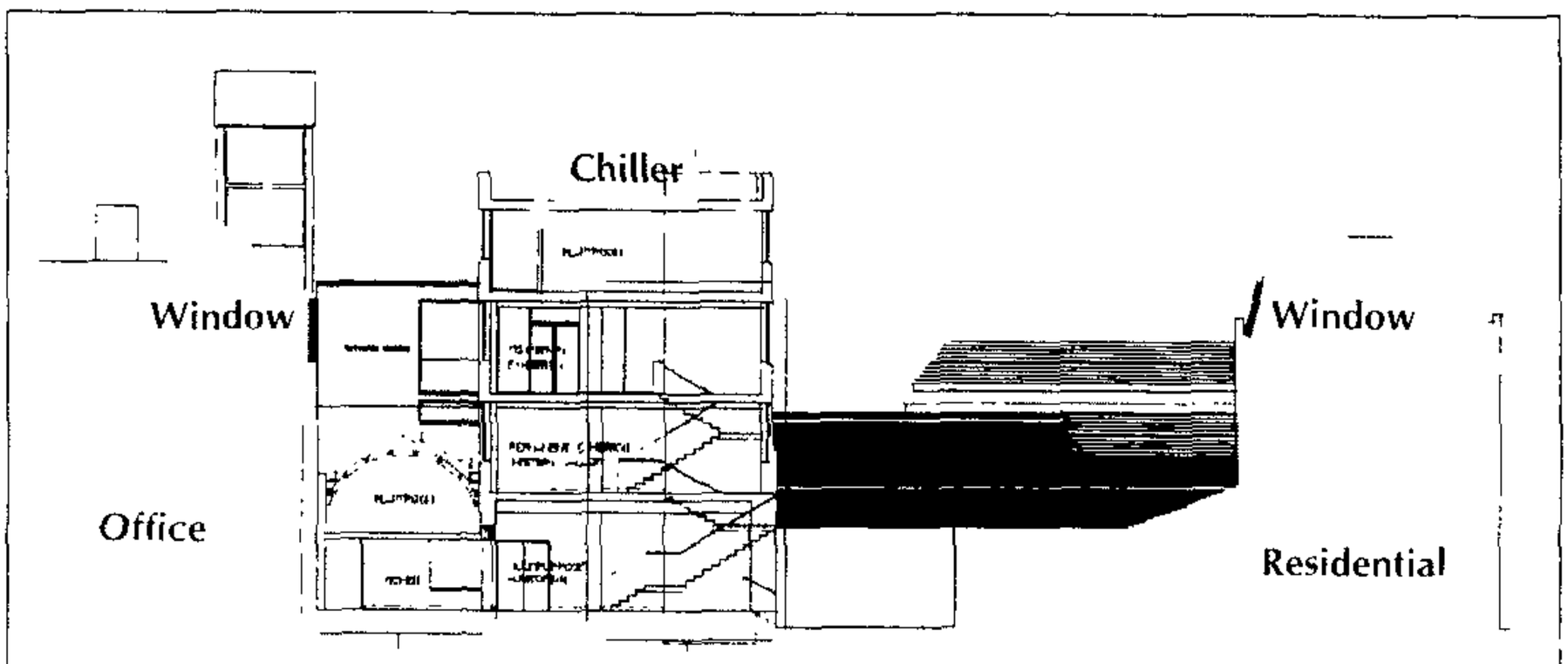

Figure 2 Chiller and surrounding noise sensitive properties (with windows)

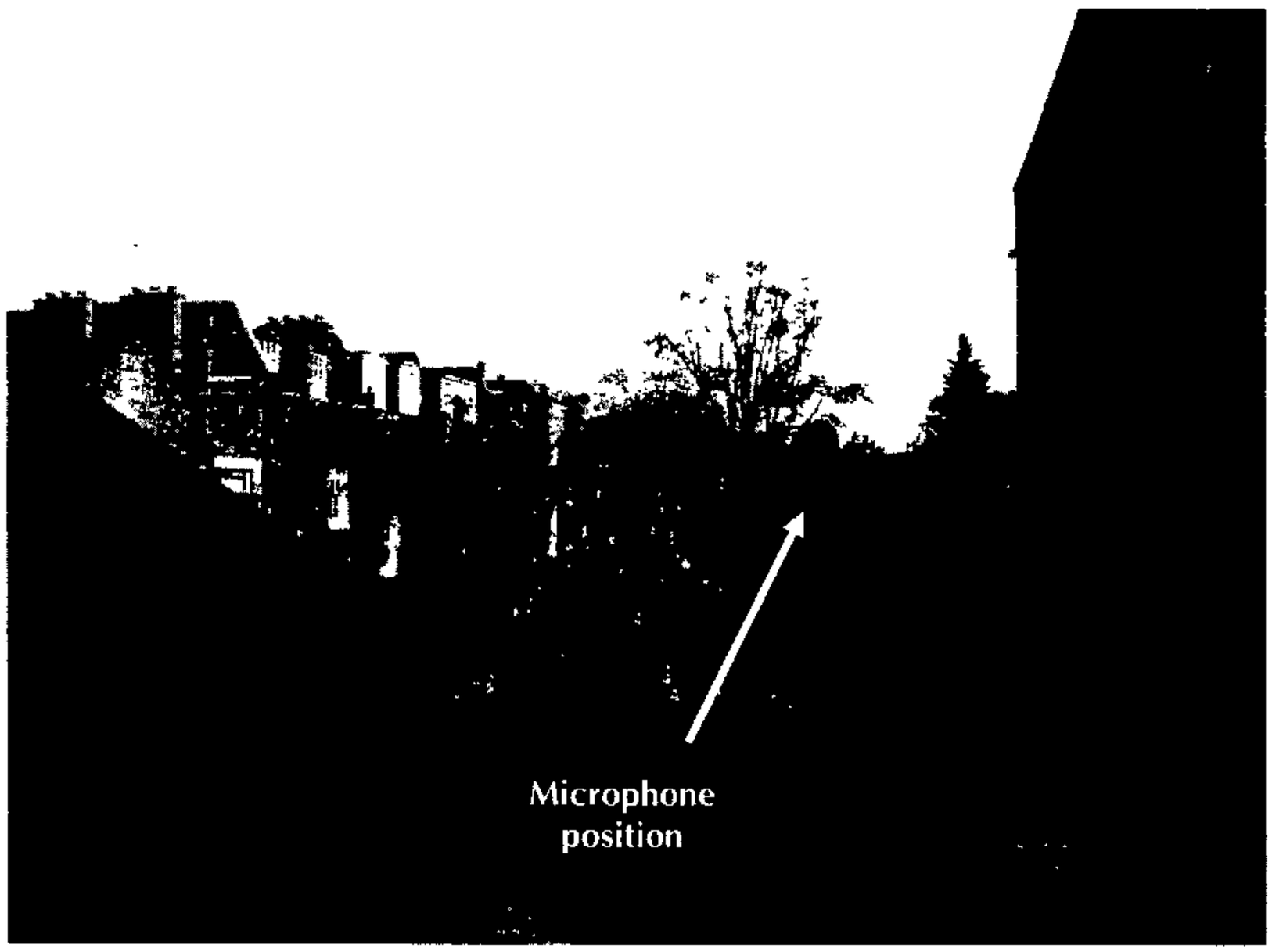

Figure 3 Photograph showing microphone position

Environmental noise logging

Methodology

A six day continuous noise survey was undertaken to determine the existing background noise levels in the area of the proposed development.

Measurements were made from 7 June 2006 to 13 June 2006.

The microphone was positioned at approximately 1.5m above roof level on top of current extension to the Museum at indicated in Figure 1, equating to approximately 8m above ground level.

It is preferable to measure at locations where there are no significant reflecting surfaces (other than the ground) closer than 3.5m to the microphone. However this was not possible at the Jewish museum site where the surrounding area is a built up semi-reverberant environment. The microphone was located as far as practicable from any reflecting surfaces. The monitoring position was screened from traffic on adjacent roads and judged to be representative of the surrounding residential windows.

Equipment and procedure

A Bruel & Kjær 2238 Type 1 sound level meter was used to perform the background noise monitoring.

All measurements were made at least 1.5 m from the roof top (effective ground surface).

The sound level meter and microphone were calibrated at the beginning and end of measurements using a type 4231 microphone calibrator. No significant calibration deviation occurred.

Noise indices

The equipment was set to record a continuous series of broadband sound pressure levels assessed over 5 minute intervals. Noise indices recorded included the following:

- $L_{Aeq,T}$ *The A-weighted equivalent continuous sound pressure level over a* period of time, T.
- $L_{Amax,T}$ The A-weighted maximum sound pressure level that occurred during a given period. Measured using the fast time weighting in accordance with the requirements of BS 8233 : 1999.
- $L_{A90,T}$ The A-weighted sound pressure level exceeded for 90% of the measurement period. Indicative of the background noise level.

The L_{A90} is considered most representative of the background noise level for the purposes of complying with any local authority requirements.

Sound pressure level measurements are normally taken with an A-weighting (denoted by a subscript 'A', eg L_{A90}) to approximate the frequency response of the human ear.

A more detailed explanation of these quantities can be found in BS7445: Part 1: 1991 ISO 1996-1: 1982 *'Description and measurement of environmental noise, Part 1 Guide to quantities and procedures'.*

Weather Conditions

During the survey the weather conditions were generally dry and fine. Temperatures varied between 9°C at night and 31°C during the day. These conditions were suitable for representative measurements.

A summary of the weather conditions from the weather station at Heathrow Airport for the duration of the noise survey presented in Table 4.

Table 4 Summary of weather conditions

Date	Wind speed (km/h)		Temperature (°C)		Precipitation (mm)
	Average	Max	Max	Min	
7 June 2006	9	13	25	11	0
8 June 2006	4	18	26	13	0
9 June 2006	5	26	26	14	0
10 June 2006	10	32	29	15	0
11 June 2006	10	18	28	18	0
12 June 2006	3	24	31	19	0
13 June 2006	7	26	25	16	10

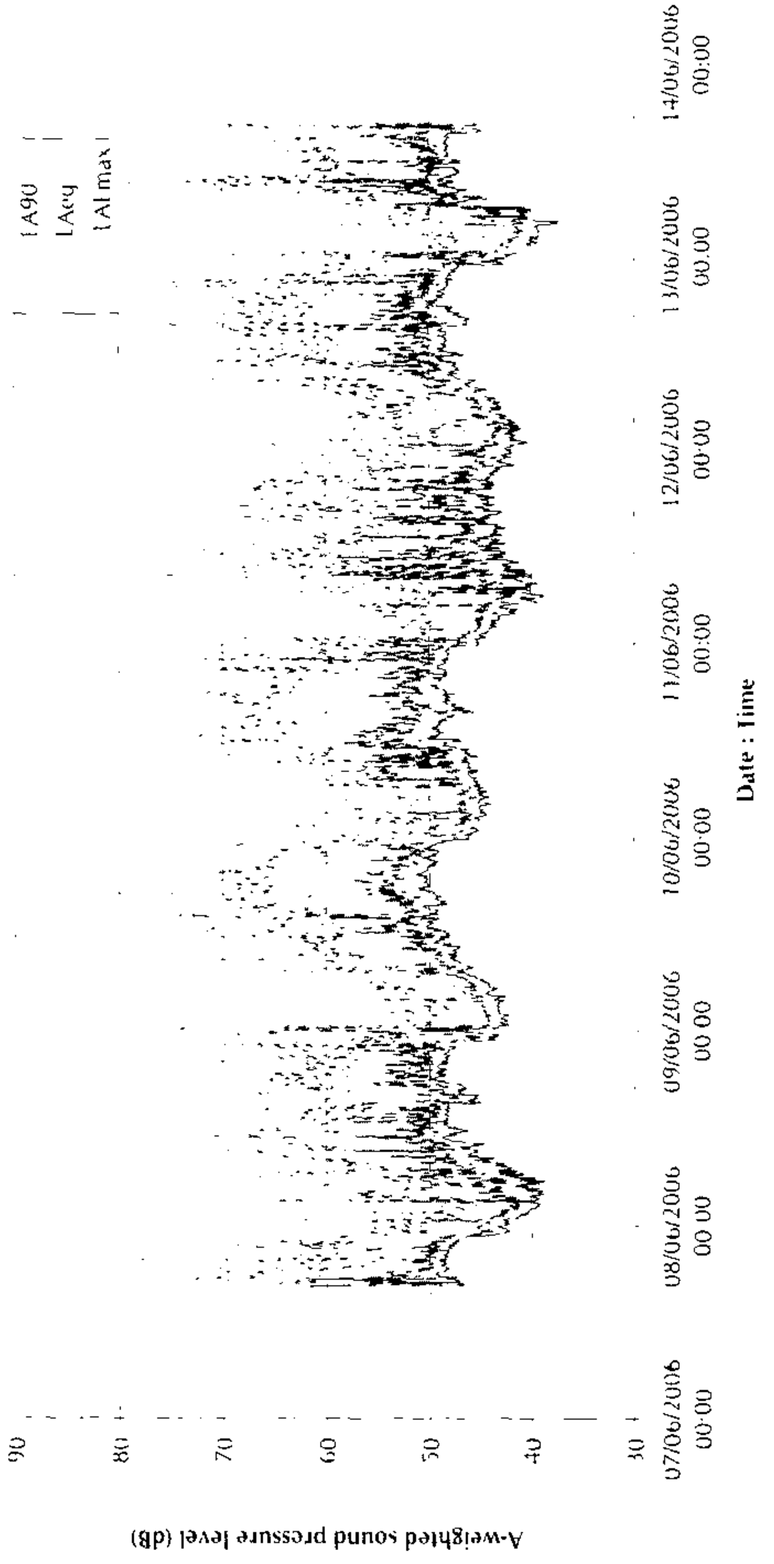

Figure 4 Noise logging time history

Camden

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19 June 2006

Miss M J Long
Long & Kentish architects
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N5 1XL

Dear Miss Long

PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990
JEWISH MUSEUM, 129-130 ALBERT STREET

Thank you for your letter received on 6 June 2006.

Albert Street elevation
The removal of the modern pilasters and entablature and the omission of the proposed banner advertising to the entrance on Albert Street are welcome. However, I note that it is proposed to use a powder coated metal framework for the glazed entrance. I would prefer that either a more lightweight frameless glazing system or timber framework were utilised. I appreciate that you no longer propose a projecting entrance, nonetheless, the door and screen should be fully setback behind the front building line so as to retain the impression of a void.

I also have some reservations about the incorporation of air intake louvers into the screen. These could appear a little utilitarian for the front elevation of the building, however I would need to see more detailed plans in order to fully comment on this part of the proposal.

Parkway extension
I have discussed your submission with my urban design colleague and I am afraid that I have serious concerns about this part of the proposal.

This site falls within the Camden Town Conservation Area and the large brick warehouse at no.79 Parkway (which I understand was a piano factory) forms a prominent and imposing part of its backland character. My concerns focus on the impact that the proposed extension would have on views of the factory façade and the large gap between it and adjacent development. In my view the existing pitched roof extension to the building is appropriately scaled and allows the 1st floor factory windows to remain visible and uncompromised. This low side extension also allows for a sizeable gap between no.79 and no.77, offering visual relief in this otherwise densely developed area.

Director
Peter Bishop

The proposed extension would introduce considerable bulk into this gap, reaching to just below the 3rd floor windows on the factory façade, albeit only adjacent to three window bays. I appreciate that the front elevation of the extension has been designed so as to protect neighbour amenity for the properties on Parkway, however, the proposed solid brick façade would emphasise the perceived bulk of the extension and detract from the visible distinction between no.79 and its neighbour. The piano factory has a robust and well-articulated façade and is an attractive reminder of the industrial heritage of the area. In particular, the Camden Town Conservation Area Statement refers to the historic proliferation of piano and other musical instrument manufacturers in the area who took advantage of the nearby canal for transport.

I am afraid that the Council would not be supportive of the proposal for the rear of the building as submitted and consider that there would be a detrimental impact on the character and appearance of the Camden Town Conservation Area. It is unlikely that any increase in height to the existing pitched roof element of the building would be acceptable, unless it could be demonstrated that there would be no visual conflict with the elevation of the piano factory.

There may be change of use issues associated with your proposal and I would advise that you either contact the Duty Planner on 020 7974 1911 or Adele Caste, Team Leader (North East) on 020 7974 5885.

You are advised that the above comments represent the informal view of an officer of the Borough Council and would not prejudice any subsequent decision taken by the Council.

Yours sincerely

Hannah Walker
Senior Conservation Officer