RESULTS OF A 72 HOUR NOISE LEVEL SURVEY AND A SOURCE NOISE LEVEL TEST CARRIED OUT IN THE SOUTH LIGHT WELL OF ACADEMIC HOUSE 24-28 OVAL ROAD, LONDON NW1 AND A BS4142:2014 ASSESSMENT OF THE NOISE IMPACT OF THE NEWLY INSTALLED PLANT AT ROOF LEVEL

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Authorised for
Release by : I J Marchant

Client	:	ISG PLC
Project	:	Academic House, 24-28 Oval Road, London NW1
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1.0. INTRODUCTION

This report details the results of a 72 hour noise survey carried out in the south light well of the office building known as Academic House located at 24-28 Oval Road, London NW1.

Due to the potential for resonant frequency effects within the south light well it was decided to position two microphones within this area to verify and confirm that the results obtained were realistic.

The locations of the two microphones were as follows,

- Location A - South Light well left hand side
- Location B - South Light-well right hand side

To establish the variation of noise levels up the light well from second to fifth floor level it was decided to carry out a further noise test with a sound source (of some 100dBA) being placed inside the condenser plant area and noise level measurements taken at second, fourth and fifth floor levels, opposite the residential windows of the adjacent building.

The objectives of the survey and the test were as follows:

- To measure the noise levels in the south light-well with, and without, the newly installed Air Handling Unit and cooling plant on the roof of Academic House in operation

- To compare the measured noise levels, with the plant running, with the already established normal LA_{90} background, to assess the impact of the plant noise under the guidelines of BS4142:2014 and whether or not complaints are likely from the neighbouring residential properties.

- To establish if the operation of the newly installed plant increases the normal level and if no increase is perceived to confirm that the newly installed plant meets the planning requirements of the local council.

- By carrying out the further sound source noise test to establish the reduction, if any, of noise levels down the light well.

This report has been divided into the following sections for ease of analysis:

2.0. SITE DESCRIPTION

The building known as Academic House, located at 24-25 Oval Road, London NW1 is a large, seven storey office building with ground floor and six upper floors. The building occupies a corner site, with frontages onto Oval Road and Jamestown Road.

The south west corner of the building can be seen on the attached Photo A.

To the west of Academic House there is a seven storey block of residential flats. There are two light wells formed between the buildings and residential windows look into these light wells. The light wells descend from roof level down to the second floor level of Academic House. The south light well and the adjoining residential windows can be seen in the attached Photos B, C and F.

There are a number of air cooled condenser units installed within a plant area on the roof next to the top of the south light well. The condensers are surrounded by an acoustic panel screen and have been fitted with discharge attenuators. The plant area can be seen in the attached Photo E.

An aerial overview of the site and its surroundings can be seen in the attached Photo F.

3.0. TEST INSTRUMENTATION

All measurement equipment used during the 72 hour noise level survey complied with the requirements of BS4142:2014 “Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas”. Details of the equipment are as follows:

Integrating Sound Level Meter:	Rion type NL-52 class 1 Sound Level Meters fitted with Rion type UC-59 ½ inch condenser microphones. Serial Nos.: 01232570, 01232569, 01121380
Statistical Analysis Modules:	Built in module capable of computing the percentile levels LA_1, LA_{10}, LA_{50}, LA_{90} and LA_{99} and also the LA_{eq} level.
Acoustic Calibrator:	Bruel & Kjaer type 4231 electronic calibrator. Serial No.: 1934160

All measurements taken during the Sound Source test were with the following instrumentation:

Integrating Sound Level Meter:	Bruel & Kjaer type 2250 fitted with a Bruel & Kjaer type 4155 ½ inch condenser microphone.
Acoustic Calibrator:	Bruel & Kjaer type 4231 electronic calibrator.
Sound Source:	Norsonics NOR270 Dodecahedron Loudspeaker array linked to a Norsonics NOR260 power amplifier.

Calibration was performed before and after the survey and the test and was found to be, in all cases, +/- 0.1 dB from the reference source.

3.1. Existing Noise Climate

Road traffic travelling on surrounding roads could be heard at the start and end of the survey, so the noise levels measured will include contributions from road vehicles.

Commercial jet aircraft were observed at medium and high altitude during the manned periods at the start and the end of the survey, so it is possible that the noise levels measured could include contributions from medium altitude jet aircraft. However airplane movements from London Airports were less than normal due to the Covid19 restrictions in place at the time of this survey.

There are no overland railways nearby, so the noise levels measured will not include contributions from rail noise.

Construction works were not observed being carried out in the vicinity during the manned periods at the start and end of the survey so the sound levels recorded when the roof plant was not operating should be typical of normal daytime background noise levels.

4.0. TEST PROCEDURE

The noise survey was conducted during a continuous 72 hour period from 2:49 pm on Friday the 29th of May 2020 to 2:40 pm on Monday the 1st of June 2020.

Data was continuously acquired throughout the measurement period with the individual averaging time for statistical noise data set to 15 minutes. The following 'A' weighted statistical measurements were recorded concurrently: -

LA_1 - The Sound Pressure Level exceeded for 1% of the measurement period.

LA_{10} - The Sound Pressure Level exceeded for 10% of the measurement period.

LA_{50} - The Sound Pressure Level exceeded for 50% of the measurement period.

LA_{90} - The Sound Pressure Level exceeded for 90% of the measurement period. LA_{90} is considered to represent the "background noise level" during the measurement period and is used for the assessment of noise to determine the likelihood of complaints (See BS 4142:2014).

LA_{99} - The Sound Pressure Level exceeded for 99% of the measurement period.

LA_{eq} - The continuous steady state Sound Pressure Level that has the same acoustic energy as the real fluctuating level.

The noise test in the light well was conducted on the Wednesday the 19th of Ausust 2020 between the hours of 9.30am and 11.00am.

4.1. Measurement Positions – 72 hour noise survey

Location A - The microphone was mounted on a tripod and positioned towards the north-east corner of the roof at second floor level within the south light-well of the building.
The microphone was oriented vertically and was approximately 1.5 metres above the second floor level. The location of the microphone can be seen in the attached Photos B, C & F.

Location B - The microphone was mounted on a tripod and positioned towards the south-east corner of the roof at second floor level within the south light-well of the building.
The microphone was oriented vertically and was approximately 1.7 metres above the second floor level. The location of the microphone can be seen in the attached Photos B, C & F.

Both microphones were connected by low impedance cables to their associated instrumentation which was contained within individual weatherproof housings.

4.2 Measurement Positions – Light Well Sound Source Noise Test

The microphone was located out of the windows of the Bauer Media offices on the second, fourth and fifth floor of the building. The microphone was held outside of these windows at a distance of approximately 900mm from the windows. Three readings were taken in each location, one looking straight ahead and one each at 45 degrees to the right and left. The microphone was positioned at three different angles in order to try and eliminate any standing wave resonances from affecting the measurements.

4.3 Weather Conditions

The weather conditions prevailing during the all the measurement periods were in line with those recommended in BS 4142:2014: -

Weather daytime: -	Clear	Weather night time: -	Clear
Wind daytime: -	Calm	Wind night time: -	Calm

All the microphones were protected throughout the survey by acoustically transparent wind balloons.

5.0. RESULTS AND EVALUATION OF NOISE CRITERIA

The raw test data, gathered during the 72 hour noise survey, is given in Appendix 'A 'of this report.

The 'A' Weighted L_{eq} levels measured over each 15 minute interval throughout the 72 hour period, denoted by LA_{eq}, (15 mins), are displayed as bar graphs on the attached Sketches No QF/8777/T1 and -/T3 at the back of this report.

The 'A' Weighted percentile levels measured over each 15 minute interval throughout the 72 hour period, denoted by LA_{10} (15 mins), LA_{50} (15 mins) and LA_{90} (15 mins) are displayed as line graphs on the attached Sketches No QF/8777/T2 and -/T4 at the back of this report.

The noise levels measured during the sound source noise test are given in the table QF/8777/D1 below

Table QF/8777/D1 - Noise levels in south light well with noise source in condenser compound

floor	reading	ref	63	125	250	500	1000	2000	4000	8000	dB(A)
5	background	003	61.8	58.4	52.1	46.4	38.7	37.0	33.6	27.2	49
5	source on	004	79.5	86.1	86.4	74.8	66.7	63.8	59.6	45.3	80
5	source on	005	79.5	86.0	86.8	74.6	66.7	63.7	59.4	45.2	80
5	source on	006	79.4	86.0	86.6	74.3	66.6	63.6	59.3	45.1	80
5	average		79.5	86.1	86.6	74.6	66.7	63.7	59.5	45.2	**80**
4	background	002	58.0	54.4	49.9	44.3	38.0	36.8	34.1	29.4	47
4	source on	007	79.5	85.6	86.2	73.0	66.2	63.4	58.9	44.7	79
4	source on	008	79.0	85.3	86.0	73.0	66.4	63.4	59.1	44.8	79
4	source on	009	79.1	85.7	86.1	72.9	66.1	63.2	58.8	44.4	79
4	average		79.2	85.5	86.1	73.0	66.2	63.3	58.9	44.6	**79**
2	background	001	53.6	54.9	50.4	44.6	39.8	42.4	36.1	25.5	49
2	source on	010	76.6	83.7	84.9	71.1	64.2	61.2	56.3	41.6	78
2	source on	011	75.5	83.8	85.4	71.2	64.2	61.4	56.9	48.2	78
2	source on	012	76.1	84.1	85.6	71.6	64.4	61.4	56.6	42.2	78
2	average		76.1	83.9	85.3	71.3	64.3	61.3	56.6	45.1	**78**

The above results show that, within the reverberant light well, the reduction in noise down the building does not follow the normal inverse square law for distance but rather reduces by only 2dB over the total height of the light well.

The noise levels taken in the light well, during the 72 hour noise survey, were measured at the bottom of the light well.

The table QF/8777/D2 below summarises the noise levels taken over the 72 hour period in terms of the LA_{eq}(16hr) noise levels with the plant running and not running and with the additional LA_{eq} (12hr) noise level between 7am and 7pm when the plant was operating and not operating. The plant was operating during Friday and Monday between the hours of 7.00am and 19.00pm.

Table QF/8777/D2 – Summary of Daytime/Evening Noise Levels

Location	LA_{eq} (16hr) – 07.00am to 23.00pm			LA_{eq} (12hr) – 07.00am to 19.00pm		
	Fri/Mon	Sat	Sun	Fri/Mon	Sat	Sun
A	43dBA	45dBA	46dBA	44dBA	44dBA	46dBA
B	44dBA	45dBA	46dBA	44dBA	45dBA	47dBA

The table QF/8777/D3 below summarises the noise levels taken over the 72 hour period in terms of the LA_{eq}(1hr) noise levels with the plant running between 7am and 7pm on Monday and Friday and when the plant was not operating on Friday, Saturday, Sunday and Monday. The plant was operating during Friday and Monday between the hours of 7.00am and 19.00pm.

Table QF/8777/D3 – Summary of Daytime/Evening Noise Levels

Location	LA_{eq} (1hr)– start times and *Median Level															
	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	Med *
A – La_{eq} Plant on		49	46	46	47	46	47	47	47	45	44	45	45			46
B – La_{eq} Plant on		50	47	48	47	47	47	48	45	44	45	45	45			47
A – LA_{eq} Plant off Saturday	46	41	42	44	43	44	44	48	43	44	42	42	45	44	49	44
A – LA_{eq} Plant off Sunday	41	42	44	42	46	48	51	47	43	43	47	43	45	45	46	45
B – LA_{eq} Plant off Saturday	43	41	43	44	44	44	44	49	44	44	43	43	46	45	51	44
B – LA_{eq} Plant off Sunday	47	43	45	43	46	49	52	45	44	43	47	43	46	46	46	46
A – LA_{eq} Plant off Fri/Mon	41													44	43	43
B – LA_{eq} Plant off Fri/Mon	47													45	43	45

The above table shows that the LA_{eq}(1hr) noise level varied very little over the 72 hours of the noise level survey. The Median LA_{eq}(1hr) with the plant running was 46/47dBA and with the plant not running varied from 43 to 46dBA.

5.1. Summary of the Local Authority's planning requirements regarding noise

The local planning authority is the London Borough of Camden.

The Camden Local Plan sets out the Council's planning policies and replaces the Core Strategy and Development Policy planning documents (adopted in 2010). It ensures that Camden continues to have robust, effective and up-to-date planning policies that respond to changing circumstances and the borough's unique characteristics and contribute to delivering the Camden Plan and other local priorities.

The Local Plan will cover the period from 2016-2031. Policy A4 of The Local Plan is entitled Noise and Vibration and states:

The Council will seek to ensure that noise and vibration is controlled and managed. Development should have regard to Camden's Noise and Vibration thresholds (Appendix 3). We will not grant planning permission for a) a development likely to generate unacceptable noise and vibration impacts or b) a development sensitive to noise in locations which experience high

levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses. We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development.

The parts of Appendix 3 that we have identified as relevant to this application are as follows:

Appendix 3: Noise thresholds

The significance of noise impact varies dependent on the different noise sources, receptors and times of operation presented for consideration within a planning application. Therefore, Camden's thresholds for noise and vibration evaluate noise impact in terms of various 'effect levels' described in the National Planning Policy Framework and Planning Practice Guidance:

- *NOEL – No Observed Effect Level*
- *LOAEL – Lowest Observed Adverse Effect Level*
- *SOAEL – Significant Observed Adverse Effect Level*

Three basic design criteria have been set for proposed developments, these being aimed at guiding applicants as to the degree of detailed consideration needed to be given to noise in any planning application. The design criteria outlined below are defined in the corresponding noise tables. The values will vary depending on the context, type of noise and sensitivity of the receptor:

- *Green – where noise is considered to be at an acceptable level.*
- *Amber – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development.*
- *Red – where noise is observed to have a significant adverse effect.*

Table C: Noise levels applicable to proposed industrial and commercial developments (including plant and machinery)

Existing Noise sensitive receptor	*Assessment Location*	*Design Period*	*LOAEL (Green)*	*LOAEL to SOAEL (Amber)*	*SOAL (Red)*
*Dwellings***	*Garden used for main amenity (free field) and Outside living or dining or bedroom window (façade)*	*Day*	*'Rating level' 10dB* below background*	*'Rating level' between 9dB below and 5dB above background*	*'Rating level' greater than 5dB above background*
*Dwellings***	*Outside bedroom window (façade)*	*Night*	*'Rating level' 10dB* below background and no events exceeding 57dB L_{Amax}*	*'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dB L_{Amax}*	*'Rating level' greater than 5dB above background and/or events exceeding 88dB L_{Amax}*

**10dB should be increased to 15dB if the noise contains audible tonal elements (day and night). However, if it can be demonstrated that there is no significant difference in the character of the residual background noise and the specific noise from the proposed development then this reduction may not be required. In addition, a frequency analysis (to include, the use of Noise Rating (NR) curves or other criteria curves) for the assessment of tonal or low frequency noise may be required.*

***levels given are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises.*

The periods in Table C correspond to 0700 hours to 2300 hours for the day and 2300 hours to 0700 hours for the night. The Council will take into account the likely times of occupation for types of development and will be amended according to the times of operation of the establishment under consideration.

There are certain smaller pieces of equipment on commercial premises, such as extract ventilation, air conditioning units and condensers, where achievement of the rating levels (ordinarily determined by a BS:4142 assessment) may not afford the necessary protection. In these cases, the Council will generally also require an NR curve specification of NR35 or below, dependant on the room (based upon measured or predicted L_{eq} (5mins) noise levels in octave bands, 1 metre from the façade of affected premises, where the noise sensitive premise is located in a quiet background area.

5.2. Determination of noise sensitive property design criteria

In order to comply with a green rating from the table above the new plant should therefore have a Sound Pressure Level 10dB below the lowest LA_{90} background noise level at 1 metre from the nearest noise sensitive window. The lowest LA_{90} noise levels, originally established in March 2017, were as discussed in the following section 6 of this report.

6.0. DISCUSSION OF RESULTS

The original project noise impact report QF8777/PF5785/PF5895/RP2, compiled for Arcadis, was written and issued on the 30th of March 2017 and set recommended design rating noise levels (L_{ArT}) for different locations around the site. The lowest LA_{90} noise level during the daytime (8am to 10pm) was established at 49.1dBA for the Jamestown Road side of the building. Due to Camden's planning requirements at that time being to achieve 5dB below these background levels it was established that for daytime operation of the plant, between the hours of 8am and 10pm, a limiting LAeq level of 44.1dBA, adjacent to the neighboring residential property, was appropriate for the operation of the condensers. A limiting L_{ArT} noise level of 55dBA was set for the offices.

Detailed calculations were included in this report to show that the condensers would achieve 54.7dBA at 1 metre from the windows of the offices facing into the south light well.

In this report it was clearly shown that the nearest residential windows were at the front and rear of the adjacent residential block of flats. The two light wells at the rear of Academic House were considered to be only surrounded by office windows.

6.1 AAD Plant Measurements

A separate noise survey was carried out by Applied Acoustic Design in January 2019 and the daytime ambient background noise level in the South Light Well was measured at LA_{eq}:54dB.

The noise level, with only the Air Handling Unit running was measured at LA_{eq}:56dB (ie 2dB above ambient background) and AAD recommended 12dB of additional attenuation to reduce the noise of the Air Handling Unit.

The noise level, with only the Condensers running, was measured at LA_{eq}:62dB and with both the condensers and Air Handling Unit running was measured at LA_{eq}:66dB.

AAD recommended 22dB of additional attenuation to the condensers.

6.2 Emtec Predictions

In Emtec's email of the 29th of April 2019 the following statements were made:

The current noise level, with all the condensers running is 61dBA and, as agreed by AAD, to reduce this noise level to 10dB below background (54dBA or 48dBA) depending on whose report you take as the baseline (AAD or Emtec) will mean that between 17 to 23dB attenuation will be required.

Emtec confirmed that the attenuators that were to be fitted, and that are now installed, would provide 14-17dB attenuation and would reduce the noise level in the light well to 44-47dBA and that the resultant noise level in the light well would then be the background noise level plus the noise from the plant and that this would be, at best, 44dBA plus 48dBA = 49.4dBA (1.4dB above ambient background) and at worst 47dBA plus 48dBA = 50dBA (2dB above ambient background).

Because the proposed attenuation was not going to achieve 10dB below the lowest background LA90 noise level it was suggested that the condensers were controlled to start up in sequence so that no more than 50% of the units were operating at any one time. This advice, so far as we are aware, has not been taken but the condensers have now been limited to operate at 75% of their original duty which, we believe, will give a reduction in their noise level of approximately 10dBA. This reduction was confirmed by Sale's email of the 19th of December 2019. The noise level in the light well should therefore be reduced to 34-37dBA. This should reduce the noise level of the condensers so that no increase in the ambient background noise level should occur.

6.3 Noise Level Achieved – Air Handling Unit

The tests carried out in September 2019 showed that with the Air Handling Unit running at 50Hz, which was considered to be its normal maximum duty, had a corrected LA_{eq} noise level, in the South Light Well, of 40dBA and the newly installed fresh air inlet silencer had thereby achieved a noise reduction of 16dB and the contribution of the Air Handling Unit was below the original project design goals of 44.1/42.0dBA.

It was therefore considered that the mitigation measures, with regard to the Air Handling Unit, had been successful and the tenant of Flat 60 of the adjacent residential block confirmed that the squeak, on the start-up of the Air handling unit, has been eliminated.

6.4 Noise Level Achieved - Condensers

The tests carried out in September 2019 also showed that when all the condensers were running on maximum duty, in heating mode, the corrected LA_{eq} noise level in the South Light Well was 52dBA, which was 10dB below the noise level measured by AAD and was 2dB higher than Emtec's worst case prediction.

The noise survey carried out and reported here show that the LA_{eq}(1hr) between the hours of 7am to 7pm, when the units are running, is between 50dBA and 44dBA with median levels of 46dBA at location A and 47dBA at location B. These levels can be taken as the ambient LA_{eq} level with the specific source and any other sources included.

The residual LAeq noise level, without the specific source, is the noise level when the air conditioning systems on Academic House are switched off. The median levels of the residual sound level varied from 43dBA to 46dBA over the weekend period.

The difference between the ambient LA_{eq} noise level and the residual noise level with, and without, the plant running is less than 3dB so the specific noise level of the plant could be between 40dBA and 45dBA.

These noise levels can be used to establish the "specific noise level" under the guidelines of BS4142:2014 at 40-45dBA.

The "specific noise level" is then corrected for tonal or impulsive sound to arrive at a "rating level". We believe that there is now no tonal or impulsive characteristic to the sound emanating from the roof plant so we would contest that the "rating level" of the plant is also 40-45dBA.

If the daytime background LA_{90} noise level of 49dBA, established in our report of 2017, is used as the normal background LA_{90} noise level in the South Light well then the impact of the sound source is the difference between this background noise level and the "rating level". This difference is a maximum of -9dB and a minimum of -4dB.

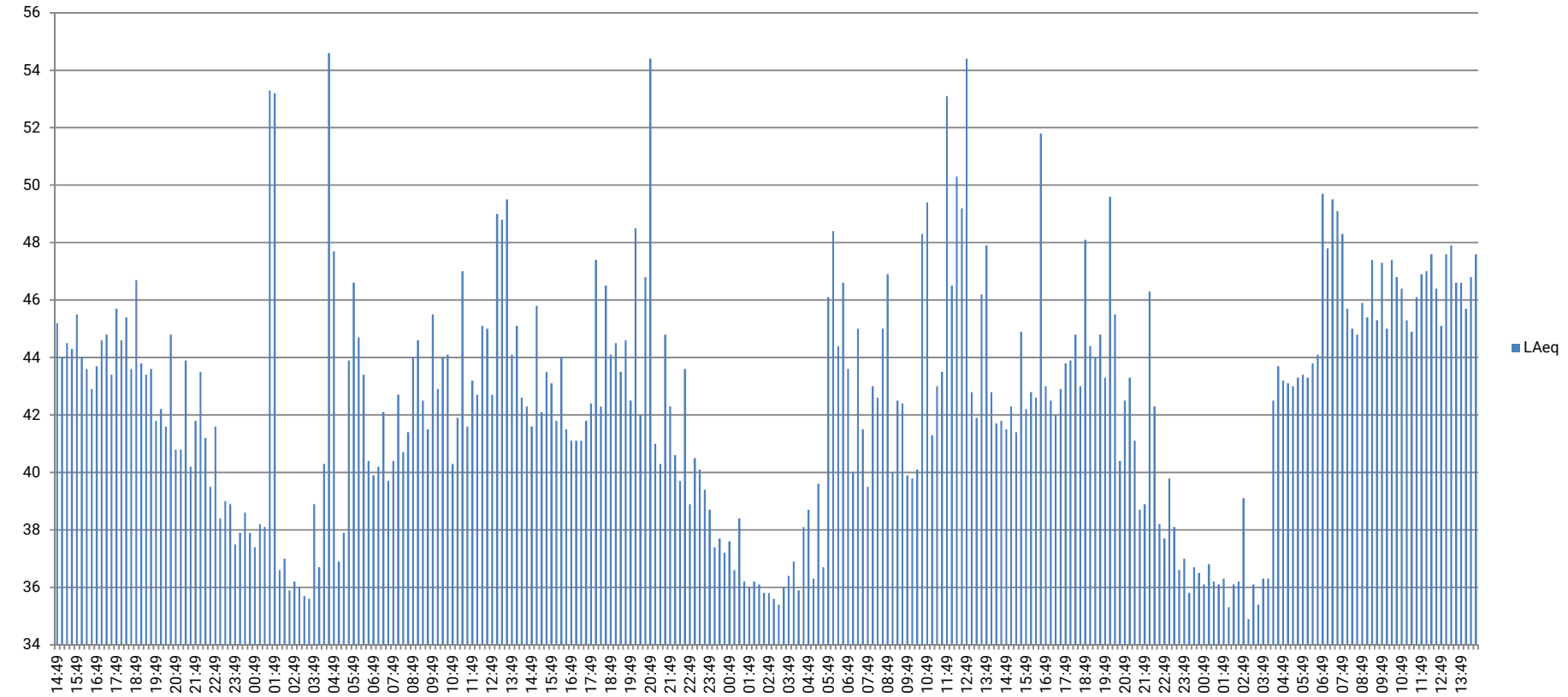
This would put the impact of the noise source at between -9db and +5db and would meet the local council's Amber noise rating. Under the guidelines of BS4142:2014 the significance of the source sound depends upon both the margin by which the rating level exceeds the background level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reasons for the assessment. In this case the original noise level of the plant was unacceptable for a residential receptor. The current noise levels, with and without the plant running, are very similar as can be seen on the attached graphs QF/8777/T1, -/T3 and -/T5, which show the LAeq levels measured over the 72 hour period in each location. If these graphs are inspected it can be seen that the shape of the graphs, and their levels, are very similar with and without the plant in operation.

We would therefore submit that the operation of the plant, with the attenuation that has now been fitted and the condensers being controlled to operate at 75% of their full duty, is not leading to a noise level that is likely to lead to any complaints from the residential neighbors and this is borne out by the fact that the occupiers of Flat 60 have confirmed to our engineer that they can no longer hear the Air Conditioning Plant on Academic House and are satisfied with the noise levels inside their bedroom.

The guidelines laid down in BS8233:2014, which follow the World Health Organization's recommendations, suggest that a noise level of 30dBA allows uninterrupted sleep within a residential bedroom and recommends 35dBA for other rooms within a residential property. The median measured noise level in the light well, with the plant running, are 46/47dBA and the attenuation through an open window, again from BS8233, is given as -15dB. This would equate to a noise level of 31/32dBA in the neighbour's bedroom which would mean that it is very close to being acceptable for sleeping and is below the normal level of 35dBA for daytime residential use.

We would therefore submit that the current noise levels of the Air Conditioning Plant currently being used by Bauer Media within the office building at Academic House meets the lower end of the Amber rating of Camden Council's planning requirements and is very unlikely to evoke any justifiable complaints under the guidelines of both BS4142:2014 or BS8233:2014.

Emtec Products Ltd
1st September 2020



TITLE: *LAeq Levels (Location A)*	*ISSUE DATE:* *9th June 2020*				*DRAWN BY:* *MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: *Bauer Media*	*PF No: 6736*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: *Academic House, 24-28 Oval Road, London NW1*	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/8777/T1*							

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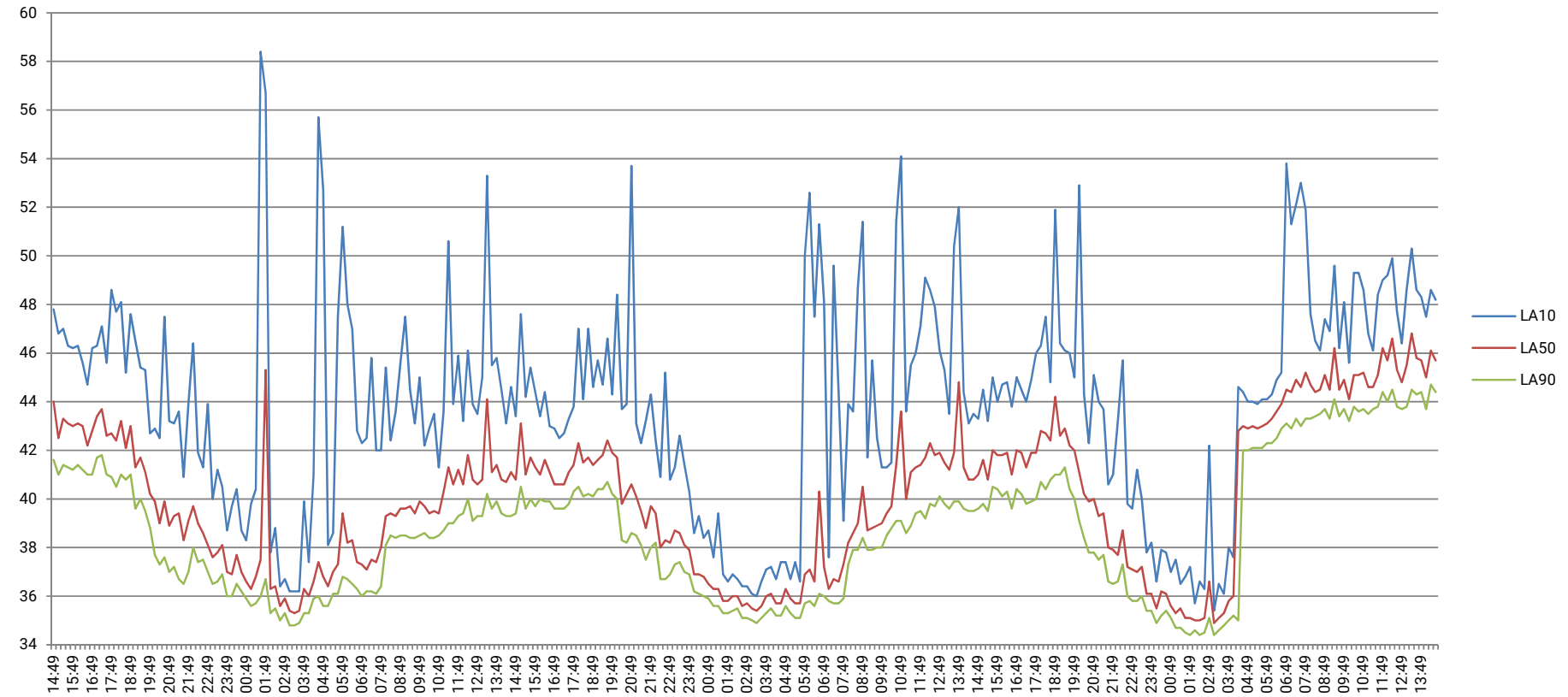

TITLE: *LA10; LA50 & LA90 Levels (Location A)*	*ISSUE DATE:* *9th June 2020*				*DRAWN BY:* *MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: *Bauer Media*	*PF No: 6736*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: *Academic House, 24-28 Oval Road, London NW1*	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/8777/T2*							

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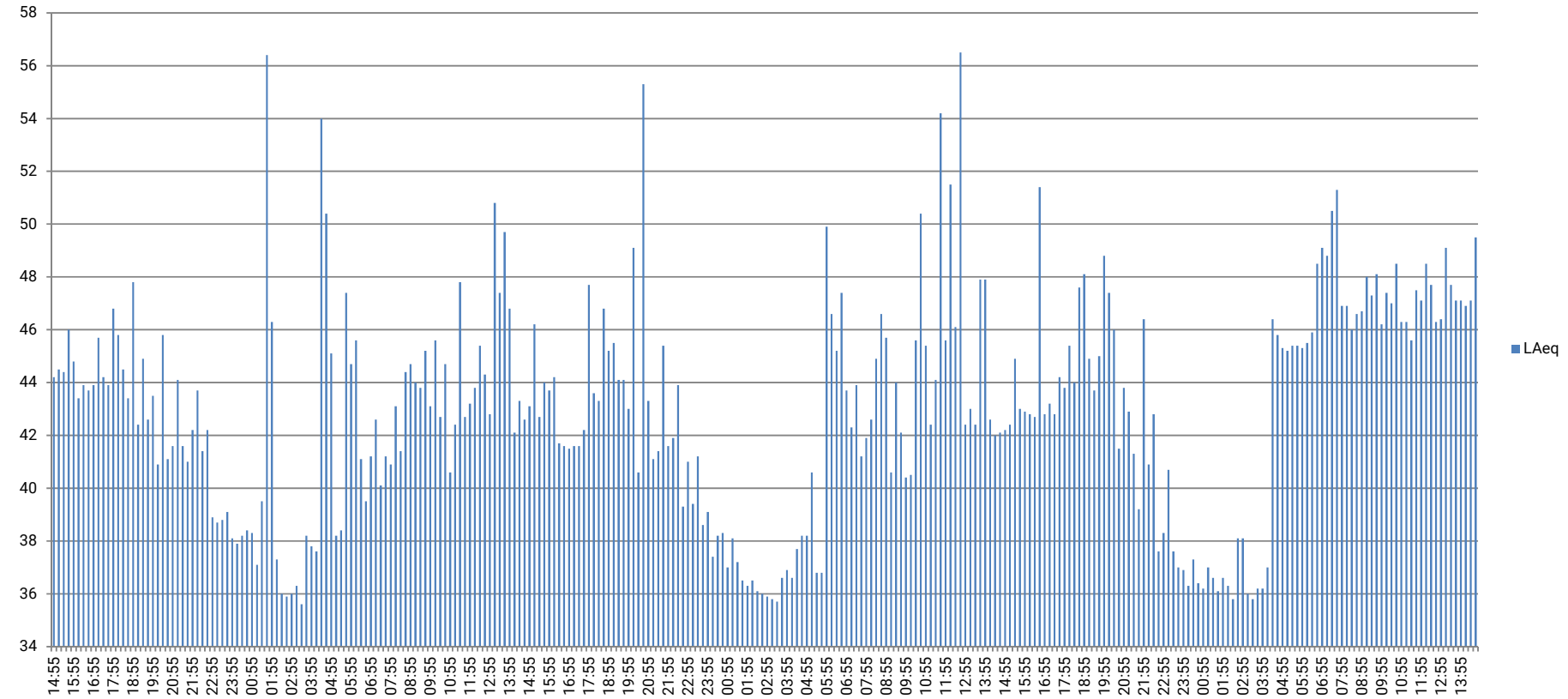

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CLIENT: *Bauer Media*	*PF No: 6736*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: *Academic House, 24-28 Oval Road, London NW1*	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/8777/T3*							

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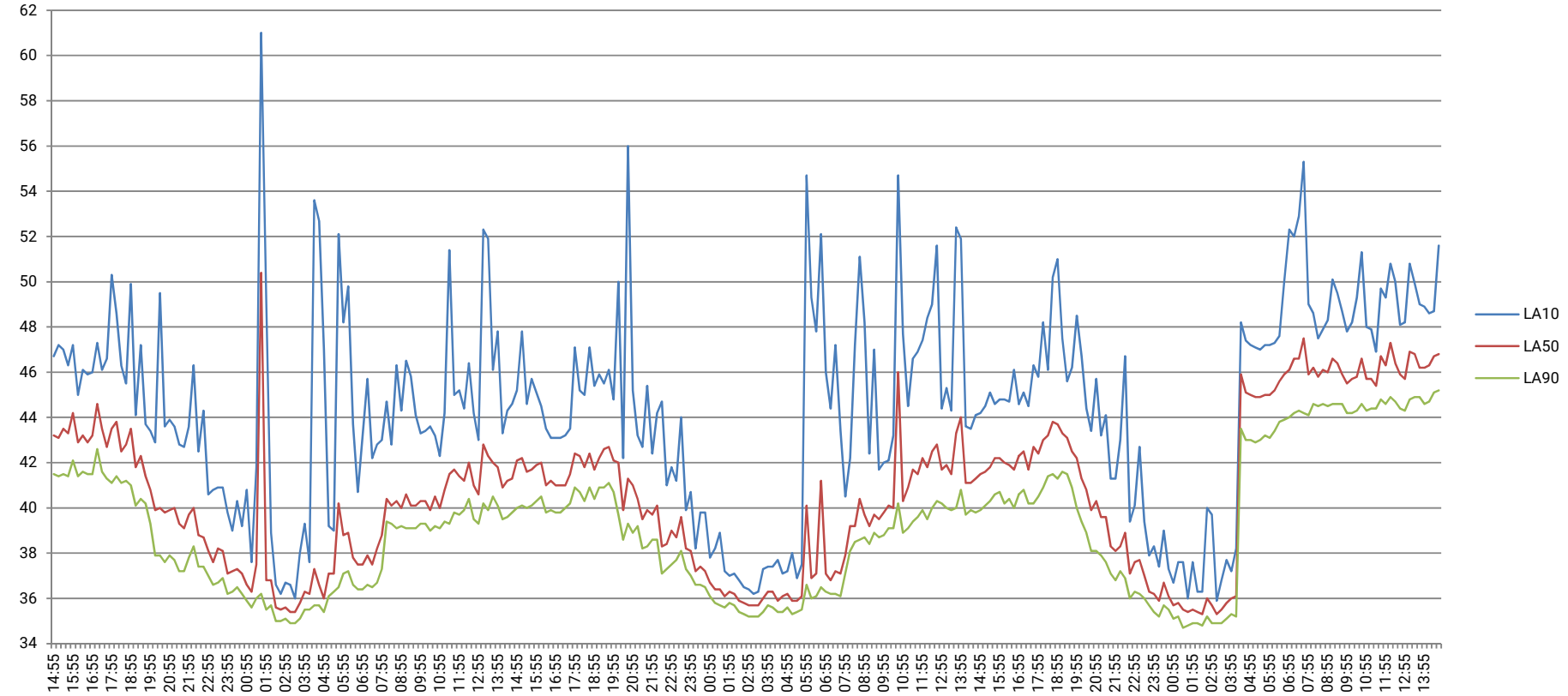
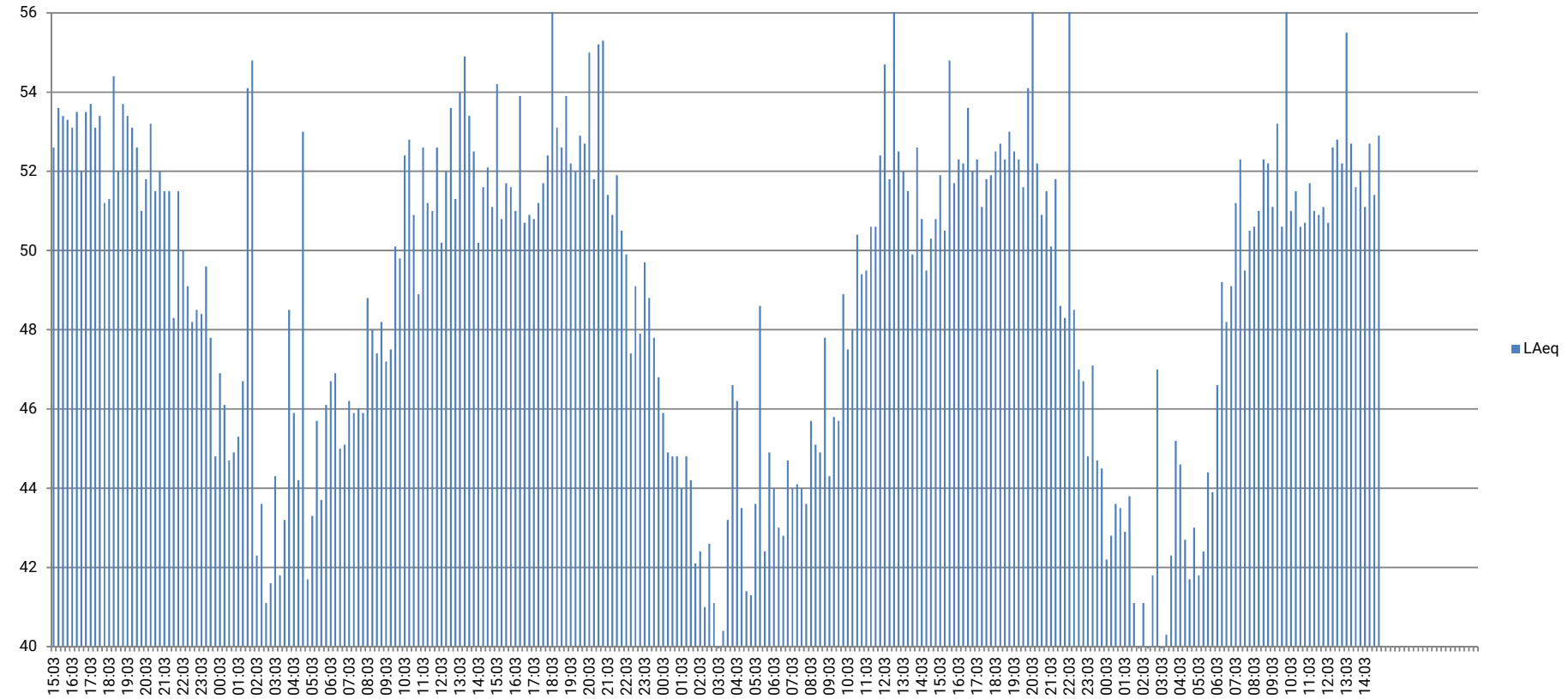


TITLE: *LA10; LA50 & LA90 Levels (Location B)*	*ISSUE DATE:* *9th June 2020*			*DRAWN BY:* *MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	EMTEC
CLIENT: *Bauer Media*	*PF No: 6736*			*APPROVED BY:* *MGR*	*REVISION*								Unit L, Turnpike Way, High Wycombe, Buckinghamshire, HP12 3TF Telephone: 020 8848 3031 www.emtecproducts.co.uk
PROJECT: *Academic House, 24-28 Oval Road, London NW1*	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/8777/T4*							



TITLE: *LAeq Levels (Location C)*	*ISSUE DATE:* *9th June 2020*				*DRAWN BY:* *MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Bauer Media	*PF No: 6736*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: Academic House, 24-28 Oval Road, London NW1	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/8777/T5*							

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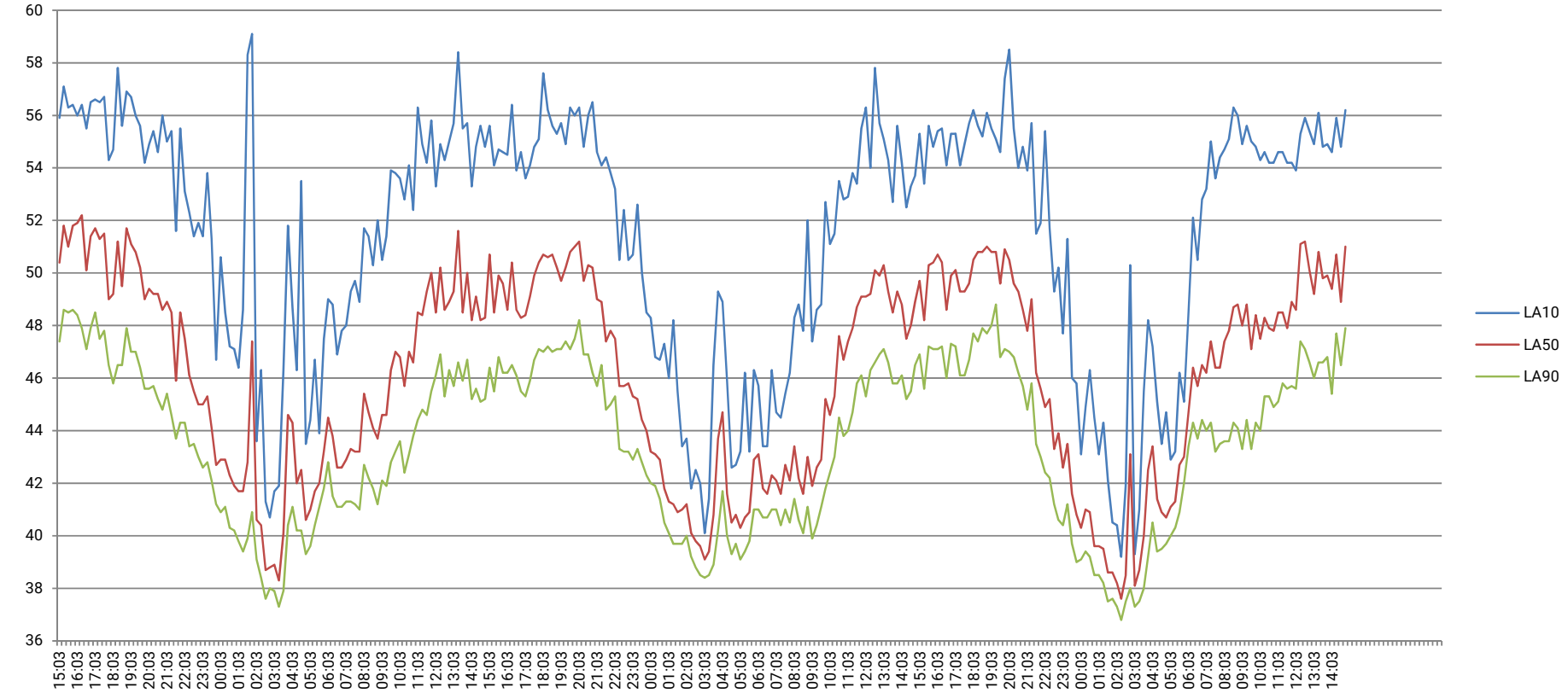

TITLE: *LA10; LA50 & LA90 Levels (Location C)*	*ISSUE DATE:* *9th June 2020*			*DRAWN BY:* *MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Bauer Media	*PF No: 6736*			*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: Academic House, 24-28 Oval Road, London NW1	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/8777/T6*						

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APPENDIX ‘A’

Raw Data – 72 hour Noise Level Survey

29th of May 2020 to 1st of June 2020

EMTEC PRODUCTS LTD.

Project: Academic House, 24-28 Oval Road, London NW1 (Location A)
Client: Bauer Media
Date: 29th May to 1st June 2020
Serial No: 01232570

Address	Start Time	LA_{eq}	LE	Lmax	Lmin	LA_{1}	LA_{10}	LA_{50}	LA_{90}	LA_{99}
1	14:49	45	75	60	39	49	48	44	42	41
2	15:04	44	74	56	39	48	47	43	41	41
3	15:19	45	74	53	40	48	47	43	41	41
4	15:34	44	74	64	39	47	46	43	41	41
5	15:49	46	75	69	40	48	46	43	41	41
6	16:04	44	74	50	39	47	46	43	41	41
7	16:19	44	73	52	39	47	46	43	41	41
8	16:34	43	73	50	40	46	45	42	41	41
9	16:49	44	73	56	39	47	46	43	41	41
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11	17:19	45	74	61	40	49	47	44	42	41
12	17:34	43	73	55	39	47	46	43	41	41
13	17:49	46	75	60	39	51	49	43	41	41
14	18:04	45	74	56	39	49	48	42	41	40
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278	12:04	47	77	64	42	50	49	46	44	44
279	12:19	48	77	58	43	51	50	47	45	44
280	12:34	46	76	65	42	49	48	45	44	44
281	12:49	45	75	53	42	47	46	45	44	44
282	13:04	48	77	70	42	50	49	46	44	44
283	13:19	48	78	64	43	52	50	47	45	44
284	13:34	47	76	57	43	50	49	46	44	44
285	13:49	47	76	62	43	50	48	46	44	44
286	14:04	46	75	58	42	49	48	45	44	44
287	14:19	47	76	61	43	49	49	46	45	44
288	14:34	48	77	62	42	51	48	46	44	44

APPENDIX ‘B’

Photos and Drawing

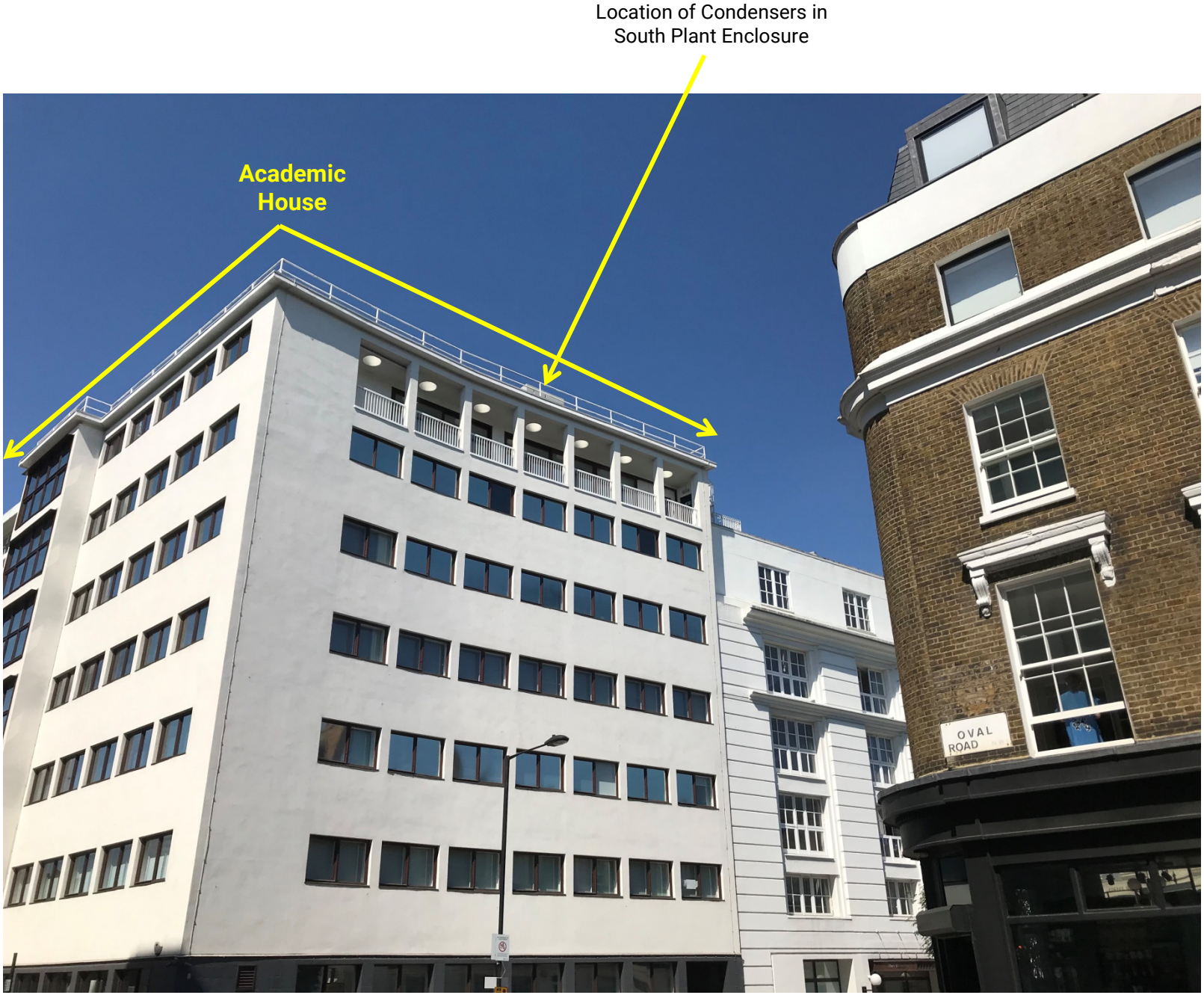

Photo A: View of front façade of Academic House, 24-28 Oval Road, London NW1

Photo B – View looking upwards to the east from base of south light-well at Academic House, 24-28 Oval Road, London NW1

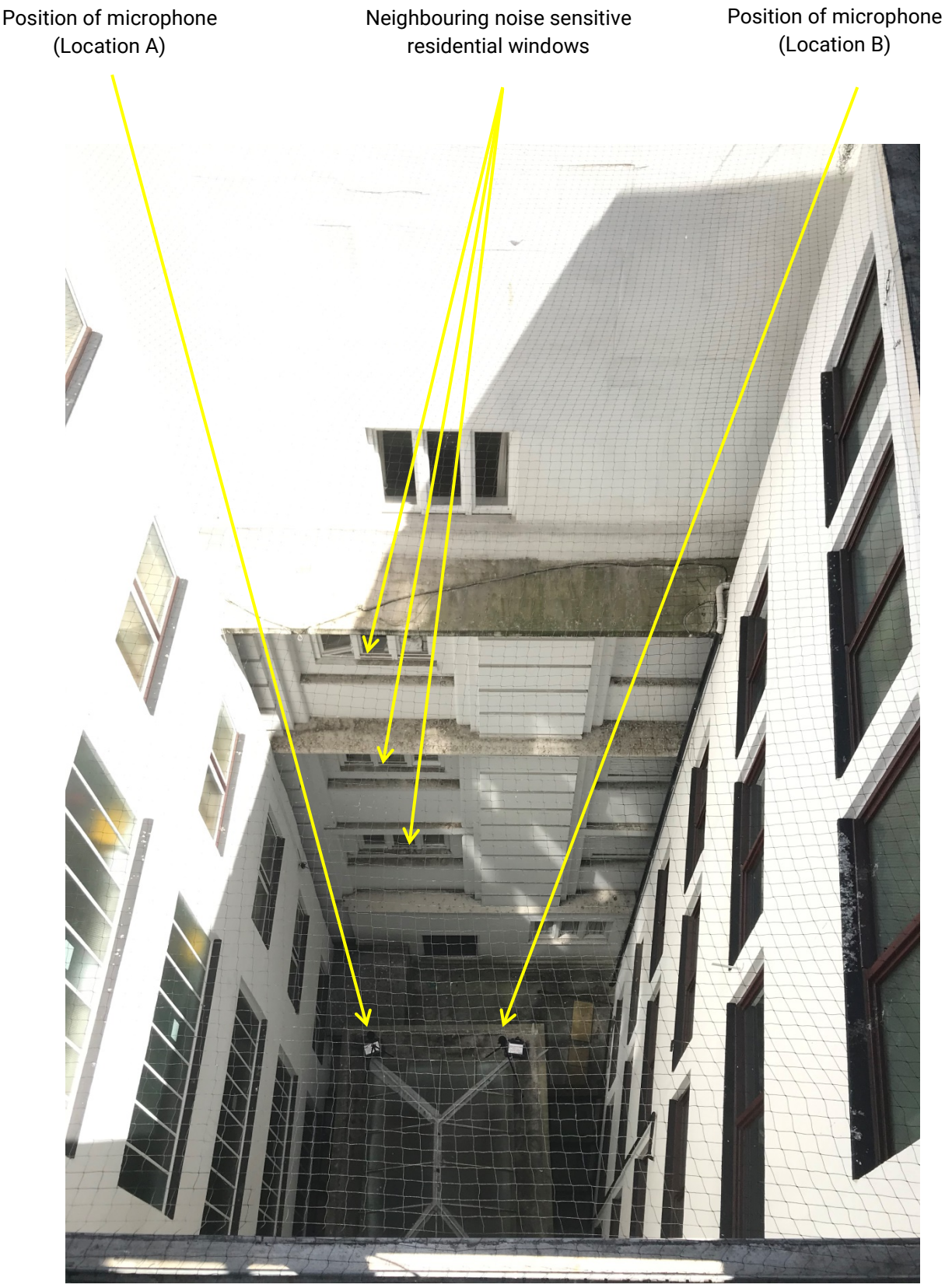

Photo C – View looking down into the south light-well from the roof of Academic House, 24-28 Oval Road, London NW1

Photo E: View of plant enclosure on roof of Academic House, 24-28 Oval Road, London NW1

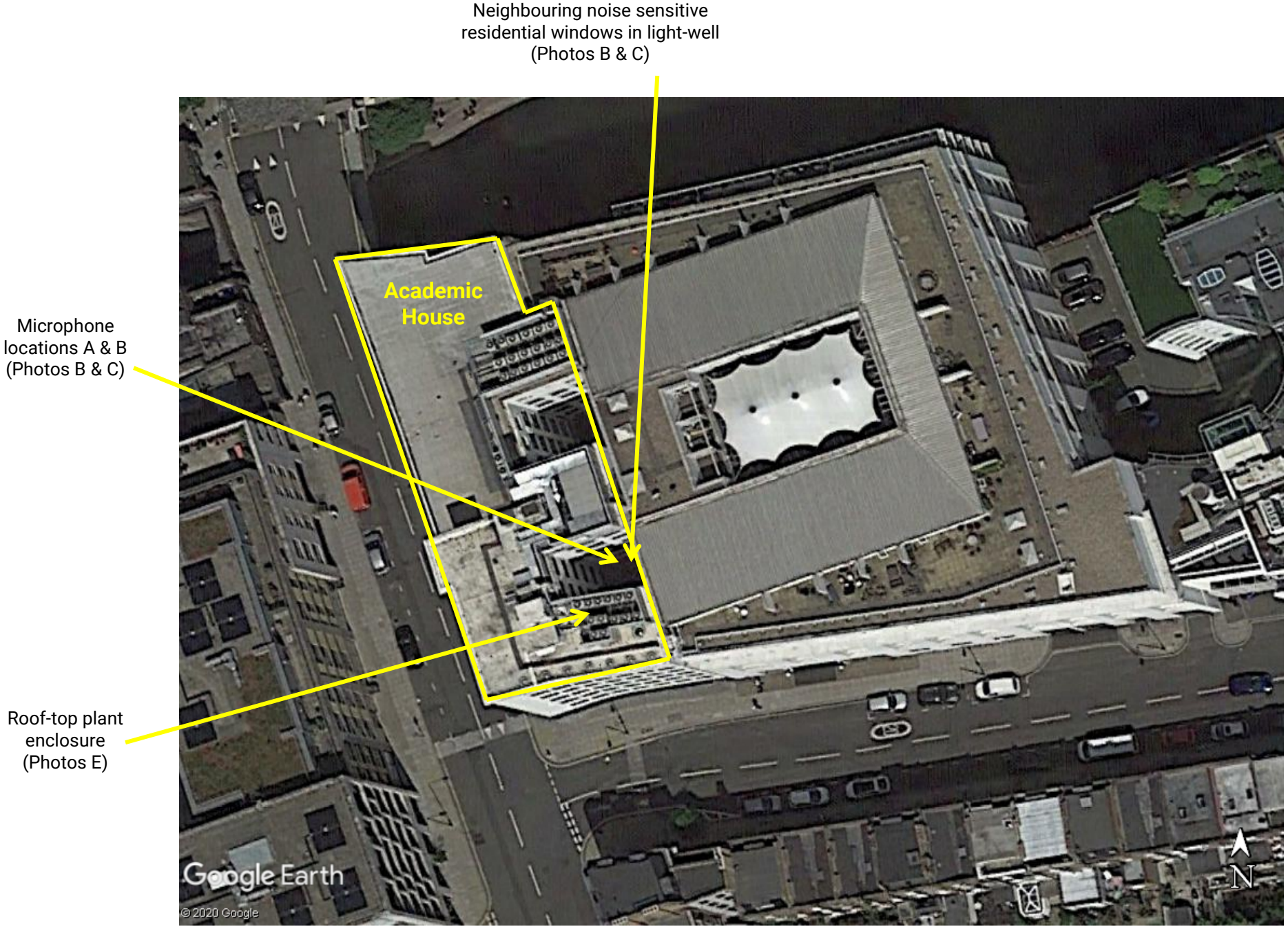

Photo F: Aerial view of site and surroundings at Academic House, 24-28 Oval Road, London NW1