RESULTS OF A DOUBLE 24-HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE FRONT AND THE REAR OF THE PROPERTY AT 1 ELY PLACE, LONDON EC1

A REPORT ON THE NOISE LEVELS IMPINGING ONTO THE FRONT FAÇADE OF THE BUILDING AND AN IMPACT ASSESSMENT OF PLACING NEW MECHANICAL PLANT AT THE REAR OF THE BUILDING

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Authorised for Release by : I J Marchant

Client	:	Peter Deer and Associates
Project	:	1 Ely Place, London EC1
Emtec Ref.	:	QF9836/PF6530/RP1B
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1.0. INTRODUCTION

This report details the results of two 24-hour noise level surveys, carried out in separate locations, at the front and to the rear of the property, at 1 Ely Place, London EC1. The two surveys were carried out concurrently, over the same 24 hour period.

The locations where the microphones were positioned were as follows,

- Location A – At the front of the building at first floor level.
- Location B – On the flat roof at the rear of the building at ground floor level.

The objectives of the survey were as follows:

- To measure the noise impinging onto the front façade of the building from the traffic using the main intersection at Holborn Circus

- To assess the proposal to install new mechanical plant at the rear of the building.

- To identify the nearest residential and commercial properties that might be affected by noise from the proposed new plant.

- To establish the existing background noise level outside the nearest affected properties.

- To recommend noise limits and any necessary mitigating measures in order to ensure that the operation of the new plant does not disturb the occupants of the nearest affected properties and meets the planning requirements of the local authority.

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

2.0. SITE DESCRIPTION

1 Ely Place is a 6 storey, commercial building occupying a site to the north of Holborn Circus between Ely Place and Hatton Gardens. The building is currently used as offices and is surrounded by other commercial buildings. The building fronts onto Ely Place to the east, Holborn Circus to the south and Hatton Garden to the west. Holborn Circus is a major road intersection with significant through traffic movements. The façade of the building which fronts onto Ely Place can be seen in the attached Photo A.

The south west façade of the building, which fronts onto Holborn Circus and Hatton Gardens, can be seen in the attached Photo B.

At the rear of the building is a light well area which is surrounded by other commercial buildings. The building has a large iron security cage around the ground floor flat roof area. Some items of plant, which presently serve No 1 Ely Place, are contained within this security cage and other items of plant serving No 1 Ely Place are located on the second floor roof and fixed to the rear wall of the building. The existing plant associated with No 1 Ely Place can be seen in Photos E and G.

A large number of other air cooled condensers, associated with the surrounding commercial office buildings, can be seen in the attached Photos E and F.

An aerial view of the site can be seen in the attached Photo H.

3.0. TEST INSTRUMENTATION

All measurement equipment used during the 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 No's.: 01121380, 01121378
Statistical Analysis Modules:	Built in module capable of computing the percentile levels L1, L10, L50, L90 and L99 and also the Leq level.
Acoustic Calibrator:	Bruel & Kjaer type 4231 electronic calibrator. Serial No.: 1934160

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

3.1. Existing Noise Climate

Road traffic travelling through Holborn Circus could be clearly heard during the manned periods at the start and the end of the survey, so the noise levels measured will include contributions from road vehicle movements.

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.

There are no overland railways nearby and no construction was being carried out in the vicinity, so the measured noise levels should be representative of normal background levels.

4.0. TEST PROCEDURE

The survey was conducted during a continuous 24-hour period from 13:06pm, at location A, on Wednesday the 26th of June 2019 to 13:46pm, at location B, on Thursday the 27th of June 2019.

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.

4.1. Measurement Positions

Location A – The microphone was mounted on a boom and extended horizontally from a first floor window in the south west front façade of the building. The microphone was approximately 1m from the outside face of the building. The location of the microphone can be seen in the attached Photos B, C, D and H.

Location B – The microphone was mounted on a vertical boom and attached to the outside of the iron security cage which covers the ground floor flat roof at the rear of the building. The microphone was approximately 3m above the ground floor flat roof and 3.5m from the rear walls of the building. The location of this microphone can be seen in the attached Photos E, F and H.

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

4.2. Weather Conditions

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

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

The microphone was protected throughout the tests by an acoustically transparent wind balloon.

5.0. RESULTS AND EVALUATION OF NOISE CRITERIA

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

The 'A' Weighted Leq levels measured over each 15 minute interval throughout the 24-hour period, denoted by LA_{eq} (15 mins), are displayed as bar graphs on the attached Sketches No QF/9836/T1 and -/T3 at the back of this report.

The 'A' Weighted percentile levels measured over each 15 minute interval, 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/9836/T2 and -/T4 at the back of this report.

5.1. Summary of Results

The table QF/9836/D1 below summarises the noise levels taken at microphone locations A and B over the 24-hour period in terms of the maximum and minimum Sound Pressure Levels recorded.

Table QF/9836/D1 – Summary of Maximum and Minimum Noise Levels

	Location	**LA_{eq}**	**LA_1**	**LA_{10}**	**LA_{50}**	**LA_{90}**	**LA_{99}**
Minimum	A	62dBA	70dBA	67dBA	59dBA	53dBA	51dBA
	B	51dBA	56dBA	52dBA	51dBA	50dBA	50dBA
Maximum	A	77dBA	91dBA	73dBA	69dBA	66dBA	64dBA
	B	61dBA	70dBA	64dBA	58dBA	56dBA	56dBA

The following table QF/9836/D2 states the minimum LA_{90} noise levels recorded during the time periods of 7.00am to 23.00pm (Daytime/Evening) and between 23.00pm and 7.00am (Night time)

Table QF/9836/D2 – Minimum LA_{90} Noise Levels – Daytime and Night time

Time of Day	**Location**	**LA_{90}**
Minimum Daytime/Evening (7am to 11pm)	A	62dBA
	B	51dBA
Minimum Night Time (11pm to 7am)	A	53dBA
	B	50dBA

5.2. Summary of the Local Authority's planning requirements regarding noise for noise sensitive properties

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 57dBL_{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 88dBL_{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 Leq (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.

5.3. Determination of noise sensitive property design criteria

We believe that the new plant, which we believe will consist of a number of air cooled condensing units, will not emit noise that will have a distinguishable discrete tone or emit noise that has distinctive impulses. The fans and compressors within the condenser units will be inverter controlled and will slowly ramp up to their operating speed. To comply with a green rating from the table above the new units 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 background noise levels measured during the 24 hour survey were:

- Location A – 53dBA
- Location B – 50dBA

The daytime/evening (7am to 11pm) minimum LA_{90} noise levels measured during the survey were:

- Location A – 62dBA
- Location B – 51dBA

We believe that the proposed mechanical plant will only run during the daytime/evening, and will not be operated during the night time period, so applying a rating level that is 10dB below the lowest daytime/evening and night time LA_{90} noise levels would give the following limiting rating LA_{eq} levels as listed in table QF/9836/D3 below:

Table QF/9836/D3 – Proposed Design Rating Levels

Existing Noise sensitive receptor	*Design Period*	*Location*	*Lowest measured background level*	***Proposed rating level***	*Proposed Local Authority criteria*
Dwellings	*Day*	*A*	*62dBA*	***52dBA***	*Green*
		B	*51dBA*	***41dBA***	*Green*
Dwellings	*Night*	*A*	*53dBA*	***43dBA***	*Green*
		B	*50dBA*	***40dBA***	*Green*

5.4. Determination of commercial design criteria

The use of the commercial premises, which surround the light well at the rear of the building, comprise generally of offices. It is therefore proposed that the recommendations given in BS8233:2014 be adhered to and that Table 2 of that standard be considered.

	Good	Reasonable
Open plan offices: $L_{Aeq,T}$	45dBA	50dBA

We propose that the lower of these rating levels is adopted, i.e. 45dBA. Assuming a 10dB noise reduction due to a partially open window the rating level at 1 metre external to the nearest affected office windows should be no more than 45dBA + 10dB = 55dBA.

5.5. Summary of external noise criteria

Based upon the results of the survey and the above design criteria we summarise the actual design rating levels to be adopted for this project in table QF/9836/D4: -

Table QF/9836/D4 – recommended design rating levels $L_{Ar,T}$

Type of premises	**Location**	**$L_{Ar,T}$ (7am – 11pm)**	**$L_{Ar,T}$ (11pm – 7am)**
Noise sensitive	A (Front)	52dBA	43dBA
	B (Rear)	41dBA	40dBA
Commercial	A & B	55dBA	-

6.0 DISCUSSION OF RESULTS – FAÇADE PERFORMANCE

The noise level impinging upon the front façade of the building can be assessed by considering the $LA_{eq\ (16hrs)}$ noise level over the daytime/evening period from 7am to 11pm and by also considering the $LA_{max\ (16hrs)}$ noise level as a worst case. These two noise levels are listed in Table QF/9836/D5 below:

Table QF/9836/D5 – Traffic Noise Assessment Noise Levels

Location	**$L_{Aeq(16hrs)}$ (7am – 11pm)**	**$L_{Amax(16hrs)}$ (7am – 11pm)**
A	69dBA	98dBA

Assuming that the building is to continue its current use as offices it will be necessary to maintain a noise level of 45dBA within the offices in order to achieve a good working environment under the guidelines of BS8233:2014 table 2 as referred to in our previous paragraph 5.4 above.

In order to achieve this for the average LAeq input of 69dBA a sound reduction index through the external glazing of 24dB will be required. This is not a particularly onerous specification for the windows and would be easily achieved by using proprietary double glazing. However if the maximum noise level of 98dBA is considered a sound reduction index of 53dB would be required and this would be an extremely difficult noise reduction to achieve.

Heavy duty double glazed windows, with well designed frames, can achieve a sound reduction index of between 34-38dB and if this type of window is installed into the front façade of the building the maximum noise level of 98dBA would be reduced to 60dBA. This would still be considered unacceptable for an office environment but would only occur on the odd occasion when a police car passes by or some other instantaneous high noise level occurs outside.

If a higher noise reduction is considered necessary it would require a heavy duty double glazed outer window with a substantial airgap behind, of up to 200mm to achieve 53dB, and a 10mm thick glass panel inside the void. The outside reveals of the void should be insulated with acoustic material, such as 45kg/m3 density mineral wool, retained by a perforated metal or perforated wooden covering.

7.0 DISCUSSION OF RESULTS – NOISE CONTROL OF CONDENSERS

It is proposed to replace the two existing vertical air cooled condensers under the iron security cage on the ground floor at the rear of the building. These existing condensers can be seen in the Photo E.

It is proposed to remove some of the existing condensers on the second floor roof platform which can be seen on the attached Photos F and G. New condensers will also be added to an extended plant platform that is to be erected on the second floor roof. The layout of the proposed condensers is shown on the attached Peter Deer/Emtec drawing No QF/9836/GA3

The following table QF/9836/D6 lists the Sound Pressure level of the retained and the proposed new condensers together with the natural and required attenuation to meet the limiting LAeq noise level of 55dBA at 1 metre from the adjacent office windows.

Table QF/9836/D6 – Noise Level of Condensers on the second floor plant platform at the rear of 1 Ely Place, operating on full duty, and the natural and required attenuation to 1 metre from Nearest Office Window

Equipment/Attenuation	Sound Pressure Level (dB ref 2 x 10^{-5} N/m^2)								dBA
	63	125	250	500	1k	2k	4k	8k	
3 off PURYEP450YNWA	79	69	72	70	65	60	55	51	71
2 off PURYEP250YNWA	81	66	65	62	55	52	52	45	64
4 off RXYSQ5	66	59	58	56	52	46	39	33	57
1 off PUZ-ZM100VKA	54	54	53	49	45	41	35	29	51
4 off PUZ-ZM71VHA	59	58	59	50	49	45	39	33	55
1 off PURY-P250YHMA	61	54	48	44	42	39	43	33	49
1m (free field) Reverberation	+5	+5	+5	+5	+5	+5	+5	+5	
Distance attenuation to 15 metres ($10\log(A_{14}/A_1)$)	-18	-18	-18	-18	-18	-18	-18	-18	
Barrier Effect Of Buildings (0.2m)	-6	-8	-10	-12	-14	-16	-18	-20	
Resultant SPL @ 1m from nearest residential window	64	50	50	46	39	32	26	19	
Emtec LAAC30-105 acoustic louvres and Emtec PAC30 plenum silencers on large units	-5	-7	-8	-12	-26	-34	-32	-22	
Attenuated Resultant SPL at Im from nearest window	59	43	42	34	13	-	-	-	38

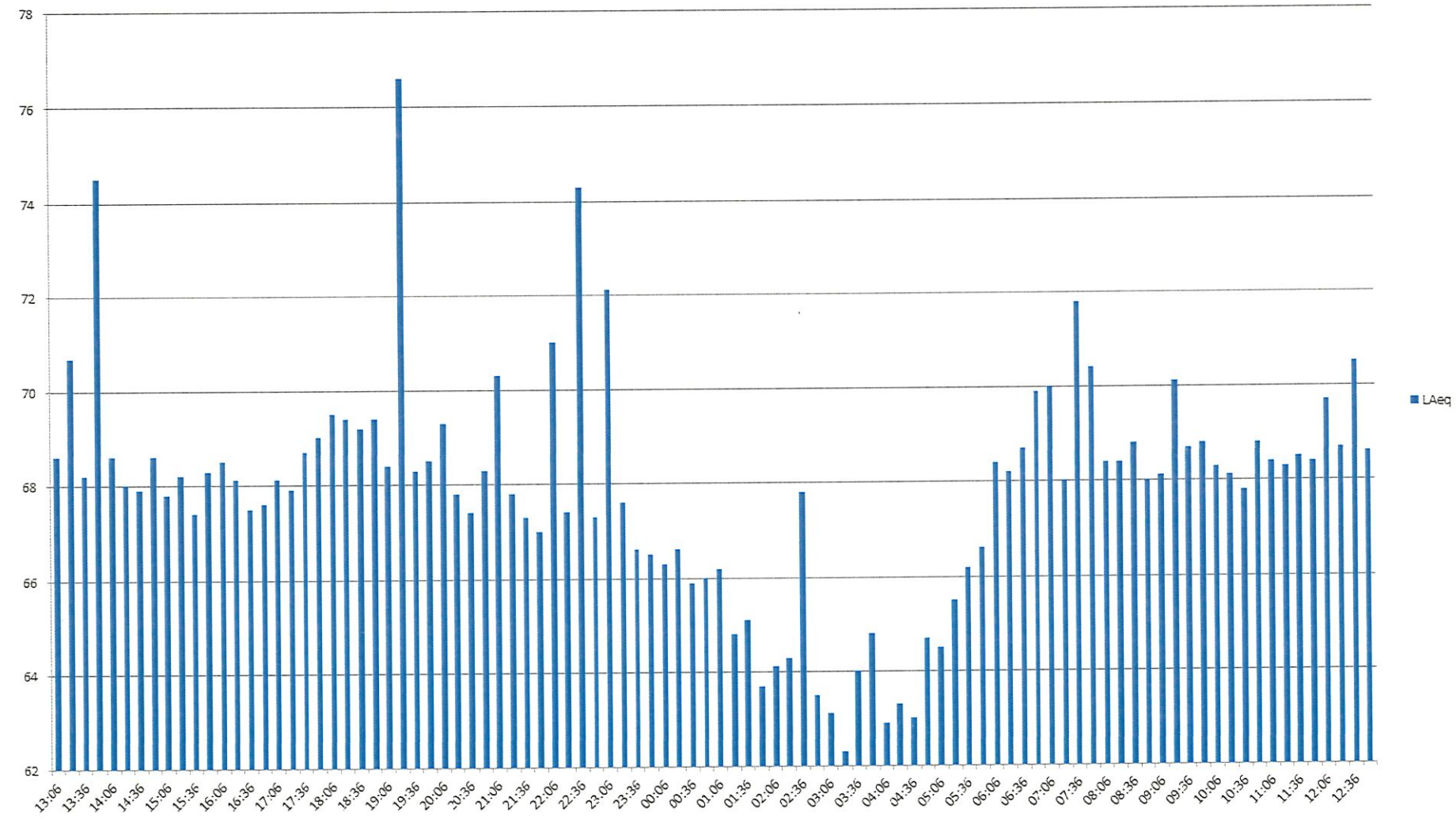
The above calculation shows that if a screen of Emtec LAAC30-105 acoustic louvres is placed around the condensers and Emtec PAC30 acoustic plenum silencers are positioned on top of the large vertical condensers then the limiting LAeq noise level of 41dBA will not be exceeded at 1 metre from the nearest noise sensitive residential office windows. This will allow daytime/evening operation of the condenser between the hours of 7am and 11pm.

The layout of the acoustic treatment is shown on the attached isometric sketch No QF/9836/GA3 which indicates the position of the necessary mitigation measures.

The condensers, in all locations, should be mounted onto neoprene-in-shear, anti-vibration mountings having a minimum static deflection of 6mm, so as to isolate any structural borne noise from entering the fabric of the building.

If the above recommendations are followed the installation of the new condensers will meet the planning requirements of the local council and should lead to no justifiable complaints under the guidelines of BS4142:2014.

Emtec Products Ltd
25th November 2019



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CLIENT: *Peter Deer and Associates*	*PF No: 6530*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: *1 Ely Place, London EC1N*	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/9836/T1*							

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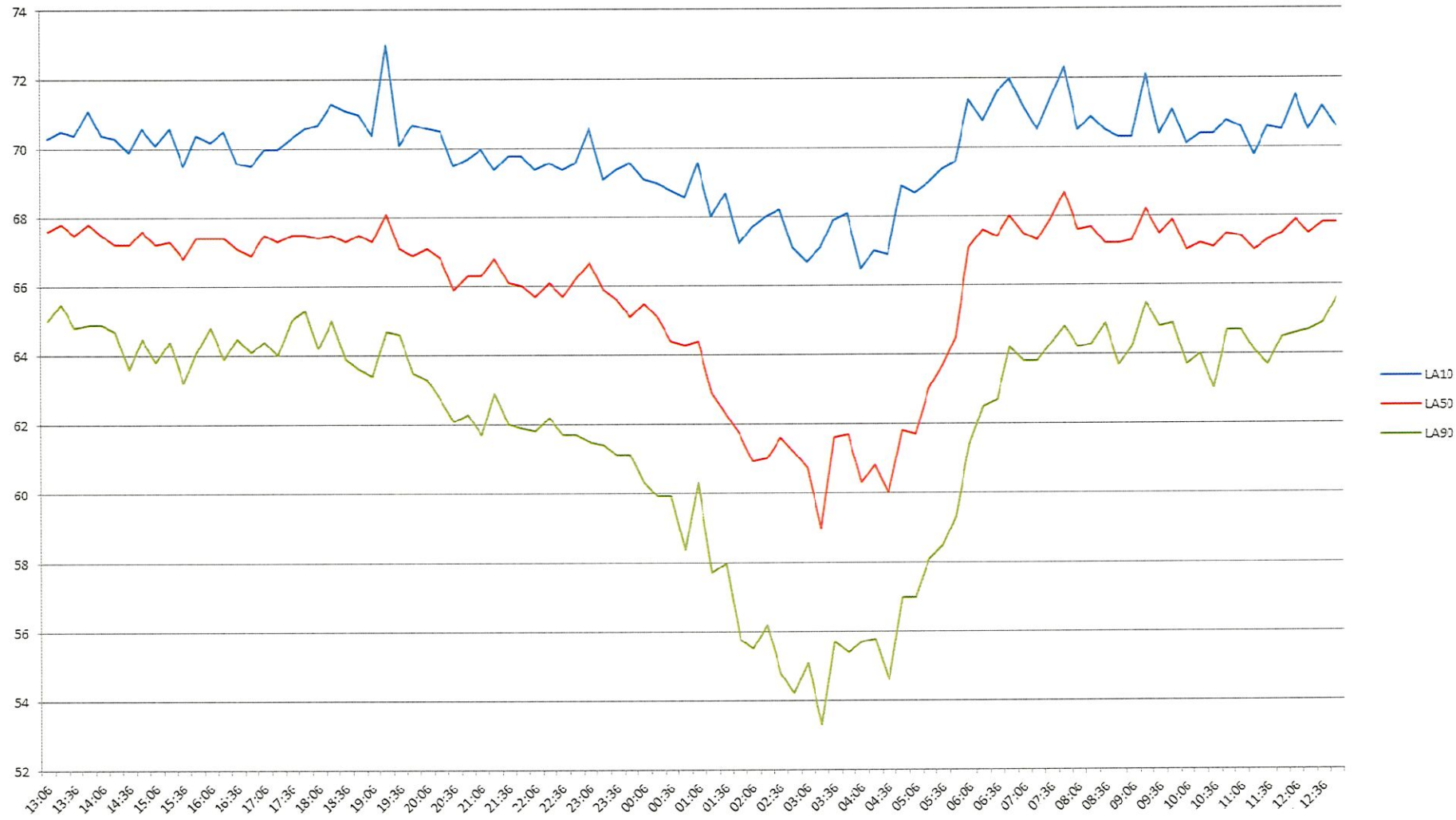

TITLE: LA10; LA50 & LA90 Levels (Location A)	ISSUE DATE: 03-07-2019				DRAWN BY: MGR	A	B	C	D	E	F	G	H
CLIENT: Peter Deer and Associates	PF No: 6530				APPROVED BY: MGR	REVISION							
PROJECT: 1 Ely Place, London EC1N	Q	A	M	I	DESIGN AUTH: MGR	SKETCH No. QF/9836/T2							

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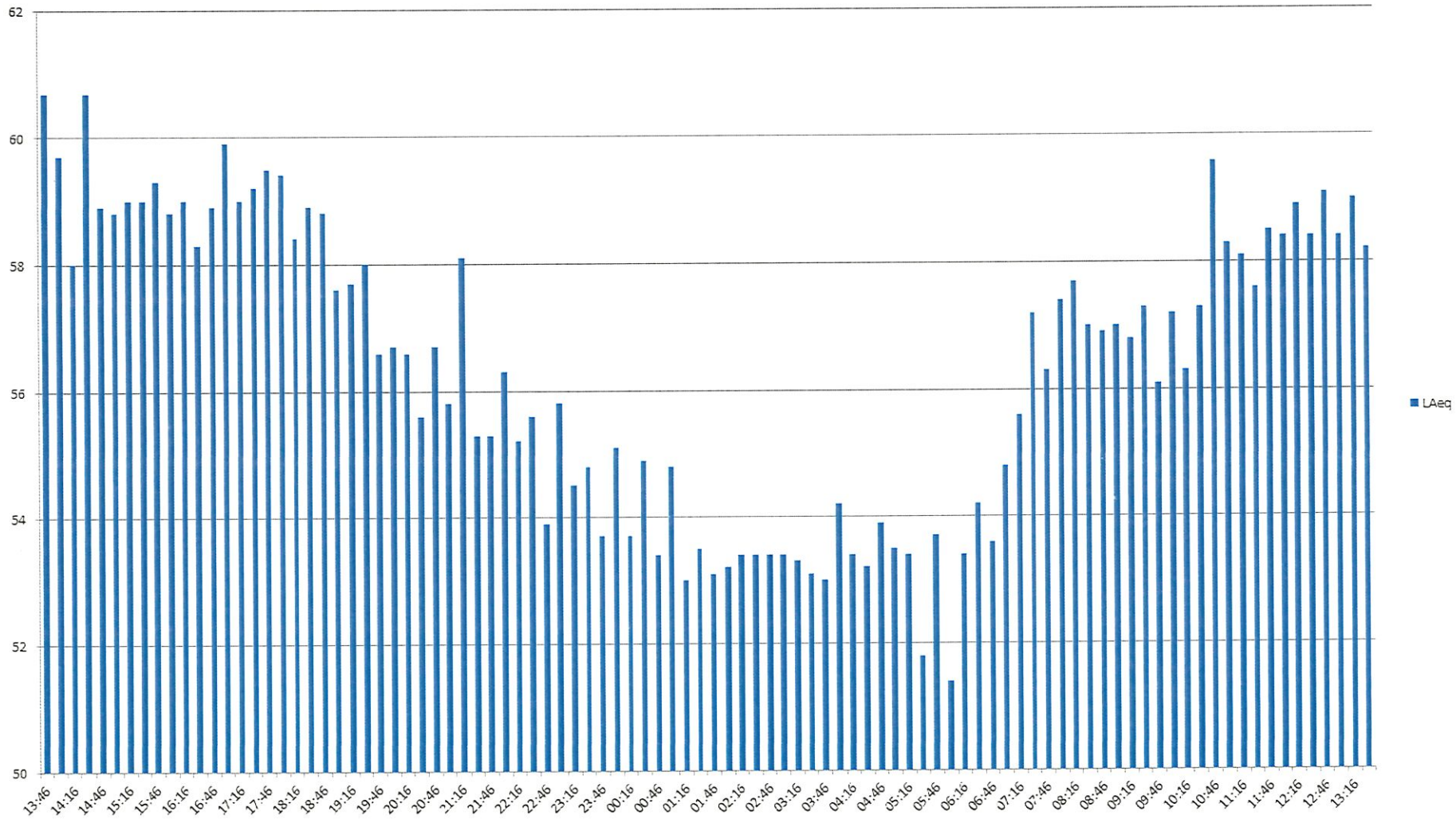

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CLIENT: *Peter Deer and Associates*	*PF No: 6530*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: *1 Ely Place, London EC1N*	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/9836/T3*							

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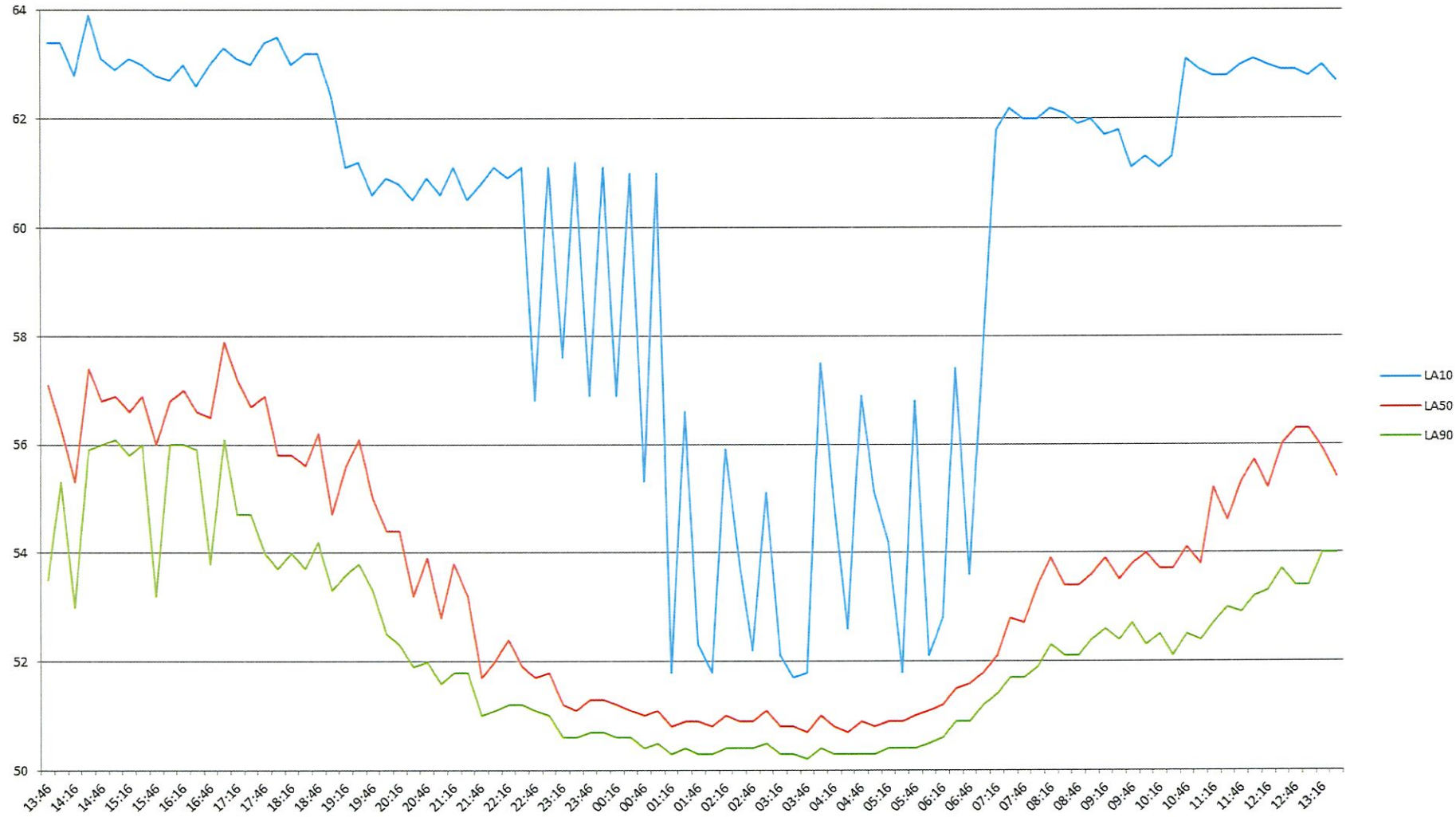

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CLIENT: Peter Deer and Associates	*PF No: 6530*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: 1 Ely Place, London EC1N	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/9836/T4*							

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APPENDIX 'A'

Raw Data – Noise Survey

26th June to 27th June 2019

Project: 1 Ely Place, London EC1N (Location A)
Ref: QF9836/PF6530/RP1
Client: Peter Deer and Associates
Date: 26th to 27th June 2019
Serial No: 1121380

Address	Start Time	LA_{eq}	LE	Lmax	Lmin	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
1	13:06	69	98	92	61	75	70	68	65	63
2	13:21	71	100	93	62	81	71	68	66	64
3	13:36	68	98	84	62	74	70	68	65	63
4	13:51	75	104	98	60	86	71	68	65	62
5	14:06	69	98	86	62	76	70	68	65	64
6	14:21	68	98	85	62	74	70	67	65	62
7	14:36	68	98	89	59	73	70	67	64	61
8	14:51	69	98	84	60	76	71	68	65	62
9	15:06	68	97	83	59	73	70	67	64	62
10	15:21	68	98	82	60	74	71	67	64	61
11	15:36	67	97	82	60	73	70	67	63	61
12	15:51	68	98	83	61	75	70	67	64	63
13	16:06	69	98	86	61	76	70	67	65	63
14	16:21	68	98	84	60	74	71	67	64	62
15	16:36	68	97	87	60	72	70	67	65	63
16	16:51	68	97	82	60	73	70	67	64	62
17	17:06	68	98	83	59	74	70	68	64	61
18	17:21	68	98	80	61	74	70	67	64	62
19	17:36	69	98	85	62	76	70	68	65	63
20	17:51	69	99	86	61	77	71	68	65	63
21	18:06	70	99	91	59	76	71	67	64	61
22	18:21	69	99	87	61	79	71	68	65	63
23	18:36	69	99	87	60	79	71	67	64	62
24	18:51	69	99	91	60	77	71	68	64	61
25	19:06	68	98	84	60	76	70	67	63	61
26	19:21	77	106	98	61	91	73	68	65	63
27	19:36	68	98	84	60	76	70	67	65	62
28	19:51	69	98	81	60	77	71	67	64	61
29	20:06	69	99	87	59	80	71	67	63	61
30	20:21	68	97	85	59	74	71	67	63	60
31	20:36	67	97	84	59	74	70	66	62	60
32	20:51	68	98	90	58	78	70	66	62	59
33	21:06	70	100	96	57	75	70	66	62	58
34	21:21	68	97	86	58	75	69	67	63	60
35	21:36	67	97	84	58	74	70	66	62	60
36	21:51	67	97	80	56	74	70	66	62	59
37	22:06	71	101	96	57	79	69	66	62	59
38	22:21	67	97	88	57	73	70	66	62	60
39	22:36	74	104	98	57	88	69	66	62	60
40	22:51	67	97	86	58	74	70	66	62	60
41	23:06	72	102	96	58	84	71	67	62	59
42	23:21	68	97	89	56	75	69	66	61	58
43	23:36	67	96	80	56	72	69	66	61	59
44	23:51	67	96	78	57	73	70	65	61	58
45	00:06	66	96	79	55	72	69	66	60	57
46	00:21	67	96	85	56	74	69	65	60	57
47	00:36	66	96	80	55	72	69	64	60	57
48	00:51	66	96	82	54	74	69	64	58	55
49	01:06	66	96	77	56	73	70	64	60	58
50	01:21	65	94	88	52	72	68	63	58	55
51	01:36	65	95	79	52	74	69	62	58	55
52	01:51	64	93	74	52	71	67	62	56	54

53	02:06	64	94	81	51	73	68	61	56	52
54	02:21	64	94	77	50	73	68	61	56	53
55	02:36	68	97	90	49	77	68	62	55	51
56	02:51	64	93	76	51	72	67	61	54	52
57	03:06	63	93	75	51	71	67	61	55	53
58	03:21	62	92	72	50	70	67	59	53	51
59	03:36	64	94	78	52	72	68	62	56	53
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63	04:36	63	93	74	50	70	67	60	55	51
64	04:51	65	94	80	53	73	69	62	57	55
65	05:06	65	94	80	52	72	69	62	57	54
66	05:21	66	95	80	55	73	69	63	58	56
67	05:36	66	96	83	53	75	69	64	59	55
68	05:51	67	96	84	55	75	70	65	59	56
69	06:06	68	98	79	56	76	71	67	61	59
70	06:21	68	98	80	57	74	71	68	63	59
71	06:36	69	98	82	57	76	72	67	63	60
72	06:51	70	100	84	60	80	72	68	64	61
73	07:06	70	100	92	60	80	71	68	64	61
74	07:21	68	98	80	59	74	71	67	64	61
75	07:36	72	101	98	60	81	71	68	64	62
76	07:51	70	100	88	62	79	72	69	65	63
77	08:06	68	98	82	60	75	71	68	64	62
78	08:21	68	98	81	60	74	71	68	64	62
79	08:36	69	98	91	61	75	71	67	65	63
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85	10:06	68	98	83	60	77	70	67	64	61
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87	10:36	68	97	82	59	74	70	67	63	61
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92	11:51	68	98	84	61	75	71	68	65	62
93	12:06	70	99	88	61	80	72	68	65	63
94	12:21	69	98	86	61	77	71	68	65	63
95	12:36	71	100	92	61	82	71	68	65	63
96	12:51	69	98	83	61	75	71	68	66	63

Project: 1 Ely Place, London EC1N (Location B)
Ref: QF9836/PF6530/RP1
Client: Peter Deer and Associates
Date: 26th to 27th June 2019
Serial No: 1121378

Address	Start Time	LA_{eq}	LE	Lmax	Lmin	LA_{1}	LA_{10}	LA_{50}	LA_{90}	LA_{99}
1	13:46	61	90	83	51	69	63	57	54	52
2	14:01	60	89	78	54	65	63	56	55	55
3	14:16	58	88	68	52	66	63	55	53	52
4	14:31	61	90	68	55	67	64	57	56	56
5	14:46	59	89	68	54	64	63	57	56	55
6	15:01	59	88	65	55	64	63	57	56	56
7	15:16	59	89	66	54	64	63	57	56	55
8	15:31	59	89	65	55	64	63	57	56	56
9	15:46	59	89	76	52	69	63	56	53	52
10	16:01	59	88	64	55	63	63	57	56	56
11	16:16	59	89	65	55	64	63	57	56	55
12	16:31	58	88	67	55	64	63	57	56	56
13	16:46	59	89	66	52	64	63	57	54	53
14	17:01	60	90	68	53	65	63	58	56	54
15	17:16	59	89	67	52	64	63	57	55	54
16	17:31	59	89	68	53	64	63	57	55	54
17	17:46	60	89	68	52	65	63	57	54	53
18	18:01	59	89	69	52	66	64	56	54	53
19	18:16	58	88	66	52	64	63	56	54	53
20	18:31	59	89	73	52	65	63	56	54	53
21	18:46	59	88	68	52	64	63	56	54	53
22	19:01	58	87	65	51	64	62	55	53	52
23	19:16	58	87	65	52	62	61	56	54	53
24	19:31	58	88	64	52	62	61	56	54	53
25	19:46	57	86	65	51	62	61	55	53	52
26	20:01	57	86	65	51	62	61	54	53	52
27	20:16	57	86	62	51	62	61	54	52	52
28	20:31	56	85	63	50	62	61	53	52	51
29	20:46	57	86	67	51	63	61	54	52	51
30	21:01	56	85	64	50	62	61	53	52	51
31	21:16	58	88	77	51	68	61	54	52	51
32	21:31	55	85	63	50	62	61	53	52	51
33	21:46	55	85	62	50	61	61	52	51	51
34	22:01	56	86	67	50	63	61	52	51	51
35	22:16	55	85	63	50	62	61	52	51	51
36	22:31	56	85	66	50	62	61	52	51	51
37	22:46	54	84	63	50	62	57	52	51	51
38	23:01	56	85	65	50	62	61	52	51	51
39	23:16	55	84	63	50	62	58	51	51	50
40	23:31	55	84	63	50	62	61	51	51	50
41	23:46	54	83	63	50	62	57	51	51	50
42	00:01	55	85	79	50	62	61	51	51	50
43	00:16	54	83	63	50	62	57	51	51	50
44	00:31	55	85	63	50	62	61	51	51	50
45	00:46	53	83	63	49	62	55	51	50	50
46	01:01	55	84	63	50	62	61	51	51	50
47	01:16	53	83	63	49	62	52	51	50	50
48	01:31	54	83	63	50	62	57	51	50	50
49	01:46	53	83	62	50	62	52	51	50	50
50	02:01	53	83	63	49	62	52	51	50	50
51	02:16	53	83	63	50	62	56	51	50	50
52	02:31	53	83	63	50	62	54	51	50	50

53	02:46	53	83	64	50	62	52	51	50	50
54	03:01	53	83	63	50	62	55	51	51	50
55	03:16	53	83	64	50	62	52	51	50	50
56	03:31	53	83	63	49	62	52	51	50	50
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61	04:46	54	84	73	50	62	57	51	50	50
62	05:01	54	83	63	49	62	55	51	50	50
63	05:16	53	83	65	49	62	54	51	50	50
64	05:31	52	81	73	50	59	52	51	50	50
65	05:46	54	83	63	50	62	57	51	50	50
66	06:01	51	81	63	50	56	52	51	51	50
67	06:16	53	83	63	50	62	53	51	51	50
68	06:31	54	84	67	50	62	57	52	51	50
69	06:46	54	83	71	50	63	54	52	51	51
70	07:01	55	84	64	50	63	58	52	51	51
71	07:16	56	85	66	50	63	62	52	51	51
72	07:31	57	87	69	51	63	62	53	52	51
73	07:46	56	86	64	51	63	62	53	52	51
74	08:01	57	87	64	51	63	62	53	52	51
75	08:16	58	87	64	51	63	62	54	52	52
76	08:31	57	87	64	51	63	62	53	52	52
77	08:46	57	87	65	51	63	62	53	52	52
78	09:01	57	87	66	51	63	62	54	52	52
79	09:16	57	86	65	52	63	62	54	53	52
80	09:31	57	87	64	51	62	62	54	52	52
81	09:46	56	86	63	52	62	61	54	53	52
82	10:01	57	87	70	51	62	61	54	52	52
83	10:16	56	86	64	51	63	61	54	53	52
84	10:31	57	87	64	51	63	61	54	52	52
85	10:46	60	89	75	51	70	63	54	53	52
86	11:01	58	88	66	51	64	63	54	52	52
87	11:16	58	88	65	52	64	63	55	53	52
88	11:31	58	87	67	52	64	63	55	53	52
89	11:46	59	88	69	52	64	63	55	53	52
90	12:01	58	88	66	52	64	63	56	53	53
91	12:16	59	89	74	52	64	63	55	53	53
92	12:31	58	88	68	52	64	63	56	54	53
93	12:46	59	89	65	52	64	63	56	53	53
94	13:01	58	88	72	52	63	63	56	53	53
95	13:16	59	89	65	52	64	63	56	54	53
96	13:31	58	88	65	52	63	63	55	54	53

APPENDIX 'B'

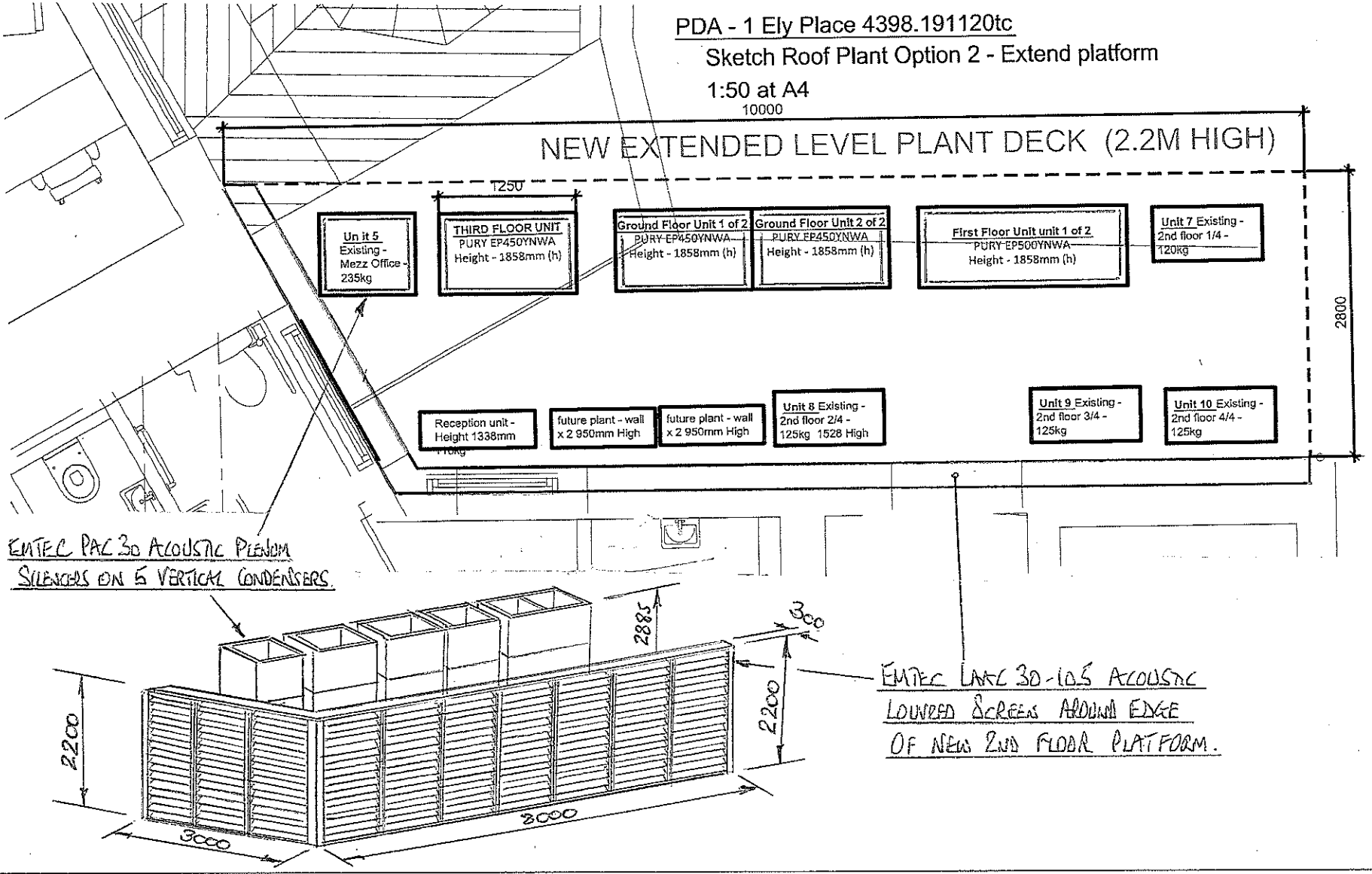
Photos and Sketch

Revision	Issued	Date

PDA - 1 Ely Place 4398.191120tc

Sketch Roof Plant Option 2 - Extend platform

1:50 at A4



Project	NO. 1 ELY PLACE, LONDON.					
Client	PETER DEER & ASSOCIATES.					
Designed by	Checked by	Approved by - date	Filename	Date drawn	Scale	
MGR	MGR	25/11/2019	QF 9836	25/11/2019	NTS.	

Title: LAYOUT OF EMTEC ACOUSTIC TREATMENT TO 2ND FLOOR PLANT PLATFORM.

ALL DIMENSIONS IN mm UNLESS STATED

EMTEC

Unit L, Turn Pike Way, High Wycombe, Buckinghamshire. HP12 3TF
Telephone : 020 8648 3031 www.emtecproducts.co.uk

Drawing Number: QF/9836/GA3.

Revision: -

Works order No.: PF

Microphone in Location A

Photo B – View of south west corner façade of 1 Ely Place, London EC1 facing onto Holborn Circus

Photo A – View of façade of 1 Ely Place, London EC1 facing onto Ely Place

Microphone in Location A

Photo C – View of microphone in location A looking down Holborn Viaduct

Microphone in Location A

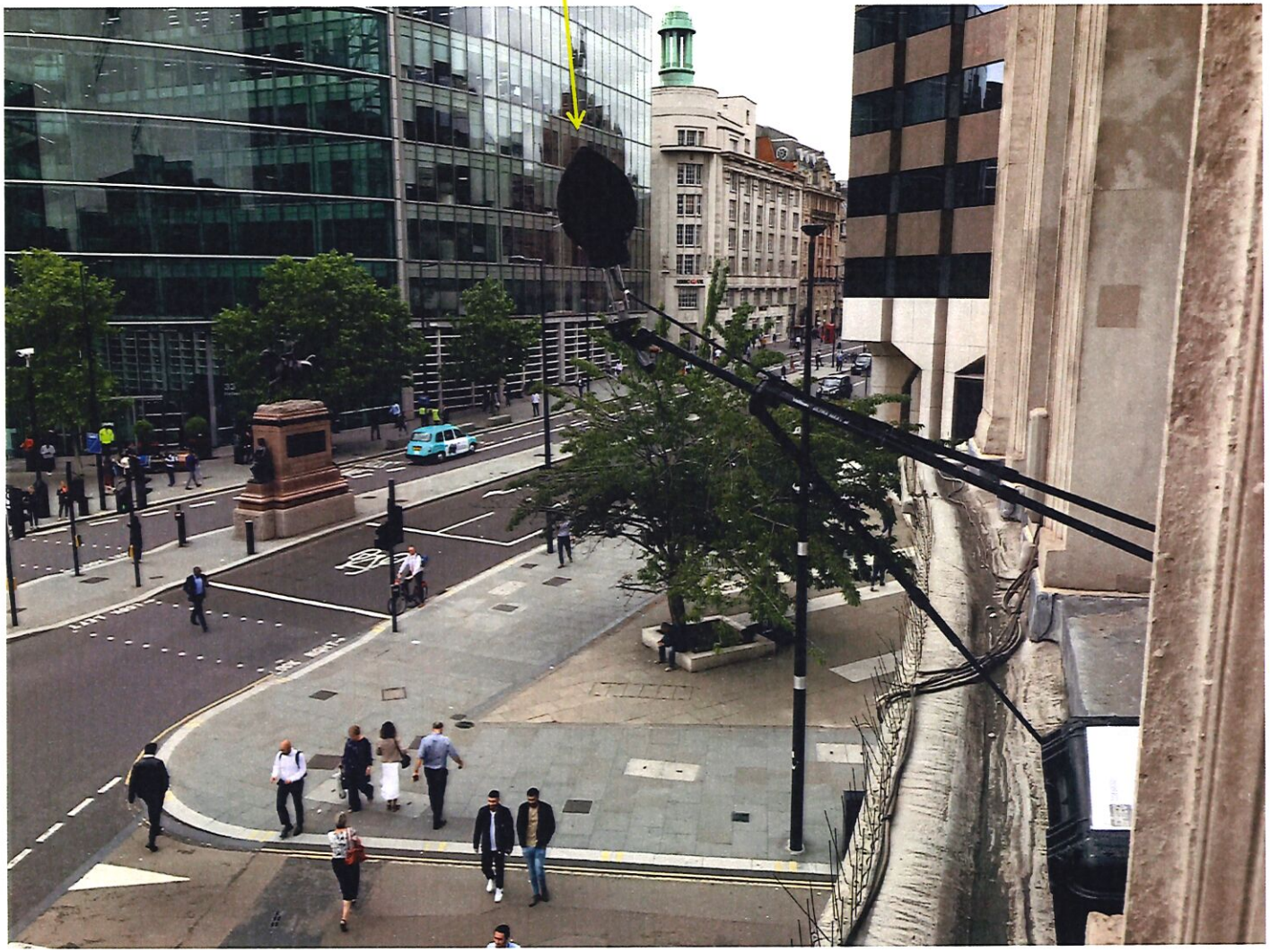


Photo D – View of microphone in location A looking up Holborn

Photo E – View of rear of 1 Ely Place showing security cage at ground floor roof level and existing vertical condensers

Photo F – View to the rear of 1 Ely Place, looking North, showing the existing condensers at second floor level

Existing condensers serving No. 1 Ely Place to be replaced and/or repositioned and contained within new acoustic screening

Photo G – View of the rear of 1 Ely Place showing existing plant at second floor level serving building

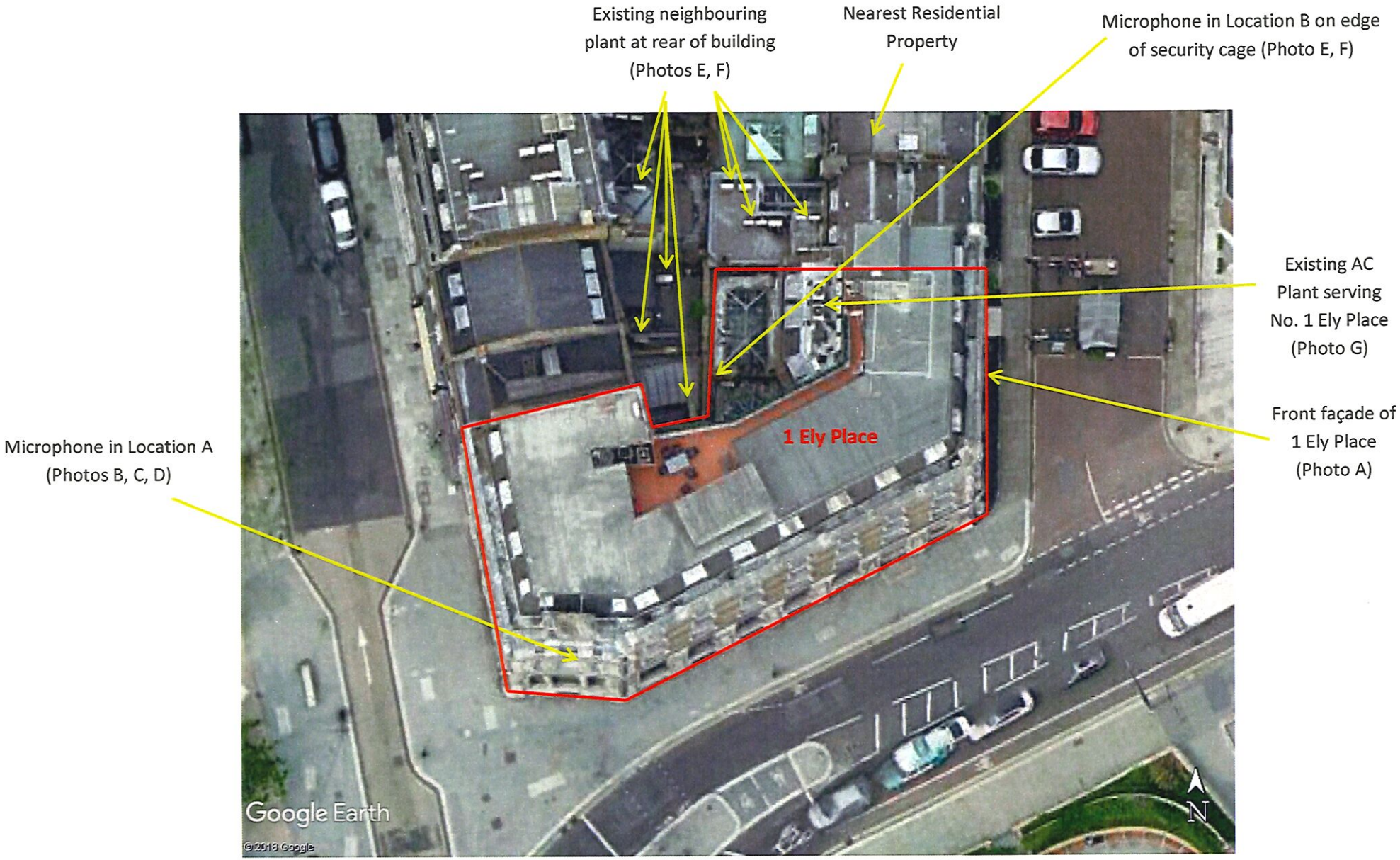


Photo H – Aerial view of site and surroundings of 1 Ely Place, London EC1