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RESULTS OF A DOUBLE 24-HOUR NOISE LEVEL SURVEY
CARRIED OUT AT THE FRONT AND REAR OF THE ROOF
OF THE OFFICE BUILDING AT 40-42 PARKER STREET, LONDON WC2
AND A REPORT ON THE NOISE CONTROL MEASURES
REQUIRED TO MINIMISE THE NOISE IMPACT
OF THE PROPOSED NEW EXTERNAL PLANT

Test Engineer : M G Roberts

Report Author :



M G Roberts

Authorised for
Release by :



I J Marchant

Client: Peter Deer & Associates/Gazelle London
Project: 40-42 Parker Street, London WC2
Emtec Ref: QF9086/PF5990/RP3B
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1.0. INTRODUCTION

This report details the results of a double 24-hour noise survey carried out at the front and the rear of the existing flat roof area of the office building located at 40-42 Parker Street, London WC2.

The objectives of this survey were as follows:

- To assess the proposal to install new external plant on the proposed new roof area of the building.
- To establish the existing background noise level outside the nearest affected properties.
- To recommend noise limits and any necessary measures to ensure that the operation of the new plant does not disturb the occupants of the nearest affected properties.

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

- 1.0. INTRODUCTION
- 2.0. SITE DESCRIPTION
- 3.0. TEST INSTRUMENTATION
- 4.0. TEST PROCEDURE
- 5.0. RESULTS AND EVALUATION OF NOISE CRITERIA
- 6.0. DISCUSSION OF RESULTS

2.0. SITE DESCRIPTION

The property at 40-42 Parker Street is a four storey office block with brick facades and metal windows as can be seen in the front view of the building in Photo A.

The properties around the site are generally office buildings but a new residential developments are being built directly behind and immediately opposite the front of the building and a flat exists to the right hand side of the building. See the attached Photos B, C, F and G for the location of the residential properties.

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 Meter fitted with a Rion type UC-59 ½ inch condenser microphone.
Serial No. 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 surveys and found to be, in all cases, +/- 0.1 dB from the reference source.

3.1. Existing Noise Climate

Road traffic travelling on nearby Kingsway, Great Queen Street and Parker Street could be heard during the manned periods at the start and the 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.

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

There was construction work being carried out on the office building directly behind the site so daytime noise levels will be affected by the noise from these operations.

Existing air conditioning condensers are mounted onto the rear face of the roof plantroom (see Photo G) and these units were operating up until 3pm after which time they were switched off.

We judged that during the latter part of the day and during the overnight period the noise road traffic noise would be the dominant source of noise.

4.0. TEST PROCEDURE

The surveys were conducted during a continuous 24-hour period from approximately 8:40am on Monday the 26th of June 2017 to 8:40am on Tuesday the 27th of June 2017.

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: -

- LA₁ - The Sound Pressure Level exceeded for 1% of the measurement period.
- LA₁₀ - The Sound Pressure Level exceeded for 10% of the measurement period.
- LA₅₀ - The Sound Pressure Level exceeded for 50% of the measurement period.
- LA₉₀ - The Sound Pressure Level exceeded for 90% of the measurement period.
LA90 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).
- LA₉₉ - 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

Noise levels were measured at two positions on the roof of the building as indicated on the aerial view photograph B attached. The photographs C and D show the microphone at the front of the roof and photographs E and F show the rear microphone location.

The microphones were both fitted onto booms that were attached to the metal railings at the front and rear of the roof and were both approximately 2 metres above the roof surface. The rest of the measurement equipment was located in weatherproof enclosures with low impedance cables running from the microphones to the instrumentation.

4.2. Weather Conditions

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

Weather daytime: -	Bright and Clear	Weather night time: -	Clear
Wind daytime: -	Light	Wind night time: -	Light

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/8537/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/8537/T2 and -/T4 at the back of this report.

5.1. Summary of Results

The tables QF/9086/D1 and -/D2 below summarise the noise levels taken over the 24-hour period in the two locations in terms of the maximum and minimum Sound Pressure Levels recorded.

Table QF/9086/D1 – Summary of Maximum and Minimum Noise Levels at front of roof

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	54.2 dBA	55.3 dBA	54.7 dBA	54.1 dBA	53.7 dBA	53.3 dBA
Maximum	66.0 dBA	75.1 dBA	69.4 dBA	65.1 dBA	61.7 dBA	59.0 dBA

Table QF/9086/D2 – Summary of Maximum and Minimum Noise Levels at rear of roof

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	57.7 dBA	58.5 dBA	58.1 dBA	57.7 dBA	57.3 dBA	56.9 dBA
Maximum	70.4 dBA	85.0 dBA	73.6 dBA	61.9 dBA	59.9 dBA	59.3 dBA

The following table QF/9086/D3 states the minimum LA_{90} noise levels recorded in the two positions in the time periods of 7.00am to 23.00pm (Daytime) and between 23.00pm and 7.00am (Night time)

Table QF/9086/D3 – Minimum LA₉₀ Noise Levels – Daytime and Night time

Time of Day	Front of Building LA ₉₀	Rear of Building LA ₉₀
Minimum Daytime (7am to 11pm)	54.0dBA	57.3dBA
Minimum Night Time (11pm to 7am)	53.7dBA	57.4dBA

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

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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 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 will consist of up to ten number condensing units will not emit noise that has a distinguishable discrete continuous note, or emit noise that that has distinct impulses. The condensers will be inverter controlled and will slowly ramp up to their operating condition. To comply with a green rating from the table above the new units should have a combined Sound Pressure Level 10dB below the lowest LA90 background noise level at 1 metre from the nearest noise sensitive window.

The lowest background noise levels measured during the survey were 54.0dBA and 57.3dBA at the front and rear of the building during the daytime and 53.7dBA and 57.4dBA during the nighttime. The proposed plant will only run during the daytime period and applying a rating level that is 10dB below the lowest daytime noise level would give a limiting daytime rating level of 44.0dBA.

We therefore propose that the following rating levels are applied:

Table QF/9086/D4 – Proposed Design Rating Levels

<i>Existing Noise sensitive receptor</i>	<i>Assessment Location</i>	<i>Design Period</i>	<i>Lowest measured background level</i>	<i>Proposed rating level</i>	<i>Proposed Local Authority criteria</i>
<i>Dwellings</i>	<i>Garden used for main amenity (free field) and Outside living or dining or bedroom window (façade)</i>	<i>Day</i>	<i>Front: 54.0dBA Rear: 57.3dBA</i>	<i>Front: 44.0dBA Rear: 47.3dBA</i>	<i>Green</i>
<i>Dwellings</i>	<i>Outside bedroom window (façade)</i>	<i>Night</i>	<i>Front: 53.7dBA Rear: 57.3dBA</i>	<i>Front: 43.7dBA Rear: 47.4dBA</i>	<i>Green</i>

5.4. Determination of commercial design criteria

The use of the commercial premises that are to the left of the site consist of offices. It is therefore proposed that the recommendations given in BS8233:2014, Table 6 be considered.

	Good 35dBA	Reasonable 40dBA
Executive office: $L_{Aeq,T}$		

We propose that the lower of these rating levels is adopted, i.e. 35dBA.

Assuming a 10dB noise reduction due to a partially open window, as per the lower limit of the range given in BS8233:2014 table 6, the rating level at 1 metre external to the nearest affected office windows would be 35dBA + 10dB = 45dBA.

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/9086/D5: -

Table QF/9086/D5 – recommended design rating levels $L_{Ar,T}$

Type of premises	Front $L_{Ar,T}$ (7am – 11pm)	Front $L_{Ar,T}$ (11pm – 7am)	Rear $L_{Ar,T}$ (7am – 11pm)	Rear $L_{Ar,T}$ (11pm – 7am)
Noise sensitive	44.0dBA	43.7dBA	47.3dBA	47.4dBA
Commercial	45 dBA	-	45dBA	-

6.0. DISCUSSION OF RESULTS

During the daytime period of the surveys the mechanical plant associated with the building was operating. It was agreed with the building management that the plant would not be operating from 3pm until 8am.

It can be seen from the LA_{90} background noise levels at the front of the site that the levels dropped after 5pm and by 8pm were at about their lowest level and remained at this level until early morning. After 7am the levels rose significantly.

The LA_{90} levels at the rear of the site fell after 5pm and remained low until after 7am the next morning.

The LA_{90} background noise level between 7.00pm and 10.00pm is therefore considered representative of the normal daytime LA_{90} background noise level in the area without the

plant running or without the influence of construction noise. We therefore consider the criteria set of 10dB below the lowest LA_{90} level to be valid for designing the new plant that will be operational during extended office hours.

The nearest noise sensitive properties were identified as the front windows of the new residential development opposite the front façade of 40-42 Parker Street, the window to the right hand side of the back of the property and the windows of the new residential development directly behind the site, all as indicated on the attached Photos B, C, F and G.

It is proposed to add an additional storey onto the top of the building and install new air cooled condensers onto the fifth floor roof.

The existing wall mounted condensers (seven Daikin Multi Inverter condensers and two Fujitsu split condensers) are to be removed and replaced by ten new LG ARUB060GSS4 type condensers. These condensers are to be positioned on the roof as shown on our attached sketch No QF/9086/GA1(B) and as generally indicated on Peter Deer's drawing No 4204 M/203 T.

The free field Sound Pressure levels of these condensers are 57dBA at a distance of 1 metre in free field conditions.

Allowing for ten (+10dB) and for reverberation (+3dB) and a distance correction of $10 \log A_{10}/A_1 = -16\text{dB}$ for the 11 metre distance between the units and the residential window to the right of the site we arrive at a noise level of 54dBA at 1 metre from this window.

This noise level of the condensers is therefore 10.3dB above the established noise criteria, for the front of the building, as listed in table QF/9086/D5, of 43.7dBA to allow 24 hour operation of the condensers.

The distance between the condensers and the façade of the new residential development on the other side of Parker Street is 17 metres and some of the condensers will benefit from being shielded by the new plantroom structure. The noise level at 1 metre from the windows of this development will be $57+10+3-10\log A_{16}/A_1 = 63\text{dBA}$, which is 15.7dB more than the noise criteria of 47.3dBA at the rear of the building in order to allow 24 hour operation of the condensers.

The windows of the new residential development at the rear of the building are only some 4 metres from the condensers and applying the same multiple, reverberation and distance corrections for 3 metres we arrive at $57+10+3-10\log A_3/A_1 =$ a noise level of 64dBA at 1 metre from the office windows. This is 9dB higher than the noise criteria laid down in table QF/9086/D5 of 55dBA.

We would therefore recommend that a high performance acoustic louvred screen be placed along the rear portion of the proposed screen around the condensers and a standard acoustic louvre be located to the sides and to the front sections of the screen. The side and front louvres should provide a minimum noise reduction of 15dB and the rear section of the screen should provide 20dB attenuation.

The nearest office window is in the tower block to the left hand side of the site and is some 24 metres from the nearest condenser. Applying the same corrections we arrive at $57+10+3-10\log A_{23}/A_1 = 47\text{dBA}$. This is 2dB above the criteria of 45dBA.

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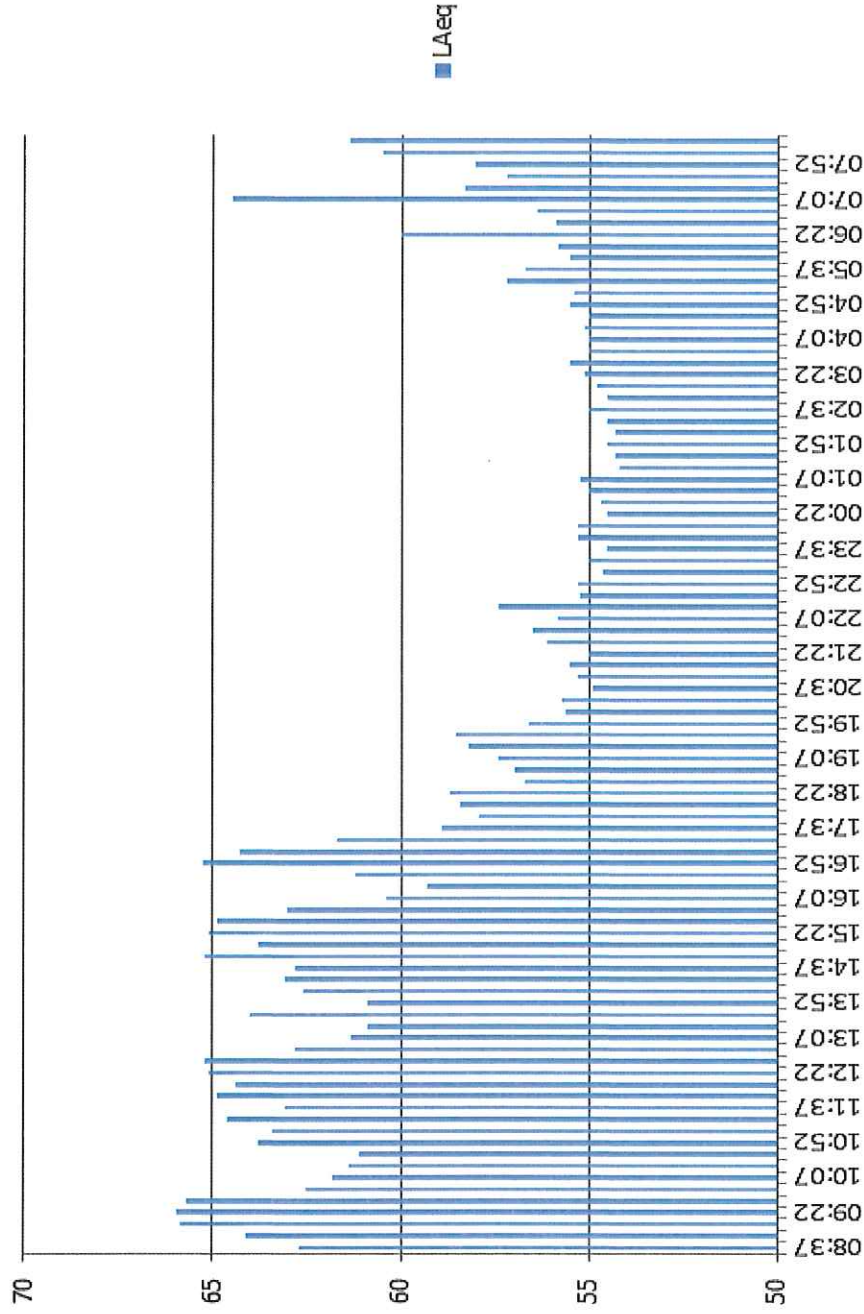
The attached Peter Deer drawing No 4204 M/203 T1 shows the extent of the acoustic louvred screen. The screen should be at least 200mm higher than the height of the condensers at the front and sides and at least 400mm higher on the rear section of the screen. Our attached sketch No.QF/9086/GA1(B) outlines the acoustic louvred screen.

In order to achieve the required level of noise reduction it will be necessary to form the screen from acoustic louvres having the following minimum noise reduction

Type/Location	Sound Reduction Index (dB ref $2 \times 10^{-5} \text{ N/m}^2$)							
	63	125	250	500	1k	2k	4k	8k
Side & Front sections -Emtec type LAAC15 Acoustic Louvres	5	7	9	12	18	19	15	15
Rear section – Emtec type LAAC30/105 Acoustic Louvres	6	9	11	17	25	32	30	23

If the condenser units are installed as shown on our attached sketch No.QF/9086/GA1(B) and in line with the Peter Deer drawing No.4204 M/203 T1 and the acoustic louvred screen is constructed from Emtec LAAC15 and Emtec LAAC30/105 acoustic louvres then the noise level at both the nearest residential, and the nearest office window, will be less than the established maximum allowable LAeq level listed in table QF/9086/D5 and the installation will meet the requirements of Camden Council's current planning requirements.

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19th June 2018



TITLE:
LAeq Levels

CLIENT: Peter Deer & Associates

PROJECT: 40-42 Parker Street –
Front of Property

ISSUE DATE:
28/06/2017

PF No: 5990

Q A M I

DRAWN BY:
MGR

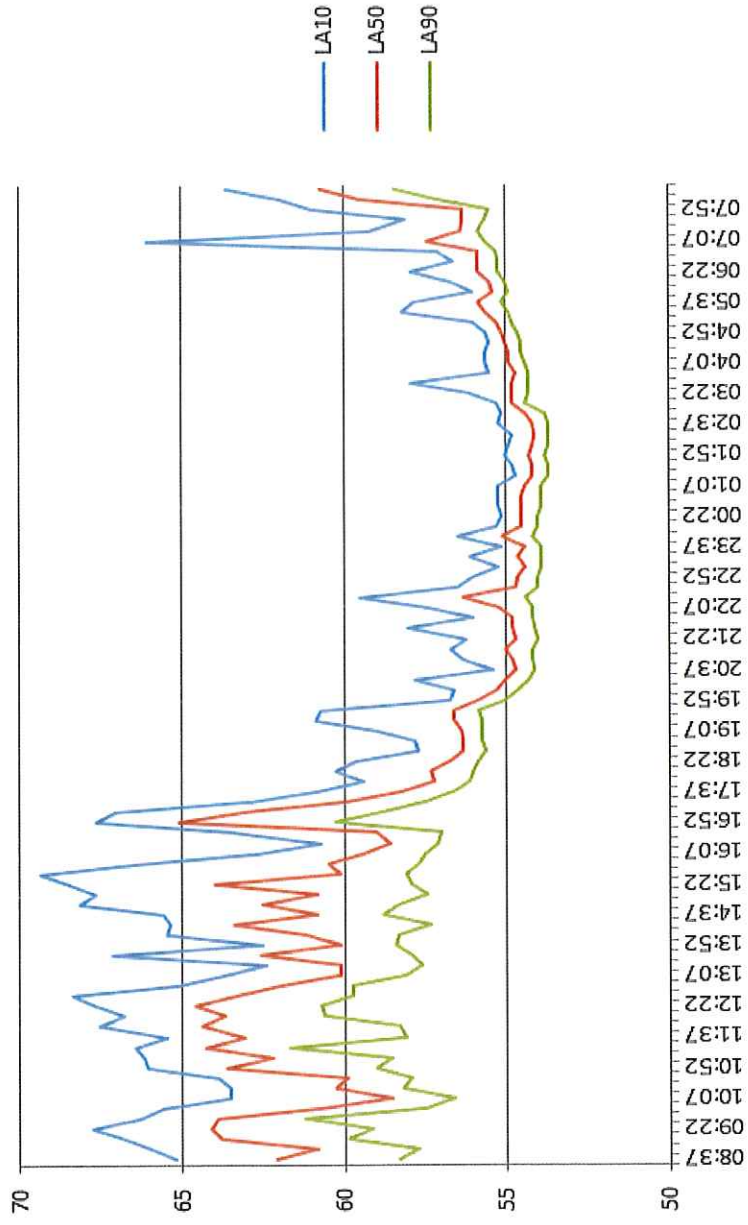
APPROVED BY:
MGR


DESIGN AUTH:
MGR

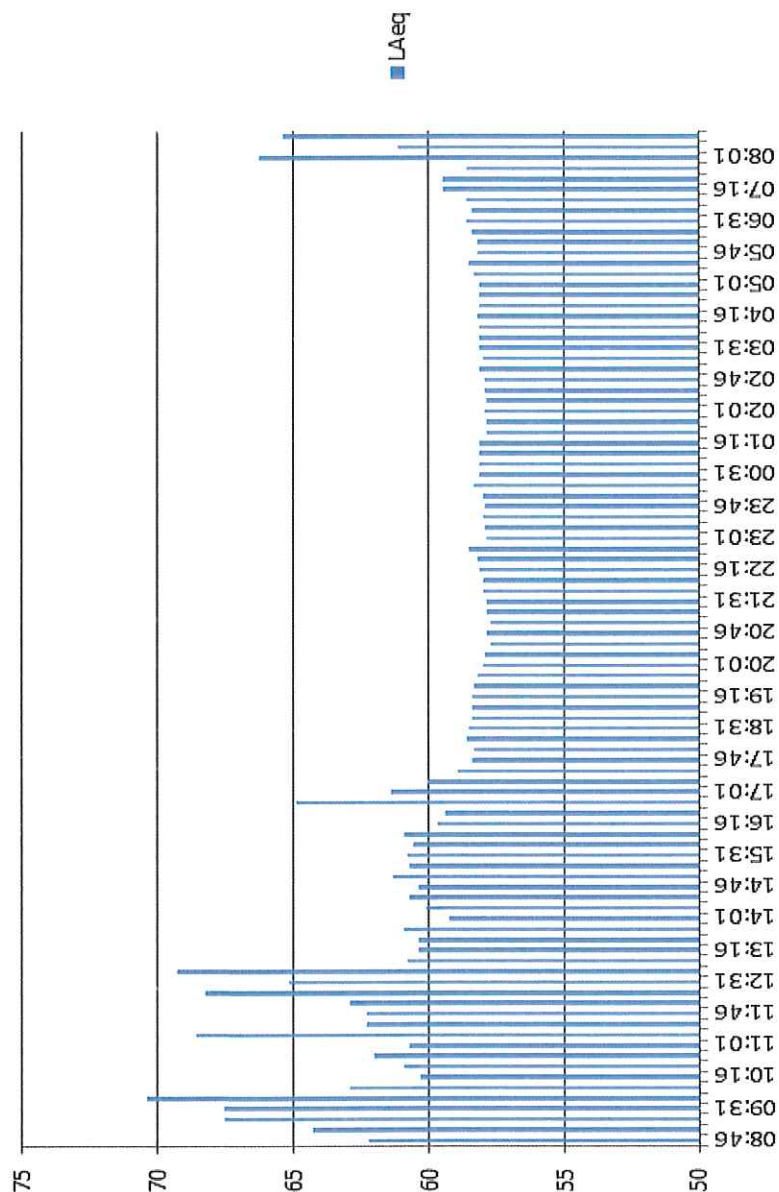
A	B	C	D	E	F	G	H
REVISION							
SKETCH No. QF/9086/T1							



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TITLE: LA10, LA50 & LA90 Levels		ISSUE DATE: 28/06/2017	DRAWN BY: MGR	A	B	C	D	E	F	G	H
CLIENT: Peter Deer & Associates		PF No: 5990	APPROVED BY: MGR	REVISION							
				SKETCH No. QF/9086/T2							
PROJECT: 40-42 Parker Street – Front of Property		Q	A	M	I	DESIGN AUTH: MGR					
<div style="text-align: right;">  <p> Unit L, Turnpike Way, High Wycombe Bucks HP12 3TF Tel: 020 8848 3031 Fax: 020 8573 3605 </p> </div>											



TITLE:
LAeq Levels

CLIENT: Peter Deer & Associates

PROJECT: 40-42 Parker Street –
Rear of Property

ISSUE DATE:
28/06/2017

PF No: 5990

Q A M I

DRAWN BY:
MGR

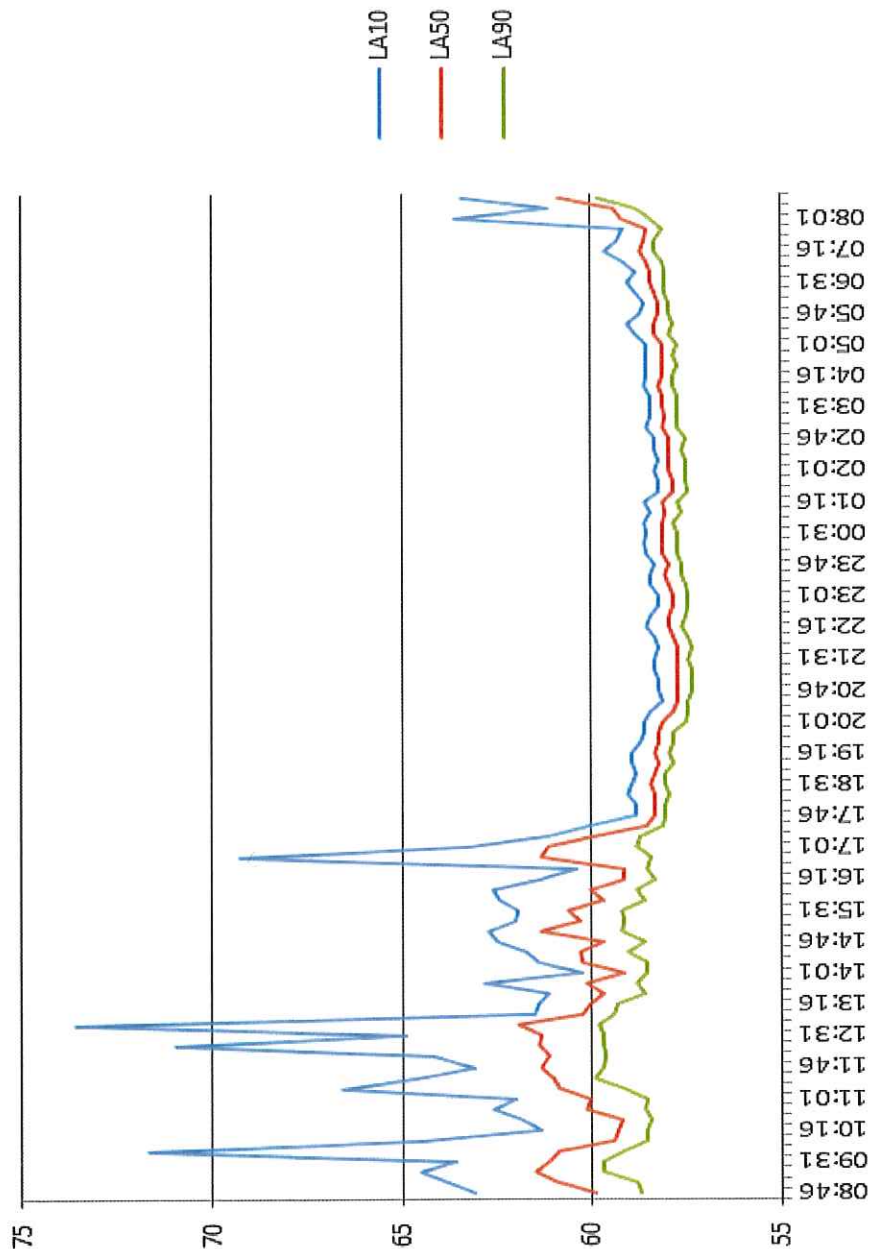
APPROVED BY:
MGR

DESIGN AUTH:
MGR

REVISION							
A	B	C	D	E	F	G	H
SKETCH No. QF/9086/T3							



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TITLE:

LA10; LA50 & LA90 Levels

CLIENT: Peter Deer & Associates

PROJECT: 40-42 Parker Street –
Rear of Property

ISSUE DATE:

28/06/2017

PF No: 5990

Q A M I

DRAWN BY:

MGR

APPROVED BY:

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DESIGN AUTH:

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REVISION

SKETCH No. QF/9086/T4



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APPENDIX 'A'

Raw Data – Noise Survey

26th to 27th June 2017

RAW NOISE DATA - 40-42 Parker Street, London (Front of Property)

Ref: QF9086/PF5990/RP1
 Client: Peter Deer & Associates
 Date: 26th to 27th June 2017

Address	Start Time	LAeq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	08:37	62.7	92.3	74.4	55.4	67.5	65.2	62.1	58.3	56.5
2	08:52	64.1	93.7	81.4	55.6	74.6	66	60.8	57.7	56.5
3	09:07	65.9	95.5	84.8	56	75.1	66.8	63.8	59.9	57
4	09:22	66	95.6	90.3	55.5	72	67.8	64.1	59.1	56.6
5	09:37	65.7	95.3	93.8	56.5	69.4	66.3	63.9	61.2	57.8
6	09:52	62.5	92.1	76.3	55.3	69.1	65.6	60.7	57.5	56.3
7	10:07	61.8	91.4	76.5	55.1	73	63.5	58.5	56.6	55.8
8	10:22	61.4	91	78.7	56	67.9	63.5	60.3	58.2	57
9	10:37	61.1	90.7	72	55.9	66.5	63.9	59.9	57.9	56.8
10	10:52	63.8	93.4	72	56.2	68.2	66.1	63.6	59	57.1
11	11:07	63.4	93	75.9	55.8	68.9	66.2	62.2	58.5	57.1
12	11:22	64.6	94.2	74	55.2	69.2	66.5	64.3	61.7	56.6
13	11:37	63.1	92.7	72.9	54.9	68.1	65.5	63.1	58.1	55.9
14	11:52	64.9	94.5	78.2	56.4	71.7	67.6	64.4	58.3	57
15	12:07	64.4	94	77.3	57.8	69.3	66.8	63.7	60.6	59
16	12:22	65.1	94.7	74	57.7	69.9	67.7	64.6	60.7	58.8
17	12:37	65.2	94.8	73.9	57.2	71.3	68.4	63.3	59.7	58.5
18	12:52	62.8	92.4	72.4	57	68.3	65.1	61.9	59.7	58.4
19	13:07	61.3	90.9	78	55.8	66.9	63.7	60.1	58.1	56.9
20	13:22	60.9	90.5	75.5	55.5	68.2	62.4	60.1	57.6	56.5
21	13:37	64	93.6	73.6	55.5	69.3	67.2	62.6	57.9	56.4
22	13:52	60.9	90.5	70.7	56.1	68	62.5	60.1	58.4	57.4
23	14:07	62.6	92.2	75.3	56.5	67.6	65.5	61.2	58.3	57.3
24	14:22	63.1	92.7	70.9	55.3	67.8	65.4	63.4	57.3	56.2
25	14:37	62.8	92.4	84.5	56.7	69.7	65.6	60.8	58.8	57.8
26	14:52	65.2	94.8	77.9	55.4	71.2	68.2	62.5	58.3	56.3
27	15:07	63.8	93.4	72.6	55	69.1	67.7	60.8	57.4	56.1
28	15:22	65.1	94.7	75.3	55.6	71.6	68.5	64	57.9	56.5
29	15:37	64.9	94.5	78.6	56.1	72.8	69.4	60.1	58.1	57
30	15:52	63	92.6	73.1	55.8	68.6	66.4	60.5	57.7	56.7
31	16:07	60.4	90	75.9	55.6	66.9	62.7	59.4	57.5	56.7
32	16:22	59.3	88.9	74.6	55.6	65.1	60.7	58.6	57.1	56.4
33	16:37	61.2	90.8	77.5	55.5	69.6	63.5	59	57	56.3
34	16:52	65.3	94.9	77.8	57.3	69.2	67.7	65.1	60.3	58.4
35	17:07	64.3	93.9	77.2	56.2	68	67.1	63	58.8	57.3
36	17:22	61.7	91.3	84.8	55.8	68.3	62.9	59.9	57.5	56.5
37	17:37	58.9	88.5	70	54.9	64.9	60.8	58.2	56.6	55.8
38	17:52	57.9	87.5	68.2	54.6	63	59.4	57.2	56.1	55.5
39	18:07	58.4	88	70.3	55	65.2	60.3	57.3	56	55.4
40	18:22	58.7	88.3	76.3	54.7	67.3	59.6	56.7	55.8	55.4
41	18:37	56.7	86.3	66	54.6	61	57.7	56.3	55.6	55.2
42	18:52	57	86.6	70.2	54.8	63.1	57.8	56.3	55.7	55.4
43	19:07	57.4	87	72.2	54.6	63.7	59	56.4	55.7	55.3
44	19:22	58.2	87.8	75.5	54.6	65.1	60.9	56.6	55.7	55.2
45	19:37	58.5	88.1	81.6	54.6	65.5	60.7	56.6	55.8	55.3
46	19:52	56.6	86.2	71.8	54	61.2	56.7	55.8	55	54.6
47	20:07	55.6	85.2	66.7	53.5	59.9	56.6	55.3	54.6	54.1
48	20:22	55.7	85.3	61.2	53.4	59.1	57.8	55	54.3	53.9
49	20:37	54.9	84.5	66.9	53.1	59.2	55.4	54.7	54.1	53.8
50	20:52	55.3	84.9	66.7	53.2	60	56.3	54.8	54.2	53.8

51	21:07	55.5	85.1	66.4	53.4	60.1	56.7	55	54.2	53.8
52	21:22	55	84.6	63	52.7	58.1	56.2	54.7	54	53.6
53	21:37	56.1	85.7	69.1	53.1	63.4	58	54.8	54.1	53.6
54	21:52	56.5	86.1	77.3	53.1	67.2	56	54.8	54.2	53.7
55	22:07	55.8	85.4	64.8	53.3	60.1	57.4	55.2	54.2	53.8
56	22:22	57.4	87	69.8	53.2	64	59.5	56.3	54.4	53.7
57	22:37	55.2	84.8	66.7	52.9	59.7	56.5	54.7	54	53.6
58	22:52	55.3	84.9	74.3	52.9	58.7	56	54.6	54	53.6
59	23:07	54.6	84.2	64.2	52.9	58	55.2	54.4	53.9	53.5
60	23:22	55	84.6	64.7	52.9	58.8	56.1	54.6	53.9	53.5
61	23:37	54.5	84.1	62.6	53	56.6	55.1	54.4	53.9	53.5
62	23:52	55.3	84.9	63.1	53	58.8	56.5	55.1	54.2	53.8
63	00:07	55.3	84.9	77.1	53.1	59.3	55.3	54.5	54	53.6
64	00:22	54.5	84.1	59.6	53.1	56.1	55.1	54.5	54	53.6
65	00:37	54.7	84.3	61.4	52.4	59	55.2	54.5	53.9	53.6
66	00:52	55	84.6	66.2	52.8	61.2	55.2	54.5	53.9	53.5
67	01:07	55.2	84.8	68.3	52.9	63.4	55.2	54.4	53.9	53.5
68	01:22	54.2	83.8	59	52.6	55.3	54.7	54.2	53.7	53.3
69	01:37	54.3	83.9	62.7	52.5	57.9	54.8	54.2	53.7	53.4
70	01:52	54.5	84.1	67.6	52.8	57.7	55	54.3	53.8	53.4
71	02:07	54.3	83.9	61.6	52.6	58	54.9	54.2	53.7	53.3
72	02:22	54.5	84.1	71.9	52.6	58.2	54.8	54.1	53.7	53.3
73	02:37	55	84.6	67	52.7	61.7	55.2	54.2	53.7	53.3
74	02:52	54.5	84.1	65.4	52.7	56.2	55.1	54.4	53.8	53.4
75	03:07	54.8	84.4	59.7	53.2	56.8	55.3	54.8	54.4	54
76	03:22	55.1	84.7	62.6	53.5	57.8	56.1	54.8	54.3	54
77	03:37	55.5	85.1	59.9	53.5	59	57.9	54.8	54.3	54
78	03:52	55	84.6	62.7	53.5	58.6	55.5	54.7	54.3	54
79	04:07	55	84.6	62.1	53.6	57.6	55.6	54.9	54.4	54.1
80	04:22	55.1	84.7	64.3	53.5	58	55.6	54.9	54.5	54.2
81	04:37	55	84.6	59.9	53.5	58	55.5	55	54.5	54.2
82	04:52	55.5	85.1	69.5	53.8	59.4	55.6	55.1	54.6	54.3
83	05:07	55.4	85	68.8	53.8	57.6	56	55.3	54.8	54.4
84	05:22	57.2	86.8	70.1	53.8	66.8	58.2	55.6	54.9	54.6
85	05:37	56.7	86.3	68.5	54	63.3	57.8	55.8	55.1	54.7
86	05:52	55.5	85.1	62	54	58.2	56	55.4	54.9	54.6
87	06:07	55.8	85.4	63.5	53.8	58.7	56.7	55.5	55	54.6
88	06:22	60	89.6	84.1	54.2	71	57.9	55.8	55.2	54.8
89	06:37	55.9	85.5	61.7	54.4	58.8	56.6	55.8	55.2	54.9
90	06:52	56.4	86	70.9	54.3	62	57.1	55.8	55.3	54.9
91	07:07	64.5	94.1	90.7	54.5	70.7	66.1	57.4	55.6	55.2
92	07:22	58.3	87.9	72	54.8	68.3	59.2	56.4	55.8	55.4
93	07:37	57.2	86.8	79.4	54.7	62.4	58.1	56.3	55.6	55.3
94	07:52	58	87.6	71.4	54.5	64.8	61	56.3	55.5	55.1
95	08:07	60.5	90.1	84.1	55.5	66.4	62	59.5	57.1	56.3
96	08:22	61.4	91	75.2	56.2	66.2	63.6	60.7	58.4	56.9

RAW NOISE DATA - 40-42 Parker Street, London (Rear of Property)

Ref: QF9086/PF5990/RP1
Client: Peter Deer & Associates
Date: 26th to 27th June 2017

Address	Start Time	LAeq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	08:46	62.2	91.8	84.2	57.2	71.7	63.1	59.9	58.7	58.2
2	09:01	64.3	93.9	82.4	57.4	77	63.8	60.9	58.8	58
3	09:16	67.6	97.2	89	58.4	83	64.5	61.5	59.7	59
4	09:31	67.6	97.2	90.1	58.1	77.5	63.6	61.1	59.7	58.8
5	09:46	70.4	100	88.5	57.7	85	71.7	60.8	59.1	58.4
6	10:01	62.9	92.5	76	57.5	73.9	64.4	59.4	58.5	58.2
7	10:16	60.3	89.9	72.3	57.4	68.3	61.3	59.3	58.5	58
8	10:31	60.9	90.5	80.2	57.4	70.2	61.8	59.2	58.4	58.1
9	10:46	62	91.6	80.1	57.5	71.5	62.6	60.1	58.6	58.2
10	11:01	60.7	90.3	75.2	57.5	67.1	62	60	58.5	58.1
11	11:16	68.6	98.2	83.2	57.4	81.2	66.6	60.8	59.1	58.3
12	11:31	62.3	91.9	75.8	58.2	69.5	64.6	61	59.9	58.8
13	11:46	62.3	91.9	77.5	58.3	70.2	63.1	61.3	59.7	59
14	12:01	62.9	92.5	78	58.5	72.6	64.2	61.1	59.6	59
15	12:16	68.3	97.9	82	58.5	80	71	61.4	59.7	59.2
16	12:31	65.2	94.8	84	58.4	77	64.9	61.3	59.7	59
17	12:46	69.3	98.9	87	58.7	80.8	73.6	61.9	59.8	59.2
18	13:01	60.8	90.4	74.6	58.3	66.9	61.5	60.2	59.4	59
19	13:16	60.4	90	70	58.1	64.4	61.4	60	59.3	58.8
20	13:31	60.4	90	75.1	57.4	68.1	61.1	59.7	58.6	58.1
21	13:46	60.9	90.5	67.1	57.6	64.1	62.8	60.1	58.8	58.4
22	14:01	59.3	88.9	68.6	57.6	62.1	60.2	59.1	58.5	58.2
23	14:16	60.1	89.7	65.3	57.1	62.7	61.4	60.2	58.5	58.1
24	14:31	60.7	90.3	73.9	57.7	66.5	61.7	60.3	59	58.4
25	14:46	60.4	90	71.1	57.2	64.2	62.5	59.7	58.6	58.1
26	15:01	61.3	90.9	74.7	58	64.5	62.7	61.3	59.2	58.6
27	15:16	60.7	90.3	79	57.9	65	62	60.3	59.1	58.6
28	15:31	60.8	90.4	71.8	58.3	64.4	61.9	60.6	59.2	58.7
29	15:46	60.6	90.2	73.1	57.6	66	62.4	59.7	58.6	58.2
30	16:01	60.9	90.5	71.9	57.8	66.2	62.6	60	58.8	58.3
31	16:16	59.7	89.3	69	57.5	64.9	61.3	59.1	58.3	57.9
32	16:31	59.4	89	68.9	57.4	63.4	60.4	59.1	58.5	58.1
33	16:46	64.9	94.5	75.7	57.3	73.8	69.3	61.3	58.4	58
34	17:01	61.4	91	68.2	57.6	65.8	63.2	61.1	58.8	58.1
35	17:16	60	89.6	70.8	57.5	63	61.1	59.9	58.7	58.1
36	17:31	58.9	88.5	70.1	57.3	62.3	60	58.5	58.1	57.8
37	17:46	58.4	88	67.4	57.2	60	58.8	58.3	58	57.7
38	18:01	58.3	87.9	62.5	57.2	60.1	58.8	58.3	58	57.7
39	18:16	58.6	88.2	69.4	57.2	63	59	58.3	57.9	57.7
40	18:31	58.5	88.1	66.6	57.2	60.3	58.9	58.4	58	57.7
41	18:46	58.4	88	62.5	57.2	60.1	58.8	58.3	58	57.7
42	19:01	58.4	88	68.4	56.9	62	58.9	58.2	57.8	57.5
43	19:16	58.4	88	69	57.1	61.1	58.9	58.3	57.9	57.6
44	19:31	58.3	87.9	65.3	57.1	59.9	58.7	58.2	57.8	57.6
45	19:46	58.2	87.8	69.2	56.9	59.4	58.6	58.2	57.8	57.5
46	20:01	58	87.6	63.8	56.7	59.3	58.6	58.1	57.5	57.1
47	20:16	57.9	87.5	63.5	56.6	59.6	58.4	57.8	57.4	57.1
48	20:31	57.7	87.3	60.8	56.6	58.5	58.1	57.7	57.4	57.1
49	20:46	57.8	87.4	70.1	56.3	59.4	58.2	57.7	57.3	57
50	21:01	57.7	87.3	61.2	56.4	59	58.2	57.7	57.3	57
51	21:16	57.8	87.4	67	56.3	59.4	58.3	57.7	57.3	56.9

52	21:31	57.8	87.4	60.9	56.5	59.5	58.3	57.7	57.4	57.1
53	21:46	58	87.6	75.1	56.5	61.4	58.2	57.7	57.3	57
54	22:01	58	87.6	70.4	56.7	62.3	58.3	57.8	57.4	57.1
55	22:16	58.1	87.7	66.4	56.8	61.9	58.5	57.9	57.6	57.2
56	22:31	58.2	87.8	69.6	56.6	64.1	58.4	57.9	57.5	57.1
57	22:46	58.5	88.1	80.6	56.5	59.7	58.2	57.8	57.4	57.1
58	23:01	57.8	87.4	69.4	56.6	58.9	58.2	57.8	57.4	57.1
59	23:16	57.9	87.5	63.9	56.7	59.4	58.4	57.9	57.5	57.2
60	23:31	58	87.6	62	56.6	59	58.4	58	57.6	57.2
61	23:46	57.9	87.5	60.4	56.8	58.8	58.3	57.9	57.6	57.3
62	00:01	58	87.6	66.4	56.8	58.8	58.5	58.1	57.7	57.4
63	00:16	58.3	87.9	71.7	56.8	59.9	58.6	58.1	57.7	57.4
64	00:31	58.1	87.7	60.7	56.8	59	58.5	58.1	57.7	57.4
65	00:46	58.1	87.7	61.7	56.9	59.2	58.6	58.1	57.8	57.5
66	01:01	58.1	87.7	70.6	56.8	58.8	58.4	58	57.6	57.3
67	01:16	58.1	87.7	61.8	56.9	59.3	58.6	58.1	57.7	57.4
68	01:31	57.8	87.4	59.3	56.7	58.6	58.2	57.8	57.4	57.1
69	01:46	57.8	87.4	61.2	56.6	58.6	58.2	57.8	57.5	57.2
70	02:01	57.9	87.5	63	56.8	58.7	58.3	57.9	57.5	57.2
71	02:16	57.8	87.4	59.6	56.8	58.6	58.2	57.9	57.5	57.2
72	02:31	57.9	87.5	60.7	56.7	58.8	58.3	57.9	57.6	57.3
73	02:46	57.9	87.5	59.5	56.8	58.6	58.3	57.9	57.5	57.2
74	03:01	58.1	87.7	60	57	58.8	58.5	58.1	57.7	57.4
75	03:16	58	87.6	59.8	56.8	58.7	58.4	58	57.7	57.4
76	03:31	58.1	87.7	59.8	57	58.8	58.4	58.1	57.7	57.5
77	03:46	58.1	87.7	69.9	56.9	58.8	58.4	58.1	57.7	57.5
78	04:01	58.1	87.7	61	57.1	59.2	58.6	58.2	57.8	57.5
79	04:16	58.2	87.8	64.7	57	59.5	58.5	58.1	57.8	57.5
80	04:31	58.1	87.7	62.4	56.8	59.7	58.5	58.1	57.7	57.4
81	04:46	58.1	87.7	64.4	57.1	59.2	58.5	58.1	57.8	57.5
82	05:01	58.1	87.7	65.5	57	59.3	58.5	58.1	57.7	57.4
83	05:16	58.3	87.9	65.7	57.1	59.9	58.8	58.3	57.9	57.6
84	05:31	58.5	88.1	68.4	56.8	62.4	59	58.3	57.8	57.4
85	05:46	58.2	87.8	64.3	57	59.1	58.7	58.2	57.9	57.6
86	06:01	58.2	87.8	65.2	57.1	59.2	58.6	58.2	57.9	57.6
87	06:16	58.4	88	67.7	57.1	59.8	58.8	58.3	58	57.6
88	06:31	58.6	88.2	68.4	57.3	62.2	59	58.4	58	57.7
89	06:46	58.4	88	63.4	57.1	59.8	58.8	58.4	58	57.7
90	07:01	58.6	88.2	65.1	57.4	61.1	59.1	58.5	58.1	57.9
91	07:16	59.5	89.1	79.9	57.2	62.4	59.6	58.7	58.3	58
92	07:31	59.5	89.1	85.5	57.4	61.8	59.3	58.6	58.3	58
93	07:46	58.6	88.2	64	57.2	60.4	59.1	58.5	58.1	57.8
94	08:01	66.3	95.9	83.1	57.5	78.9	63.6	59.2	58.4	58.1
95	08:16	61.1	90.7	84.9	57.4	66.1	61.1	59.4	58.8	58.2
96	08:31	65.4	95	85.7	58.7	76.6	63.4	60.8	59.8	59.3

QF9086/PF5990/RP3B

EMTEC PRODUCTS LTD.

APPENDIX 'B'

Photos, sketch and drawing



Photo A – Front Façade of the Office Building at 40-42 Parker Street

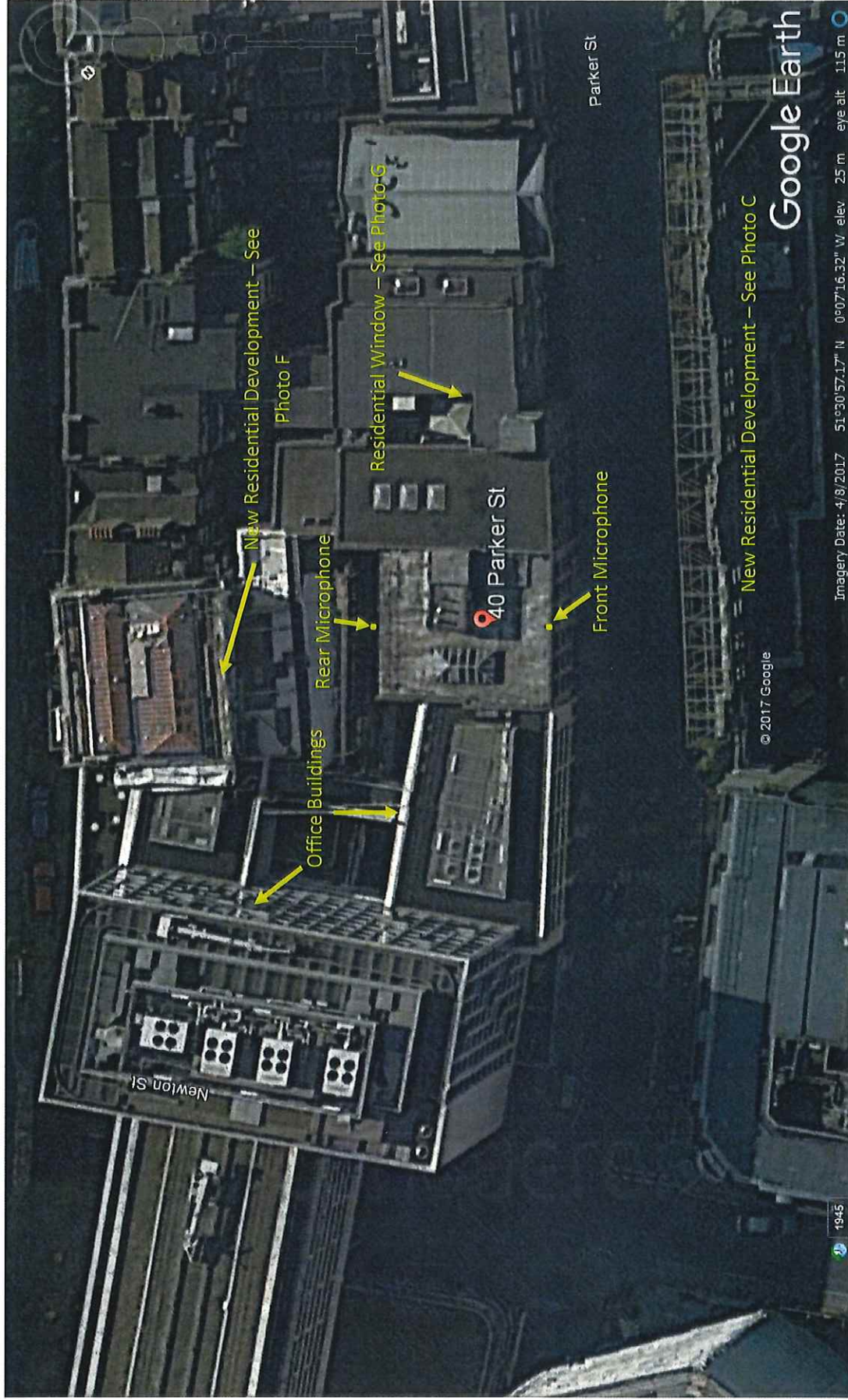


Photo B - Aerial View of 40-42 Parker Street with Microphone Positions and Plant Locations Shown

Microphone attached to Railings

Retained Façade of
New Residential
Development



Photo C – Microphone at Front of Site with New Residential Building's Retained Façade in Background



Office Buildings

Front
Microphone

New Residential
Development

Photo D – Office Buildings on Opposite Side of Parker Street

Rear Microphone

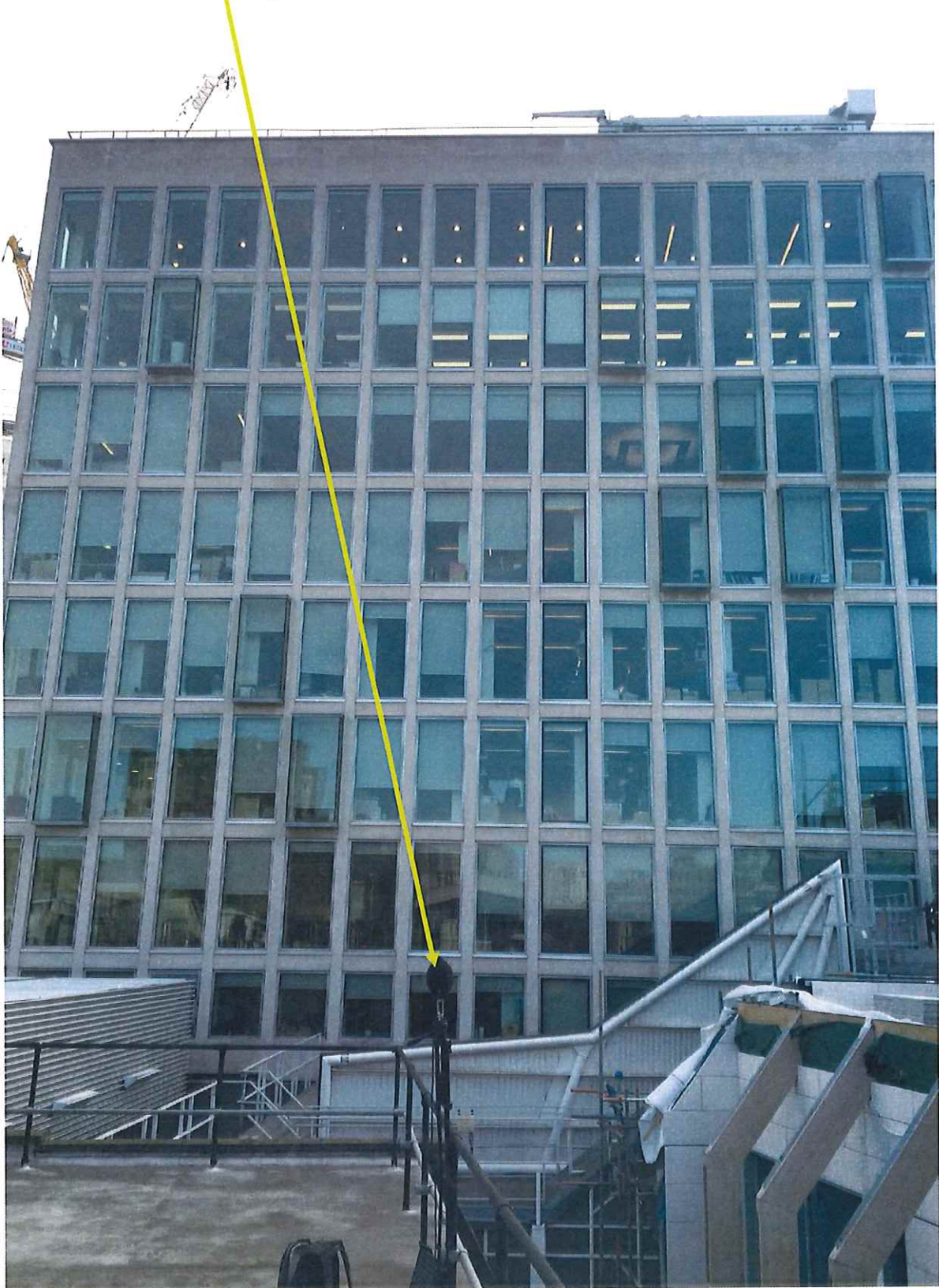
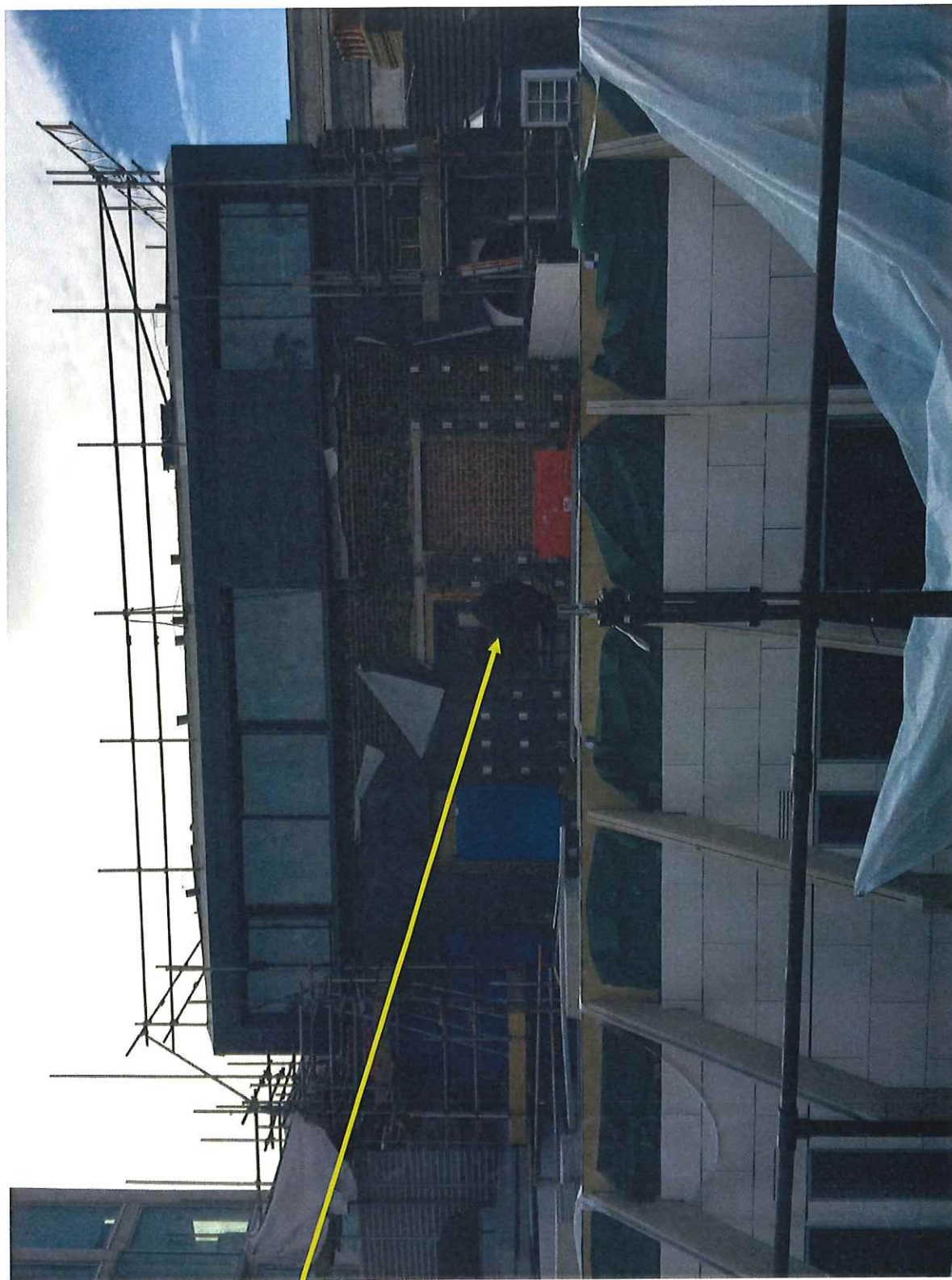


Photo E – Microphone at Rear of Roof with Large Office Building to the Left of Site



Rear
Microphone

Photo F – Rear Microphone with New Residential Development Under Construction at Rear of Site

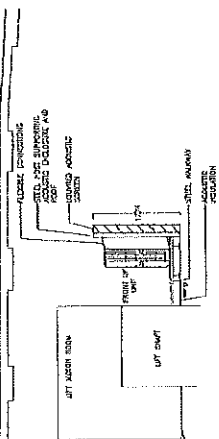
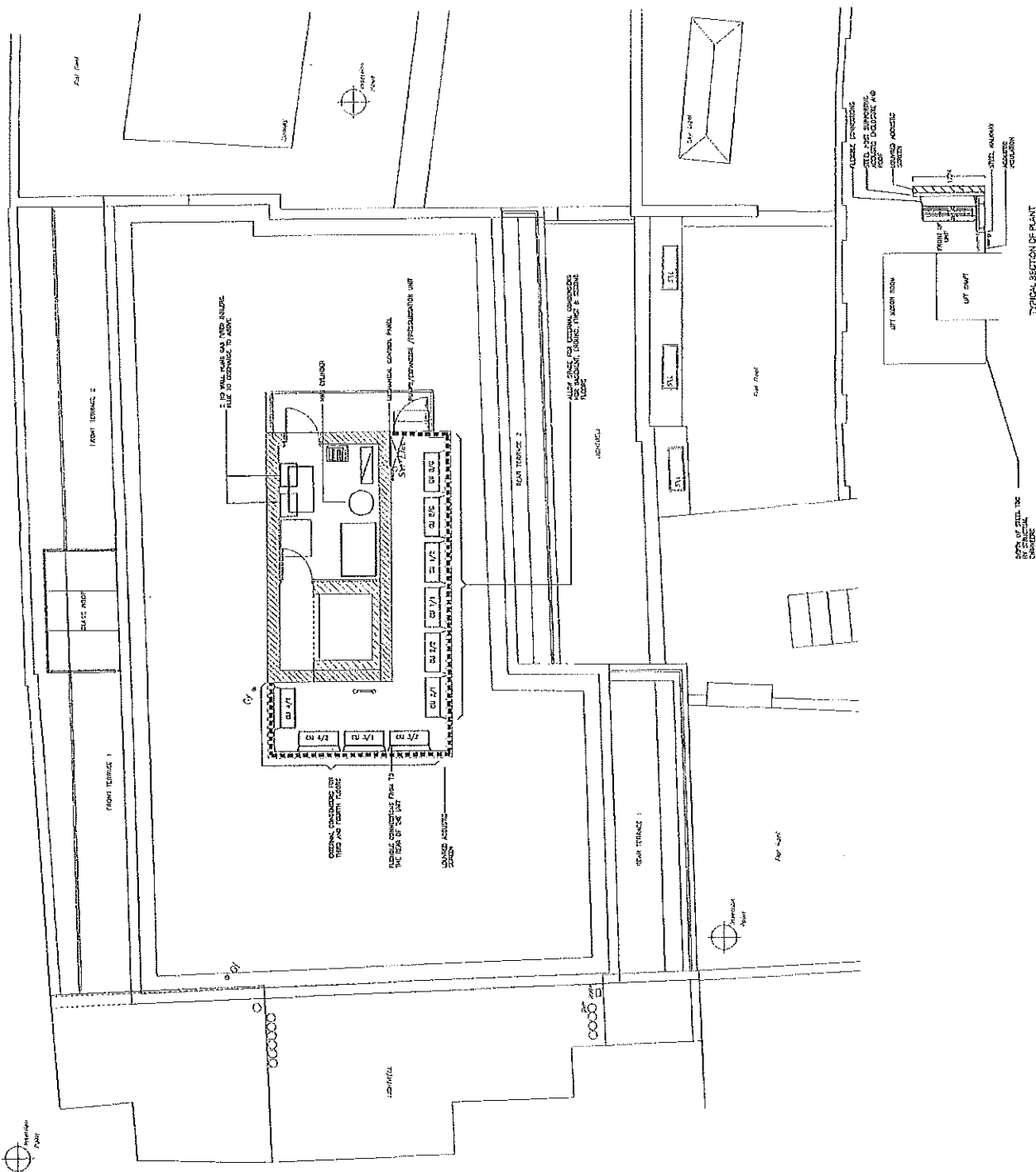
Residential
Window

Existing Air Cooled
Condensers



Photo G – View of Existing AC Condensers Fixed to Roof Plantroom with Residential Flat's Window Behind

1. THIS TRAINING SHALL BE HELD IN CONJUNCTION WITH THE WEEKLY SPIRITUAL.
2. ALL SITTING OUT ARE TO BE CONSIDERED BY THE ADMIRAL.
3. ALL PARTICIPANTS ARE TO BE REPORTED TO THE CAPTAIN/JOINT TEAM.

[illegible]

RENDER

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Client Name

40-42 PARKER STREET
ROJES HILLTOP

MECHANICAL SERVICES LAYOUT

ENCLOSURE

NTS

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