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RESULTS OF A 24-HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF THE GROUND FLOOR OFFICE SPACE AT 2-4 BLACKBURN ROAD, LONDON NW6 AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW EXTERNAL PLANT

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Client	:	Conditioned Environment (Mechanical Services) Ltd
Project	:	2-4 Blackburn Road, London NW6
Emtec Ref.	:	QF8095/PF5242/RP2
Issue Date	:	25th September 2014
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1.0. INTRODUCTION

This report details the results of a 24-hour noise survey carried out at the rear of the ground floor office premises located at 2-4 Blackburn Road, London NW6.

The objectives of this survey were as follows:

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

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

2.0. SITE DESCRIPTION

The building at 2-4 Blackburn Road is a newly completed development with a large ground floor office area and a five storey residential block located above. The residential block is set back from the rear ground floor façade as can be clearly seen on the attached photographs A and B.

3.0. TEST INSTRUMENTATION

All measurement equipment used during the survey complied with the requirements of BS4142:1997 "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.: 011232569
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

Rail traffic travelling on the nearby British Rail railway line 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 passing trains.

The closeness of the train line can be seen from the Photograph C attached.

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.

We judged that train noise to be the dominant source of noise affecting ambient noise levels.

4.0. TEST PROCEDURE

The survey was conducted during a continuous 24-hour period from 8.41am on Tuesday 23rd of September 2014 to 8.41am on Wednesday the 24th of September 2014.

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. 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 4142:1997).

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

Noise levels were measured at a location next to the perimeter fence at the rear of the site. The location of the microphone can be clearly seen on the attached photographs A, B and C.

The microphone was pointing vertically and was approximately 1.2 metres above ground level. The rest of the measurement equipment was located in a weatherproof enclosure with a low impedance cable running from the microphone to the instrumentation.

4.2. Weather Conditions

The weather conditions prevailing during the measurement period were generally in line with those recommended in BS 4142:1997: -

Weather daytime: -	Clear and bright	Weather night time: -	Clear and overcast
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 a bar graph on the attached Sketch No QF/8095/T1 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 Sketch No QF/8095/T2 at the back of this report.

5.1. Summary of Results

The table QF/8095/D1 below summarises the noise levels taken over the 24-hour period in terms of the maximum and minimum Sound Pressure Levels recorded.

Table QF/8095/D1 – Summary of Maximum and Minimum Noise Levels

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	38.2 dBA	41.6 dBA	39.5 dBA	38.0 dBA	36.3 dBA	36.1 dBA
Maximum	78.5 dBA	89.5 dBA	71.7 dBA	53.9 dBA	48.2 dBA	46.9 dBA

The table QF/8095/D2 below summarises the noise levels taken over the extended office hours period, between 8.00am and 10.00pm in terms of the maximum and minimum sound pressure levels recorded.

Table QF/8095/D2 – Summary of Maximum Sound Pressure Levels Recorded

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	58.4 dBA	72.7 dBA	55.9 dBA	42.0 dBA	40.3 dBA	39.8 dBA
Maximum	68.5 dBA	81.5 dBA	65.7 dBA	53.9 dBA	48.2 dBA	46.9 dBA

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

Table E of Camden's current replacement Unitary Development Plan states that noise from external plant and machinery must be at least 5dB less than the lowest measured LA90 when measured at 1 metre external to the nearest sensitive façade.

Where the noise has a distinguishable discrete continuous note (whine, hiss, screech, hum) the Development Plan states that noise from external plant and machinery must be at least 10dB less than the lowest measured LA90 when measured at 1 metre external to the nearest sensitive façade.

Where the noise has distinct impulses (bangs, clicks, clatters, thumps) the Development Plan states that noise from external plant and machinery must be at least 10dB less than the lowest measured LA90 when measured at 1 metre external to the nearest sensitive façade.

Section 16.34 of Camden's Noise Strategy 2002 states: -

The Council considers that for new developments involving noisy plant/equipment or other uses, design measures should be taken to ensure that noise levels predicted at a point 1 metreexternalto sensitive facades are at least 5dB(A) less than the existing background measurement (LA90) when the equipment is in operation. Where it is anticipated that equipment will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses in the noise (bangs, clicks, clatters, thumps), special attention should be given to reducing the noise levels from plant and equipment at any sensitive facade to at least 10dB(A) below the LA90 level.

5.3. Determination of noise sensitive property design criteria

The new plant will not be intermittent or contain tones. Based on the local authority's planning requirements outlined above, the new plant should be designed to be 5dBA below the minimum existing LA_{90} background noise level during the relevant operational period.

It is proposed to operate the majority of the plant during extended office hours only. The condensing units associated with the air conditioning systems will operate on this basis but the small condensing units associated with the computer room air conditioning will operate over a 24 hour period.

The lowest recorded LA_{90} level measured during the extended office hours period (8.00am to 10.00pm) and over the 24-hour period were 40.3 dBA and 36.3 dBA respectively.

The new plant should therefore be designed to achieve 35.3 dBA and 31.3 dBA at 1 metre from the nearest noise sensitive properties' windows where the externally located equipment is to be operated during extended office hours (8.00am to 10.00pm) and on a 24-hour basis.

5.4. Determination of commercial design criteria

The use of the ground floor commercial premises within the development site will consist of offices. It is therefore proposed that the recommendations given in BS8233:1999, Section 7.6 be considered.

	Good	Reasonable
Open plan office: $L_{Aeq,T}$	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 door, as per the lower limit of the range given in BS8233:1999 section 8.4.7, the rating level at 1 metre external to the office windows would be 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/8095/D3: -

Table QF/8095/D2 – recommended design rating levels $L_{Ar,T}$

Type of premises	**$L_{Ar,T}$ (24-hour)**	**$L_{Ar,T}$ (8.00am to 10.00pm)**
Noise sensitive	31.3 dBA	35.3 dBA
Commercial	-	55 dBA

6.0. DISCUSSION OF RESULTS

It is proposed to locate the following air cooled condensers inside a compound at the end of the area between the building and the perimeter fence, generally as shown on our attached sketch No. QF/8095/GA1.

The condensers that are to be located in the compound are as follows:-

1 off Daikin RYYQ54T made up of 3 number RYMQ18T units
1 off Daikin RYYQ12T condenser
2 off Daikin RZQSG71LV condensers

The Daikin RYYQ units will operate during extended office hours (8.00am to 10.00pm) and the two small RZQSG units will operate on a 24 hour basis.

The daytime maximum noise levels of the condensers are given in the table QF/8095/D4 below, together with the natural attenuation to the nearest window of the residential block above.

Table QF/8095/D4 – Daytime Sound Pressure Levels of Condensers and Natural Attenuation

Condenser Units/Attenuation	Sound Pressure Level (dB ref 2 x 10^{-5} N/m^2) 63	125	250	500	1k	2k	4k	8k	dBA
Daikin RYMQ18T Condenser 3 Units making up RYYQ54T	66 +5	65 +5	67 +5	64 +5	59 +5	55 +5	50 +5	44 +5	65
Overall free field SPL of RYYQ54T condensers @ 1 metre (a) Free field SPL of RYYQ12T @ 1 metre (b)	71 59	70 66	72 60	69 62	64 54	60 50	55 44	49 37	70 61
Free field SPL of RZQSG71LV @ 1 metre 2 units	52 +3	53 +3	49 +3	47 +3	45 +3	38 +3	36 +3	21 +3	49
Overall free field SPL of 2 RZQSG71LV units @ 1 metre (c)	55	56	52	50	48	41	39	24	52
Overall total free field SPL of condensers (a + b + c) Distance to nearest window (12 metres) – distance correction 20 log 10 Barrier effect of edge of ground floor building (d = 100m)	71 -20 -6	71 -20 -8	72 -20 -9	70 -20 -10	65 -20 -12	61 -20 -14	56 -20 -16	49 -20 -16	71
Overall total SPL at 1 metre from nearest window	45	43	43	40	33	27	20	13	40.3

The night time maximum noise levels of the two small condensers are given in the table QF/8095/D5 below, together with the natural attenuation to the nearest window of the residential block above.

Table QF/8095/D5 – Nightime Sound Pressure Levels of Condensers and Natural Attenuation

Condenser Units/Attenuation	Sound Pressure Level (dB ref 2 x 10^{-5} N/m^2) 63	125	250	500	1k	2k	4k	8k	dBA
Free field SPL of RZQSG71LV @ 1 metre 2 units	52 +3	53 +3	49 +3	47 +3	45 +3	38 +3	36 +3	21 +3	49
Overall free field SPL of 2 RZQSG71LV units @ 1 metre (c)	55	56	52	50	48	41	39	24	52
Distance to nearest window (12 metres) – distance correction 20 log 10 Barrier effect of edge of ground floor building (d = 500m)	-20 -8	-20 -10	-20 -12	-20 -14	-20 -16	-20 -18	-20 -20	-20 -20	
Overall total SPL at 1 metre from nearest window	27	26	20	16	12	3	-	-	18

As can be seen from the above tables, the two small condensers, operating at night, will not exceed the recommended design rating levels and therefore will not require any mediation to meet the requirements of Camden's planning directives.

However the large condensers, operating during the day time, will exceed the recommended design rating level of 35.3 dBA by 5dB.

Mediation will therefore be necessary and we would suggest that each of the four vertical condenser units be fitted with an Emtec PAC 30 acoustic discharge plenum silencer having an overall height of 1000mm, in order that both the inlet and outlet barrier effect is increased to 1000mm. This will ensure that the recommended design rating level of 35.5 dBA is not exceeded at 1 metre from the residential windows in the block above and the installation and thereby should be acceptable to the Camden Planning Authority.

We believe that there are also four Daikin VAM2000 Heat Recovery Air Handling Units with fresh air and exhaust air grilles located on the façade of the ground floor facing the railway. These should achieve a noise level of no more than 10dB below the recommended design rating (ie: 25.3 dBA) at 1 metre from the residential windows. This will ensure that their noise level will not increase the noise from the condensers and therefore have no adverse effect on the noise level of the condensers.

Table QF/8095/D6 below calculates the noise level that is to be expected from the Heat Recovery Units based on there being two units local to the condensers and two units at the opposite end of the railway façade.

Table QF/8095/D6 – Daytime Sound Pressure Level of Heat Recovery Units discharging/intaking on railway façade

Source/Attenuation	Sound Pressure Level (dB ref 2 x 10^{-5} N/m^2) 63	125	250	500	1k	2k	4k	8k	dBA
Sound power level of VAM2000 unit (0.566 m^3/sec @ 137pa) Ultra High Speed	66	63	58	55	54	46	41	34	
Correction to "in duct" SWL	+9	+9	+9	+9	+9	+9	+9	+9	
11 metres of ducting (400 dia)	-6	-6	-3	-3	-3	-3	-3	-3	
1 off 400 dia bend	0	0	0	-1	-2	-3	-3	-3	
End Reflection	-6	-3	0	0	0	0	0	0	
Power to pressure	-8	-8	-8	-8	-8	-8	-8	-8	
Distance to nearest window (12 metres) 20 log 10	-20	-20	-20	-20	-20	-20	-20	-20	
Barrier effect of edge of ground floor building (d = 500mm)	-8	-10	-12	-14	-16	-18	-20	-20	
2 Units	+3	+3	+3	+3	+3	+3	+3	+3	
Resultant Noise Level	30	28	27	21	17	6	-	-	23

Based upon the above calculations it will not be necessary to fit duct mounted silencers to the atmospheric connections on the four heat recovery Air Handling Units that take their air/discharge their air on the rear façade of the building.

The mitigation measures necessary to meet the planning requirements of Camden Council will therefore be fitting of the Emtec PAC 30 acoustic plenum silencers onto the discharge of the four vertical Daikin air cooled condensers. If these silencers are fitted the noise level, at 1 metre from the nearest residential window, should be no greater than the recommended design rating levels listed in section 5.5 of this report, and the installation should meet the requirements of Camden Council's planning conditions and evoke no justifiable complaints under the guidelines of BS4142:2004.

EMTEC PRODUCTS LTD
11th November 2014

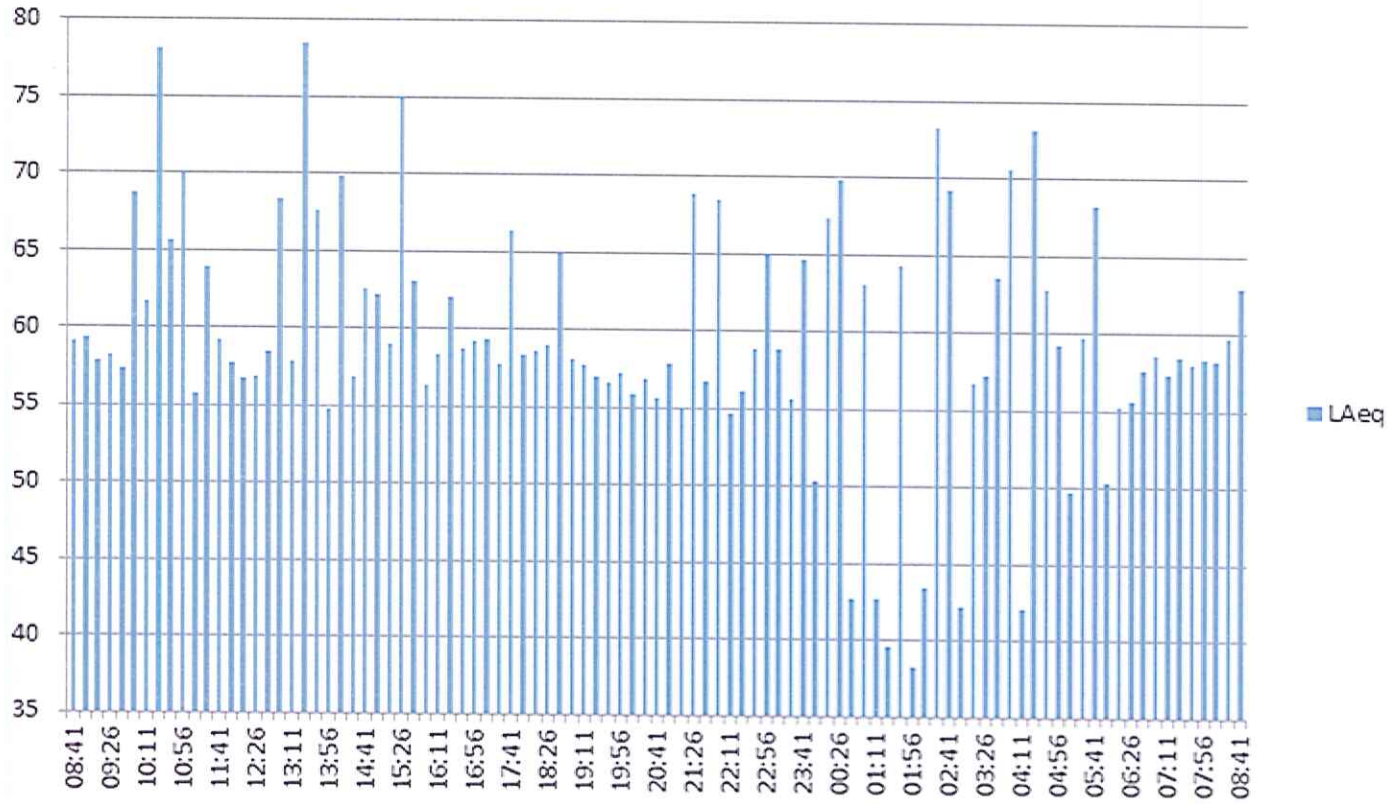
APPENDIX 'A'

Raw Data – Noise Survey

23rd to 24th September 2014

APPENDIX 'B'

Photos and sketches



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CLIENT: Conditioned Environment	*PF No: 5242*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: 2-4 Blackburn Road, London NW6	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/8095/T1*							

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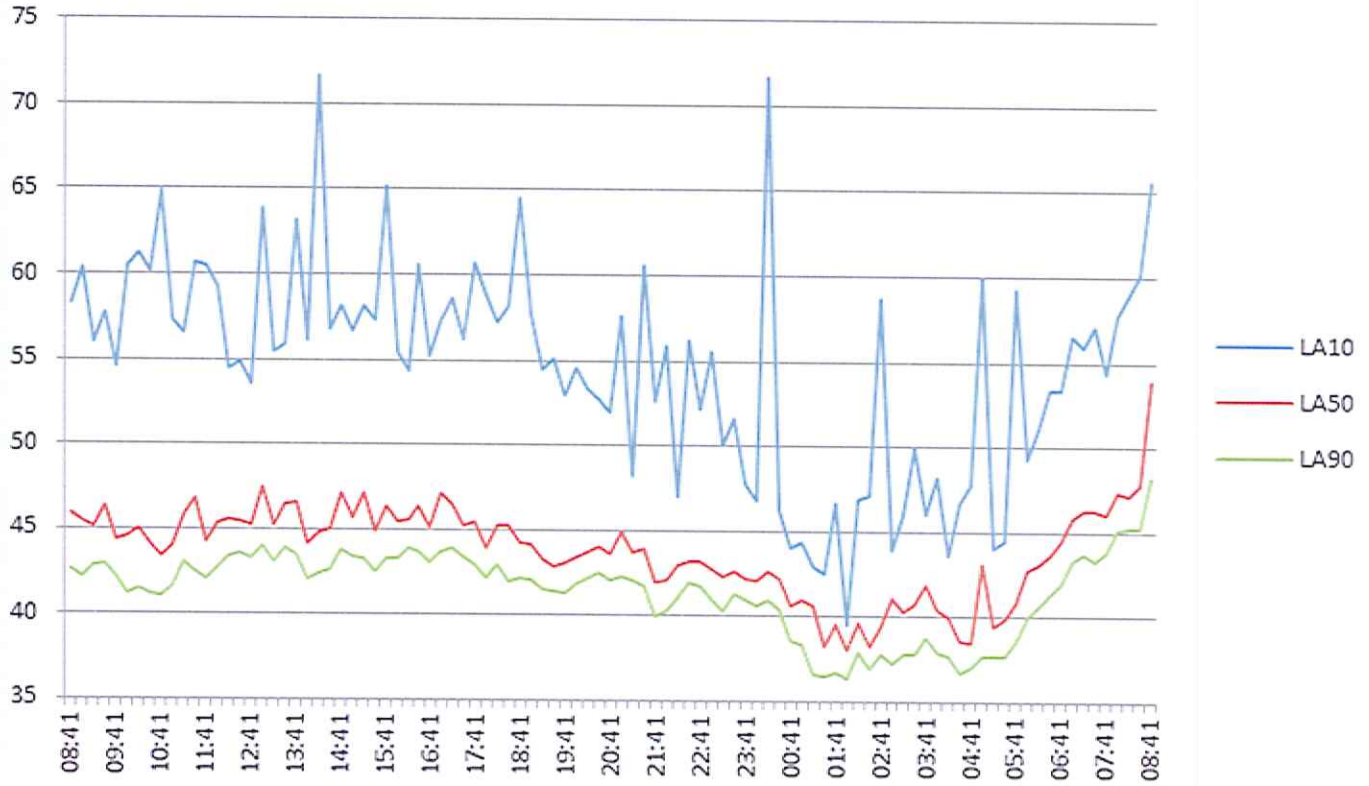

TITLE: LA10; LA50 & LA90 Levels	*ISSUE DATE:* 24/9/14				*DRAWN BY:* MGR	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Conditioned Environment	*PF No: 5242*				*APPROVED BY:* MGR	*REVISION*							
PROJECT: 2-4 Blackburn Road, London NW6	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* MGR	*SKETCH No. QF/8095/T2*							

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APPENDIX 'A'

Raw Data – Noise Survey

23rd to 24th September 2014

RAW NOISE DATA - 2-4 Blackburn Road, London, NW6

Ref: QF8095/PF5242/RP1
Client: Conditioned Environment (Mechanical Services) Ltd
Date: 23rd to 24th September 2014

Address	Start Time	LAeq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	08:41	59.1	88.7	82.7	40.7	72.7	58.3	45.9	42.6	42.2
2	08:56	59.3	88.9	81.9	40	73	60.4	45.5	42.1	41.6
3	09:11	57.9	87.5	78.2	40.4	71.9	56	45.1	42.8	42.3
4	09:26	58.3	87.9	75.8	39.6	72.6	57.7	46.3	42.9	42.3
5	09:41	57.4	87	75.9	39.6	72.6	54.6	44.4	42.1	41.7
6	09:56	68.8	98.4	94	38.8	81.8	60.5	44.6	41.2	40.7
7	10:11	61.7	91.3	79.8	39	74.7	61.3	45	41.5	41.1
8	10:26	78.1	107.7	113.1	38.8	73.6	60.2	44.1	41.2	40.6
9	10:41	65.7	95.3	99.4	39	75.3	64.9	43.4	41	40.5
10	10:56	70.1	99.7	102.8	39.5	81.3	57.3	44	41.6	41.2
11	11:11	55.8	85.4	76.4	40.2	70.7	56.5	45.8	43	42.4
12	11:26	63.9	93.5	82.3	40.4	78.1	60.7	46.8	42.5	42.1
13	11:41	59.2	88.8	78.7	39.9	72.6	60.5	44.2	42	41.7
14	11:56	57.7	87.3	80.8	40.4	71.8	59.3	45.3	42.7	42.2
15	12:11	56.7	86.3	76.6	40.7	71.5	54.5	45.6	43.4	42.8
16	12:26	56.9	86.5	76.6	41.3	71.8	54.9	45.4	43.6	43.2
17	12:41	58.5	88.1	79.6	41.1	73.3	53.6	45.2	43.3	42.9
18	12:56	68.4	98	100.1	41.1	76.3	63.9	47.4	44	43.5
19	13:11	57.9	87.5	75.2	40.9	73	55.4	45.2	43	42.6
20	13:26	78.5	108.1	112.7	41.9	79.1	55.9	46.4	43.9	43.5
21	13:41	67.6	97.2	99.7	41.2	76.2	63.2	46.5	43.5	43.1
22	13:56	54.8	84.4	73.7	39.8	68.5	56.1	44.1	42	41.5
23	14:11	69.9	99.5	91.8	39.9	83.5	71.7	44.8	42.4	42
24	14:26	56.9	86.5	81.2	40.4	71.5	56.8	45	42.6	41.9
25	14:41	62.6	92.2	84	41.7	76.2	58.2	47.1	43.8	43.5
26	14:56	62.2	91.8	84.2	41.2	74.1	56.6	45.7	43.4	43
27	15:11	59	88.6	79.9	41.8	73.4	58.2	47.1	43.3	43
28	15:26	75.1	104.7	107.6	40.4	87.6	57.3	44.9	42.5	42.1
29	15:41	63.1	92.7	84.7	41	75.4	65.2	46.3	43.2	42.5
30	15:56	56.4	86	76.7	41.2	71.2	55.4	45.4	43.2	42.9
31	16:11	58.4	88	82.5	41.5	72.6	54.3	45.6	43.9	43.5
32	16:26	62.1	91.7	85.2	41.7	76.3	60.6	46.3	43.7	43.3
33	16:41	58.7	88.3	79.3	41.1	73.4	55.2	45.1	43	42.6
34	16:56	59.2	88.8	83.8	41.8	72.6	57.3	47.1	43.7	43.3
35	17:11	59.3	88.9	82	41.9	72.8	58.6	46.4	43.9	43.5
36	17:26	57.8	87.4	81	41.7	71.8	56.2	45.2	43.4	43.1
37	17:41	66.4	96	87.5	41.1	81.8	60.7	45.5	42.9	42.5
38	17:56	58.4	88	78.9	40.2	72.8	58.9	43.9	42.1	41.7
39	18:11	58.6	88.2	82.9	40.8	72.2	57.2	45.2	42.9	42.3
40	18:26	59	88.6	82.5	39.9	72.3	58.2	45.2	41.9	41.6
41	18:41	65.1	94.7	86.1	40.6	78.9	64.6	44.2	42.1	41.8
42	18:56	58.1	87.7	79.3	39.8	72.6	57.6	44.1	42	41.6
43	19:11	57.8	87.4	85.1	39.5	72.4	54.4	43.2	41.5	41.1
44	19:26	57	86.6	75.2	39.8	72.1	55.1	42.8	41.4	41.1
45	19:41	56.6	86.2	81.9	39.6	71.7	52.9	43	41.3	41
46	19:56	57.2	86.8	76.7	39.8	72.5	54.6	43.4	41.8	41.4
47	20:11	55.9	85.5	74.7	40.7	71.4	53.4	43.7	42.2	41.9
48	20:26	56.9	86.5	75.3	40.7	72.4	52.7	44	42.5	42.2
49	20:41	55.7	85.3	75.9	40.4	71.3	51.9	43.6	42	41.7
50	20:56	57.9	87.5	77.2	40.4	73	57.6	44.9	42.3	41.9

51	21:11	55	84.6	76.5	40.1	70.6	48.2	43.7	42	41.6
52	21:26	68.9	98.5	89.3	40.1	84.1	60.6	43.9	41.7	41.3
53	21:41	56.7	86.3	81.9	37.8	71.9	52.6	41.9	39.9	39.4
54	21:56	68.5	98.1	92.8	38.6	81.5	55.9	42	40.3	39.8
55	22:11	54.7	84.3	77.4	39	69.9	47	42.9	41	40.6
56	22:26	56.1	85.7	74.1	40.2	70.2	56.2	43.1	41.9	41.7
57	22:41	58.8	88.4	79	39.5	72.8	52.2	43.1	41.7	41.4
58	22:56	65.1	94.7	82.9	38.4	80.6	55.6	42.7	40.9	40.4
59	23:11	58.9	88.5	80.4	38	75.7	50.1	42.3	40.3	39.4
60	23:26	55.7	85.3	77.6	39.9	71.3	51.6	42.6	41.3	41
61	23:41	64.7	94.3	94.5	39.4	72.3	47.8	42.1	40.9	40.5
62	23:56	50.3	79.9	68.4	38.6	65.2	46.8	42	40.6	40.3
63	00:11	67.4	97	89	38.4	79.7	71.7	42.6	40.9	40.5
64	00:26	69.8	99.4	94	38.5	84.6	46.2	42.2	40.4	39.7
65	00:41	42.7	72.3	60.9	37	52.5	44	40.6	38.5	38.2
66	00:56	63	92.6	85.9	36.1	78.2	44.3	40.9	38.3	37.8
67	01:11	42.7	72.3	63.7	35.1	52.4	42.9	40.6	36.5	36.2
68	01:26	39.6	69.2	53	35.1	46	42.5	38.2	36.4	36.1
69	01:41	64.3	93.9	84.4	35.3	80	46.7	39.5	36.7	36.3
70	01:56	38.2	67.8	46.6	34.9	41.6	39.5	38	36.3	36.1
71	02:11	43.4	73	59.8	36	52.3	46.9	39.6	37.9	37.6
72	02:26	73.3	102.9	100.2	35.8	80	47.1	38.2	36.9	36.7
73	02:41	69.3	98.9	90.3	36.6	82.7	58.7	39.4	37.8	37.5
74	02:56	42.2	71.8	56.9	35.8	51.9	43.9	41	37.2	36.8
75	03:11	56.8	86.4	78.2	36.4	70.6	46	40.3	37.8	37.5
76	03:26	57.2	86.8	76.7	36.3	71.1	49.9	40.7	37.8	37.5
77	03:41	63.6	93.2	87.4	36.8	77.3	46	41.8	38.8	38.1
78	03:56	70.6	100.2	94.3	36.2	83.6	48.2	40.4	37.9	37.5
79	04:11	42.1	71.7	64.5	36	52.9	43.6	40	37.6	37.3
80	04:26	73.2	102.8	93.6	35.6	89.5	46.7	38.5	36.7	36.5
81	04:41	62.8	92.4	86.4	35.8	74.9	47.7	38.4	37	36.8
82	04:56	59.2	88.8	79.1	36	73.8	59.9	43	37.7	37.2
83	05:11	49.7	79.3	74.4	36.4	56.6	44	39.4	37.7	37.5
84	05:26	59.7	89.3	83.5	36.3	76.2	44.5	39.8	37.7	37.4
85	05:41	68.2	97.8	93.6	37	77.9	59.3	40.8	38.5	38.1
86	05:56	50.3	79.9	68.9	37.8	61.6	49.3	42.7	40	39.6
87	06:11	55.3	84.9	76.7	39	71.2	51.1	43	40.6	40.1
88	06:26	55.6	85.2	76.2	39.4	70.7	53.3	43.6	41.3	40.9
89	06:41	57.6	87.2	75.7	39.5	72.8	53.3	44.5	41.9	41.5
90	06:56	58.6	88.2	80.9	40.8	72.6	56.5	45.8	43.2	42.6
91	07:11	57.4	87	75.2	40.8	72.4	55.9	46.2	43.7	43.2
92	07:26	58.5	88.1	77	41	73.3	57.1	46.2	43.2	42.8
93	07:41	58	87.6	75.6	41.1	73.1	54.3	46	43.8	43.4
94	07:56	58.4	88	77.4	42	72.9	57.7	47.3	45.1	44.7
95	08:11	58.3	87.9	76.4	43.3	72.7	59	47.1	45.2	44.8
96	08:26	59.7	89.3	77.5	43	73.8	60.2	47.8	45.2	44.8
97	08:41	62.9	87.7	81.5	43.4	74.1	65.7	53.9	48.2	46.9

APPENDIX 'B'

Photos and sketches

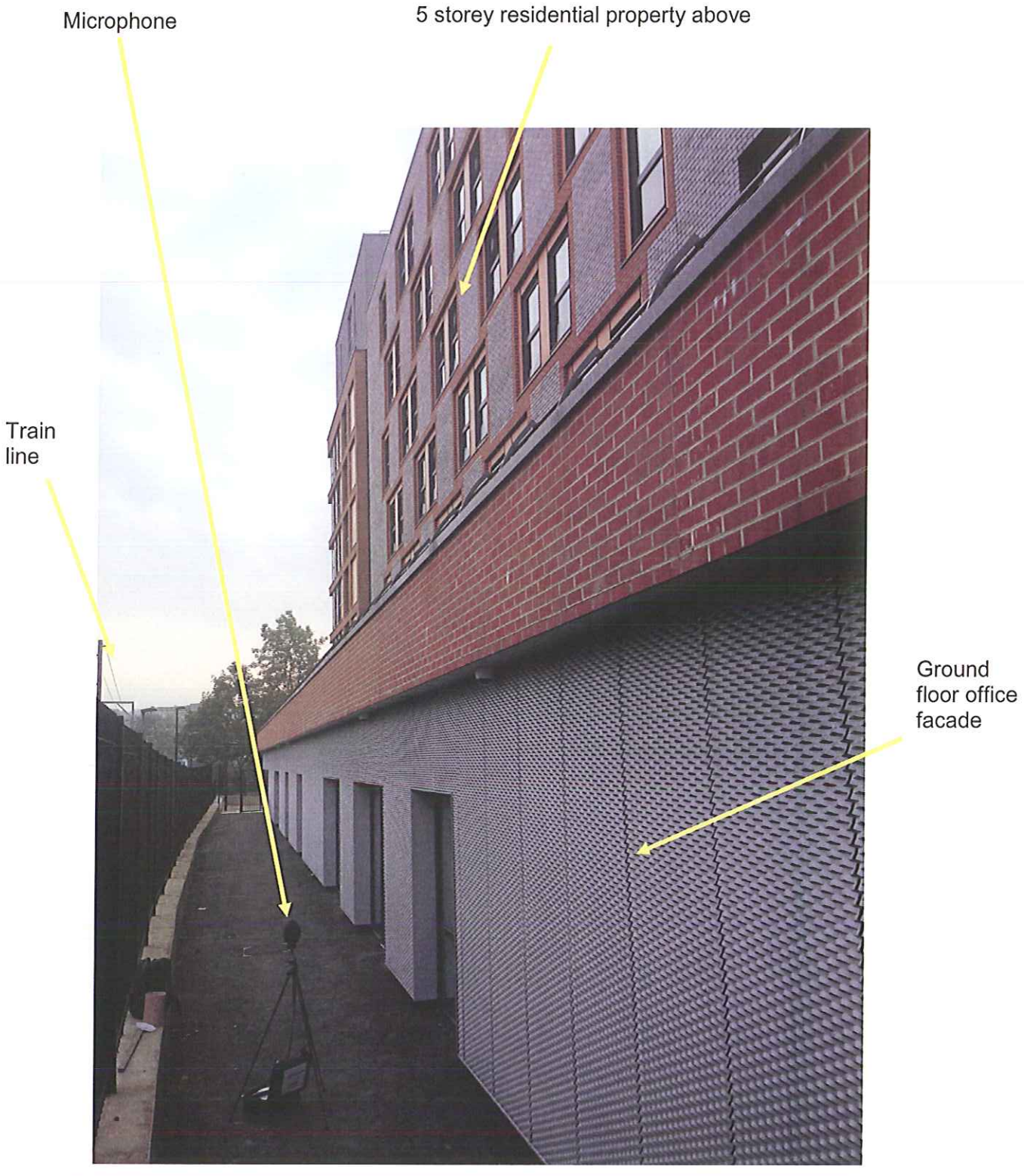


PHOTO A: Location of microphone between ground floor office façade and site boundary railings

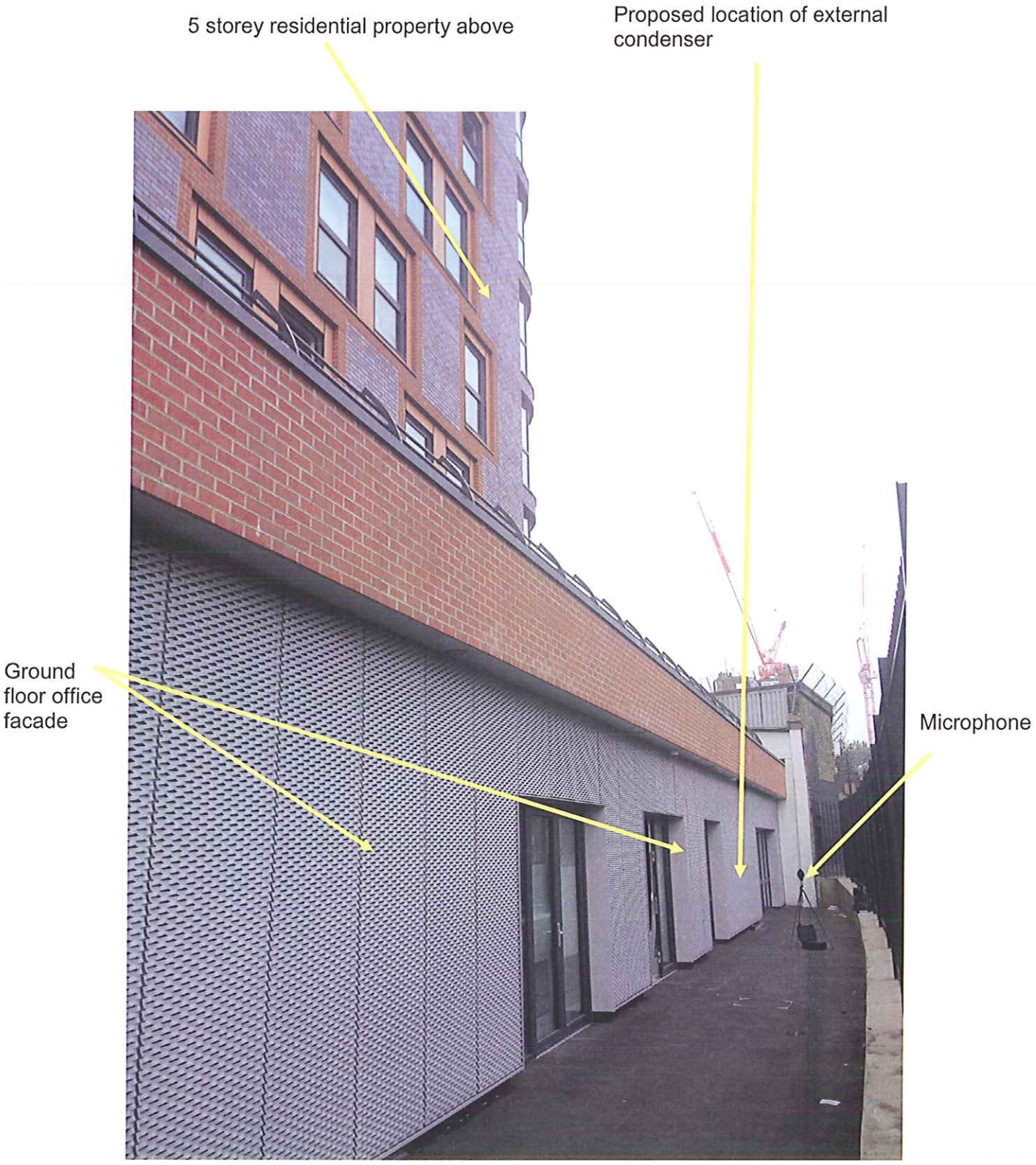


PHOTO B: Position of microphone and proposed location of air cooled condensers.

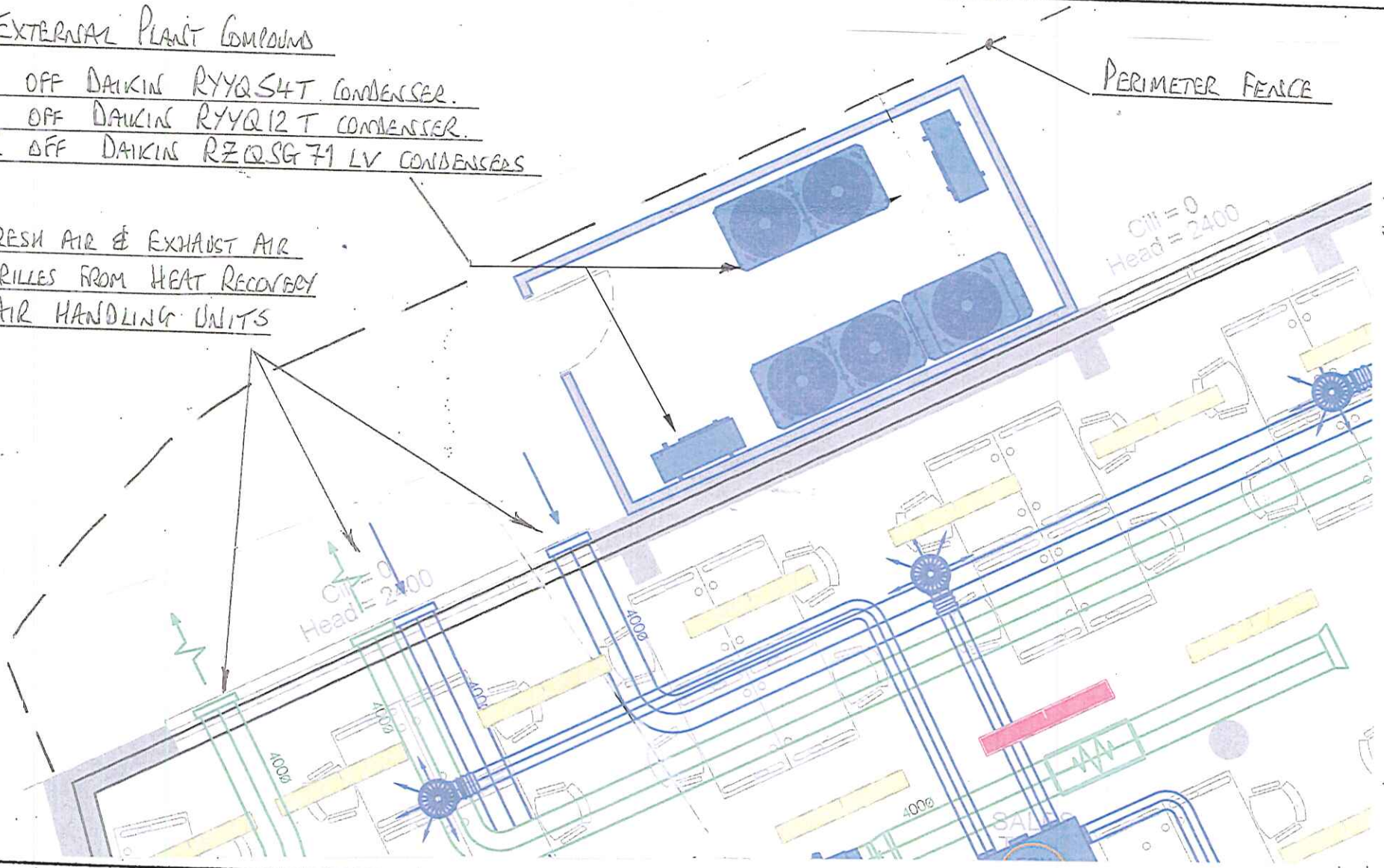
PHOTO C: Microphone located next to railings with railway line behind

EXTERNAL PLANT COMPOUND

1 OFF DAIKIN RYYQ54T CONDENSER.
1 OFF DAIKIN RYYQ12T CONDENSER.
2 OFF DAIKIN RZQSG71 LV CONDENSERS

FRESH AIR & EXHAUST AIR GRILLES FROM HEAT RECOVERY AIR HANDLING UNITS

PERIMETER FENCE



TITLE: LOCATION OF EXTERNAL PLANT.	ISSUE DATE: 25/9/2014	DRAWN BY: MGR	A B C D E F G H	EMTEC	Emtec Products Ltd., Enterprise House, Blyth Road, Hayes, Middx. UB3 1DD. Tel: 0181-848 3031 Fax: 0181-573 3605
CLIENT: CONDITIONED ENVIRONMENT (MS) LTD.	PF No. PF 5242.	APPROVED BY:	REVISION:		
PROJECT: 2-4 BLACKBURN ROAD, NW6.	STATUS: Q A M I	DESIGN AUTH: MGR.	SK No. QF/8095/GA1		