Emtec Products Ltd, Unit L Turnpike Way,
High Wycombe, Bucks, HP12 3TF

Telephone: 020 8848 3031 Fax: 020 8573 3605
Web: www.emtecproducts.co.uk Email: sales@emtecproducts.co.uk

RESULTS OF A DOUBLE 24-HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF THE RESIDENTIAL PROPERTY LOCATED AT 42 ELSWORTHY ROAD, LONDON NW3 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:	MW Architects
Project:	42 Elsworthy Road, London NW3
Emtec Ref:	QF9166/PF6268/RP1
Issue Date:	4th September 2018

RESULTS OF A DOUBLE 24-HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF THE RESIDENTIAL PROPERTY LOCATED AT 42 ELSWORTHY ROAD, LONDON NW3 AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW EXTERNAL PLANT

1.0. INTRODUCTION

This report details the results of a double 24-hour noise survey carried out in the rear garden of the residential property located at 42 Elsworthy Road in St. Johns Wood in London NW3.

The objectives of this survey were as follows:

- To assess the proposal to install new external plant in the rear garden of the property.
- To establish the existing background noise level outside the nearest neighbouring 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:

2.0. SITE DESCRIPTION

The property at 42 Elsworthy Road is a five storey, detached, brick built, residential house located on the corner of Elsworthy Road and Lower Merton Rise. The property has a substantial garden on the corner portion of the site with the house being close to the neighbouring property in Elsworthy Road.

The attached Photo A shows an aerial view of the site and Photos B, C and D show the front, side and rear of the house.

The properties around the site are all residential houses.

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 Elsworthy Road and Lower Merton Rise 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.

We judged that 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 10:50am on Tuesday the 24th of July 2018 to 10:50am on Wednesday the 25th of July 2018.

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 4142:2014).

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

Noise levels were measured at two positions in the rear garden of the property. The Location 1 was at a position adjacent to the boundary with the next door property at No 40 Elsworthy Road. The location 1 microphone can be seen on the attached Photos D, E and F.

The Location 2 microphone was adjacent to the brick wall at the back of the rear garden and its position can be seen on the attached Photo G. The neighbouring property at No.2 Lower Merton Rise is immediately behind the brick wall at the back of the garden..

The microphones were both fitted onto and were both approximately 1.2 metres above ground level. The rest of the measurement equipment was located in two 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: -	Calm	Wind night time: -	Calm

The microphones were protected throughout the tests by acoustically transparent wind balloons.

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/9166/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/9166/T2 and -/T4 at the back of this report.

5.1. Summary of Results

The tables QF/9166/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/9166/D1 – Summary of Maximum and Minimum Noise Levels at side of house

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	31.0 dBA	36.9 dBA	32.2 dBA	30.2 dBA	29.3 dBA	28.7 dBA
Maximum	58.4 dBA	66.8 dBA	64.0 dBA	54.9 dBA	44.8 dBA	42.8 dBA

Table QF/9166/D2 – Summary of Maximum and Minimum Noise Levels at back of Garden

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	31.1 dBA	34.1 dBA	32.2 dBA	30.6 dBA	29.3 dBA	28.8 dBA
Maximum	62.2 dBA	72.1 dBA	67.4 dBA	59.9 dBA	51.4 dBA	47.6 dBA

The following table QF/9166/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/9166/D3 – Minimum LA_{90} Noise Levels – Daytime and Night time

Time of Day	**Side of Building Location 1 - LA_{90}**	**Back of Garden Location 2 - LA_{90}**
Minimum Daytime (7am to 11pm)	35.2dBA	36.5dBA
Minimum Night Time (11pm to 7am)	29.3dBA	29.3dBA

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 will consist of a number of 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 29.3dBA in both locations and these readings occurred during the same time period starting at 2.06am. The daytime minimum LA90 noise levels were 35.2dBA and 36.5dBA at the side of the house and at the back of the garden respectively. The proposed plant will run during the daytime and night time periods and applying a rating level that is 10dB below the lowest daytime and night time LA90 noise levels would give the limiting rating LAeq levels as listed in table QF/9166/D4 below:

Table QF/9166/D4 – Proposed Design Rating Levels

Existing Noise sensitive receptor	*Assessment Location*	*Design Period*	*Lowest measured background level*	***Proposed rating level***	*Proposed Local Authority criteria*
Dwellings	*Garden used for main amenity (free field) and Outside living or dining or bedroom window (façade)*	*Day*	*Side: 35.2dBA* *Rear: 36.5dBA*	***Front: 25.2dBA*** ***Rear: 26.5dBA***	*Green*
Dwellings	*Outside bedroom window (façade)*	*Night*	*Side & Back : 29.3dBA*	***Front & Back: 19.3dBA***	*Green*

5.4. 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/9166/D5: -

Table QF/9166/D5 – recommended design rating levels $L_{Ar,T}$

Type of premises	**Side $L_{Ar,T}$ (7am – 11pm)**	**Side $L_{Ar,T}$ (11pm – 7am)**	**Back of Garden $L_{Ar,T}$ (7am – 11pm)**	**Back of Garden $L_{Ar,T}$ (11pm – 7am)**
Noise sensitive	25.2dBA	19.3dBA	26.5dBA	19.3dBA

6.0. DISCUSSION OF RESULTS

It is proposed to install six Mitsubishi air cooled condensers in the rear garden of the property and install ventilation systems within the house which will have fresh air inlet and exhaust air outlet louvres in the walls of the property.

The equipment should be designed to achieve a combined Sound Pressure Level, at 1 metre from the neighbours' windows, that is no greater than the limiting LAeq noise levels, itemised in table QF/9166/D5, during the hours of operation of the plant.

The tables QF/9166/D6 and -/D7 below list the Sound Pressure levels of the six condensers and the natural and required attenuation in order to achieve a noise level below the daytime and night time limiting LAeq levels at 1 metre from the windows of 40 Elsworthy Road.

Table QF/9166/D6 – Noise Level of condensers at the nearest neighbour's window

Noise Level/ Attenuation	Sound Pressure Level (dB ref 2 x 10^{-5} N/m^2) 63	125	250	500	1k	2k	4k	8k	dBA
Mitsubishi PUMY-P200 (2 off)	67	64	64	61	60	55	52	44	64
Mitsubishi PUMY-P112 (4 off) at 1m free field	63	61	60	58	56	51	44	38	60
Reverberation off brick wall	+3	+3	+3	+3	+3	+3	+3	+3	
Distance correction (units at 19 metres)10 log A_{18}/A_1	-21	-21	-21	-21	-21	-21	-21	-21	
Directivity of output to receiver (45 degrees)	0	-1	-2	-2	-3	-3	-4	-4	
SPL at 1 metre from window	50	47	44	43	40	35	31	23	45

Table QF/9166/D7 – Required attenuation of the six condensers to achieve the limiting LAeq noise levels at 1 metre from the windows of the property at 40 Elsworthy Road

Noise Level/ Attenuation	Sound Pressure Level (dB ref 2 x 10^{-5} N/m^2) 63	125	250	500	1k	2k	4k	8k	dBA
Unattenuated SPL at 1m from windows	50	47	44	43	40	35	31	23	45
Attenuation of Emtec RAAC/25/600 silencer	-6	-9	-15	-27	-34	-34	-31	-28	
Attenuated Resultant SPL at 1 metre from nearest window of 40 Elsworthy Road	44	38	29	16	6	1	-	-	25

The tables QF/9166/D8 and -/D9 below list the Sound Pressure levels of the six condensers and the natural and required attenuation in order to achieve a noise level below the daytime and night time limiting LAeq levels at 1 metre from the windows of 2 Lower Merton Rise.

Table QF/9166/D8 – Noise Level of condensers at the nearest neighbour's window

Noise Level/ Attenuation	Sound Pressure Level (dB ref 2 x 10^{-5} N/m^2) 63	125	250	500	1k	2k	4k	8k	dBA
Mitsubishi PUMY-P200 (2 off) Mitsubishi PUMY-P112 (4 off) at 1m free field	67 63	64 61	64 60	61 58	60 56	55 51	52 44	44 38	64 60
Reverberation off brick wall	+3	+3	+3	+3	+3	+3	+3	+3	
Distance correction (units at 10 metres)10 log A_9/A_1	-15	-15	-15	-15	-15	-15	-15	-15	
Directivity of output to receiver (180 degrees)	-2	-4	-6	-10	-10	-10	-10	-10	
Barrier effect of boundary wall	-6	-8	-9	-10	-12	-14	-16	-18	
SPL at 1 metre from window	48	42	38	31	27	20	15	5	34

Table QF/9166/D9 – Required attenuation of the six condensers to achieve the limiting LAeq noise levels at 1 metre from the windows of the property at 2 Lower Merton Rise

Noise Level/ Attenuation	Sound Pressure Level (dB ref 2 x 10^{-5} N/m^2) 63	125	250	500	1k	2k	4k	8k	dBA
Unattenuated SPL at 1m from windows	48	42	38	31	27	20	15	5	45
Attenuation of Emtec RAAC/25/600 silencer	-6	-9	-15	-27	-34	-34	-31	-28	
Attenuated Resultant SPL at 1 metre from nearest window of 2 Lower Merton Rise	42	33	23	4	-	-	-	-	21

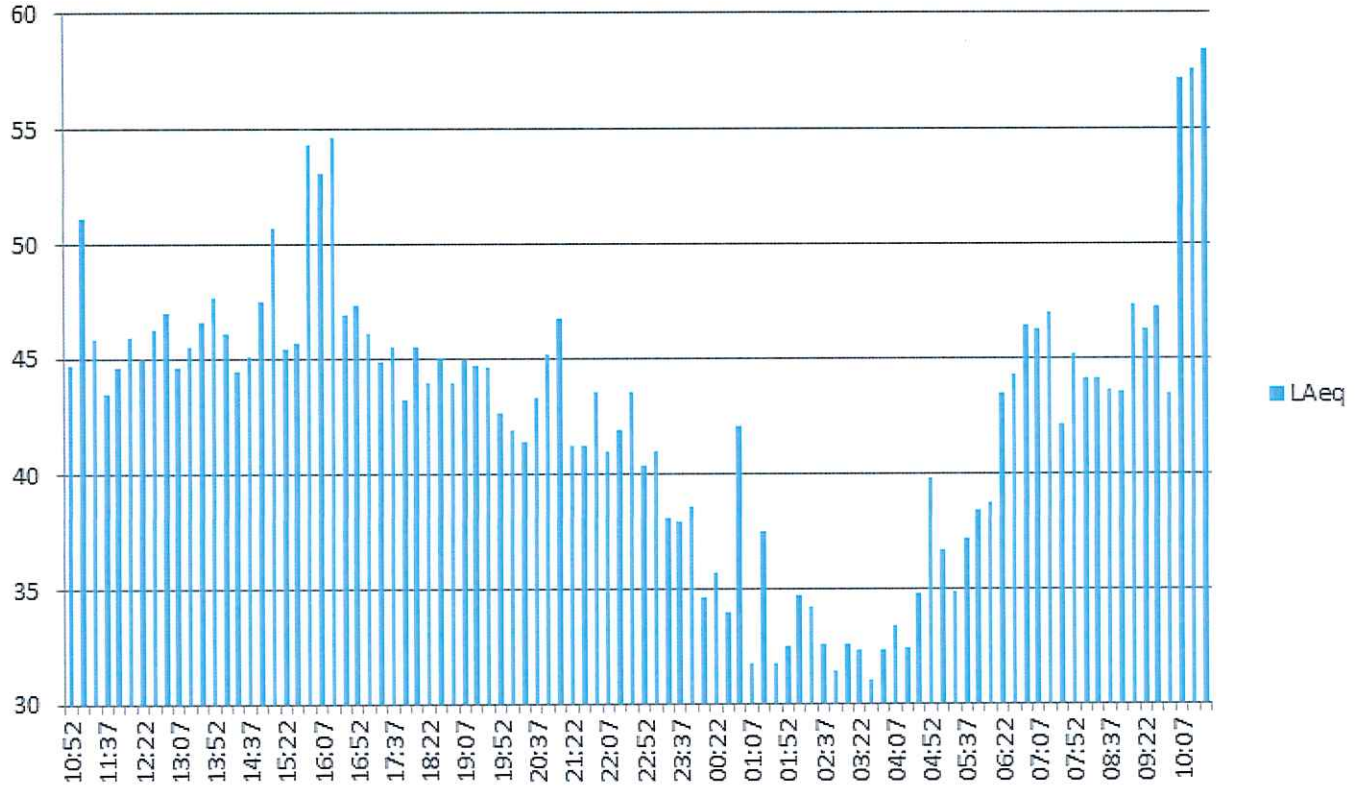
If the condenser units are installed as shown on our attached sketch No.QF/9166/GA1 and are located in the corner of the rear garden up against the boundary wall in line with the location shown on the attached photo A then the noise level at the nearest residential window will be less than the established maximum allowable LAeq level listed in table QF/9166/D5 and the installation will meet the requirements of Camden Council's current planning directives with regard to noise.

The condensers should be mounted onto neoprene-in-shear, anti-vibration mounts having a minimum static deflection of 6mm in order to eliminate any structural transfer of noise to the adjacent properties.

Any ventilation systems that are installed within the proposed new scheme should have atmospheric silencers fitted on the fresh air inlets and exhaust air outlets to achieve a noise level, with all systems operating, no more than 5dB below the established limiting noise levels listed in table QF/9166/D5. This will ensure that the overall established limiting LAeq level will not exceeded at 1 metre from the nearest neighbours' windows.

If the above recommendations are followed the proposed new equipment should meet the requirements of Camden's current planning policy with regard to noise.

EMTEC PRODUCTS LTD
4th September 2018

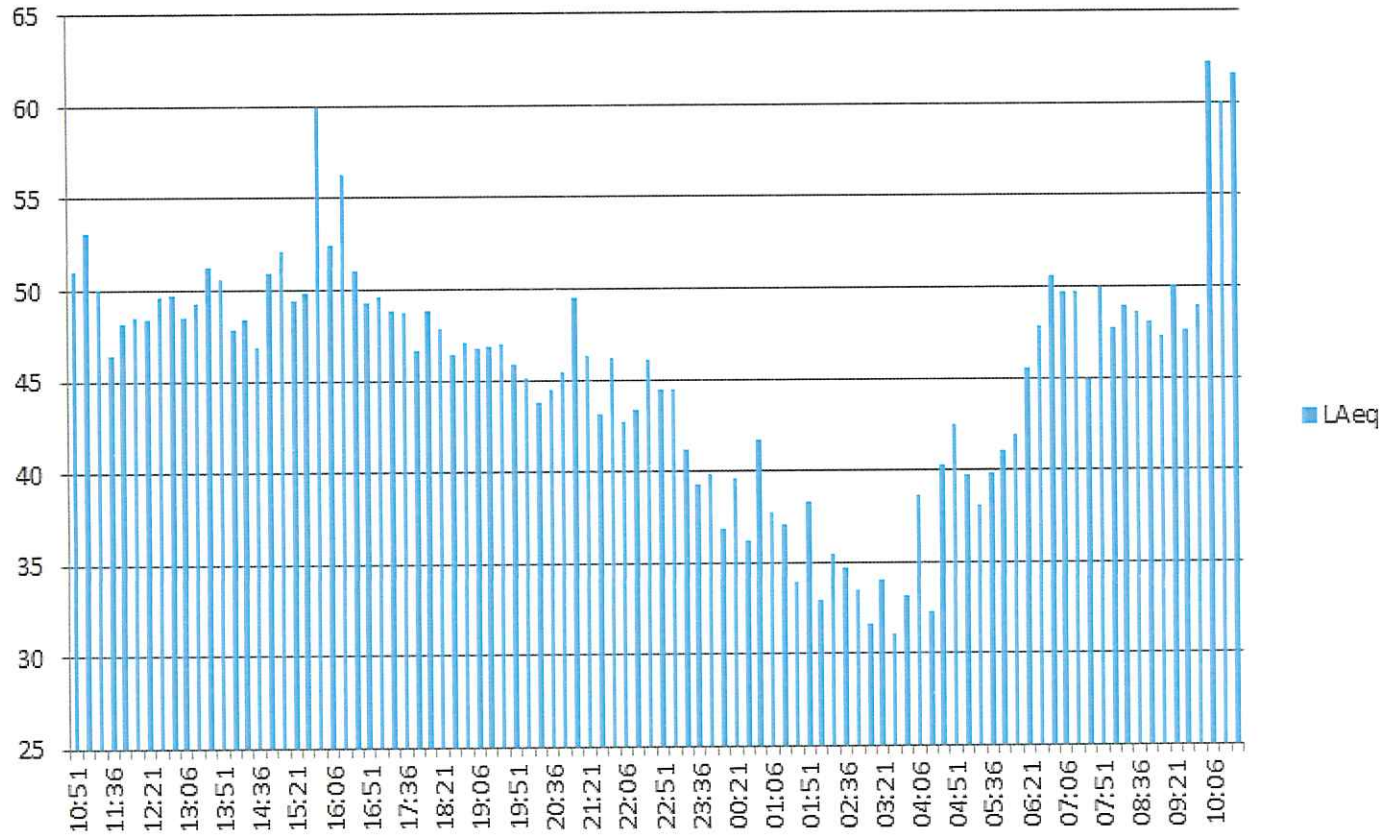


TITLE: *LAeq Levels*	*ISSUE DATE:* 25/07/2018				*DRAWN BY:* *IG*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: MW Architects	*PF No: 6268*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: 42 Elsworthy Road, London NW3	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/9166/T1*							

EMTEC
Unit L, Turnpike Way, High Wycombe
Bucks HP12 3TF
Tel: 020 8848 3031 Fax: 020 8573 3605

TITLE: *LA10; LA50 & LA90 Levels*	*ISSUE DATE:* 25/07/2018				*DRAWN BY:* *IG*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: MW Architects	*PF No: 6268*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: 42 Elsworthy Road, London NW3	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/9166/T2*							

EMTEC
Unit L, Turnpike Way, High Wycombe
Bucks HP12 3TF
Tel: 020 8848 3031 Fax: 020 8573 3605



TITLE: *LAeq Levels*	*ISSUE DATE:* 25/07/2018				*DRAWN BY:* *IG*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: MW Architects	*PF No: 6268*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: 42 Elsworthy Road, London NW3 – Rear Garden	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/9166/T3*							

EMTEC
Unit L, Turnpike Way, High Wycombe
Bucks HP12 3TF
Tel: 020 8848 3031 Fax: 020 8573 3605

TITLE: *LA10; LA50 & LA90 Levels*	*ISSUE DATE:* 25/07/2018				*DRAWN BY:* *IG*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: MW Architects	*PF No: 6268*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: 42 Elsworthy Road, London NW3 – Rear Garden	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/9166/T4*							

EMTEC
Unit L, Turnpike Way, High Wycombe
Bucks HP12 3TF
Tel: 020 8848 3031 Fax: 020 8573 3605

APPENDIX 'A'

Raw Data – Noise Survey

24th to 25th July 2018

RAW NOISE DATA - 42 Elsworthy Road, London NW3 - Side of House (Location 1)

Ref: QF9166/PF6268/RP1
Client: MW Architects
Date: 24th to 25th July 2018

Address	Start Time	LAeq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	10:52	44.7	74.3	62.1	37.9	51.3	46.5	43.6	41.4	39.3
2	11:07	51.1	80.7	82.1	38.7	60.5	48.9	44	41.4	39.8
3	11:22	45.8	75.4	65.9	36.8	53.8	47.5	43.6	40.3	38
4	11:37	43.4	73	56	37	49.9	45.7	42.5	40	38.2
5	11:52	44.6	74.2	57.3	35.6	51.3	47.1	43.6	40.8	37.8
6	12:07	45.9	75.5	59.7	37.6	51.2	48.2	45.3	42.1	39.7
7	12:22	44.9	74.5	63.6	37.7	51.7	47.3	43.6	40.7	39
8	12:37	46.2	75.8	65.5	37.4	53	48	44.1	41	39
9	12:52	47	76.6	64.9	38.1	57.7	49.2	43.6	41	39.4
10	13:07	44.6	74.2	60.2	35.5	52.2	47.5	42.7	38.3	36.3
11	13:22	45.5	75.1	61.6	37.1	51.7	47.6	44.9	41.8	38.9
12	13:37	46.6	76.2	61.6	36.3	54.8	49	45.4	40.5	37.9
13	13:52	47.6	77.2	65.7	37.4	53.2	50.3	46.7	41.9	39.5
14	14:07	46.1	75.7	61.1	36.6	52.5	49.4	44.3	40.2	37.7
15	14:22	44.4	74	61.4	37.3	51.4	46.8	43.1	40.3	38.6
16	14:37	45.1	74.7	70.5	36.1	52.1	47.5	43.5	40	38.2
17	14:52	47.5	77.1	70.9	36.8	57.6	48.5	42.9	39.6	38.1
18	15:07	50.7	80.3	70.8	36.7	61.6	51.7	44.7	41	38.4
19	15:22	45.4	75	61.8	36.8	54.5	48.1	42.6	39.7	38
20	15:37	45.7	75.3	58.8	37.7	55.1	48.1	43.6	40.8	39.1
21	15:52	54.3	83.9	70.5	39.3	66.8	50.5	44.5	41.8	40.5
22	16:07	53.1	82.7	66.4	38.2	61	58	45.8	41.5	39.7
23	16:22	54.6	84.2	69	37	66.3	59.4	44.2	40.2	38.1
24	16:37	46.9	76.5	68.7	35.1	58.9	48.9	42.5	39.3	36.4
25	16:52	47.3	76.9	66.4	37.6	54.4	51	45	41	38.9
26	17:07	46.1	75.7	66.6	37.1	56	48.3	43.6	39.9	38.1
27	17:22	44.8	74.4	62.3	36.5	53.2	46.8	43	39.7	38
28	17:37	45.5	75.1	68.7	36.6	53.8	46.8	41.9	38.7	37.5
29	17:52	43.2	72.8	59.5	35.6	50.9	45.6	41.9	38.4	36.8
30	18:07	45.5	75.1	61.6	36.4	54.8	47.8	43.1	39.9	37.9
31	18:22	43.9	73.5	57.7	34.7	53	46.7	41.8	38.4	36.5
32	18:37	45	74.6	65.2	35.3	55.7	47.3	41.6	37.9	36.5
33	18:52	43.9	73.5	60.9	35.8	52.2	45.9	41.9	39	37.4
34	19:07	44.9	74.5	60.1	37.7	51.8	46.8	43.9	41.6	39.3
35	19:22	44.7	74.3	59.7	37.5	51.6	47	43.4	40.5	38.9
36	19:37	44.6	74.2	58.9	36.3	53.8	47.4	42.2	39	37.4
37	19:52	42.6	72.2	59.7	36.7	49.6	45	41.2	39.1	37.7
38	20:07	41.9	71.5	57.2	35.6	50.6	44.5	39.9	37.9	36.8
39	20:22	41.4	71	56.4	36	48.5	43.7	40.2	38	36.9
40	20:37	43.3	72.9	67.8	35.2	52.3	45.3	40.1	37.6	36.3
41	20:52	45.2	74.8	65.3	35.6	57.9	44.9	40.2	37.5	36.4
42	21:07	46.7	76.3	69.2	35	59.4	47.7	40.7	37.6	36.2
43	21:22	41.2	70.8	65.4	34	49.5	43.1	38.8	36.1	35
44	21:37	41.2	70.8	62.1	33.2	48.9	43.8	39.7	35.5	34.3
45	21:52	43.5	73.1	60.4	34.6	57	43.7	39.1	36.7	35.4
46	22:07	41	70.6	58.1	34.5	48.8	43.2	39.4	36.6	35.2
47	22:22	41.9	71.5	58.8	34.4	51.3	44.8	38.7	35.9	35
48	22:37	43.5	73.1	66	33.1	56.5	43.6	38.8	35.9	34.5
49	22:52	40.4	70	63.6	33.4	49.9	42.6	37.7	35.2	34.3
50	23:07	41	70.6	58.8	33.3	50.6	43.6	37.8	35.4	34.5

51	23:22	38.1	67.7	57.3	32.8	44.6	40.6	36.6	34.2	33.4
52	23:37	37.9	67.5	53.4	31.4	45.8	41.2	35.4	33	32.2
53	23:52	38.6	68.2	56.8	30.2	50.4	40.9	33.3	32	31
54	00:07	34.6	64.2	46.3	29.7	43.2	37.2	32.7	31.4	30.6
55	00:22	35.7	65.3	63.3	29.8	44	36.4	32.3	31.2	30.6
56	00:37	34	63.6	50.3	28.5	43.6	35.8	31.6	30.1	29.3
57	00:52	42	71.6	62.5	28.7	56.1	41.7	31	29.8	29.4
58	01:07	31.7	61.3	45	29	39.4	32.6	30.8	30	29.6
59	01:22	37.5	67.1	53.4	29.1	47.2	41.5	33.2	30.8	30
60	01:37	31.7	61.3	49.3	28.4	37.8	33	31	29.8	29.1
61	01:52	32.5	62.1	48.8	27.9	39.5	33.1	31	30	29.1
62	02:07	34.7	64.3	56.4	28.1	42.4	34.1	30.3	29.3	28.7
63	02:22	34.2	63.8	50.1	28.2	44.9	36.7	30.2	29.3	28.8
64	02:37	32.6	62.2	48	28.2	42	33.9	30.4	29.4	28.9
65	02:52	31.4	61	45	28.2	37.9	32.8	30.7	29.5	28.9
66	03:07	32.6	62.2	56.3	29.3	37.8	32.6	31.6	30.7	30.1
67	03:22	32.3	61.9	45.2	28.7	41.7	32.5	30.9	30	29.4
68	03:37	31	60.6	42.5	28	36.9	32.2	30.4	29.6	29
69	03:52	32.3	61.9	46.2	28.5	41.8	33.1	30.8	30	29.4
70	04:07	33.4	63	47	28.3	43.5	34.3	31	29.9	29.3
71	04:22	32.4	62	44.9	28.7	40.3	33.1	31.4	30.2	29.6
72	04:37	34.8	64.4	54	29.6	44.2	36.1	32.7	31.4	30.7
73	04:52	39.8	69.4	57	30.1	51.2	43.1	33.4	31.8	31
74	05:07	36.7	66.3	51.8	30.3	46.9	38.5	33.6	31.9	31.3
75	05:22	34.9	64.5	48.7	30.7	41.7	37.1	33.7	32.4	31.7
76	05:37	37.2	66.8	58.6	31	45.6	39.6	33.9	32.7	31.9
77	05:52	38.4	68	53.9	31.4	48.2	41.4	35.3	33.2	32.4
78	06:07	38.7	68.3	58.1	31.6	47.8	41.8	35.8	33.5	32.7
79	06:22	43.4	73	64.9	32.8	54.9	44.2	38.4	35.2	33.8
80	06:37	44.3	73.9	63.8	32.8	56.2	46.8	39	35.4	34.1
81	06:52	46.4	76	64.9	35.2	57.7	48.5	42.3	38.2	36.4
82	07:07	46.2	75.8	67	35.7	57.6	48.5	41.4	37.8	36.5
83	07:22	47	76.6	66	33.8	59	49.4	41	36.6	34.8
84	07:37	42.1	71.7	63.5	31.9	51.8	43.9	39.6	35.9	34
85	07:52	45.2	74.8	72.2	32.9	55.2	46.9	40.9	36.8	34.7
86	08:07	44.1	73.7	61.1	34.8	55.1	45.8	41.3	38.1	36.3
87	08:22	44.1	73.7	60.6	35.1	52.3	46.8	42.1	38.4	36.5
88	08:37	43.6	73.2	56	34	51.7	46.5	41.8	38	35.5
89	08:52	43.5	73.1	59.1	33.8	53.3	45.7	41	37.1	35.3
90	09:07	47.3	76.9	75.6	33.5	54.5	46.3	41.1	36.3	34.8
91	09:22	46.2	75.8	65	35.4	55.9	48.5	43.3	39.1	36.7
92	09:37	47.2	76.8	66.3	33.3	54.2	49.3	46.2	42.6	35.9
93	09:52	43.4	73	67.5	33.8	51.2	46.7	41	37.4	35.8
94	10:07	57.2	86.8	64.9	35.9	63.7	62	54	43.1	38.3
95	10:22	57.6	87.2	64.2	40.2	63.3	61.7	54.9	42.7	41.1
96	10:37	58.4	88	67.7	41.4	65.9	64	51.7	44.8	42.8

RAW NOISE DATA - 42 Elsworthy Road, London NW3 - Back of Garden (Location 2)

Ref: QF9166/PF6268/RP1
Client: MW Architects
Date: 24th to 25th July 2018

Address	Start Time	LAeq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	10:51	51	80.6	78.5	40.6	58.6	51	46.7	43.8	42
2	11:06	53.1	82.7	80.2	40.7	64	53.8	47.1	43.5	42
3	11:21	50	79.6	71.1	38.8	59.8	51.7	46.9	43	40.3
4	11:36	46.4	76	54.7	38.4	51.9	49.3	45.6	42.2	39.7
5	11:51	48.2	77.8	59	37.2	55.9	51	46.7	43.2	39.9
6	12:06	48.5	78.1	66.6	40.5	54.1	51	47.9	43.8	41.6
7	12:21	48.4	78	61	39.7	55.8	50.9	47.1	43.7	41.6
8	12:36	49.6	79.2	68.2	38.8	57	51.6	47.3	43.4	40.7
9	12:51	49.7	79.3	68.2	37.1	60.5	51.7	46.4	42.7	38.3
10	13:06	48.5	78.1	66.4	37.5	56.8	50.6	46.4	41.5	39.1
11	13:21	49.3	78.9	67.4	39	56	51.9	47.9	44.1	40.6
12	13:36	51.3	80.9	65.3	38.9	59.2	54.4	49.6	44.8	41.7
13	13:51	50.6	80.2	65.9	38.9	57.1	53.6	49.4	44.2	41.8
14	14:06	47.9	77.5	61.1	38.3	54.2	50.9	46.5	42.3	39.6
15	14:21	48.4	78	69.7	39.6	54.9	51.1	47	43.5	41.3
16	14:36	46.9	76.5	57.7	38.5	53.9	49.8	45.5	41.6	39.8
17	14:51	50.9	80.5	74.6	39.4	60	54.8	46.2	42.2	40.4
18	15:06	52.1	81.7	74.5	40.4	62.9	53.7	47.6	42.9	41.3
19	15:21	49.4	79	68.4	39	58.6	51.9	45.8	42.3	40.1
20	15:36	49.8	79.4	65.5	40.2	59.2	52.5	47.3	43.7	41.7
21	15:51	59.9	89.5	75.1	41.1	72.1	60.4	47.7	44.1	42.4
22	16:06	52.5	82.1	65.9	39.5	61	57.8	47.9	43.2	40.9
23	16:21	56.3	85.9	72.1	39.1	70.1	57.9	47	42.5	40.5
24	16:36	51	80.6	66.2	37.1	61.7	53.4	46.8	41.9	38.6
25	16:51	49.3	78.9	65.5	39.6	58	52.7	46.8	43.1	41
26	17:06	49.6	79.2	66.6	39.1	61.2	51.1	46.2	42	40.1
27	17:21	48.8	78.4	67.3	39.5	57.7	50.9	46.5	42.4	40.6
28	17:36	48.7	78.3	68.5	38.8	57.1	50.7	45.7	41.9	40
29	17:51	46.6	76.2	62.3	37.7	52.8	49.5	45.5	41.2	38.7
30	18:06	48.8	78.4	65.2	37	57.8	51.8	46.4	41.3	38.8
31	18:21	47.9	77.5	62.4	38.3	57.5	50.9	45.1	41.1	39.8
32	18:36	46.4	76	62.2	37.9	54.2	49.8	44.2	40.2	38.7
33	18:51	47.1	76.7	64	38.9	55.7	49.3	45	41.7	40
34	19:06	46.8	76.4	64.8	39.1	54.5	48.9	44.8	42	40.4
35	19:21	46.9	76.5	64.2	36.1	55	49.8	45.1	40.9	37.8
36	19:36	47	76.6	62.7	36.6	56.4	49.6	44.3	40.5	38.3
37	19:51	45.9	75.5	61.8	38	53.3	48.7	44.2	41	39.6
38	20:06	45.1	74.7	63.6	36	55	47.8	41.9	38.8	37.1
39	20:21	43.8	73.4	57.1	36.1	51.2	47	41.9	38.7	36.8
40	20:36	44.4	74	60.6	35	52.3	48.1	41.7	37.8	36
41	20:51	45.4	75	59.9	35.9	55.9	48	41.7	38.3	37.1
42	21:06	49.5	79.1	73.6	35.3	62.2	50.1	43.3	39.7	38.1
43	21:21	46.3	75.9	75	35.1	55.5	47.8	41.7	37.7	36.2
44	21:36	43.1	72.7	66.4	34.2	51.9	45.9	40.5	36.9	35.4
45	21:51	46.2	75.8	61.1	35.2	58.6	48.5	40.4	37.3	36.2
46	22:06	42.7	72.3	57	35	50.7	46.2	40.3	36.9	35.9
47	22:21	43.4	73	57.5	34.9	51.9	47.1	40.4	37.3	36
48	22:36	46.1	75.7	67.1	34.7	58.8	47.8	40.9	37.1	35.9
49	22:51	44.5	74.1	64	34.5	56.2	46.6	40.3	36.5	35.4
50	23:06	44.4	74	62	33.9	54.9	46.7	38.5	35.8	34.6

51	23:21	41.2	70.8	58.5	33.5	49.1	44.6	38.7	35.4	34.4
52	23:36	39.3	68.9	57.5	31.8	49.9	42.2	35.3	33.5	32.7
53	23:51	39.8	69.4	58.2	30.4	50.9	42.8	33.8	32.1	31.2
54	00:06	36.9	66.5	49.7	30	46.9	39.7	33.3	31.7	30.9
55	00:21	39.6	69.2	68.9	30.2	48.6	38.8	33.4	31.8	30.9
56	00:36	36.2	65.8	54.8	28.8	49	37.1	32.2	30.5	29.5
57	00:51	41.7	71.3	60.5	29.2	54.9	43.8	31.5	30.2	29.7
58	01:06	37.7	67.3	56	29	49.4	41.5	31.4	30.4	29.8
59	01:21	37.1	66.7	53.3	29.8	47.4	39.6	33.8	31.6	30.6
60	01:36	33.9	63.5	49.2	28.6	43.8	34.8	32	30.4	29.6
61	01:51	38.3	67.9	60.4	28.9	51.1	36.4	31.9	30.7	29.6
62	02:06	32.9	62.5	47.6	28	43.7	34.6	30.6	29.3	28.8
63	02:21	35.5	65.1	49.8	28.3	45.7	38.2	31.3	29.7	29.1
64	02:36	34.7	64.3	52.7	28.5	45.3	35.9	30.7	29.6	29.1
65	02:51	33.5	63.1	56.6	28.1	42.7	34.9	30.6	29.5	28.9
66	03:06	31.6	61.2	43.2	28.5	39	32.2	30.9	29.8	29.1
67	03:21	34	63.6	49.7	28.6	45.9	33.7	31	30	29.4
68	03:36	31.1	60.7	36.3	28.6	34.1	32.3	30.9	29.9	29.3
69	03:51	33.1	62.7	49.4	29.1	42.4	33.8	31.5	30.4	29.7
70	04:06	38.6	68.2	56.4	28.4	50.7	40.4	31.8	30.1	29.2
71	04:21	32.3	61.9	45.8	29	37.7	34	31.5	30.4	29.8
72	04:36	40.3	69.9	59.4	29.8	53.6	41.4	33.4	31.6	30.7
73	04:51	42.5	72.1	61	30.5	54.1	45.2	35.8	32.8	31.6
74	05:06	39.7	69.3	59.3	31.8	49.3	43	35.8	33.4	32.5
75	05:21	38.1	67.7	56.5	32	47.6	40.6	35.4	33.7	32.9
76	05:36	39.8	69.4	54.4	32.4	48.6	43.7	36.5	34.3	33.2
77	05:51	41.1	70.7	56.6	32.6	50.8	44.3	37.9	34.9	33.9
78	06:06	41.9	71.5	59.6	33.4	51.1	45.5	38	35.4	34.5
79	06:21	45.6	75.2	67.8	34.9	55.6	46.8	41.2	37.6	36.1
80	06:36	47.9	77.5	70.8	34.5	58.7	50	42.5	37.5	36
81	06:51	50.6	80.2	71.7	37.1	62.6	51.9	45	40.3	38.6
82	07:06	49.7	79.3	70.3	36.9	62.6	50.5	44.3	40.4	38.7
83	07:21	49.7	79.3	66.9	35.5	61.1	52.9	43.7	38.5	36.7
84	07:36	44.9	74.5	64.2	34.5	52.6	47.6	42.9	38.2	36.2
85	07:51	49.9	79.5	79.4	35	59.3	51.5	44.4	39.8	36.8
86	08:06	47.7	77.3	67.6	37.5	59.6	49.3	44.2	39.6	38.2
87	08:21	49	78.6	72.9	36.7	59	51.4	45.3	40.9	39
88	08:36	48.6	78.2	65	36.3	59.3	51.4	44.9	39.7	37.5
89	08:51	48.1	77.7	64.7	35	58.4	50.7	44.5	39.7	36.7
90	09:06	47.3	76.9	72.4	35.2	54.2	49.7	43.7	38.3	36.4
91	09:21	50	79.6	71.8	37.9	60.1	52.4	46.7	42.8	39.9
92	09:36	47.6	77.2	61.3	34.8	54.9	50.2	46.8	40.4	36.8
93	09:51	49	78.6	72.4	36.5	57.4	53.1	45	39.8	37.6
94	10:06	62.2	91.8	69.1	41.6	67.4	66.1	59.9	51.4	45.2
95	10:21	60.1	89.7	68.2	46.2	67.1	65.4	55.4	48.9	47.6
96	10:36	61.6	91.2	71	38.3	69	67.4	52.7	44.8	39.6

APPENDIX 'B'

Photos and Sketch

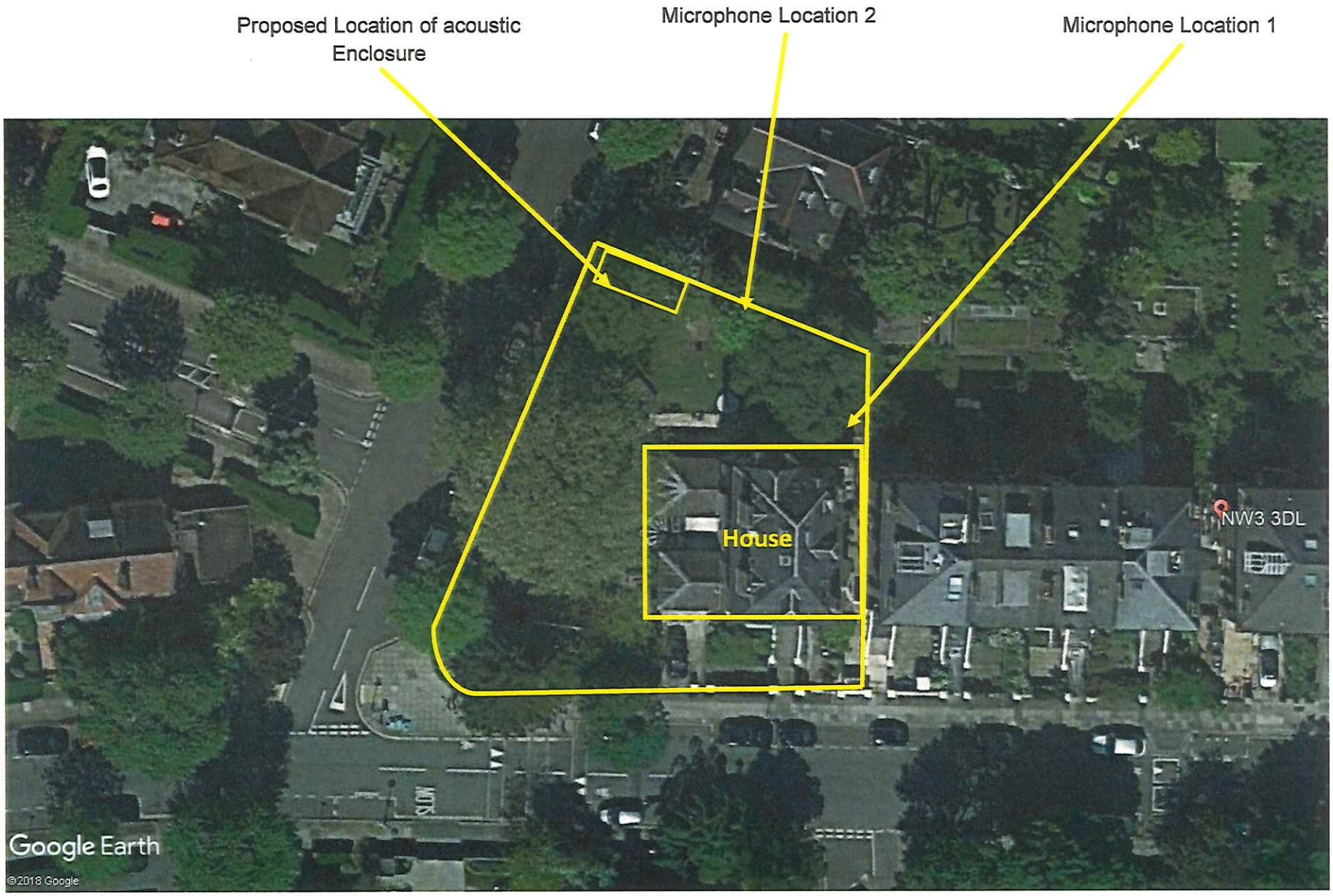


Photo A – Aerial View of Site at 42 Elsworthy Road with Microphone Locations & Proposed Plant Locations.

Photo B – Front of House at 42 Elsworthy Road

Photo C – Side of House at 42 Elsworthy Road Viewed from side garden

Photo D – Rear of House at 42 Elsworthy Road again viewed from side garden

Photo E – Microphone at Location 1 on tripod

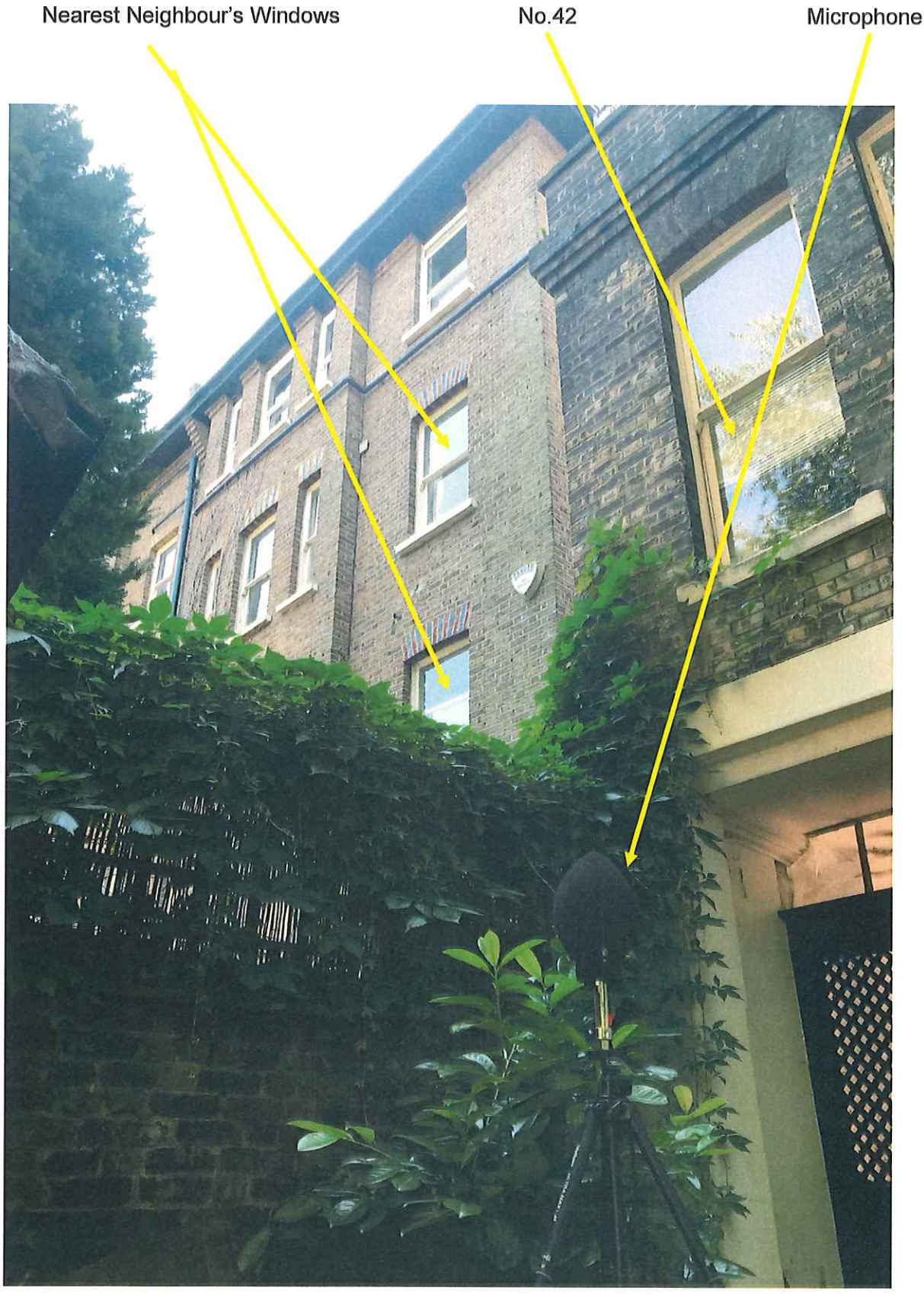


Photo F – Microphone Location 1 with neighbour's residential property behind

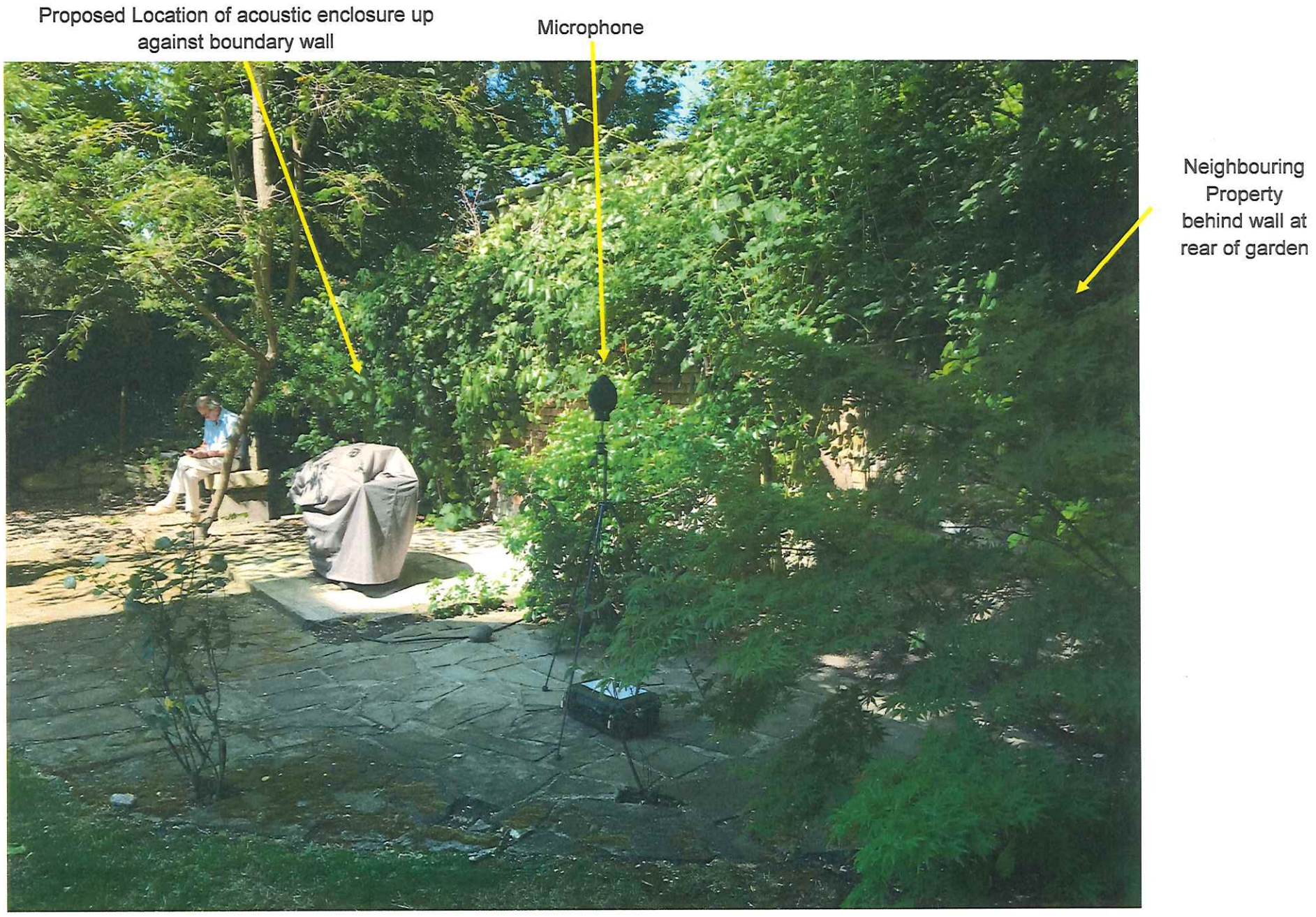
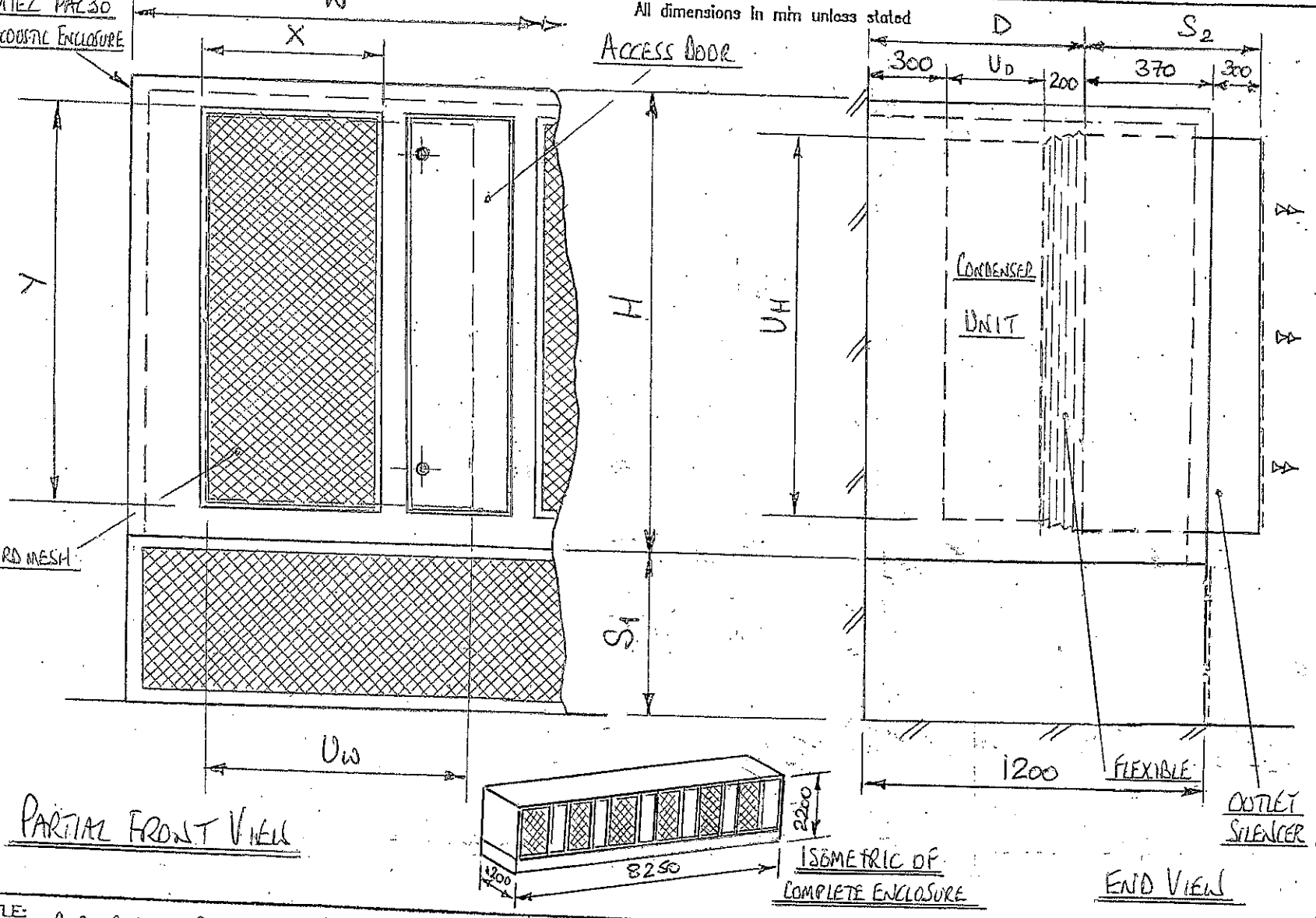


Photo G – Microphone location 2 next to rear wall of garden

EMTEC PAC30
ACOUSTIC ENCLOSURE

All dimensions in mm unless stated



REF.	E1.
UNITS	2x PUMY-P200 4x PUMY-P112
U_W	1050
U_D	330
U_H	1338
W (OVERALL)	8250
D	830
H	1700
INLET SILENCER	RAAC/43/1200B.
OUTLET SILENCER	RAAC/25/600S.
S1	500
S2	600
X	2x1000 4x 800
Y	1600
No. OFF	1
COLOUR.	TBC.

TITLE: AIR COOLED CONDENSER ACOUSTIC ENCLOSURE

CLIENT: MW ARCHITECTS.

PROJECT: 42, ELSWORTHY ROAD.

ISSUE DATE: 4/09/2018

PF No.

STATUS: Q | A | M | I

DRAWN BY: MGR

APPROVED BY:

DESIGN AUTH: MGR.

A | B | C | D | E | F | G | H

REVISION:

SK No. QF/9166/GA1

Emtec Products Ltd.,
Enterprise House, Bilton Road, Hayes, Middx. UB3 1DD.
Tel: 0181-848 3031 Fax: 0181-573 3605