Design Note

Daily Sushi, Bloomsbury Plaza, London

ACA ACOUSTICS

Client: Spiritus Technical Services Limited
Project: Daily Sushi, Bloomsbury Plaza
Reference: 180701-R002
Date: September 5, 2018
Author: Rob Cant MIOA

RESPONSE TO LONDON BOROUGH OF CAMDEN COMMENTS

PLANNING APPLICATION REFERENCE 2018/3351/P

Further to receipt of comments from Nick Priddle of London Borough of Camden Council and subsequent telephone conversation between Mr Priddle and myself, please see below additional technical details as requested. This Design Note is intended to be read in conjunction with our acoustic report, reference 180701-R001A dated 14th August 2018.

Note that ACA Acoustics Limited is only able to comment on the acoustic aspect of the design. Any recommended construction detail, structural element, materials, etc., should be verified by a suitable third-party accordingly.

1. Measurement Positions

Measurement positions are confirmed in Section 4, paragraph 3, of the report. For clarity confirmation is provided below.

Measurement Position	Description of Location
MP1	Basement lightwell to the front of the site, adjoining Bloomsbury Street
MP2	Rear alleyway adjacent to rear windows of the closest residential flat on Stedham Place

Location of the closest noise-sensitive receptors is shown on a marked-up image on the following page (available at www.google.co.uk/maps).

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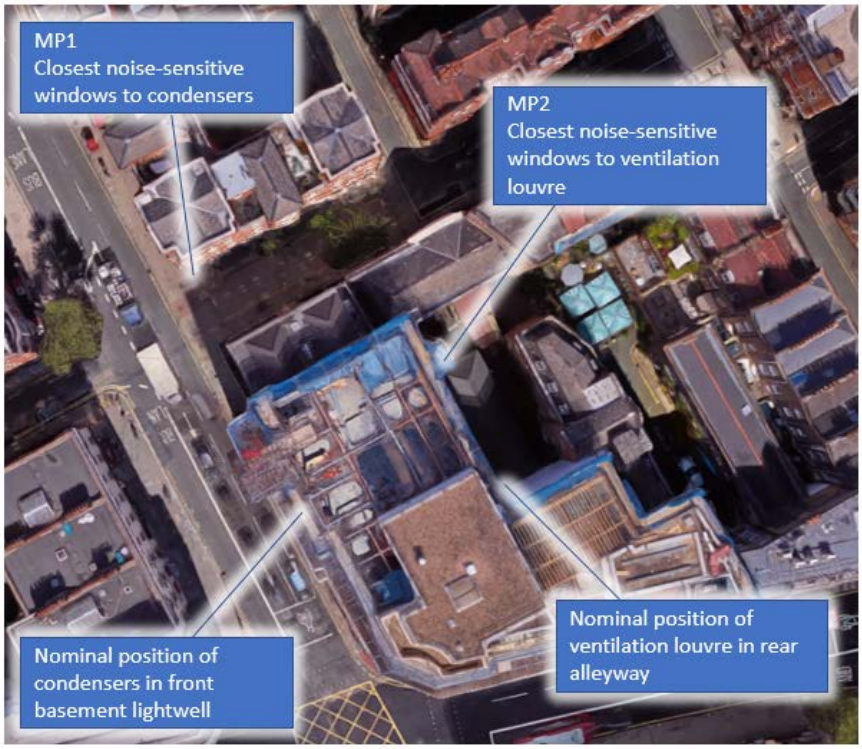


Figure 1: Marked-up site plan showing proposed equipment location and closest noise-sensitive receptors (available at www.google.co.uk/maps)

2. Sound Level Survey Results

Results of the sound level survey on 5th July 2018 are provided in graphical form below.

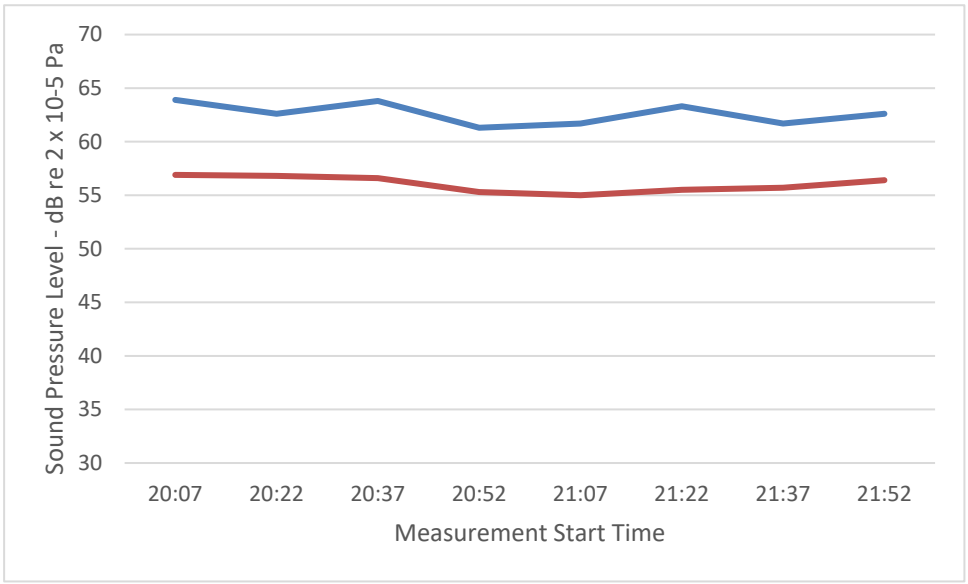


Figure 2: Sound level survey results - Position MP1

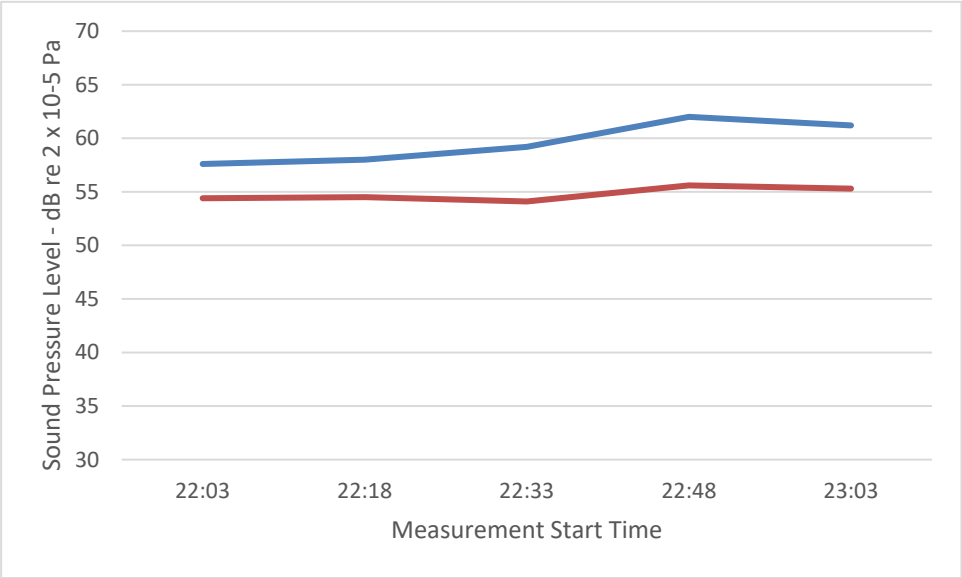


Figure 3: Sound level survey results - Position MP2

At Position MP1, adjoining Bloomsbury Street, the dominant source was exclusively of high-volume traffic on Bloomsbury Street, New Oxford Street, and other local routes, along with pedestrian activity passed the site. Measurement of the background sound level ranged between LA90 55dB to LA90 57dB over the two-hour measurement period, with no obvious trend; levels are very consistent. This correlates with my opinion of the likely acoustic climate in this location; traffic and pedestrian activity will remain high into the early hours of the morning.

Measured sound levels at Position MP2 the underlying sound level is due to existing, non-associated, mechanical services equipment serving other properties backing onto the alleyway and adjoining Stedham Place. There is also significant contribution from traffic and pedestrian activity on New Oxford Street, visible through an arch at the end of the alleyway. Over the hour measurement period in this position there was actually a slight upward trend in measurement results. This provides positive confirmation that the area remains busy into the late evening and early morning periods.

3. Acoustic Calculations

Acoustic calculations have been undertaken using Sound Design, a software package available from Acoustics Central. Rather than noise mapping, this allows practically an infinite number and type of calculations to be undertaken. In this instance, source sound levels are connected to a calculation module following the methodology of ISO 9613. These are then connected to an external receptor, which calculates the cumulative sound levels from all equipment.

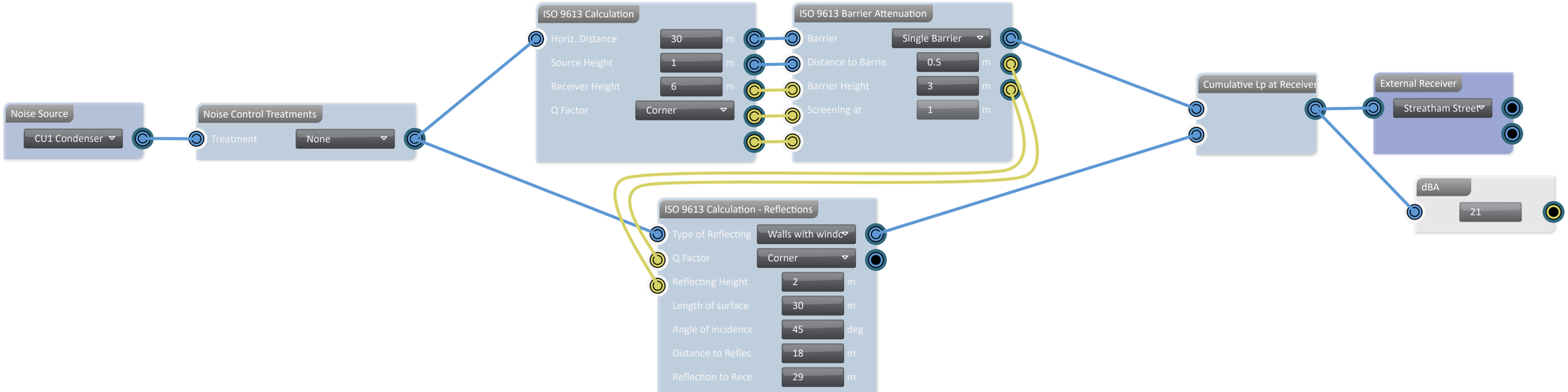
Print-out of the calculation canvas, showing how modules are connected is included in Attachment A.

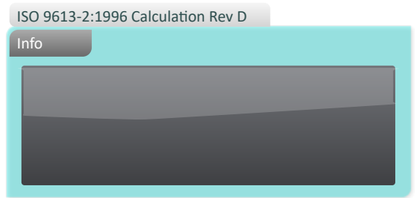
As discussed with Mr Priddle, one calculation has been expanded out to show individual steps of the calculation.

I trust that the above and attached answers all the questions raised, however please do let me know if I can be of any further assistance.

Best regards

Rob Cant MIOA
Director


Noise Source
CU1 Condenser
Noise Control Treatments
Treatment
None
ISO 9613 Calculation
Horiz. Distance
30
m
Source Height
1
m
Receiver Height
6
m
Q Factor
Corner
ISO 9613 Barrier Attenuation
Barrier
Single Barrier
Distance to Barrie
0.5
m
Barrier Height
3
m
Screening at
1
m
ISO 9613 Calculation - Reflections
Type of Reflecting
Walls with windo
Q Factor
Corner
Reflecting Height
2
m
Length of surface
30
m
Angle of incidence
45
deg
Distance to Reflec
18
m
Reflection to Rece
29
m
Cumulative Lp at Receiver
External Receiver
Streatham Street
dBA
21


ISO 9613-2:1996 Calculation Rev D
Info

Calculation Sheet

CU1 Condenser to Streatham Street

		Octave Band Centre Frequency (Hz)								
		63	125	250	500	1k	2k	4k	8k	
Noise Source										
Noise Source - CU1 Condenser										Source sound power levels
Sound Power Levels		**74.0**	**74.0**	**68.0**	**67.0**	**62.0**	**57.0**	**53.0**	**49.0**	
Noise Control Treatments										
Treatment - None										Noise control treatments
		0.0	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
ISO 9613 Calculation										Incoming attenuated Lw to ISOl 9613 calculation module
Q Factor										
Q Factor - Corner										
Lw		74.0	74.0	68.0	67.0	62.0	57.0	53.0	49.0	
		9.0	*9.0*	*9.0*	*9.0*	*9.0*	*9.0*	*9.0*	*9.0*	Q factor to account for reflections
ISO 9613 Geometrical Divergance										
Horiz. Distance (m)	30.0									
Source Height (m)	1.0									Sound power to pressure distance correction between source and receiver
Receiver Height (m)	6.0									
		-40.7	*-40.7*	*-40.7*	*-40.7*	*-40.7*	*-40.7*	*-40.7*	*-40.7*	
ISO 9613 Atmospheric Attenuation										
Conditions - 10°C 70% Humidity										Atmospheric absorption. Lowest correction of ISO 9613 selected as 'worst-case'
		0.0	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.3*	*-1.0*	*-3.6*	
ISO 9613 Ground Attenuation										
Gm	1.0									
Gs	1.0									
Gr	1.0									Ground attenuation
		3.0	*-1.4*	*-3.7*	*-4.0*	*-0.9*	*0.0*	*0.0*	*0.0*	
ISO 9613 Calculation										
ISO 9613 Barrier Attenuation										
		-11.9	*-9.5*	*-9.7*	*-12.1*	*-18.0*	*-20.0*	*-20.0*	*-20.0*	Barrier attenuation from wall around lightwell
Cumulative Lp at Receiver		Sum of corrections is the Direct Lp to receptor. E.g. at 63Hz this equates to 33.4dB - refer Page 3								
Source Lw										
InLink Output		**74.0**	**74.0**	**68.0**	**67.0**	**62.0**	**57.0**	**53.0**	**49.0**	Incoming attenuated Lw to ISO 9613 Reflections calculation module

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		Octave Band Centre Frequency (Hz)								
		63	125	250	500	1k	2k	4k	8k	
Lw,im										
Type of Reflecting Surface - Walls with windows, recesses or bays Q Factor - Corner										
Source Lw		74.0	74.0	68.0	67.0	62.0	57.0	53.0	49.0	
		8.0	*8.0*	*8.0*	*8.0*	*8.0*	*8.0*	*8.0*	*8.0*	Q factor for reflections and correction for type of reflecting plane
Distance to Reflecting Plane										
Reflecting Height (m)	2.0									
		-36.1	*-36.1*	*-36.1*	*-36.1*	*-36.1*	*-36.1*	*-36.1*	*-36.1*	Sound power to pressure distance correction between source and reflecting plane. Note distance not shown but is 18m
ISO 9613 Atmospheric Attenuation										
Conditions - 10°C 70% Humidity										
		0.0	*0.0*	*0.0*	*0.0*	*-0.1*	*-0.2*	*-0.6*	*-2.1*	
ISO 9613 Ground Attenuation					Atmospheric absorption from source to reflecting plane					
Gm	0.0									
Gs	0.0									
Gr	0.0									Ground attenuation
		3.0	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
ISO 9613 Barrier Attenuation										
Barrier - Single Barrier										
Distance to Barrier (m)	1.0									
Barrier Height (m)	3.0									Barrier attenuation from source to reflecting plane from wall around lightwell
Screening at (m)	1.1									
		-11.8	*-13.8*	*-16.2*	*-18.9*	*-21.8*	*-23.0*	*-23.0*	*-23.0*	
Distance from Reflection to Receiver										
		-29.3	*-29.3*	*-29.3*	*-29.3*	*-29.3*	*-29.3*	*-29.3*	*-29.3*	Sound power from reflection to receiver - distance 29m
ISO 9613 Atmospheric Attenuation										
Conditions - 10°C 70% Humidity										
		0.0	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.3*	*-1.0*	*-3.4*	Atmospheric absorption from reflecting plane to receiver
ISO 9613 Ground Attenuation										
Gm	0.0									
Gs	0.0									
Gr	0.0									Ground attenuation
		3.0	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	

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		Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
ISO 9613 Barrier Attenuation									
Barrier - No Barrier									
Distance to Barrier (m)	0.0								
Barrier Height (m)	0.0								
Screening at (m)	2.0								
		0.0	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Conditional									
Result		**10.8**	**8.8**	**0.3**	**-3.4**	**-11.4**	**-17.9**	**-23.0**	**-31.0**
		0.0	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
ISO 9613 Calculation - Reflections									
Cumulative Lp at Receiver									
Cumulative Lp									
Direct Lp - InLink Output		33.4	31.4	22.9	19.2	11.3	5.0	0.3	-6.2
Reflected Lp - InLink Output		10.8	8.8	0.3	-3.4	-11.4	-17.9	-23.0	-31.0
Result		**33.5**	**31.4**	**22.9**	**19.2**	**11.3**	**5.1**	**0.4**	**-6.2**
Cumulative Lp at Receiver									
External Receiver									
External Receiver - Streatham Street									
Sound Pressure, Lp:		**33.5**	**31.4**	**22.9**	**19.2**	**11.3**	**5.1**	**0.4**	**-6.2**

Barrier attenuation from reflecting plane to receiver - none

Some of corrections, giving reflected Lp to receptor.

Logarithmic sum of direct and reflected sound levels from CU1 to closest noise-sensitive receptor.

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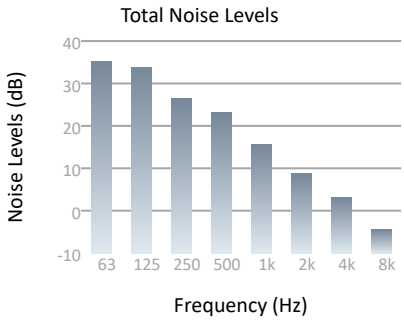
Sushi Daily, Bloomsbury Plaza

Project Name	Sushi Daily, Bloomsbury Plaza
Project Reference	180701
Reference	Streatham Street
Description	Residential flats
Noise Limit	45
dBA	24.4



Noise Sources

Reference	Quantity	Noise Levels (dB)							
		63	125	250	500	1k	2k	4k	8k
CU1 Condenser	1	33.5	31.4	22.9	19.2	11.3	5.1	0.4	-6.2
CU2 Condenser	1	27.6	29.2	22.2	19.9	12.2	3.2	-3.6	-12.1
Coldroom Condenser	1	26.5	22.4	18.9	14.2	8.3	3.1	-2.6	-12.2

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