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SCHRODERS

CRAVEN HOUSE

PLANT NOISE ASSESSMENT REPORT

DATE OF ISSUE	DETAILS OF CHANGE	AUTHOR	CHECKED
7TH DECEMBER 2012	ISSUE ONE	MA	MG

CONTENTS

1.0 INTRODUCTION

mTT has been commissioned to undertake a noise assessment of the new extract fans and air handling units proposed to be installed at Craven House, 121 Kingsway, London WC2. The plant is to be installed externally at 1st and 6th floor roof levels; all as shown on the Architects drawings. Additionally it should be noted that the fans will be fitted with in-line duct attenuators to reduce noise transmission to atmosphere.

The purpose of the assessment is to ascertain whether the proposed new plant will achieve the design noise criteria detailed in the mTT Environmental Noise Survey Report dated 29th September 2011 (summarised as follows), and thereby satisfy the planning requirements of the local planning authority (London Borough of Camden)

2.0 DESIGN NOISE CRITERIA

The London Borough of Camden current noise emission criteria in relation to this site states that;

"Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment are in operation. Where it is anticipated that any plant/equipment will have noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum), and/or if there are distinct impulses (bangs, clicks, clatters, thumps) special attention should be given to reducing the noise levels from that piece of plant/equipment at any sensitive facade to at least 10dB(A) below the LA90, expressed in dB(A)"

To conform to the above criteria and in accordance with the mTT environmental noise survey report dated 29th September 2011, noise from the proposed plant installations should not exceed the following values.

Daytime plant operation (07:00 to 23:00hrs) - 49.9 L_{Aeq}
24hour plant operation - 47.1 L_{Aeq}

Note: These levels must be achieved cumulatively with all plant operating, and as measured at 1 metre external to the nearest noise sensitive facades.

3.0 PLANT NOISE ASSESSMENT

MECHANICAL PLANT DETAILS AND NOISE DATA

Plant located at 1st floor roof level

	63	125	250	500	1K	2K	4K	8K
1.0 EF02								
Fan outlet SWL	80	75	62	58	62	57	54	49
Attenuator insertion loss	1	1	2	4	7	9	7	5
2.0 SF-B/04								
Fan inlet SWL	64	62	60	58	57	55	52	48
Attenuator insertion loss	5	7	10	18	26	28	23	20

Plant located at 6th floor roof level

	63	125	250	500	1K	2K	4K	8K
3.0 EF01								
Fan outlet SWL	85	80	79	80	75	68	68	63
Attenuator insertion loss	1	2	3	6	8	8	6	4
4.0 SF-05/02								
Fan inlet SWL	62	67	67	61	54	51	46	53
Attenuator insertion loss	4	6	12	25	32	32	26	20
5.0 SF-06/03								
Fan inlet SWL	64	62	60	58	57	55	52	48
Attenuator insertion loss	5	7	10	18	26	28	23	20

Nearest noise sensitive properties

The nearest noise sensitive properties are considered to be the residential flats in Newton Street, the facade of which is approximately 40 metres away from fan item EF-01, and 50 metres away from the remaining fans. Additionally it should be noted that there is no line of sight between the fans at 1st floor roof level and the flats, due to the shielding provided by the edge of the development building.

CALCULATIONS

Detailed calculations for all plant items are contained within the appendix attached to this report, with the resultant noise levels at the nearest flats summarised as follows:

PLANT REFERENCE	DISTANCE TO NEAREST WINDOW	RESULTANT NOISE LEVEL
EF-02	50m	7dBA
SF-B/04	50m	0dBA
EF-01	40m	32dBA
SF-05/02	50m	3dBA
SF-06/03	50m	0dBA
TOTAL		**32dBA**
Facade correction		+3dB
TOTAL		**35dBA**
Daytime Criteria		**49.9dBA**
Margin of safety		**14.9dBA**
Nightime criteria		**47.1dBA**
Margin of safety		**12.1dBA**

4.0 CONCLUSION

A plant noise assessment of the proposed new equipment to be installed at Craven House, 121 Kingsway, has been carried out.

It has been established that based upon the proposed plant selections and locations, and with fan noise control measures incorporated, the design noise criterion will be achieved, and therefore the requirements of the local planning authority (London Borough of Camden) will be achieved.

APPENDIX A - CALCULATION SHEETS

mTT CONSULTANTS

PROJECT: CRAVEN HOUSE, 121 KINGSWAY

DATE: 07/12/2012 **NOISE UNTREATED: 34 NR**
SYSTEM: EF-01 **39 dB'A'**
VOLUME: 1.33
ATTR REF:
CALC: 3

ATMOSPHERE SIDE ANALYSIS
OCTAVE BAND CENTRE FREQ

	63	125	250	500	1K	2K	4K	8K			
SWL	**85**	**80**	**79**	**80**	**75**	**68**	**68**	**63**			
BENDS	0	0	1	2	3	3	3	3	**500**	**1**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
RECTANGULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
CIRCULAR DUCTS	0	0	0	0	0	0	0	0	**500**	**2**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
EQUIPMENT LOSSES	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0	**M2**		
GRILLE END REFLECTION	9	5	2	0	0	0	0	0	**0.00**		CENTRE
SYSTEM ATTENUATION	**9**	**5**	**3**	**2**	**3**	**3**	**3**	**3**	**0.20**		OMNI
SWL AT GRILLE	**76**	**75**	**76**	**78**	**72**	**65**	**65**	**60**	**0.00**		JUNC 2
DIRECTIVITY	1	1	2	3	4	6	6	6	**0.00**		JUNC 3
DISTANCE TO LISTENER	43	43	43	43	43	43	43	43	**40.00**		METERS
SPL AT LISTENER	**34**	**33**	**35**	**38**	**33**	**28**	**28**	**23**	**0**		ANGLE
NOISE CRITERION	**59**	**48**	**40**	**34**	**30**	**27**	**25**	**23**	**NR 30**		CRITERION
ALLOWANCE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
REQUIRED INSERTION LOSS	**0**	**0**	**0**	**4**	**3**	**1**	**3**	**0**			
ATTENUATOR DIL	**1**	**2**	**3**	**6**	**8**	**8**	**6**	**4**	**CA50S**		
ATTENUATED SPL	**33**	**31**	**32**	**32**	**25**	**20**	**22**	**19**			

ATTENUATED NOISE LEVEL 28 NR
ATTENUATED NOISE LEVEL 32 Dba

mTT CONSULTANTS

PROJECT: CRAVEN HOUSE, 121 KINGSWAY

DATE: 07/12/2012 **NOISE UNTREATED: 11 NR**
SYSTEM: EF02 EXHAUST **14 dB'A'**
VOLUME: 0.17
ATTR REF:
CALC: 1

ATMOSPHERE SIDE ANALYSIS
OCTAVE BAND CENTRE FREQ

	63	125	250	500	1K	2K	4K	8K			
SWL	**80**	**75**	**62**	**58**	**62**	**57**	**54**	**49**			
BENDS	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
RECTANGULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
CIRCULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
EQUIPMENT LOSSES	0	0	0	0	0	0	0	0			
BUILDING EDGE	10	10	10	10	10	10	10	10			
	0	0	0	0	0	0	0	0	**M2**		
GRILLE END REFLECTION	14	9	5	2	0	0	0	0	**0.00**		CENTRE
SYSTEM ATTENUATION	**24**	**19**	**15**	**12**	**10**	**10**	**10**	**10**	**0.05**		OMNI
SWL AT GRILLE	**56**	**56**	**47**	**46**	**52**	**47**	**44**	**39**	**0.00**		JUNC 2
DIRECTIVITY	0	0	1	3	4	5	5	6	**0.00**		JUNC 3
DISTANCE TO LISTENER	45	45	45	45	45	45	45	45	**50.00**		METERS
SPL AT LISTENER	**11**	**11**	**3**	**4**	**11**	**7**	**4**	**0**	**0**		ANGLE
NOISE CRITERION	**59**	**48**	**40**	**34**	**30**	**27**	**25**	**23**	**NR 30**		CRITERION
ALLOWANCE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
REQUIRED INSERTION LOSS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
ATTENUATOR DIL	**1**	**1**	**2**	**4**	**7**	**9**	**7**	**5**	**CA25S MELINEX**		
ATTENUATED SPL	**10**	**10**	**1**	**0**	**4**	**-2**	**-3**	**-5**			

ATTENUATED NOISE LEVEL 4 NR
ATTENUATED NOISE LEVEL 7 Dba

mTT CONSULTANTS

PROJECT: CRAVEN HOUSE, 121 KINGSWAY

DATE: 07/12/2012 **NOISE UNTREATED: 21 NR**
SYSTEM: SF-05/02 **21 dB'A'**
VOLUME: .31
ATTR REF:
CALC: 4

ATMOSPHERE SIDE ANALYSIS

	OCTAVE BAND CENTRE FREQ										
	63	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**			
SWL	**62**	**67**	**67**	**61**	**54**	**51**	**46**	**53**			
BENDS	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
RECTANGULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
CIRCULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
EQUIPMENT LOSSES	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0	**M2**		
GRILLE END REFLECTION	9	5	2	0	0	0	0	0	**0.00**		CENTRE
SYSTEM ATTENUATION	**9**	**5**	**2**	**0**	**0**	**0**	**0**	**0**	**0.20**		OMNI
SWL AT GRILLE	**53**	**62**	**65**	**61**	**54**	**51**	**46**	**53**	**0.00**		JUNC 2
DIRECTIVITY	1	1	2	3	4	6	6	6	**0.00**		JUNC 3
DISTANCE TO LISTENER	45	45	45	45	45	45	45	45	**50.00**		METERS
SPL AT LISTENER	**9**	**18**	**22**	**19**	**13**	**12**	**7**	**14**	**0**		ANGLE
NOISE CRITERION	**59**	**48**	**40**	**34**	**30**	**27**	**25**	**23**	**NR 30**		CRITERION
ALLOWANCE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
REQUIRED INSERTION LOSS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
ATTENUATOR DIL	**4**	**6**	**12**	**25**	**32**	**32**	**26**	**20**	**SIL**		
ATTENUATED SPL	**5**	**12**	**10**	**-6**	**-19**	**-20**	**-19**	**-6**			

ATTENUATED NOISE LEVEL 2 NR
ATTENUATED NOISE LEVEL 3 Dba

mTT CONSULTANTS

PROJECT: CRAVEN HOUSE, 121 KINGSWAY

DATE: 07/12/2012 **NOISE UNTREATED: 18 NR**
SYSTEM: SF-06/03 **21 dB'A'**
VOLUME: .11
ATTR REF:
CALC: 5

ATMOSPHERE SIDE ANALYSIS
OCTAVE BAND CENTRE FREQ

	63	125	250	500	1K	2K	4K	8K			
SWL	**64**	**62**	**60**	**58**	**57**	**55**	**52**	**48**			
BENDS	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
RECTANGULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
CIRCULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
EQUIPMENT LOSSES	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0	**M2**		
GRILLE END REFLECTION	14	9	5	2	0	0	0	0	**0.00**		CENTRE
SYSTEM ATTENUATION	**14**	**9**	**5**	**2**	**0**	**0**	**0**	**0**	**0.05**		OMNI
SWL AT GRILLE	**50**	**53**	**55**	**56**	**57**	**55**	**52**	**48**	**0.00**		JUNC 2
DIRECTIVITY	0	0	1	3	4	5	5	6	**0.00**		JUNC 3
DISTANCE TO LISTENER	45	45	45	45	45	45	45	45	**50.00**		METERS
SPL AT LISTENER	**5**	**8**	**11**	**14**	**16**	**15**	**12**	**9**	**0**		ANGLE
NOISE CRITERION	**59**	**48**	**40**	**34**	**30**	**27**	**25**	**23**	**NR 30**		CRITERION
ALLOWANCE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
REQUIRED INSERTION LOSS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
ATTENUATOR DIL	**5**	**7**	**10**	**18**	**26**	**28**	**23**	**20**	**SIL**		
ATTENUATED SPL	**0**	**1**	**1**	**-4**	**-10**	**-13**	**-11**	**-11**			

ATTENUATED NOISE LEVEL -3 NR
ATTENUATED NOISE LEVEL -1 Dba

mTT CONSULTANTS

PROJECT: CRAVEN HOUSE, 121 KINGSWAY

DATE: 07/12/2012 **NOISE UNTREATED: 8 NR**
SYSTEM: SF B/04 FRESH AIR INLET **11 dB'A'**
VOLUME: 0.135
ATTR REF:
CALC: 2

ATMOSPHERE SIDE ANALYSIS

	OCTAVE BAND CENTRE FREQ										
	63	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**			
SWL	**64**	**62**	**60**	**58**	**57**	**55**	**52**	**48**			
BENDS	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
	0	0	0	0	0	0	0	0	**0**	**0**	BEND W/QTY
RECTANGULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
CIRCULAR DUCTS	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
	0	0	0	0	0	0	0	0	**0**	**0**	DUCT W/L
EQUIPMENT LOSSES	0	0	0	0	0	0	0	0			
BUILDING EDGE	10	10	10	10	10	10	10	10			
	0	0	0	0	0	0	0	0	**M2**		
GRILLE END REFLECTION	14	9	5	2	0	0	0	0	**0.00**		CENTRE
SYSTEM ATTENUATION	**24**	**19**	**15**	**12**	**10**	**10**	**10**	**10**	**0.05**		OMNI
SWL AT GRILLE	**40**	**43**	**45**	**46**	**47**	**45**	**42**	**38**	**0.00**		JUNC 2
DIRECTIVITY	0	0	1	3	4	5	5	6	**0.00**		JUNC 3
DISTANCE TO LISTENER	45	45	45	45	45	45	45	45	**50.00**		METERS
SPL AT LISTENER	**-5**	**-2**	**1**	**4**	**6**	**5**	**2**	**-1**	**0**		ANGLE
NOISE CRITERION	**59**	**48**	**40**	**34**	**30**	**27**	**25**	**23**	**NR 30**		CRITERION
ALLOWANCE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
REQUIRED INSERTION LOSS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
ATTENUATOR DIL	**5**	**7**	**10**	**18**	**26**	**28**	**23**	**20**	**SIL**		
ATTENUATED SPL	**-10**	**-9**	**-9**	**-14**	**-20**	**-23**	**-21**	**-21**			

ATTENUATED NOISE LEVEL -13 NR
ATTENUATED NOISE LEVEL -11 Dba