10 - 11 LINCOLNS INN FIELDS

GARRET DESIGN LTD
DESIGN & ACCESS STATEMENT: PROPOSED PLANT LOCATION AND SPECIFICATION
DATE: **06/06/18**
REVISION: **P1**

Contents

1. Introduction

1.1 Purpose

1.1 Purpose

The purpose of this document is to describe the intent to replace the existing Plant Units for 10-11 Lincolns Inn Fields. . Although the scope of works is not substantial with only minor alterations to the exterior, a thorough analysis of the proposal has been articulated within this document. . This is due to the sensitivity of the site location within the Bloomsbury Conservation Area and proximity of the Grade I Listed Sir John Soane Museum.

1.2 Scope

The statement:

Assesses the site and context

Considers the constraints and opportunities

Describes the Specification of new Condenser Units

Assesses the Acoustics on surrounding area

1.3 The Brief

The proposals are for works to existing offices at 10 - 11 Lincoln's Inn Fields. The brief considers the replacement of existing Plant located on the roof space of No.9 Lincolns Inn Fields, with more modern and efficient models.

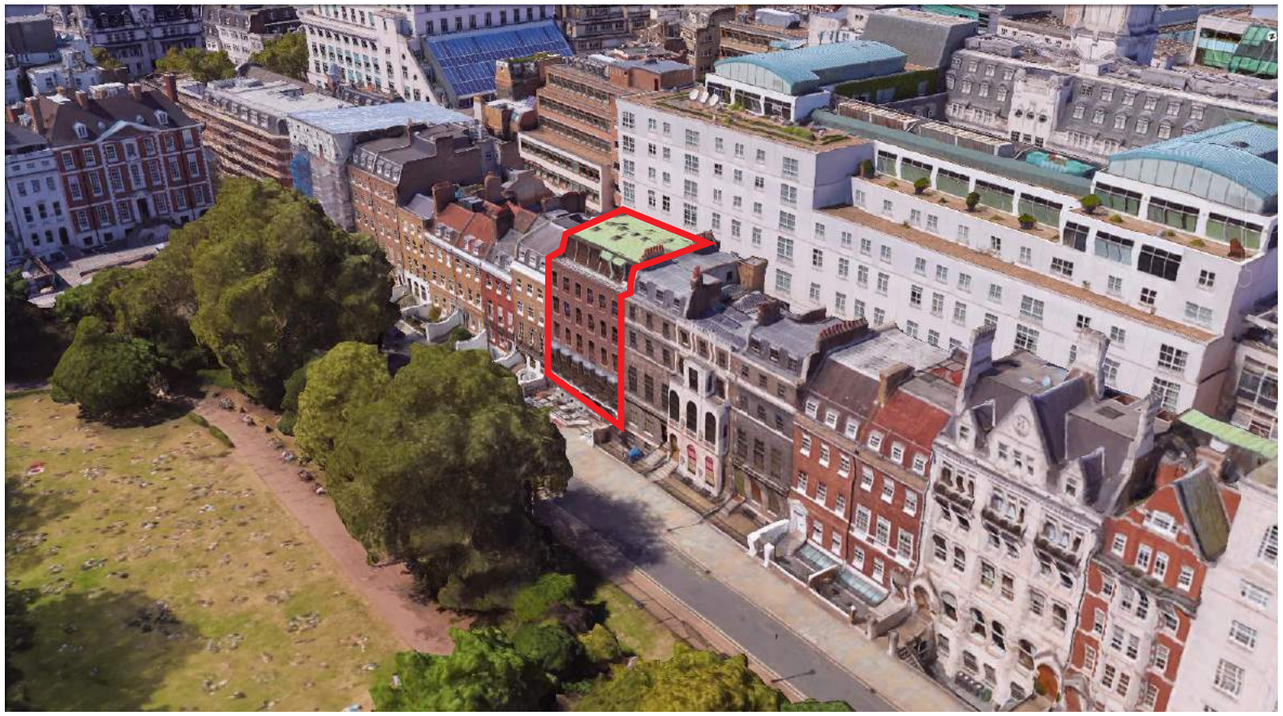
2. Assessment

2.1 The Site

The site is situated at 10-11 Lincoln's Inn Fields WC2A3BP, which falls within the Bloomsbury Conservation Area. The referenced building consists of a; basement; mezzanine; ground; and five upper floors.
Built in 1970, Lincolns Inn fields was granted the Civic Trust Award 5 years after construction in 1975- This award is a recognition to buildings which have demonstrated architecture/ design of high quality, sustainability, access to all and having made a Irrefutable cultural, social or economic augmentation to the local community.

Juxtaposed to 10-11 Lincolns Inn Fields is; No.12-14 which is the home of the Sir John Soane Museum; No.9 is occupied by the Grain and Feed association which is classified as a

Grade II listed building.



2. Assessment

2.2 Historic and Architectural context

The site is located within the Sub Area 9: Lincoln's Inn Fields/ Inns of Court/High Holborn of the Bloomsbury Conservation Area.

Lincoln's Inn Fields takes its name from its proximity next to (The honourable society of) Lincoln's Inn. The history of the two has been intertwined from its early beginnings as a recreational field for the law students, known as the Purse and Cup Field. The land was seized by the Crown in 1537 and subsequently purchased by William Newton in 1630's, who submitted an application to develop the land into the square we know today. Newton brokered an agreement with the council and Inns of Court to develop only the area around the perimeter of the fields, leaving the centre as a wide open space. The overall layout and west side of the square was built by Inigo Jones in the Baroque style of which only 16C Lindsey House remains.

In the following years the square was developed as grand individual town houses to the west, rows of terraces to the north and large institutional buildings to the south. The square was originally occupied by the landed gentry up until the 1790's but when fashion began to turn to the West they followed. Subsequently the wealthy lawyers began to move into the square, such as Farrer & Co and Frere Chomeley. More recently the entire south side of the square bar the Royal College of Surgeons is now occupied by London School of Economics. This microcosm of learned bodies of lawyers, solicitors, scholars, institutes and museums has characterised the square.

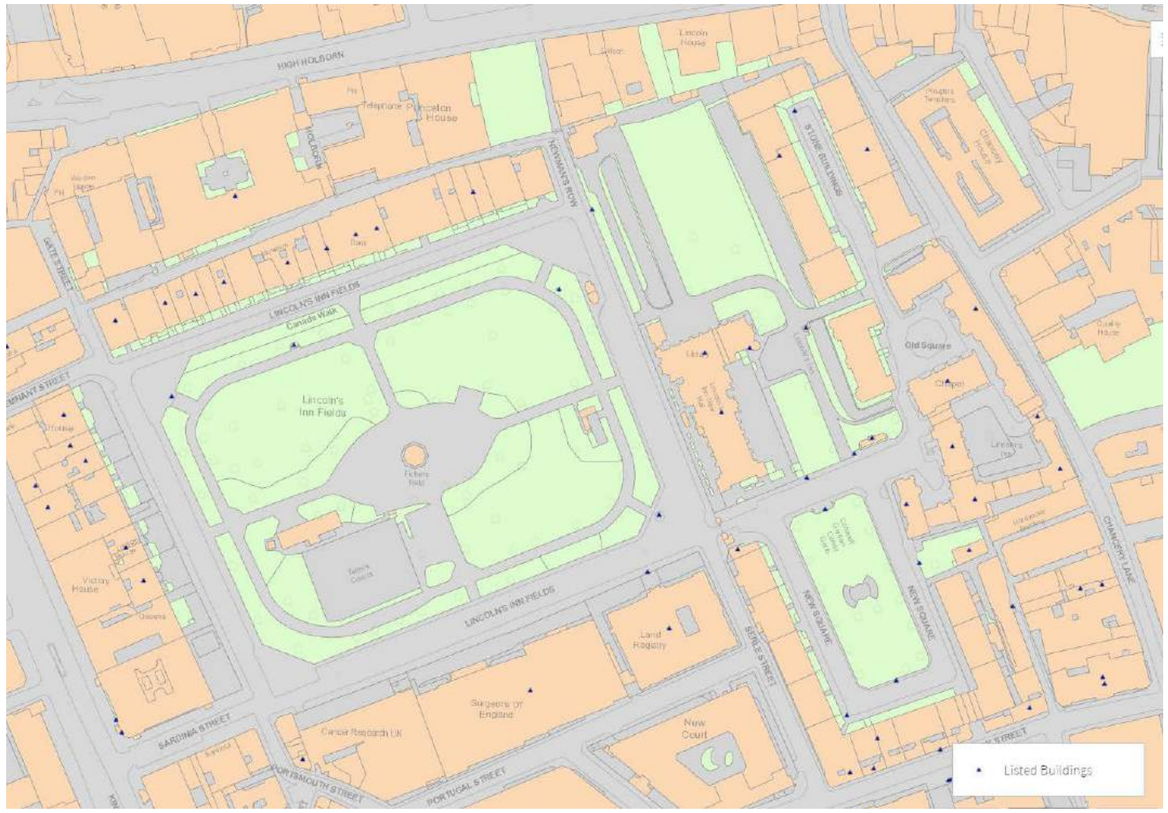
The key listed buildings upon this page epitomise the varying styles of classicism which are diffused and regurgitated to unify the squares order. Newcastle House was built in 1680's in the English Baroque, No.57-58 in the Neoclassical style in 1730's and the Royal College of Surgeons remodelled in the Neoclassical style in 1806.

The application site is located on the North side of Lincoln's Inn Fields with a detailed description following overleaf.

Lindsey House - A

No.57 & 58 - B

"Butterwalk" - C



Newcastle House - D

Royal College of Surgeons - E

2. Assessment

2.2 Historic and Architectural context

Lincoln's Inn Fields North Terraces

The Bloomsbury Conservation Area Appraisal and Management Strategy describes the notable characteristics of the north side of Lincoln's Inn Fields:

"5.149 The north side of the square comprises a row of town houses of different ages and styles, most of which are listed. They tend to occupy narrower plot widths than the properties on the west side. Dating from the early 18th to 20th centuries, the properties range from three to six storeys.

The most notable buildings in the row are Nos 12-14 (consec) housing Sir John Soane's Museum. Listed grade I, these three linked four storey houses were built and remodelled by Soane, for use as his house, studio and as a museum, over three decades from circa 1792 to 1824. They have a symmetrical grey brick front, with a highly sculpted projecting stone centrepiece.

Also of significance are Nos 17-18, built as offices for Equity and Law Assurance in 1871-72 by the eminent 19th century architect Alfred Waterhouse. Its western neighbour, at No 19, dates from 1868-69, and was designed by Philip Webb.

Of lesser interest are the 20th century buildings at Nos 3-4, 10-11, 20-23 (consec) and 29. The later examples, as found at Nos 3-4 by T Saunders Associates (1970-72) and Nos 10-11 by Westwood Piet, Poole and Smart(1983-84), are more consistent with the older town houses, due to the simpler architectural treatment of their brick fronts and their five-storey height.

2. Assessment

2.2 Historic and Architectural context

Sir John Soane Museum

Adjoining the site the three terrace's of No's 12-14 are occupied by the former home, studio and private museum of Sir John Soane, which is now open free to the public. It houses the collection and life works of one of the prominent British neoclassical architects of the 18th century. He notably also designed the Dulwich Picture Gallery and Bank of England and was appointed the Professor of Architecture at the Royal Academy in 1806. His bequeath gift to the nation has become a breading ground of ideas for the pilgrims of students which study the antiquities, artefact, art, literature, models and studies which were left for "benefit of amateurs and students".

The terraces at Lincoln's Inn Fields were progressively rebuilt by Soane to form a symmetrical neoclassical facade. No.12 was built in c1792-94; No.13, c1812-13; No.14, c1824. The key architectural features are outlined below:

1. The central terrace No.13 is dominated by the Portland stone loggia with three bays of arched windows, ornate blind balustrade and enrich panels above. It is surmounted by a classical stone figures to each corner. The recessed second floor outer bays are articulated with pilaster strips and friezes. The projecting middle bay is adorned by acroteria.

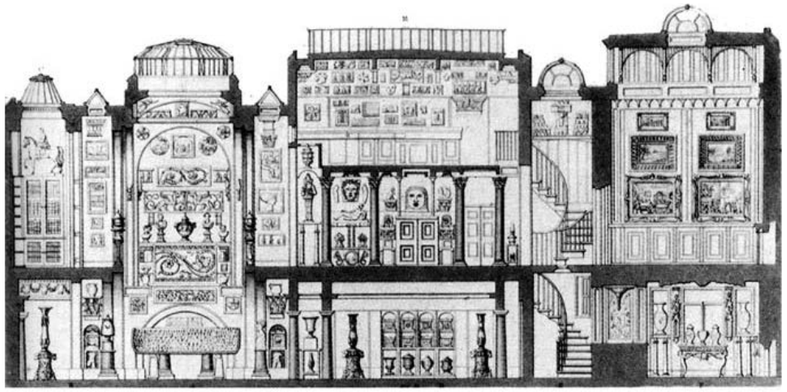
2. The slim curved wrought iron balconies sit in front of the northern brick façades of No. 12 and 14.

3. The moderation of the logical vertical progression is controlled by the sill string on 2nd floor, brick modillion and stone cornice at 3rd floor. The dominance of the parapet line to the central bays is accentuated by the recess stone pilasters and balustrade with acroteria finials.

4. The slate mansard roof with dormers, brick chimneys and lead detailing sit above the 3rd floor stone cornice and block course on No.12 and 14.

Central terrace No. 13

Portland stone loggia with ornate blind balustrade



Museum Section

All Soane's buildings between 1808 and 1815 by J.Gandy

2. Assessment

2.3 Constraints and Opportunities

Opportunities

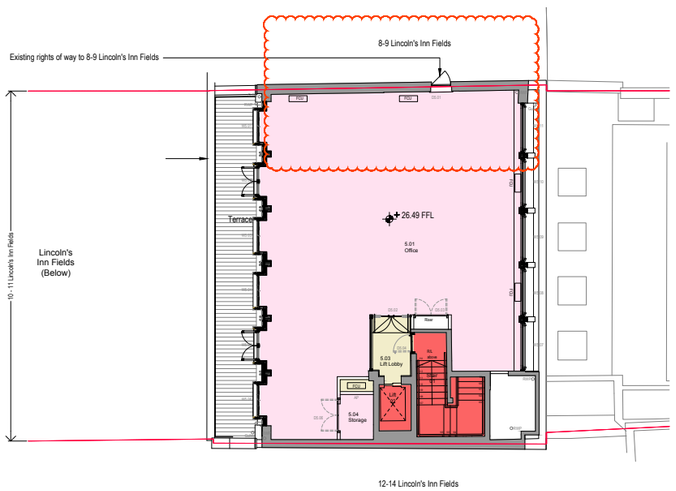
The brief and scope propose to replace the existing plant units currently accessed via the roof level of number 9 Lincolns Inn Fields. Due to number no.9 achieving a Grade II listing we must be sympathetic towards any works which could impact the buildings integrity. We will not be changing the location of the units, simply updating the model to a more efficient version.

Constraints

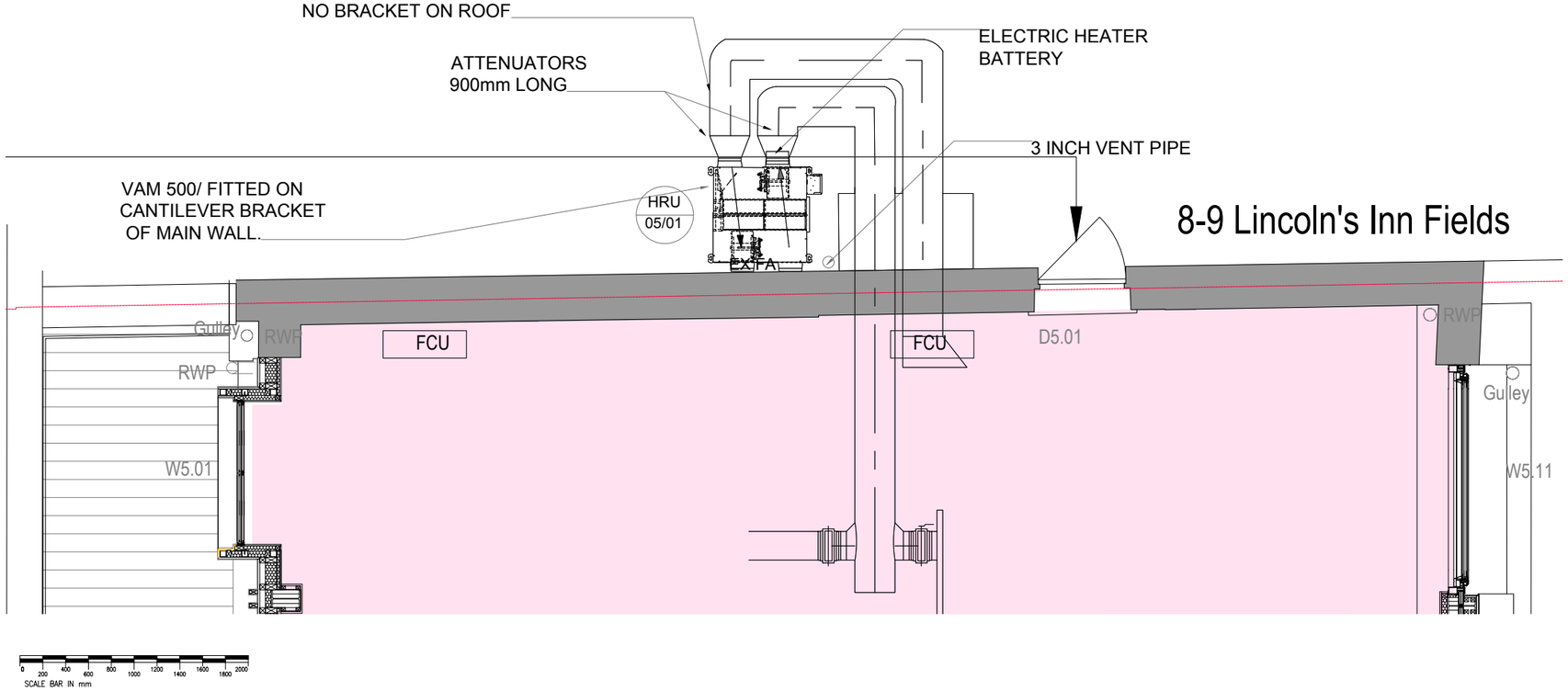
The addition of the new condenser units should not it be in conflict acoustically or ecstatically with the iconic neighbouring architecture.

3. Evaluation & Design

3.1 Plan

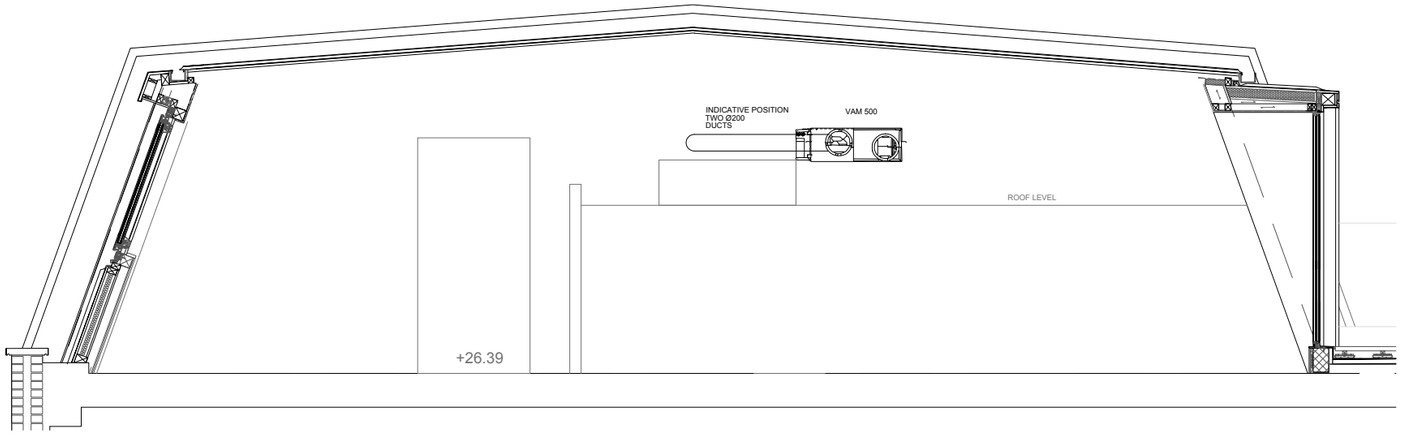


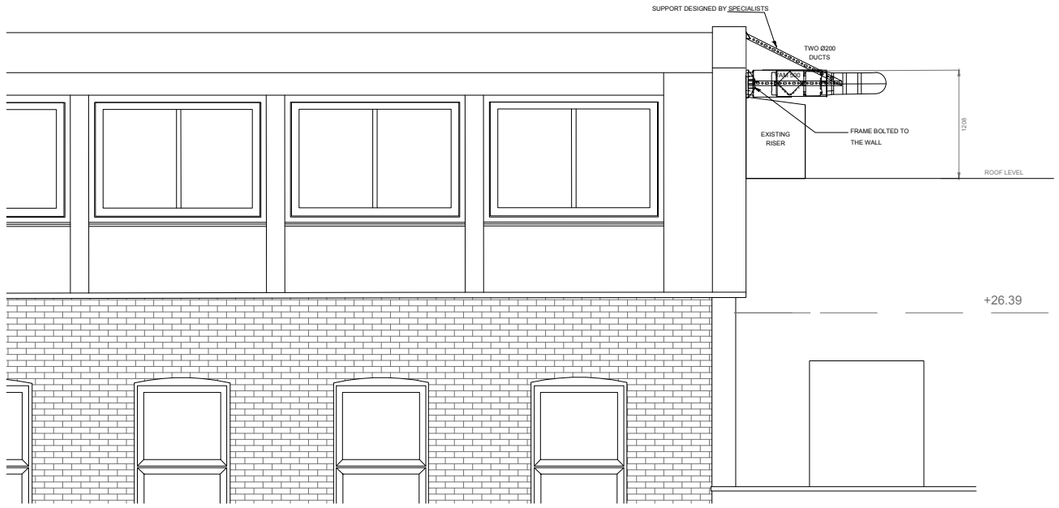
DUCTWORK CONNECTIONS TO BE MADE IN SOLID DUCTWORK, WITH ONLY SUPPORT FROM MAIN WALL.

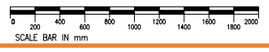


Evaluation & Design

3.2 Section and Elevation







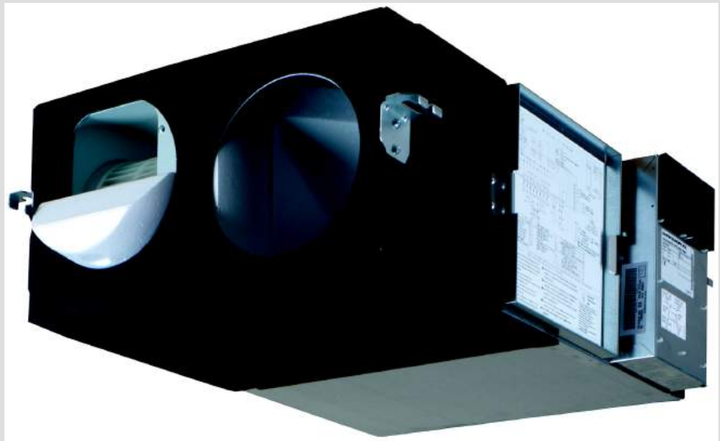
Technical Data

4.1 Correspondence with Daiken

DAIKIN

Ventilation
Technical Data

VAM-FC



> VAM150FCVE
> VAM250FCVE
> VAM350FCVE
> VAM500FCVE
> VAM650FCVE
> VAM800FCVE
> VAM1000FCVE
> VAM1500FCVE
> VAM2000FCVE

See full report in attachments

2-1 Technical Specifications					VAM150FC	VAM250FC	VAM350FC	VAM500FC	VAM650FC	VAM800FC	VAM1000FC	VAM1500FC	VAM2000FC
Power input - 50Hz	Heat exchange mode	Nom.	Ultra high	kW	0.132	0.161	0.071 (1)	0.147 (1)	0.188 (1)	0.320 (1)	0.360 (1)	0.617 (1)	0.685 (1)
			High	kW	0.111	0.079	0.057 (1)	0.101 (1)	0.114 (1)	0.241 (1)	0.309 (1)	0.463 (1)	0.575 (1)
			Low	kW	0.058	0.064	0.020 (1)	0.049 (1)	0.063 (1)	0.185 (1)	0.198 (1)	0.353 (1)	0.295 (1)
	Bypass mode	Nom.	Ultra high	kW	0.132	0.161	0.071 (1)	0.147 (1)	0.188 (1)	0.320 (1)	0.360 (1)	0.617 (1)	0.685 (1)
			High	kW	0.111	0.079	0.057 (1)	0.101 (1)	0.114 (1)	0.241 (1)	0.309 (1)	0.463 (1)	0.575 (1)
			Low	kW	0.058	0.064	0.020 (1)	0.049 (1)	0.063 (1)	0.185 (1)	0.198 (1)	0.353 (1)	0.295 (1)
Temperature exchange efficiency - 50Hz	Ultra high			%	77.0 (2) / 72.0 (3)	74.9 (2) / 69.5 (3)	78.0 (2) / 71.6 (4)	77.0 (2) / 70.2 (4)	77.0 (2) / 69.8 (4)	77.0 (2) / 67.8 (4)	78.0 (2) / 70.2 (4)	78.0 (2) / 69.5 (4)	78.0 (2) / 70.2 (4)
	High			%	78.3 (2) / 72.3 (3)	76.0 (2) / 70.0 (3)	79.3 (2) / 71.9 (4)	78.8 (2) / 70.7 (4)	79.1 (2) / 71.2 (4)	78.2 (2) / 68.8 (4)	78.6 (2) / 71.1 (4)	79.6 (2) / 70.3 (4)	79.6 (2) / 71.3 (4)
	Low			%	82.8 (2) / 73.2 (3)	80.1 (2) / 72.0 (3)	84.1 (2) / 73.0 (4)	80.9 (2) / 71.3 (4)	81.1 (2) / 72.9 (4)	79.1 (2) / 69.6 (4)	80.2 (2) / 73.4 (4)	80.8 (2) / 71.0 (4)	80.6 (2) / 74.6 (4)
Enthalpy exchange efficiency - 50Hz	Cooling	Ultra high		%	60.3 (2)		63.4 (2)	60.3 (2)		62.4 (2)	63.4 (2)		
		High		%	61.9 (2)	61.2 (2)	65.0 (2)	63.4 (2)	64.0 (2)	63.6 (2)	64.2 (2)	65.0 (2)	64.5 (2)
		Low		%	67.3 (2)	64.5 (2)	70.7 (2)	66.9 (2)	67.3 (2)	64.6 (2)	66.3 (2)	66.2 (2)	67.8 (2)
	Heating	Ultra high		%	66.6 (2)		67.6 (2)	64.5 (2)	65.5 (2)	67.6 (2)	68.6 (2)		
		High		%	67.9 (2)	67.4 (2)	68.9 (2)	67.6 (2)	67.7 (2)	68.8 (2)	69.4 (2)	69.7 (2)	69.5 (2)
		Low		%	72.4 (2)	70.7 (2)	73.7 (2)	71.1 (2)	69.7 (2)	69.8 (2)	71.5 (2)	70.5 (2)	72.1 (2)
Operation mode					Heat exchange mode, bypass mode, fresh-up mode								
Heat exchange system					Air to air cross flow total heat (sensible + latent heat) exchange								
Heat exchange element					Specially processed non-flammable paper								
Dimensions	Unit	Height		mm	285		301		364			726	
		Width		mm	776		828		1,000			1,510	
		Depth		mm	525		816		868		1,160	868	1,160
Weight	Unit			kg	24.0		33.0		51.0	54.0	63.0	128	145
Casing	Material				Galvanised steel plate								
Fan	Type				Sirocco fan								
	Air flow rate - 50Hz	Heat exchange mode	Ultra high	m³/h	150 (5)	250 (5)	350 (1)	500 (1)	650 (1)	800 (1)	1,000 (1)	1,500 (1)	2,000 (1)
			High	m³/h	140 (5)	230 (5)	320 (1)	410 (1)	545 (1)	725 (1)	950 (1)	1,350 (1)	1,880 (1)
			Low	m³/h	105 (5)	155 (5)	210 (1)	310 (1)	450 (1)	665 (1)	820 (1)	1,230 (1)	1,500 (1)
		Bypass mode	Ultra high	m³/h	150 (5)	250 (5)	350 (1)	500 (1)	650 (1)	800 (1)	1,000 (1)	1,500 (1)	2,000 (1)
			High	m³/h	140 (5)	230 (5)	320 (1)	410 (1)	545 (1)	725 (1)	950 (1)	1,350 (1)	1,880 (1)
			Low	m³/h	105 (5)	155 (5)	210 (1)	310 (1)	450 (1)	665 (1)	820 (1)	1,230 (1)	1,500 (1)
	External static pressure - 50Hz	Ultra high		Pa	90 (5)	70 (5)	103 (1)	83 (1)	100 (1)	109 (1)	147 (1)	116 (1)	132 (1)
		High		Pa	87 (5)	63 (5)	93 (1)	57 (1)	73 (1)	94 (1)	135 (1)	97 (1)	118 (1)
		Low		Pa	40 (5)	25 (5)	51 (1)	35 (1)	49 (1)	78 (1)	100 (1)	80 (1)	77 (1)
Fan motor	Quantity				2							4	
	Output	50 Hz		W	30		80		106	210			
Air filter	Type				Multidirectional fibrous fleeces								
Sound pressure level - 50Hz	Heat exchange mode	Ultra high		dBA	27.0	28.0	32.0	33.0	34.5	36.0		39.5	40.0
		High		dBA	26.0		31.5		33.0	34.5	35.0	38.0	
		Low		dBA	20.5	21.0	23.5	24.5	27.0	31.0		34.0	35.0
	Bypass mode	Ultra high		dBA	27.0	28.0	32.0	33.5	34.5	36.0		40.5	40.0
		High		dBA	26.5	27.0	31.0	32.5	34.0	34.5	35.5	38.0	
		Low		dBA	20.5	21.0	24.5	25.5	27.0	31.0		33.5	35.0
Operation range	Min.			°CDB	-15								
	Max.			°CDB	50								
	Relative humidity			%	80% or less								
	On coil temperature	Cooling	Max.	°CDB	-								
		Heating	Min.	°CDB	-								
Connection duct diameter				mm	100	150		200		250		350	
Insulation material					Self-extinguishable urethane foam								

Technical Data

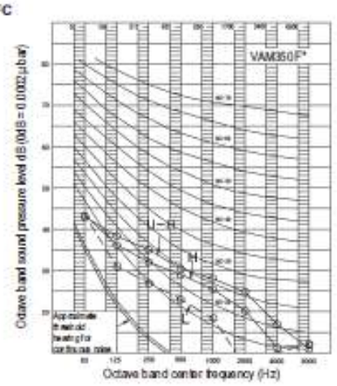
4.1 Correspondence with Daiken

See full report in attachments

2-1 Technical Specifications				VAM150FC	VAM250FC	VAM350FC	VAM500FC	VAM650FC	VAM800FC	VAM1000FC	VAM1500FC	VAM2000FC
General	Supplier/ Manufacturer details	Name or trademark		Daikin Europe N.V.								
	Product description	Model identifier		VAM150FCVE	VAM250FCVE	VAM350FCVE	VAM500FCVE	VAM650FCVE	VAM800FCVE	VAM1000FCVE	VAM1500FCVE	VAM2000FCVE
Specific energy consumption (SEC)	Cold climate		kWh/(m².a)	-56.0 (6)	-60.5 (6)	-						
	Average climate		kWh/(m².a)	-22.1 (6)	-27.0 (6)	-						
	Warm climate		kWh/(m².a)	-0.100 (6)	-5.30 (6)	-						
SEC class				D / (6)	B / (6)	-						
Type of product				Bidirectional RVU / (7)		Bidirectional NRVU / (7)						
Type of drive				Multi-speed drive								
Heat recovery system				recuperative								
Thermal efficiency			%	73.6 (3)	72.2 (3)	71.6 (4)	70.2 (4)	69.8 (4)	69.0 (4)	70.2 (4)	69.5 (4)	70.2 (4)
Maximum flow rate at 100 Pa ESP	Flow rate		m³/h	130 (5)	207 (5)	-						
	Electric power input		W	129	160	-						
Sound power level (Lwa)			dB	40	43	48	50	51	53		55	57
Nominal flow rate			m³/s	-		0.097	0.139	0.181	0.222	0.278	0.417	0.556
Reference flow rate			m³/s	0.025	0.040	-						
Reference pressure difference			Pa	50.0		-						
Effective electric power input			kW	-		0.055	0.121	0.140	0.241	0.279	0.465	0.532
Specific power input			W/(m³/h)	0.626 (8)	0.445 (8)	-						
Internal specific fan power			W/(m³/s)	-		350	644	594	845	816	852	811
Ventilation control	Type			Clock control		-						
	Factor			0.950 (6)		-						
Maximum external leakage			%	7.42	4.66	4.13	2.89	3.81	3.09	6.59	3.09	6.59
Maximum internal leakage			%	4.50		8.10	8.20	7.70		6.50	7.70	6.50
Filter energy performance			kWh	-		279 (7)						
Filter service warning				Displayed on controller / (5)								
Instructions for pre-/disassembly				www.daikineurope.com/energylabel								
Annual electricity consumption			kWh/a	18.9 (6)	13.6 (6)	-						
Annual heating saved	Cold climate		kWh/a	41.0 (6)	40.6 (6)	-						
	Average climate		kWh/a	80.2 (6)	79.4 (6)	-						
	Warm climate		kWh/a	18.5 (6)	18.4 (6)	-						
Face velocity			m/s	-		0.648	0.926	1.20	1.48	1.38	1.39	1.38
External pressure			Pa	-		59.7	56.4	52.6	56.8	84.8	60.0	67.7
Internal pressure drop			Pa	-		94.9	143	151	210	249	189	160
Fan efficiency			%	-		32.9		47.2		37.1		

2-2 Electrical Specifications				VAM150FC	VAM250FC	VAM350FC	VAM500FC	VAM650FC	VAM800FC	VAM1000FC	VAM1500FC	VAM2000FC
Power supply	Name			VE								
	Phase			1~								
	Frequency		Hz	50/60								
	Voltage		V	220-240/220								
Voltage range	Min.		%	-10								
	Max.		%	10								
Current	Minimum circuit amps (MCA)		A	0.900			1.30	1.60	2.50	3.00	5.00	
	Maximum fuse amps (MFA)		A	15.0		16.0						
	Fan motor rated output		kW	0.03x2		0.08x2		0.105x2	0.210x2		0.210x4	
	Full load amps (FLA)	Fan motor	A	0.400			0.600	0.700	1.10	1.30	2.20	
		Fan motor 2	A	0.400			0.600	0.700	1.10	1.30	2.20	
		Fan motor 3	A	-							2.20	
		Fan motor 4	A	-							2.20	

VAM350FC

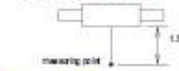


4D082471

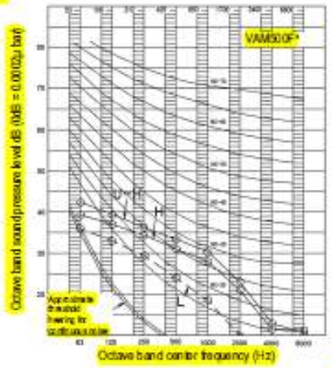
Air flow rate (dB)		
U-H	H	L
32	31.5	25.5

NOTES

1. Ventilation mode: total heat exchange.
2. Operation noise is measured in an anechoic chamber.
3. The operation noise level may become higher than this value depending on the operation conditions, reflected sound and peripheral noise.
4. Operation noise differs with operation and ambient conditions.
5. U-H: ultra-high, H: high, L: low
6. Location of microphone.



VAM500FC

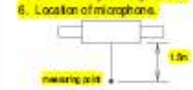


4D082472

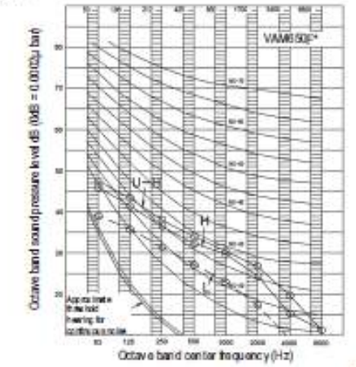
Air flow rate (dB)		
U-H	H	L
33	31.5	26.5

NOTES

1. Ventilation mode: total heat exchange.
2. Operation noise is measured in an anechoic chamber.
3. The operation noise level may become higher than this value depending on the operation conditions, reflected sound and peripheral noise.
4. Operation noise differs with operation and ambient conditions.
5. U-H: ultra-high, H: high, L: low
6. Location of microphone.



VAM650FC

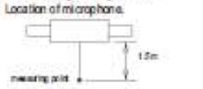


4D082473

Air flow rate (dB)		
U-H	H	L
34.5	33	27

NOTES

1. Ventilation mode: total heat exchange.
2. Operation noise is measured in an anechoic chamber.
3. The operation noise level may become higher than this value depending on the operation conditions, reflected sound and peripheral noise.
4. Operation noise differs with operation and ambient conditions.
5. U-H: ultra-high, H: high, L: low
6. Location of microphone.



Acoustic Report

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10-11 Lincoln's Inn Fields
London

Plant Noise Assessment Report

12 June 2018

For
1 GC Management Limited London
10-11 Lincolns Inn Fields
London
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10-11 Lincoln's Inn Fields, London
Plant Noise Assessment Report

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SUMMARY

A new ventilation unit is proposed as part of the refurbishment at 10-11 Lincolns Inn Fields in London. Camden Council has external noise requirements for new items of building services plant, requiring a background noise survey and plant noise assessment to be undertaken.

A noise survey has been undertaken by **auricl** to determine background noise levels that are representative of the nearest noise sensitive property.

A noise assessment has been undertaken to predict noise emissions associated with the ventilation unit at the nearest residential property.

The predicted noise level associated with the new ventilation unit complies with the Camden Council requirements during daytime and night-time periods.

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1.0 Introduction

A new ventilation unit is proposed externally as part of the building refurbishment at 10-11 Lincolns Inn Fields. Camden Council has external noise requirements for new items of building services plant, requiring a background noise survey and plant noise assessment to be undertaken.

auricl has been instructed to undertake a background noise survey and acoustic assessment of the new ventilation unit, in relation to the Camden Council requirements.

This report presents the methodology and results of a noise survey to determine background noise levels that are representative of the nearest noise sensitive properties, as well as an acoustic assessment of the plant to address the Camden Council requirements.

2.0 Description of Site and Proposals

The site is occupied by an office building with Lincoln's Inn Fields and a park to the south-east and mainly office buildings around the remainder of the site. The nearest noise sensitive property is noted to be the hotel on the north-western side of Whetstone Park.

A heat recovery ventilation unit is proposed externally at roof level on the western side of the building.

Figure 2.1 shows the approximate site extent in red with the nearest noise sensitive property in green and the approximate location of the proposed ventilation unit in blue.

Figure 2.1 Existing Site Extent and Surroundings

3.0 Camden Council Requirements

Camden Council typically requires plant noise emissions to be limited to a level at least 10 dB lower than the L_{A90} background noise level, when determined at a distance of 1m from the nearest noise sensitive property.

10-11 Lincoln's Inn Fields, London
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4.0 Noise Survey Methodology

An unmanned environmental noise survey was undertaken over a 48-hour period between Wednesday 30 May 2018 and Friday 1 June 2018. This measurement period was selected to assess background noise levels during typical daytime and night-time periods, when the ventilation unit is proposed to be operational.

The equipment used for the noise survey is described in Table 4.1.

Table 4.1 Description of Equipment used for Noise Survey

Item	Make & Model	Serial Number
Type 1 sound level meter	01 dB FUSION	11388
Type 1 ½" microphone	GRAS 40 CE	259634
Calibrator	01 dB CAL21	34375252

L_{Aeq} and L_{A90} sound pressure levels were measured throughout the noise survey over 125-millisecond intervals.

The noise monitoring equipment was calibrated before and after the noise survey period. No significant change was found. Laboratory equipment calibration certificates can be provided upon request.

The measurement position was located with the microphone attached to an extendable pole pultruding from a top floor window on the northern side of the site. The measurement position is considered to be representative of background noise levels at the nearest noise sensitive property (the hotel on the north-western side of Whetstone Park).

The measurement position is indicated in purple on Figure 4.1.

Figure 4.1 Site Plan Indicating Approximate Location of Measurement Position

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Due to the nature of the noise survey, i.e. unmanned, we are unable to comment on the weather conditions throughout the entire noise survey period. However, at the beginning of the survey period, there was noted to be very little cloud with very dry, still and clear conditions. These conditions are understood to be representative of the full survey period and are considered appropriate for undertaking environmental noise measurements.

5.0 Noise Survey Results

Appendix B presents a time history graph showing the L_{Aeq} and L_{A90} sound pressure levels measured throughout the noise survey (shown as 15-minute intervals).

We would consider the levels measured to be reasonable, taking into account the location of the measurement position and the dominant nearby noise sources.

Due to the nature of the unmanned noise survey we are unable to comment on the exact noise climate throughout the entire survey period, however, at the beginning and end of the survey period, the daytime noise climate at the measurement position was noted to affected by road traffic using surrounding roads. We anticipate the same would also be true of night-time periods

The lowest measured L_{A90} background noise levels for daytime and night-time periods are summarised in Table 5.1.

Table 5.1 Lowest Measured Background Noise Levels

Lowest Measured $L_{A90\,(15\,min)}$ Background Noise Level (dB)	
Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
52	51

6.0 Plant Noise Assessment

This section presents our assessment and calculations of noise emissions from the proposed condenser units, in relation to the Camden Council requirements.

6.1 Proposed Plant

A ventilation unit is proposed to be fitted on the roof of 10-11 Lincoln's Inn Fields. The proposed unit is a Daikin VAM500FC. The manufacturer states that the unit operates at a sound pressure level of 33dB at 1.5m. The proposed position of the plant is shown on Figure 2.1 in blue.

6.2 Nearest Noise Sensitive Property

We have considered the nearest noise sensitive property to be the hotel on the north side of Whetstone Park, the closest façade being at a distance of approximately 10m from the proposed ventilation unit.

6.3 Plant Noise Predictions

Our calculations to predict the plant noise level at the nearest noise sensitive property are presented in Table 6.1.

Table 6.1 Plant Noise Emission Calculations

Element	predicted sound pressure level (dB)	
VAM Unit Sound Pressure Level at 1.5m	33	
Distance Attenuation	-11	
Predicted Noise Level at Nearest Residential Property	22	
Lowest Background Noise Level	52 (day)	51 (night)
Difference	-30	-29

It can be seen that the predicted noise level complies with Camden Council's requirements at the nearest noise sensitive property during daytime and night-time periods.

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Appendix A – Acoustic Terminology

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ($20x10^{-6}$ Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T= 16 hours for daytime periods, T = 8 hours for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
$L_{A90\,(15\,min)}$	The noise level exceeded for 90% of the time (also referred to as the background noise level), measured over a 15 minute period

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Appendix B – Time History Graph