FRASER HOUSE, MANCHESTER

MECHANICAL & ELECTRICAL SERVICES

PLANNING SUBMISSION INFORMATION

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1.0 Introduction

2.0 Planning Requirement Item 12: Discharge of Fumes

3.0 Planning Requirement Item 15: Air Conditioning Proposals

Appendix A: Proposed Equipment Technical Details

Appendix B: Proposed Services Installation Drawings

1.0 Introduction

Viridian Consulting Engineers has been asked to provide Mechanical and Electrical Services design information, to accompany the planning submission for the refurbishment of Fraser House, Charlotte Street, Manchester.

The items relating to the specific conditions are identified in this report and relate to the discharge of odours from the building, heat rejection plant locations and noise emissions from building services installations, with acoustic information for plant and equipment provided to Hann Tucker associates for further analysis.

The following drawings identify the proposals for the services installations to the building;

V1472(57)001 P2 Lower Ground Floor HVAC Layout

V1472(57)002 P3 Upper Ground Floor HVAC Layout

V1472(57)003 P3 Level 1 HVAC Layout

V1472(57)004 P3 Level 2 HVAC Layout

V1472(57)005 P3 Level 3 HVAC Layout

V1472(57)006 P3 Level 4 HVAC Layout

2.0 Planning Requirement Item 12: Discharge of Fumes

The following clause identifies the information required in respect of this;

12. Details of how, fumes and vapours are to be extracted and discharged from the development including any risers (description and technical details) - for the avoidance of doubt all equipment associated with extraction should be located internally within the building which is not as shown in the submitted drawings – you will need to look at how fumes can be extracted without the need for an external flue and if this is not possible provide a full explanation of why. This must be in keeping with the Defra Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust systems

Kitchen extract ductwork currently runs externally at the rear of the building. It is proposed that these will run internally within a specific riser, accessible at each level to facilitate cleaning. Make up supply air will be dealt with locally via external louvres on the rear elevation on Reyner Street.

The entire installations will be in keeping with the requirements of Defra Guidance.

3.0 Planning Requirement Item 15: Air Conditioning Proposals

The following clause identifies the information required in respect of this;

15. Confirmation of whether any new air conditioning units are proposed as part of the fit out. If they are, you will need to provide the following information

Scaled existing and proposed plans/elevations. The proposed plans/elevations should clearly show the location of the units. If the units are proposed for the roof, you will also need to provide scaled existing and proposed elevations of the building

from all 4 directions, with the relevant street names clearly marked. If the units are proposed for a vertical elevation, please provide existing and proposed drawings for that particular elevation

Scaled cross-sections through the condenser units showing their relationship to the roofscape/elevation.

A technical specification of the units. This should include details such as the appearance, dimensions, materials, colour, noise output etc. of the unit.

Details regarding the noise output from the units, including the cumulative impact of all the units operating simultaneously, and any acoustic attenuation measures you are proposing to install to limit the breakout of noise from the units. You should also provide details of the ambient noise levels during the daytime, night and weekends and assess how noise from the units will impact on ambient noise levels.

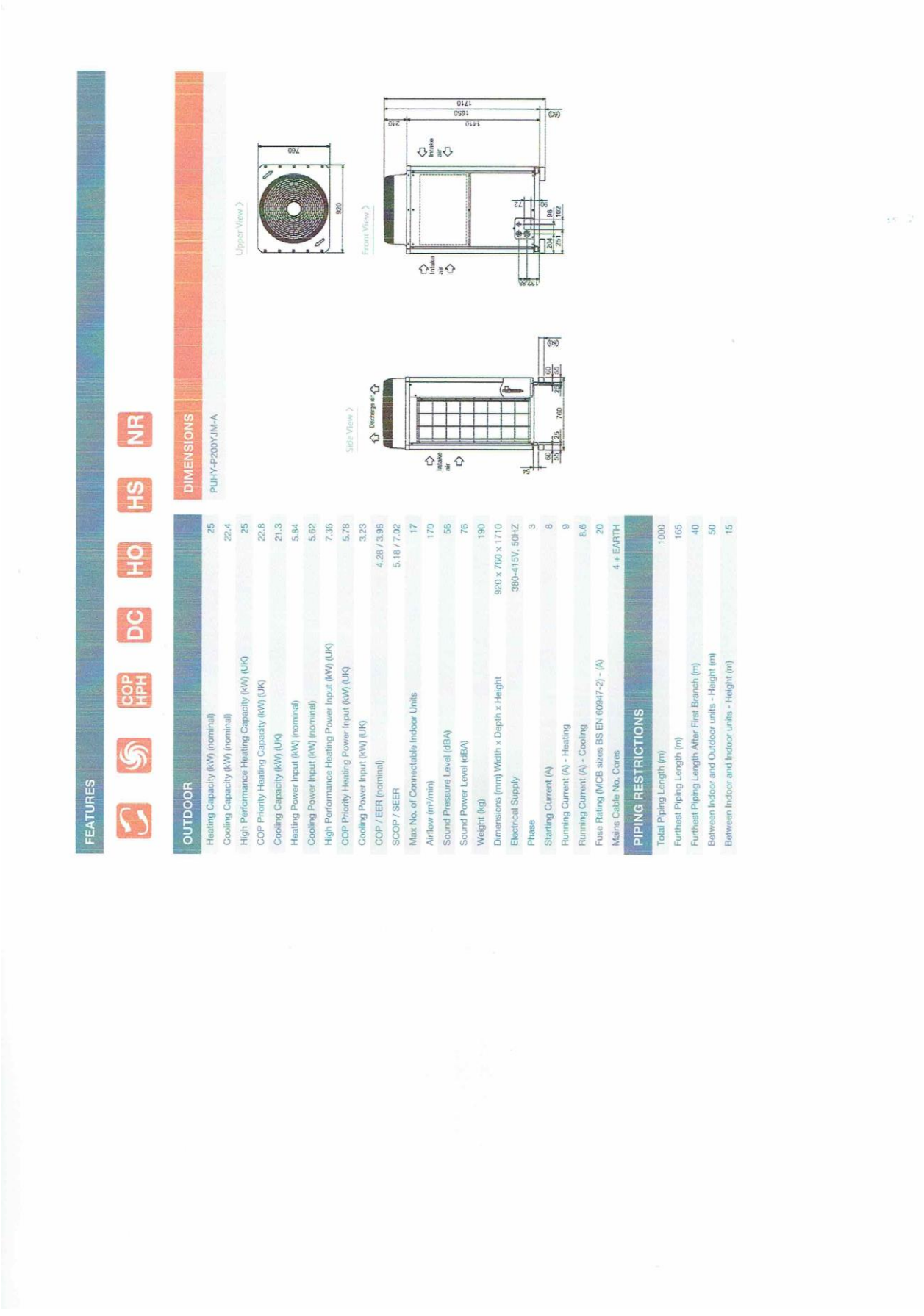
It is proposed to install a refrigerant type air conditioning installation to serve the Upper Ground Restaurant Unit. An allowance has been made for a similar installation serving the lower ground floor area, which would form part of the units fit out works.

Noise data for these installations has been issued to the acoustic consultants Hann Tucker for detailed analysis and report in respect of planning submission.

The upper office floors and ancillary areas are to be heated via a replacement central gas fired boiler installation, feeding perimeter radiators.

Appendix A: Proposed Equipment Technical Details

The following air conditioning unit is proposed to serve the Lower Ground Floor Restaurant space.



FEATURES

COP HPH DC HO HS NR

DIMENSIONS

PUHY-P200YJM-A

Upper View

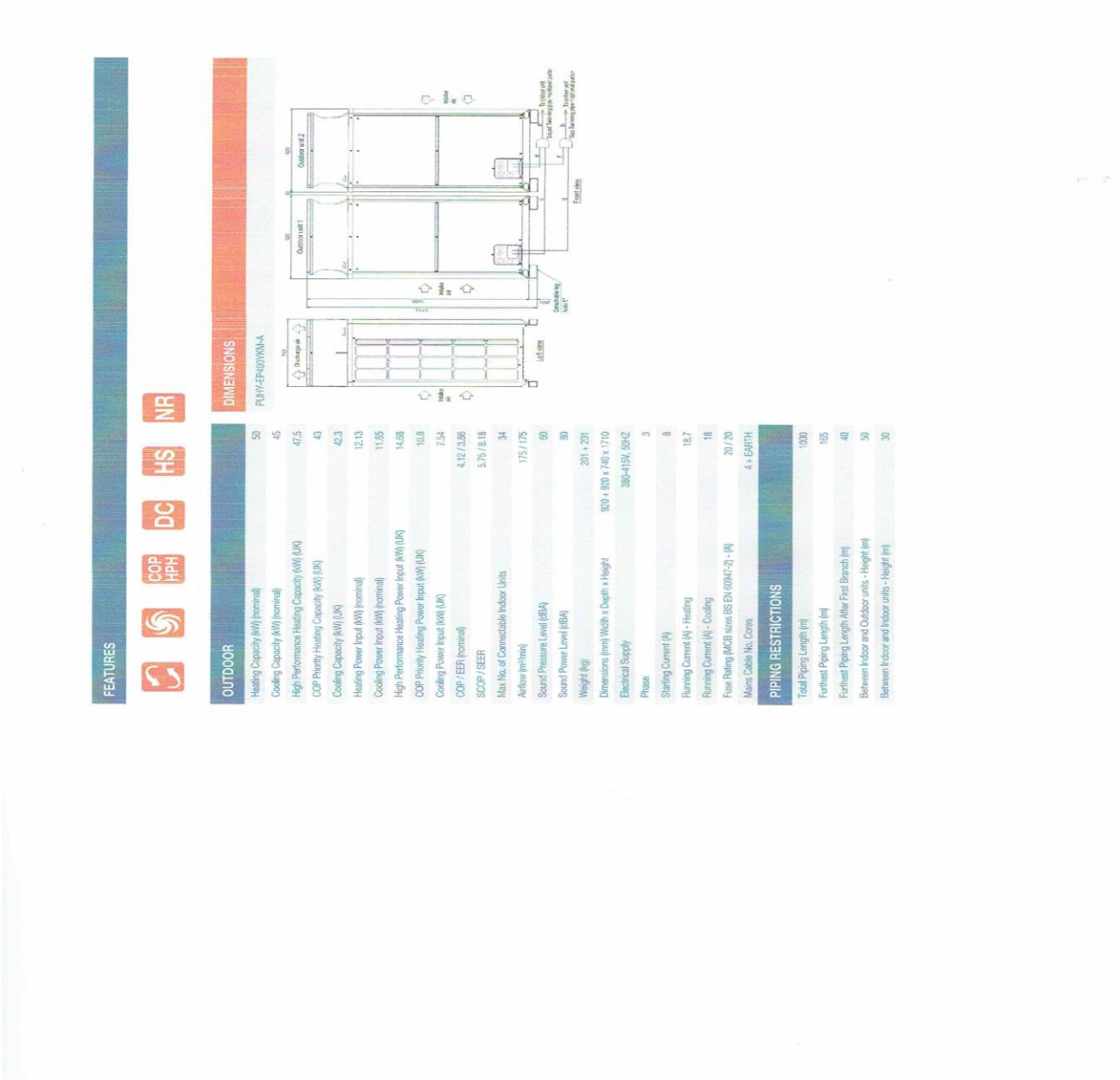
Front View

Side View

OUTDOOR	
Heating Capacity (kW) (nominal)	25
Cooling Capacity (kW) (nominal)	22.4
High Performance Heating Capacity (kW) (UK)	25
COP Priority Heating Capacity (kW) (UK)	22.8
Cooling Capacity (kW) (UK)	21.3
Heating Power Input (kW) (nominal)	5.84
Cooling Power Input (kW) (nominal)	5.62
High Performance Heating Power Input (kW) (UK)	7.36
COP Priority Heating Power Input (kW) (UK)	5.78
Cooling Power Input (kW) (UK)	3.23
COP / EER (nominal)	4.28 / 3.98
SCOP / SEER	5.18 / 7.02
Max No. of Connectable Indoor Units	17
Airflow (m³/min)	170
Sound Pressure Level (dBA)	56
Sound Power Level (dBA)	76
Weight (kg)	190
Dimensions (mm) Width x Depth x Height	920 x 760 x 1710
Electrical Supply	380-415V, 50HZ
Phase	3
Starting Current (A)	8
Running Current (A) - Heating	9
Running Current (A) - Cooling	8.6
Fuse Rating (MCB sizes BS EN 60947-2) - (A)	20
Mains Cable No. Cores	4 + EARTH

PIPING RESTRICTIONS	
Total Piping Length (m)	1000
Furthest Piping Length (m)	165
Furthest Piping Length After First Branch (m)	40
Between Indoor and Outdoor units - Height (m)	50
Between Indoor and Indoor units - Height (m)	15

The following air conditioning unit is proposed to serve the Upper Ground Floor Restaurant space.



FEATURES

COP HPH DC HS NR

OUTDOOR

Heating Capacity (kW) (nominal)	50
Cooling Capacity (kW) (nominal)	45
High Performance Heating Capacity (kW) (UK)	47.5
COP Priority Heating Capacity (kW) (UK)	43
Cooling Capacity (kW) (UK)	42.3
Heating Power Input (kW) (nominal)	12.13
Cooling Power Input (kW) (nominal)	11.65
High Performance Heating Power Input (kW) (UK)	14.68
COP Priority Heating Power Input (kW) (UK)	10.8
Cooling Power Input (kW) (UK)	7.54
COP / EER (nominal)	4.12 / 3.86
SCOP / SEER	5.75 / 8.18
Max No. of Connectable Indoor Units	34
Airflow (m³/min)	175 / 175
Sound Pressure Level (dBA)	60
Sound Power Level (dBA)	80
Weight (kg)	201 + 231
Dimensions (mm) Width x Depth x Height	923 + 920 x 740 x 1710
Electrical Supply	380-415V, 50HZ
Phase	3
Starting Current (A)	8
Running Current (A) - Heating	18.7
Running Current (A) - Cooling	18
Fuse Rating (MCB sizes BS EN 60947-2) - (A)	20 / 20
Mains Cable No. Cores	4 + EARTH

DIMENSIONS

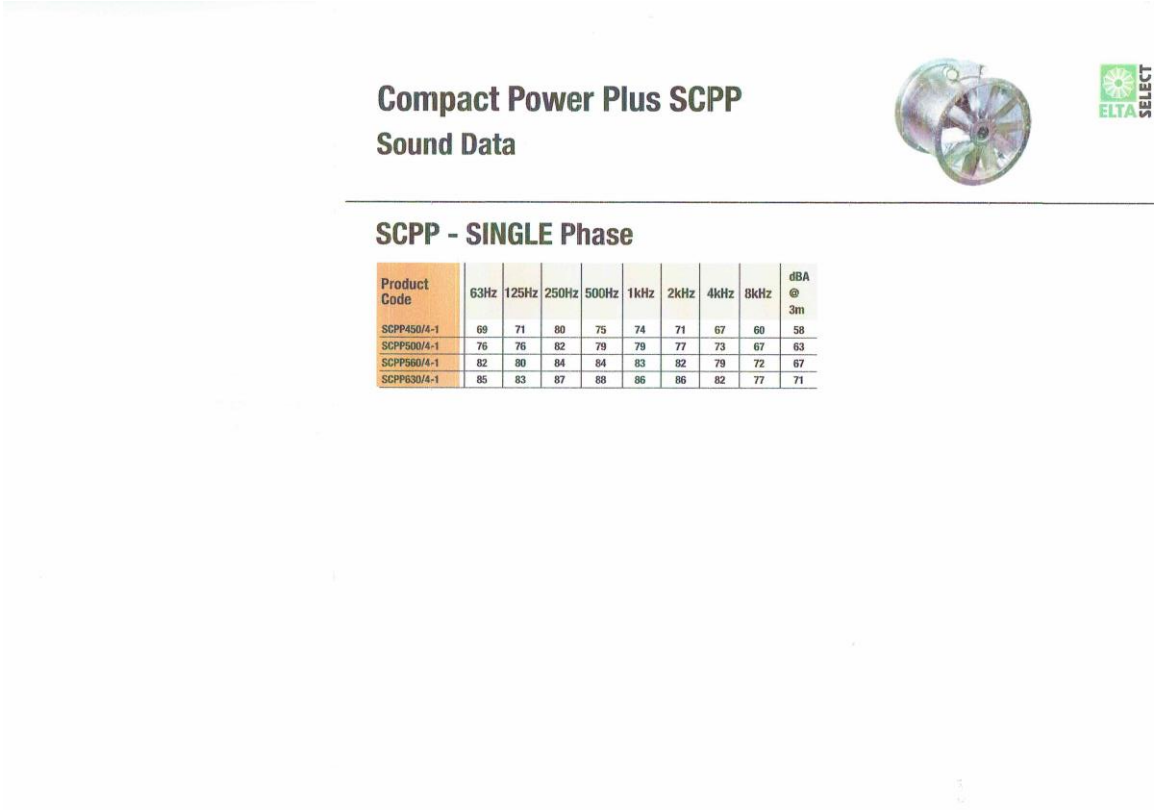
PUHY-EP400YKM-A

PIPING RESTRICTIONS

Total Piping Length (m)	1000
Furthest Piping Length (m)	165
Furthest Piping Length After First Branch (m)	40
Between Indoor and Outdoor units - Height (m)	50
Between Indoor and Indoor units - Height (m)	30

Kitchen Extract Fans

The riser shall be acoustically separated from the adjacent office on Level 4, to minimise noise transfer.



Compact Power Plus SCPP
Sound Data

ELTA SELECT

SCPP - SINGLE Phase

Product Code	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dBA @ 3m
SCPP450/4-1	69	71	80	75	74	71	67	60	58
SCPP500/4-1	76	76	82	79	79	77	73	67	63
SCPP560/4-1	82	80	84	84	83	82	79	72	67
SCPP630/4-1	85	83	87	88	86	86	82	77	71

The toilet extract fan in the upper level services riser is the SQS400 model as per below;

SINGLE Phase - 220V to 240V / 50Hz

Product Code		Sound Power Level dBW @ Octave Band Hz								Total dB
		63Hz	125Hz	250Hz	500Hz	1 kHz	2 kHz	4 kHz	8 kHz	
SQS150-L	Inlet	62	61	56	51	47	42	36	32	65
	Outlet	-	-	-	-	-	-	-	-	-
SQS315-L	Inlet	82	77	71	62	62	58	59	50	84
	Outlet	-	-	-	-	-	-	-	-	-
SQS400-L	Inlet	85	80	75	66	65	66	61	52	87
	Outlet	-	-	-	-	-	-	-	-	-
SQS500-L	Inlet	81	80	74	67	68	67	61	53	84
	Outlet	-	-	-	-	-	-	-	-	-

Appendix B: Proposed Services Installation Drawings