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2.01 - GENERAL

This section provides technical and performance data for each item of plant and equipment previously described in Section One.

It should be noted that the figures are based either on initial design data or on the information supplied by manufacturers and that the actual commissioning figures may differ. See Section Nine - Test & Commissioning Data.

2.02 - VENTILATION & AIR CONDITIONING SYSTEMS**2.02.01 - Soldier Gallery & Temporary Exhibition Supply/Extract Air Handling Unit
AHU01**

Location		External Roof Plant Area	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Single Deck, Side-by-Side	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume.....	4.500m³/s	
	- No. Installed / Size.....	2No. 290x595mm 4No. 595x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Cross Flow Plate Heat Recovery	
	- Supply Air On/Off	-4.0/10.7°C	
	- Extract Air On/Off.....	24.0/11.8°C	
	- Duty	79.500kW	
	- Efficiency	57.40%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER63C-4DN.H7.1R	
	- Duty	- Air Volume	4.500m³/s
		- External Resistance	300Pa
	- Motor	- Type.....	TEFC
		- Power	7.500kW
		- Speed	1588rpm
Cooling Coil	- Type	CHW	
	- Air Volume.....	4.500m³/s	
	- Air Temperature	- On	28.5°C
		- Off	14.0°C
	- Duty	154.500kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C

Heating Coil	- Flow Rate	6.170l/s
	- Fluid Pressure Drop	24.30kPa
	- Type	LPHW
	- Air Volume	4.500m ³ /s
	- Air Temperature - On	12.0°C
	- Off	24.0°C
	- Duty	78.100kW
Humidifier	- LPHW - Flow	70.0°C
	- Return	50.0°C
	- Flow Rate	0.810l/s
	- Fluid Pressure Drop	18.30kPa
	- Manufacturer	Condair Plc
	- Type	Duct Mounted Electric Resistive Steam Humidifier
	- Air Volume	4.500m ³ /s
	- Electrical Supply	230V/1Ph/50Hz
	- Further Details	Refer to Section 2.02.23

Extract Section

Primary Filter	- Type	Bag
	- Air Volume	4.100m ³ /s
	- No. Installed / Size	2No. 290x595mm 4No. 595x595mm
	- Efficiency	G4
Heat Exchanger		Refer to Supply Section
Extract Fan	- Type	Direct Drive Plug Fan
	- Size	ER63C-4DN.F7.1R
	- Duty - Air Volume	4.100m ³ /s
	- External Resistance	300Pa
	- Motor - Type	TEFC
	- Power	4.000kW
Outlet Damper	- Speed	1322rpm
		Motorised

2.02.02 - Supply/Extract Air Handling Unit AHU02

Location		External Roof Plant Area	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume.....	0.220m³/s	
	- No. Installed / Size.....	1No. 595x595x290mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/11.2°C	
	- Extract Air On/Off.....	15.0/-0.2°C	
	- Duty	5.400kW	
	- Efficiency	80.20%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER22C-2DN.A7.1R	
	- Duty	- Air Volume	0.220m³/s
		- External Resistance	300Pa
	- Motor	- Type.....	TEFC
		- Power	0.550kW
		- Speed	2817rpm
Cooling Coil	- Type	CHW	
	- Air Volume.....	0.220m³/s	
	- Air Temperature	- On	28.5°C
		- Off	15.0°C
	- Duty	4.900kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C
	- Flow Rate	0.139l/s	
	- Fluid Pressure Drop	18.70kPa	
Heating Coil	- Type	LPHW	
	- Air Volume	0.220m³/s	

Humidifier	- Air Temperature	- On	10.0°C
		- Off	15.0°C
	- Duty		1.400kW
	- LPHW	- Flow	70.0°C
		- Return	50.0°C
	- Flow Rate		0.611l/s
	- Fluid Pressure Drop		6.00kPa
	- Manufacturer		Condair Plc
	- Type		Electric Resistive Steam Humidifier
	- Air Volume		0.220m ³ /s
	- Relative Humidity	- On	29.0%
		- Off	58.0%
	- Electrical Supply		230V/1Ph/50Hz
	- Further Details		Refer to Section 2.02.23

Extract Section

Primary Filter	- Type		Bag
	- Air Volume		0.170m ³ /s
	- No. Installed / Size		1No. 595x595x290mm
	- Efficiency		G4
Heat Exchanger			Refer to Supply Section
Extract Fan	- Type		Direct Drive Plug Fan
	- Size		ER22C-2DN.A7.1R
	- Duty	- Air Volume	0.170m ³ /s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	0.550kW
Outlet Damper		- Speed	2633rpm
			Motorised

2.02.03 - Lower Ground Floor South Toilets Supply/Extract Air Handling Unit AHU03

Location	Internal Roof Plant Room	
General	- Manufacturer	Lennox International Inc.
	- Type	Packaged Double Deck

Supply Section

Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	0.310m³/s	
	- No. Installed / Size	1No. 290x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Cross Flow Heat Recovery	
	- Supply Air On/Off	-4.0/11.1°C	
	- Extract Air On/Off	20.0/9.6°C	
	- Duty	5.600kW	
	- Efficiency	62.80%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER22C-2DN.A7.1R	
	- Duty	- Air Volume	0.310m³/s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	0.550kW
		- Speed	2985rpm
Heating Coil	- Type	LPHW	
	- Air Volume	0.310m³/s	
	- Air Temperature	- On	12.0°C
		- Off	20.0°C
	- Duty	3.100kW	
	- LPHW	- Flow	70.0°C
		- Return	50.0°C
	- Flow Rate	0.038l/s	
	- Fluid Pressure Drop	0.30kPa	

Extract Section

Primary Filter	- Type	Bag
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	- Air Volume.....	0.390m³/s
	- No. Installed / Size.....	1No. 290x595mm
	- Efficiency	G4
Heat Exchanger		Refer to Supply Section
Extract Fan	- Type	Direct Drive Plug Fan
	- Size.....	ER22C-2DN.A7.1R
	- Duty	- Air Volume 0.390m³/s
		- External Resistance 300Pa
	- Motor	- Type..... TEFC
		- Power 0.550kW
		- Speed 3222rpm
Outlet Damper		Motorised

2.02.04 - Café Supply/Extract Air Handling Unit AHU04

Location		External Roof Plant Area	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	1.200m³/s	
	- No. Installed / Size	1No. 892x490mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/8.8°C	
	- Extract Air On/Off	15.0/-0.3°C	
	- Duty	24.700kW	
	- Efficiency	67.20%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER31C-2DN.D7.1R	
	- Duty	- Air Volume	1.200m³/s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	2.200kW
		- Speed	3187rpm
Cooling Coil	- Type	CHW	
	- Air Volume	1.200m³/s	
	- Air Temperature	- On	28.5°C
		- Off	14.0°C
	- Duty	41.200kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C
	- Flow Rate	1.639l/s	
	- Fluid Pressure Drop	30.80kPa	
Heating Coil	- Type	LPHW	
	- Air Volume	1.200m³/s	

- Air Temperature	- On	12.0°C
	- Off	21.0°C
- Duty		13.400kW
- LPHW	- Flow	70.0°C
	- Return	50.0°C
- Flow Rate		0.167l/s
- Fluid Pressure Drop		7.20kPa

Extract Section

Primary Filter	- Type	Bag	
	- Air Volume	1.000m ³ /s	
	- No. Installed / Size	1No. 892x490mm	
	- Efficiency	G4	
Heat Exchanger		Refer to Supply Section	
Extract Fan	- Type	Direct Drive Plug Fan	
	- Size.....	ER31C-2DN.B7.1R	
	- Duty	- Air Volume	1.000m ³ /s
		- External Resistance	300Pa
	- Motor	- Type.....	TEFC
		- Power	1.100kW
		- Speed	2612rpm
Outlet Damper		Motorised	

2.02.05 - Learning Spaces Supply/Extract Air Handling Unit AHU05A & B

Location	Internal Roof Plant Room	
General	- Manufacturer	Lennox International Inc.
	- Type	Packaged Separate Decks

Supply Deck (AHU05A)

Primary Filter	- Type	Bag
	- Air Volume.....	2.200m ³ /s
	- No. Installed / Size.....	2No. 595x595mm
	- Efficiency	G4
Run-Around Coil	- Type	Water (<i>Linked with AHU05B</i>)
	- Air Volume.....	2.200m ³ /s
	- Air Temperature	- On -4.0°C
		- Off 6.2°C
	- Duty	27.700kW
	- Fluid	- Flow 10.2°C
		- Return 5.9°C
	- Flow Rate.....	15.389l/s
	- Fluid Pressure Drop	9.40kPa
Supply Fan	- Type	Direct Drive Plug Fan
	- Model	ER45C-4DN.E7.1R
	- Duty	- Air Volume 2.200m ³ /s
		- External Resistance 300Pa
	- Motor	- Type..... TEFC
		- Power 3.000kW
		- Speed 2097rpm
Cooling Coil	- Type	CHW
	- Air Volume.....	2.200m ³ /s
	- Air Temperature	- On 28.5°C
		- Off 14.0°C
	- Duty	76.100kW
	- CHW	- Flow 6.0°C
		- Return 12.0°C
	- Flow Rate.....	2.833l/s
	- Fluid Pressure Drop	34.50kPa

Heating Coil	- Type	LPHW
	- Air Volume.....	2.200m ³ /s
	- Air Temperature	- On 10.0°C
		- Off 21.0°C
	- Duty	30.100kW
	- LPHW	- Flow 70.0°C
		- Return 50.0°C
	- Flow Rate.....	0.389l/s
	- Fluid Pressure Drop	10.90kPa
<u>Extract Deck (AHU05B)</u>		
Primary Filter	- Type	Bag
	- Air Volume.....	2.000m ³ /s
	- No. Installed / Size.....	2No. 595x595mm
	- Efficiency	G4
Run-Around Coil	- Type	Water (<i>Linked with AHU05A</i>)
	- Air Volume.....	2.000m ³ /s
	- Air Temperature	- On 20.0°C
		- Off 9.4°C
	- Duty	28.600kW
	- Fluid	- Flow 5.9°C
		- Return 10.2°C
	- Flow Rate.....	15.389l/s
	- Fluid Pressure Drop	29.50kPa
Extract Fan	- Type	Direct Drive Plug Fan
	- Size.....	ER40C-4DN.E7.1R
	- Duty	- Air Volume 2.000m ³ /s
		- External Resistance 300Pa
	- Motor	- Type..... TEFC
		- Power..... 3.000kW
		- Speed 2415rpm

2.02.06 - Discovery Gallery Supply/Extract Air Handling Unit AHU06

Location		Internal Roof Plant Room	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	0.800m³/s	
	- No. Installed / Size	1No. 490x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/13.0°C	
	- Extract Air On/Off	22.0/3.2°C	
	- Duty	24.800kW	
	- Efficiency	65.50%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER28C-2DN.B7.1R	
	- Duty	- Air Volume	0.800m³/s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	1.100kW
		- Speed	3331rpm
Cooling Coil	- Type	CHW	
	- Air Volume	0.800m³/s	
	- Air Temperature	- On	28.5°C
		- Off	18.0°C
	- Duty	16.000kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C
	- Flow Rate	0.750l/s	
	- Fluid Pressure Drop	25.50kPa	
Heating Coil	- Type	LPHW	
	- Air Volume	0.800m³/s	

- Air Temperature	- On	12.0°C
	- Off	22.0°C
- Duty		9.800kW
- LPHW	- Flow	70.0°C
	- Return	50.0°C
- Flow Rate		0.111l/s
- Fluid Pressure Drop		3.20kPa

Extract Section

Primary Filter	- Type	Bag	
	- Air Volume	0.720m³/s	
	- No. Installed / Size	1No. 490x595mm	
	- Efficiency	G4	
Heat Exchanger		Refer to Supply Section	
Extract Fan	- Type	Direct Drive Plug Fan	
	- Size.....	ER28C-2DN.B7.1R	
	- Duty	- Air Volume	0.720m³/s
		- External Resistance	300Pa
	- Motor	- Type.....	TEFC
		- Power	0.750kW
		- Speed	2914rpm
Outlet Damper		Motorised	

2.02.07 - Ground Floor South Toilets Supply/Extract Air Handling Unit AHU07

Location		Internal Roof Plant Room
General	- Manufacturer	Lennox International Inc.
	- Type	Packaged Double Deck

Supply Section

Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	0.130m³/s	
	- No. Installed / Size	1No. 290x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Cross Flow Heat Recovery	
	- Supply Air On/Off	-4.0/10.5°C	
	- Extract Air On/Off	20.0/8.0°C	
	- Duty	3.900kW	
	- Efficiency	60.40%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER22C-2DN.A7.1R	
	- Duty	- Air Volume	0.130m³/s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	0.550kW
		- Speed	2602rpm
Heating Coil	- Type	LPHW	
	- Air Volume	0.130m³/s	
	- Air Temperature	- On	12.0°C
		- Off	20.0°C
	- Duty	13.400kW	
	- LPHW	- Flow	70.0°C
		- Return	50.0°C
	- Flow Rate	0.056l/s	
	- Fluid Pressure Drop	0.20kPa	

Extract Section

Primary Filter	- Type	Bag
----------------	--------------	-----

	- Air Volume.....	0.190m³/s
	- No. Installed / Size.....	1No. 290x595mm
	- Efficiency	G4
Heat Exchanger		Refer to Supply Section
Extract Fan	- Type	Direct Drive Plug Fan
	- Size.....	ER22C-2DN.A7.1R
	- Duty	- Air Volume 0.190m³/s
		- External Resistance 300Pa
	- Motor	- Type..... TEFC
		- Power 0.550kW
		- Speed 2496rpm
Outlet Damper		Motorised

2.02.08 - Lower Ground Floor Stores Supply/Extract Air Handling Unit AHU08

Location		Internal Roof Plant Room	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	0.210m³/s	
	- No. Installed / Size	1No. 290x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/16.9°C	
	- Extract Air On/Off	22.0/1.2°C	
	- Duty	8.500kW	
	- Efficiency	80.40%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER22C-2DN.A7.1R	
	- Duty	- Air Volume	0.210m³/s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	0.550kW
	- Speed	2658rpm	
Heating Coil	- Type	LPHW	
	- Air Volume	0.210m³/s	
	- Air Temperature	- On	12.0°C
		- Off	24.0°C
	- Duty	3.340kW	
	- LPHW	- Flow	70.0°C
		- Return	50.0°C
	- Flow Rate	0.056l/s	
- Fluid Pressure Drop	0.30kPa		
<u>Extract Section</u>			
Primary Filter	- Type	Bag	

	- Air Volume.....	0.190m³/s
	- No. Installed / Size.....	1No. 290x595mm
	- Efficiency	G4
Heat Exchanger		Refer to Supply Section
Extract Fan	- Type	Direct Drive Plug Fan
	- Size.....	ER22C-2DN.A7.1R
	- Duty	- Air Volume 0.190m³/s
		- External Resistance 300Pa
	- Motor	- Type..... TEFC
		- Power 0.550kW
		- Speed 2633rpm
Outlet Damper		Motorised

2.02.09 - Society Gallery Supply/Extract Air Handling Unit AHU09A & B

Location	Internal Roof Plant Room	
General	- Manufacturer	Lennox International Inc.
	- Type	Packaged Separate Decks

Supply Deck (AHU09A)

Primary Filter	- Type	Bag
	- Air Volume.....	2.120m ³ /s
	- No. Installed / Size.....	2No. 595x595mm
	- Efficiency	G4
Run-Around Coil	- Type	Water (<i>Linked with AHU09B</i>)
	- Air Volume.....	2.120m ³ /s
	- Air Temperature	- On -4.0°C
		- Off 8.7°C
	- Duty	33.300kW
	- Fluid	- Flow 13.6°C
		- Return 7.6°C
	- Flow Rate.....	1.330l/s
	- Fluid Pressure Drop	34.90kPa
Supply Fan	- Type	Direct Drive Plug Fan
	- Model	ER45C-4DN.E7.1R
	- Duty	- Air Volume 2.120m ³ /s
		- External Resistance 250Pa
	- Motor	- Type..... TEFC
		- Power 3.000kW
		- Speed 2084rpm
Cooling Coil	- Type	CHW
	- Air Volume.....	2.120m ³ /s
	- Air Temperature	- On 28.5°C
		- Off 14.0°C
	- Duty	73.200kW
	- CHW	- Flow 6.0°C
		- Return 12.0°C
	- Flow Rate.....	2.920l/s
	- Fluid Pressure Drop	32.20kPa

Heating Coil	- Type	LPHW
	- Air Volume.....	2.120m ³ /s
	- Air Temperature	- On 12.0°C
		- Off 24.0°C
	- Duty	31.700kW
	- LPHW	- Flow 70.0°C
		- Return 50.0°C
	- Flow Rate.....	0.389l/s
	- Fluid Pressure Drop	12.00kPa
<u>Extract Deck (AHU09B)</u>		
Primary Filter	- Type	Bag
	- Air Volume.....	1.900m ³ /s
	- No. Installed / Size.....	2No. 595x595mm
	- Efficiency	G4
Run-Around Coil	- Type	Water (<i>Linked with AHU09A</i>)
	- Air Volume.....	1.900m ³ /s
	- Air Temperature	- On 20.0°C
		- Off 11.0°C
	- Duty	21.300kW
	- Fluid	- Flow 7.6°C
		- Return 13.6°C
	- Flow Rate.....	1.330l/s
	- Fluid Pressure Drop	22.70kPa
Extract Fan	- Type	Direct Drive Plug Fan
	- Size.....	ER40C-4DN.E7.1R
	- Duty	- Air Volume 1.900m ³ /s
		- External Resistance 250Pa
	- Motor	- Type..... TEFC
		- Power..... 2.200kW
		- Speed 2314rpm
Outlet Damper		Motorised

2.02.10 - Battle Gallery Supply/Extract Air Handling Unit AHU10A & B

Location	Internal Roof Plant Room	
General	- Manufacturer	Lennox International Inc.
	- Type	Packaged Separate Decks

Supply Deck (AHU10A)

Primary Filter	- Type	Bag
	- Air Volume.....	1.560m ³ /s
	- No. Installed / Size.....	2No. 490x595mm
	- Efficiency	G4
Run-Around Coil	- Type	Water (<i>Linked with AHU10B</i>)
	- Air Volume.....	1.560m ³ /s
	- Air Temperature	- On -5.0°C
		- Off 8.9°C
	- Duty	26.800kW
	- Fluid	- Flow 14.5°C
		- Return 6.3°C
	- Flow Rate.....	0.778l/s
	- Fluid Pressure Drop	22.10kPa
Supply Fan	- Type	Direct Drive Plug Fan
	- Model	ER35C-2DN.E7.1R
	- Duty	- Air Volume 1.560m ³ /s
		- External Resistance 250Pa
	- Motor	- Type..... TEFC
		- Power 3.000kW
		- Speed 2880rpm
Cooling Coil	- Type	CHW
	- Air Volume.....	1.560m ³ /s
	- Air Temperature	- On 28.5°C
		- Off 14.0°C
	- Duty	53.000kW
	- CHW	- Flow 6.0°C
		- Return 12.0°C
	- Flow Rate.....	2.110l/s
	- Fluid Pressure Drop	21.90kPa

Heating Coil	- Type	LPHW
	- Air Volume.....	1.560m ³ /s
	- Air Temperature	- On 12.0°C
		- Off 24.0°C
	- Duty	23.300kW
	- LPHW	- Flow 70.0°C
		- Return 50.0°C
	- Flow Rate.....	0.278l/s
	- Fluid Pressure Drop	21.60kPa
<u>Extract Deck (AHU10B)</u>		
Primary Filter	- Type	Bag
	- Air Volume.....	1.400m ³ /s
	- No. Installed / Size.....	2No. 490x595mm
	- Efficiency	G4
Run-Around Coil	- Type	Water (<i>Linked with AHU10A</i>)
	- Air Volume.....	1.400m ³ /s
	- Air Temperature	- On 24.0°C
		- Off 11.6°C
	- Duty	27.100kW
	- Fluid	- Flow 6.3°C
		- Return 14.5°C
	- Flow Rate.....	0.778l/s
	- Fluid Pressure Drop	28.20kPa
Extract Fan	- Type	Direct Drive Plug Fan
	- Size.....	ER35C-2DN.D7.1R
	- Duty	- Air Volume 1.400m ³ /s
		- External Resistance 250Pa
	- Motor	- Type..... TEFC
		- Power..... 2.200kW
Outlet Damper		- Speed 2466rpm
		Motorised

2.02.11 - North Toilets Supply Air Handling Unit AHU11

Location	First Floor Roof	
General	- Manufacturer	Lennox International Inc.
	- Type	Packaged Single Deck

Supply Section

Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	0.290m³/s	
	- No. Installed / Size.....	1No. 290x595mm	
	- Efficiency	G4	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER22C-2DN.A7.1R	
	- Duty	- Air Volume	0.290m³/s
		- External Resistance	300Pa
	- Motor	- Type.....	TEFC
		- Power	0.550kW
		- Speed	2650rpm
Heating Coil	- Type	LPHW	
	- Air Volume	0.290m³/s	
	- Air Temperature	- On	12.0°C
		- Off	20.0°C
	- Duty	2.900kW	
	- LPHW	- Flow	70.0°C
		- Return	50.0°C
	- Flow Rate	0.039l/s	
	- Fluid Pressure Drop	0.20kPa	

2.02.12 - Boardroom Supply/Extract Air Handling Unit AHU12

Location		External Roof Plant Area	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	0.600m³/s	
	- No. Installed / Size	1No. 490x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/14.3°C	
	- Extract Air On/Off	22.0/1.8°C	
	- Duty	20.000kW	
	- Efficiency	70.30%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER25C-2DN.B7.1R	
	- Duty	- Air Volume	0.600m³/s
		- External Resistance	250Pa
	- Motor	- Type	TEFC
		- Power	0.750kW
		- Speed	3301rpm
Cooling Coil	- Type	CHW	
	- Air Volume	0.600m³/s	
	- Air Temperature	- On	28.5°C
		- Off	14.0°C
	- Duty	20.800kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C
	- Flow Rate	0.778l/s	
	- Fluid Pressure Drop	35.60kPa	
Heating Coil	- Type	LPHW	
	- Air Volume	0.600m³/s	

- Air Temperature	- On	12.0°C
	- Off	24.0°C
- Duty		9.000kW
- LPHW	- Flow	70.0°C
	- Return	50.0°C
- Flow Rate		0.111/s
- Fluid Pressure Drop		2.70kPa

Extract Section

Primary Filter	- Type	Bag	
	- Air Volume	0.540m ³ /s	
	- No. Installed / Size	1No. 490x595mm	
	- Efficiency	G4	
Heat Exchanger		Refer to Supply Section	
Extract Fan	- Type	Direct Drive Plug Fan	
	- Size.....	ER25C-2DN.B7.1R	
	- Duty	- Air Volume	0.540m ³ /s
		- External Resistance	250Pa
	- Motor	- Type.....	TEFC
		- Power	0.750kW
		- Speed	2902rpm
Outlet Damper		Motorised	

2.02.13 - Army Gallery Supply/Extract Air Handling Unit AHU13

Location		External Roof Plant Area	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	1.350m³/s	
	- No. Installed / Size	1No. 290x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/12.5°C	
	- Extract Air On/Off	22.0/3.5°C	
	- Duty	40.600kW	
	- Efficiency	63.50%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER35C-2DN.D7.1R	
	- Duty	- Air Volume	1.350m³/s
		- External Resistance	250Pa
	- Motor	- Type	TEFC
		- Power	2.200kW
		- Speed	2727rpm
Cooling Coil	- Type	CHW	
	- Air Volume	1.350m³/s	
	- Air Temperature	- On	28.5°C
		- Off	14.0°C
	- Duty	46.400kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C
	- Flow Rate	1.860l/s	
	- Fluid Pressure Drop	29.10kPa	
Heating Coil	- Type	LPHW	
	- Air Volume	1.350m³/s	

- Air Temperature	- On	12.0°C
	- Off	24.0°C
- Duty		20.100kW
- LPHW	- Flow	70.0°C
	- Return	50.0°C
- Flow Rate		0.250/s
- Fluid Pressure Drop		17.50kPa

Extract Section

Primary Filter	- Type	Bag	
	- Air Volume	1.200m³/s	
	- No. Installed / Size	1No. 290x595mm	
	- Efficiency	G4	
Heat Exchanger		Refer to Supply Section	
Extract Fan	- Type	Direct Drive Plug Fan	
	- Size	ER31C-2DN.C7.1R	
	- Duty	- Air Volume	1.200m³/s
		- External Resistance	250Pa
	- Motor	- Type	TEFC
		- Power	1.500kW
		- Speed	3008rpm
Outlet Damper		Motorised	

2.02.14 - General Areas Supply/Extract Air Handling Unit AHU14

Location		External Roof Plant Area	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	1.240m³/s	
	- No. Installed / Size	1No. 290x595mm 1No. 595x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/8.4°C	
	- Extract Air On/Off	15.0/1.3°C	
	- Duty	24.700kW	
	- Efficiency	65.20%	
	- Type	Direct Drive Plug Fan	
	- Model	ER31C-2DN.D7.1R	
	- Duty	- Air Volume	1.240m³/s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	2.200kW
		- Speed	3293rpm
Cooling Coil	- Type	CHW	
	- Air Volume	1.240m³/s	
	- Air Temperature	- On	28.5°C
		- Off	16.0°C
	- Duty	38.000kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C
	- Flow Rate	1.420l/s	
	- Fluid Pressure Drop	35.60kPa	
	- Type	LPHW	

- Air Volume.....	1.240m ³ /s
- Air Temperature	- On 12.0°C
	- Off 21.0°C
- Duty	14.000kW
- LPHW	- Flow 70.0°C
	- Return 50.0°C
- Flow Rate	0.167/s
- Fluid Pressure Drop	8.90kPa

Extract Section

Primary Filter	- Type	Bag
	- Air Volume.....	1.240m ³ /s
	- No. Installed / Size	1No. 290x595mm 1No. 595x595mm
	- Efficiency	G4
Heat Exchanger		Refer to Supply Section
Extract Fan	- Type	Direct Drive Plug Fan
	- Size.....	ER31C-2DN.C7.1R
	- Duty	- Air Volume 1.120m ³ /s
		- External Resistance 300Pa
	- Motor	- Type..... TEFC
		- Power 1.500kW
		- Speed 2903rpm
Outlet Damper		Motorised

2.02.15 - Retail Supply/Extract Air Handling Unit AHU15

Location		External Roof Plant Area	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume.....	0.300m³/s	
	- No. Installed / Size.....	1No. 290x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/9.7°C	
	- Extract Air On/Off.....	15.0/-0.2°C	
	- Duty	6.600kW	
	- Efficiency	72.30%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER22C-2DN.A7.1R	
	- Duty	- Air Volume	0.300m³/s
		- External Resistance	300Pa
	- Motor	- Type.....	TEFC
		- Power	0.550kW
		- Speed	3215rpm
Cooling Coil	- Type	CHW	
	- Air Volume.....	0.300m³/s	
	- Air Temperature	- On	28.5°C
		- Off	14.0°C
	- Duty	10.400kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C
	- Flow Rate	0.417l/s	
	- Fluid Pressure Drop	20.50kPa	
Heating Coil	- Type	LPHW	
	- Air Volume.....	0.300m³/s	

- Air Temperature	- On	12.0°C
	- Off	24.0°C
- Duty		4.500kW
- LPHW	- Flow	70.0°C
	- Return	50.0°C
- Flow Rate		0.056/s
- Fluid Pressure Drop		0.50kPa

Extract Section

Primary Filter	- Type	Bag	
	- Air Volume	0.270m ³ /s	
	- No. Installed / Size	1No. 290x595mm	
	- Efficiency	G4	
Heat Exchanger		Refer to Supply Section	
Extract Fan	- Type	Direct Drive Plug Fan	
	- Size	ER22C-2DN.A7.1R	
	- Duty	- Air Volume	0.270m ³ /s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	0.550kW
		- Speed	2823rpm
Outlet Damper		Motorised	

2.02.16 - Archive Supply/Extract Air Handling Unit AHU16

Location		External Roof Plant Area	
General	- Manufacturer	Lennox International Inc.	
	- Type	Packaged Double Deck	
<u>Supply Section</u>			
Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	0.210m³/s	
	- No. Installed / Size	1No. 290x595mm	
	- Efficiency	G4	
Heat Exchanger	- Type	Thermal Wheel Heat Recovery	
	- Supply Air On/Off	-4.0/11.2°C	
	- Extract Air On/Off	15.0/-0.2°C	
	- Duty	5.400kW	
	- Efficiency	80.20%	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER22C-2DN.A7.1R	
	- Duty	- Air Volume	0.210m³/s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	0.550kW
		- Speed	2865rpm
Cooling Coil	- Type	CHW	
	- Air Volume	0.210m³/s	
	- Air Temperature	- On	28.5°C
		- Off	15.0°C
	- Duty	10.400kW	
	- CHW	- Flow	6.0°C
		- Return	12.0°C
	- Flow Rate	0.250l/s	
	- Fluid Pressure Drop	9.90kPa	
Heating Coil	- Type	LPHW	
	- Air Volume	0.210m³/s	

Humidifier	- Air Temperature	- On	10.0°C
		- Off	16.0°C
	- Duty		1.600kW
	- LPHW	- Flow	70.0°C
		- Return	50.0°C
	- Flow Rate		0.389/s
	- Fluid Pressure Drop		8.40kPa
	- Manufacturer		Condair Plc
	- Type		Electric Resistive Steam Humidifier
	- Electrical Supply		400V/3Ph/50Hz
	- Further Details		Refer to Section 2.02.23

Extract Section

Primary Filter	- Type		Bag
	- Air Volume		0.190m ³ /s
	- No. Installed / Size		1No. 290x595mm
	- Efficiency		G4
Heat Exchanger			Refer to Supply Section
Extract Fan	- Type		Direct Drive Plug Fan
	- Size		ER22C-2DN.A7.1R
	- Duty	- Air Volume	0.190m ³ /s
		- External Resistance	300Pa
	- Motor	- Type	TEFC
		- Power	0.550kW
		- Speed	2633rpm
Outlet Damper			Motorised

2.02.17 - Kitchen Supply Air Handling Unit AHU17

Location		External Roof Plant Area
General	- Manufacturer	Lennox International Inc.
	- Type	Packaged Single Deck

Supply Section

Inlet Damper		Motorised	
Primary Filter	- Type	Bag	
	- Air Volume	1.500m³/s	
	- No. Installed / Size.....	2No. 490x595mm	
	- Efficiency	G4	
Supply Fan	- Type	Direct Drive Plug Fan	
	- Model	ER35C-2DN.D7.1R	
	- Duty	- Air Volume	1.500m³/s
		- External Resistance	300Pa
	- Motor	- Type.....	TEFC
		- Power	0.550kW
		- Speed	2509rpm
Heating Coil	- Type	LPHW	
	- Air Volume	1.500m³/s	
	- Air Temperature	- On	-5.0°C
		- Off	16.0°C
	- Duty	38.900kW	
	- LPHW	- Flow	70.0°C
		- Return	50.0°C
	- Flow Rate	0.472l/s	
	- Fluid Pressure Drop	22.40kPa	

2.02.18 - Archive Supply/Re-Circulation Air Handling Units AHU AE01 & 02

Location		Lower Ground Floor Archive	
General	- Manufacturer	AirCRAFT Air Handling Limited	
	- Type	Internal Packaged, Single Decked	
Primary Filter	- Type	Panel	
	- Air Volume	1.000m³/s	
	- No. Installed / Size.....	1No. @ 495x495x50mm 1No. @ 495x595x50mm	
	- Efficiency	EU 4	
Secondary Filter	- Type	Bag	
	- Air Volume	1.000m³/s	
	- No. Installed / Size.....	1No. @ 495x495x380mm 1No. @ 495x595x380mm	
	- Efficiency	EU 7	
DX Coil	- Type	Reverse Cycle DX	
	- Air Volume	1.000m³/s	
	- Air Temperature (Cooling)	- On 15.0°C - Off 8.0°C	
	- Cooling Duty	8.700kW	
	- Heating Duty.....	9.600kW	
	- Refrigerant.....	R410A	
	Supply Fan	- Manufacturer	ZIEHL-ABEGG
Supply Fan	- Type	Backward Curved Direct Drive Plug Fan	
	- Size.....	ER31C-ZID.DC.CR	
	- Duty	- Air Volume	1.000m³/s
		- External Resistance	150Pa
	- Speed	Variable	
	- Motor	- Type.....	TEFC
		- Power	3.700kW
		- Speed	4100rpm
		- Full Load Current.....	6.00Amps
	- Electrical Supply	400V/3Ph/50Hz	

2.02.19 - [REDACTED] Supply/Re-Circulation Air Handling Units AHU AM01 & 02

Location	[REDACTED]	
General	- Manufacturer	AirCraft Air Handling Limited
	- Type	Internal Packaged, Single Decked
Primary Filter	- Type	Panel
	- Air Volume	0.400m ³ /s
	- No. Installed / Size	1No. @ 495x495x50mm
	- Efficiency	EU 4
Secondary Filter	- Type	Bag
	- Air Volume	0.400m ³ /s
	- No. Installed / Size	1No. @ 495x495x380mm
	- Efficiency	EU 7
DX Coil	- Type	Reverse Cycle DX
	- Air Volume	0.400m ³ /s
	- Air Temperature (Cooling)	- On 15.0°C - Off 8.0°C
	- Cooling Duty	3.480kW
	- Heating Duty	3.900kW
	- Refrigerant	R410A
Supply Fan	- Manufacturer	ZIEHL-ABEGG
	- Type	Backward Curved Direct Drive Plug Fan
	- Size	ER31C-ZID.DC.CR
	- Duty	- Air Volume 0.400m ³ /s - External Resistance 150Pa
	- Speed	Variable
	- Motor	- Type TEFC - Power 3.700kW - Speed 4100rpm - Full Load Current 6.00Amps - Electrical Supply 400V/3Ph/50Hz

2.02.20 - Kitchen Extract Ventilation Fan Unit KE/GF/01

Location	External Roof Plant Room
Manufacturer	Elta Fans Limited
Type	Centrifugal Box Fan
Model	SQU4/4-3HTS
Duty	- Air Volume 1.600m ³ /s
	- Resistance 550Pa
Speed	1447rpm
Motor	- Type TEFC
	- Power 3.000kW
	- Full Load Current 6.20Amps
	- Electrical Supply 400V/3Ph/50Hz
Controller	- Type Inverter Controller
	- Model 149-ODE-2-24400

2.02.21 - Ground & First Floor Toilets Extract Ventilation Fan Unit TX/01/01

Location	First Floor Roof
Manufacturer	Elta Fans Limited
Type	Centrifugal Twin Box Fan, Weatherproof
Model	SQT500-1ECLWP
Duty	- Air Volume 0.500m ³ /s
	- Resistance 220Pa
Motor	- Type TEFC
	- Power 0.774kW (Max)
	- Full Load Current 3.50Amps
	- Electrical Supply 400V/3Ph/50Hz
Controller	- Type Changeover Panel
	- Model ACI14E

2.02.22 - AHU Run-Around Coil Pumps

Location	AHU05A & B, AHU09A & B and AHU10A & B Systems
Manufacturer	Grundfos Pumps Limited
Type	Single-Head In-Line
Model	MAGNA3 25-60
Number Installed.....	3No. (1No. per AHU System)
Duty - Volume Flow	0.400l/s
- Resistance	30.00kPa
Motor - Type.....	TEFC
- Power	0.091kW
- Full Load Current.....	0.75Amps
- Electrical Supply	230V/1Ph/50Hz

2.02.23 - Electric Steam Humidifiers

Location	Roof Level
Manufacturer	Condair Plc
Type	Electric Resistive Steam Humidifier with Advanced Scale Management

a)

Systems Served	AHU01 & 02
Model	RS 5
Number Installed.....	2No.
Capacity	5.100kg/h
Electrical Supply	230V/1Ph/50Hz

b)

Systems Served	AHU16
Model	RS 40
Number Installed.....	1No.
Capacity	40.000kg/h
Electrical Supply	400V/3Ph/50Hz

2.02.24 - Kitchen Extract Filtration Unit

Location.....	Ground Floor Kitchen
Manufacturer	Extechnology Limited
Type.....	Duct Mounted UV Kitchen Extract Emissions Control Unit
Model	Ecovent UV-C
Air Volume.....	1.500 m ³ /s (Max)
UV Lamp Type	1No. 135W Quartz, 12,000 Hour Life
Electrical Supply	230V/1Ph/50Hz

2.02.25 - Variable Air Volume (VAV) Boxes

Location.....	Various
Manufacturer	Trox UK Limited
Type.....	Rectangular VAV Terminal Unit c/w Silencer

Reference	Location	Max Volume (l/s)	Model
VAV/LG/TA/01	Templer Study A	0.200	TVJ-Easy/200x200
VAV/LG/TA/02	Templer Study A	0.200	TVJ-Easy/200x200
VAV/LG/TA/03	Templer Study A	0.300	TVJ-Easy/300x200
VAV/LG/TA/04	Templer Study A	0.270	TVJ-Easy/300x200
VAV/LG/GA/01	Group Area	0.450	TVJ-Easy/600x200
VAV/LG/CR/01	Corridor (LG.05)	0.500	TVJ-Easy/500x200
VAV/LG/L1/01	Learning Space 1	0.500	TVJ-Easy/600x200
VAV/LG/L2/01	Learning Space 2	0.450	TVJ-Easy/500x200
VAV/LG/EE/01	Entrance/Foyer	1.200	TVJ-Easy/700x300
VAV/LG/EE/02	Entrance/Foyer	1.100	TVJ-Easy/700x300
VAV/LG/SG/01	Soldier Gallery	1.105	TVJ-Easy/800x300
VAV/LG/SG/02	Soldier Gallery	0.255	TVJ-Easy/300x200
VAV/LG/SG/03	Soldier Gallery	0.765	TVJ-Easy/600x300
VAV/LG/SG/04	Soldier Gallery	0.460	TVJ-Easy/500x300
VAV/LG/KZ/01	Kids Zone	0.540	TVJ-Easy/600x200
VAV/LG/KZ/02	Kids Zone	0.600	TVJ-Easy/600x300
VAV/LG/DR/01	Dining Room	0.140	TVJ-Easy/200x200
VAV/LG/DR/02	Dining Room	0.130	TVJ-Easy/200x200
VAV/LG/TE/01	Temporary Exhibition	0.286	TVJ-Easy/400x200
VAV/LG/TE/02	Temporary Exhibition	0.430	TVJ-Easy/400x300
VAV/LG/TE/03	Temporary Exhibition	0.430	TVJ-Easy/400x300
VAV/LG/TE/04	Temporary Exhibition	0.286	TVJ-Easy/400x200
VAV/LG/TE/05	Temporary Exhibition	0.286	TVJ-Easy/400x200
VAV/LG/TE/06	Temporary Exhibition	0.286	TVJ-Easy/400x200

2.02.26 - Attenuators

Location.....	Various
Manufacturer	Caice Acoustic Air Movement Limited

Reference should be made to the Caice Acoustic Air Movement Limited information within Section Ten of this manual for a schedule of installed attenuators and full technical details.

2.02.27 - Grilles & Diffusers

Location..... See Schedules Below

Manufacturers..... Halton Limited & Trox UK
Limited as per Schedules Below

SCHEDULE OF SUPPLY GRILLES AND DIFFUSERS										
Reference	Location		Description	Type	Air Flow (L/s)	Duct Conn. Size (mm)	Pressure Drop (Maximum) (Pa)	Nominal Size		Revision
	a	b						Width (mm)	Depth (mm)	
Lower Ground Floor										
Ref.		Qty.								
SG		4	Armoury	Supply Grille (From Floor Mounted Unit)	Adjustable blade grille AT-DG	340		1200	300	
SG		1	Armoury	Supply Grille	Adjustable blade grille AT-DG	130		700	250	
SD		1	Viewing Room	Linear Supply Diffuser	Fixed Blade Linear Diffuser ADM-1	200	160 Ø	5500	150	
SD		2	Lockers	Supply Grille	TROX Disc Valve Z-LVS	17	100 Ø	100 Ø		
SD		2	Changing Places WC	Supply Grille	TROX Disc Valve Z-LVS	32	160 Ø	160 Ø		
SD		1	Office	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	20	100 Ø	4500	150	
SD		1	Templer Study A	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	400	200 Ø	7000	150	
SD		1	Templer Study B	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	550	200 Ø	6000	150	
SD		6	Open Area/Discovery Gallery	Linear Supply Diffuser	TROX Linear Slot Diffuser VSD50	50	160 Ø	1700	59.5	
SG		16	Archive	Supply Grille (From Floor Mounted Unit)	Adjustable blade grille AT-DG	340		1200	300	
SG		2	Archive	Supply Grille	Adjustable blade grille AT-DG	80		450	150	
SG		1	Photography	Supply Grille	Adjustable blade grille AT-DG	20		200	150	
SG		1	Film	Supply Grille	Adjustable blade grille AT-DG	80	200 x 150	450	150	
SD		1	Wet Learning Space	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	1150	200 x 200	14000	150	
SD		1	Learning Space 1	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	700	200 Ø	10000	150	
SD		1	Learning Space 2	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	700	200 Ø	10000	150	
SD		10	Discovery Gallery	Low Level Displacement Terminals	Halton sidewall displacement diffusers	80		TBA	TBA	
SG		1	Front of House Storage	Supply Grille	Adjustable blade grille AT-DG	47		250	200	
SG		1	Retail Deep Storage	Supply Grille	Adjustable blade grille AT-DG	27		200	150	
SG		1	Handling Collection	Supply Grille	Adjustable blade grille AT-DG	32		250	150	
Ground Floor										
SD		38	Soldier Gallery	Linear Supply Diffuser	TROX Linear Slot Diffuser VSD50	51	160 Ø	1700	59.5	
SD		1	Soldier Gallery	Sidewall Linear Diffuser	Linear Fixed Blade AH - 15 - AG	250	180 Ø	7500	100	
SD		1	Soldier Gallery	Sidewall Linear Diffuser		306	180 Ø	10000	100	
SD		5	Retail	Supply Diffuser	Halton TRB Conical Diffuser	75	180 Ø	438 Ø		
SD		2	Kids Zone	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	1200	180 Ø	17000	150	
SD		1	Office	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	200	100 Ø	2000	150	
SD		1	Dining	Linear Supply Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	400	200 Ø	6500	150	
SD		31	Cafe	Supply Diffuser	TROX Linear Slot Diffuser VSD50	80	200 Ø	1700	59.5	
SD		5	Cafe	Supply Diffuser	Halton TRB Conical Diffuser			438 Ø		
SD		24	Entrance/Foyer	Linear Supply Diffuser	TROX Linear Slot Diffuser VSD50			1700	59.5	
SD		15	Entrance/Foyer	Supply Diffuser	Halton TRB Conical Diffuser			438 Ø		
First Floor										
SD		36	Temporary Exhibition	Linear Supply Diffuser	TROX Linear Slot Diffuser VSD50	48	160 Ø	1700	59.5	
SD		33	Army Gallery	Linear Supply Diffuser	TROX Linear Slot Diffuser VSD50	50	160 Ø	1700	59.5	
Second Floor										
SD		48	Society Gallery	Linear Supply Diffuser	TROX Linear Slot Diffuser VSD50	43	160 Ø	1700	59.5	
SD		30	Battle Gallery	Linear Supply Diffuser	TROX Linear Slot Diffuser VSD50	52	160 Ø	1700	59.5	
SD		1	Boardroom	Linear Supply Air Slot Diffuser	TROX Fixed Blade Linear Diffuser ADM-1	600	200 Ø	3500	250	

SCHEDULE OF EXTRACT GRILLES AND DIFFUSERS												
Reference		Location		Description	Type	Air Flow (L/s)	Throw (m)	Duct Conn. Size (mm)	Pressure Drop (Maximum) (Pa)	Nominal Size a Width (mm) b Depth (mm)		Provision
Lower Ground Floor												
Ref.			Qty.									
EG			1	Armoury	Extract Grille	Adjustable blade grille AT-DG	200			1200	250	
EG			2	Lockers	Extract Grille	TROX Disc Valve LVS	17	100 Ø		100 Ø		
EG			1	Baby Changing	Extract Grille	TROX Disc Valve LVS	32	125 Ø		125 Ø		
EG			1	Breast Feeding	Extract Grille	TROX Disc Valve LVS	32	125 Ø		125 Ø		
EG			2	Changing Places WC	Extract Grille	TROX Disc Valve LVS	40	160 Ø		160 Ø		
EG			1	Front of House Storage	Extract Grille	Adjustable blade grille AT-DG	47			250	200	
EG			1	Retail Deep Storage	Extract Grille	Adjustable blade grille AT-DG	27			200	150	
EG			1	Handling Collection	Extract Grille	Adjustable blade grille AT-DG	32			250	150	
EG			2	Wet Learning Space	Linear Return Air Diffuser	TROX Linear Slot Diffuser VSD50	700			9000	59.5	
EG			1	Learning Space 1/2	Linear Return Air Diffuser	TROX Linear Slot Diffuser VSD50	1150			14000	59.5	
EG			3	Archive	Extract Grille	Adjustable blade grille AT-DG	54			400	150	
EG			1	Photography	Extract Grille	Adjustable blade grille AT-DG	20			200	150	
EG			1	Film	Extract Grille	Adjustable blade grille AT-DG	10			150	150	
EG			1	Templer Study A	Linear Return Air Sidewall Diffuser	Linear Fixed Blade AH - 15 - AG	550	N/A		6000	100	
EG			1	Templer Study B	Linear Return Air Sidewall Diffuser	Linear Fixed Blade AH - 15 - AG	400	N/A		4000	100	
Ground Floor												
EG			1	Kids Zone	Linear Return Air Grille	TROX Linear Slot Diffuser VSD50	2400	N/A		17000	59.5	
EG			1	Office	Extract Grille	TROX Linear Slot Diffuser VSD50	200	N/A		5000	59.5	
EG			1	Dining	Extract Grille	TROX Linear Slot Diffuser VSD50	400	N/A		5000	59.5	
EG			2	Discovery Gallery	Linear Return Air Grille	Linear Fixed Blade AH - 15 - AG	360	N/A		8000	100	
EG			1	Office 2	Linear Return Air Grille	TROX Linear Slot Diffuser VSD50	200	N/A		2000	59.5	
EG			1	Disabled WC	Extract Grille	TROX Disc Valve LVS	22	100 Ø		100 Ø		
EG			1	Baby Changing	Extract Grille	TROX Disc Valve LVS	28	125 Ø		125 Ø		
EG			2	Kids WC & Change	Extract Grille	TROX Disc Valve LVS	17	100 Ø		100 Ø		
First Floor												
EG			1	Disabled WC	Extract Grille	TROX Disc Valve LVS	22	125 Ø		125 Ø		
EG			1	Baby Changing	Extract Grille	TROX Disc Valve LVS	31	125 Ø		125 Ø		
EG			1	Male WC - Cubicle	Extract Grille	TROX Disc Valve LVS	10	100 Ø		100 Ø		
EG			1	Female WC - Cleaners Cupboard	Extract Grille	TROX Disc Valve LVS	10	100 Ø		100 Ø		
Second Floor												
N/A (Extract via ceiling void)												

2.02.28 - Fan Coil Unit Air Conditioning Equipment

Location..... Various
 Manufacturer Lennox International Inc.
 Type..... CHW/LPHW Ducted

Reference	Location	Model
<u>Lower Ground Floor</u>		
FCU-LG-01 & 02	Learn Space 1	LSNE-941L
FCU-LG-03 & 04	Learn Space 2	LSNE-941L
FCU-LG-05 & 06	Wet Learning	LSNE-941L
FCU-LG-07 & 08	Group Area	LSNE-941L
FCU-LG-09	Office	LSNE-441L
FCU-LG-10		LSNE-441L
FCU-LG-11 & 12	Templar Study A	LSNE-941L
FCU-LG-13 & 14	Templar Study B	LSNE-941L
<u>Ground Floor</u>		
FCU-G-01 to 07	Café	LSNE-941L
FCU-G-08 to 14	Entrance/Foyer	LSNE-941L
FCU-G-15 to 17	Retail	LSNE-941L
FCU-G-18	Retail	LSNE-441L
FCU-G-19 to 24	Kids Zone	LSNE-441L
FCU-G-25	Office	LSNE-941L
FCU-G-26 to 27	Dining Room	LSNE-941L

2.02.29 - DX Refrigerant Air Conditioning Equipment

Sub-Contractor Aerocool Limited
 Manufacturer Mitsubishi Electric Limited

In-Room Units

Reference	Location	Type	Model
AC 1	Lower Ground Floor Frame Room	Wall Mounted	PKA-RP50HAL
AC 2	Lower Ground Floor Store Room	Ceiling Cassette	PLA-ZRP71BA
AC 3	Ground Floor Control Room 1A	Wall Mounted	PKA-RP50HAL
AC 4	Lower Ground Floor Film Store	Wall Mounted	PKA-RP60HAL
AC 5	Lower Ground Floor Control Room 1B	Wall Mounted	PKA-RP60HAL
AC 6	Lower Ground Floor Control Room 1B	Wall Mounted	PKA-RP60HAL
AC 7	First Floor AV Control 2	Wall Mounted	PKA-RP50HAL

Condenser Units

Reference	Location	Model
CU 1	External Roof Plant Area	PUHZ-ZRP50VKA
CU 2	External Roof Plant Area	PUHZ-ZRP71VKA
CU 3	External Roof Plant Area	PUHZ-ZRP50VKA
CU 4	External Roof Plant Area	PUHZ-ZRP60VKA
CU 5	External Roof Plant Area	PUHZ-ZRP60VKA
CU 6	External Roof Plant Area	PUHZ-ZRP60VKA
CU 7	External Roof Plant Area	PUHZ-ZRP50VKA

Controllers

Type Hard Wired, Wall Mounted
 Model PAR-32MAA

2.03 - HEATING SYSTEMS

2.03.01 - LPHW Boilers

Location.....	Roof Plant Room
Manufacturer	Elco Heating Solutions Limited
Type.....	Floor Standing Gas Fired Condensing
Model	R605
Number Installed.....	2No.
Duty	380.200kW (Max)
Water Content.....	68.00Litres
Water Flow Temperature.....	70.0°C
Water Return Temperature	50.0°C
Burner - Type.....	Pre-Mix
- Gas - Type.....	Natural Gas
- Gas Flow Rate	35.600m ³ /hr (Max)
- Minimum Supply Pressure	17mbar
- Electrical Supply	230/400V, 50Hz

2.03.02 - LPHW Boilers Flue System

Location	Roof Plant Room
Manufacturer	A1 Flue Systems Limited
Type	Twin-wall Prefabricated Stainless Steel Duct System
Model	Deltavent

2.03.03 - LPHW Pressurisation Unit PU1 & Expansion Vessel

Location	Roof Plant Room
Manufacturer	Grundfos Pumps Limited

Pressurisation Unit

Type	Floor Standing Packaged, Twin Pump Unit
Model	PHT F225
Number Installed	1No.
Working Pressure	2.50bar
System Water Content	10000.00Litres
Break Tank Capacity	18.00Litres
Pumps	- Type..... TEFC
	- Number Installed 2No.
	- Power..... 0.430kW
	- Full Load Current 1.90Amps
	- Electrical Supply..... 230V/1Ph/50Hz

Expansion Vessel

Number Installed	1No.
Model	GT-HR-500 PN6 R1 V
Capacity	500.00Litres

2.03.04 - LPHW CT Heating Circuit Pumps P1 & P2

Location.....	Roof Plant Room
Manufacturer	Grundfos Pumps Limited
Type.....	Single-Head In-Line (Duty/Standby)
Model	TPE 65-340/2 A-F-A-BAQE
Duty - Volume Flow	7.800l/s
- Resistance	280.00kPa
Speed.....	2920rpm
Motor - Type.....	TEFC
- Power	5.500kW
- Speed	4000rpm (Max)
- Full Load Current.....	10.30Amps
- Electrical Supply	400V/3Ph/50Hz

2.03.05 - LPHW DHW Heating Circuit Pumps P3 & P4

Location.....	Roof Plant Room
Manufacturer	Grundfos Pumps Limited
Type.....	Single-Head In-Line (Duty/Standby)
Model	TPE 32-180/2-S A-F-A-BUBE
Duty - Volume Flow	0.850l/s
- Resistance	120.00kPa
Speed.....	2840rpm
Motor - Type.....	TEFC
- Power	0.550kW
- Speed	2840rpm (Max)
- Full Load Current.....	4.30Amps
- Electrical Supply	230V/1Ph/50Hz

2.03.06 - LPHW Return Heating Pumps P7a & b

Location	Roof Plant Room
Manufacturer	Grundfos Pumps Limited
Type	Twin-Head In-Line (Duty/Standby)
Model	TPE3 D 40-200-S A-F-A-BUBE 1 Phase
Duty - Volume Flow	4.800l/s
- Resistance	100.00kPa
Speed	5000rpm
Motor - Type	TEFC
- Power	2No. 1.100kW
- Speed	5900rpm (Max)
- Full Load Current	6.80Amps
- Electrical Supply	230V/1Ph/50Hz

2.03.07 - LPHW Return Heating Pumps P8a & b

Location	Roof Plant Room
Manufacturer	Grundfos Pumps Limited
Type	Twin-Head In-Line (Duty/Standby)
Model	TPE3 D 40-200-S A-F-A-BUBE 1 Phase
Duty - Volume Flow	4.800l/s
- Resistance	100.00kPa
Speed	5000rpm
Motor - Type	TEFC
- Power	2No. 1.100kW
- Speed	5900rpm (Max)
- Full Load Current	6.80Amps
- Electrical Supply	230V/1Ph/50Hz

2.03.08 - LPHW Air/Dirt Separator

Location.....	Roof Plant Room
Manufacturer	Flamco Limited
Type.....	In-Line Air Separator with Dirt Trap
Model	Flamcovent Clean FC DAC 65F
Number Installed.....	1No.
Capacity.....	8.00Litres
Max. Working Pressure	10.0bar

2.03.09 - LPHW Dosing Pot

Location.....	Roof Plant Room
Manufacturer	Flamco Limited
Type.....	Mild Steel Chemical Dosing Pot
Model	FC D POT 18
Number Installed.....	1No.
Capacity.....	18.00Litres
Working Pressure	10.00bar

2.03.10 - Trench Heaters TH/G/01 & 02

Location	Ground Floor Entrance
Manufacturer	Fraser Engineering Limited
Type	LPHW
Model	LTU/D

Reference should be made to the Fraser Engineering Limited information within Section Ten of this manual for full technical details.

2.03.11 - Overdoor Air Curtains DC/01 & 02

Location	See Table Below
Manufacturer	JS Air Curtains Limited
Type	LPHW Heated, Exposed
Electrical Supply	230V/1Ph/50Hz

Reference	Location	Model	Air Flow (m ³ /h)	Max Heating Capacity (kW)
DC/01	Ground Floor Draught Lobby	ZEN G 1500 P	3000	16.02
DC/02	Lower Ground Floor Staff Entrance	ZEN G 2500 P	5250	31.16

2.03.12 - Electric Underfloor Heating

Location	Toilets
Manufacturer	CTD Chester Limited

Reference should be made to the CTD Chester Limited information within Section Ten of this manual for full technical details.

2.04 - CHILLED WATER SYSTEMS**2.04.01 - Water Chillers 1 & 2**

Location	External Roof Plant Room
Manufacturer	Lennox International Inc.
Type	Air Cooled Liquid Chiller
Model	NAC 270-DNM5M
Number Installed	2No.
Duty	273.000kW (Each)
Evaporator - Type	Stainless Steel Plate Brazed with Copper Heat Exchanger
- CHW Flow/Return Temperature	6.0/12.0°C
- Flow Rate	46.900m ³ /h
- Pressure Drop	55.90kPa
- Refrigerant	R410a
Condenser - Type	Microchannel Aluminium Tube & Fins
- Fan - Type	Variable Speed
- Number Installed	4No.
- Motor - Type	TEFC
- Power	6.400kW (Each)
Compressors - Type	Hermetic Scroll
- Number Installed	4No.
Pumps - Type	Integral, Inverter Controlled, Double Pump
- Available Static Pressure	82.00kPa
- Power	3.000kW
- Maximum Current	6.10Amps
Unit Total Power Input	106.700kW
Unit Full Load Current	185.50Amps
Electrical Supply	400V/3Ph/50Hz

2.04.02 - CHW Buffer Vessel

Location.....	Roof Plant Room
Manufacturer	GMS Thermal Products Limited
Type.....	Mild Steel Vertical Unit
Model	MS-TS-2000
Storage Capacity.....	2000.00Litres

2.04.03 - CHW Pressurisation Unit PU2 & Expansion Vessel

Location.....	Roof Plant Room
Manufacturer	Grundfos Pumps Limited

Pressurisation Unit

Type.....	Floor Standing Packaged, Twin Pump Unit
Model	PHT F225
Number Installed.....	1No.
Working Pressure	2.50bar
System Water Content	7000.00Litres
Break Tank Capacity	18.00Litres
Pumps	
- Type.....	TEFC
- Number Installed	2No.
- Power.....	0.430kW
- Full Load Current	1.90Amps
- Electrical Supply.....	230V/1Ph/50Hz

Expansion Vessel

Number Installed.....	1No.
Model	GT-HR-80 PN6 R1 V
Capacity.....	80.00Litres

2.04.04 - CHW Secondary Circuit Pumps P9 & 10

Location	Roof Plant Room
Manufacturer	Grundfos Pumps Limited
Type	Single-Head In-Line (Duty/Standby)
Model	TPE 80-330/2 A-F-A-GQQE
Duty - Volume Flow	19.500l/s
- Resistance	270.00kPa
Speed	2930rpm
Motor - Type	TEFC
- Power	11.000kW
- Speed	3540rpm (Max)
- Full Load Current	22.50Amps
- Electrical Supply	400V/3Ph/50Hz

2.04.05 - CHW Air/Dirt Separator

Location.....	Roof Plant Room
Manufacturer	Flamco Limited
Type.....	In-Line Air Separator with Dirt Trap
Model	Flamcovent Clean FC DAC 150F
Number Installed.....	1No.
Capacity.....	60.00Litres
Max. Working Pressure	10.0bar

2.04.06 - CHW Dosing Pot

Location.....	Roof Plant Room
Manufacturer	Flamco Limited
Type.....	Mild Steel Chemical Dosing Pot
Model	FC D POT 18
Number Installed.....	1No.
Capacity.....	18.00Litres
Working Pressure	10.00bar

2.05 - UTILITY SYSTEMS**2.05.01 - Cold Water Storage Tanks**

Location	Roof Mounted
Manufacturer	Nicholson Plastics Limited
Type	Sectional
Number Installed.....	2No.

Tank 1

Capacity	6750.00Litres
External Dimensions - Length	3150mm
- Width	1650mm
- Depth	1560mm

Tank 2

Capacity	4000.00Litres
External Dimensions - Length	2150mm
- Width	1650mm
- Depth	1560mm

2.05.02 - Kitchen Cold Water Booster Set

Location	Basement Plant Room
Manufacturer	Dutypoint Limited
Type	Packaged, Twin Pump
Model	VG2-3HM05-LZM
Pumps - No. Off	2No.
Motor - Type	TEFC
- Power.....	0.750kW
- Full Load Current	4.90Amps
- Electrical Supply	230V/1Ph/50Hz

2.05.03 - Mains Cold Water Conditioning Unit

Location	Basement Plant Room
Manufacturer	Hydrotec UK Limited
Type	Electromagnetic Physical Water Conditioner c/w 'Competition' Control Box
Model	HydroMAG DN50
Flow Rate	3.200l/s
Maximum Operating Pressure	16.0bar
Electrical Supply	230V/1Ph/50Hz

2.05.04 - DHWS Cold Feed UV Filtration Unit

Location	Basement Plant Room
Manufacturer	Hydrotec UK Limited
Type	Ultra-Violet Disinfection Unit
Model	HydroPUR Compact 2E
Flow Rate	1.280l/s (Max)
Maximum Operating Pressure	10.0bar
Electrical Supply	230V/1Ph/50Hz

2.05.05 - DHWS Cold Feed Backwash Filtration Unit

Location	Basement Plant Room
Manufacturer	Hydrotec UK Limited
Type	Fully Automatic Backwash Filtration Unit
Model	HydroFIL FA-42
Flow Rate	2.800l/s @ 2.0bar Pressure Drop
Maximum Operating Pressure	16.0bar

2.05.06 - DHWS Packaged Plate Heat Exchangers & Buffer Vessels

Location.....	Basement Plant Room
Manufacturer	GMS Thermal Products Limited
Type.....	LPHW/DHW Brazed Heat Exchanger & Copper Cylinder Package
Model	VTC300/35(X)
Number Installed.....	2No.
Duty	35.000kW
Primary Medium	- Type..... LPHW
	- Flow Temperature 70.0°C
	- Return Temperature 50.0°C
Secondary Medium	- Type..... DHW
	- Flow Temperature 60.0°C
	- Cold Water Make Up 10.0°C
Buffer Vessel	- Type..... Direct Solid Copper
	- Capacity..... 300.00Litres

2.05.07 - DHWS Secondary Return Pump

Location.....	Basement Plant Room
Manufacturer	Grundfos Pumps Limited
Type.....	Single-Head Circulator
Model	UPS25-80 N 180
Duty - Volume Flow	0.400l/s
- Resistance	50.00kPa
Motor - Type.....	TEFC
- Power	0.165kW
- Full Load Current.....	0.70Amps
- Electrical Supply	230V/1Ph/50Hz

2.05.08 - Water Saving PIR & Solenoid Valve Systems

Location.....	All WC's
Manufacturer	Robert Pearson & Company Limited

For further information refer to the Robert Pearson & Company Limited literature in Section Ten and Section Twelve - Record Drawings for specific location and layout details.

2.05.09 - Gas Proving System

Location.....	Ground Floor Kitchen
Manufacturer	S&S Northern Limited

For further information refer to the S&S Northern Limited's literature in Section Ten.

2.05.10 - Gas Detection System

Location.....	Roof Plant Room
Manufacturer	S&S Northern Limited

For further information refer to the S&S Northern Limited's literature in Section Ten.

2.05.11 - Sanitaryware & Fittings

Supplier Neville Lumb Bathroom Solutions

Manufacturer Various as **Bolded**

Item	Description
Doc M Pack	Ideal Standard S6966MY Doc M Contour 21 Close Coupled Pack LH
WC Pan	Duravit 2200090000 Wall Mounted WC Pan
WC Pan	Ideal Standard E621701 Jasper Morrison Wall Mounted WC Pan
WC Cistern	Ideal Standard S359967 Sensorflow 21 WC Flushing Device, 4.5Litre Cistern & Panel Mounted Sensor
Urinal	Ideal Standard E621501 Jasper Morrison Urinal, Rim Flushing, Full Concealed
Urinal Sensor	Ideal Standard A4854AA Sensorflow 21 Urinal Flush Sensor, Panel Mounted
Basin	Duravit 0751500008/9 Handrinse Basin with Tap Platform Right/Left Hand Side Tap Hole
Basin	Duravit 0300550000 Handrinse Basin with Tap Platform, 550mm
Sink	Ideal Standard S59001 Alder Sink & Bucket Grating
Tap	Ideal Standard A4171AA Sensorflow 21 Basin Mixer Tall Spout Electronic Sensor
Taps	Ideal Standard S7206AA Nimbus ½in Inclined Bib Taps

2.06 - SPECIALIST SYSTEMS

2.06.01 - Smoke Ventilation System

Sub-Contractor G.S. Stothers Mechanical &
Electrical Engineering Limited

For further information refer to the G.S. Stothers specialist documentation in Section
Ten of this manual.

2.07 - MAIN LV SWITCHGEAR**2.07.01 - Main Intake Switchboard**

Location	External Intake/Meter Utility Room
Manufacturer	Kane Engineering Limited
Type	Form 4 Type 2
Ingress Protection Rating	IP43
Fault Current Rating	50KA for 1 Second
Busbar Rating	800A
Operating Voltage	400V
Polarity	TP & N
Protection	800A TP & N MCCB

2.07.02 - Main LV Switchboard MDB/001

Location	Basement LV Switch Room B.03
Manufacturer	Kane Engineering Limited
Type	Form 4 Type 2
Ingress Protection Rating	IP43
Fault Current Rating	50KA for 1 Second
Busbar Rating	800A
Operating Voltage	400V
Polarity	TP & N
Protection	Main Incoming 800A TP & N Isolator & Outgoing MCCB's

Reference should be made to the Kane Engineering Limited information within Section Eleven of this manual for full technical details.

2.08 - LV DISTRIBUTION**2.08.01 - Rising Main Busbars**

Location	Risers 2a and 2b
Manufacturer	Legrand Electric Limited
Type	Vertical
Model	Zucchini 50410254
Operating Voltage	400V
Rating	400A
End Feed Unit	400A - 50411134
Tap Off Units	160A - 50414003M3RF

2.08.02 - Distribution Boards

a)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	12 Way
Model	Loadcentre KQ
Operating Voltage	230V
Polarity	SP & N
Protection	Incoming 125A DP Switch Disconnecter & Outgoing MCB's

b)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	6 Way
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection	Incoming 125A TP & N Switch Disconnecter & Outgoing MCB's

c)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	8 Way
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection.....	Incoming 125A TP & N Switch Disconnecter & Outgoing MCB's

d)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	18 Way
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection.....	Incoming 160A TP & N Switch Disconnecter & Outgoing MCB's

e)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	24 Way
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection.....	Incoming 250A TP & N Switch Disconnecter & Outgoing MCB's

f)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	24 Way Split Metered (8 Way Lighting & 16 Way Power)
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection	Incoming 125A TP & N Switch Disconnecter & Outgoing MCB's

g)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	24 Way Split Metered (8 Way Lighting & 16 Way Power)
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection	Incoming 250A TP & N Isolator, 2 x 125A Switch Disconnectors & Outgoing MCB's

h)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	32 Way Split Metered (16 Way Lighting & 16 Way Power)
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection	Incoming 125A TP & N Switch Disconnecter & Outgoing MCB's

i)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	32 Way Split Metered (16 Way Lighting & 16 Way Power)
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection	Incoming 250A TP & N Isolator, 2 x 125A Switch Disconnectors & Outgoing MCB's

j)

Supplier	Northern Switchgear Limited
Manufacturer	Schneider Electric Limited
Type	34 Way Split Metered (16 Way Lighting & 18 Way Power)
Model	Loadcentre KQ
Operating Voltage	400V
Polarity	TP & N
Protection	Incoming 250A TP & N Isolator, 2 x 125A Switch Disconnectors & Outgoing MCB's

2.08.03 - Cable Ladder

Manufacturer	Unitrunk Limited
Type	Various Sizes
Model	Speedway Range

2.08.04 - Cable Tray

Manufacturer	Unitrunk Limited
Type	Various Sizes
Model	MR Range

2.08.05 - Cable Trunking

Manufacturer	Unitrunk Limited
Type	Various Sizes
Model	TK Range

2.08.06 - Cable Basket

Manufacturer	Unitrunk Limited
Type	Various Sizes
Model	Easy Connect Range

2.08.07 - Distribution Board Schedules

Reference should be made to the distribution board circuit charts / test results located in Section Nine of this manual.

2.09 - SMALL POWER**2.09.01 - Socket Outlets**

a)

Manufacturer	MK Electric Limited
Type	One Gang Flush DP Switched with Clean Earth Facility
Model	Edge K14268BSS/WHI/DBZB
Operating Voltage	230V
Rating	13A

b)

Manufacturer	MK Electric Limited
Type	One Gang Flush DP Switched with Dual Earth Terminals
Model	Albany Plus K2958BSS
Operating Voltage	230V
Rating	13A

c)

Manufacturer	MK Electric Limited
Type	One Gang Surface DP Switched with Dual Earth Terminals
Model	Metalclad Plus K2977ALM
Operating Voltage	230V
Rating	13A

d)

Manufacturer	MK Electric Limited
Type	One Gang Surface DP Switched with Clean Earth Facility
Model	Metalclad Plus K1247ALM
Operating Voltage	230V
Rating	13A

e)

Manufacturer	MK Electric Limited
Type	Two Gang Flush DP Switched
Model	Logic Plus K2747WHI
Operating Voltage	230V
Rating	13A

f)

Manufacturer	MK Electric Limited
Type	Two Gang Flush DP Switched with Dual Earth Terminals
Model	Edge K14347BSS/WHI/DBZB
Operating Voltage	230V
Rating	13A

g)

Manufacturer	MK Electric Limited
Type	Two Gang Flush DP Switched
Model	Albany Plus K2948BSS
Operating Voltage	230V
Rating	13A

h)

Manufacturer	MK Electric Limited
Type	Two Gang Surface DP Switched
Model	Metalclad Plus K2946ALM
Operating Voltage	230V
Rating	13A

2.09.02 - TP & N Switches

Manufacturer	MK Electric Limited
Type	Flush On/Off
Model	Albany Plus K5114BSS
Operating Voltage	400V
Rating	32A

2.09.03 - Fused Connection Units

a)

Manufacturer	MK Electric Limited
Type	Flush Unswitched with Neon Indicator & Flex Outlet
Model	Albany Plus K978BSS
Operating Voltage	230V
Rating	13A

b)

Manufacturer	MK Electric Limited
Type	Surface Unswitched with Neon Indicator
Model	Metalclad Plus K983ALM
Operating Voltage	230V
Rating	13A

c)

Manufacturer	MK Electric Limited
Type	Flush DP Switched
Model	Edge K14941BSS/WHIW
Operating Voltage	230V
Rating	13A

d)

Manufacturer	MK Electric Limited
Type	Surface DP Switched
Model	Metalclad Plus K942ALM
Operating Voltage	230V
Rating	13A

e)

Manufacturer	MK Electric Limited
Type	Surface DP Switched with Neon Indicator
Model	Metalclad Plus K962ALM
Operating Voltage	230V
Rating	13A

f)

Manufacturer	MK Electric Limited
Type	Surface DP Switched with Flex Outlet
Model	Metalclad Plus K932ALM
Operating Voltage	230V
Rating	13A

g)

Manufacturer	MK Electric Limited
Type	Surface DP Switched with Flex Outlet & Neon Indicator
Model	Metalclad Plus K972ALM
Operating Voltage	230V
Rating	13A

h)

Manufacturer	MK Electric Limited
Type	Surface DP Switched with Secret Key Operated Switch, Neon Indicator & Tamperproof Fuse Carrier Screw
Model	Metalclad Plus K963KOALM
Operating Voltage	230V
Rating	13A

2.09.04 - Double Pole Switches

Manufacturer	MK Electric Limited
Type	Flush with Neon Indicator
Model	Albany Plus K5236BSS
Operating Voltage	230V
Rating	50A

2.09.05 - Hand Dryers

Manufacturer	Lovair Limited
Type	Automatic, High Speed
Model	L-3000
Operating Voltage	230V
Rating	1.80kW

2.09.06 - Screeded Floor Trunking

Manufacturer	Unitrunk Limited
Type	Three Compartment
Model	UF3

2.09.07 - Floor Boxes

Manufacturer	Unitrunk Limited
Type	Three Compartment
Model	Special

2.09.08 - Dado Trunking

Manufacturer	Univolt (UK) Limited
Type	170 x 50mm Three Compartment Chamfered
Model	SLC50/170

2.10 - LIGHTING

2.10.01 - Lighting Control System

Reference should be made to the Helvar Controls Limited information within Section Eleven of this manual for full technical details.

2.10.02 - Light Switches

Manufacturer	MK Electric Limited
Type	One Way SP
Model	Edge K4881BSS
Operating Voltage	230V
Rating	10A

2.10.03 - Key Switches

Manufacturer	MK Electric Limited
Type	Two Way Secret Key marked 'EMG LTG TEST'
Model	Grid Plus K4898 EL WHI
Operating Voltage	230V
Rating	20A

2.10.04 - Ceiling Roses

a)

Manufacturer	Hager Limited
Type	Three Pin Plug-In
Model	Klik PCR2000

b)

Manufacturer	Hager Limited
Type	Four Pin Plug-In
Model	Klik CR64AX

c)

Manufacturer	Flex Connectors Limited
Type	Seven Pin Plug-In
Model	fp/7/b

2.10.05 - Luminaire Schedule

REF	DESCRIPTION	MANUFACTURER/MODEL	LAMP DETAILS
A1	Track mounted high output LED spotlight with adjustable beam distribution and DALI dimmable control gear.	Havells Sylvania UK Limited Concord Beacon Muse	LED
A2	Track mounted high output LED spotlight with wide beam distribution and DALI dimmable control gear.	Havells Sylvania UK Limited Concord Beacon Muse	LED
A3	Recessed LED directional downlight with adjustable medium beam distribution, deep cone specular silver reflector and DALI dimmable control gear.	Designed Architectural Lighting Limited Ambiance X100 Directional C0541/130350	LED
A4	Recessed LED directional downlight with adjustable narrow beam distribution, deep cone specular silver reflector and DALI dimmable control gear.	Designed Architectural Lighting Limited Ambiance X100 Directional C0521/130350	LED
A5A	36W twin suspended gloss black aluminium luminaire complete with injection moulded opalescent methacrylate diffuser and dimmable high frequency control gear.	Atrium Limited Flos Smithfield S Eco F1365030	36W TC-L
A6A	35W recessed luminaire complete with frosted opal acrylic PMMA diffuser, metallised aluminium reflector and dimmable high frequency control gear.	Fagerhult Lighting Limited Notor T5 Recessed Opal 22903-436 + 91045 + 91054	35W T5
A6B	28W recessed luminaire complete with frosted opal acrylic PMMA diffuser, metallised aluminium reflector and dimmable high frequency control gear.	Fagerhult Lighting Limited Notor T5 Recessed Opal 22901-436 + 91045 + 91054	28W T5
A6C	14W recessed luminaire complete with frosted opal acrylic PMMA diffuser, metallised aluminium reflector and dimmable high frequency control gear.	Fagerhult Lighting Limited Notor T5 Recessed Opal 22900-436 + 91045 + 91054	14W T5

REF	DESCRIPTION	MANUFACTURER/MODEL	LAMP DETAILS
A6F	14W recessed luminaire complete with frosted opal acrylic PMMA diffuser, metallised aluminium reflector and dimmable high frequency control gear.	Fagerhult Lighting Limited Notor T5 Recessed Opal 22900-436 + 91045 + 91054	14W T5
A7	Recessed continuous lighting complete with frosted opal acrylic PMMA diffuser, metallised aluminium reflector and DALI dimmable control gear.	Fagerhult Lighting Limited Notor T5 Recessed Opal 22922-436 + 22910-436 + 22918-436 + 22903-436 + 22912-436 + 22907-436 + 22920-436 + 91045 + 91046 + 91031	Various T5
A8	28W twin suspended fluorescent luminaire complete with satin polycarbonate diffuser, UV sleeve and high frequency control gear.	Thorlux Lighting Limited Light Line T5 LL133332LF + Encapsulite UV400	28W T5
A9	35W twin suspended fluorescent luminaire complete with satin polycarbonate diffuser, UV sleeve and high frequency control gear.	Thorlux Lighting Limited Light Line T5 LL133334JF + Encapsulite UV400	35W T5
A10A	Recessed LED luminaire complete with opal PMMA diffuser and DALI dimming control gear.	Selux UK Limited SX-30VM-7BI/914	LED
A10B	Recessed LED luminaire complete with opal PMMA diffuser and DALI dimming control gear.	Selux UK Limited SX-30VM-7BJ/1210	LED
A11	Recessed LED luminaire complete with opal PMMA diffuser and DALI dimming control gear.	Selux UK Limited SX-30VM-7BJ/2396	LED
A12	Recessed LED luminaire complete with opal PMMA diffuser and DALI dimming control gear.	Selux UK Limited SX-30VM-7BJ/3286	LED
A13	Recessed circular LED luminaire complete with opal acrylic diffuser, and DALI dimmable control gear.	Fagerhult Lighting Limited Pozzo D550 Opal 24293-402	LED

REF	DESCRIPTION	MANUFACTURER/MODEL	LAMP DETAILS
A14	35W single IP65 corrosion resistant luminaire complete with polycarbonate cover and high frequency control gear.	Thorlux Lighting Limited A-Line Range AL13695JF	35W T5
A14E	As ref. A14 above but complete with emergency conversion pack capable of a three hour duration.	Thorlux Lighting Limited A-Line Range EAL13695JF	35W T5
A15	35W twin IP65 corrosion resistant luminaire complete with polycarbonate cover and high frequency control gear.	Thorlux Lighting Limited A-Line Range AL13696JF	35W T5
A16	38W 2D circular fluorescent luminaire complete with high frequency control gear.	Thorlux Lighting Limited Dot Range DOT12100JF	38W 2D
A17	To be advised.		
A18	Recessed LED downlight complete with DALI dimmable control gear.	Orluna LED Technologies Quad 70	LED
A19	Track mounted LED wallwasher luminaire complete with asymmetric specular reflector.	Havells Sylvania UK Limited Concord Beacon Wallwash 2059073	LED
A20	Rectangular miniaturised recessed luminaire with 15 LED's, metallised thermoplastic high definition optics and DALI dimming control gear.	iGuzzini UK Laser Blade TG3.MK55.747.0	LED
A21	Cove lighting incorporating LED spot lights in composite housings and DALI dimmable control gear.	Atrium Limited Flos Light Cut	LED
A22	Adjustable LED spotlight complete with honeycomb louvre and DALI dimmable control gear.	Atrium Limited Flos Light Cut	LED
A23	Adjustable LED spotlight complete with honeycomb louvre and DALI dimmable control gear.	Atrium Limited Flos Light Cut	LED

REF	DESCRIPTION	MANUFACTURER/MODEL	LAMP DETAILS
A24	4 x 24W recessed luminaire complete with symmetric aluminium reflector, anodised aluminium cover and PMMA diffuser panel.	ZG Lighting (UK) Limited Clean Classic 42159502	24W T16
A25	Recessed LED downlighter providing wide beam distribution and complete with deep cone specular silver reflector and DALI dimmable driver.	Designed Architectural Lighting Limited Ambiance X100 C034113 A350	LED
A27	Continuous surface mounted linear LED profile with direct symmetrical cosine distribution and complete with opal frosted PMMA diffuser.	Fagerhult Lighting Limited Notor LED 27950-402 + 27954-402 + 27952-402 + 27955-402	LED
A27 SUSP	Continuous suspended linear LED profile with direct symmetrical cosine distribution and complete with opal frosted PMMA diffuser.	Fagerhult Lighting Limited Notor LED 27951-402 + 27955-402 + 91980	LED
A28	Single source recessed LED wall washer with asymmetric distribution complete with specular metalised polycarbonate reflector and DALI dimmable control gear.	Fagerhult Lighting Limited Pleiad G3 77990	LED
A29	Track mounted fully adjustable LED spotlight complete with aluminium reflector, sand blasted clear safety glass lens and DALI dimmable driver.	Havells Sylvania UK Limited Concord Beacon XXL	LED
A30	Wall mounted IP44 LED bathroom fixture with symmetric wide beam distribution and complete with matt opal acrylic diffuser and DALI dimmable driver.	Inform Furniture Limited Zero 595 7639-1-27HFF	LED
A31	49W continuous surface mounted linear profile with direct symmetrical cosine distribution and complete with opal frosted PMMA diffuser and high frequency control gear.	Fagerhult Lighting Limited Notor G2 Ceiling 26787	49W T5

REF	DESCRIPTION	MANUFACTURER/MODEL	LAMP DETAILS
A32	14W surface mounted linear fluorescent luminaire providing symmetrical distribution complete with opal acrylic diffuser	ZG Lighting (UK) Limited Thorn PopPack Pro 96548068 + 96239193	14W T5
A33	Continuous surface mounted linear LED profile with direct symmetrical cosine distribution and complete with opal frosted PMMA diffuser.	Fagerhult Lighting Limited Notor LED 27950-402 + 27952-402 + 27955-402	LED
E1	Surface mounted LED emergency downlighter complete with 'area' lens optic and capable of a three hour duration.	Philip Payne Limited Sprite Range SPRE203LNZ	LED
E2	Recessed LED emergency downlighter complete with 'area' lens optic and capable of a three hour duration.	Philip Payne Limited Tyke Range TYKE203LNZ	LED
E3	Recessed LED corridor emergency downlighter complete with 'corridor' lens optic and capable of a three hour duration.	Philip Payne Limited Tyke Range TYKC203LNZ	LED
E4	Suspended LED emergency exit luminaire complete with arrow directional legend and capable of a three hour duration.	Philip Payne Limited 1880 Range 1880250CMLMK	LED
E5	Wall mounted LED emergency exit luminaire complete with arrow directional legend and capable of a three hour duration.	Philip Payne Limited 1880 Range 1880250DWLM	LED
E6	Ceiling recessed LED emergency exit luminaire complete with arrow directional legend and capable of a three hour duration.	Philip Payne Limited 1880 Range 1880250FCLM	LED
T1	Suspended three phase standard aluminium lighting track.	Havells Sylvania UK Limited Concord Lytespan 3 2025502	N/A

REF	DESCRIPTION	MANUFACTURER/MODEL	LAMP DETAILS
T2	Ceiling recessed three phase standard aluminium lighting track.	Havells Sylvania UK Limited Concord Lytespan 3 2020718	N/A
X1	Surface mounted LED ceiling downlight complete with clear safety glass.	ZG Lighting (UK) Limited Bega 6503 24158201	LED
X2	150W column mounted street light providing direct symmetrical distribution and complete with clear safety glass and integral LED power supply.	Marwood Electric Company Hess City Elements 203AA	LED
X3	Wall washer with symmetrical light distribution complete with pure anodised aluminium reflector.	ZG Lighting (UK) Limited Bega 2392 24203303	LED
X5	70W IP65 surface washer complete with clear safety glass and anodised pure aluminium reflector.	ZG Lighting (UK) Limited Bega 8409 24133965	70W HIT-DE
X6	35W IP65 surface washer complete with clear safety glass and anodised pure aluminium reflector.	ZG Lighting (UK) Limited Bega 8407 24133962	35W HIT-DE
X7	IP67 LED in-ground uplighter providing symmetric narrow beam distribution and complete with safety glass lens.	WE-EF Lighting Limited 185-2703.18 + 185-0924.18 + 185-1624.18	LED

2.11 - FIRE DETECTION & ALARM SYSTEM

Reference should be made to the Logistica Facilities Management information within Section Eleven of this manual for full technical details.

2.12 - INTRUDER ALARM SYSTEM

Reference should be made to the Network Security & Alarms Limited information within Section Eleven of this manual for full technical details.

2.13 - ACCESS CONTROL SYSTEM

Reference should be made to the Network Security & Alarms Limited information within Section Eleven of this manual for full technical details.

2.14 - CCTV SYSTEM

Reference should be made to the Network Security & Alarms Limited information within Section Eleven of this manual for full technical details.

2.15 - PUBLIC ADDRESS SYSTEM

Reference should be made to the PEL Services Limited information within Section Eleven of this manual for full technical details.

2.16 - STRUCTURED CABLING SYSTEM

Reference should be made to the PTC Systems information within Section Eleven of this manual for full technical details.

2.17 - COMBINED DISABLED REFUGE INTERCOM & TOILET ALARM SYSTEM

Reference should be made to the PEL Services Limited information within Section Eleven of this manual for full technical details.

2.18 - FIRE DETECTION & ALARM SYSTEM

Reference should be made to the Logistica Facilities Management information within Section Eleven of this manual for full technical details.

2.19 - LIGHTNING PROTECTION

Reference should be made to the Redpath Buchanan information within Section Eleven of this manual, along with their test certification in Section Nine.