HM Government

Air Conditioning Inspection Report

Site Details

Site Address (where inspection was carried out)	COMMON AREAS, The Serpentine, Serpentine Green Shopping Centre, Hampton, PETERBOROUGH, PE7 8BE						
City	PETERBOROUGH	Postcode	PE7 8BE	RRN	0940-3934-0528-0061-5264	Related RRN	9306-6064-0382-2501-0495

Report Information

Inspection Date	2018-04-10	Issue Date	2018-05-01	UPRN	362345600021	

Assessor Details

Assessor Name	David Frank	Assessor ID	QUID201686
Employer/Trading Name	David Frank Consulting		
Employer/Trading Address	2 All Saints Close St Ives Cambridgeshire PE27 3SZ		
Accreditation Scheme Name	Quidos		

Executive Summary

This report has been prepared in accordance with the requirements of the Energy Performance of Buildings Regulations 2012 as amended, which implements the EU legislative requirements of the Energy Performance of Buildings Directive 2010/31/EU. The inspection has been carried out by an Accredited Air Conditioning Assessor using the Department for Communities and Local Government approved inspection and reporting methodology.

The common and management areas of a shopping centre. Ventilation, heating and cooling to the public space is from five rooftop units, while the management suite is heated and cooled from unitary split air conditioners.

HM Government

Air Conditioning Inspection Report

About this document and the data in it

This document was produced following an energy assessment undertaken by a qualified Energy Assessor, accredited by Quidos. You can obtain contact details of the Accreditation Scheme at www.quidos.co.uk.

A copy of this report has been lodged on a national register as a requirement under the Energy Performance of Buildings Regulations 2012 as amended. It will be made available via the online search function at www.ndepcregister.com. The report (including the building address) and other data about the building collected during the energy assessment may be made publicly available at www.opendatacommunities.org.

This report and other data about the building may be shared with other bodies (including government departments and enforcement agencies) for research, statistical and enforcement purposes. Any personal data it contains will be processed in accordance with the General Data Protection Regulation and all applicable laws and regulations relating to the processing of personal data and privacy. For further information about this and how data about the property are used, please visit www.ndepcregister.com. To opt out of having information about your building made publicly available, please visit www.ndepcregister.com/optout.

There is more information in the guidance document *Air-conditioning inspections for buildings* available on the Government website at: www.gov.uk/government/collections/energy-performance-certificates. It explains the content and use of this document, advises on how to identify the authenticity of a report and how to make a complaint.

Key Recommendations:

Advice and comments on the efficiencies of the AC sub system(s)

The office systems are modern and as such are probably as efficient as any other modern system available.

The ventilation plant is 20 years old. Replacement units with variable speed EC motors and modern controls would be more efficient

Advice and comments on the maintenance of the AC sub system(s)

The standard of maintenance is high using direct employed staff supported by contractors. All the equipment examined appeared to have been well maintained.

Each AHU bears a record of filter changes

Advice and comments on the control of AC sub system(s)

The major systems are controlled off a building management system which appears to be well configured.

Advice and comments on the management of AC sub system(s)

Monitor and Target Energy Consumption

Install energy meters to condensing units and heat raising plant. Automatic monitoring of these will enable management to keep an eye on energy consumption.

The metering could be programmed to automatically generate reports of energy consumption against weather data, and raise alarms for exceptional energy use such as equipment being operated out of hours.

The existing BMS is likely to have the functionality to incorporate the above, alternatively there are stand alone systems available which send meter readings to a remote bureau and automatically generate regular reports and raise alarms for unusual patterns of energy use.

Key Recommendations:

Useful guidance is contained in CIBSE TN39 “Building Energy Metering”.

It is recommended that the temperature set point for cooling in, for example, an office is ideally no more than 3ºC below the external temperature. So, with an outside temperature of 27ºC, the cooling set point should be set at 24ºC. Observe staff behaviour, if people are bringing in warmer clothing to wear whilst working, this may be a sign that the air conditioning is set too cold or are suffering draughts. If staff are using electric heaters to compensate for overcooling find out why, put it right and then take them away.

Set internal temperatures appropriately and encourage staff to dress in a way that suits the setting. If uniforms are provided, make sure they are suitable for their purpose, considering extreme temperatures if necessary. If possible, also ensure workspaces are shielded from draughts and direct sunlight to help improve the comfort of the entire work area. These are no-cost and low cost solutions that save money and help to maintain comfort.

The concourse ventilation control could be improved so that the AHUs run for shorter hours and at lower volumes when feasible, using intelligent control algorithms

Sub System Index	
Volume Definitions	VOL001
Sub System ID	vol001/sys101
Sub System Description	Weatherite rooftop units. These have been refurbished recently and are in reasonable condition, but their age makes it increasingly difficult to source spares. Replacement units would be more efficient and reliable. The maintainer has recommended replacement and we agree.
Effective Rated Cooling Output of Sub System (kW)	600
Sub System Area Served	Concourse
Inspection Date	2018-04-11
Cooling Plant Count	5
AHU Count	5
Terminal Units Count	5
Sub System Controls Count	1

Sub System Index	
Volume Definitions	VOL001
Sub System ID	VOL001/SYS102
Sub System Description	Condensing unit and ceiling mounted terminal unit
Effective Rated Cooling Output of Sub System (kW)	5
Sub System Area Served	Meeting Room
Inspection Date	2018-04-10
Cooling Plant Count	1
AHU Count	0
Terminal Units Count	1
Sub System Controls Count	1

Sub System Index	
Volume Definitions	VOL001
Sub System ID	VOL001/SYS103
Sub System Description	Condensing unit and fan coil terminal unit
Effective Rated Cooling Output of Sub System (kW)	3
Sub System Area Served	Reception
Inspection Date	2018-04-10
Cooling Plant Count	1
AHU Count	0
Terminal Units Count	1
Sub System Controls Count	1

Sub System Index	
Volume Definitions	VOL001
Sub System ID	VOL001/SYS104
Sub System Description	Condensing unit and ceiling mounted terminal unit
Effective Rated Cooling Output of Sub System (kW)	5
Sub System Area Served	General Office
Inspection Date	2018-04-10
Cooling Plant Count	1
AHU Count	0
Terminal Units Count	1
Sub System Controls Count	1

Note: Request the following information from client and complete the following checklist. The assessor should examine the relevant documentation and systems as far as possible to check that the installed equipment is as described. If the documentation is not available, then an additional part of this procedure is to locate the equipment and assemble a portfolio of relevant documentation which should include all 'Essential' items as a minimum.

Record Checklist Pre Inspection Information

Level	Information Required	Reviewed	Not Available
Essential	Itemised list of installed air conditioning and refrigeration plant including product makes, models and identification numbers.	[x]	[ ]
	Cooling capacities, with locations of the indoor and outdoor components of each plant.	[ ]	[x]
	Description of system control zones, with schematic drawings.	[x]	[ ]
	Description of method of control of temperature.	[ ]	[x]
	Description of method of control of periods of operation.	[ ]	[x]
	Floor plans and schematics of air conditioning systems.	[x]	[ ]
Desirable	Reports from earlier inspections of air conditioning systems, and for the generation of an energy performance certificate.	[ ]	[x]
	Records of maintenance operations carried out on refrigeration systems, including cleaning indoor and outdoor heat exchangers, refrigerant leakage tests, repairs to refrigeration components replenishing with refrigerant.	[x]	[ ]
	Records of maintenance operations carried out on air delivery systems, including filter cleaning and changing, and cleaning of heat exchangers.	[x]	[ ]
	Records of calibration and maintenance operations carried out on control systems and sensors, or BMS systems and sensors.	[ ]	[x]
	Records of sub-metered air conditioning plant use or energy consumption.	[ ]	[x]
	For relevant air supply and extract systems, commissioning results of measured absorbed power at normal air delivery and extract rates, and commissioning results for normal delivered delivery and extract air flow rates (or independently calculated specific fan power for the systems).	[ ]	[x]
Optional	An estimate of the design cooling load for each system (if available). Otherwise, a brief description of the occupation of the cooled spaces, and of power consuming equipment normally used in those spaces.	[ ]	[x]
	Records of any issues or complaints that have been raised concerning the indoor comfort conditions achieved in the treated spaces.	[ ]	[x]
	Where a BMS is used the manager should arrange for a short statement to be provided describing its capabilities, the plant it is connected to control, the set points for the control of temperature, the frequency with which it is maintained, and the date of the last inspection and maintenance.	[ ]	[x]

Record Checklist Pre Inspection Information

Level	Information Required	Reviewed	Not Available
	Where a monitoring station, or remote monitoring facility, is used to continually observe the performance of equipment such as chillers, the manager should arrange for a statement to be provided describing the parameters monitored, and a statement reviewing the operating efficiency of the equipment.	[ ]	[x]

Cooling Plant Equipment Inspected	
Unit Identifier	VOL001/SYS101/CSCP001
Component Identifier	VOL001/SYS101/CSCP001
Manufacturer	Weatherite
Description (type/details)	Rooftop ventilation plant with integral cooling and gas fired heater
Model/Reference	wperg 130/2/1200V
Serial Number	7725
Year Plant Installed	1998
Rated Cooling Capacity (kW)	120
Refrigerant Type	R407C
Refrigerant Charge (kg)	30
Location of Cooling Plant	Roof
Areas/Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the cooling plant/system: NA	

This section applies to the following unit: VOL001/SYS101/CSCP001

Cooling Plant Equipment Visual Inspection

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS2.1	Is the refrigeration plant operational?	Yes [x] No [ ]	NA
CS2.2/a	Is the area around the refrigeration plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS2.2/b	Is the general condition of refrigeration and any associated central plant in good order?	Yes [x] No [ ]	Starting to show its age, but in good condition
CS2.2/c	Is the condenser placed clear from warm air discharge louvres?	Yes [x] No [ ]	NA
CS2.3/a	Are compressors operational or can they be brought into operation?	Yes [x] No [ ]	None
CS3.1/a	Is the heat rejection plant operational?	Yes [x] No [ ]	Integral to unit
CS3.1/b	Are condenser heat exchangers undamaged/ un-corroded and clean?	Yes [x] No [ ]	Exchangers have been refurbished and coated in recent years, but need annual washdowns to maintain performance
CS3.2/a	Is the area around the heat rejection plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS3.2/b	Is the condenser free of any possibility of air recirculation?	Yes [x] No [ ]	NA
CS4.1	Is the insulation on circulation pipe work well fitted and in good order?	Yes [x] No [ ]	No pipework external to unit

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
CS1.1	**Refrigerant Used**		Refrigerant Type	R407C	None
			Montreal/ODS/F-Gas controlled?	Yes [x] No [ ]	NA
CS1.3	**Regular Maintenance**	Is there evidence of regular maintenance?	Yes [x] No [ ]		Leetons are a proactive maintainer with an interest in keeping all systems operational
		Is the maintenance undertaken by suitably competent people and in accordance to industry guidelines?	Yes [x] No [ ]		NA Na
CS1.4 CL1.1	**Appropriately Sized Cooling Plant**		**Following Information Required:**		*The current version of the Building Regulations Approved Document Part L documentation provides guidance suggesting that the plant should not be more than 20% oversized. This should be adopted as means of comparison to stay in line with current standards.* Moderate ventilation gains - all the duty is via the AHUs. The system does not seek to achieve an internal condition, only to temper the air supplied to occupants who are mobile and only in the space temporarily
			Total Occupants served by this plant	500	
			Total Floor Area served by this plant(m²)	6000	
			Occupant Density (m²/person)	12.0	
			Maximum Instantaneous Heat Gain (W/m²)	100.0	
			Installed Cooling Capacity (kW)	120.0	
			The Installed Size is Deemed:		
			More than Expected Less than Expected As Expected	[ ] [ ] [x]	
CS1.6	**Metering Comparison to appropriate energy benchmarks**	Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes [ ] No [x]		
			Recorded meter reading	0	
		Is the refrigeration plant connected to a BEMS that can provide out of range alarms?	Yes [ ] No [x]		The BMS is capable of this functionality. It is recommended that this function is implemented.

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
		Are there any records of air conditioning plant usage or sub-metered energy consumption with expected hours of use per year for the plant?	Yes [ ] No [x]	na
		Is the energy consumption or hours of use excessive?	Yes [ ] No [x]	It was not possible to determine the energy consumption NA
CS2.2/d	**Refrigeration Leaks**	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	NA NA
CL1.3	**Refrigeration**		**Refrigeration Temperature:** Pre Compressor(°C): 15 Post Compressor(°C): 9 Ambient(°C): 5 **The Temperature is Deemed:** More than Expected [ ] Less than Expected [ ] As Expected [x]	NA
		Assess the refrigeration compressor(s) and the method of refrigeration capacity control	Capacity control is by sequencing of the circuits	
CS3.5	**Water Cooled Chillers (Cooling Towers & Evaporative Condensers)**	Is the water flow through cooling towers or evaporative coolers even and efficient, and there is no loss of water?	Yes [x] No [ ]	There are no cooling towers associated with this plant
		Is there a management regime in place to ensure that water is regularly checked and treated to ensure that there is no Legionella risk?	Yes [x] No [ ]	NA NA

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
	Humidity Control	Is there separate equipment installed for humidity control?	Yes [ ]	No [x]	NA NA

Cooling Plant Equipment Inspected	
Unit Identifier	VOL001/SYS101/CSCP002
Component Identifier	VOL001/SYS101/CSCP002
Manufacturer	Weatherite
Description (type/details)	Rooftop ventilation plant with integral cooling and gas fired heater
Model/Reference	wperg 130/2/1200V
Serial Number	7725
Year Plant Installed	1998
Rated Cooling Capacity (kW)	120
Refrigerant Type	R407C
Refrigerant Charge (kg)	30
Location of Cooling Plant	Roof
Areas/Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the cooling plant/system: NA	

This section applies to the following unit: VOL001/SYS101/CSCP002

Cooling Plant Equipment Visual Inspection

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS2.1	Is the refrigeration plant operational?	Yes [x] No [ ]	NA
CS2.2/a	Is the area around the refrigeration plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS2.2/b	Is the general condition of refrigeration and any associated central plant in good order?	Yes [x] No [ ]	Starting to show its age, but in good condition
CS2.2/c	Is the condenser placed clear from warm air discharge louvres?	Yes [x] No [ ]	NA
CS2.3/a	Are compressors operational or can they be brought into operation?	Yes [x] No [ ]	None
CS3.1/a	Is the heat rejection plant operational?	Yes [x] No [ ]	Integral to unit
CS3.1/b	Are condenser heat exchangers undamaged/ un-corroded and clean?	Yes [x] No [ ]	Exchangers have been refurbished and coated in recent years, but need annual washdowns to maintain performance
CS3.2/a	Is the area around the heat rejection plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS3.2/b	Is the condenser free of any possibility of air recirculation?	Yes [x] No [ ]	NA
CS4.1	Is the insulation on circulation pipe work well fitted and in good order?	Yes [x] No [ ]	No pipework external to unit

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
CS1.1	**Refrigerant Used**		Refrigerant Type	R407C	None
			Montreal/ODS/F-Gas controlled?	Yes [x] No [ ]	NA
CS1.3	**Regular Maintenance**	Is there evidence of regular maintenance?	Yes [x]	No [ ]	Leetons are a proactive maintainer with an interest in keeping all systems operational
		Is the maintenance undertaken by suitably competent people and in accordance to industry guidelines?	Yes [x]	No [ ]	NA Na
CS1.4 CL1.1	**Appropriately Sized Cooling Plant**		**Following Information Required:**		*The current version of the Building Regulations Approved Document Part L documentation provides guidance suggesting that the plant should not be more than 20% oversized. This should be adopted as means of comparison to stay in line with current standards.* Moderate ventilation gains - all the duty is via the AHUs. The system does not seek to achieve an internal condition, only to temper the air supplied to occupants who are mobile and only in the space temporarily Refer to VOL001/SYS101/CSCP001 for duty calculation
			Total Occupants served by this plant	0	
			Total Floor Area served by this plant(m²)	0	
			Occupant Density (m²/person)	0.0	
			Maximum Instantaneous Heat Gain (W/m²)	0.0	
			Installed Cooling Capacity (kW)	0.0	
			The Installed Size is Deemed:		
			More than Expected Less than Expected As Expected	[ ] [ ] [x]	
CS1.6	**Metering Comparison to appropriate energy benchmarks**	Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes [ ]	No [x]	
			Recorded meter reading	0	
		Is the refrigeration plant connected to a BEMS that can provide out of range alarms?	Yes [ ]	No [x]	The BMS is capable of this functionality. It is recommended that this function is implemented.

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
		Are there any records of air conditioning plant usage or sub-metered energy consumption with expected hours of use per year for the plant?	Yes [ ] No [x]	na
		Is the energy consumption or hours of use excessive?	Yes [ ] No [x]	It was not possible to determine the energy consumption NA
CS2.2/d	**Refrigeration Leaks**	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	NA NA
CL1.3	**Refrigeration**		**Refrigeration Temperature:** Pre Compressor(°C): 15 Post Compressor(°C): 9 Ambient(°C): 5 **The Temperature is Deemed:** More than Expected [ ] Less than Expected [ ] As Expected [x]	NA
		Assess the refrigeration compressor(s) and the method of refrigeration capacity control	Capacity control is by sequencing of the circuits	
CS3.5	**Water Cooled Chillers (Cooling Towers & Evaporative Condensers)**	Is the water flow through cooling towers or evaporative coolers even and efficient, and there is no loss of water?	Yes [x] No [ ]	There are no cooling towers associated with this plant
		Is there a management regime in place to ensure that water is regularly checked and treated to ensure that there is no Legionella risk?	Yes [x] No [ ]	NA NA

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
	Humidity Control	Is there separate equipment installed for humidity control?	Yes [ ]	No [x]	NA NA

Cooling Plant Equipment Inspected	
Unit Identifier	VOL001/SYS102/PS001
Component Identifier	VOL001/SYS102/PS001
Manufacturer	Mitsubishi Electric
Description (type/details)	Air Cooled condensing unit
Model/Reference	suz-ka50
Serial Number	6005
Year Plant Installed	2014
Rated Cooling Capacity (kW)	5
Refrigerant Type	R410A
Refrigerant Charge (kg)	2
Location of Cooling Plant	Roof
Areas/Systems Served	Meeting Room
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the cooling plant/system: Unit was as listed in the asset register	

This section applies to the following unit: VOL001/SYS102/PS001

Cooling Plant Equipment Visual Inspection

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS2.1	Is the refrigeration plant operational?	Yes [x] No [ ]	The condensing unit started and ran when called upon to
CS2.2/a	Is the area around the refrigeration plant clear of obstructions & debris?	Yes [x] No [ ]	NA
CS2.2/b	Is the general condition of refrigeration and any associated central plant in good order?	Yes [x] No [ ]	The external condition of the unit was seen to be in the appropriate condition for its age, and it appeared to be operating as it should.
CS2.2/c	Is the condenser placed clear from warm air discharge louvres?	Yes [x] No [ ]	NA
CS2.3/a	Are compressors operational or can they be brought into operation?	Yes [x] No [ ]	None
CS3.1/a	Is the heat rejection plant operational?	Yes [x] No [ ]	The heat rejection plant is integral to the condensing unit
CS3.1/b	Are condenser heat exchangers undamaged/ un-corroded and clean?	Yes [x] No [ ]	NA
CS3.2/a	Is the area around the heat rejection plant clear of obstructions & debris?	Yes [x] No [ ]	The heat rejection plant is integral to the condensing unit
CS3.2/b	Is the condenser free of any possibility of air recirculation?	Yes [x] No [ ]	NA
CS4.1	Is the insulation on circulation pipe work well fitted and in good order?	Yes [x] No [ ]	The insulation on the refrigerant pipework was seen to be well fitted and intact

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
CS1.1	**Refrigerant Used**		Refrigerant Type	R410A	None
			Montreal/ODS/F-Gas controlled?	Yes [x] No [ ]	NA
CS1.3	**Regular Maintenance**	Is there evidence of regular maintenance?	Yes [x]	No [ ]	NA
		Is the maintenance undertaken by suitably competent people and in accordance to industry guidelines?	Yes [x]	No [ ]	NA Na
CS1.4 CL1.1	**Appropriately Sized Cooling Plant**		**Following Information Required:**		*The current version of the Building Regulations Approved Document Part L documentation provides guidance suggesting that the plant should not be more than 20% oversized. This should be adopted as means of comparison to stay in line with current standards.* Moderate gains
			Total Occupants served by this plant	10	
			Total Floor Area served by this plant(m²)	40	
			Occupant Density (m²/person)	4.0	
			Maximum Instantaneous Heat Gain (W/m²)	120.0	
			Installed Cooling Capacity (kW)	5.0	
			The Installed Size is Deemed:		
			More than Expected Less than Expected As Expected	[ ] [ ] [x]	
CS1.6	**Metering Comparison to appropriate energy benchmarks**	Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes [ ]	No [x]	It is recommended that the feasibility of metering and monitoring is investigated.
			Recorded meter reading	0	
		Is the refrigeration plant connected to a BEMS that can provide out of range alarms?	Yes [ ]	No [x]	

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
		Are there any records of air conditioning plant usage or sub-metered energy consumption with expected hours of use per year for the plant?	Yes [ ] No [x]	na
		Is the energy consumption or hours of use excessive?	Yes [ ] No [x]	It was not possible to determine the energy consumption NA
CS2.2/d	**Refrigeration Leaks**	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	NA NA
CL1.3	**Refrigeration**		**Refrigeration Temperature:** Pre Compressor(°C): 20 Post Compressor(°C): 19 Ambient(°C): 19 **The Temperature is Deemed:** More than Expected [ ] Less than Expected [ ] As Expected [x]	NA
		Assess the refrigeration compressor(s) and the method of refrigeration capacity control	Capacity control is not known	
CS3.5	**Water Cooled Chillers (Cooling Towers & Evaporative Condensers)**	Is the water flow through cooling towers or evaporative coolers even and efficient, and there is no loss of water?	Yes [x] No [ ]	There are no cooling towers associated with this plant
		Is there a management regime in place to ensure that water is regularly checked and treated to ensure that there is no Legionella risk?	Yes [x] No [ ]	NA NA

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
	Humidity Control	Is there separate equipment installed for humidity control?	Yes [ ]	No [x]	NA NA

Cooling Plant Equipment Inspected	
Unit Identifier	VOL001/SYS103/PS001
Component Identifier	VOL001/SYS103/PS001
Manufacturer	Mitsubishi Electric
Description (type/details)	Air Cooled condensing unit
Model/Reference	suz-ka50
Serial Number	2195
Year Plant Installed	2014
Rated Cooling Capacity (kW)	5
Refrigerant Type	R410A
Refrigerant Charge (kg)	2
Location of Cooling Plant	Roof
Areas/Systems Served	Reception
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the cooling plant/system: Unit was as listed in the asset register	

This section applies to the following unit: VOL001/SYS103/PS001

Cooling Plant Equipment Visual Inspection

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS2.1	Is the refrigeration plant operational?	Yes [x] No [ ]	The condensing unit started and ran when called upon to
CS2.2/a	Is the area around the refrigeration plant clear of obstructions & debris?	Yes [x] No [ ]	NA
CS2.2/b	Is the general condition of refrigeration and any associated central plant in good order?	Yes [x] No [ ]	The external condition of the unit was seen to be in the appropriate condition for its age, and it appeared to be operating as it should.
CS2.2/c	Is the condenser placed clear from warm air discharge louvres?	Yes [x] No [ ]	NA
CS2.3/a	Are compressors operational or can they be brought into operation?	Yes [x] No [ ]	None
CS3.1/a	Is the heat rejection plant operational?	Yes [x] No [ ]	The heat rejection plant is integral to the condensing unit
CS3.1/b	Are condenser heat exchangers undamaged/ un-corroded and clean?	Yes [x] No [ ]	NA
CS3.2/a	Is the area around the heat rejection plant clear of obstructions & debris?	Yes [x] No [ ]	The heat rejection plant is integral to the condensing unit
CS3.2/b	Is the condenser free of any possibility of air recirculation?	Yes [x] No [ ]	NA
CS4.1	Is the insulation on circulation pipe work well fitted and in good order?	Yes [x] No [ ]	The insulation on the refrigerant pipework was seen to be well fitted and intact

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
CS1.1	**Refrigerant Used**		Refrigerant Type	R410A	None
			Montreal/ODS/F-Gas controlled?	Yes [x] No [ ]	NA
CS1.3	**Regular Maintenance**	Is there evidence of regular maintenance?	Yes [x]	No [ ]	NA
		Is the maintenance undertaken by suitably competent people and in accordance to industry guidelines?	Yes [x]	No [ ]	NA Na
CS1.4 CL1.1	**Appropriately Sized Cooling Plant**		**Following Information Required:**		*The current version of the Building Regulations Approved Document Part L documentation provides guidance suggesting that the plant should not be more than 20% oversized. This should be adopted as means of comparison to stay in line with current standards.* Moderate gains
			Total Occupants served by this plant	2	
			Total Floor Area served by this plant(m²)	30	
			Occupant Density (m²/person)	15.0	
			Maximum Instantaneous Heat Gain (W/m²)	120.0	
			Installed Cooling Capacity (kW)	3.0	
			The Installed Size is Deemed:		
			More than Expected Less than Expected As Expected	[ ] [ ] [x]	
CS1.6	**Metering Comparison to appropriate energy benchmarks**	Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes [ ]	No [x]	It is recommended that the feasibility of metering and monitoring is investigated.
			Recorded meter reading	0	
		Is the refrigeration plant connected to a BEMS that can provide out of range alarms?	Yes [ ]	No [x]	

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
		Are there any records of air conditioning plant usage or sub-metered energy consumption with expected hours of use per year for the plant?	Yes [ ] No [x]	na
		Is the energy consumption or hours of use excessive?	Yes [ ] No [x]	It was not possible to determine the energy consumption NA
CS2.2/d	**Refrigeration Leaks**	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	NA NA
CL1.3	**Refrigeration**		**Refrigeration Temperature:** Pre Compressor(°C): 20 Post Compressor(°C): 19 Ambient(°C): 19 **The Temperature is Deemed:** More than Expected [ ] Less than Expected [ ] As Expected [x]	NA
		Assess the refrigeration compressor(s) and the method of refrigeration capacity control	Capacity control is not known	
CS3.5	**Water Cooled Chillers (Cooling Towers & Evaporative Condensers)**	Is the water flow through cooling towers or evaporative coolers even and efficient, and there is no loss of water?	Yes [x] No [ ]	There are no cooling towers associated with this plant
		Is there a management regime in place to ensure that water is regularly checked and treated to ensure that there is no Legionella risk?	Yes [x] No [ ]	NA NA

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
	Humidity Control	Is there separate equipment installed for humidity control?	Yes [ ]	No [x]	NA NA

Cooling Plant Equipment Inspected	
Unit Identifier	VOL001/SYS104/PS001
Component Identifier	VOL001/SYS104/PS001
Manufacturer	Mitsubishi Electric
Description (type/details)	Air Cooled condensing unit
Model/Reference	suz-ka50
Serial Number	6082
Year Plant Installed	2014
Rated Cooling Capacity (kW)	5
Refrigerant Type	R410A
Refrigerant Charge (kg)	2
Location of Cooling Plant	Roof
Areas/Systems Served	General Office
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the cooling plant/system: Unit was as listed in the asset register	

This section applies to the following unit: VOL001/SYS104/PS001

Cooling Plant Equipment Visual Inspection

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS2.1	Is the refrigeration plant operational?	Yes [x] No [ ]	The condensing unit started and ran when called upon to
CS2.2/a	Is the area around the refrigeration plant clear of obstructions & debris?	Yes [x] No [ ]	NA
CS2.2/b	Is the general condition of refrigeration and any associated central plant in good order?	Yes [x] No [ ]	The external condition of the unit was seen to be in the appropriate condition for its age, and it appeared to be operating as it should.
CS2.2/c	Is the condenser placed clear from warm air discharge louvres?	Yes [x] No [ ]	NA
CS2.3/a	Are compressors operational or can they be brought into operation?	Yes [x] No [ ]	None
CS3.1/a	Is the heat rejection plant operational?	Yes [x] No [ ]	The heat rejection plant is integral to the condensing unit
CS3.1/b	Are condenser heat exchangers undamaged/ un-corroded and clean?	Yes [x] No [ ]	NA
CS3.2/a	Is the area around the heat rejection plant clear of obstructions & debris?	Yes [x] No [ ]	The heat rejection plant is integral to the condensing unit
CS3.2/b	Is the condenser free of any possibility of air recirculation?	Yes [x] No [ ]	NA
CS4.1	Is the insulation on circulation pipe work well fitted and in good order?	Yes [x] No [ ]	The insulation on the refrigerant pipework was seen to be well fitted and intact

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
CS1.1	**Refrigerant Used**		Refrigerant Type	R410A	None
			Montreal/ODS/F-Gas controlled?	Yes [x] No [ ]	NA
CS1.3	**Regular Maintenance**	Is there evidence of regular maintenance?	Yes [x]	No [ ]	NA
		Is the maintenance undertaken by suitably competent people and in accordance to industry guidelines?	Yes [x]	No [ ]	NA Na
CS1.4 CL1.1	**Appropriately Sized Cooling Plant**		**Following Information Required:**		*The current version of the Building Regulations Approved Document Part L documentation provides guidance suggesting that the plant should not be more than 20% oversized. This should be adopted as means of comparison to stay in line with current standards.* Moderate gains
			Total Occupants served by this plant	4	
			Total Floor Area served by this plant(m²)	40	
			Occupant Density (m²/person)	10.0	
			Maximum Instantaneous Heat Gain (W/m²)	120.0	
			Installed Cooling Capacity (kW)	5.0	
			The Installed Size is Deemed:		
			More than Expected Less than Expected As Expected	[ ] [ ] [x]	
CS1.6	**Metering Comparison to appropriate energy benchmarks**	Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes [ ]	No [x]	It is recommended that the feasibility of metering and monitoring is investigated.
			Recorded meter reading	0	
		Is the refrigeration plant connected to a BEMS that can provide out of range alarms?	Yes [ ]	No [x]	

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
		Are there any records of air conditioning plant usage or sub-metered energy consumption with expected hours of use per year for the plant?	Yes [ ] No [x]	na
		Is the energy consumption or hours of use excessive?	Yes [ ] No [x]	It was not possible to determine the energy consumption NA
CS2.2/d	**Refrigeration Leaks**	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	NA NA
CL1.3	**Refrigeration**		**Refrigeration Temperature:** Pre Compressor(°C): 20 Post Compressor(°C): 19 Ambient(°C): 19 **The Temperature is Deemed:** More than Expected [ ] Less than Expected [ ] As Expected [x]	NA
		Assess the refrigeration compressor(s) and the method of refrigeration capacity control	Capacity control is not known	
CS3.5	**Water Cooled Chillers (Cooling Towers & Evaporative Condensers)**	Is the water flow through cooling towers or evaporative coolers even and efficient, and there is no loss of water?	Yes [x] No [ ]	There are no cooling towers associated with this plant
		Is there a management regime in place to ensure that water is regularly checked and treated to ensure that there is no Legionella risk?	Yes [x] No [ ]	NA NA

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
	Humidity Control	Is there separate equipment installed for humidity control?	Yes [ ]	No [x]	NA NA

Cooling Plant Equipment Inspected	
Unit Identifier	VOL001/SYS101/CSCP003
Component Identifier	VOL001/SYS101/CSCP003
Manufacturer	Weatherite
Description (type/details)	Rooftop ventilation plant with integral cooling and gas fired heater
Model/Reference	wperg 130/2/1200V
Serial Number	7725
Year Plant Installed	1998
Rated Cooling Capacity (kW)	120
Refrigerant Type	R407C
Refrigerant Charge (kg)	30
Location of Cooling Plant	Roof
Areas/Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the cooling plant/system: NA	

This section applies to the following unit: VOL001/SYS101/CSCP003

Cooling Plant Equipment Visual Inspection

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS2.1	Is the refrigeration plant operational?	Yes [x] No [ ]	NA
CS2.2/a	Is the area around the refrigeration plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS2.2/b	Is the general condition of refrigeration and any associated central plant in good order?	Yes [x] No [ ]	Starting to show its age, but in good condition
CS2.2/c	Is the condenser placed clear from warm air discharge louvres?	Yes [x] No [ ]	NA
CS2.3/a	Are compressors operational or can they be brought into operation?	Yes [x] No [ ]	None
CS3.1/a	Is the heat rejection plant operational?	Yes [x] No [ ]	Integral to unit
CS3.1/b	Are condenser heat exchangers undamaged/ un-corroded and clean?	Yes [x] No [ ]	Exchangers have been refurbished and coated in recent years, but need annual washdowns to maintain performance
CS3.2/a	Is the area around the heat rejection plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS3.2/b	Is the condenser free of any possibility of air recirculation?	Yes [x] No [ ]	NA
CS4.1	Is the insulation on circulation pipe work well fitted and in good order?	Yes [x] No [ ]	No pipework external to unit

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
CS1.1	**Refrigerant Used**		Refrigerant Type	R407C	None
			Montreal/ODS/F-Gas controlled?	Yes [x] No [ ]	NA
CS1.3	**Regular Maintenance**	Is there evidence of regular maintenance?	Yes [x]	No [ ]	Leetons are a proactive maintainer with an interest in keeping all systems operational
		Is the maintenance undertaken by suitably competent people and in accordance to industry guidelines?	Yes [x]	No [ ]	NA Na
CS1.4 CL1.1	**Appropriately Sized Cooling Plant**		**Following Information Required:**		*The current version of the Building Regulations Approved Document Part L documentation provides guidance suggesting that the plant should not be more than 20% oversized. This should be adopted as means of comparison to stay in line with current standards.* Moderate ventilation gains - all the duty is via the AHUs. The system does not seek to achieve an internal condition, only to temper the air supplied to occupants who are mobile and only in the space temporarily Refer to VOL001/SYS101/CSCP001 for duty calculation
			Total Occupants served by this plant	0	
			Total Floor Area served by this plant(m²)	0	
			Occupant Density (m²/person)	0.0	
			Maximum Instantaneous Heat Gain (W/m²)	0.0	
			Installed Cooling Capacity (kW)	0.0	
			The Installed Size is Deemed:		
			More than Expected Less than Expected As Expected	[ ] [ ] [x]	
CS1.6	**Metering Comparison to appropriate energy benchmarks**	Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes [ ]	No [x]	
			Recorded meter reading	0	
		Is the refrigeration plant connected to a BEMS that can provide out of range alarms?	Yes [ ]	No [x]	The BMS is capable of this functionality. It is recommended that this function is implemented.

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
		Are there any records of air conditioning plant usage or sub-metered energy consumption with expected hours of use per year for the plant?	Yes [ ] No [x]	na
		Is the energy consumption or hours of use excessive?	Yes [ ] No [x]	It was not possible to determine the energy consumption NA
CS2.2/d	**Refrigeration Leaks**	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	NA NA
CL1.3	**Refrigeration**		**Refrigeration Temperature:** Pre Compressor(°C): 15 Post Compressor(°C): 9 Ambient(°C): 5 **The Temperature is Deemed:** More than Expected [ ] Less than Expected [ ] As Expected [x]	NA
		Assess the refrigeration compressor(s) and the method of refrigeration capacity control	Capacity control is by sequencing of the circuits	
CS3.5	**Water Cooled Chillers (Cooling Towers & Evaporative Condensers)**	Is the water flow through cooling towers or evaporative coolers even and efficient, and there is no loss of water?	Yes [x] No [ ]	There are no cooling towers associated with this plant
		Is there a management regime in place to ensure that water is regularly checked and treated to ensure that there is no Legionella risk?	Yes [x] No [ ]	NA NA

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
	Humidity Control	Is there separate equipment installed for humidity control?	Yes [ ]	No [x]	NA NA

Cooling Plant Equipment Inspected	
Unit Identifier	VOL001/SYS101/CSCP004
Component Identifier	VOL001/SYS101/CSCP004
Manufacturer	Weatherite
Description (type/details)	Rooftop ventilation plant with integral cooling and gas fired heater
Model/Reference	wperg 130/2/1200V
Serial Number	7725
Year Plant Installed	1998
Rated Cooling Capacity (kW)	120
Refrigerant Type	R407C
Refrigerant Charge (kg)	30
Location of Cooling Plant	Roof
Areas/Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the cooling plant/system: NA	

This section applies to the following unit: VOL001/SYS101/CSCP004

Cooling Plant Equipment Visual Inspection

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS2.1	Is the refrigeration plant operational?	Yes [x] No [ ]	NA
CS2.2/a	Is the area around the refrigeration plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS2.2/b	Is the general condition of refrigeration and any associated central plant in good order?	Yes [x] No [ ]	Starting to show its age, but in good condition
CS2.2/c	Is the condenser placed clear from warm air discharge louvres?	Yes [x] No [ ]	NA
CS2.3/a	Are compressors operational or can they be brought into operation?	Yes [x] No [ ]	None
CS3.1/a	Is the heat rejection plant operational?	Yes [x] No [ ]	Integral to unit
CS3.1/b	Are condenser heat exchangers undamaged/ un-corroded and clean?	Yes [x] No [ ]	Exchangers have been refurbished and coated in recent years, but need annual washdowns to maintain performance
CS3.2/a	Is the area around the heat rejection plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS3.2/b	Is the condenser free of any possibility of air recirculation?	Yes [x] No [ ]	NA
CS4.1	Is the insulation on circulation pipe work well fitted and in good order?	Yes [x] No [ ]	No pipework external to unit

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
CS1.1	**Refrigerant Used**		Refrigerant Type	R407C	None
			Montreal/ODS/F-Gas controlled?	Yes [x] No [ ]	NA
CS1.3	**Regular Maintenance**	Is there evidence of regular maintenance?	Yes [x]	No [ ]	Leetons are a proactive maintainer with an interest in keeping all systems operational
		Is the maintenance undertaken by suitably competent people and in accordance to industry guidelines?	Yes [x]	No [ ]	NA Na
CS1.4 CL1.1	**Appropriately Sized Cooling Plant**		**Following Information Required:**		*The current version of the Building Regulations Approved Document Part L documentation provides guidance suggesting that the plant should not be more than 20% oversized. This should be adopted as means of comparison to stay in line with current standards.* Moderate ventilation gains - all the duty is via the AHUs. The system does not seek to achieve an internal condition, only to temper the air supplied to occupants who are mobile and only in the space temporarily Refer to VOL001/SYS101/CSCP001 for duty calculation
			Total Occupants served by this plant	0	
			Total Floor Area served by this plant(m²)	0	
			Occupant Density (m²/person)	0.0	
			Maximum Instantaneous Heat Gain (W/m²)	0.0	
			Installed Cooling Capacity (kW)	0.0	
			The Installed Size is Deemed:		
			More than Expected Less than Expected As Expected	[ ] [ ] [x]	
CS1.6	**Metering Comparison to appropriate energy benchmarks**	Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes [ ]	No [x]	
			Recorded meter reading	0	
		Is the refrigeration plant connected to a BEMS that can provide out of range alarms?	Yes [ ]	No [x]	The BMS is capable of this functionality. It is recommended that this function is implemented.

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
		Are there any records of air conditioning plant usage or sub-metered energy consumption with expected hours of use per year for the plant?	Yes [ ] No [x]	na
		Is the energy consumption or hours of use excessive?	Yes [ ] No [x]	It was not possible to determine the energy consumption NA
CS2.2/d	**Refrigeration Leaks**	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	NA NA
CL1.3	**Refrigeration**		**Refrigeration Temperature:** Pre Compressor(°C): 15 Post Compressor(°C): 9 Ambient(°C): 5 **The Temperature is Deemed:** More than Expected [ ] Less than Expected [ ] As Expected [x]	NA
		Assess the refrigeration compressor(s) and the method of refrigeration capacity control	Capacity control is by sequencing of the circuits	
CS3.5	**Water Cooled Chillers (Cooling Towers & Evaporative Condensers)**	Is the water flow through cooling towers or evaporative coolers even and efficient, and there is no loss of water?	Yes [x] No [ ]	There are no cooling towers associated with this plant
		Is there a management regime in place to ensure that water is regularly checked and treated to ensure that there is no Legionella risk?	Yes [x] No [ ]	NA NA

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
	Humidity Control	Is there separate equipment installed for humidity control?	Yes [ ]	No [x]	NA NA

Cooling Plant Equipment Inspected	
Unit Identifier	VOL001/SYS101/CSCP005
Component Identifier	VOL001/SYS101/CSCP005
Manufacturer	Weatherite
Description (type/details)	Rooftop ventilation plant with integral cooling and gas fired heater
Model/Reference	wperg 130/2/1200V
Serial Number	7725
Year Plant Installed	1998
Rated Cooling Capacity (kW)	120
Refrigerant Type	R407C
Refrigerant Charge (kg)	30
Location of Cooling Plant	Roof
Areas/Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the cooling plant/system: NA	

This section applies to the following unit: VOL001/SYS101/CSCP005

Cooling Plant Equipment Visual Inspection

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS2.1	Is the refrigeration plant operational?	Yes [x] No [ ]	NA
CS2.2/a	Is the area around the refrigeration plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS2.2/b	Is the general condition of refrigeration and any associated central plant in good order?	Yes [x] No [ ]	Starting to show its age, but in good condition
CS2.2/c	Is the condenser placed clear from warm air discharge louvres?	Yes [x] No [ ]	NA
CS2.3/a	Are compressors operational or can they be brought into operation?	Yes [x] No [ ]	None
CS3.1/a	Is the heat rejection plant operational?	Yes [x] No [ ]	Integral to unit
CS3.1/b	Are condenser heat exchangers undamaged/ un-corroded and clean?	Yes [x] No [ ]	Exchangers have been refurbished and coated in recent years, but need annual washdowns to maintain performance
CS3.2/a	Is the area around the heat rejection plant clear of obstructions & debris?	Yes [x] No [ ]	Roof area is clear of debris and rubbish
CS3.2/b	Is the condenser free of any possibility of air recirculation?	Yes [x] No [ ]	NA
CS4.1	Is the insulation on circulation pipe work well fitted and in good order?	Yes [x] No [ ]	No pipework external to unit

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
CS1.1	**Refrigerant Used**		Refrigerant Type	R407C	None
			Montreal/ODS/F-Gas controlled?	Yes [x] No [ ]	NA
CS1.3	**Regular Maintenance**	Is there evidence of regular maintenance?	Yes [x]	No [ ]	Leetons are a proactive maintainer with an interest in keeping all systems operational
		Is the maintenance undertaken by suitably competent people and in accordance to industry guidelines?	Yes [x]	No [ ]	NA Na
CS1.4 CL1.1	**Appropriately Sized Cooling Plant**		**Following Information Required:**		*The current version of the Building Regulations Approved Document Part L documentation provides guidance suggesting that the plant should not be more than 20% oversized. This should be adopted as means of comparison to stay in line with current standards.* Moderate ventilation gains - all the duty is via the AHUs. The system does not seek to achieve an internal condition, only to temper the air supplied to occupants who are mobile and only in the space temporarily Refer to VOL001/SYS101/CSCP001 for duty calculation
			Total Occupants served by this plant	0	
			Total Floor Area served by this plant(m²)	0	
			Occupant Density (m²/person)	0.0	
			Maximum Instantaneous Heat Gain (W/m²)	0.0	
			Installed Cooling Capacity (kW)	0.0	
			The Installed Size is Deemed:		
			More than Expected	[ ]	
			Less than Expected	[ ]	
			As Expected	[x]	
CS1.6	**Metering Comparison to appropriate energy benchmarks**	Is metering installed to enable monitoring of energy consumption of refrigeration plant?	Yes [ ]	No [x]	The BMS is capable of this functionality. It is recommended that this function is implemented.
			Recorded meter reading	0	
		Is the refrigeration plant connected to a BEMS that can provide out of range alarms?	Yes [ ]	No [x]	

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
		Are there any records of air conditioning plant usage or sub-metered energy consumption with expected hours of use per year for the plant?	Yes [ ] No [x]	na
		Is the energy consumption or hours of use excessive?	Yes [ ] No [x]	It was not possible to determine the energy consumption NA
CS2.2/d	**Refrigeration Leaks**	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	NA NA
CL1.3	**Refrigeration**		**Refrigeration Temperature:** Pre Compressor(°C): 15 Post Compressor(°C): 9 Ambient(°C): 5 **The Temperature is Deemed:** More than Expected [ ] Less than Expected [ ] As Expected [x]	NA
		Assess the refrigeration compressor(s) and the method of refrigeration capacity control	Capacity control is by sequencing of the circuits	
CS3.5	**Water Cooled Chillers (Cooling Towers & Evaporative Condensers)**	Is the water flow through cooling towers or evaporative coolers even and efficient, and there is no loss of water?	Yes [x] No [ ]	There are no cooling towers associated with this plant
		Is there a management regime in place to ensure that water is regularly checked and treated to ensure that there is no Legionella risk?	Yes [x] No [ ]	NA NA

Cooling Plant Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding		Notes and Recommendations
	Humidity Control	Is there separate equipment installed for humidity control?	Yes [ ]	No [x]	NA NA

Air Handling Systems:

Note: For safety reasons, it will be necessary for air handling fans in air distribution systems to be turned off in order to gain access inside air handlers or ductwork to examine components such as fans, drives, filters, heat exchangers and control dampers. The building manager should arrange safe access for the inspector.

Air Handling Systems Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSAHU001
Component Identifier	VOL001/SYS101/CSAHU001
Systems Served from Cooling Plant	Rooftop unit
Manufacturer	Weatherite
Year Systems Installed	1998
Location of Plant	Within rooftop unit
Areas / Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the AHU/system: na	

This section applies to the following unit:VOL001/SYS101/CSAHU001

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS1.5	**Specific Fan Power**	Estimate the specific fan power (SFP) of air movement systems		*The current version of the Building Regulations Approved Document Part F and Part L documentation provide guidance on limiting values. This should be adopted as means of comparison to stay inline with current standards.*
		Are air flow rates and system pressures available from commissioning data?	Yes [ ] No [x] SFP Calculation: 3.2	na SFP is fine
CS6.1 CS6.2	**Filters**	Are air intake and filter conditions acceptable?	Yes [x] No [ ]	Intakes are clean and clear and the primary filter panels are in reasonable condition
		Have filters been changed according to current industry guidance	Yes [x] No [ ]	Filters are regularly checked and replaced. Last changed in Feb 2018 according to the record notes in the AHU
CS6.3		Is the filter differential pressure gauge, where fitted, working?	Yes [x] No [ ]	NA NA
CS6.5	**Condition of Heat Exchangers**	Are heat exchangers in good condition?	Yes [x] No [ ]	The matrices are in reasonable condition but showing their age. The is some corrosion to the base of the unit. None
CS6.6	**Refrigeration Leaks *(if DXCoil Installed)***	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	None seen None
CS6.7/a	**Fan Rotation**	Does the fan rotate in the correct direction?	Yes [x] No [ ]	Na
		Is the speed control or modulation operational?	Yes [x] No [ ]	Constant speed fans

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
				NA
CS6.7/b	**Fan & Control**	Note the fan type, and method of air speed control. Check the setting and operation of any fresh air/recirculation dampers.	Centrifugal constant speed	Damper settings all as to be expected
CS6.8	**Heat Recovery**	Identify whether the systems have any energy conservation facilities, e.g. heat recovery, free cooling sequence, and check for evidence that such facilities are/have been functioning.	None seen	na
CS6.9	**Air Leakage**	Observe the air handling plant and visible air containment including ductwork, floor or ceiling plenums and builders' work shafts for signs of excessive leakage and energy loss.	No leaks were seen to the AHU or ductwork	NA
CS7.1 CS7.2	**Outdoor Air Inlets**	(a) Locate the inlets for outdoor air. (b) Note any significant obstructions or blockages to inlet grilles, screens and pre-filters. (c) Note where inlets may be affected by proximity to local sources of heat, or to air exhausts.	Inlets for outdoor air are in free air	NA

Air Handling Systems Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSAHU002
Component Identifier	VOL001/SYS101/CSAHU002
Systems Served from Cooling Plant	Rooftop unit
Manufacturer	Weatherite
Year Systems Installed	1998
Location of Plant	Within rooftop unit
Areas / Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the AHU/system: na	

This section applies to the following unit:VOL001/SYS101/CSAHU002

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS1.5	**Specific Fan Power**	Estimate the specific fan power (SFP) of air movement systems		*The current version of the Building Regulations Approved Document Part F and Part L documentation provide guidance on limiting values. This should be adopted as means of comparison to stay inline with current standards.*
		Are air flow rates and system pressures available from commissioning data?	Yes [ ] No [x] SFP Calculation: 3.2	na SFP is fine
CS6.1 **CS6.2**	**Filters**	Are air intake and filter conditions acceptable?	Yes [x] No [ ]	Intakes are clean and clear and the primary filter panels are in reasonable condition
		Have filters been changed according to current industry guidance	Yes [x] No [ ]	Filters are regularly checked and replaced. Last changed in Feb 2018 according to the record notes in the AHU
CS6.3		Is the filter differential pressure gauge, where fitted, working?	Yes [x] No [ ]	NA NA
CS6.5	**Condition of Heat Exchangers**	Are heat exchangers in good condition?	Yes [x] No [ ]	The matrices are in reasonable condition but showing their age. The is some corrosion to the base of the unit. None
CS6.6	**Refrigeration Leaks *(if DXCoil Installed)***	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	None seen None
CS6.7/a	**Fan Rotation**	Does the fan rotate in the correct direction?	Yes [x] No [ ]	Na
		Is the speed control or modulation operational?	Yes [x] No [ ]	Constant speed fans

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
				NA
CS6.7/b	**Fan & Control**	Note the fan type, and method of air speed control. Check the setting and operation of any fresh air/recirculation dampers.	Centrifugal constant speed	Damper settings all as to be expected
CS6.8	**Heat Recovery**	Identify whether the systems have any energy conservation facilities, e.g. heat recovery, free cooling sequence, and check for evidence that such facilities are/have been functioning.	None seen	na
CS6.9	**Air Leakage**	Observe the air handling plant and visible air containment including ductwork, floor or ceiling plenums and builders' work shafts for signs of excessive leakage and energy loss.	No leaks were seen to the AHU or ductwork	NA
CS7.1 CS7.2	**Outdoor Air Inlets**	(a) Locate the inlets for outdoor air. (b) Note any significant obstructions or blockages to inlet grilles, screens and pre-filters. (c) Note where inlets may be affected by proximity to local sources of heat, or to air exhausts.	Inlets for outdoor air are in free air	NA

Air Handling Systems Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSAHU003
Component Identifier	VOL001/SYS101/CSAHU003
Systems Served from Cooling Plant	Rooftop unit
Manufacturer	Weatherite
Year Systems Installed	1998
Location of Plant	Within rooftop unit
Areas / Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the AHU/system: na	

This section applies to the following unit:VOL001/SYS101/CSAHU003

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS1.5	**Specific Fan Power**	Estimate the specific fan power (SFP) of air movement systems		*The current version of the Building Regulations Approved Document Part F and Part L documentation provide guidance on limiting values. This should be adopted as means of comparison to stay inline with current standards.*
		Are air flow rates and system pressures available from commissioning data?	Yes [ ] No [x] SFP Calculation: 3.2	na SFP is fine
CS6.1 CS6.2	**Filters**	Are air intake and filter conditions acceptable?	Yes [x] No [ ]	Intakes are clean and clear and the primary filter panels are in reasonable condition
		Have filters been changed according to current industry guidance	Yes [x] No [ ]	Filters are regularly checked and replaced. Last changed in Feb 2018 according to the record notes in the AHU
CS6.3		Is the filter differential pressure gauge, where fitted, working?	Yes [x] No [ ]	NA NA
CS6.5	**Condition of Heat Exchangers**	Are heat exchangers in good condition?	Yes [x] No [ ]	The matrices are in reasonable condition but showing their age. The is some corrosion to the base of the unit. None
CS6.6	**Refrigeration Leaks *(if DXCoil Installed)***	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	None seen None
CS6.7/a	**Fan Rotation**	Does the fan rotate in the correct direction?	Yes [x] No [ ]	Na
		Is the speed control or modulation operational?	Yes [x] No [ ]	Constant speed fans

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
				NA
CS6.7/b	**Fan & Control**	Note the fan type, and method of air speed control. Check the setting and operation of any fresh air/recirculation dampers.	Centrifugal constant speed	Damper settings all as to be expected
CS6.8	**Heat Recovery**	Identify whether the systems have any energy conservation facilities, e.g. heat recovery, free cooling sequence, and check for evidence that such facilities are/have been functioning.	None seen	na
CS6.9	**Air Leakage**	Observe the air handling plant and visible air containment including ductwork, floor or ceiling plenums and builders' work shafts for signs of excessive leakage and energy loss.	No leaks were seen to the AHU or ductwork	NA
CS7.1 CS7.2	**Outdoor Air Inlets**	(a) Locate the inlets for outdoor air. (b) Note any significant obstructions or blockages to inlet grilles, screens and pre-filters. (c) Note where inlets may be affected by proximity to local sources of heat, or to air exhausts.	Inlets for outdoor air are in free air	NA

Air Handling Systems Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSAHU004
Component Identifier	VOL001/SYS101/CSAHU004
Systems Served from Cooling Plant	Rooftop unit
Manufacturer	Weatherite
Year Systems Installed	1998
Location of Plant	Within rooftop unit
Areas / Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the AHU/system: na	

This section applies to the following unit:VOL001/SYS101/CSAHU004

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS1.5	**Specific Fan Power**	Estimate the specific fan power (SFP) of air movement systems		*The current version of the Building Regulations Approved Document Part F and Part L documentation provide guidance on limiting values. This should be adopted as means of comparison to stay inline with current standards.*
		Are air flow rates and system pressures available from commissioning data?	Yes [ ] No [x] SFP Calculation: 3.2	na SFP is fine
CS6.1 **CS6.2**	**Filters**	Are air intake and filter conditions acceptable?	Yes [x] No [ ]	Intakes are clean and clear and the primary filter panels are in reasonable condition
		Have filters been changed according to current industry guidance	Yes [x] No [ ]	Filters are regularly checked and replaced. Last changed in Feb 2018 according to the record notes in the AHU
CS6.3		Is the filter differential pressure gauge, where fitted, working?	Yes [x] No [ ]	NA NA
CS6.5	**Condition of Heat Exchangers**	Are heat exchangers in good condition?	Yes [x] No [ ]	The matrices are in reasonable condition but showing their age. The is some corrosion to the base of the unit. None
CS6.6	**Refrigeration Leaks *(if DXCoil Installed)***	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	None seen None
CS6.7/a	**Fan Rotation**	Does the fan rotate in the correct direction?	Yes [x] No [ ]	Na
		Is the speed control or modulation operational?	Yes [x] No [ ]	Constant speed fans

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
				NA
CS6.7/b	**Fan & Control**	Note the fan type, and method of air speed control. Check the setting and operation of any fresh air/recirculation dampers.	Centrifugal constant speed	Damper settings all as to be expected
CS6.8	**Heat Recovery**	Identify whether the systems have any energy conservation facilities, e.g. heat recovery, free cooling sequence, and check for evidence that such facilities are/have been functioning.	None seen	na
CS6.9	**Air Leakage**	Observe the air handling plant and visible air containment including ductwork, floor or ceiling plenums and builders' work shafts for signs of excessive leakage and energy loss.	No leaks were seen to the AHU or ductwork	NA
CS7.1 CS7.2	**Outdoor Air Inlets**	(a) Locate the inlets for outdoor air. (b) Note any significant obstructions or blockages to inlet grilles, screens and pre-filters. (c) Note where inlets may be affected by proximity to local sources of heat, or to air exhausts.	Inlets for outdoor air are in free air	NA

Air Handling Systems Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSAHU005
Component Identifier	VOL001/SYS101/CSAHU005
Systems Served from Cooling Plant	Rooftop unit
Manufacturer	Weatherite
Year Systems Installed	1998
Location of Plant	Within rooftop unit
Areas / Systems Served	Concourse
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the AHU/system: na	

This section applies to the following unit:VOL001/SYS101/CSAHU005

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS1.5	**Specific Fan Power**	Estimate the specific fan power (SFP) of air movement systems		*The current version of the Building Regulations Approved Document Part F and Part L documentation provide guidance on limiting values. This should be adopted as means of comparison to stay inline with current standards.*
		Are air flow rates and system pressures available from commissioning data?	Yes [ ] No [x] SFP Calculation: 3.2	na SFP is fine
CS6.1 **CS6.2**	**Filters**	Are air intake and filter conditions acceptable?	Yes [x] No [ ]	Intakes are clean and clear and the primary filter panels are in reasonable condition
		Have filters been changed according to current industry guidance	Yes [x] No [ ]	Filters are regularly checked and replaced. Last changed in Feb 2018 according to the record notes in the AHU
CS6.3		Is the filter differential pressure gauge, where fitted, working?	Yes [x] No [ ]	NA NA
CS6.5	**Condition of Heat Exchangers**	Are heat exchangers in good condition?	Yes [x] No [ ]	The matrices are in reasonable condition but showing their age. The is some corrosion to the base of the unit. None
CS6.6	**Refrigeration Leaks *(if DXCoil Installed)***	Are there any signs of a refrigerant leak?	Yes [ ] No [x]	None seen None
CS6.7/a	**Fan Rotation**	Does the fan rotate in the correct direction?	Yes [x] No [ ]	Na
		Is the speed control or modulation operational?	Yes [x] No [ ]	Constant speed fans

Air Handling Systems Equipment Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
				NA
CS6.7/b	**Fan & Control**	Note the fan type, and method of air speed control. Check the setting and operation of any fresh air/recirculation dampers.	Centrifugal constant speed	Damper settings all as to be expected
CS6.8	**Heat Recovery**	Identify whether the systems have any energy conservation facilities, e.g. heat recovery, free cooling sequence, and check for evidence that such facilities are/have been functioning.	None seen	na
CS6.9	**Air Leakage**	Observe the air handling plant and visible air containment including ductwork, floor or ceiling plenums and builders' work shafts for signs of excessive leakage and energy loss.	No leaks were seen to the AHU or ductwork	NA
CS7.1 CS7.2	**Outdoor Air Inlets**	(a) Locate the inlets for outdoor air. (b) Note any significant obstructions or blockages to inlet grilles, screens and pre-filters. (c) Note where inlets may be affected by proximity to local sources of heat, or to air exhausts.	Inlets for outdoor air are in free air	NA

Terminal Units:

Terminal Unit Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSTU001
Component Identifier	vol001/sys101
Description of Unit	Cooling coil in AHU and displacement diffuser in the occupied space
Identify Cooling Plant Serving Terminal Unit	VOL001/SYS101/CSCP001
Manufacturer	Not known
Year Terminal Unit Installed	1998
Terminal Unit Location	Concourse
Area Served	As above
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the terminal unit/system: NA	

This section applies to the following unit:vol001/sys101

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS4.1	**Insulation**	Is the pipework adequately insulated?	Yes [x] No [ ]	NA
		Is the ductwork adequately insulated?	Yes [x] No [ ]	None None
CS4.2	**Unit Condition**	Are the terminal units in good working order?	Yes [x] No [ ]	None None
CS5.1	**Grilles & Air Flow**	Do air delivery openings provide good distribution?	Yes [x] No [ ]	Delivery from displacement diffusers - no adverse comments
		Is there evidence of tampering with diffusers?	Yes [ ] No [x]	None
		Are chilled and hot water being supplied to terminals simultaneously?	Yes [ ] No [x]	Air only
CS5.2		Are there are any records of occupant complaints regarding air distribution	Yes [ ] No [x]	None None
CS5.3	**Diffuser Positions**	Is there potential for air to short-circuit from supply to extract?	Yes [ ] No [x]	None
CS5.4		Is the position of partitioning or furniture adversely affecting performance?	Yes [ ] No [x]	None
CS5.5		Is the control and operation adequate?	Yes [x] No [ ]	Refer to controls section of this report

Terminal Unit Detailed Inspection Notes				
Item Ref	**Item**	**Inspection Item**	**Finding**	**Notes and Recommendations**
				None

Terminal Unit Equipment Inspection	
Unit Identifier	VOL001/SYS102/PSTU001
Component Identifier	VOL001/SYS102
Description of Unit	Fan coil split system evaporator
Identify Cooling Plant Serving Terminal Unit	VOL001/SYS102/PS001
Manufacturer	Mitsubishi Electric
Year Terminal Unit Installed	2014
Terminal Unit Location	Meeting
Area Served	As above
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the terminal unit/system: NA	

This section applies to the following unit:VOL001/SYS102

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS4.1	**Insulation**	Is the pipework adequately insulated?	Yes [x] No [ ]	DX pipework insulation was seen to be in good condition considering the age of the equipment
		Is the ductwork adequately insulated?	Yes [ ] No [x]	There is no ductwork associated with this split system None
CS4.2	**Unit Condition**	Are the terminal units in good working order?	Yes [x] No [ ]	The terminal unit was seen to be operating as it should None
CS5.1	**Grilles & Air Flow**	Do air delivery openings provide good distribution?	Yes [x] No [ ]	Delivery from unit vanes - no adverse comments
		Is there evidence of tampering with diffusers?	Yes [ ] No [x]	None
		Are chilled and hot water being supplied to terminals simultaneously?	Yes [ ] No [x]	NA - DX only
CS5.2		Are there are any records of occupant complaints regarding air distribution	Yes [ ] No [x]	There are no occupants in this space None
CS5.3	**Diffuser Positions**	Is there potential for air to short-circuit from supply to extract?	Yes [ ] No [x]	None
CS5.4		Is the position of partitioning or furniture adversely affecting performance?	Yes [ ] No [x]	None

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS5.5		Is the control and operation adequate?	Yes [x] No [ ]	Refer to controls section of this report None

Terminal Unit Equipment Inspection	
Unit Identifier	VOL001/SYS103/PSTU001
Component Identifier	VOL001/SYS103
Description of Unit	Fan coil split system evaporator
Identify Cooling Plant Serving Terminal Unit	VOL001/SYS103/PS001
Manufacturer	Mitsubishi Electric
Year Terminal Unit Installed	2014
Terminal Unit Location	Reception
Area Served	As above
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the terminal unit/system: NA	

This section applies to the following unit:VOL001/SYS103

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS4.1	**Insulation**	Is the pipework adequately insulated?	Yes [x] No [ ]	DX pipework insulation was seen to be in good condition considering the age of the equipment
		Is the ductwork adequately insulated?	Yes [ ] No [x]	There is no ductwork associated with this split system None
CS4.2	**Unit Condition**	Are the terminal units in good working order?	Yes [x] No [ ]	The terminal unit was seen to be operating as it should None
CS5.1	**Grilles & Air Flow**	Do air delivery openings provide good distribution?	Yes [x] No [ ]	Delivery from unit vanes - no adverse comments
		Is there evidence of tampering with diffusers?	Yes [ ] No [x]	None
		Are chilled and hot water being supplied to terminals simultaneously?	Yes [ ] No [x]	NA - DX only
CS5.2		Are there are any records of occupant complaints regarding air distribution	Yes [ ] No [x]	There are no occupants in this space None
CS5.3	**Diffuser Positions**	Is there potential for air to short-circuit from supply to extract?	Yes [ ] No [x]	None
CS5.4		Is the position of partitioning or furniture adversely affecting performance?	Yes [ ] No [x]	None

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS5.5		Is the control and operation adequate?	Yes [x] No [ ]	Refer to controls section of this report None

Terminal Unit Equipment Inspection	
Unit Identifier	VOL001/SYS104/PSTU001
Component Identifier	VOL001/SYS104
Description of Unit	Fan coil split system evaporator
Identify Cooling Plant Serving Terminal Unit	VOL001/SYS104/PS001
Manufacturer	Mitsubishi Electric
Year Terminal Unit Installed	2014
Terminal Unit Location	General Office
Area Served	As above
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the terminal unit/system: NA	

This section applies to the following unit:VOL001/SYS104

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS4.1	**Insulation**	Is the pipework adequately insulated?	Yes [x] No [ ]	DX pipework insulation was seen to be in good condition considering the age of the equipment
		Is the ductwork adequately insulated?	Yes [ ] No [x]	There is no ductwork associated with this split system None
CS4.2	**Unit Condition**	Are the terminal units in good working order?	Yes [x] No [ ]	The terminal unit was seen to be operating as it should None
CS5.1	**Grilles & Air Flow**	Do air delivery openings provide good distribution?	Yes [x] No [ ]	Delivery from unit vanes - no adverse comments
		Is there evidence of tampering with diffusers?	Yes [ ] No [x]	None
		Are chilled and hot water being supplied to terminals simultaneously?	Yes [ ] No [x]	NA - DX only
CS5.2		Are there are any records of occupant complaints regarding air distribution	Yes [ ] No [x]	There are no occupants in this space None
CS5.3	**Diffuser Positions**	Is there potential for air to short-circuit from supply to extract?	Yes [ ] No [x]	None
CS5.4		Is the position of partitioning or furniture adversely affecting performance?	Yes [ ] No [x]	None

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS5.5		Is the control and operation adequate?	Yes [x] No [ ]	Refer to controls section of this report None

Terminal Unit Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSTU002
Component Identifier	vol001/sys101
Description of Unit	Cooling coil in AHU and displacement diffuser in the occupied space
Identify Cooling Plant Serving Terminal Unit	VOL001/SYS101/CSCP002
Manufacturer	Not known
Year Terminal Unit Installed	1998
Terminal Unit Location	Concourse
Area Served	As above
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the terminal unit/system: NA	

This section applies to the following unit:vol001/sys101

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS4.1	**Insulation**	Is the pipework adequately insulated?	Yes [x] No [ ]	NA
		Is the ductwork adequately insulated?	Yes [x] No [ ]	None None
CS4.2	**Unit Condition**	Are the terminal units in good working order?	Yes [x] No [ ]	None None
CS5.1	**Grilles & Air Flow**	Do air delivery openings provide good distribution?	Yes [x] No [ ]	Delivery from displacement diffusers - no adverse comments
		Is there evidence of tampering with diffusers?	Yes [ ] No [x]	None
		Are chilled and hot water being supplied to terminals simultaneously?	Yes [ ] No [x]	Air only
CS5.2		Are there are any records of occupant complaints regarding air distribution	Yes [ ] No [x]	None None
CS5.3	**Diffuser Positions**	Is there potential for air to short-circuit from supply to extract?	Yes [ ] No [x]	None
CS5.4		Is the position of partitioning or furniture adversely affecting performance?	Yes [ ] No [x]	None
CS5.5		Is the control and operation adequate?	Yes [x] No [ ]	Refer to controls section of this report

Terminal Unit Detailed Inspection Notes				
Item Ref	**Item**	**Inspection Item**	**Finding**	**Notes and Recommendations**
				None

Terminal Unit Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSTU003
Component Identifier	vol001/sys101
Description of Unit	Cooling coil in AHU and displacement diffuser in the occupied space
Identify Cooling Plant Serving Terminal Unit	VOL001/SYS101/CSCP003
Manufacturer	Not known
Year Terminal Unit Installed	1998
Terminal Unit Location	Concourse
Area Served	As above
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the terminal unit/system: NA	

This section applies to the following unit:vol001/sys101

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS4.1	**Insulation**	Is the pipework adequately insulated?	Yes [x] No [ ]	NA
		Is the ductwork adequately insulated?	Yes [x] No [ ]	None
CS4.2	**Unit Condition**	Are the terminal units in good working order?	Yes [x] No [ ]	None None
CS5.1	**Grilles & Air Flow**	Do air delivery openings provide good distribution?	Yes [x] No [ ]	Delivery from displacement diffusers - no adverse comments
		Is there evidence of tampering with diffusers?	Yes [ ] No [x]	None
		Are chilled and hot water being supplied to terminals simultaneously?	Yes [ ] No [x]	Air only
CS5.2		Are there are any records of occupant complaints regarding air distribution	Yes [ ] No [x]	None None
CS5.3	**Diffuser Positions**	Is there potential for air to short-circuit from supply to extract?	Yes [ ] No [x]	None
CS5.4		Is the position of partitioning or furniture adversely affecting performance?	Yes [ ] No [x]	None
CS5.5		Is the control and operation adequate?	Yes [x] No [ ]	Refer to controls section of this report

Terminal Unit Detailed Inspection Notes				
Item Ref	**Item**	**Inspection Item**	**Finding**	**Notes and Recommendations**
				None

Terminal Unit Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSTU004
Component Identifier	vol001/sys101
Description of Unit	Cooling coil in AHU and displacement diffuser in the occupied space
Identify Cooling Plant Serving Terminal Unit	VOL001/SYS101/CSCP004
Manufacturer	Not known
Year Terminal Unit Installed	1998
Terminal Unit Location	Concourse
Area Served	As above
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the terminal unit/system: NA	

This section applies to the following unit:vol001/sys101

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS4.1	**Insulation**	Is the pipework adequately insulated?	Yes [x] No [ ]	NA
		Is the ductwork adequately insulated?	Yes [x] No [ ]	None
CS4.2	**Unit Condition**	Are the terminal units in good working order?	Yes [x] No [ ]	None None
CS5.1	**Grilles & Air Flow**	Do air delivery openings provide good distribution?	Yes [x] No [ ]	Delivery from displacement diffusers - no adverse comments
		Is there evidence of tampering with diffusers?	Yes [ ] No [x]	None
		Are chilled and hot water being supplied to terminals simultaneously?	Yes [ ] No [x]	Air only
CS5.2		Are there are any records of occupant complaints regarding air distribution	Yes [ ] No [x]	None None
CS5.3	**Diffuser Positions**	Is there potential for air to short-circuit from supply to extract?	Yes [ ] No [x]	None
CS5.4		Is the position of partitioning or furniture adversely affecting performance?	Yes [ ] No [x]	None
CS5.5		Is the control and operation adequate?	Yes [x] No [ ]	Refer to controls section of this report

Terminal Unit Detailed Inspection Notes				
Item Ref	**Item**	**Inspection Item**	**Finding**	**Notes and Recommendations**
				None

Terminal Unit Equipment Inspection	
Unit Identifier	VOL001/SYS101/CSTU005
Component Identifier	vol001/sys101
Description of Unit	Cooling coil in AHU and displacement diffuser in the occupied space
Identify Cooling Plant Serving Terminal Unit	VOL001/SYS101/CSCP005
Manufacturer	Not known
Year Terminal Unit Installed	1998
Terminal Unit Location	Concourse
Area Served	As above
Note below any discrepancy between information provided by client and on site information collected, or any information of additional relevance to the terminal unit/system: NA	

This section applies to the following unit:vol001/sys101

Terminal Unit Detailed Inspection Notes

Item Ref	Item	Inspection Item	Finding	Notes and Recommendations
CS4.1	**Insulation**	Is the pipework adequately insulated?	Yes [x] No [ ]	NA
		Is the ductwork adequately insulated?	Yes [x] No [ ]	None None
CS4.2	**Unit Condition**	Are the terminal units in good working order?	Yes [x] No [ ]	None None
CS5.1	**Grilles & Air Flow**	Do air delivery openings provide good distribution?	Yes [x] No [ ]	Delivery from displacement diffusers - no adverse comments
		Is there evidence of tampering with diffusers?	Yes [ ] No [x]	None
		Are chilled and hot water being supplied to terminals simultaneously?	Yes [ ] No [x]	Air only
CS5.2		Are there are any records of occupant complaints regarding air distribution	Yes [ ] No [x]	None None
CS5.3	**Diffuser Positions**	Is there potential for air to short-circuit from supply to extract?	Yes [ ] No [x]	None
CS5.4		Is the position of partitioning or furniture adversely affecting performance?	Yes [ ] No [x]	None
CS5.5		Is the control and operation adequate?	Yes [x] No [ ]	Refer to controls section of this report

Terminal Unit Detailed Inspection Notes				
Item Ref	**Item**	**Inspection Item**	**Finding**	**Notes and Recommendations**
				None

System Controls:

System Controls			
Item Ref	**Inspection Item**	**Finding**	**Notes and Recommendations**
n/a	Sub System Identifier (if applicable)	vol001/sys101	
CS8.1	Is the zoning appropriate in relation to anticipated cooling demand?	Yes [x] No [ ]	Return air sensors are the return air path. None
CS8.2	Note the current indicated weekday and time of day on controllers or BMS against the actual time.		Current times correct on BMS
CS8.3/a	Note the set on and off periods (for weekday and weekend if this facility is available with the timer).		Systems run according to a time schedule off the BMS. The systems run between 0800 and 1900
CS8.3/b	Is there a shortfall in timer capabilities?	Yes [ ] No [x]	na None - a sensible way to control the systems
CS8.4	Identify and assess zone heating and cooling temperature control sensors. Are the sensor types and locations appropriate in relation to heating and cooling emitters, heat flows or likely temperature distributions in the zone or space?	Yes [ ] No [x]	Air temperature from sensors in the return air path. NA
CS8.5	Note the set temperature in each zone for heating and cooling in relation to the activities and occupancy of zones and spaces in relation to the manager's intent.		Setpoint 22 degrees
CS8.6	Note whether a 'dead band' is, or can be, set between heating and cooling.		Deadband is believed to be in the region of 2 degrees C although there were no technicians on site who could confirm this
CS8.7	Do the sub system controls integrate effectively with the overall system control strategy?	Yes [x] No [ ]	Na

System Controls

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS8.8	Assess the means of modulating or controlling air flow rate through the air supply and exhaust ducts.		Air is supplied via diffusers
PS3.6	Are guidance notices visible or controls available to inhibit use of cooling equipment whilst windows are open or cooling/heating is on?	Yes [ ] No [x]	No windows in the occupied areas na

System Controls

Item Ref	Inspection Item	Finding	Notes and Recommendations
n/a	Sub System Identifier (if applicable)	VOL001/SYS102	
CS8.1	Is the zoning appropriate in relation to anticipated cooling demand?	Yes [x] No [ ]	The room air temperature is controlled off the remote controller for the system None
CS8.2	Note the current indicated weekday and time of day on controllers or BMS against the actual time.		Current times correct on the controller
CS8.3/a	Note the set on and off periods (for weekday and weekend if this facility is available with the timer).		Systems run as needed by staff
CS8.3/b	Is there a shortfall in timer capabilities?	Yes [ ] No [x]	na None
CS8.4	Identify and assess zone heating and cooling temperature control sensors. Are the sensor types and locations appropriate in relation to heating and cooling emitters, heat flows or likely temperature distributions in the zone or space?	Yes [ ] No [x]	The room air temperature is controlled off the remote controller for the system NA
CS8.5	Note the set temperature in each zone for heating and cooling in relation to the activities and occupancy of zones and spaces in relation to the manager's intent.		Setpoint 20 degrees
CS8.6	Note whether a 'dead band' is, or can be, set between heating and cooling.		Deadband is believed to be in the region of 2 degrees C although there were no technicians on site who could confirm this
CS8.7	Do the sub system controls integrate effectively with the overall system control strategy?	Yes [x] No [ ]	Na

System Controls

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS8.8	Assess the means of modulating or controlling air flow rate through the air supply and exhaust ducts.		Natural ventilation
PS3.6	Are guidance notices visible or controls available to inhibit use of cooling equipment whilst windows are open or cooling/heating is on?	Yes [ ] No [x]	There are no windows na

System Controls

Item Ref	Inspection Item	Finding	Notes and Recommendations
n/a	Sub System Identifier (if applicable)	VOL001/SYS103	
CS8.1	Is the zoning appropriate in relation to anticipated cooling demand?	Yes [x] No [ ]	The room air temperature is controlled off the remote controller for the system None
CS8.2	Note the current indicated weekday and time of day on controllers or BMS against the actual time.		Current times correct on the controller
CS8.3/a	Note the set on and off periods (for weekday and weekend if this facility is available with the timer).		Systems run as needed by staff
CS8.3/b	Is there a shortfall in timer capabilities?	Yes [ ] No [x]	na None
CS8.4	Identify and assess zone heating and cooling temperature control sensors. Are the sensor types and locations appropriate in relation to heating and cooling emitters, heat flows or likely temperature distributions in the zone or space?	Yes [ ] No [x]	The room air temperature is controlled off the remote controller for the system NA
CS8.5	Note the set temperature in each zone for heating and cooling in relation to the activities and occupancy of zones and spaces in relation to the manager's intent.		Setpoint 20 degrees
CS8.6	Note whether a 'dead band' is, or can be, set between heating and cooling.		Deadband is believed to be in the region of 2 degrees C although there were no technicians on site who could confirm this
CS8.7	Do the sub system controls integrate effectively with the overall system control strategy?	Yes [x] No [ ]	Na

System Controls

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS8.8	Assess the means of modulating or controlling air flow rate through the air supply and exhaust ducts.		Natural ventilation
PS3.6	Are guidance notices visible or controls available to inhibit use of cooling equipment whilst windows are open or cooling/heating is on?	Yes [ ] No [x]	There are no windows na

System Controls

Item Ref	Inspection Item	Finding	Notes and Recommendations
n/a	Sub System Identifier (if applicable)	VOL001/SYS104	
CS8.1	Is the zoning appropriate in relation to anticipated cooling demand?	Yes [x] No [ ]	The room air temperature is controlled off the remote controller for the system None
CS8.2	Note the current indicated weekday and time of day on controllers or BMS against the actual time.		Current times correct on the controller
CS8.3/a	Note the set on and off periods (for weekday and weekend if this facility is available with the timer).		Systems run as needed by staff
CS8.3/b	Is there a shortfall in timer capabilities?	Yes [ ] No [x]	na None
CS8.4	Identify and assess zone heating and cooling temperature control sensors. Are the sensor types and locations appropriate in relation to heating and cooling emitters, heat flows or likely temperature distributions in the zone or space?	Yes [ ] No [x]	The room air temperature is controlled off the remote controller for the system NA
CS8.5	Note the set temperature in each zone for heating and cooling in relation to the activities and occupancy of zones and spaces in relation to the manager's intent.		Setpoint 20 degrees
CS8.6	Note whether a 'dead band' is, or can be, set between heating and cooling.		Deadband is believed to be in the region of 2 degrees C although there were no technicians on site who could confirm this
CS8.7	Do the sub system controls integrate effectively with the overall system control strategy?	Yes [x] No [ ]	Na

System Controls

Item Ref	Inspection Item	Finding	Notes and Recommendations
CS8.8	Assess the means of modulating or controlling air flow rate through the air supply and exhaust ducts.		Natural ventilation
PS3.6	Are guidance notices visible or controls available to inhibit use of cooling equipment whilst windows are open or cooling/heating is on?	Yes [ ] No [x]	There are no windows na