Design and Access Statement

External Plant Replacement
Roof Level Research Block Building
for SOAS, University of London WC1H 0XG

Document Ref. 200171-0200 Rev P1

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Job No. 200171

Document Control Record

Version	Date	Prepared by	Checked by
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Design and Access Statement

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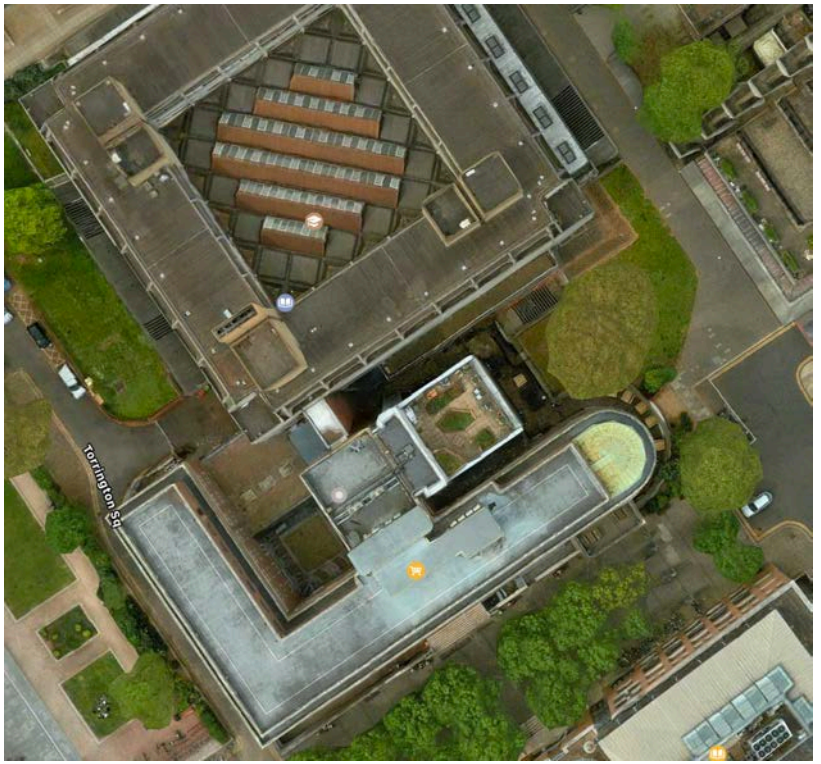
SOAS Campus Map

Research Block



Maps aerial image

Research Block -North East Elevation with College Buildings on left

Research Block -North East Elevation with Philips Building on right

1.00 Introduction

This Design and Access Statement has been prepared in support of a planning application submitted by Kendall Kingscott Limited on behalf of the School of Oriental and African Studies (SOAS), University of London.

This Statement relates to the Research Block at the centre of the SOAS Campus in Bloomsbury.

The address is:

SOAS University of London
10 Thornhaugh Street
Russell Square
London
WC1H 0XG.

2.00 Site Description

SOAS is a Higher Education institution specialising in the study of Asia, Africa and the Near and Middle East. It was founded as the School of Oriental Studies and received its Royal Charter in 1916.

The Research Block forms part of the SOAS Campus and houses teaching and administration space for SOAS on all floors. It is a steel framed structure with aluminium cladding panels on its flank walls to the north west and south east elevations and glazing to the main north east elevation. It was constructed around 2005, with minor alterations to the external access arrangements and boundary wall treatment were carried out in 2015. Access to the Block is via internal link routes only. A fire exit door at lower ground floor level was removed as part of the project carried out in 2015.

The Research Block contains five storeys including a lower ground floor and an external roof terrace at fourth floor level, with level access from the corridor and lifts. The Block is linked via an internal corridor to the College Buildings and via linkways to the Philips Building at all levels. The Philips Building provides library facilities and office accommodation for the students and staff, while the College Buildings house the main entrance and provide access to the rest of the facilities in the Philips Building and the Research Block, including the Students' Union. Together they form the main SOAS site at Thornhaugh Street.

The Research Block is not included as a listed building in the English Heritage website but it is linked internally to both the College Buildings and the Philips Building. It lies within the Bloomsbury Conservation Area Sub Area 3: University of London/British Museum[1]. It is not locally listed.

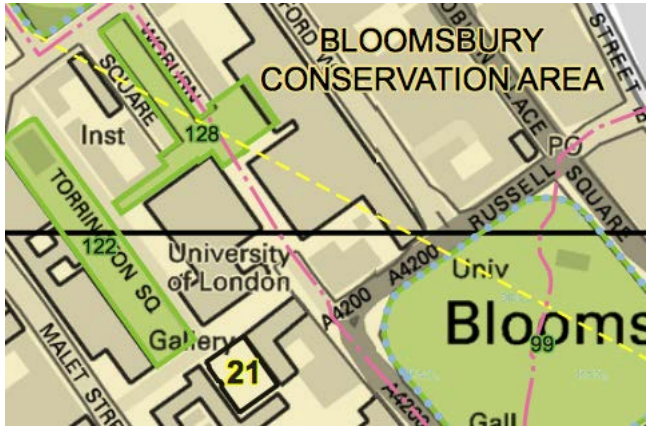
London Borough of Camden map showing listed buildings and Conservation Area

There is a grassed area to the north east side and a lightwell surrounding the three external elevations which can be accessed from the Students Union at Lower Ground Floor level. Means of Escape is via routes through the College Buildings and Philips Building.

3.00 Planning Statement

3.01 National and Local Policies

The development is in accordance with the relevant National and Local Policies. The Camden Planning Policy Map indicates a nearby Background Assessment Area for designated views, a Metropolitan walk designation and a site close by earmarked for potential development.



Extract from London Borough of Camden Policies Map[2]

[1] https://www.camden.gov.uk/documents/20142/7239578/Bloomsbury+CA+Sub+Area3+Townscape.pdf/059ed81f-26f5-83ff-64ed-bfffa959fca9

[2] https://www.camden.gov.uk/documents/20142/4820180/Camden+Policies+Map+2019+March.pdf/c810da24-d8d6-7ad8-e935-2be47b7feb37

The London Borough of Camden's Local Area Requirements for Planning Applications (2018)[3] state that where a development may give rise to noise, including plant, ventilation, air extraction or conditioning near a "noise sensitive use" (which) may include housing, schools/libraries, hospitals, offices, workshops, laboratories, hotels and open spaces, then an Acoustic Report should be provided in support of the planning application.

Policy Drivers are listed as:
National Planning Policy Framework;
Camden Local Plan Policies A1, and A4;
Relevant Neighbourhood Plans;
Appendix 3 of the Local Plan and Camden Planning Guidance on Amenity.
Guidance cited in Appendix 3 - Proposed Developments likely to be Sensitive to Noise.

Policy A4 Noise and vibration of the Camden Local Plan 2017 states that:
The Council will seek to ensure that noise and vibration is controlled and managed.
Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for:
a. development likely to generate unacceptable noise and vibration impacts; or
b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.
We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development.

An acoustic report forms part of the supporting documentation for this planning application, and the suggested mitigation measures have been integrated into the proposed scheme.

3.02 Consultees

The requirement for the proposed works was instigated by SOAS and its recent increase in student numbers, with consequent pressure on teaching space and accommodation.

The flank walls of the Research Block face respectively the College Buildings and the Philips Building. The proposed plant will be visible and audible at fourth floor level, with potentially greater impact on the Philips Building.

[3] https://www.camden.gov.uk/documents/20142/2247044/Local+area+requirements+for+planning+applications+July+2018.pdf/aae40604-02b3-9cec-a7d0-799b86ba1d00

View facing towards the Philips Building

View facing towards the College Buildings

3.03 Site History

The first planning application for the construction of the Research Block was submitted in 2000 and subsequently amended and approved in 2004. It is understood that the building was constructed by Mansell under a Design and Build contract around 2005. Minor alterations were carried out in 2015.

The existing heat pump and ventilation systems were installed during internal refurbishment works in 2009.

3.04 Statement of Community Involvement

This is an existing building within the campus environment and with little impact outside the University. The students and staff using the Research Block stand to benefit from the proposed works.

3.05 Supporting Documentation

The relevant information is attached within the Appendices of this Design and Access Statement.

Refer to **Appendix B** for a detailed outline of the works proposed and the rationale behind them.

4.00 Proposed Works

There has been a recent increase in student numbers at SOAS with consequent demands on teaching space. The rooms on Ground and Second Floors of the Research Block, RG01 and R201 are now in use as classrooms with increased occupancy and therefore demands on ventilation and cooling have increased.

Our proposal is to replace the four existing roof mounted Variable Refrigerant Volume (VRV) condensing units with a single air cooled chiller unit and roof mounted air handling unit. Associated fresh air intake and extract ductwork is proposed to be installed externally through the parapet wall, dropping to the lower fourth floor level external roof terrace. It will then be routed through a new opening formed in the roof terrace into a new fire rated vertical riser which will serve each floor of the Research Block. It will then be distributed horizontally through the ceiling voids to new intake and extract vents sited within the new suspended ceiling in each of the rooms.

The existing louvres on the flank walls will be left in place and the openings sealed internally.

A Noise Impact Assessment has been carried out to support this Application, and noise mitigation using acoustic screening is incorporated within the design.

There will be a very limited reduction of amenity space on the external roof terrace. The proposed works will not impact on its current use.

5.00 Works Impact

The proposed works will require access to the roof level. It is envisaged that heavier items of plant including the four existing VRV condensing units be disconnected and removed from the roof using crane access from the service road loading bay to the west or potentially from either the east parking bay / grassed area or the pedestrian walkway to the south between the College and Brunei Buildings, all of which are accessible from Thornhaugh Street. The replacement plant will similarly be delivered to site using crane access.

Refrigerant gas will be removed and recovered prior to the removal of the VRV condensing units from site. Some associated structural works will be required to accommodate the weight of the proposed air handling unit and replacement single chiller unit, as well as support and restraint for the proposed acoustic screen weight and wind loadings.

Flow and return chilled water pipework will be routed through the internal pump room on the upper roof at fifth floor level and will then run internally through an existing riser cupboard route sited within the Research Block. New fire rated access doors will be required at each floor level for maintenance of the pipework. The pipework penetrations and riser cupboard alterations will be fire rated to meet fire compartmentation requirements.

A new opening will be required through the parapet wall of the upper roof to accommodate the proposed ductwork drops.

Works are anticipated to start on site in September 2020. The anticipated programme is 4 weeks.

It is intended that the lifts in the Philips Building be used for site personnel access and for delivery of materials before 09.00 am daily to avoid the periods of high demand.

6.00 Design and Access Statement

6.01 Use

SOAS seeks to make the most efficient use of its estate and has identified the Research Block as an area which could provide quality teaching space adjacent to the Philips Building Library and to the Student Union facilities in College Building. Existing ventilation and cooling systems are proving inadequate and nearing the end of their useful life, and therefore the need to improve the ventilation and energy efficiency has been identified.

6.02 Amount

The proposed Air Handling Unit and Chiller Unit are sized to serve the numbers of staff and students who will occupy the Research Block. Currently cooling in the rooms is supplied via ceiling-mounted split units, each with their own maintenance requirements. The replacement equipment will consolidate maintenance works within the external roof area and thereby reduce disruption within the Rooms. There is an existing parapet and balustrade around both the upper fifth floor level roof and the lower fourth floor roof / external deck.

The Acoustic Consultancy Report 95819/3/1/5 - External Plant Assessment which forms part of this application recommends a mitigation measure with *the introduction of a suitable noise mitigation scheme by means of attenuators installed on the AHU fresh air in and discharge* and *an open top screen should surround the chiller with a minimum height of 200mm above the unit.*[4]
These measures form part of the proposals.

The location of the proposed acoustic screening is shown on the proposed plan and elevations. Suitable structural support will form part of the installation.

Example of acoustic screen

[4]Section 5.1 Noise Mitigation Scheme

There will be a very limited reduction of amenity space on the external roof terrace but our proposal will not impact on its current use. The external hard landscaping at lower ground floor level is used for access only, and likewise our proposal will not affect this.

6.03 Layout

The.layout of the proposed equipment installation has been designed as far as possible to replicate the existing layout. The Chiller Unit will replace the four existing smaller units and is intended to use existing steel bearers subject to final structural calculations. The new Air Handling Unit will be an additional piece of equipment requiring access for maintenance. Intake and extract louvres are located to avoid discharging into the Philips Building offices.

The proposed external ductwork will be routed horizontally across the roof and then drop vertically along the front face of the north east wall elevation above the proposed single internal duct serving each floor. To reduce the ductwork's visual impact it is proposed to form a new opening through the parapet wall with a section of KeeKlamp type handrail above to maintain an adequate parapet height for safe working at roof level. This is in keeping with a similar arrangement already in place on the roof.

Existing KeeKlamp type handrail arrangement facing Philips Building

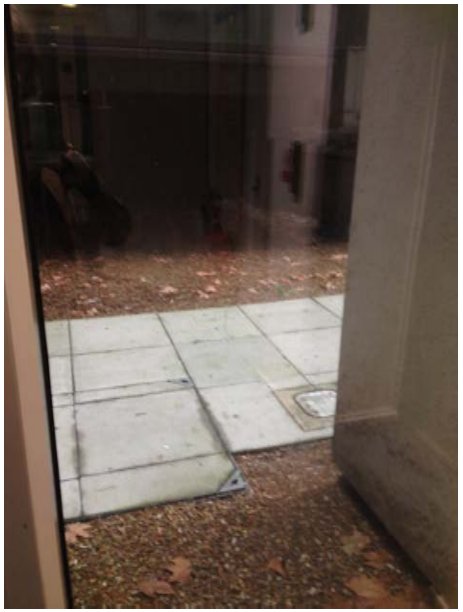
6.04 Scale

It is clear from the Mechanical proposals that the proposed Air Handling Unit and Chiller Unit represent an increase in size and will be visible, chiefly to the occupants of the Philips Building at fifth floor level. To this end an acoustic screen is proposed based on the minimum dimensions required while still accommodating access requirements. The additional ductwork is sized to serve the proposed occupancy numbers.

6.05 Landscaping

The existing roof area will remain as existing, with the loss of the area occupied by the proposed ductwork. This will not impact on the use of the space.

At lower ground floor level a route for the chiller unit pipework has been identified which will run below the existing hard landscaping to the lightwell, rising to connect to the existing louvre in the Philips Building behind the staircase..



Proposed external route for chiller pipework

6.06 Appearance

The materials and finishes chosen for the ductwork and acoustic screens are intended to blend in with the white finish of the rendered front face of the north east wall elevation which forms the principle and most visible elevation of the Research Block. While the proposed ductwork will undoubtedly be visible, it is nevertheless the intention to reduce its visual impact through the choice of self-colour. Exposed pipework will be easier to access for future maintenance and thereby reducing the amount of time which personnel will need to spend, maintenance work at height.

Roof Terrace on fourth floor viewed from College Building

7.00 Parking and Access

Parking will be unaffected as there is no designated parking space adjacent.

Access to the main entrance will remain as current and again is unaffected by this proposal.

The roof spaces are currently accessed via a hooped cat ladder, a narrow ship's ladder and steps, none of which are accessible. There will be no change to the current access arrangements. The upper roof areas are designated for authorised maintenance personnel only. The fourth floor terrace has level access currently and this will be unaffected by the proposals.

8.00 Sustainability

The principal driver behind this proposal has been the increase in class size within the teaching spaces. The proposed installation will replace a number of smaller, less efficient items of plant and consolidate into a system that although larger will require less maintenance and fewer parts.

The replacement of the individual air conditioning units and full Building Management System control will ensure that there is no simultaneous heating and cooling taking place.

From a heritage perspective, the new cooling plant has been sized to ensure the system is futureproofed, avoiding the need to install additional plant on the roof of the Philips Building.

The centralisation of cooling plant into a chilled water system supports the wider Bloomsbury Heat and Power scheme as the replacement system aims to be zero carbon through the use of heat recovery and heat pumps which can provide heating and cooling simultaneously.

The centralisation of cooling will also allow SOAS to more easily employ and insert new technologies as they emerge in the future.

Finally the proposed plant will consolidate the refrigerants into one system which will be easier to manage in terms of leak control and maintenance.

9.00 Summary

Throughout the design process every effort has been made to consider the impact of the proposal and balance this against the comfort and wellbeing of both students and staff as well as the teaching and administrative requirements of SOAS.

SOAS has engaged the services of three design consultants to design and manage the works. Kendall Kingscott Limited was appointed to deliver Architectural Design Services and Project Management of the works. Hitek was appointed to deliver Mechanical & Electrical Design Services with ongoing site visits and consultation throughout the works. Structural Design Studio has been appointed to provide associated structural services. An Acoustic Consultant has carried out a background noise survey and made recommendations on noise mitigation measures which have been incorporated within the proposed scheme.

A key principle emphasised by SOAS relates to the sustainability of any future works as it has pledged to become a carbon neutral entity by 2030. To this end, in accordance with Camden's approach towards sustainable development within the borough (set out within Policies CS13 and DP22 in Camden Development Policies) the proposed works 'include measures to minimise the effects of, and adapt to, climate change' through mechanical and electrical design.

This proposal responds in an effective way to SOAS' curriculum needs as well as the comfort and wellbeing of both students and staff.

Appendix A: Fabric Drawings

Drawing & Document Register / Issue Sheet

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T: 01425 472833

Project Title:			Project Number:	Drawing Series:	Issue Sheet No:
External Plant Replacement			200171	Documents	1
We enclose copies of the drawings / documents etc listed below:			**Date of Issue:**		
Client:		**Day**	01		
School of Oriental and African Studies		**Month**	04		
		Year	20		
Drawing / Document Description	**Size**	**Drg / Doc No.**			
Design & Access Statement	A4	200171-0200	P1		
Heritage Statement	A4	200171-0210	P1		

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External Plant Replacement		200171	1000	2
We enclose copies of the drawings / documents etc listed below:		**Date of Issue:**		
Client:	**Day**	01		
School of Oriental and African Studies	**Month**	04		
	Year	20		

Drawing / Document Description	Size	Drg / Doc No.	
Site Location Plan	A4	200171-1100	P1
Block Plan	A4	200171-1150	P1
Existing Lower Ground Floor Plan	A0	200171-1201	P1
Existing Ground Floor Plan	A0	200171-1202	P1
Existing First Floor Plan	A0	200171-1203	P1
Existing First Floor Mezzanine Plan	A0	200171-1204	P1
Existing Second Floor Plan	A0	200171-1205	P1
Existing Third Floor Plan	A0	200171-1206	P1
Existing Fourth Floor Plan	A0	200171-1207	P1
Existing Fifth Floor Plan	A0	200171-1208	P1
Existing Elevation A	A1	200171-1300	P1
Existing Elevation B	A1	200171-1301	P1
Existing Elevation C	A1	200171-1302	P1
Existing Elevation D	A1	200171-1303	P1
Proposed Lower Ground Floor Plan	A0	200171-1401	P1
Proposed Ground Floor Plan	A0	200171-1402	P1
Proposed First Floor Plan	A0	200171-1403	P1
Proposed First Floor Mezzanine Plan	A0	200171-1404	P1
Proposed Second Floor Plan	A0	200171-1405	P1
Proposed Third Floor Plan	A0	200171-1406	P1
Proposed Fourth Floor Plan	A0	200171-1407	P1
Proposed Fifth Floor Plan	A0	200171-1408	P1
Proposed Elevation A	A1	200171-1500	P1
Proposed Elevation B	A1	200171-1501	P1
Proposed Elevation C	A1	200171-1502	P1
Proposed Elevation D	A1	200171-1503	P1

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Appendix B: Mechanical and Electrical Drawings and Outline of Works

Drawing Issue Sheet

HITEK CONSULTANTS LIMITED

Chartered Building Services Consulting Engineers

The Stables
Parsonage Farm
Hollow Hill Lane
Iver, Bucks, SL0 0JW
Telephone: 01753 650 310
Telephone: 0844 880 5701
Facsimile: 0844 880 5702

Project Name:	SOAS Research Block Feasibility
Project Number:	5974
Discipline:	Mechanical Services
Page No.:	1 of 1

We enclose copies of the drawings listed below

Date	Day	03	07	10	11	27	27	11	24	26					
of	Month	02	02	02	02	02	02	03	03	03					
Issue	Year	20	20	20	20	20	20	20	20	20					
Drawing No.	**Drawing Title**	**Scale**	**Revision**												
5974															
M101	Research Block - Roof indicative powermaster chiller and AHU layout location plan	1:100 @ A1		**P2**											
M102	Research Block - proposed riser details	1:100 @ A1		**P2**											
M103	Research Block - Roof indicative powermaster chiller and AHU layout location plan	1:100 @ A1	**P1**												
M110	Research Block - Roof indicative powermaster chiller and AHU layout Option 1	1:50@ A1					**P2**	**P3**	**P4**						
M111	Research Block - Roof indicative powermaster chiller and AHU layout Option 2	1:50@ A1							**P1**	**P2**					
M200	Research Block indicative CHW schematic	NTS@ A1				**P1**				**P2**					
M201	Research Block indicative CHW schematic interim cooling option	NTS@ A1				**P1**				**P2**					
M300	Philips Building - basement chilled water & electric service route to new chiller plant	1:50@ A1								**P1**					
M310	Research Block indicative floor vent and cooling services	1:50@ A1								**P1**					
M500	Research Block - Roof existing condensing units	1:50@ A1		**P1**						**P2**					
M600	Research Block - Roof indicative chiller and AHU layout Acoustic survey	1:100 @ A1			**P1**	**P1**									
Distribution															
Client:- SOAS - Stephen McKinnell						**1**				**1**					
Client:- SOAS - Christopher Smith					**1**	**1**									
Architect:- Kendall Kingscott - Mary Moran			**1**					**1**		**1**					
Architect:- Kendall Kingscott - Gavin Cowling			**1**			**1**		**1**		**1**					
Architect:- Kendall Kingscott - Kieren Stagg			**1**			**1**		**1**		**1**					
Architect:- Kendall Kingscott - Daiana Grundinska										**1**					
Quantity Surveyor:- Kendall Kingscott - Mark Finlayson										**1**					
Structural Engineer:-															
CDM Co-ordinator:-															
Project Manager:-															
Building Control:-															
Main Contractor:-															
Electrical Contractor:-															
Mechanical Contractor:-															
Acoustic Consultant:- LCP - Victoria Bond		**1**		**1**											
Supplier:- Powermaster - Steve Hartland.							**1**		**1**						
Purpose of Issue		P	P	P	P	P	P	P	P	P					
P = Preliminary, D = Stage D, E = Stage E, T = Tender, Cn = Construction, R = Record, I = Information, A = Approval, C = Comments															
Media		E	E	E	E	Pp	E	E	E	E					
Pp = Paper print, E = e-mail, CD = CD Rom, WT = WeTransfer, 4P = 4Projects															

Research Block adaptation Lower Ground to Third floors

Mechanical and Electrical adaptation

Background

The research block was constructed in 2005 and underwent further refurbishment in 2009 to address issues with heating and cooling. It is proposed that the existing rooms on the lower ground to third floors of the research block are adapted to form two teaching rooms on each floor with an acoustic dividing wall between them. The existing offices in the spaces will be removed although the server room on the second floor will remain.

The electrical services consist of small power and lighting fed from the riser in the lobby area.

Mechanical Services

Currently the floors have a low temperature hot water Variable Temperature perimeter radiator system for heating served from a central site wide heating system. The floors have individual heat recovery AHU's for ventilation. Ceiling recessed and wall mounted DX air conditioning units provide comfort cooling to the rooms. The AC system is interfaced with the VT heating system via a 2-port valve. There is BMS in the area for monitoring purposes only.

Heating

The existing perimeter heating radiator and finned tube radiators are served with individual heating circuits to each floor from a common riser. Pipework is routed through the ceiling void floor below and rise through the floor void to the heat emitter.

Ventilation and cooling

Typically the existing ventilation consists of a heat recovery air handling unit within the ceiling voids serving ceiling mounted diffusers. The floors have one or two heat recovery AHU's depending on the design occupancy. Each unit consist of inlet filters, electric heater battery, heat recovery plate heat exchanger, supply and extract fans. The units operate via 3 PIR sensors with a 25-minute run on timer.

The floors are provided with comfort cooling via 4 way ceiling mounted cassette units or wall mounted units subject to room size. The Indoor units are piped to connect to roof mounted VRV condensing units with three systems provided serving; lower ground and ground floors, 1st & 3rd floors and 2nd floor.

Proposals

Heating

The existing perimeter heating pipework runs at high level in the ceiling void of the floor below and is laid out in a reverse return arrangement. The pipework distribution will be revised to coordinate with the proposed ductwork and chilled water services and arranged to provide separate circuits to each space complete with a 2-port control valve interlocked with the space comfort cooling controlled via the BMS. Radiators to be provided where existing offices are removed creating the open plan teaching space.

Heating is also to be provided by the new ventilation system with a new CT circuit extended from the existing circuit in the lower ground floor corridor.

Ventilation and cooling

The existing ventilation and cooling systems on the floors is not deemed to be suitable for re-use due to its age and suitability for the new space configuration and should be removed.

The existing VRV systems shall be de gassed, with refrigerant recovered and equipment removed.

The existing ventilation systems will be removed with existing external louvres to the cladding system retained with the inside of the louvre blanked off and thermally insulated. The existing 2nd floor louvre to the south facing window to be removed and replaced with glazing.

It is proposed that fresh air and extract ventilation is provided via a new packaged roof mounted heat recovery AHU with fresh air and extract ductwork riser routed vertically through the Research Block to serve each floor.

Cooling to the spaces will be provided via ceiling mounted comfort cooling fan coil units served with chilled water. Chilled water and heating to each space to be interlocked as previously noted.

Each space will be controlled separately to account for differing occupancies and the units will be connected to the BMS to allow full control of temperature and air quality for the spaces. Controls within each space will also incorporate occupancy presence detection to ensure maximum energy efficiency. Where openable windows exist, these should either be locked shut or fitted with window switches to disable heating and cooling if they are opened.

Chilled Water

A new roof mounted air cooled Turbocore chiller shall be provided to roof level. This will generate chilled water to serve the new Research Block comfort cooling units to each floor via new chilled water pump sets and vertical riser.

There is an existing chilled water system in the adjacent Philips Building and there is a desire to upgrade this to assist with longer term aims linked to the refurbishment of the estate and the upgrade of the Bloomsbury Heat and Power system.

Currently there are two chillers located in the Philip Building basement extract chamber serving existing fan coil units to Level's E and F of the library and the cooling coil of the Kahili lecture theatre AHU. The chillers are rated at 90kW and 50kW and are connected to a common header. However, the full output of the units is not being utilised which indicates that there is spare capacity available. In addition to this, the existing units are not located in an ideal location in terms of plant efficiency, maintenance access and adaptability.

The proposed works include for the new roof mounted chiller to have additional capacity to serve the existing Philips Building cooling requirements with additional spare capacity to serve areas within the Philips and College building with existing and future cooling requirements. In order to facilitate this new risers to be installed in the College building riser void with tap-offs on each floor for connections to serve the Philips and the College buildings. At Lower Ground or Ground floor, the

pipework could run through to the Phillips Building and along to the North West Riser where it can connect into the existing chilled water system.

Electrical

Existing lighting to the Research Block shall be removed and replaced with new energy efficient LED lighting and controls to suit the classroom layouts and allow for use of a projector or screen. The controls will follow similar systems installed throughout the school and include PIR absence and daylighting controls with manual dimming facilities. New emergency lighting will be installed to suit the new refurbished room layouts.

The existing fire alarm system infrastructure wiring would be modified to all floors to account for the new room layout divisions. New smoke detectors with sounder and beacon bases would be provided within the rooms and ceiling voids to replace the existing ageing devices.

The existing sub-main cabling and distribution boards serving each of the floors are to be retained and reused within the new scheme to provide lighting and small power supplies to the individual floors.

New sub-main cabling from the Philips Building existing main switch panel within the basement boiler house electrical switch room will be provided to serve a new panel board to supply the new roof mounted chiller, pump sets and associated mechanical plant.

The existing small power installation is to be replaced to all rooms with new including the underfloor power track which is believed to be obsolete and non-availability of components would make retention, alteration and reuse difficult. The small power would be provided for general power and mechanical supply provision and to include the new AV installation making suitable allowance and arrangement for users to charge laptops, tablets and phones.

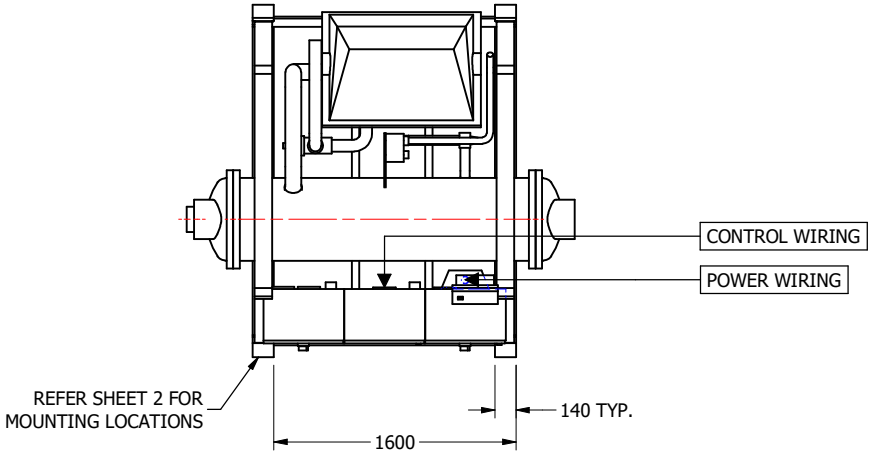
Existing data cabling is to be retained and altered to suit new refurbished scheme layout, where this is not possible new data cables are to be installed from the existing data cabinet at second floor level. The existing data cabinet and associated equipment such as UPS etc. are being retained.

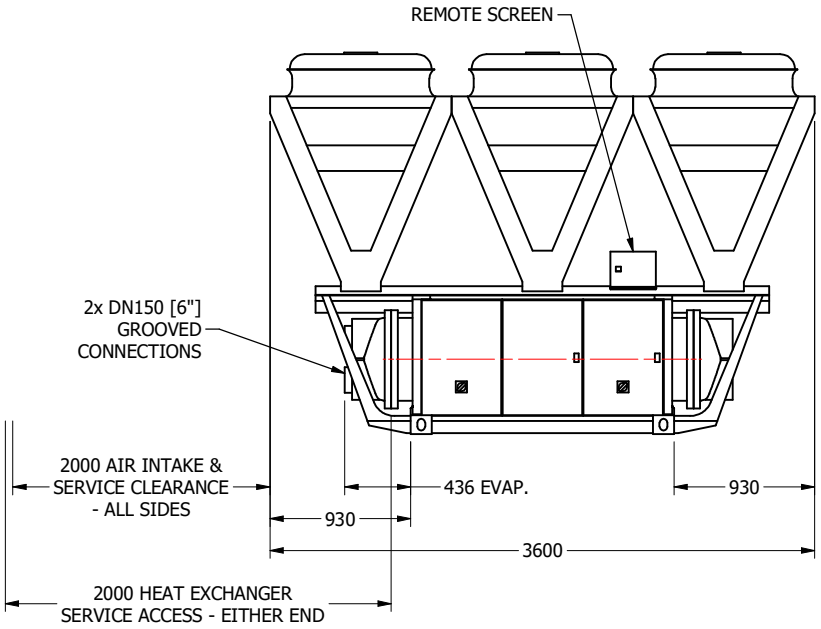
The existing access controls to the rooms are to be retained and altered to suit new door arrangement under the refurbished room division layout. New access controls to be provided to all new doors. The existing and new access controls are to use proximity card readers connected to the SOAS control system for managing the access and security requirements.

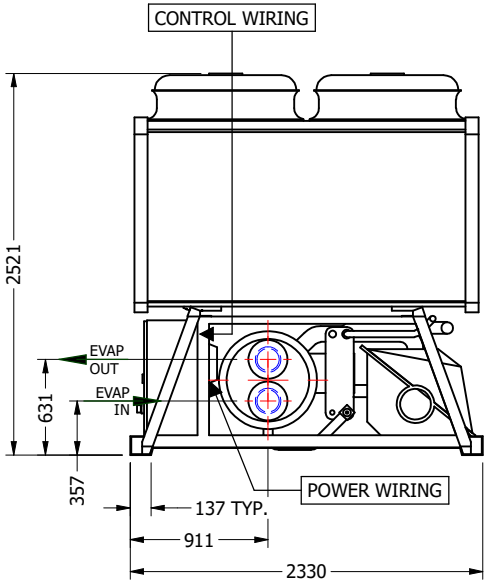
Appendix C: Structural Report

Appendix D: Product Information

NOTES:
1. DUE TO SMARDT'S POLICY OF CONTINUOUS PRODUCT IMPROVEMENT THE INFORMATION PROVIDED BY THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.
2. ALL PIPEWORK ATTACHED TO THIS UNIT TO BE SELF SUPPORTING.
3. THE FOUNDATION TO SUPPORT THE UNIT SHALL BE FLAT & MATCH THE MOUNTING LOCATIONS SHOWN ON SHEET 2..
4. OPERATING WEIGHT: 3080 kg
   SHIPPING WEIGHT: 2985 kg
   SHIPPING WEIGHT (UNCHARGED): 2805 kg







TOLERANCE ON OVERALL DIMENSIONS: ±10

REV	DATE	BY	APPR	ECO	DESCRIPTION
B	12/09/2018	MCC	MCC		PRODUCTION RELEASE

DRAWING UNITS IN METRIC
UNLESS OTHERWISE SPECIFIED
DO NOT SCALE THIS DRAWING

IMPERIAL TOLERANCES: X.XXX = ± 0.003, X.XX = ± 0.01, X.X = ± 0.05, X = ± 0.1, ANGLES ± 0°30' UNLESS OTHERWISE SPECIFIED
METRIC TOLERANCES: X.XX = ± 0.25, X.X = ± 0.5, X = ± 1

3rd ANGLE PROJECTION

SMARDT
SMARDT CHILLER GROUP INC.
MONTREAL MELBOURNE GUANGZHOU
PLATTSBURGH STUTTGART SINGAPORE
www.smardt.com

DRAWN BY	DATE	SIZE	SCALE
MCC	17/05/2018	A3	1:35

TITLE: DIMS AE040.1E.F4HCDA.A006xA.E10 (LH)

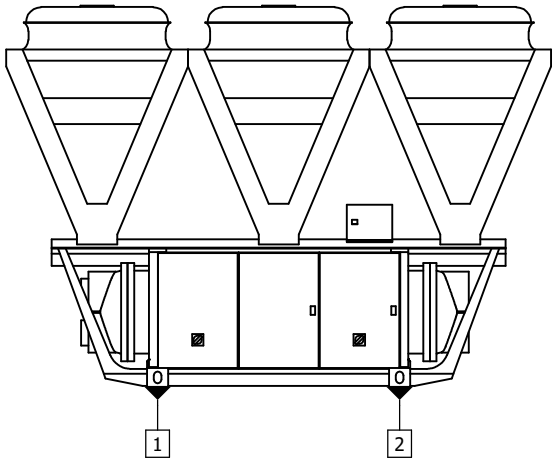
DWG. NO.	PART. NO.	REV	SHEET
55-0781-02	-	B	1 OF 4

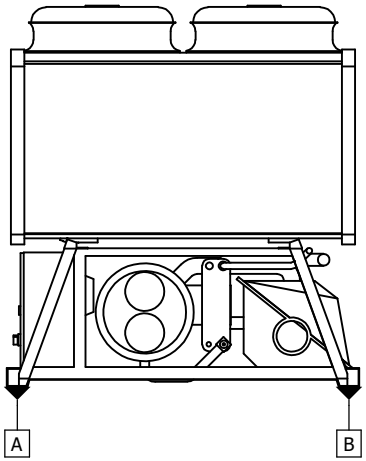
OPERATING WEIGHT DISTRIBUTION FOR:

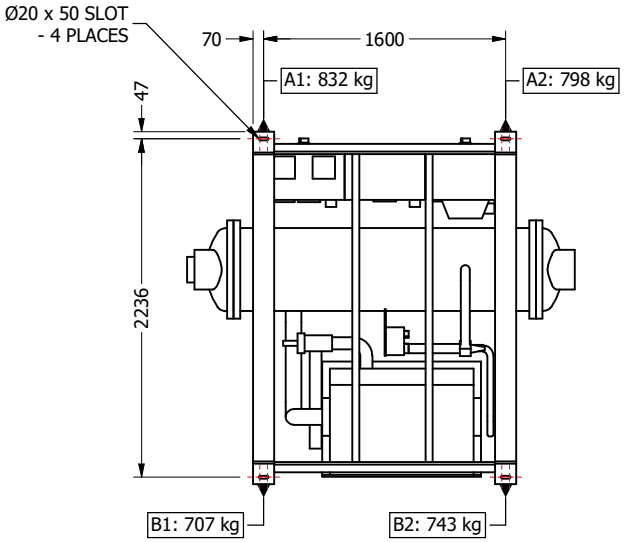
#XXXX

AE040.1E.F4HCDA.A006xA.E10

OPERATING WEIGHT: 3080 kg







NOTES:

1. THE FOUNDATION TO SUPPORT THE UNIT SHALL BE FLAT, AND SHALL SUPPORT THE LABELLED LOAD POINTS AS SHOWN ON THIS DIAGRAM.
2. THE WEIGHT AT EACH OF THE LABELLED LOAD POINTS **WILL NOT BE EQUAL**.
3. MOUNTING EQUIPMENT MUST BE SELECTED APPROPRIATELY FOR THE WEIGHT AT EACH POINT, AS DESCRIBED IN THE TABLE ABOVE.

REV	DATE	BY	APPR	ECO	DESCRIPTION
B	12/09/2018	MCC	MCC		PRODUCTION RELEASE

DRAWING UNITS IN METRIC
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DRAWN BY	DATE	SIZE	SCALE
MCC	17/05/2018	A3	1:35

TITLE: DIMS AE040.1E.F4HCDA.A006xA.E10 (LH)

DWG. NO.	PART. NO.	REV	SHEET
55-0781-02	-	B	2 OF 4

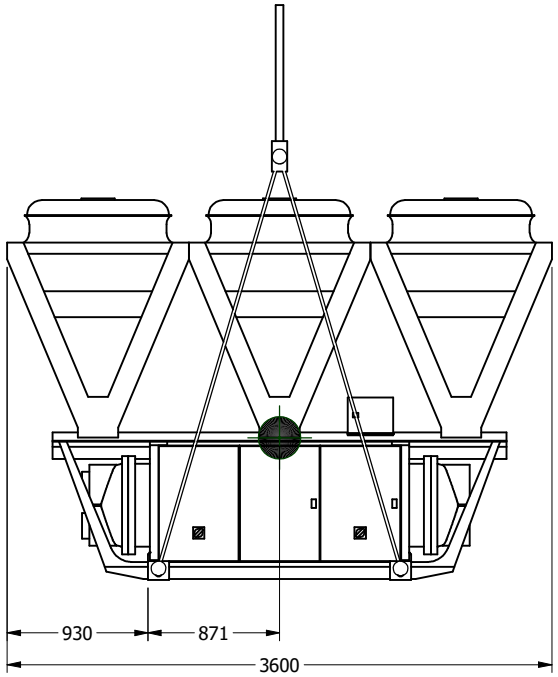
LIFTING INSTRUCTIONS FOR:

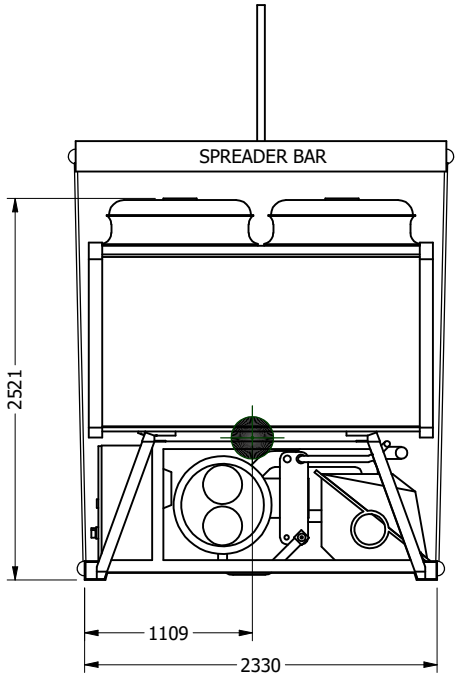
#XXXX

AE040.1E.F4HCDA.A006xA.E10

SHIPPING WEIGHT (CHARGED): 2985 kg

NOTES:
1. USE SPREADER BAR(S) AND ALL LIFTING POINTS PROVIDED.
2. LIFTING CHAINS/CABLES MUST BE ADJUSTED TO KEEP UNIT LEVEL WHILE LIFTING. ALL CHAINS/CABLES WILL NOT BE THE SAME LENGTH.
3. APPROXIMATE LOCATIONS OF CENTRE OF GRAVITY SHOWN.
4. DO NOT USE FORKLIFT TO MOVE UNIT.
5. AVOID SHOCK LOADS. LIFT SLOWLY.
6. REFER TO SHEET 2 FOR HOLD-DOWN BOLT LOCATIONS & LOADS AT THESE LOCATIONS.





DO NOT USE FORKLIFT TO MOVE THIS UNIT

TOLERANCE ON OVERALL DIMENSIONS ±10

REV	DATE	BY	APPR	ECO	DESCRIPTION
B	12/09/2018	MCC	MCC		PRODUCTION RELEASE

DRAWING UNITS IN METRIC
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METRIC TOLERANCES: X.XX = ± 0.25, X.X = ± 0.5, X = ± 1, ANGLES ± 0°30'
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3rd ANGLE PROJECTION

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DRAWN BY	DATE	SIZE	SCALE
MCC	17/05/2018	A3	NTS

TITLE: DIMS AE040.1E.F4HCDA.A006xA.E10 (LH)

DWG. NO.	PART. NO.	REV	SHEET
55-0781-02	-	B	3 OF 4

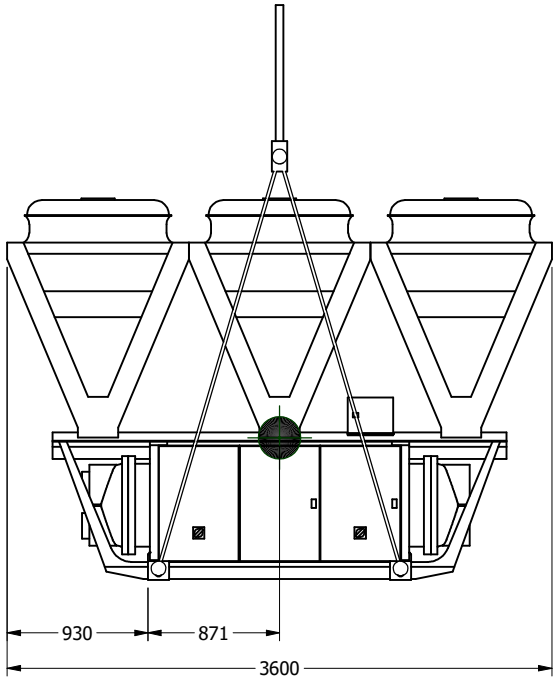
LIFTING INSTRUCTIONS FOR:

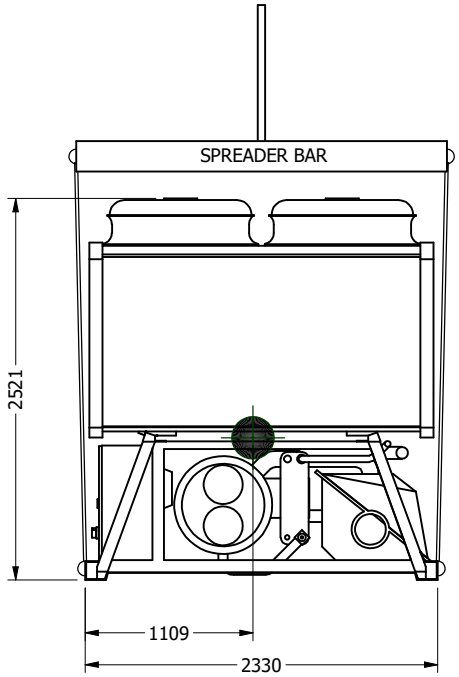
#XXXX

AE040.1E.F4HCDA.A006xA.E10

SHIPPING WEIGHT (**UNCHARGED**): 2805 kg

NOTES:
1. USE SPREADER BAR(S) AND ALL LIFTING POINTS PROVIDED.
2. LIFTING CHAINS/CABLES MUST BE ADJUSTED TO KEEP UNIT LEVEL WHILE LIFTING. ALL CHAINS/CABLES WILL NOT BE THE SAME LENGTH.
3. APPROXIMATE LOCATIONS OF CENTRE OF GRAVITY SHOWN.
4. DO NOT USE FORKLIFT TO MOVE UNIT.
5. AVOID SHOCK LOADS. LIFT SLOWLY.
6. REFER TO SHEET 2 FOR HOLD-DOWN BOLT LOCATIONS & LOADS AT THESE LOCATIONS.





DO NOT USE FORKLIFT TO MOVE THIS UNIT

TOLERANCE ON OVERALL DIMENSIONS ±10

REV	DATE	BY	APPR	ECO	DESCRIPTION
B	12/09/2018	MCC	MCC		PRODUCTION RELEASE

DRAWING UNITS IN METRIC
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3rd ANGLE PROJECTION

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DRAWN BY	DATE	SIZE	SCALE
MCC	17/05/2018	A3	NTS

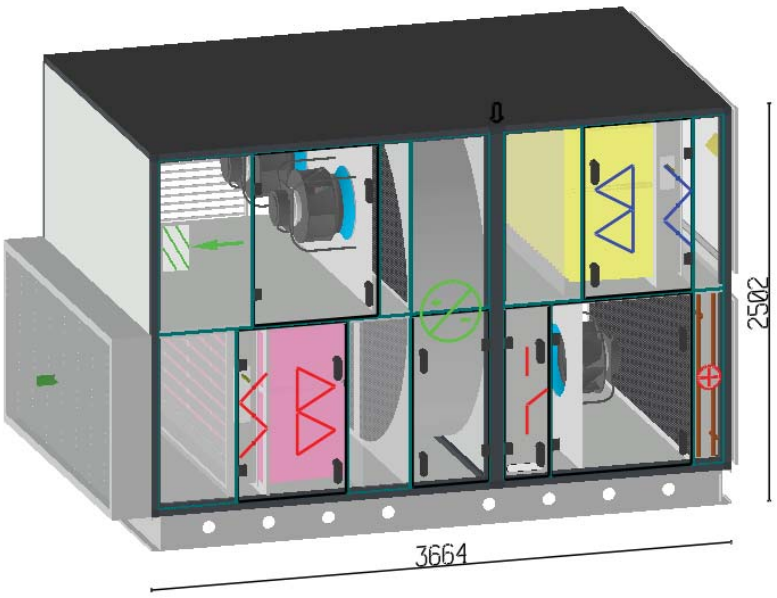
TITLE: DIMS AE040.1E.F4HCDA.A006xA.E10 (LH)

DWG. NO.	PART. NO.	REV	SHEET
55-0781-02	-	B	4 OF 4

Chiller Technical Data

Smardt Air Cooled Chiller		
Model		AE040.1E.006.DM010
No. of Units		1
Refrigerant		R513a
GWP		630
Performance		
Each Unit Providing (c/g)	kW	386
EER		3.13
SEER		5.9
Evaporator		
Evaporator Flow	l/s	15.34
From / To	°C	12/6
Pressure Drop	kPa	35.5
Ff	m2°C/W	0.000018
Condenser		
Condenser Air Flow	$m^3/_s$	37.7
Ambient	°C	35
Sound		
Sound Pressure Level at 1m	dB(A)	66 (option to reduce to 61)
Electrical Data		
Power Supply	Volts/Hz/Ph	400/50/3
Absorbed Power	kW	123.3
Max Full Load Current	Amps	210
Method of Starting		Inverter (<5Amps)
Physical Data		
Capacity Control		Inverter
Dimensions	mm	3600 x 2330 x 2520
Operating Weight	kg	2675

Unit no.: 10
Geniox 22 - Roof
Weight: 1951 kg
Unit width: 2282 mm



Air/fan data	Supply air	Extract air	Units
Airflow (1.205 kg/m³)	4.20	4.20	m³/s
Face velocity (unit)	1.86	1.86	m/s
External pressure	300	300	Pa
Fan speed	1905	1934	RPM
Motor; Voltage; Rated current	(2 x 3.40 kW) 6.80; 3x400; (2 x 5.40) 10.80	(2 x 3.40 kW) 6.80; 3x400; (2 x 5. 40) 10.80	kW/V/A
Sound break out	64 dB(A)		
Power supply	3x400V + N + PE 50 Hz		
Consumed current	24.6 A		
Filter Supply / Extract	F7 - ePM1 60% / M5 - ePM10 60%		
Heating, water	41.1 kW ; 13.9/22.0°C		
Medium	80/60°C ; 4.1 kPa ; 0.51 l/s ; 1 1/4" / 1 1/4" Pipe connections		

Energy	Dimensioning	Average	Fans [kWh/year 8760 hours]
Heat Recovery (Wet / Dry)	75.5 % / 76 %	75.5 % / 76 %	
SFPv, clean filters including speed control	1.77 kW/(m³/s)	1.77 kW/(m³/s)	65128 kWh
	2018		
Ecodesign approved	Yes		

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Birmingham

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www.systemair.co.uk
Bob.Sproston@Systemair.co.uk

Appendix E: Photo Schedule

			
Access from fourth floor to external terrace at roof level	**Riser cupboard at each floor proposed for chiller pipework route**	**Existing ventilation duct housing at second floor to be removed**	**North west elevation link corridor from Philips Build**
			
Exiting roof-mounted chiller units supported on steel beams	**View facing west showing lift motor room and access steps**	**Access door to external terrace at roof level**	**Rear face of parapet wall showing location of proposed external ductwork route**