

UCL Wilkins Building Replacement of Mechanical Services

Fan Coil Unit Selection for Provost's Dining Room
and Whistler Room

UCL Estates

14 June 2019



Notice

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This document has 12 pages including the cover.

Document history

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Abbreviations

FCU	Fan Coil Unit
CHW	Chilled Water
LTHW	Low Temperature
AHU	Air Handling Unit
BMS	Building Management System

Introduction

The purpose of this document is to present the details of the proposed mechanical installations that will enable controlled heating and cooling in the Provost's Dining Room and Whistler Room and obtain planning permission.

1. Introduction

1.1. Executive Summary

The Wilkins Building is a Grade 1 listed building and therefore all works to the building will be subject to Listed Building Consent. The building was completed in phases from 1827 to 1881, with substantial rebuilding following bomb damage during World War 2.

This report has been prepared to obtain a planning approval and Listed Building Consent for the proposed Fan Coil Units for THE Provost's Dining Room and Whistler Room, as well as the associated Low Temperature Hot Water (LTHW), Chilled Water (CHW) and condensate pipework. Atkins have surveyed the existing services within the building to understand the demand, best routes for new pipework and the location for the new Fan Coil Units (FCUs).

1.2. Planning Consent

Listed building consent is required for all works of demolition, alteration or modifications that affect the character of the Wilkins Building as a building of special historic interest.

Section 7 of the Planning (Listed Building and Conservation Areas) Act 1990 (LBCA Act) provides that, subject to the following provisions of the Act, no person shall execute or cause to be executed any works for the demolition of a listed building or for its alteration or extension in any manner which would affect its character as a building of special architectural or historic interest, unless the works are authorised.

The works at Wilkins Building will therefore require plans and specifications approval for the proposed systems and associated equipment.

This report provides sufficient details to allow the impact of the works on the building to be properly assessed.

2. Existing Services

2.1. Whistler Room Heating

At present the Whistler Room has no cooling or heating however according to BMS photos from UCL Estates it is apparent that there is a form of tempered fresh air ventilation in the room with temperature and operation control. This system is understood to be supplied by the JBR Upper Refectory Air Handling Unit (AHU) however the status of the system operation is still to be confirmed by UCL Estates. If the system in place is functional, then the controls will be integrated with the fan coil units proposed below to ensure a harmonic system. There is no heating or cooling at present in the Provost's Dining Room.

3. Proposed Services

3.1. Fan Coil Unit Selection

The selected FCUs are the Lowline 220 EC series by Diffusion. These are waterside FCUs fitted with high efficiency EC/DC motors and can be ordered as chassis only or cased. The cased option does not match the aesthetic of the Provost Dining Room or the Whistler Room therefore the FCU casing will have to be chosen separately as explained in section 3.2.

3.1.1. Provost Dining Room

The fan coil unit selected for this space is the Lowline 220 EC – L22AEC-WVCH-18/4-CH/CAV/CAH – Left Hand Unit (Chilled water (CW) and Low Temperature Hot Water (LTHW) pipework connects to and from FCU on the left-hand side) with a vertical air inlet. The heating capacity for this unit is 6.75 kW and the sensible cooling capacity is 4.67 kW to serve a total heat loss of 3.7 kW and total sensible heat gain of 4.07 kW. Further technical information can be found in Appendix B.

3.1.2. Whistler Room

The fan coil unit selected for this space is the Lowline 220 EC - L22AEC-WVCH-12/2-CH/CAV/CAH – Right Hand Unit (Chilled water (CHW) and Low Temperature Hot Water (LTHW) pipework connects to and from FCU on the left hand side) with a vertical air inlet. The heating capacity for this unit is 4.3 kW and the sensible cooling capacity is 2.7 kW to serve a total heat loss of 1.31 kW and total sensible heat gain of 2.55 kW. Further technical information can be found in Appendix B.

3.2. Architectural Casing

In order to obtain planning consent, it is proposed that the Fan Coil Unit chassis selections are cased in appropriate casing that matches the spaces aesthetic design as per UCL Estates choice to obtain planning consent. Similar arrangements can be seen in the spaces below:

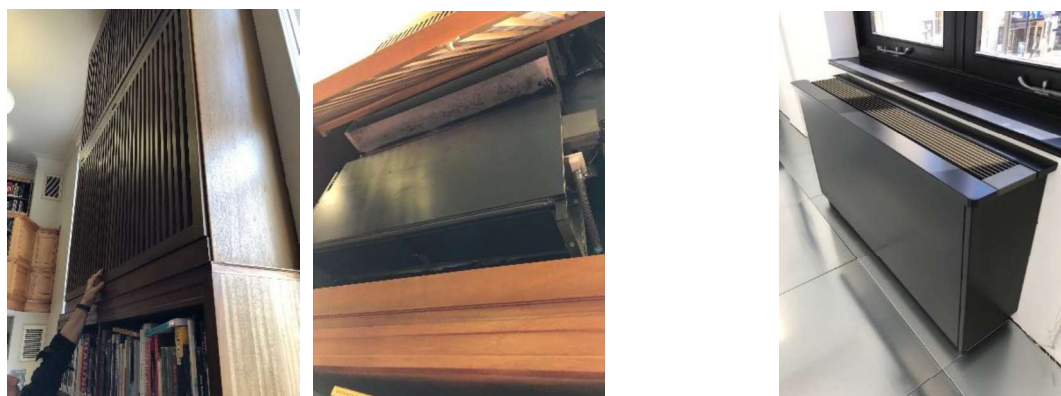


Figure 3-1 - An example of Fan Coil Unit casing in the 2nd floor of the library in the Wilkins Building (left) and an example of bespoke architectural Fan Coil Unit casing (right)

3.3. Associated Services

3.3.1. LTHW and CHW Pipework

The riser in server room G11 will serve the chilled water flow and return pipes and the low temperature hot water flow and return pipes. The pipework connecting from and to the riser will be sized to serve both fan coil units in both rooms. The pipework will route along the adjacent staircase wall at high level and drop to low level serving the fan coil unit in the Provost Dining Room with the branch connection flow/return pipework serving the fan coil unit in The Whistler Room. The pipework will be completely concealed behind existing cupboard and benching in the room to not affect the room appearance. There are two proposed options for the routes shown in the drawing found in Appendix A.

3.3.2. Condensate Pipework

The condensate pipework from both fan coil units were proposed to connect at a common point before exiting the building fabric into the surface water drainage channel. However, site surveys have shown that it is more feasible to keep the condensate pipework from each FCU separate as shown in Appendix A. The pipework will not incorporate a pump to avoid potential failure in operation and increased maintenance. Instead the

condensate will flow to the surface water drainage channel via gravity. The floor level height difference between the Whistler Room and Provost's Dining Room is sufficient to ensure a flow of condensate to the outside drainage channel.

3.3.3. Power Supply

The power supply to the proposed fan coil units will be provided from the existing distribution board DB-5/LGPLD located at high level in G90. New circuits will be provided from 2 no. spare ways in the distribution board. The existing trunking will be utilised as cable containment routed from the distribution board to 'Provost Dining Room – G10'. It is proposed that within 'Provost Dining Room – G10' and Whistler Room – G09D' cable will be contained within steel conduits. The cable conduit to G09D will be routed through G10, penetrated through the common brick wall to enter G09D. The circuits will be terminated in surface mounted switched fused connection units.

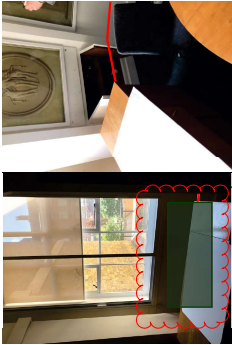
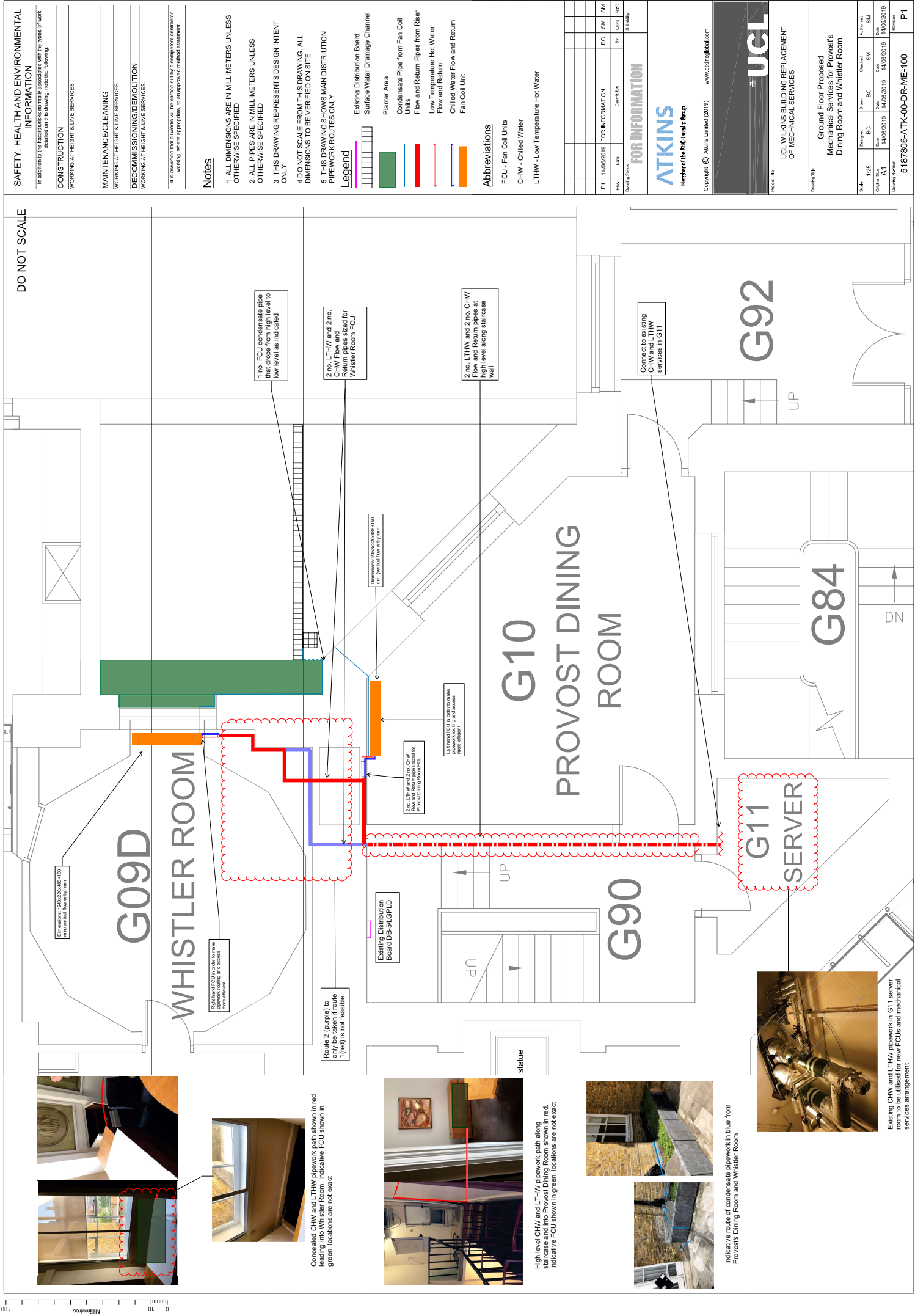
3.3.4. Controls

Diffusion use Trend as the controls BMS for their Fan Coil Units. UCL uses Trend in several areas around campus which makes compatibility easier across the network. Atkins will investigate the connection of outstation to existing network.

Appendices



Appendix A. Ground Floor Proposed Mechanical Services for Provost's Dining Room and Whistler Room



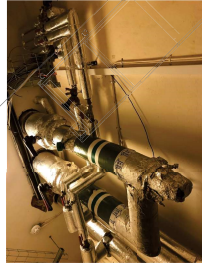
Condensate CHW and LTHW pipework path shown in red leading into Whistler Room. Indicative FCU shown in green, locations are not exact



High level CHW and LTHW pipework path along the wall in the Provost Dining Room. Indicative FCU shown in green, locations are not exact



Indicative route of condensate pipework in blue from Provost's Dining Room and Whistler Room



Existing CHW and LTHW pipework in G11 server room to be utilised for new FCUs and mechanical services arrangement

Appendix B. FCU Dimensions

LOWLINE 22-WV - GENERAL ARRANGEMENT DETAILS

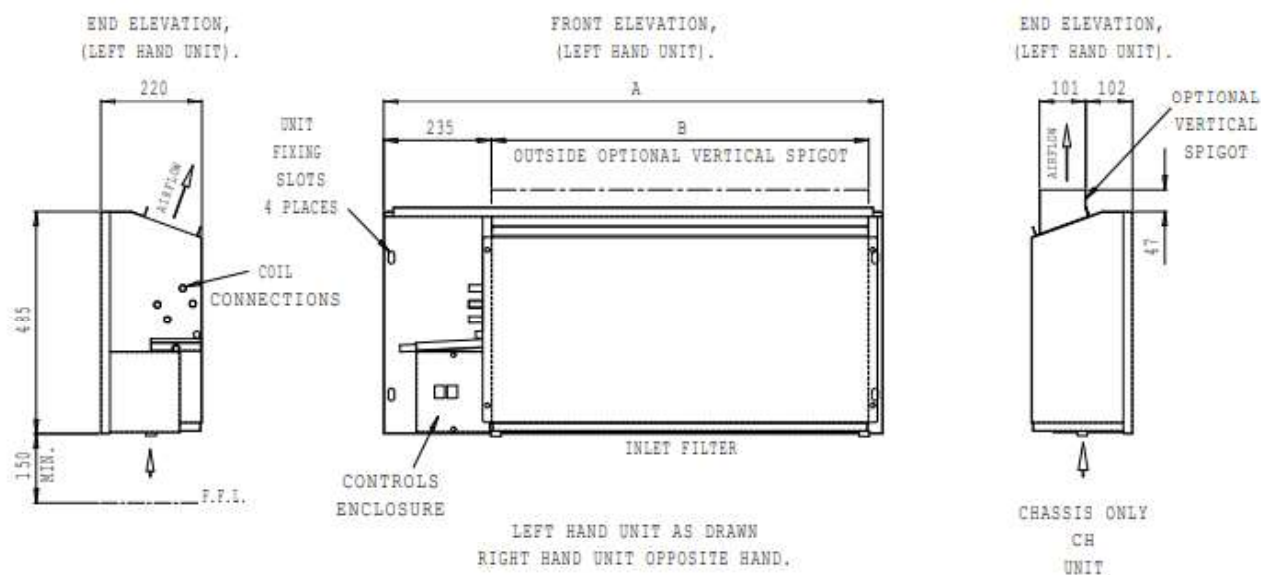


Figure B-1 - Typical FCU dimensions for Lowline series

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