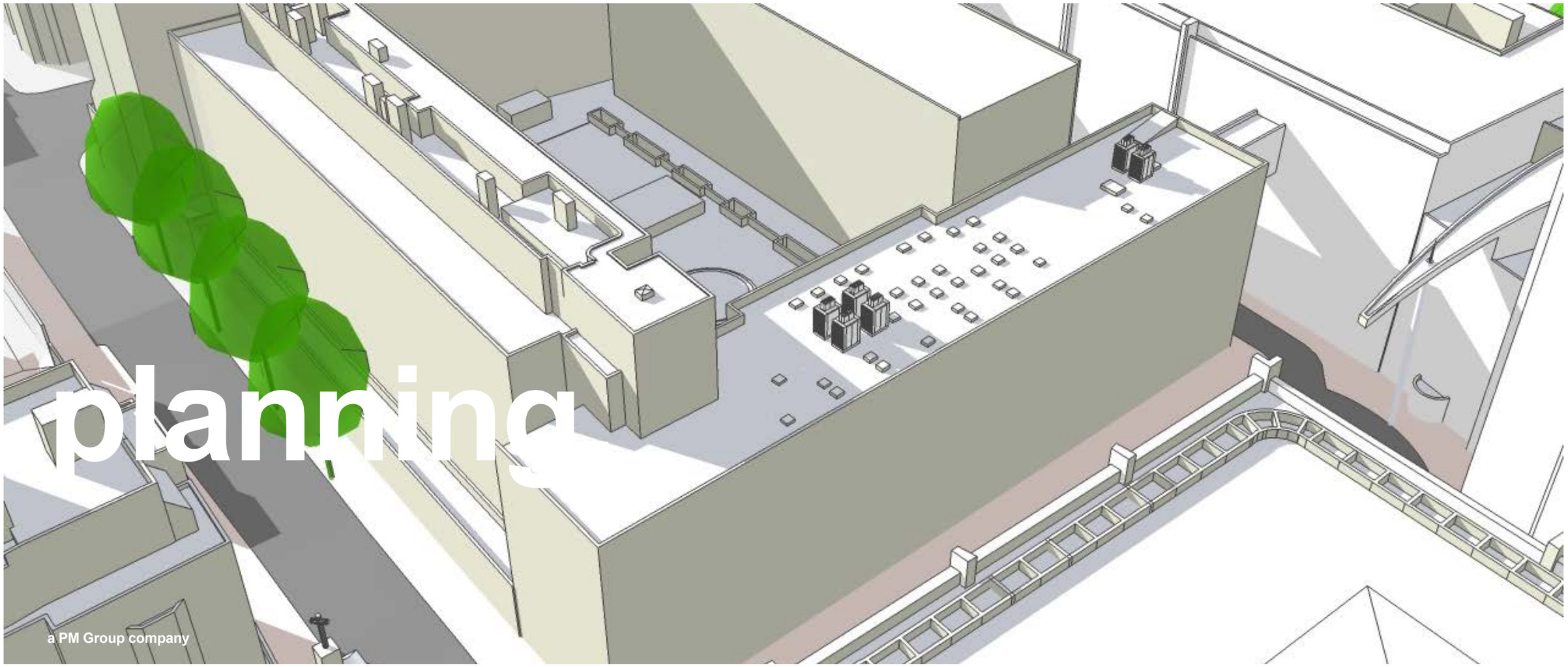
Devereux

Replacement of Air Conditioning Units, to the Roof of the 4th Floor of Maple House

Design & Access Statement - issue 2, December 2015



a PM Group company

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Reference	Issue Number	Date	Intial
GB101010830	**Issue 1**	**08.07.2015**	**RJ**
GB101010830	**Issue 1**	**10.07.2015**	**RJ**
GB101010830	**Issue 2**	**23.12.2015**	**RJ**

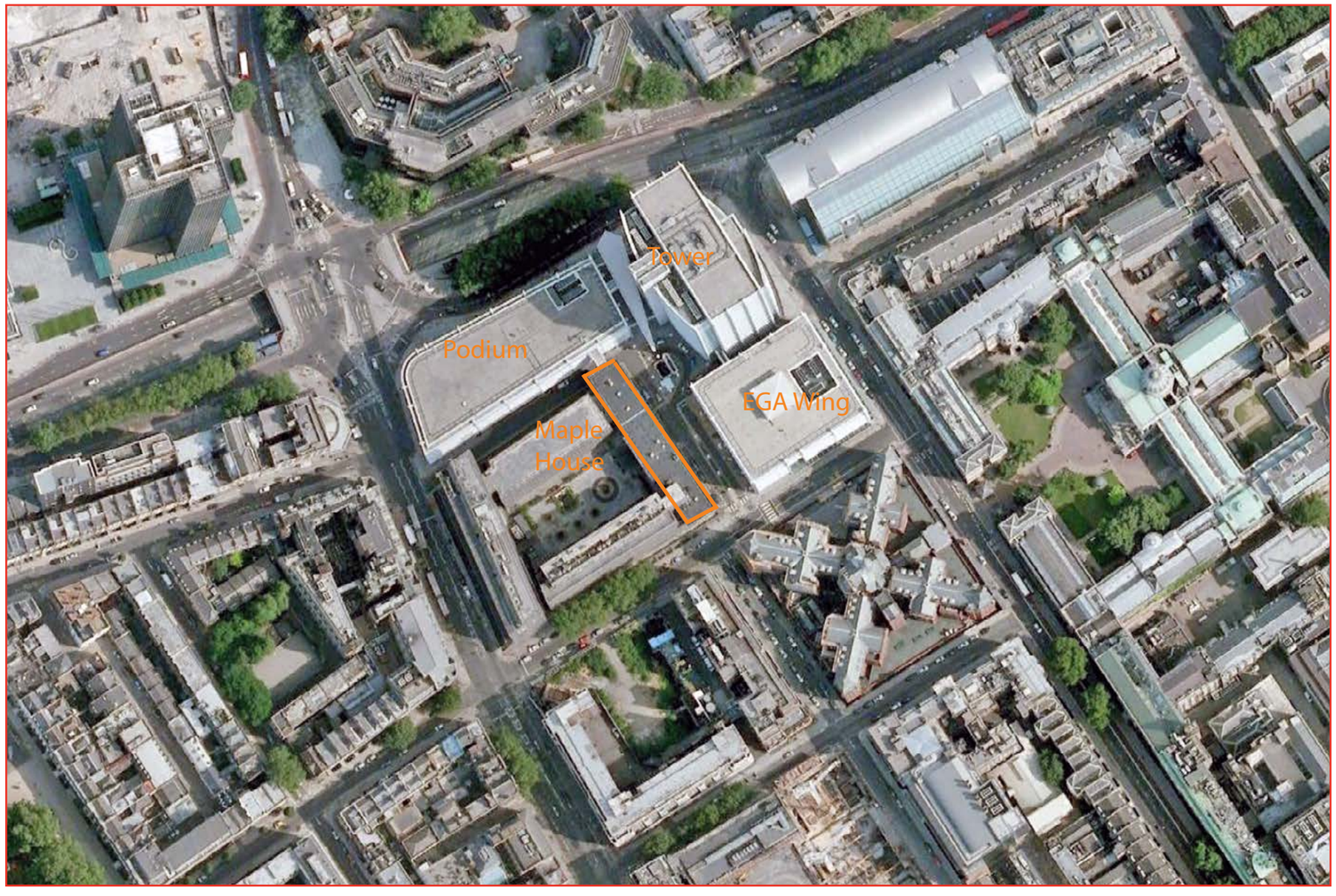
Contents

Executive Summary

This document is the Design and Access Statement in support of a full planning application for the replacement of three existing air conditioning units with six smaller units.
These smaller units vill be encapsulated with standardised acoustic enclousures.

- The current dimensions of the existing three air condition units are 1770 mm height x 990 mm width x 790 mm depth each.
- The dimensions of the six replacement units 1680 mm height x 640 mm width x 770 mm depth each.
- the dimensions of the six acoustic enclousures will be 1720 mm wide x 1235 mm deep x 2180 mm high, with two cylindrical discharge attenuators 600 mm high above the top of the enclousure.

This document includes a revised Noise Survey report produce by Hilson Moran, site photographs and CGI's of the proposal.



Above Aerial View

Executive Summary

THE SITE – EXISTING

The Site is situated centrally within the main University College London Hospital (UCLH) campus on the roof of Maple House. The fourth floor of Maple House is directly linked by a bridge to the third floor of UCLH's Podium Building.

THE BRIEF

The proposal consists of replacing three existing air conditioning units, which provide ventilation for UCLH's 12 theatre staff changing facilities, with six smaller air conditioning units. The existing air conditioning units are located on the on the roof of the fourth floor of Maple House above these changing facilities.
The heights of the new six air conditioning units (1680 mm) are lower than the existing units. (1770 mm)
The six new air conditioning units will improve the efficiency of the ventilation to the staff changing for the 12 operating theatres at UCLH.
Based on a revised Noise Survey report, 03 December 2015, to ensure the noise levels of the air conditioning units are reduced, six acoustic enclosures, with attenuated louvres have been introduced.
The expectation is thet these enclousures will provide an overall reduction of 10-12 dba

THE DESIGN PROPOSAL

The design proposal is to replace the existing three air conditioning units with six air conditioning units. The new air conditioning units will be located in the exact same location as the existing which is on the roof of the fourth floor of Maple House.

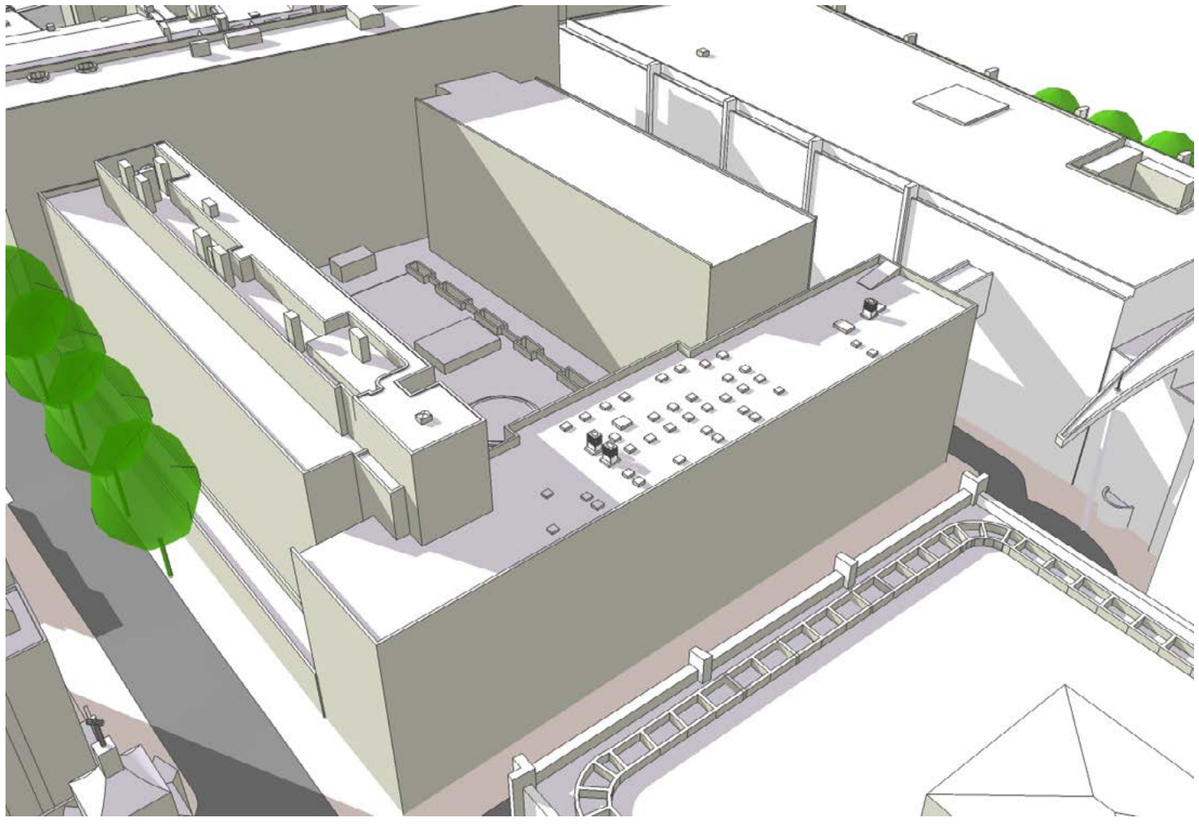
CONTEXT

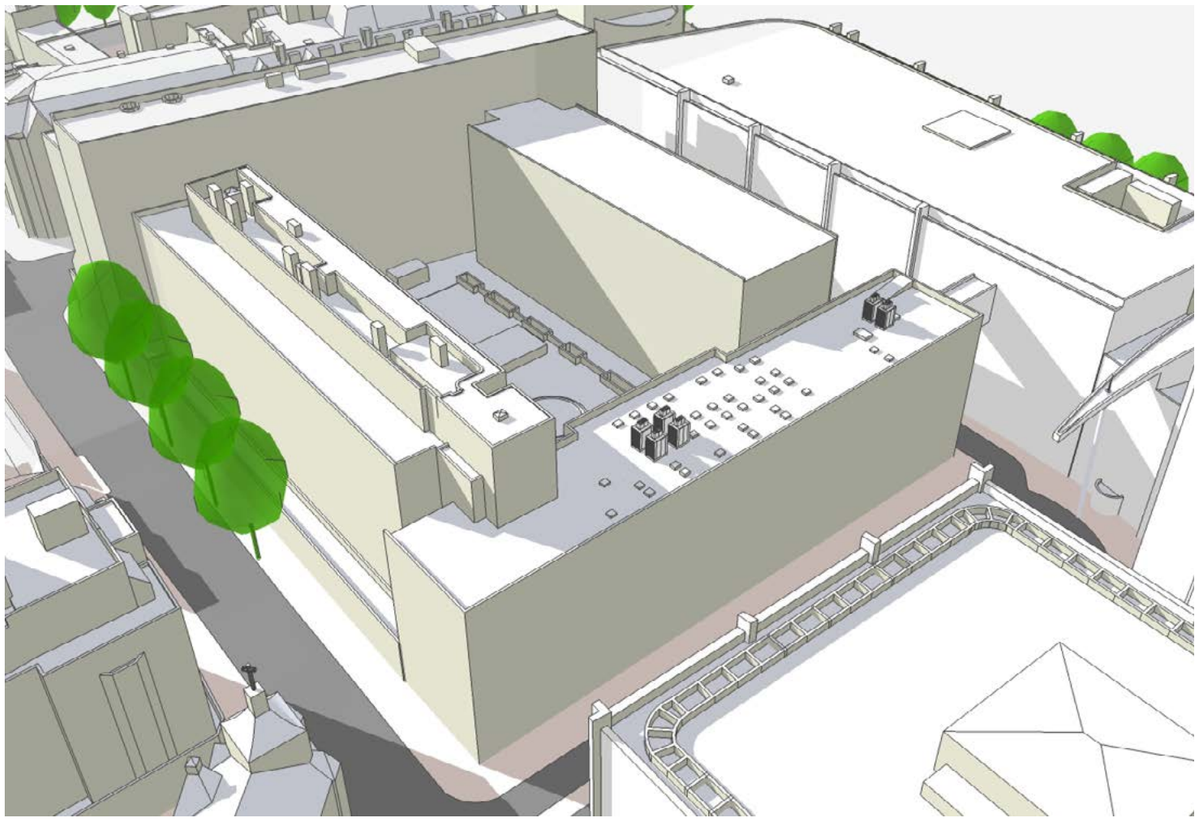
UCLH (Maple House) is located within the Bloomsbury area of central London, and is bordered to the north by UCLH's Podium building, to east by Beaumont Place and UCLH's EGA Wing, to the south by Grafton Way and to the west by the A400 Tottenham Court Road. The surrounding buildings range in height from 5 to 18 storeys. The three existing air conditioning units are fitted to the roof of the fourth floor of Maple House. The four storey UCLH podium building is located immediately to the North, and is physically linked on the third floor to Maple House's fourth floor by a bridge.

UCLH falls within the Central London Area designation of the adopted Proposals Map. The area immediately to the South and East of the site is also occupied by various University College London (UCLH) building including the Grade II listed Cruciform building opposite the site on Grafton Way. The site is not located in the Bloomsbury Conservation Area, although the boundary of this designation is just south of the site on Grafton Way.

CONTEXT – VIEW CORRIDOR

The design proposal for the replacement of the six air conditioning units with acoustice enclosures is set below the View Corridor from Parliament Hill oak tree to the Palace of Westminster. The calculated height of the view corridor across the proposed site is approximately 57.068m. The current height of the existing Maple House roof parapet is 51.07m, the height of the new air conditioning units will appear 600 mm above Maple House parapet and fall below the viewing corridor height thresholds.

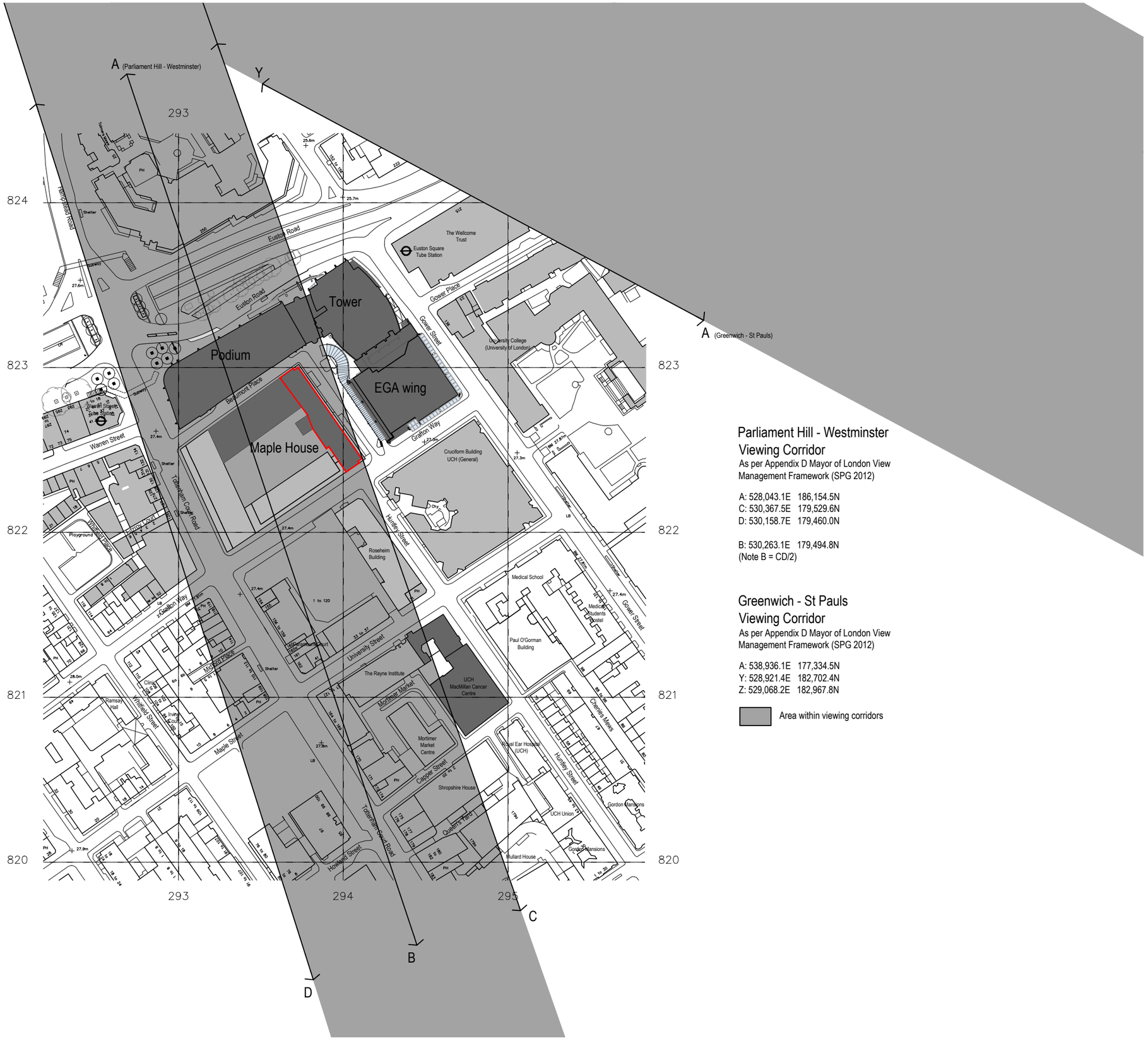




Left Existing perspective view showing the three existing air conditioning units
Right Proposed perspective view showing the proposed position of six new air conditioning units

Introduction

The University College London Hospital is a teaching hospital. It is part of the University College London NHS Foundation Trust and is closely associated with University College London (UCL). UCLH currently has 665 in-patient beds, 12 operating theatres and houses the largest sing critical care unit in the NHS. It is a major teaching hospital and a key location for the UCLH Medical School. It is a major centre for medical research and part of both the UCLH/UCL Biomedical research Centre and the UCL partners Academic Health Science Centre. The new air conditioning units will serve the staff changing facilities of the 12 operating theatres. The staff changing facilities are located on the 4th floor of Maple House which is physically linked by a bridge to the third floor of the UCLH's podium building where the 12 operating theatres are situated.



Site Views

Above View from corner of Grafton Way and Beaumont Place

Above Top View from the window of the 6th Floor of the Tower

Above Bottom View from Grafton Way

Above Top View looking East from Grafton Way

Above Bottom A view of Beaumont Place

Layout

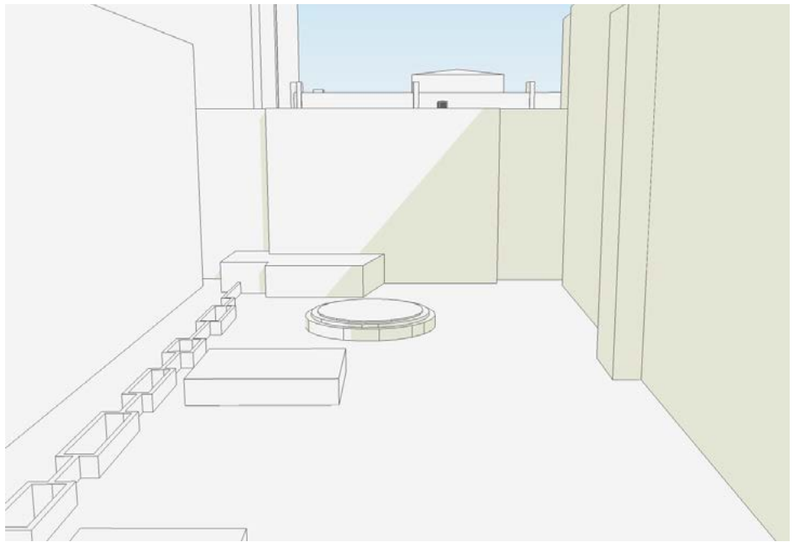
The existing three air conditioning units are located on the roof of the fourth floor of Maple House. The roof of Maple House is bounded by UCLH's Podium Building to the north, Beaumont Place and the EGA Wing to the East, and Grafton Way to the South. The A400 Tottenham Court Road is situated to the west of the Maple House.

The proposed six replacement air conditioning units will be located in the same location as the existing units, on the roof of the fourth floor of Maple House.

The six new air conditioning units will improve the efficiency of the ventilation to the staff changing facilities of the 12 operating theatres at UCLH.

The six new air conditioning units are not visible from street level.

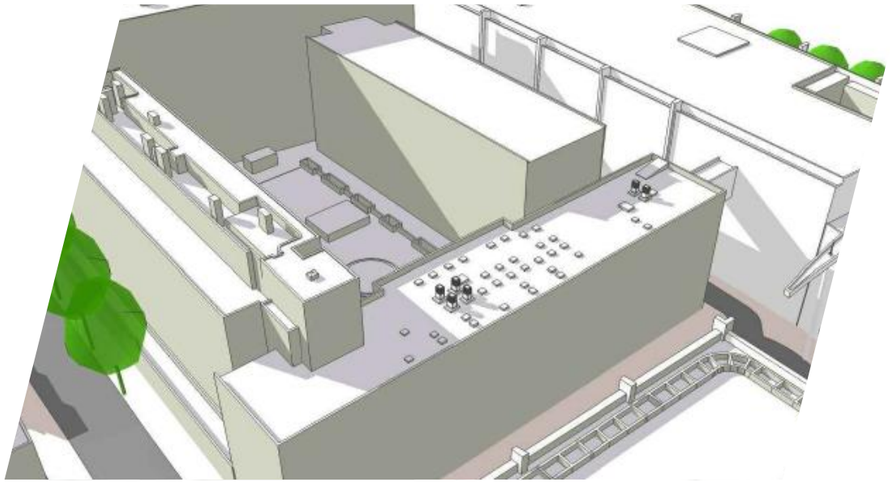
The new air conditioning units will be white panels with grey louvres.



Top Left Floor level view from Maple House Courtyard
Top Right Street level view from corner of Beaumont Place and Grafton Way
Bottom Left Air conditioning units will be white panels with grey louvres
Bottom Right New acoustic enclosures encapsulating air conditioning units

Appendix 1
Noise Report Survey

HILSON MORAN



Noise Survey Report

DATE OF ISSUE: **3 DECEMBER 2015**
REVISION NUMBER: **01**
HM REFERENCE: **20368-01/A/NS01/01**

PROJECT:

Maple House
London

CLIENT:

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HILSON MORAN

PROJECT NAME: **Maple House**
REPORT NAME: **Noise Survey Report**

ISSUE STATUS: **FINAL**
HM REFERENCE: **20368-01/A/NS01/01**

DATE OF ISSUE: **3 DECEMBER 2015**
REVISION NUMBER: **01**

AUTHOR: **SEBASTIAN WOODHAMS**
CHECKER: **NICHOLAS JONES**
APPROVER: **NICHOLAS JONES**

DOCUMENT HISTORY:

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01	3/12/2015	DOCUMENT ISSUED EXTERNALLY.

Contents

1. EXECUTIVE SUMMARY

It is proposed to replace items of plant on the rooftop of Maple House at UCLH in London. The plant items are subject to noise limits specified by Camden Borough Council.

Hilson Moran has undertaken an environmental noise survey at the site, in order to determine prevailing background noise levels that are representative of the nearest identified noise sensitive properties located below the proposed plant location.

The results of the noise survey were considered reasonable, considering the location of the measurement position and the existing dominant nearby noise sources.

External plant noise limits have been proposed based on the requirements of Camden Borough Council.

An assessment has been undertaken in order to assess noise emissions from the replacement plant in relation to Camden Borough Council's plant noise requirements.

The results of the assessment indicate noise emissions from the proposed building services plant should meet the requirements of Camden Borough Council.

2. INTRODUCTION

It is proposed to replace items of plant on the rooftop of Maple House at UCLH in London. The plant items are subject to noise limits specified by Camden Borough Council.

Hilson Moran has been appointed to undertake an environmental noise survey at the site in order to determine prevailing background noise levels that are representative of the nearest noise sensitive properties.

The purpose of this report is to use the noise survey results in assessments to predict the noise impact of the building services plant on the nearest noise sensitive receptors.

Following this introductory section, a description of the measured site and environmental noise survey methodology is given in Section 3. The results of the survey are presented in Section 4 and Appendix B. Noise limits and the plant noise calculation are presented in section 5.

Appendix A presents an explanation of the acoustic terminology used in this report.

Maple House London
Noise Survey Report

3. SITE DESCRIPTION & NOISE SURVEY METHODOLOGY

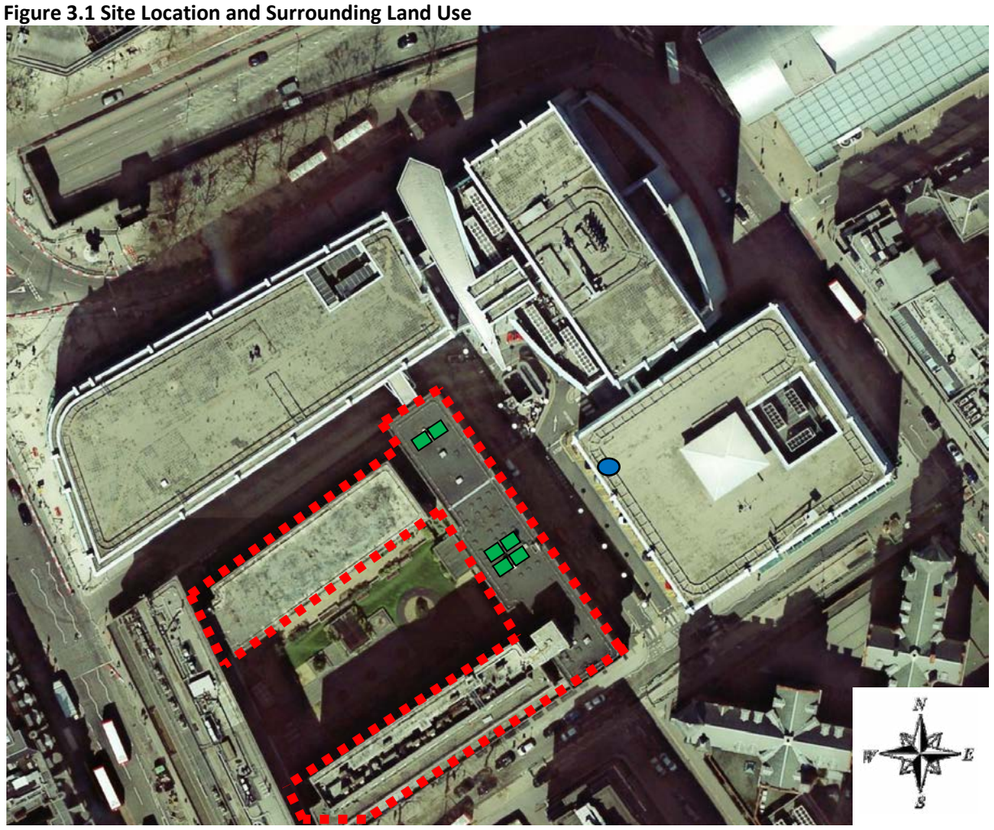
The new plant will be located on the roof of Maple House at UCLH in London. The plant location is bounded by hospital buildings to the north and east, and nurse accommodation to the south and west.

An unmanned environmental noise survey was undertaken at a single measurement location at the site between approximately 13:00 hours on Wednesday 22 October 2014 and 12:45 hours on Thursday 23 October 2014.

L_{Amax}, L_{Aeq} and L_{A90} noise levels were measured throughout the noise survey.

Figure 3.1 shows the nearest identified residential properties highlighted in **red**, the proposed plant location in **green** and the measurement position indicated in **blue.**

Figure 3.1 Site Location and Surrounding Land Use



The measurement microphone was attached to a railing at the perimeter of the roof on the western edge, facing towards the nurse accommodation.

The measurement position is considered representative of background noise levels at the nearest noise sensitive properties.

The equipment used for the noise survey is summarised in Table 3.1.

Table 3.1 Description of Equipment used for Noise Survey

Equipment	Description	Quantity	Serial Number
01 dB Solo	Type 1 automated logging sound level meter	1	60447
01 dB PRE 21	Type 1 ½" microphone and pre-amplifier	1	13259
01 dB BAP 21	Outdoor microphone casing	1	10935
01 dB CAL 21	Calibrator	1	50441990

Due to the nature of the noise survey, i.e. unmanned, we are unable to comment on the weather conditions throughout the entire noise survey period. However, at the beginning and end of the survey period, there was noted to be no rainfall, a minimally cloudy sky and only light wind. These conditions are understood to be representative of the whole survey period and are considered appropriate for undertaking environmental noise measurements.

The noise monitoring equipment used was calibrated before and after the noise survey period. No significant change was found. Equipment calibration certificates can be provided upon request.

4. NOISE SURVEY RESULTS & OBSERVATIONS

4.1. Noise Survey Results

Appendix B presents a time history graph showing the measured L_{Amax}, L_{Aeq} and L_{A90} noise levels.

The lowest background noise levels measured during daytime hours (07:00 – 23:00 hours) and night time hours (23:00 – 07:00) are presented in Table 4.1 below.

Table 4.1 Lowest Measured Background Noise Levels

Lowest Measured Background Noise Level	
Daytime (07:00 – 23:00 hours) $L_{A90\ (1\ hour)}$ (dB)	**Night-time (23:00 – 07:00 hours) $L_{A90\ (5\ minute)}$ (dB)**
62	61

4.2. Observations

Due to the nature of the unmanned noise survey we are unable to comment on the exact noise climate throughout the entire survey period.

However, at the beginning and end of the survey period, the daytime noise climate was noted to be affected most by noise from plant located on the roof of Maple House.

We anticipate that plant noise in the general vicinity would also be the dominant source of noise during night-time periods.

5. BUILDING SERVICES PLANT NOISE IMPACT ASSESSMENT

This section assesses the potential noise impact due to the new items of building services plant.

5.1. Assessment Criteria

The site lies within the jurisdiction of Camden Borough Council, whose typical requirement is for plant noise to be 10dBA below the background noise level. As such, noise emissions from the proposed plant would normally be limited to a level 10 dB less than the lowest background noise levels.

However, from our observations whilst on site and the time history graph in Appendix B, the background noise climate was mostly affected by plant located on the roof of Maple House. Because of this, we have specified noise limits which we consider to be more appropriate in relation to the actual background noise levels (in the absence of existing plant noise).

Our proposed plant noise limits are shown in Table 5.1, which are to be achieved during the relevant period when measured 1m external to the nearest noise sensitive windows.

Table 5.1 Proposed External Plant Noise Limits – Noise Sensitive Properties

External L_{Aeq} Plant Noise Limit during Plant Operating Period (dB)	
Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**
42	41

The noise limits in Table 5.1 should be reduced by 5 dB if the plant contains any observable, tonal characteristics.

5.2. Predicted Plant Noise Levels

The proposed items of plant located within the plant compound are as follows:

- VRV System 1 – Daikin RQCEQ360P
- VRV System 2 – Daikin RQCEQ280P
- VRV System 3 – Daikin RQCEQ360P

The units are to be located in an acoustic enclosure providing attenuation of 10 dBA.

The plant noise calculation for the above units is presented in Table 5.2 below.

Table 5.2 Plant Noise Calculation

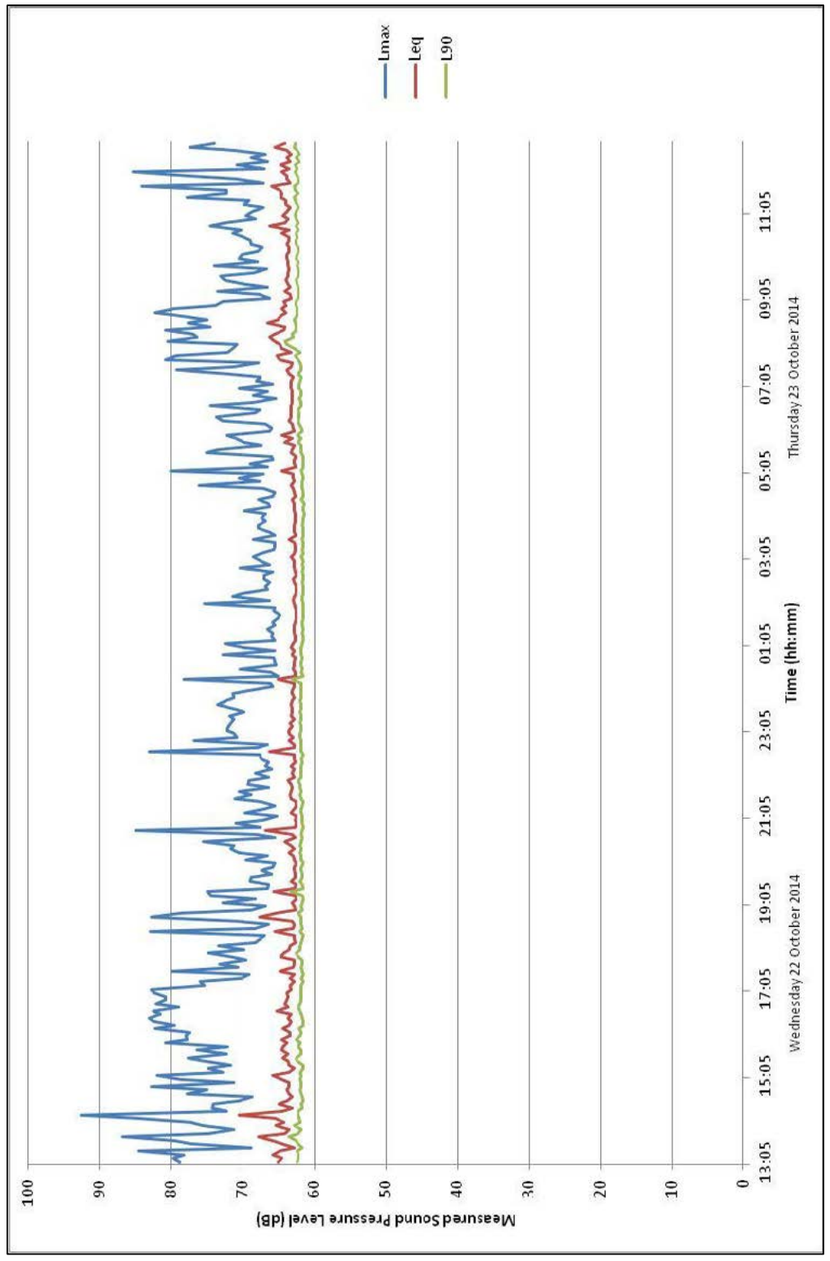
Unit	Individual Unit Noise Level	Distance Attenuation (dB)	Tonality Correction (dB)	Enclosure Attenuation (dB)	Noise Level (dB)
System 1	61 dBA at 1m	-20	+5	-10	36
System 2	57 dBA at 1m	-17	+5	-10	35
System 3	61 dBA at 1m	-20	+5	-10	36
			Total Plant Noise Level (dB)		**40**
			Daytime Noise Limit		**42**
			Night-time Noise Limit		**41**

It can be seen that the total plant noise level presented in Table 5.2 above should meet the daytime and night-time plant noise level requirements of Camden Borough Council at the nearest noise sensitive premises.

APPENDIX A – ACOUSTIC TERMINOLOGY

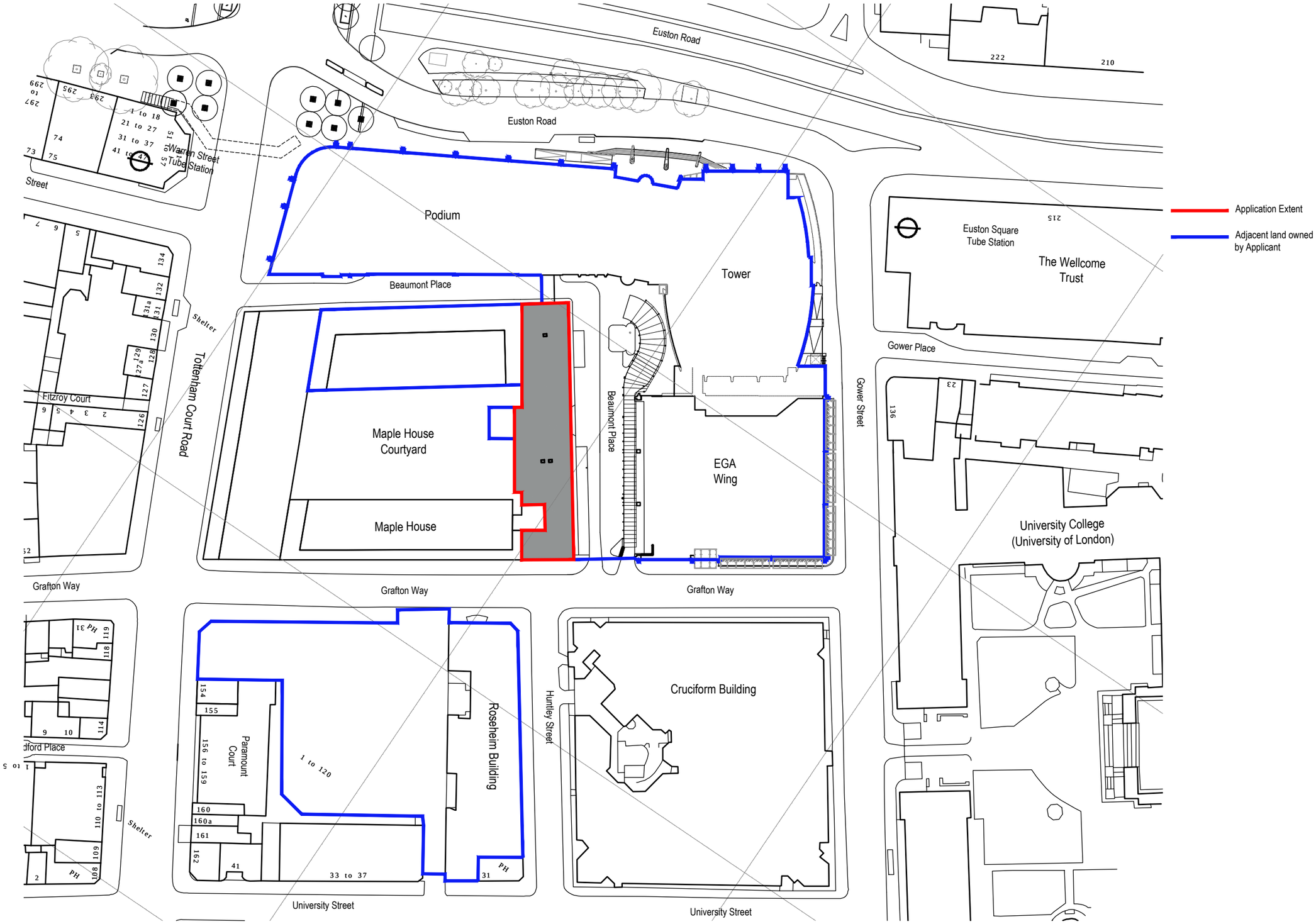
Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ($20x10^{-6}$ Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T= 16 hours for daytime periods, T = 8 hours for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
$L_{n,T}$	The noise level exceeded for n% of the time over a given period T. e.g. L_{90}, the noise level exceeded for 90% of the time (background noise level).
L_{max}	The maximum noise level measured.
SEL	The Sound Exposure Level (dB), the LAeq level normalised to one second.

APPENDIX B – TIME HISTORY GRAPH OF MEASURED NOISE LEVELS



Appendix 2
Drawings

AC Units Maple House



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title: location plan

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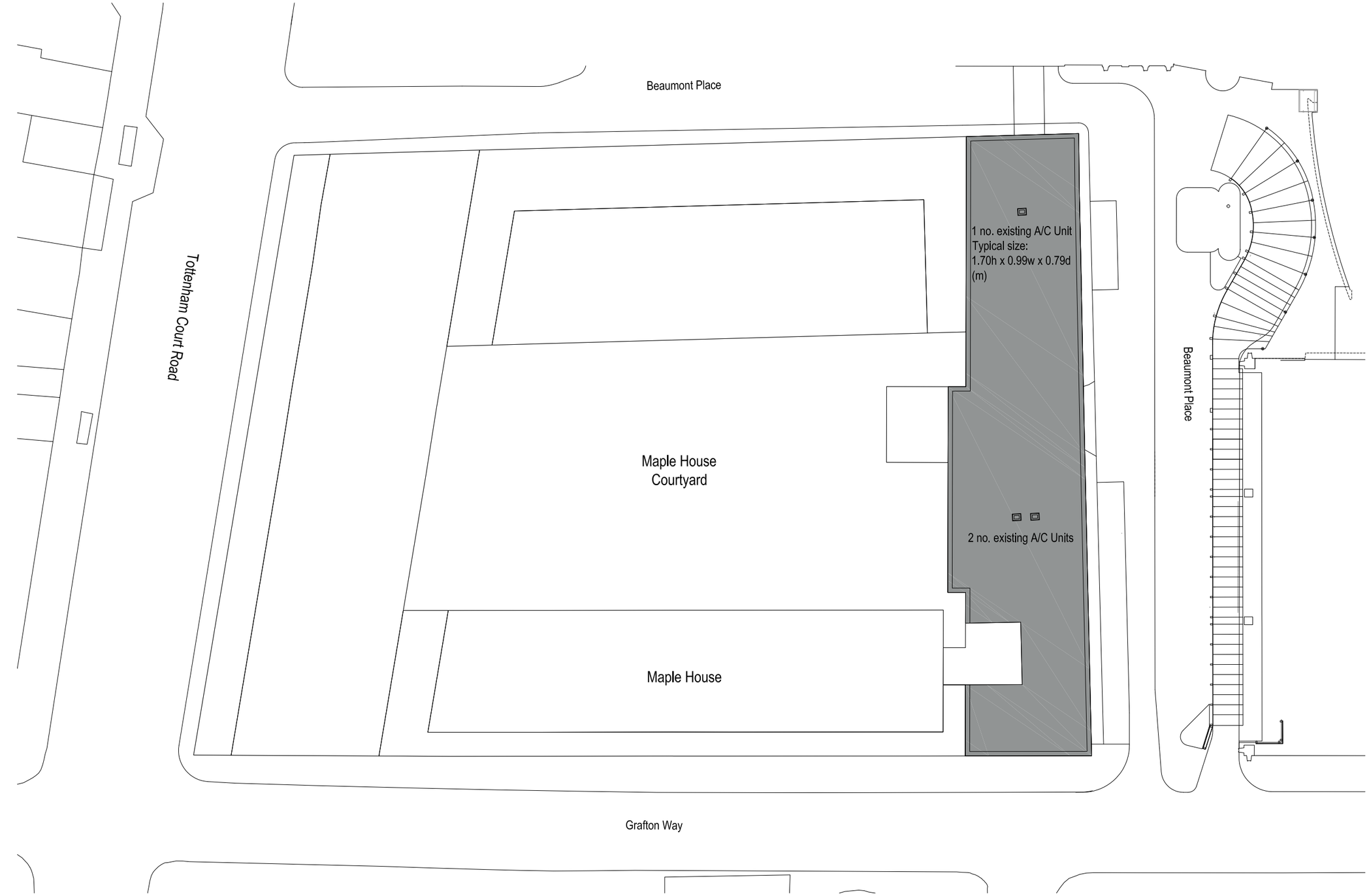
AC Units Maple House



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title: existing site plan

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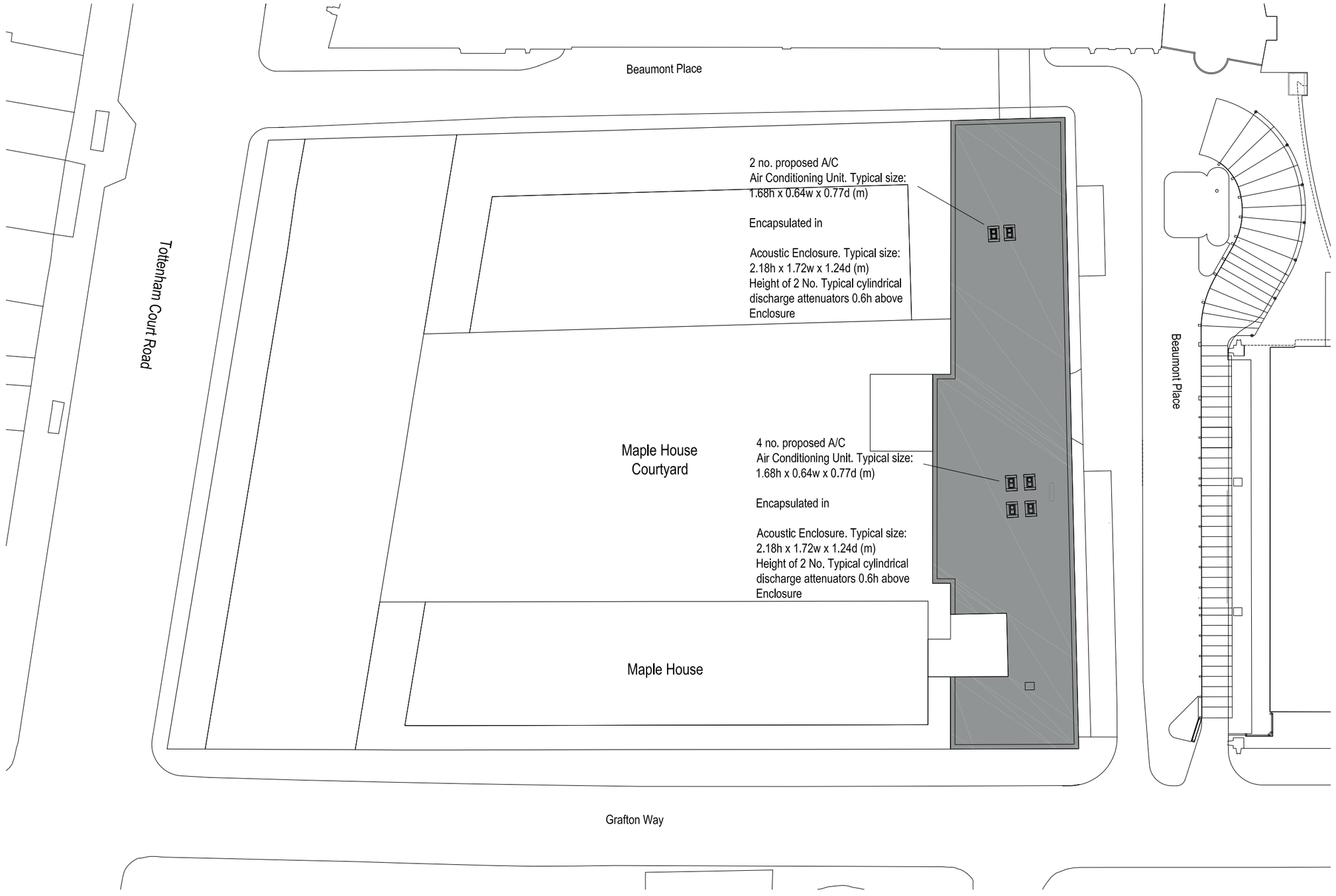
AC Units Maple House



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title: proposed site plan

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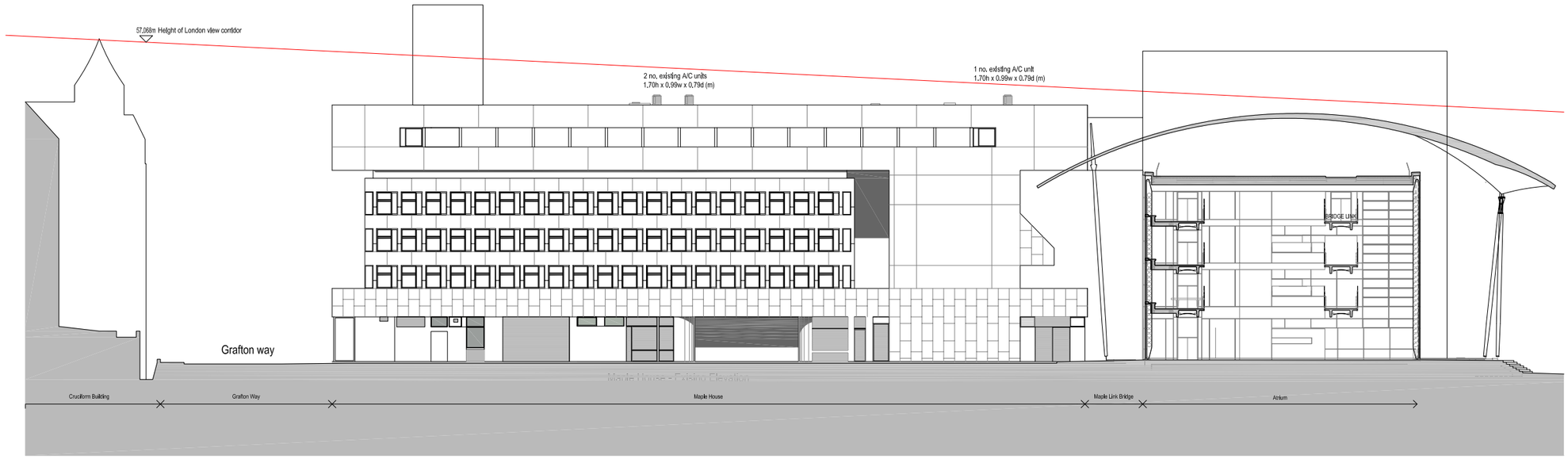
AC Units Maple House



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check by/date: RJ 07.07.2015

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client: uclh nhs foundation trust
title: existing elevation

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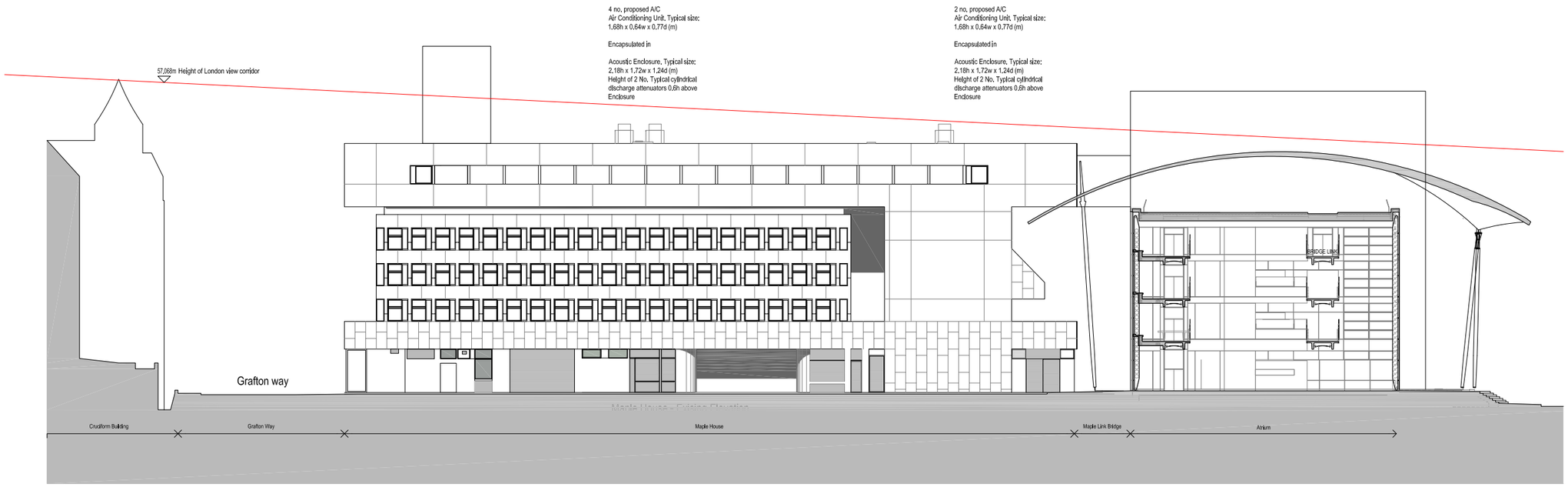

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AC Units Maple House

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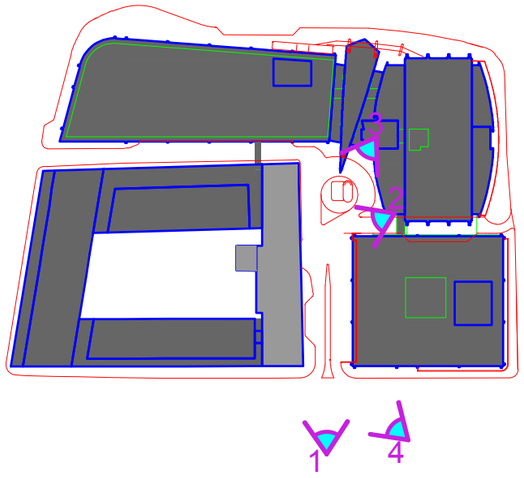
aerial view

1



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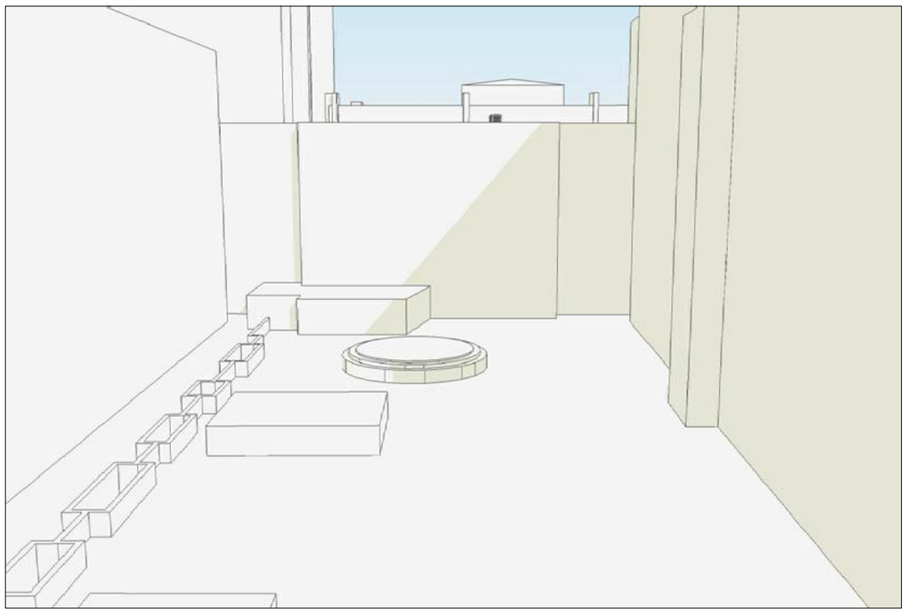
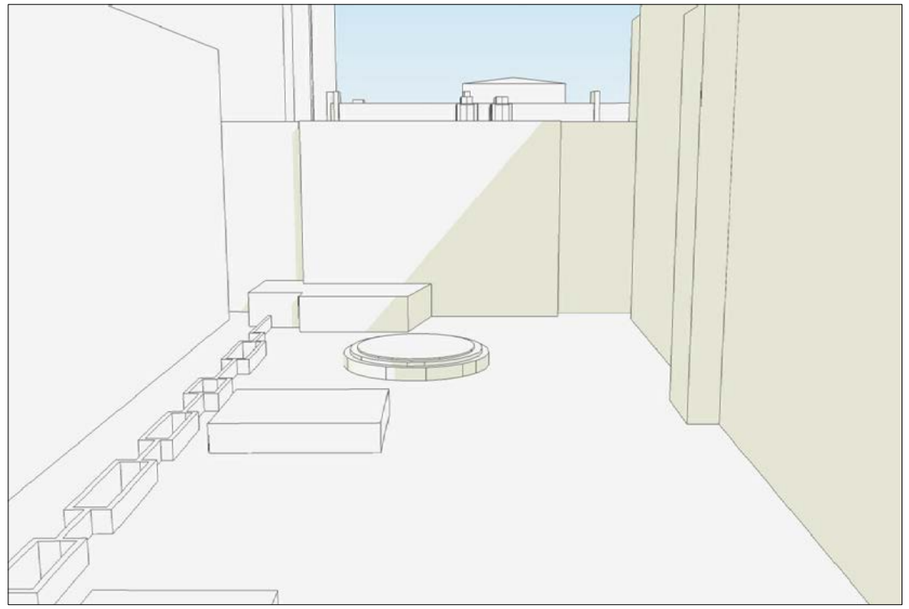


Existing courtyard perspective view



Proposed courtyard perspective view

Existing street level perspective view

Proposed street level perspective view

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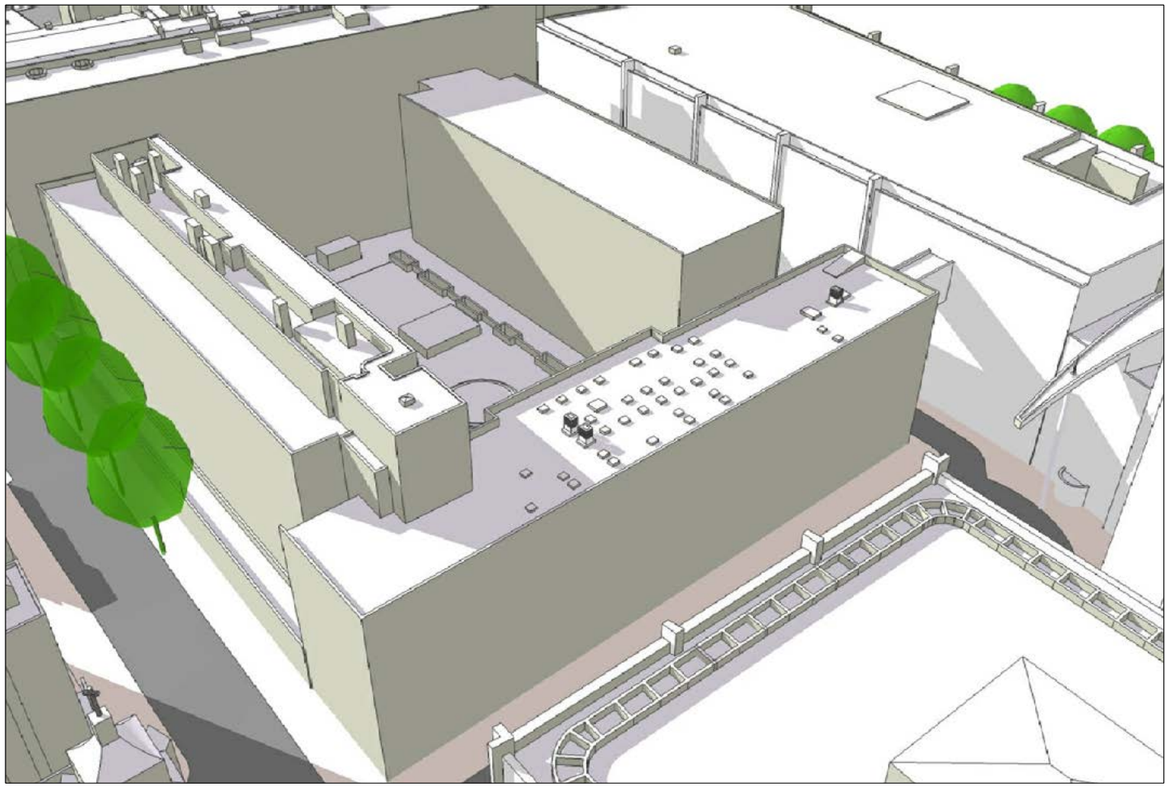
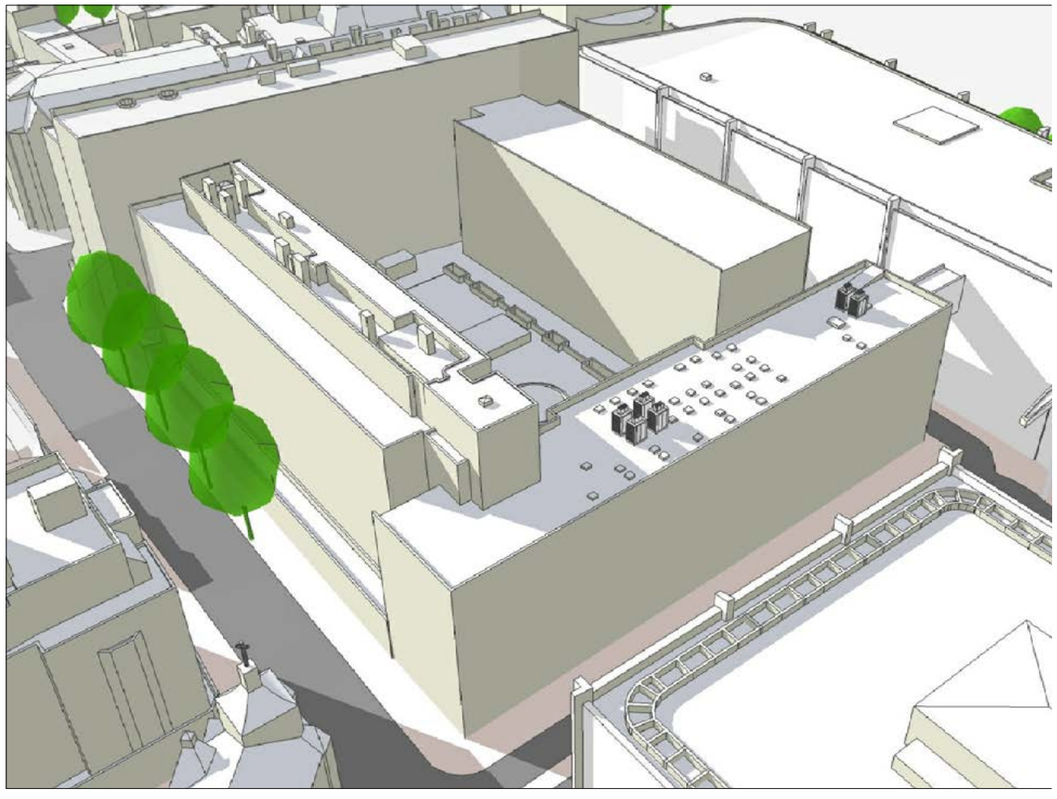
AC Units Maple House



Existing aerial perspective view



Proposed aerial perspective view

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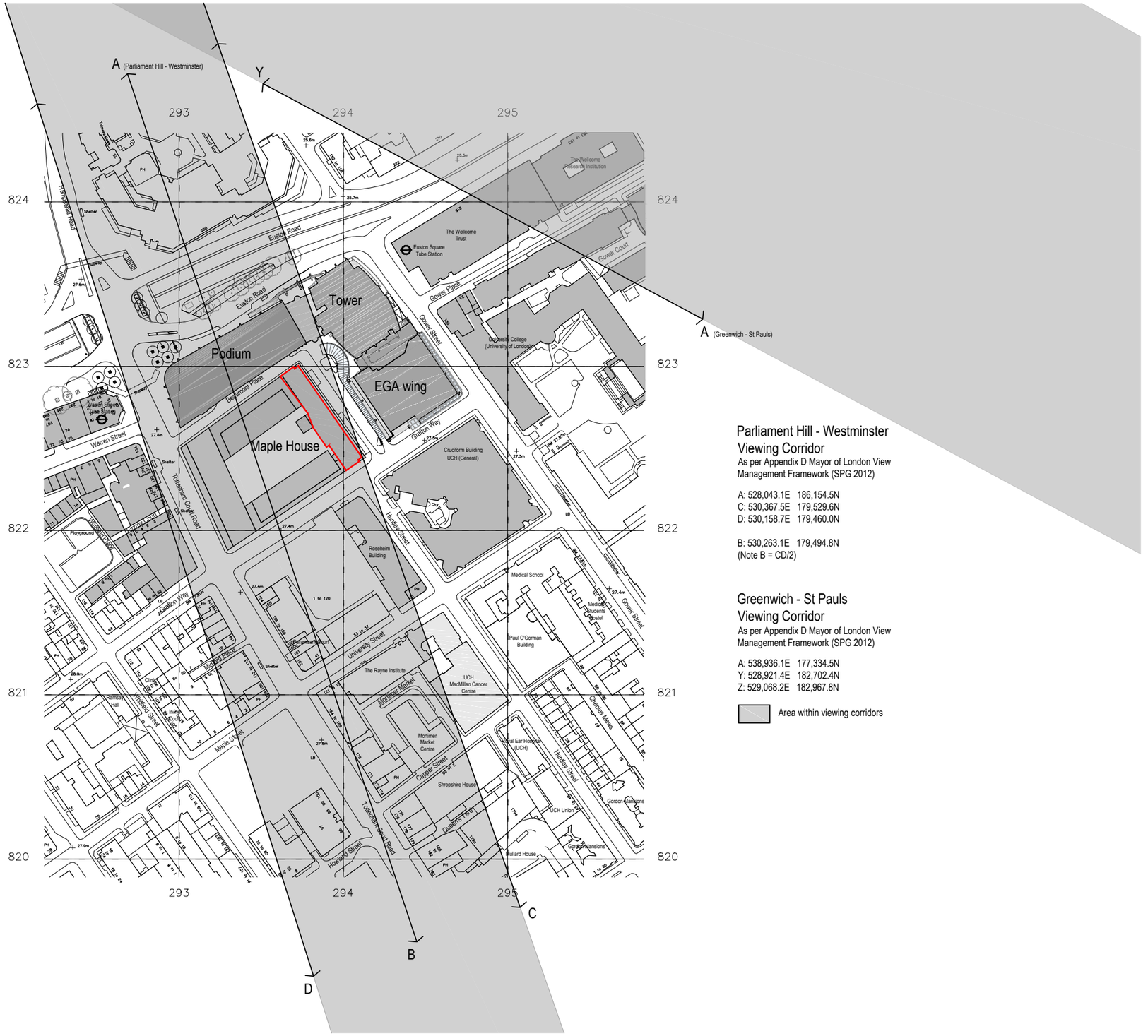

Parliament Hill - Westminster Viewing Corridor

As per Appendix D Mayor of London View Management Framework (SPG 2012)

A: 528,043.1E 186,154.5N
C: 530,367.5E 179,529.6N
D: 530,158.7E 179,460.0N

B: 530,263.1E 179,494.8N
(Note B = CD/2)

Greenwich - St Pauls Viewing Corridor

As per Appendix D Mayor of London View Management Framework (SPG 2012)

A: 538,936.1E 177,334.5N
Y: 528,921.4E 182,702.4N
Z: 529,068.2E 182,967.8N

Area within viewing corridors

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		check by/date:	RJ 18/08/14

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client: uclh nhs foundation trust
title: london view corridor site plan