CHAPTER 4

The Proposals: South-West Energy Centre (SWEC)

4.1 EXTENT OF DEMOLITION WORKS

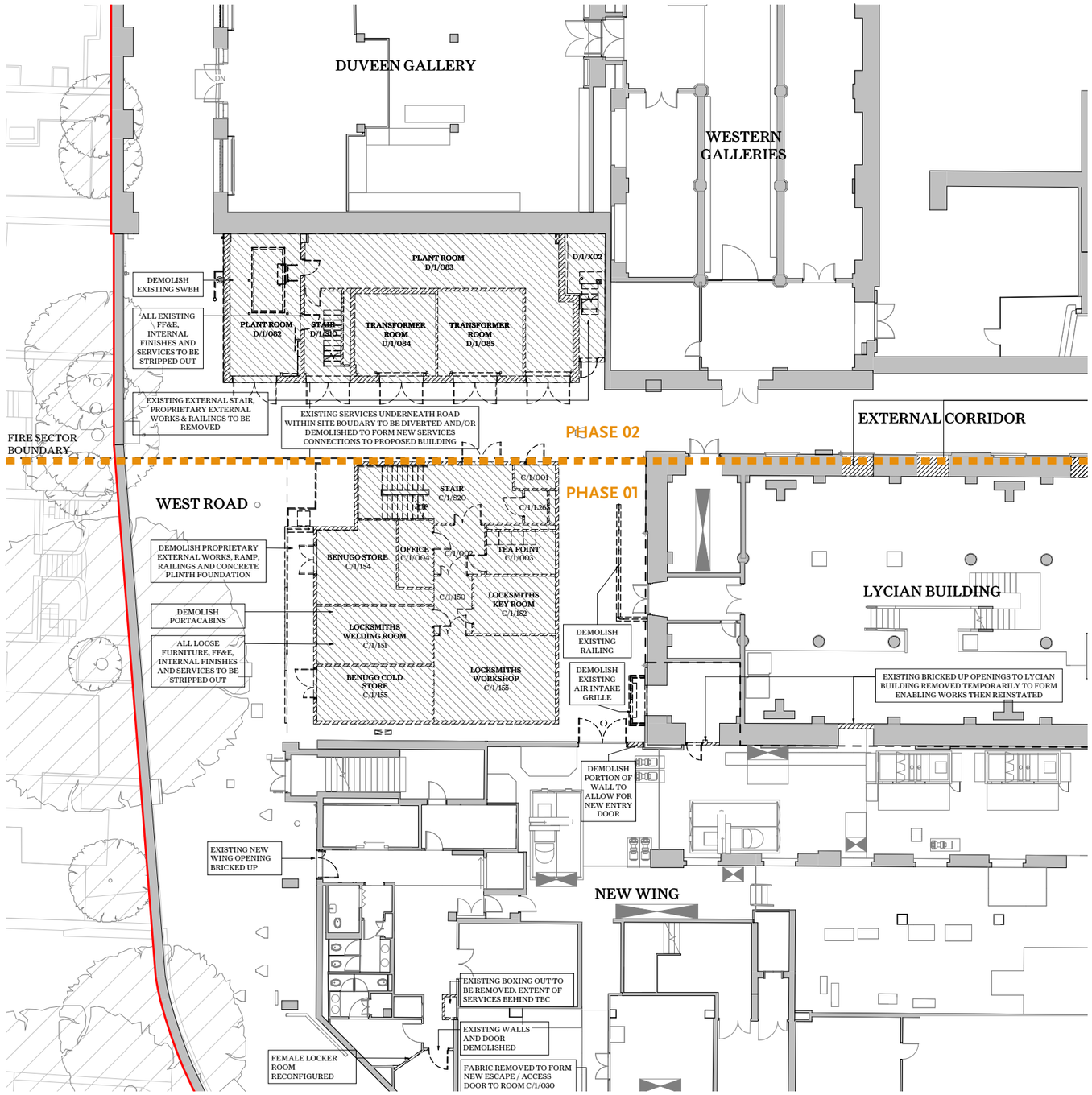
In order to achieve the development set out in this chapter, the proposals include for complete demolition of the existing three-storey temporary portacabins and an existing boiler house, dating from 1997, which occupy the site.

The demolition will be required to be undertaken in two phases, with the existing portacabins demolished to allow for Phase I of the new building to be built and commissioned. This then allows the existing South-West Boiler House to be decommissioned and demolished prior to the remainder to the proposals being constructed.

Within the Museum's Conservation Management Plan, the existing boiler house structure is assessed as of neutral significance and the existing portacabins classified as detrimental to the existing heritage significance.

With that said, the proposed new building will share 'party walls' with the Duveen Gallery to the North, Gallery 15 to the North-East, and the Lycian Building to the East, which are assessed as being of Medium, High, and Very High significance respectively. Lastly to the South, the proposed building abuts the New Wing, which is assessed as being of Low significance.

The fabric to these exiting structures will remain largely unaltered, and the proposed design is proposed without a basement and with a lightweight offset structure to minimise below ground works and consequent risk to the adjacent buildings.



Right:

Proposed Demolition Level 02 Plan

With regards to the Duveen Gallery to the North, all existing masonry walling and corbelling will be retained and protected during the works. A small railing providing protection from falling from the roof level gutter will be recorded and then removed and replaced by the new proposed building wall. Refer to the section on interfaces with neighbouring buildings later in this chapter for more information.

To the North-East and East, all existing masonry including feature cornices and windows will be retained to both Gallery 15 and the Lycian Building, with proposed foundations and columns to be offset and independent from the existing structures. The Lycian building will be repaired and cleaned where required and where it will remain visible within the proposed design.

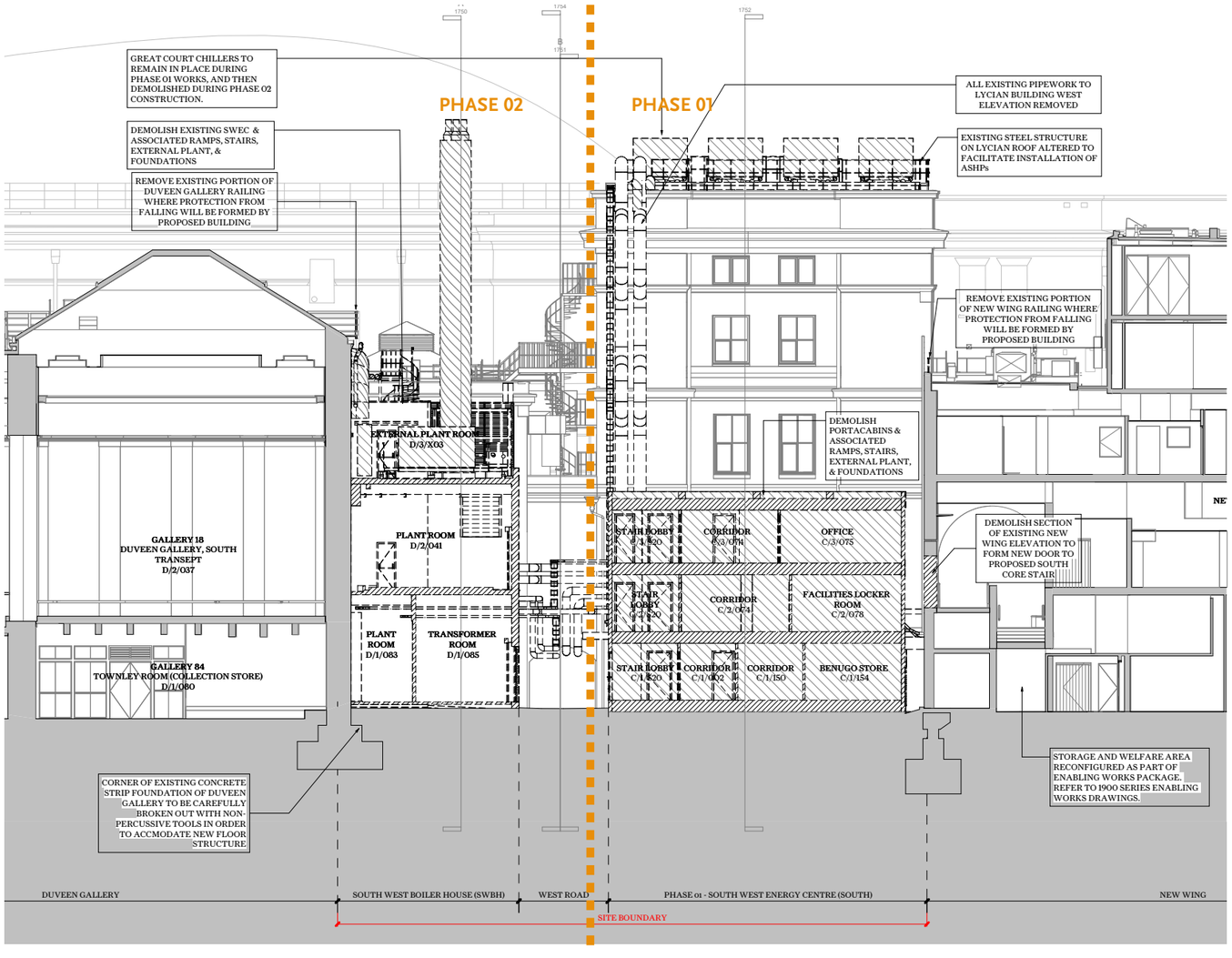
To the South, demolition works are again minimal, limited to the removal of an existing utilitarian balustrade/railing at roof level where that threshold will now be formed by the proposed building.

There are also demolition works required to the Lycian Building and New Wing associated with enabling works required to facilitate the construction of the newly proposed buildings.

For the Lycian Building, this is limited to the removal of existing blocked up windows at Level 01 to allow for the temporary distribution of services to enable the removal of services currently attached to the Lycian Building's West Elevation. It should be noted the fabric altered is not historically significant, resulting from the bricking up of windows post war, and is noted in the Conservation Management Plan as being Detrimental to the buildings significance.

For the New Wing, which is a building of Low Significance, enabling works will be permanent and are related to diversion of services serving the restaurant and staff canteen from the existing North facade and alteration of access arrangements to the Level 01 catering hub and plant room. These proposed works are to back-of-house areas and will not effect the appreciation of the building's heritage.

Reference should be made to Chapter 7 for further information about the extent of demolition works required to enable the Energy Centre Programme. Existing services underneath the West Road and the external corridor space which runs through the proposed building site will also need to be relocated and redirected within the site boundary to align to new locations of proposed infrastructure plant.



Right:

Proposed Demolition North-South section

4.2 DESIGN PRINCIPLES

4.2.1 Key Design Principles

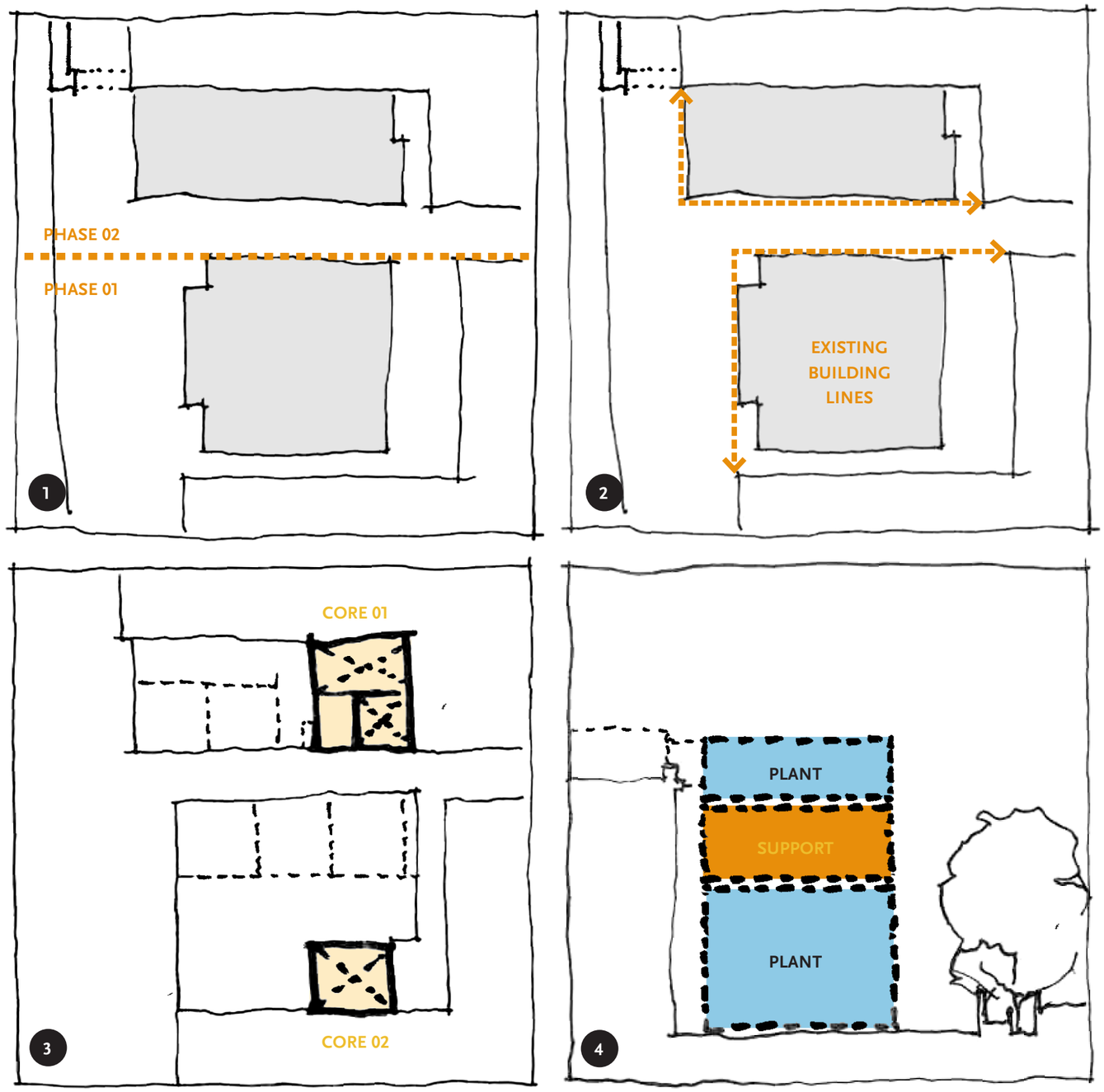
The following are key design principles underpinning the design proposals as submitted:

1. **Phasing**
   The SWEC is required to be phased to maintain infrastructure continuity during construction. This has driven the architectural, MEP, and structural design solutions to ensure the Museum is always able to be kept open and operational.

2. **Existing Building Lines**
   The new building aligns to the north with the existing tunnel under the Duveen Gallery, and to the Lycian Building and New Wing to the south, therefore forming an infill block.

3. **Two Cores serving Two Functions**
   Two cores provide robust fire safety means of escape but also allow for distinct access in everyday operation for plant and support accommodation within the building.

4. **Vertical Separation of Functions**
   Grouping support and plant functions together as much as possible simplifies construction and servicing of the building. Placing support accommodation directly below the roof, and grouping higher-risk wet areas within the accommodation floors (WCs, showers etc.) to the north feeding into 'wet wall' risers minimises risks with regards to key risks faced by the Museum Estate.



5 Ground Floor Access

Much of the electrical plant for SWEC needs to be located on the ground floor to provide ease of access and facilitate plant replacement. This, alongside the requirements for ventilation to this plant and to access cores, results in a hard-working plan at ground, with much of the façade dedicated to doors and louvres

6 Plant Access & Maintenance

This leads the cores to be drawn back to the east of the plan, in order to allow plant areas to be accessed directly off the West Road at ground level. Likewise, key larger elements of plant kit, such as the internal water-source heat pumps, and external roof-mounted air-source heat pumps, are arranged to sit adjacent to the West Road. The western façade will incorporate demountable panels to facilitate ease of longer-term plant replacement, with plant installed on skids to aid in the replacement process.

7 Lycian Façade Light-well

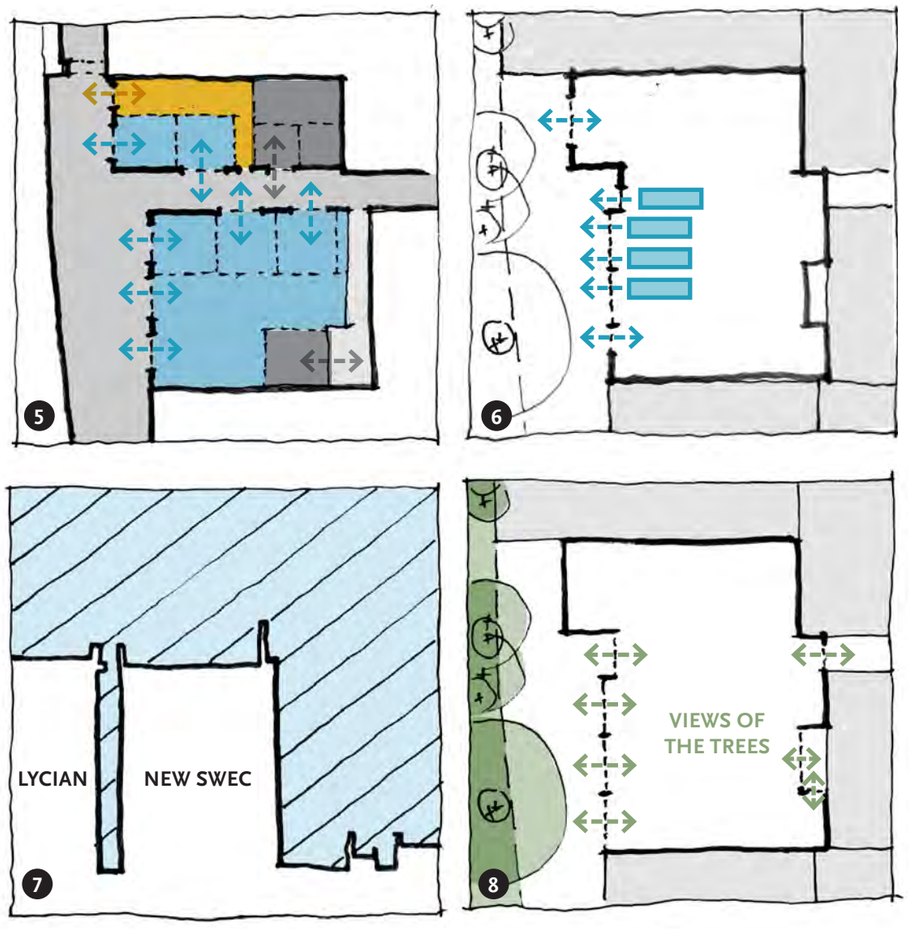
The SWEC building abuts the Lycian Building to ease the relationship to neighbouring properties and maintain existing widths along the West Road for vehicles. However, adjacent to the Lycian Building windows, a light-well is formed as a design feature and to bring light to the centre of the plan.

8 Aspect & Views

The SWEC building is predominantly landlocked, limiting opportunities for aspect and views. Support accommodation floors have been placed higher in the section to allow them to benefit from more daylight and sunlight as well as allow views out to the prominent tree canopies sitting to the West. Further daylight deeper in the plan is secured through the Lycian light-well and windows facing north-east towards the Western Range.

9 Flexibility

Support accommodation has been carefully arranged to separate 'dirty' areas, such as changing areas and storerooms, from 'clean' office space areas. The plans are arranged to operate off a central servicing spine between the two cores, resulting in flexible spaces, able to be reconfigured and divided based on year-to-year needs of Museum support and maintenance staff.



4.2.2 Critical Core Functions

The size of the proposed building results from the need to deliver three critical and inter-related functions which combine to enable a sustainable future for the wider Museum Estate:

1. **New Electrical & Life Safety Infrastructure**
   The current capacity of The Museum's primary electrical system is supplemented by gas fossil fuel heating. As a result, the current electrical capacity is insufficient to support a transition to more sustainable all electric systems. These therefore need to be upgraded with larger transformers and switchrooms put in place prior to any energy transition being able to take place.

2. **A New Low Carbon Heating System**
   The electrical upgrades will power the new low carbon heating system comprised of internal water source and external air source heat pumps. Together, these will enable the Museum to end its' reliance on carbon intensive gas fossil fuels. The new energy efficient systems installed will result in an estimated annual net saving of 1,700 tonnes of CO_2 compared to the existing baseline scenario.

3. **Maintenance & Support Accommodation**
   Modern sustainable systems rely heavily on monitoring, management, and maintenance to ensure they are operating as efficiently as possible, keeping operational carbon emissions to a minimum year on year. Therefore the proposed building also delivers support accommodation for the Museum staff who operate and maintain the systems on a day-to-day basis.

1

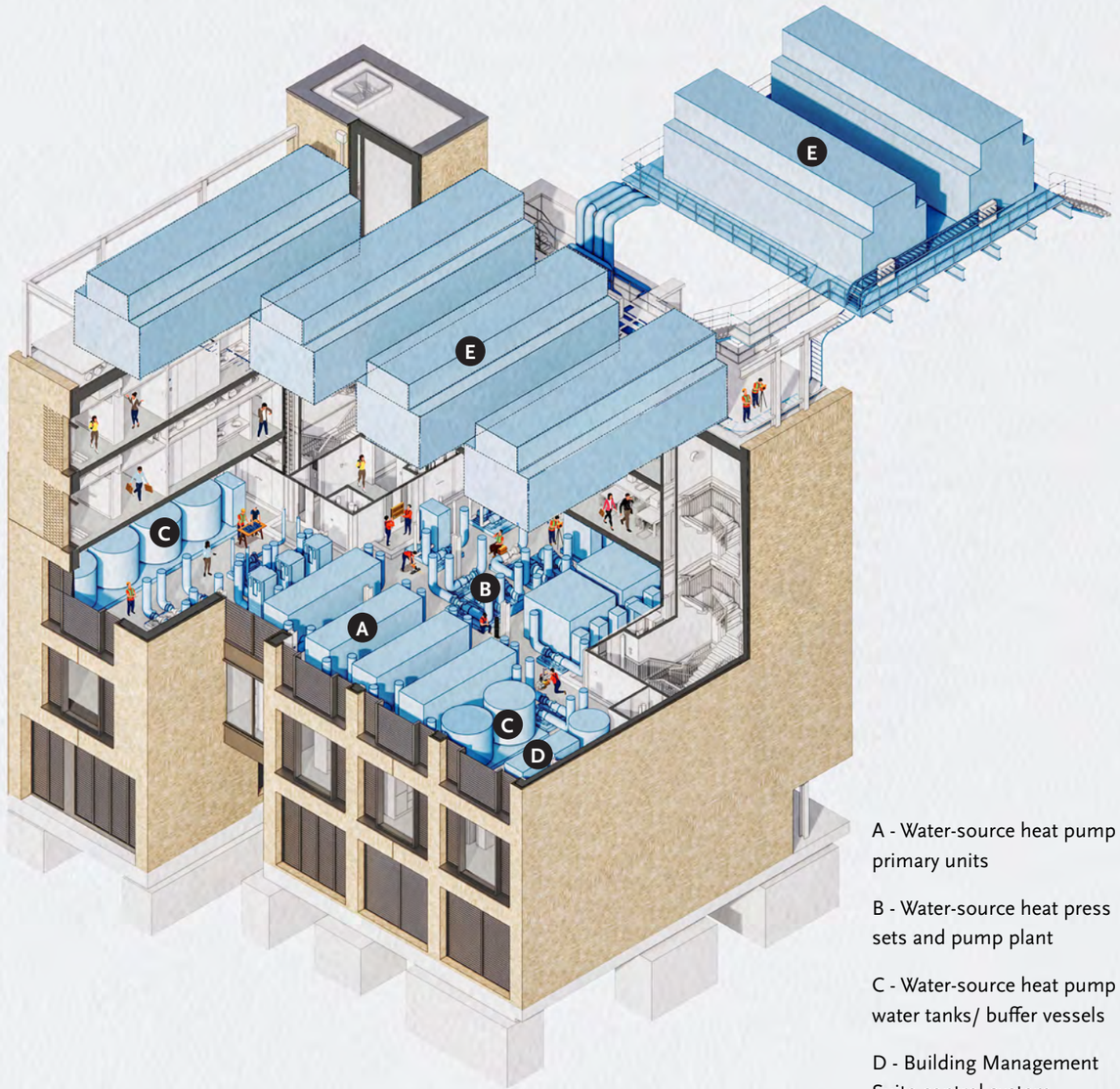
A - Life safety generators

B - Electrical transformer rooms

C - Comms controls

D - Electrical distribution switchrooms

2



A - Water-source heat pump primary units

B - Water-source heat press sets and pump plant

C - Water-source heat pump water tanks/ buffer vessels

D - Building Management Suite control system

E - Roof mounted air-source heating and cooling pumps

3

A - Desk based maintenance support space

B - Maintenance staff mess space

C - Maintenance operational manual and health and safety document store

D - Maintenance staff shower, WC and changing rooms

E - Meeting Rooms

4.3 BULK SCALE & MASSING

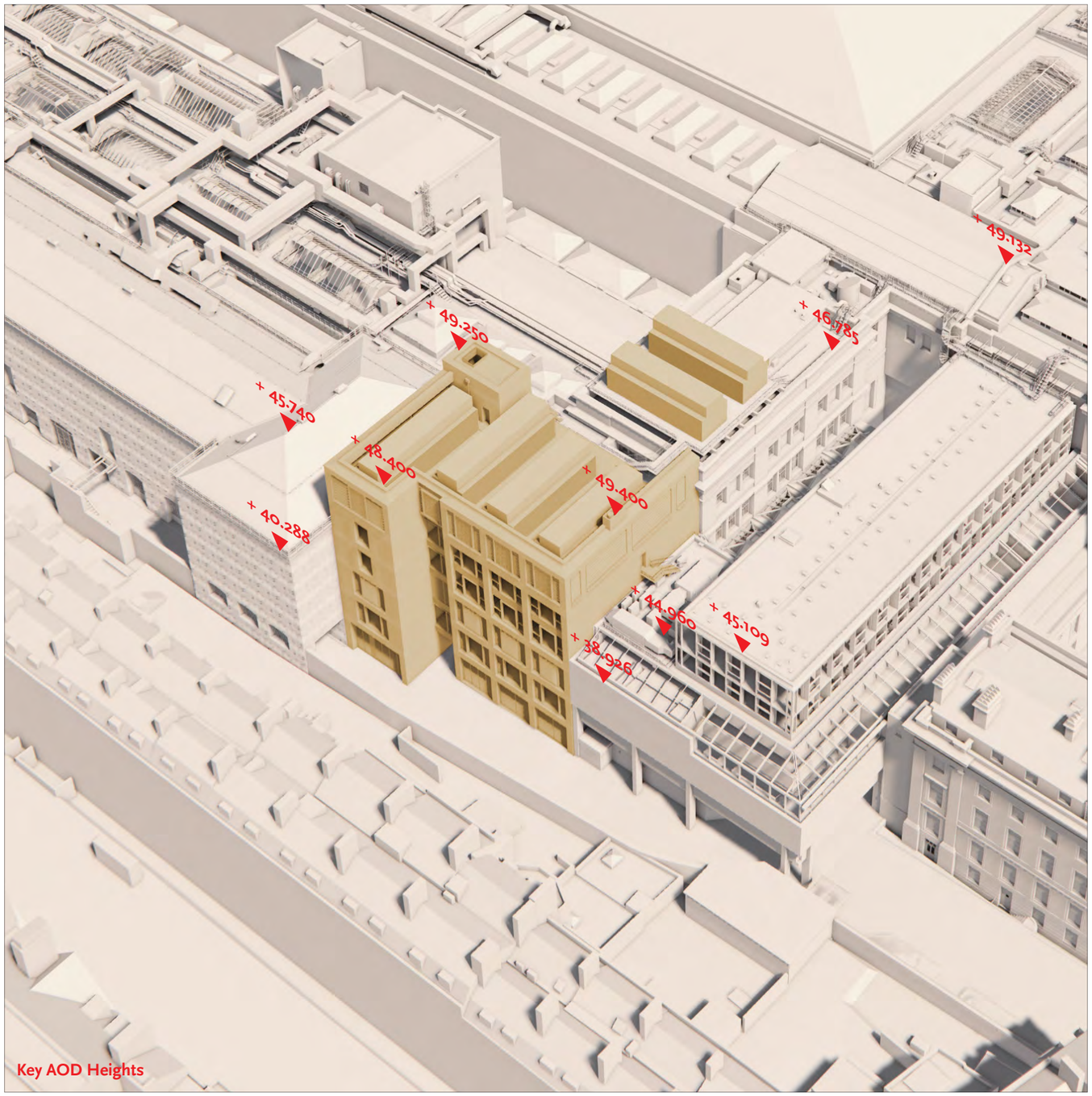
4.3.1 Summary

The proposed SWEC Massing is 48.40m AOD at its highest datum, the top of the external air source heat pump plant screen. This is set back from the leading edges of the North, South, and West facades, which sit 395mm lower at 48.005m AOD. Local areas will extend beyond this height, such as the northern core lift overrun at 49.25m AOD and the generator flues, which will terminate 1m above the screen at 49.40m AOD.

The proposed massing is in keeping with the existing scale of the Museum's neighbouring Lycian (46.785m AOD) quadrangle (49.132m AOD) buildings, and is beneath the highest point of the existing South-West Bolier House flue, which extends up to 49.915m AOD. In urbanistic terms, it effectively forms an infill block between the existing structures.

Two new air source heat pumps will be placed on the roof of the Lycian Building, replacing 4 No. existing chillers that occupy the same area. In order to limit works to the existing building fabric, the existing steel gantry chiller support structure will be adapted and extended to accommodate the new units.

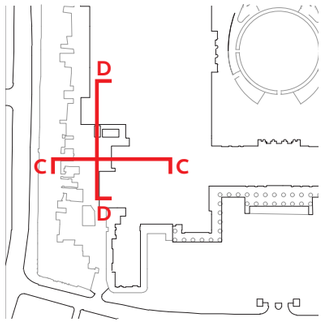
All together, the proposed accommodation delivered within the massing will provide a new low carbon heating system for the entire Estate with capacity to support existing and future masterplan heating loads, alongside the electrical upgrades required to power the system, and support accommodation for the staff who maintain it. Consequently, its delivery enables the future masterplan vision of the Museum to develop from a fundamentally sustainable basis.



Right:

Axonometric view showing the proposed SWEC in context

4.3.2 Section Heights

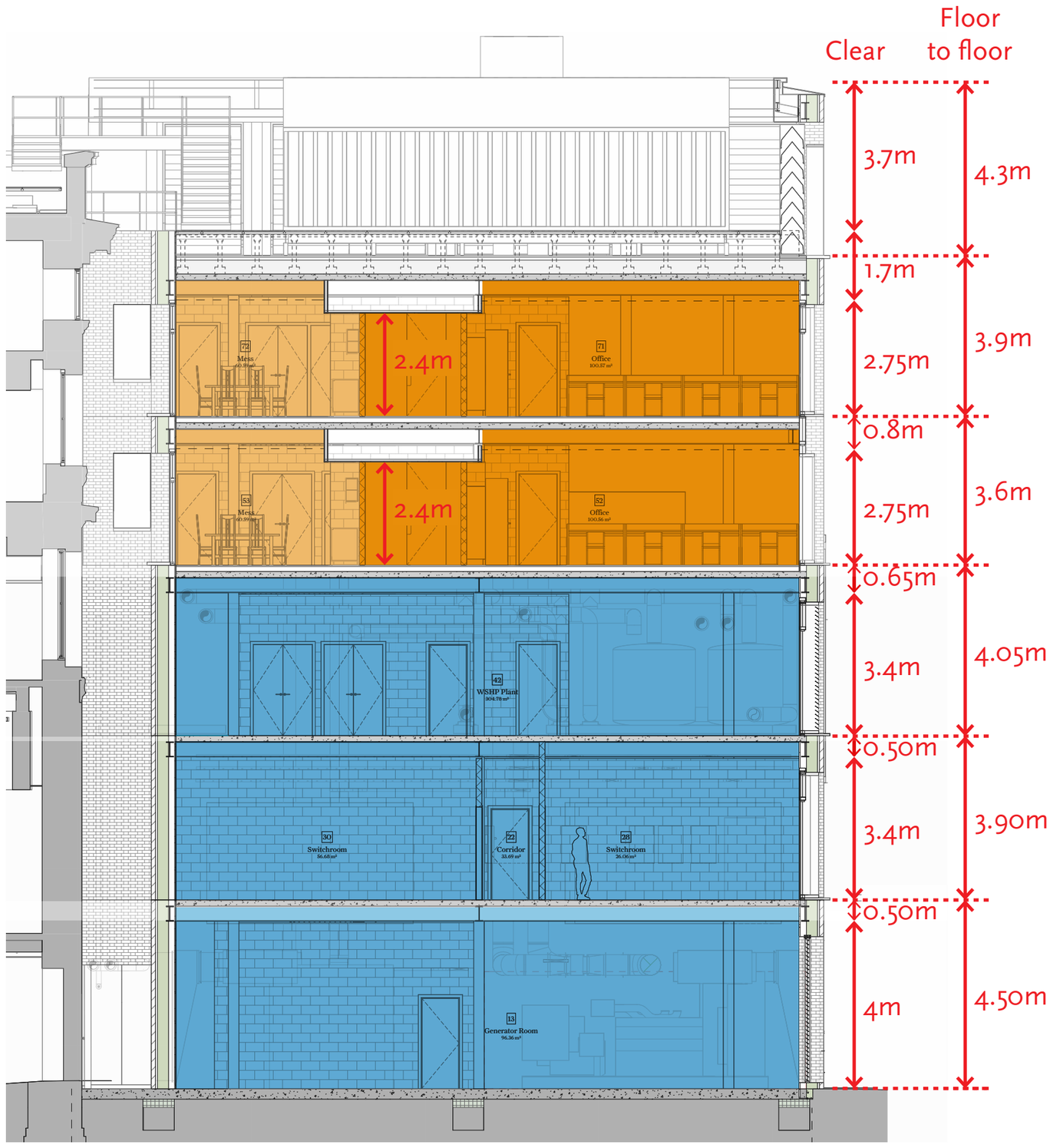


Great care has been taken in developing the design to limit impacts of the proposed new building massing. Each floor to floor height is tailored to the specific functions proposed at that level, and where opportunities were found to reduce overall height without adversely compromising the building's operations, these have been incorporated into the design. Generally, the plant floors have a greater floor-to-floor height than the support accommodation stories, meaning these will always be suitable for office based accommodation provision in a future retrofit scenario.

The additional height requirements for plant floors are a result of the sizes of plant kit and distribution that is required within the building. The majority of plant proposed within the building is not serving the building itself, but the entire or large proportions of the Museum Estate. Some are also related to critical aspects of life-safety and therefore it is essential that their capacity and sizing requirements are met.

Support accommodation floors are designed to meet the minimum clear height of 2.75m recommended by the British Council of Offices. It should be noted a central servicing zone on the floors only meets 2.4m clear height, a compromise accepted by the Museum in order to reduce the overall proposed building height.

Lastly, a bespoke detail has been developed for the acoustic plant screen at the top of the building, which, though more expensive, further reduces the overall height of the proposals and integrates the plant screen design within the overall aesthetic of the proposed lower level elevation detail and materiality.



Key:

- Plant
- Office
- Mess Areas

Right

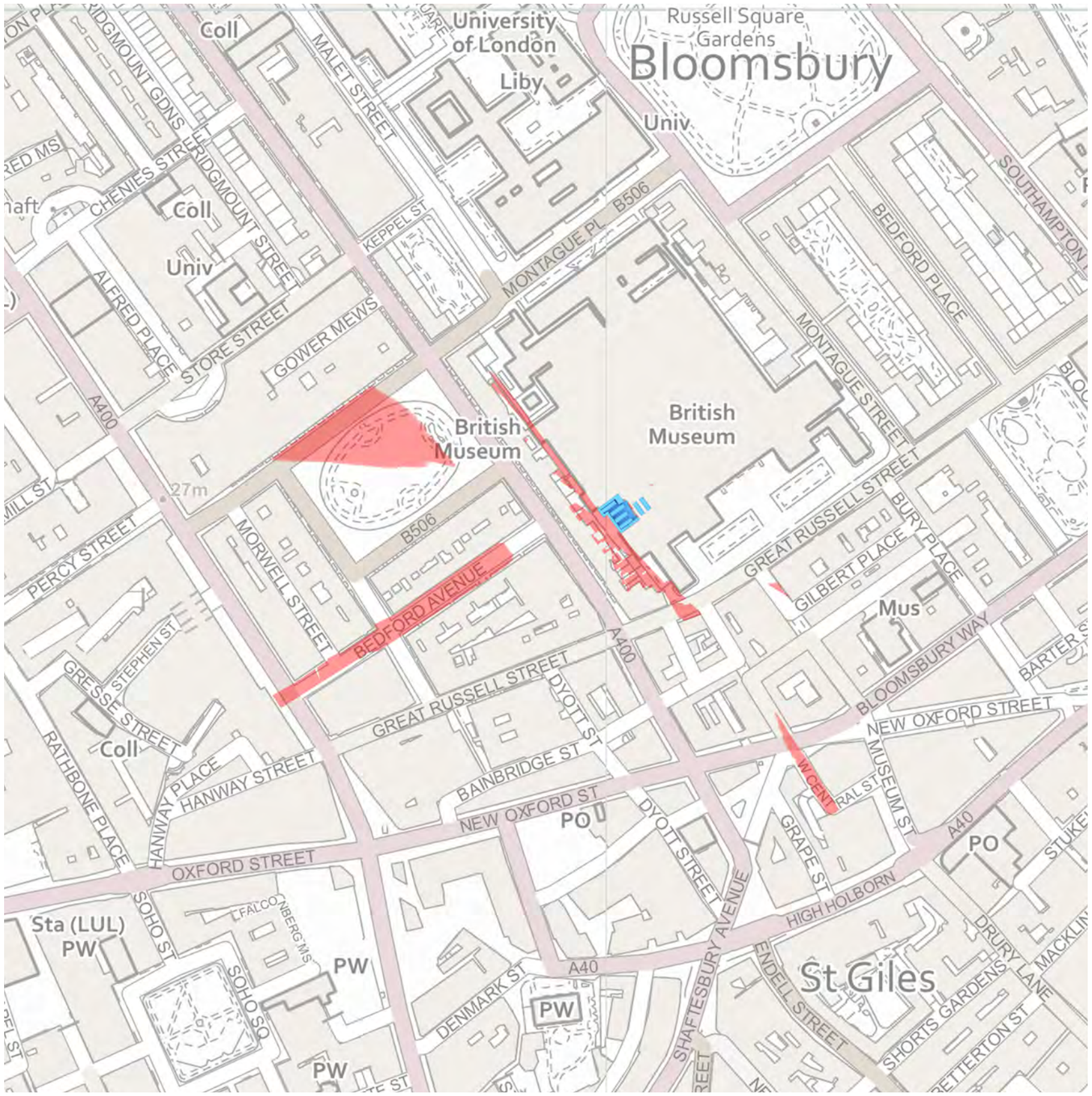
Proposed SWEC Floor-to-Floor and Clear Heights

4.3.3 Key Townscape Views

The plan adjacent shows in red the theoretical visibility of the proposed building in the townscape once it is constructed with the aid of computer modelling. This does not take into account tree foliage so presents a worst case winter condition.

As illustrated, the proposed building is not visible from within the Museum's South Forecourt, where it is hidden behind the South Colonnade and its projecting wings, as well as the New Wing and West Residence. The massing is however visible from views within the Bloomsbury Conservation Area surrounding the site. The design team has worked throughout preapplication to mitigate the visual impact of the proposed development to reduce impact wherever possible. As shown, there will be some visibility along tree lined Bedford Avenue above the roof line of the perimeter properties along Bloomsbury Street. There will also be some visibility from a portion of Great Russell Street adjacent to the South-West Gate, though it should be noted that this visibility is heavily obscured by the entrance gate, railings, and external trees. Similarly, though the massing is visible from the northern pavement of and also within Bedford Square Gardens, the prominence and density of trees within the Gardens, which are also private, will heavily obscure the visibility of the proposed massing from this point.

The following pages show the extent of massing visibility (shown by blue solid lines, dashed lines indicate proposed massing obscured by existing buildings) from key viewpoints within the townscape that were agreed with LB Camden and Historic England for assessment during preapplication. Reference should be made to the Heritage Statement for further information.



Right:

Zone of theoretical visibility for the proposed SWEC building as produced by Cityscape

4.3.4 Bedford Avenue East

Existing

Key plan

Key:

- Outline of proposed massing concealed by foreground buildings i.e. not visible
- Outline of proposed massing visible

Right:

Existing and proposed townscape view showing the extent of massing visibility in solid blue line

Proposed

4.3.5 Bedford Avenue West

Existing

Key plan

Key:

- Outline of proposed massing concealed by foreground buildings i.e. not visible
- Outline of proposed massing visible

Right:

Existing and proposed townscape view showing the extent of massing visibility in solid blue line

Proposed

4.3.6 Bedford Square South

Existing

Key plan

Proposed

Key:

- Outline of proposed massing concealed by foreground buildings i.e. not visible
- Outline of proposed massing visible

Right:

Existing and proposed townscape view showing the extent of massing visibility in solid blue line

4.3.7 Bedford Square North

Existing

Proposed

Key plan

Key:

Outline of proposed massing concealed by foreground buildings i.e. not visible

Outline of proposed massing visible

Right:

Existing and proposed townscape view showing the extent of massing visibility in solid blue line

4.3.8 Great Russell Street

Existing

Key plan

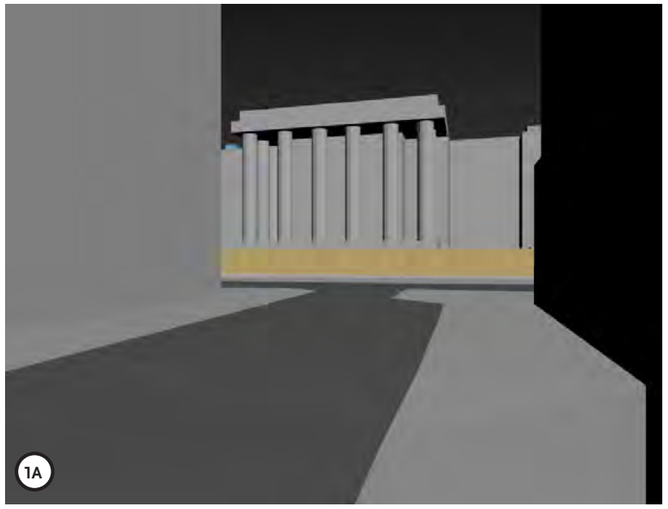
Proposed

4.3.9 Southern Views: Museum Street

Prepared with Montague Evans

The ZTV demonstrates that there may be some, glimpsed visibility of the uppermost parts of the new ASHPs on the Lycian Building from a small portion of Museum Street. Any effect would be transient and of very short duration, experienced only from a short stretch of the eastern pavement, peripheral to the focus of the view and at some distance (c.125m). The potential visibility occurs at a point where views towards the Museum are characterised by the filtering effect of the trees and railings bounding the Museum forecourt, and influenced by activity at street level on the approach to Great Russell Street.

If perceptible, therefore, the proposals would appear obliquely and above a small portion of the modern New Wing. The effect would, we consider, be so small as to be unnoticeable to the ordinary observer and not harmful to an appreciation of the Museum, the distinguished southern elevation of which holds the attention in these views. From the northern portion of Museum Street as it joins Great Russell Street, where one can appreciate the scale and status of the principal façade of the Museum, there is no visibility.



Top row:

Existing photographs on Museum Street looking northwards towards the Museum.

Bottom row:

Computer generated views from the equivalent viewpoints as the photos above showing the limited visibility of proposed air-source heat pumps on the roof of the Lycian buidling, which replace the 4 no. existing rooftop chillers in the same location. The proposed air-source heat pumps are shown in light blue colour.

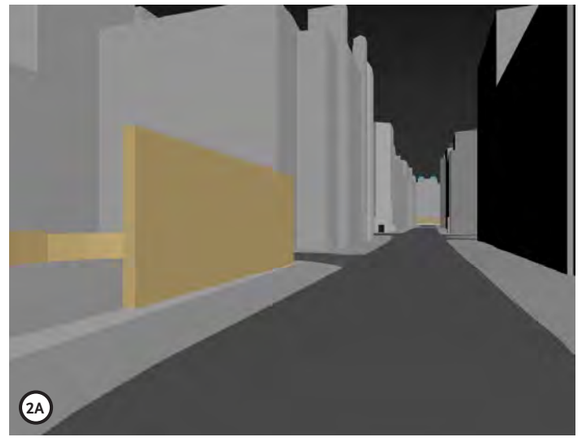
Key plan

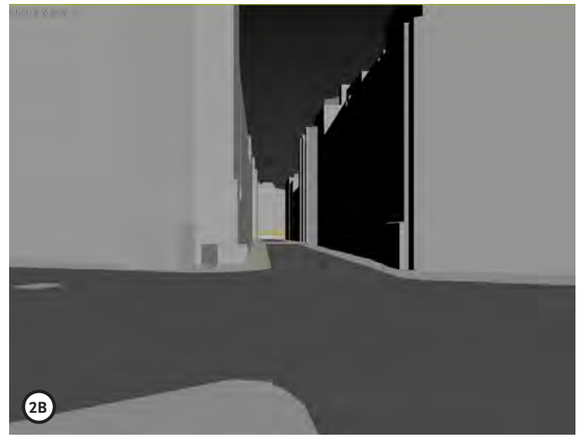
4.3.10 Southern Views: West Central Street

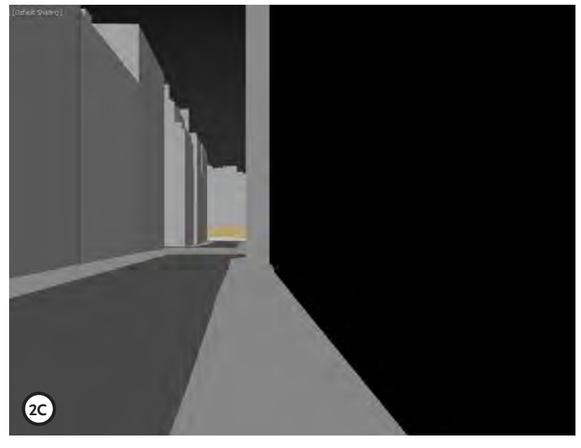
Prepared with Montague Evans

The ASHP would also be visible in some views from West Central Street / Coptic Street to the south, from which a portion of the West Residence can be seen. These views are obtained over a considerable distance (c.250m-175m) and form part of a kinetic sequence. The activity at street level (the effect occurs around the New Oxford Street junction) influences the character of the townscape and visual amenity here, and it is not a point from which the significance of the Museum is best appreciated.

The visibility diminishes rapidly as one progresses north, and is occluded altogether along Coptic Street. The nature of the effect in our view, is limited and transient, and does not materially alter the character of these views or the way the Museum is experienced, resulting in an effect that is neutral. We conclude that there will be no harm to the significance of the listed building or the way it is appreciated.







Left hand row:

Existing photographs on West Central and Copitc Streets looking northwards towards the Museum.

Right hand row:

Computer generated views from the equivalent viewpoints as the photos above showing the limited visibility of proposed air-source heat pumps on the roof of the Lycian buidling, which replace the 4 no. existing rooftop chillers in the same location. The proposed air-source heat pumps are shown in light blue colour.

Key plan