

4.6

TECHNICAL ASPECTS

4.6.1

A New Low Carbon Heating System

Prepared with Steensen Varming

The existing central heating and domestic hot water system at the Museum is fed by carbon intensive gas boilers, located within the existing South-West and North-East Boiler Houses. This will be replaced by the proposed all electric system.

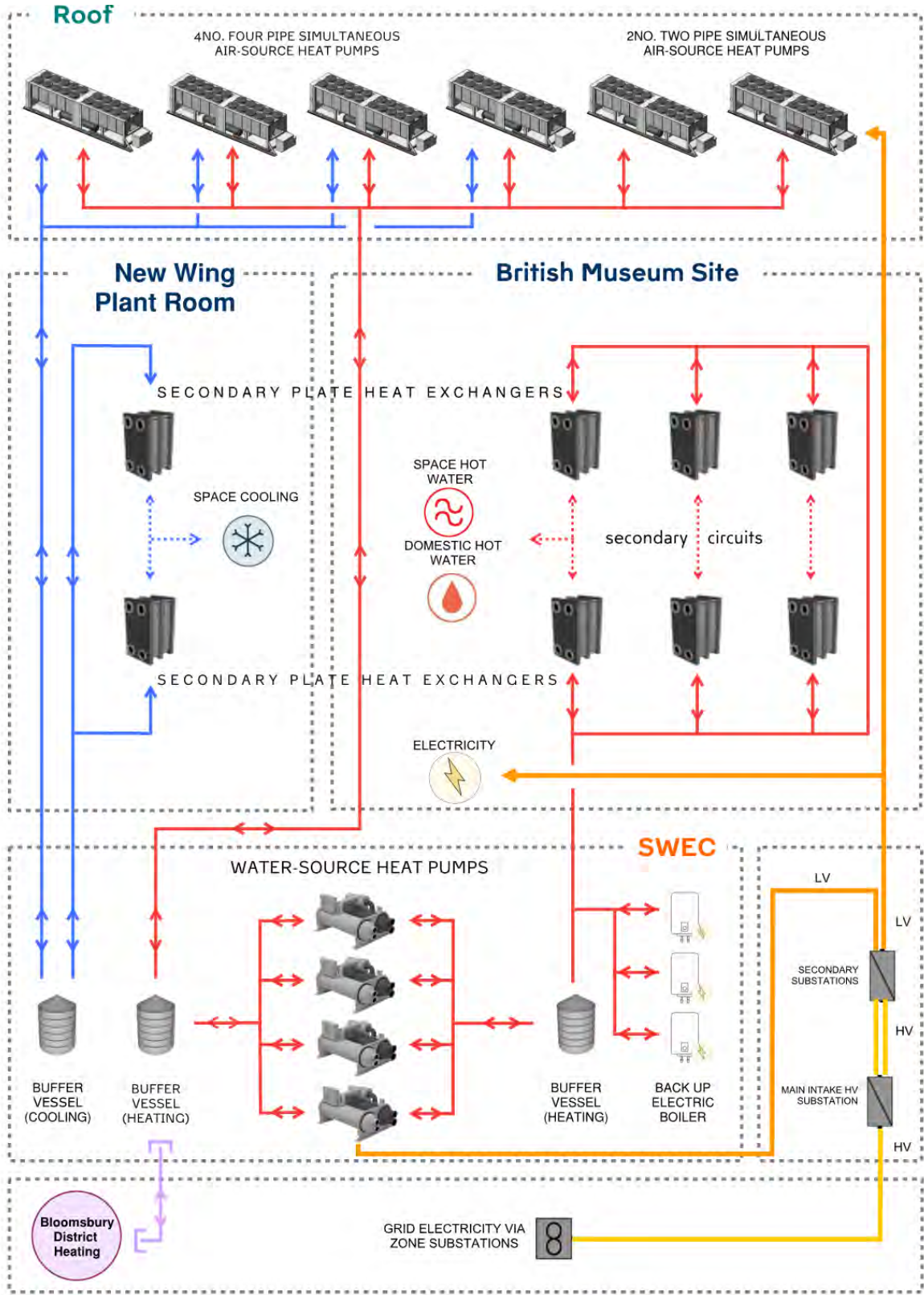
The proposed SWEC building consists of three plant floors that host central infrastructure serving the whole estate and additional plant housed at roof level. Together, the infrastructure delivered enables a sustainable future for the Museum Estate through ending its' reliance on fossil fuels and providing a low carbon system able to work with historic and modern secondary systems as they are delivered as part of future masterplan projects. In other words, the SWEC will provide an immediate and substantial reduction in operational carbon emissions produced by the Museum Estate, as well as a viable route map for further carbon emission reductions as future projects are delivered.

The key design features of the primary heating infrastructure proposed are summarised below:

- Roof-mounted air to water source heat pumps (ASHPs) to provide simultaneous heating and cooling.
- Water to water source heat pumps (WSHPs) to provide hot water heating system at boosted temperature.
- Back up electric boilers to allow for adequate system resilience.
- Services trench /pit to accommodate the primary low temperature hot water (LTHW) distribution, including both external and internal, above ground and underground distribution routes.

Right:

Proposed site-wide Low Carbon Low Temperature Hot Water & Electrical HV Distribution system that will be delivered by the development. Courtesy of Steensen Varming.



The proposed central heating plant comprises:

- First stage heating via Rooftop ASHPs:
 - 4 no. four pipe ASHPs (heating and cooling), two on the roof of the new SWEC and two on the roof of the Lycian building with flow and return temperatures to the hot water heating systems at 45°C/40°C in heating mode.
 - 2 no. two pipe ASHPs (heating/ cooling only) on the roof of SWEC.
- Second stage heating via WSHPs:
 - 4 no. WSHPs in the mechanical plant room on level 3 within SWEC with flow with system flow and return temperatures at 82°C/70°C.
- Back up heating plant for system resilience:
 - Electric boilers.

The four pipe ASHPs will be able to deliver heating and cooling simultaneously whilst the two pipe ASHPs are designed to deliver heating or cooling only so that they can provide supplementary heating or cooling in peak conditions whenever required. It is worth noting that the two pipe ASHPs will be expected to operate mainly in heating mode.

The second stage heating within the SWEC will comprise of 4no. WSHPs with system flow and return temperatures at 82°C/70°C. These heat pumps would be supplemented with electric boilers to achieve a total capacity of 7.9MW to meet any extreme demand peaks. This peak demand includes an allowance for future developments as part of the site masterplan proposals. An additional 15% spare capacity has also been allowed for flexibility.

Energy monitoring will be provided via energy meters on the LTHW circuits to comply with Part L2A 2021 and ENE02 section of BREEAM.

A connection is not currently proposed to the Bloomsbury District Heating Network, however provision has been allowed for a future connection to be made if required in future.

The proposed Air-Source Heat Pump plant will also replace existing roof mounted chillers serving located on the roof of the Lycian Building which serve the Great Court and New Wing. In addition, the cooling capacity delivered by the proposed plant will be sufficient to provide low carbon cooling to existing gallery spaces which currently experience overheating issues when these are refurbished as part of future masterplan projects. For avoidance of doubt, refurbishment works to gallery spaces/fabric are not part of the scope of this application. However the plant proposed within the application will provide the sustainable low carbon infrastructure required to maximise the benefit of refurbishment activity to gallery spaces when delivered in future. The design of ASHP plant has been developed to maximise system efficiency and reduce annual energy consumption and associated carbon emissions.

4.6.2 Sustainability & Health & Wellbeing

Prepared with Steensen Varming

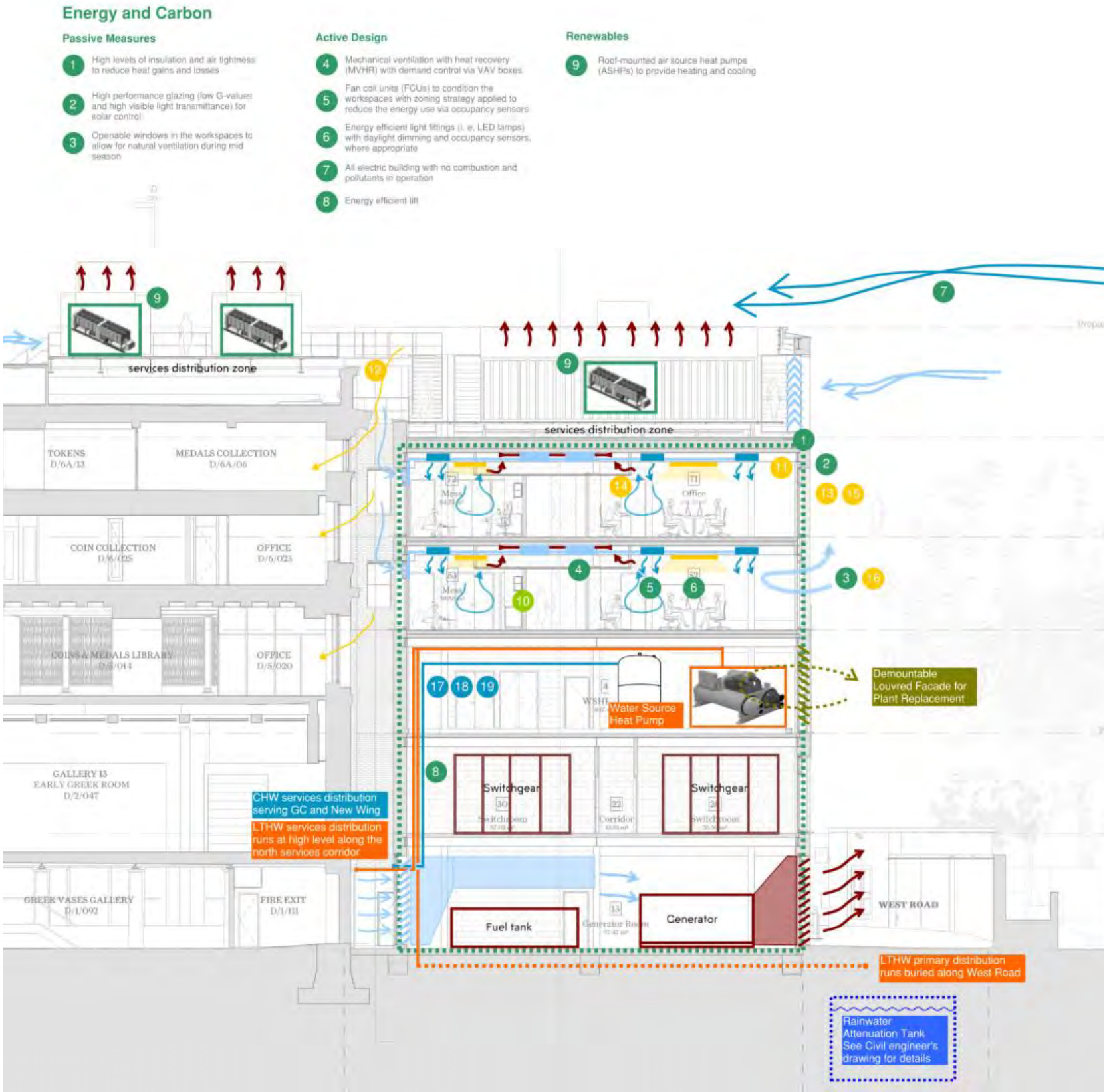
The proposed environmental design has been carefully considered with regards to key sustainability criteria to achieve BREEAM Excellent, reduce key risks such as fire and flood, and create support space which will promote good health & wellbeing for the building occupants.

Energy & Carbon:

Firstly, the proposed design employs a series of passive design measures to reduce overall energy demand.

The building takes a fabric first approach, using a high performance thermal and airtight envelope to reduce overall energy consumption aligned with the Be Lean step of the GLA Energy hierarchy. The solid thermal fabric will be paired with high performance windows and doors with solar control glazing to reduce heat gains. A mixed mode ventilation strategy with openable windows to the offices, meeting rooms, and mess spaces allows reduction of mechanical ventilation demand but also provides direct fresh air for occupants.

To supplement the passive measures, active modern efficient systems are also proposed to manage internal comfort and ventilation levels. All active systems in the building will be electrical with no combustion nor pollutants needed for day to day operation. Mechanical ventilation with heat recovery (MVHR) is provided, with VAV boxes allowing for demand control. This system will provide air to high level efficient fan coil units (FCUs) which we be equipped with occupancy sensors and zonal control to prevent their use when not required.



Right: Sectional illustration of proposed health & wellbeing and sustainability measures proposed within the SWEC building.

Lighting will be provided via energy efficient LED technology, and an energy efficient lift is also provided, delivering DDA compliance and meeting London Plan requirements for evacuation lifts.

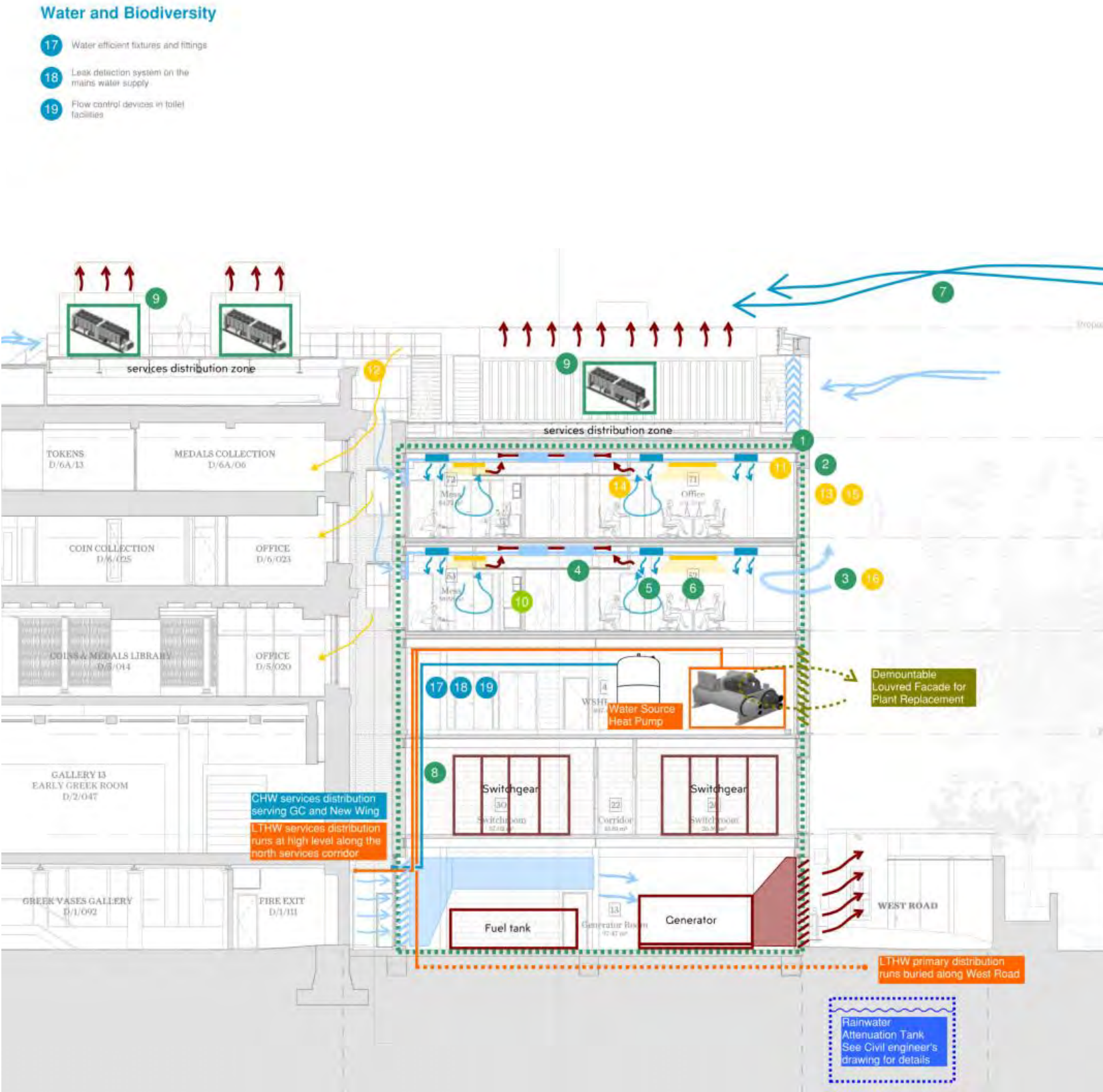
The new heating and cooling system proposed will serve the local building as well as the wider estate, replacing the existing fossil fuel powered gas systems currently operating on site. This new energy efficient system will result in an estimated annual net saving of 1,700 tonnes of CO2 compared to the existing baseline scenario.

Water Consumption:

Throughout the building, water efficient fixtures and fittings will be specified in line with BREEAM Wat 01 water consumption requirements. Flow control devices will also be utilised in WC areas to reduce overall water consumption. Leak detection will be used on the mains water supply to also prevent wastage of water.

Rainwater will also be collected into a new rainwater only attenuated system to reduce overall flow rates into the mains sewer network. This is covered in more detail later in this chapter.

Right:
Sectional illustration of proposed health & wellbeing and sustainability measures proposed within the SWEC building.



Health & Wellbeing:

A core value of the Energy Centre Programme is to deliver modern fit for purpose accommodation that will promote health and wellbeing for the dedicated people at the Museum that maintain the estate on a day to day basis. Currently, many of these people are housed in low quality and temporary portacabin type accommodation which is not in keeping with the high regard their role is held at by the Museum as an organisation.

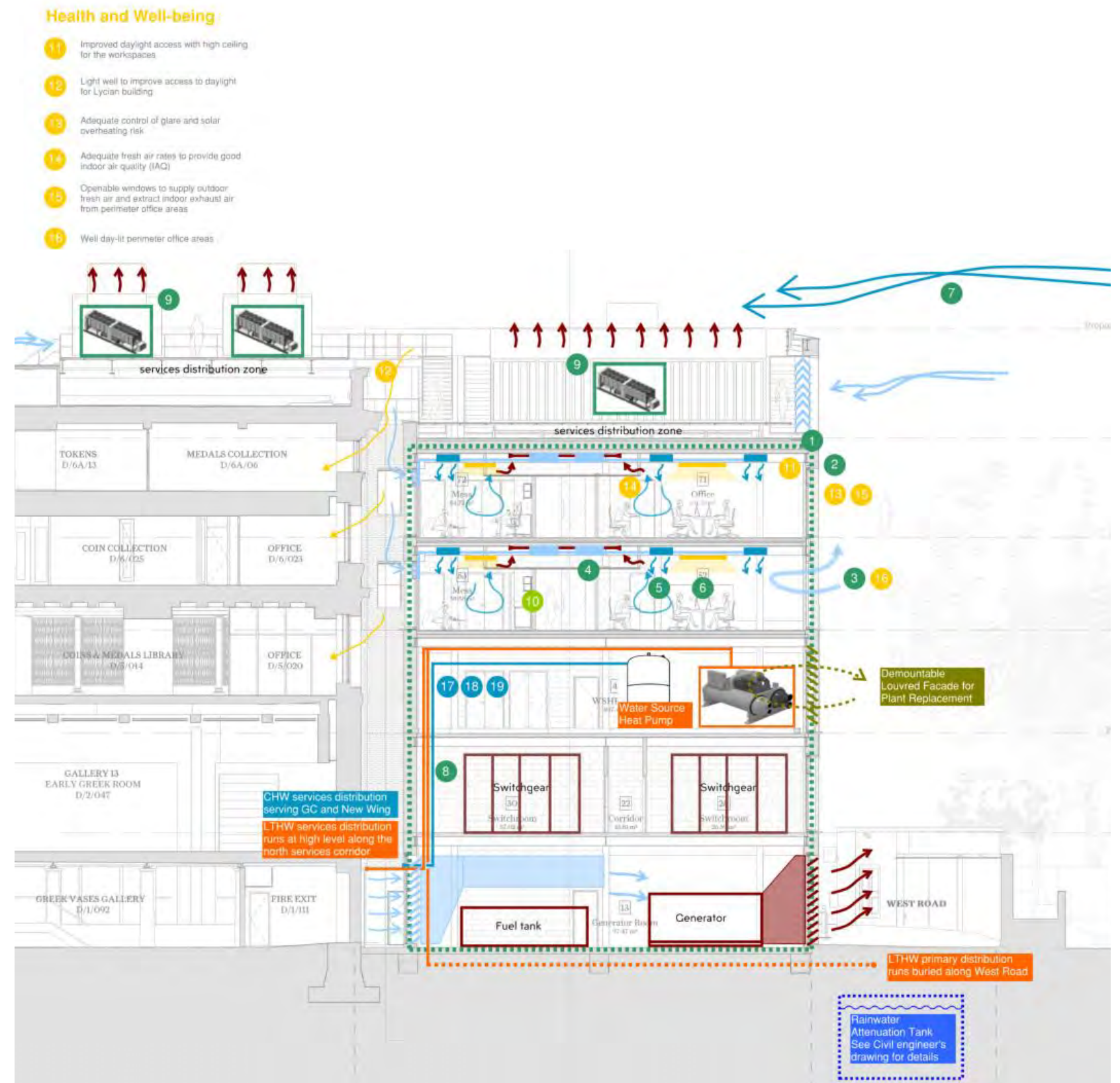
The proposed support accommodation will provide offices with good levels of natural daylight and engage with biophilia via the outlook to mature trees adjacent the proposed West elevation. Openable windows will provide natural ventilation with glare and overheating minimised through the use of solar control glazing and internal blinds. To the East elevation, the proposed lightwell will provide cross ventilation across the plan but also introduce additional daylight to mess spaces.

The existing outside space of the WCEC courtyard and new landscaped area adjacent to the ISS will provide building users with external amenity in close proximity to the site, vital for mental health and wellbeing.

Emissions from construction products will also be reduced through meeting BREEAM Hea 02 requirements.

Right:

Sectional illustration of proposed health & wellbeing and sustainability measures proposed within the SWEC building.



4.6.3 Ecology

Writtle Forest Consultancy have undertaken a Preliminary Ecological Appraisal for the proposed development. Their report identified two enhancement opportunities, in accordance with national policies for biodiversity net gain, to support local species, which will both be delivered as part of the development.

The first is to include 3 No. bird boxes suitable for use by house sparrow (*Passer domesticus*), located within a facade close to vegetation, away from doors and windows, a minimum of 2m above ground level. The report also notes the third box should be suitable for other garden birds such as a Robin and Wagtail.

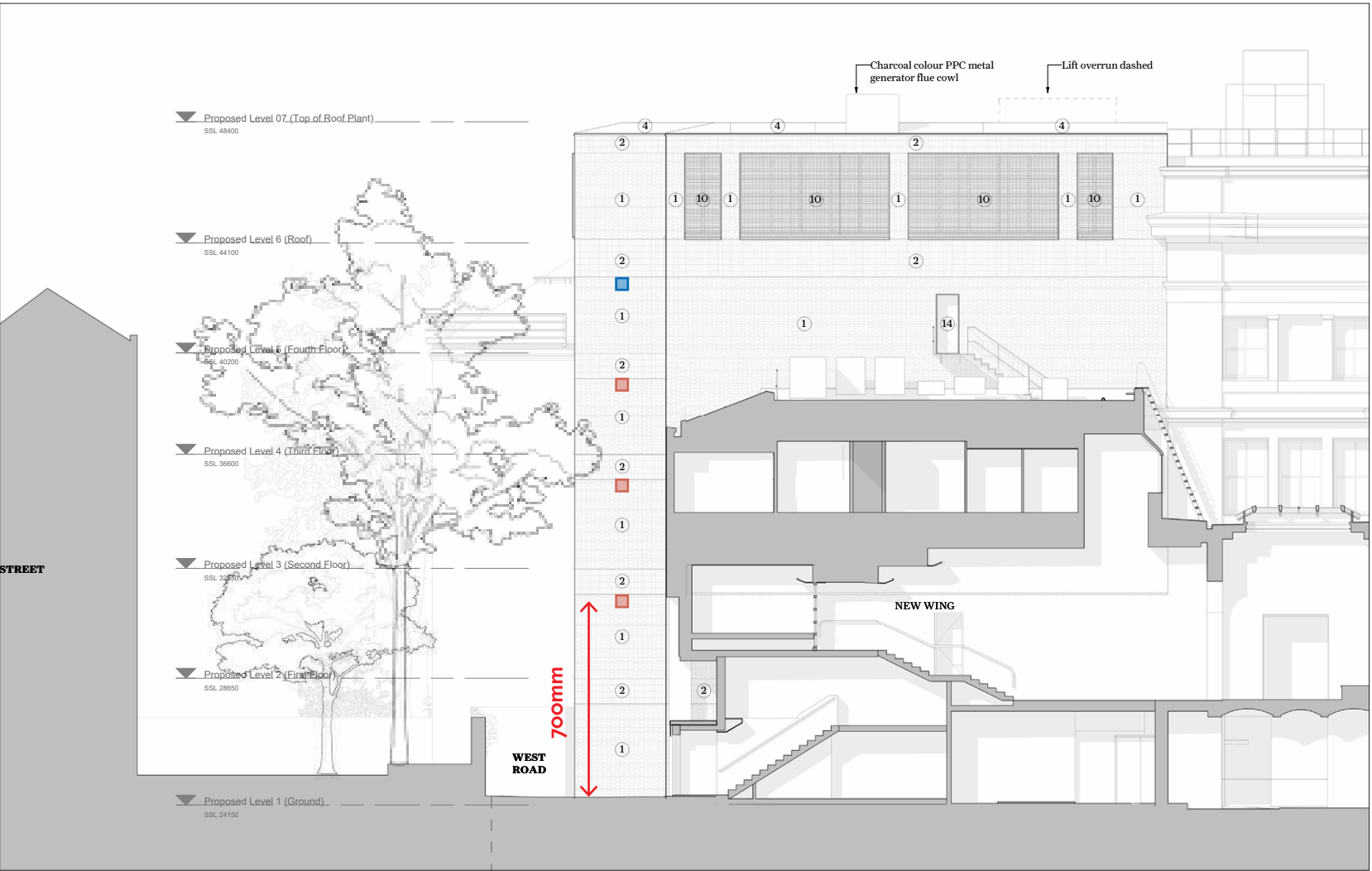
The second is to include 1 No. bat box integrated into the proposals, located away from windows and doors, within a south facing facade, and a minimum of 3 metres from the ground level.

Following the guidance in the report, the proposed boxes will be integrated into the façades of the new building to minimise impacts on the heritage setting.

- Key:
- Proposed bird boxes integrated into external facing brickwork
 - Proposed bat box integrated into external facing brickwork

From top left clockwise:
Proposed Elevation Illustrating location of proposed bird and bat boxes

Both bird and bat boxes will be located on the southern elevation facing the garden and mature trees located within the curtilage of No. 7 Montague Street. The boxes will be of types integrated into the elevation materiality, with facing brickwork to match that of the proposed elevation.



South Elevation



Integrated Bat Box



Integrated Bird Box

The completed proposals will be designed to provide an accessible and inclusive environment commensurate with the maintenance functions of the proposed support workspaces. It is important that both the internal and external environments meet regulatory provisions in inclusive design, not only to meet the needs of those with disabilities, but also, since inclusive design is indivisible from good design, this will benefit all building users by providing legible, logical, safe and navigable external pedestrian routes and internal spaces

Inclusive design guidance and standards

The following guidance and standards have been given due regard in the design proposals:

- Building Regulations 2010 and associated Approved Documents, including:
 - Building Regulations Approved Document K (ADK) – Protection from falling, collision and impact 2013
 - Building Regulations Approved Document M (ADM) – Access to and use of Buildings Vol. 2: Buildings other than dwellings, 2015 edition incorporating 2020 amendments
- National Planning Policy Framework
- Equality Act 2010
- The London Plan (2021)
- LB Camden Local Plan (2017)
- BS 8300-1:2018 Design of accessible and inclusive built environment Part 1: External environment
- BS 8300-1:2018 Design of accessible and inclusive built environment Part 2: Buildings

Key Provisions Summary

The proposals include the following key provisions to ensure the proposal is accessible to all:

- Approach to the building will be via the West Road, which will be adjacent the main proposed building entrance to provide access at no steeper than a 1:21 gradient. A level landing (no more than 1:60 gradient) is provided at the entrance doors, along with a 1500mm x 1500mm turning space clear of door swings
- An ADM Vol. 2-compliant passenger lift provides level access to all levels within the building. The proposed lift has a car size of 1500mm wide x 2700mm deep and a door width of 1300mm. The lift will have the capability to be used as an evacuation lift in case of emergency. 1400mm x 900 mm refuges with emergency call points are provided at all levels with protected stairs and lobbies, and 1500mm x 1500mm turning spaces are provided at lift entry on every level
- The core stair has been designed to meet the ADK provisions for a general access stair
- Circulation within the building to support (i.e. non plant/infrastructure) spaces are designed to meet the provisions of ADM Vol. 2
- An accessible WC and shower cubicle is located at each support accommodation floor level off the main stair and lift lobby

Further description and illustration of the accessibility provisions in response to the requirements set out in the LB Camden Local Plan (2017) are contained in the following pages.



Key:

-  Plant
-  Risers
-  Engineering FC Centre
-  Office
-  Circulation
-  Mess Areas
-  Welfare - Lockers, Showers & WCs
-  Storage
-  DDA compliant access route

Top to Bottom:

Level 01 floor plan accessibility diagram

Office floors Level 04 and 05 floor plan accessibility diagram

The Camden Local Plan (2017) sets out within Policy 6 Access for all requirements for promoting fair access and removing barriers that prevent everyone from accessing facilities and opportunities within proposed developments.

The following pages summarise how the proposals address each key aspect of Policy 6 as set out within the Local Plan. These are that LB Camden will:

Expect all buildings and places to meet the highest practicable standards of accessible and inclusive design so they can be used safely, easily and with dignity by all;

The general arrangement of the proposed SWEC places the occupied areas of accommodation, the areas to which Part M applies, on Levels 04 and 05. Other areas within the proposed building are primary plant rooms and will not be occupied.

Approved Document M (or Requirement M1 of Part M) of the Building Regulations ‘does not apply to any part of a building that is used solely to enable the building or any service or fitting in the building to be inspected, repaired or maintained’.

The SWEC occupied areas are accessed from ground level via two Part K compliant general access stairs and a Part M and London Plan compliant passenger/evacuation lift within the north core. These stairs and lifts will serve all floors of the building, meaning plant spaces will also have level access even though they fall outside the remit of Part M.

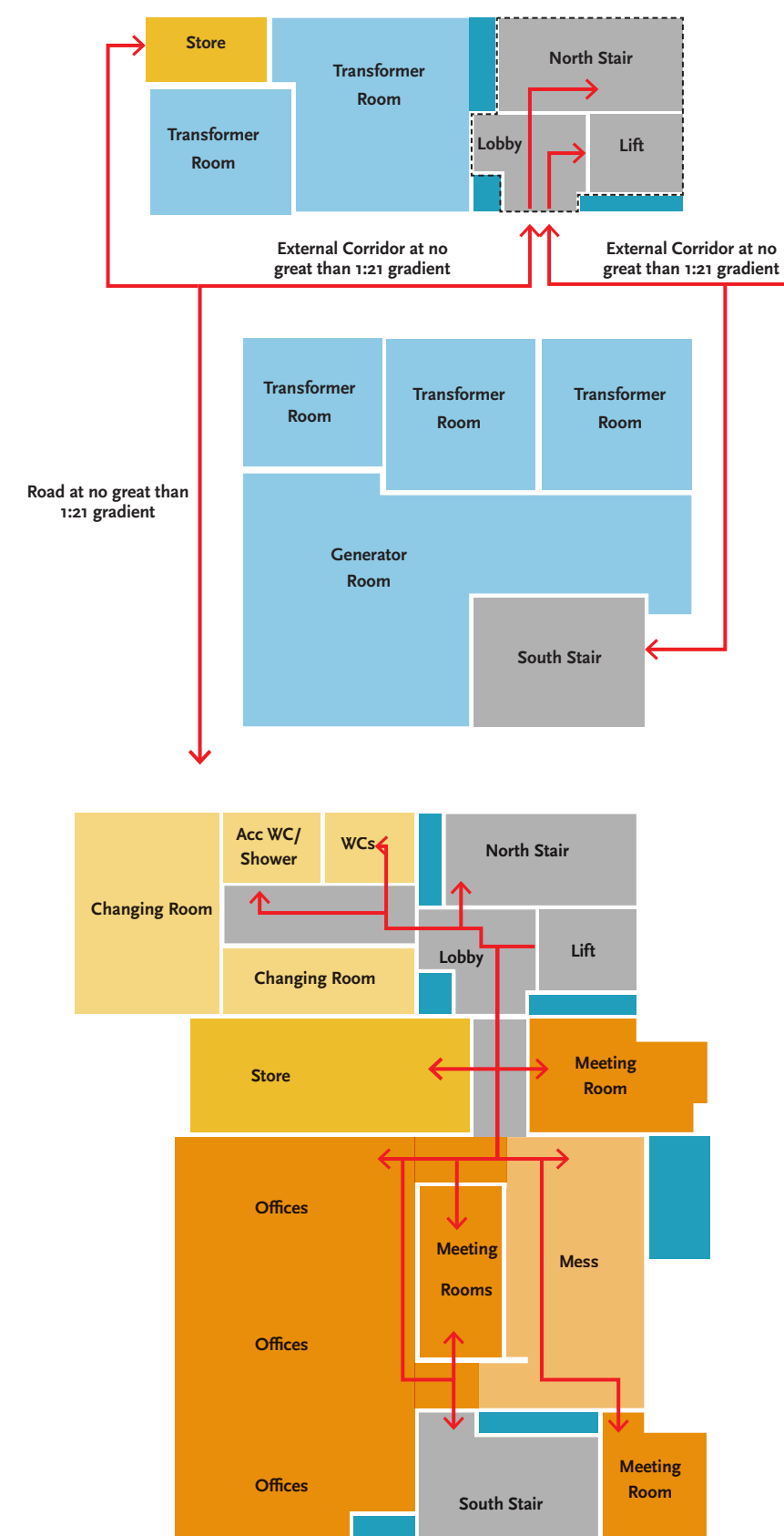
The principal entrance to the building will be accessed from the West Road via the Main South Gate entrance off Great Russell Street, a road with a shallow gradient of less than 1:21. Levels 04 and 05 will be level across the floorplate with thresholds between finishes provided to Part M requirements.

Within WC areas, a separate unisex Accessible WC and shower room is provide at both Level 04 and 05, oversized to accommodate changing lockers to be located within the same room. Refer to section 4.4 of this chapter for further information with regards to the welfare provision within the proposals.

The proposals will therefore provide a great improvement in comparison to the existing support accommodation on site, which does not provide step free access, accessible WC and shower welfare facilities, nor contain a lift.

The proposals provide accessibility over and above Part M requirements, in that they provide level access to all floors including those occupied solely by primary plant as well as the occupied areas of the building.

As the above demonstrates, the proposals are designed to meet the highest practicable standards of accessible and inclusive design in order that they can be used safely, easily, and with dignity by all.



Expect facilities to be located in the most accessible parts of the borough; AND Encourage accessible public transport;

Public Transport Access Level (PTAL)

The British Museum estate is within zone 6B which is the best level of accessibility based on PTAL credentials. This means the development will have good access to sustainable transport options.

National & International Rail

The Museum lies close to three key regional, national and international transport interchanges:

- Tottenham Court Road
- Euston
- King’s Cross St Pancras

TfL Underground Stations

The Museum is approximately 10-minutes walking distance from four TfL London Underground stations serving three Tube lines (Piccadilly, Northern & Central. Holborn Station capacity upgrade project, consulted on in 2018 and expected to start in 2023/24, includes the proposal for an additional entrance and exit to the Underground station.

Bus & City Hire Cycles

Numerous Bus stops and city cycle hire racks exist within a 500m radius of the proposed developments.



Key:

Museum Estate buildings footprint

Perimeter property and wider context building footprints

SWEC and ISS proposed building sites

ERB proposed building site (part of a separate application made in April of 2024)

Bus Stop

Cycle Hire Racks

Right:

Site location plan

Cycle storage spaces

There will be approximately 53 permanent building users who will utilise the 25 existing cycle spaces within and accessed off of the South Forecourt in room B/1/074.

The cycle spaces will meet the following criteria:



- Cycles will be secured within spaces in rack(s).
- They will be covered overhead and set in (or fixed to) a permanent structure (building or hard-standing).
- The distance between each cycle rack, and cycle racks and other obstructions will enable bikes to be easily stored and accessed.
- The storage facility or entrance to the facility is in a prominent site location that is viewable/overlooked from either an occupied building or a main access to a building.
- The cycle storage facility has adequate lighting in accordance with BS5489-1:2013. The lighting will be controlled to avoid out-of-hours use and operation during daylight hours, where there is sufficient daylight in or around the facility.

These will be supplemented by an additional 56 external cycle racks within the South Forecourt of The Museum Estate.

As the above evidences, the proposals therefore are located within the most accessible parts of the Borough and encourage the use of accessible, sustainable and healthy transport by all.



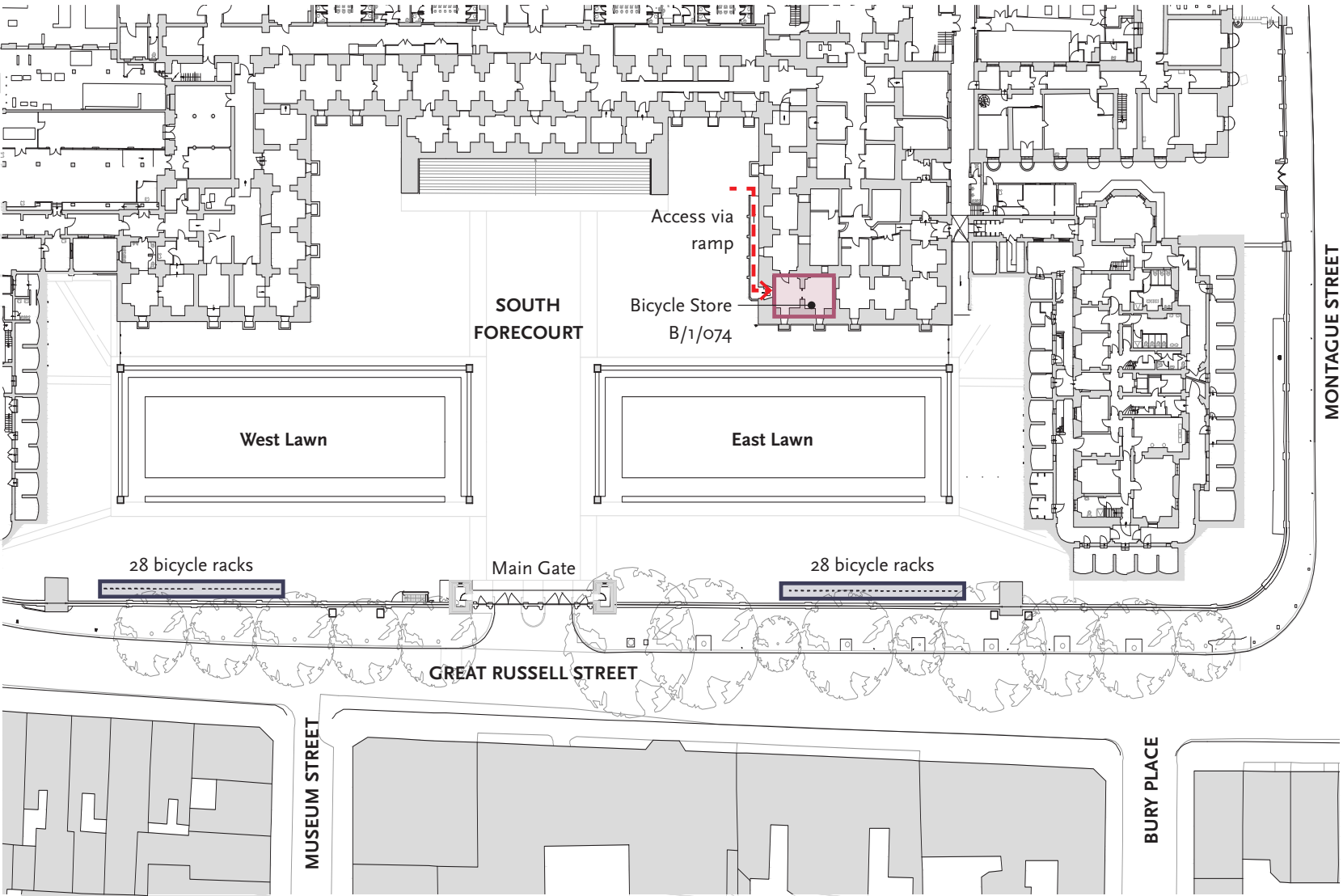
Key:

-  External bicycle parking (public & staff)
-  Covered bicycle store (staff only)

Top to bottom:

Plan showing locations of bicycle storage in the South Forecourt and at Lo1 of the Museum.

Photographs of the covered cycle store room B/1/074.

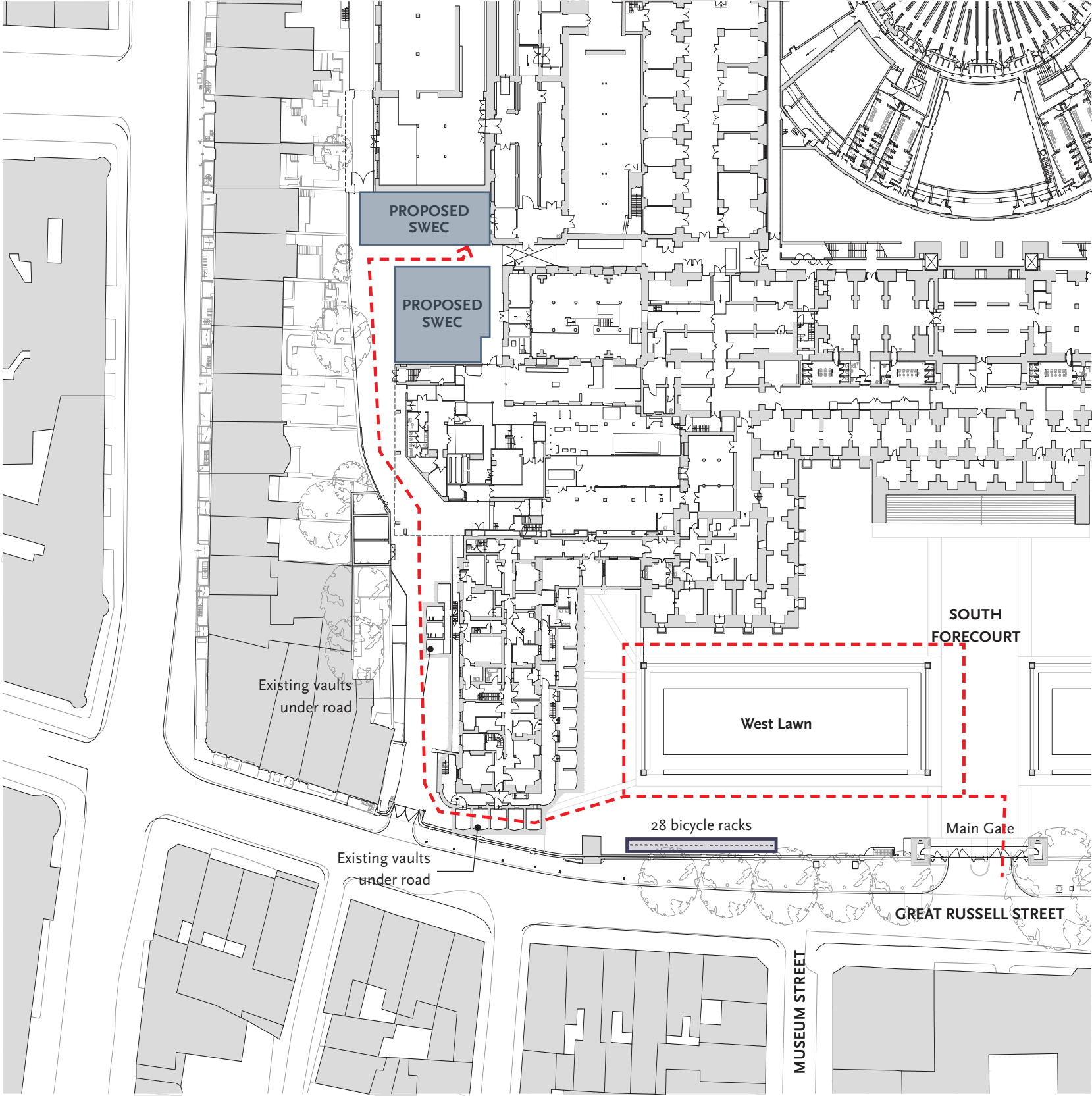


Expect spaces, routes and facilities between buildings to be designed to be fully accessible;

As stated above, the principal entrance to the proposed building will be accessed from the West Road via the Main South Gate entrance off Great Russell Street, a road with a shallow gradient of less than 1:21. Levels 04 and 05 will be level across the floorplate with thresholds between finishes provided to Part M requirements.

Level (1:60 or gentler gradient) landings of at least 1500mm x 1500mm will be provided in front of the principal entrance doors of a material that does not impede the movement of wheelchairs, and opening forces of entrance doors will meet Part M Vol.2 2.17a requirements.

As such the proposed routes to the building and facilities contained within are designed to be fully accessible and non-discriminatory in that the accessible route is the main route that all occupants will use to access the proposed building.



Key:

Proposed SWEC building footprint, filled dot indicated principal entrance location.

Accessible route for all accessing the proposed building from the South Gate.

Right:

Plan showing proposed SWEC location and accessible route to the principal entrance.

Secure accessible parking for disabled people;

The proposals do not alter the existing arrangements with regards to blue badge or other parking. Blue Badge holders access and parking within the South Forecourt will remain in the existing location once the proposals are completed. These will continue to operate as existing to ensure the needs for disabled drivers and those that rely on private motorised transport are catered for.

Likewise, provisions for emergency vehicle access will remain in place as per the existing arrangements.

In conclusion, the proposals have thoroughly considered access requirements and provide the highest practicable standards of accessible and inclusive design so the proposed buildings can be used safely, easily and with dignity by all.



1. Fire tender vehicle access
(to principal elevations and dry riser inlets)
2. Ambulance access to front door
3. London Air Ambulance landing site
(not a statutory or contractual obligation)
4. Blue Badge holders' access and parking
(average daily use is approximately two vehicles based on April–June 2022)
5. Loading/unloading for events and exhibitions
6. VIP drop-off
7. Contractors' vehicle access
8. Visitor and staff bicycle parking



Key:

- Area currently designated for visitor arrival, queuing and search
- Site entrance - Public
- Site entrance - Back of House
- BoH Logistics Vehicle entrance

4.6.5

Servicing & Logistics

The proposals do not materially alter the Estate wide servicing and operational strategies. Though the proposals will shift the location of some support functions and plant infrastructure within the Estate, these functions will continue to be serviced via the existing Estate wide arrangements and strategies in place using the existing entrance gates and internal servicing road.

The proposals do not alter the existing arrangements with regards to blue badge or other parking and vehicle servicing estate wide strategies, nor does it alter any arrangements with regards to cycle parking locations. Likewise, deliveries to site and access for emergency vehicles will continue to operate via the existing gates and perimeter road.

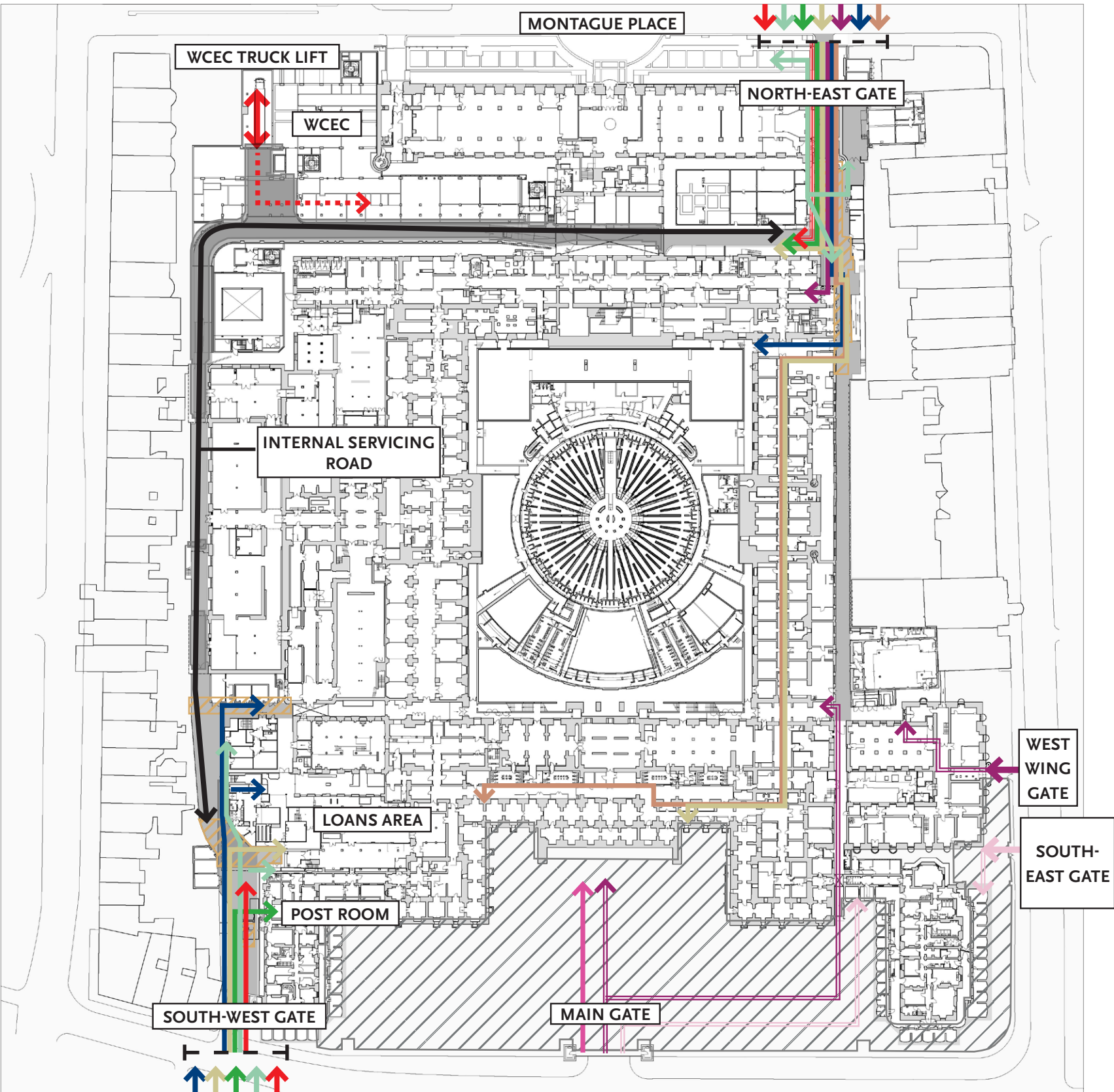
Key:

Object/collections

Events

Right:

Level 01 site plan with business as usual activity annotated



4.6.6 Refuse & Recycling Collection

The Museum currently has an Estate wide recycling, refuse, and servicing strategy and the proposals will not change the strategies in place.

The support accommodation contained within the proposals presents a rationalisation against existing space which will be demolished and/or decanted permanently as part of the proposed programme of works. Therefore, the proposals will not place any additional servicing, refuse, or recycling capacity requirements on the Estate-wide servicing arrangements and allowances currently in place.

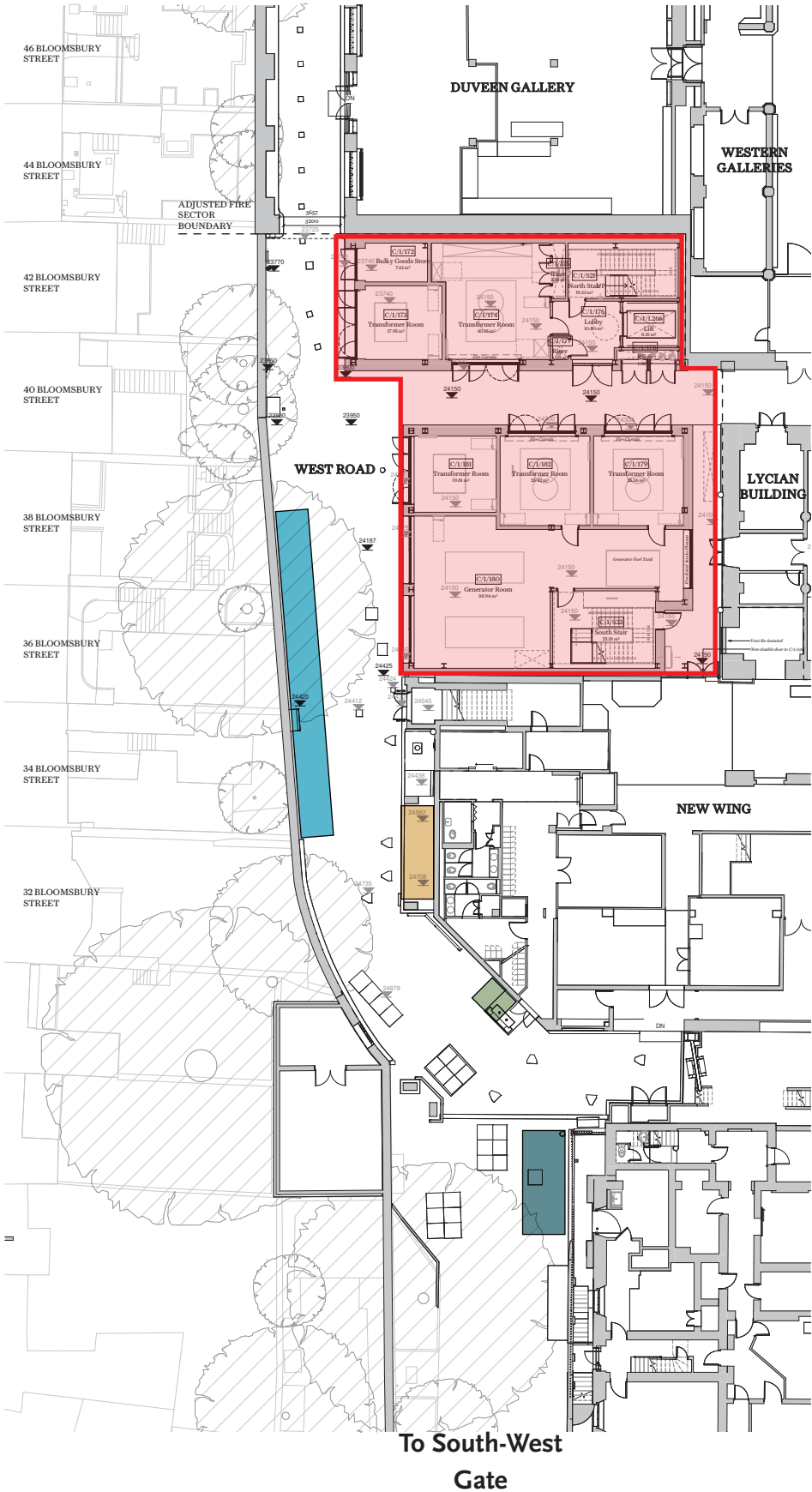
Recycling and refuse collection within the proposed SWEC will be via localised bins provided in kitchens, office, WC/Changing, and storage areas before being taken from the building, processed, and placed in large format bins at designated site collection points for eventual removal from the site. This is illustrated on the adjacent plans.

Key:

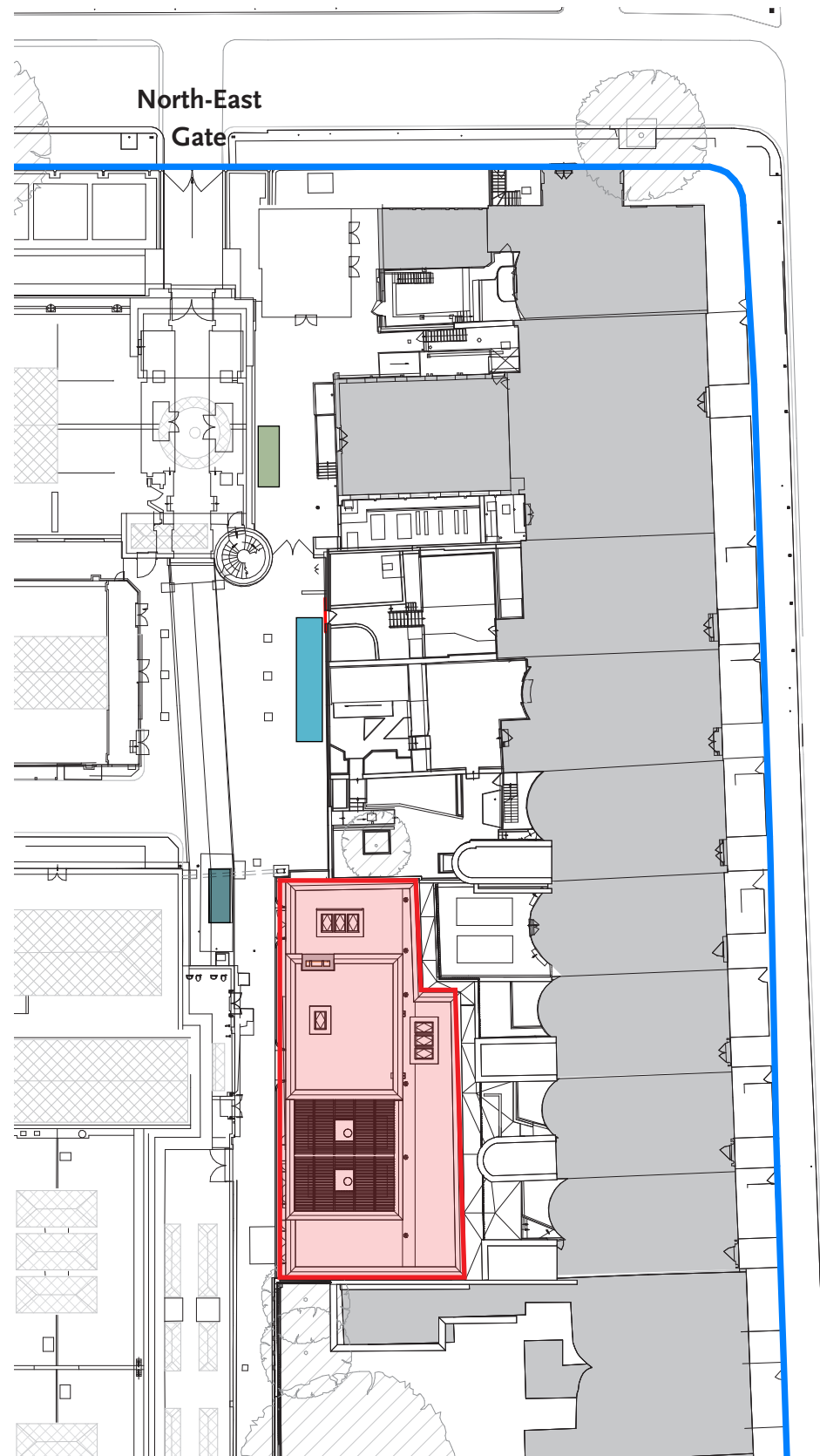
- External central Bin location for 1100L bins
- External central bin location for 240L bins
- Cardboard Compactor
- External Large Skip
- Proposed SWEC Building Footprint.

Right:

Existing Estate refuse collection points and equipment on the West Road that will be maintained.



- Southwest Corner Central Refuse Collection Point Summary:**
- Cardboard Compactor (Blue) x 1 – Dims 1900mm x 1720mm
 - Large Roll on Roll Off Skip x 1 – Dims 5500mm x 2300mm.
 - Dims can vary on the skip that is available for drop off.
 - Used for larger and bulky items and is used for waste from the SW Collection Workshop
 - Bins – 1100 Litre - Dims 1200mm x 1030mm
 - Purple (Dry mixed recycling) x 11
 - Green (Cardboard) x 2
 - Bins – 240 Litre – Dims 575mm x 1060mm
 - Purple (Residual Waste) x 3
 - Green (Glass) x 5
 - Orange (Food Waste) x 7



Northeast Corner Central Refuse Collection Point Summary:

- Cardboard Compactor (Blue) x 1 – Dims 2000mm x 1200mm
- Food and Waste Compactor (Green) x 1 – Dims 4250mm x 1850mm
- Bins – 1100 Litre - Dims 1200mm x 1030mm
 - Purple (Dry mixed recycling) x 3 –
 - Green – (Cardboard) x 1



Key:

- External central Bin location for 1100L bins
- Cardboard Compactor
- External Large Food & Waste Compactor
- Proposed ERB Building Footprint (Proposed as part of the Energy Centre Programme but does not form part of the scope of this planning application.

Right:

Existing Estate refuse collection points and equipment on the East Road that will be maintained.

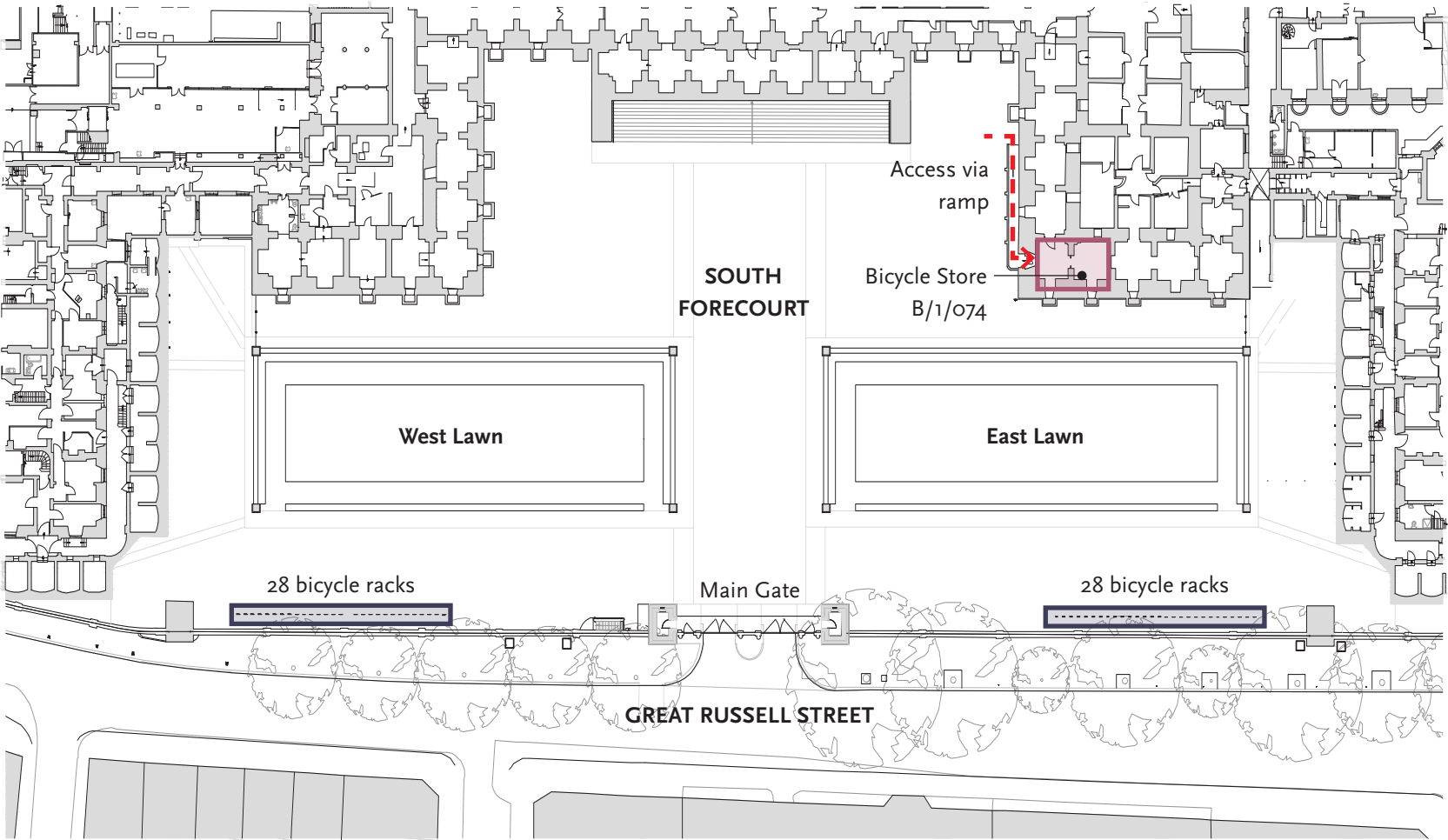
4.6.7 Cycle Storage

Similar to servicing, the Museum currently has designated cycle parking/storage facilities for members of the public and members of staff.

As the number of desks/staff provided for within the proposals is equivalent to existing capacity which will be displaced as a result of the programme works, the proposals will not place additional cycle store requirements above what currently exists on site. It is proposed that the support accommodation building users will utilise these existing facilities.

Building users will therefore enter the site through the Main Gate security points and utilise either the external Sheffield stands adjacent the South Forecourt railings or racks within Bicycle Store B/1/074, accessed via ramp directly from the South Forecourt.

Showers and lockers will be provided in the new SWEC adjacent the office desk and mess accommodation. Please refer to section 4.4.6 within this chapter for further information.



- Key:
- External bicycle parking (public & staff)
 - Covered bicycle store (staff only)

Top:

Plan showing locations of bicycle storage in the South Forecourt and at Lo1 of the Museum.

Bottom:

Images of existing cycle racks, brackets, and designated zones for non-standard cycle types in the existing Bicycle Store accessed via the South Forecourt.



4.6.8

Future Proofing & Flexibility

As part of the design development, the topic of future flexibility and future proofing has been a key area discussed and explored, in order to ensure the Museum gets the most out of the proposed building in the long term. The key items developed were the following:

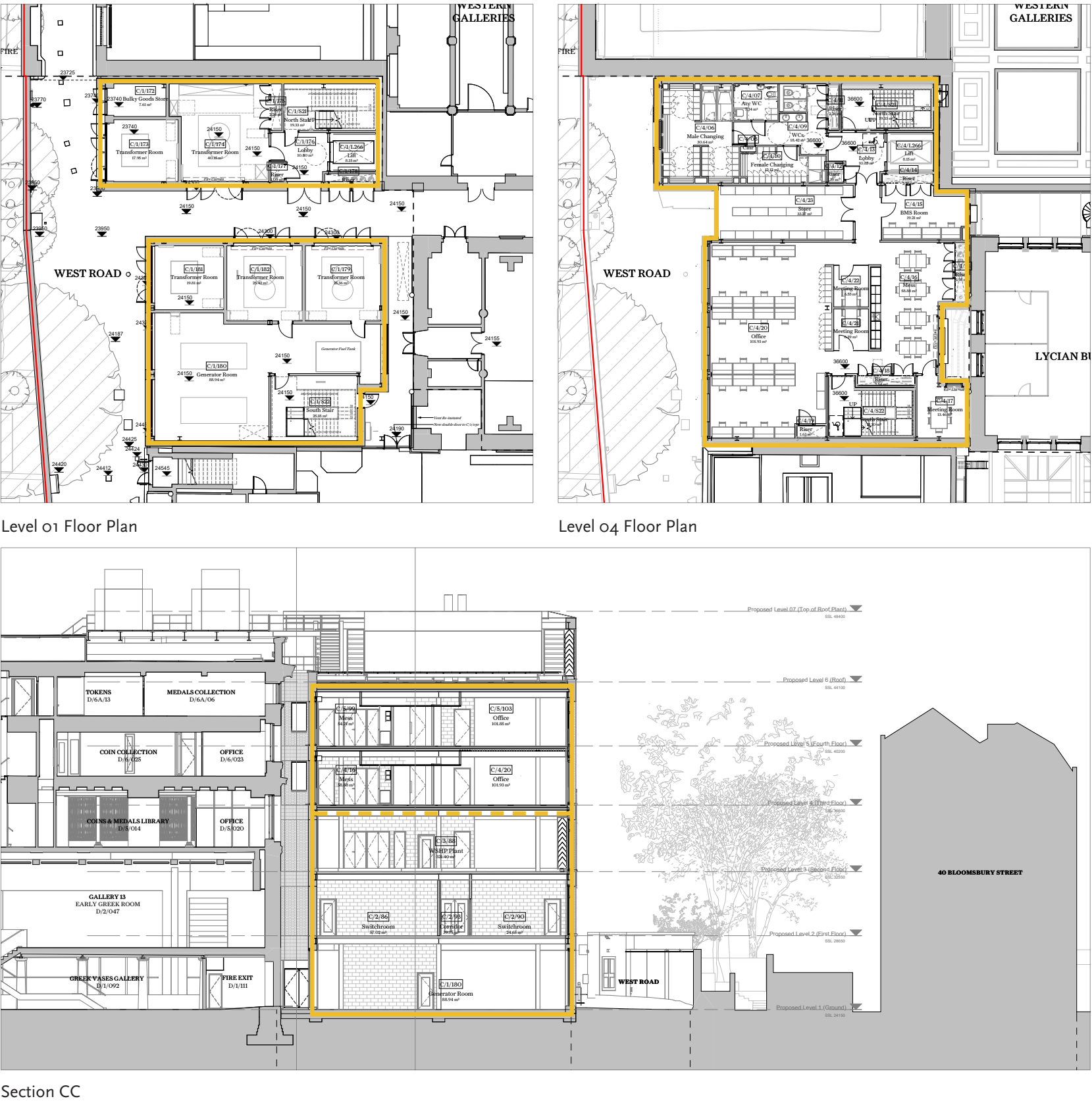
Insulation lines

Though much of the interior space delivered within the new SWEC is plant space (and therefore is not required to be thermally insulated), the proposed design provides a thermal wrap to the whole building, in order that it is ‘retrofit ready’.

Provision of insulation throughout the external wall cavity and roof means that should use change to occupied functions (office, workshop, controlled temperature storage etc.) in the building’s medium to longer term future, minimal intrusive works will be required in order to enact that change, as those spaces are already thermally insulated.

- Key:
- Proposed thermal insulation line
- Additional allowance for insulation within the steel structural zone below office accommodation to mitigate thermal losses from grilles at water-source heat pump level below.

- From top left clockwise:
- Proposed Level 01 Plan
- Proposed Level 04 Plan
- Proposed Section DD



Structural Grid and Partitions

The Structural Grid has been designed with flexibility in mind, utilising an open layout to provide flexibility of adaptation in future if required, with a typical grid bay of c. 8 x 4.5m. This typical bay however is custom tailored in order that the building creates good alignments with the existing building that surrounds its footprint.

Internal dividing walls between the steel frame will be predominantly non-structural blockwork or studwork, meaning the building’s layout can be adapted in future without adversely affecting the building’s structure. The structural loading of the plant floors are high, meaning these will be able to support other functions, like office or other storage accommodation easily in future.

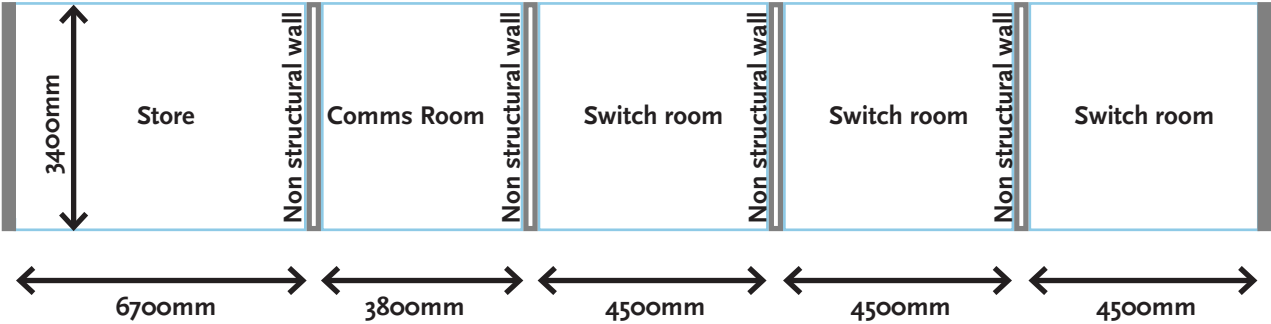
Lift

The inclusion of a Part M and London Plan compliant passenger and evacuation lift ensures step free access to all floors, enabling the possible future uses of the space pertaining to an office type function.

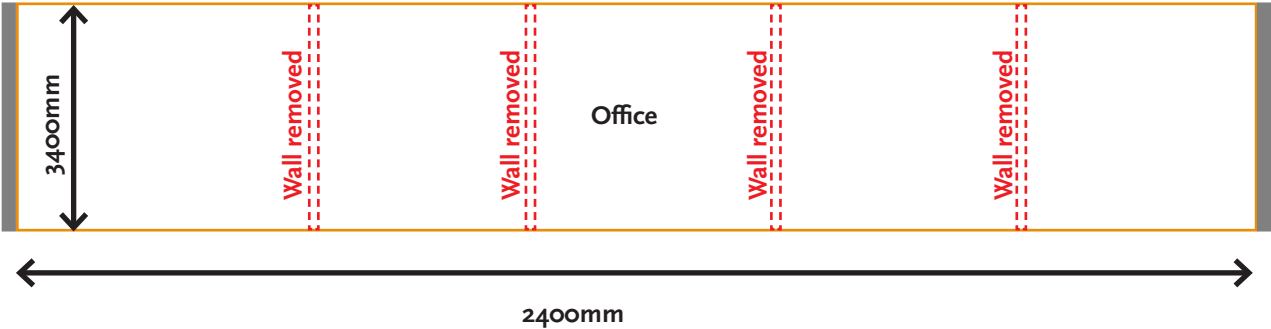
Clear Heights

The floor to ceiling heights of proposed plant spaces are greater than the support accommodation floors due to the extensive ducting and service runs needed. This improves the flexibility of the spaces as a services void is created at high level, meaning if the Museum wished to create additional office or storage spaces in future services zones and required clear heights could be accommodated.

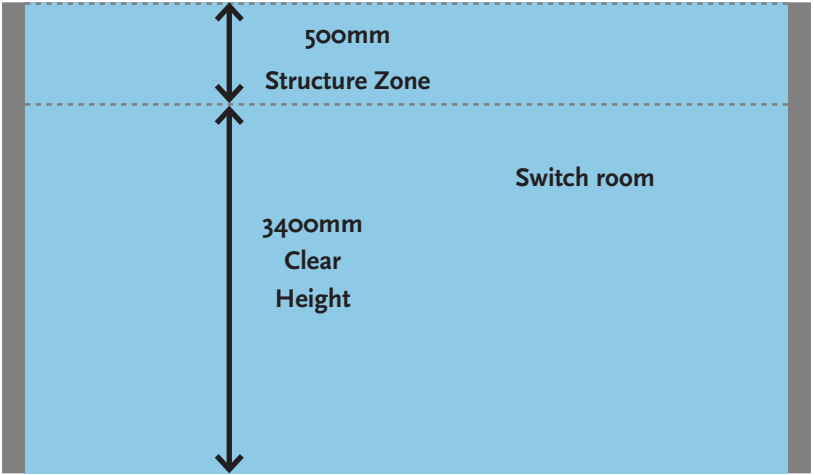
Proposed SWEC Plant Floor Example (Level 02 shown)



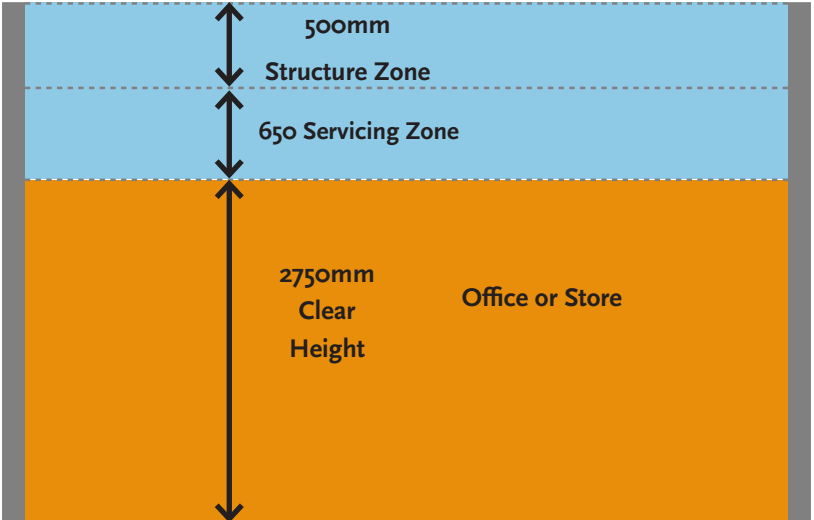
Flexible change of use



Proposed SWEC



Flexible change of use



From left:
Structural spans sectional diagram showing flexibility of space in a retrofit scenario for Level 01 (the most divided plant floor)
Clear heights diagram showing the proposed and a future office retrofit scenario for Level 01 (the lowest plant F-F height)

4.6.9

External Plant Acoustic Attenuation

Air source heat pump plant and roof level will be acoustically attenuated to achieve LB Camden requirements at sensitive receptors of 10DbA below background noise levels as surveyed.

To achieve this, the plant will be acoustically attenuated at source via side and top attenuators for each air source heat pump, and a secondary acoustic plant screen at roof level is proposed. This will provide further acoustic attenuation but also acoustic screening.

The attenuation provided will reduce the noise from 49.1 DbA at source (from the heat pumps) to 38DbA at the sensitive receptor (neighbouring hotel windows) for the daytime condition. Night time conditions will be meet through the proposed attenuation but also through running the heat pumps at a reduced capacity, and therefore lowered noise at source levels, after hours.

Please refer to the noise impact assessment submitted in the application documents for more information.

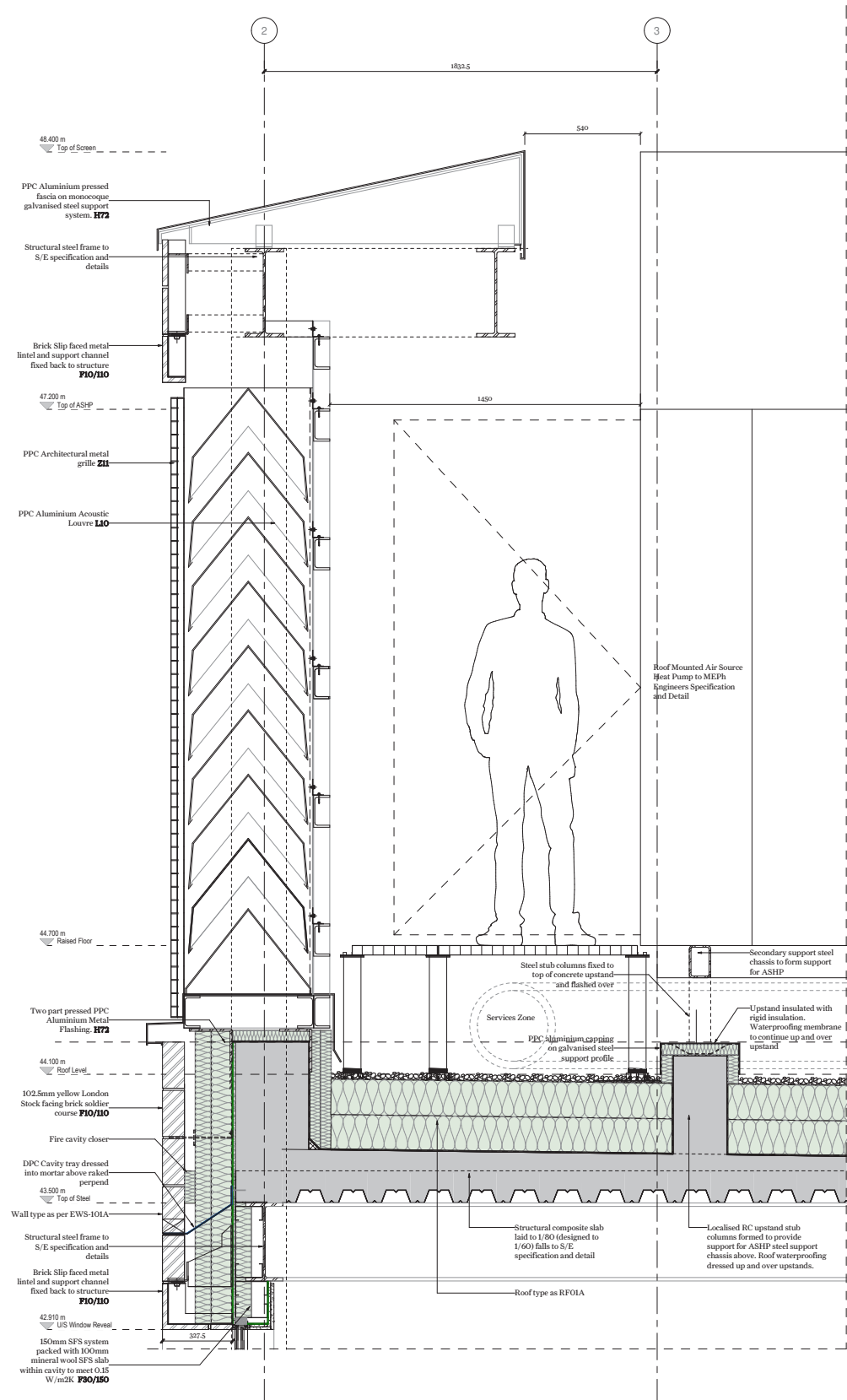
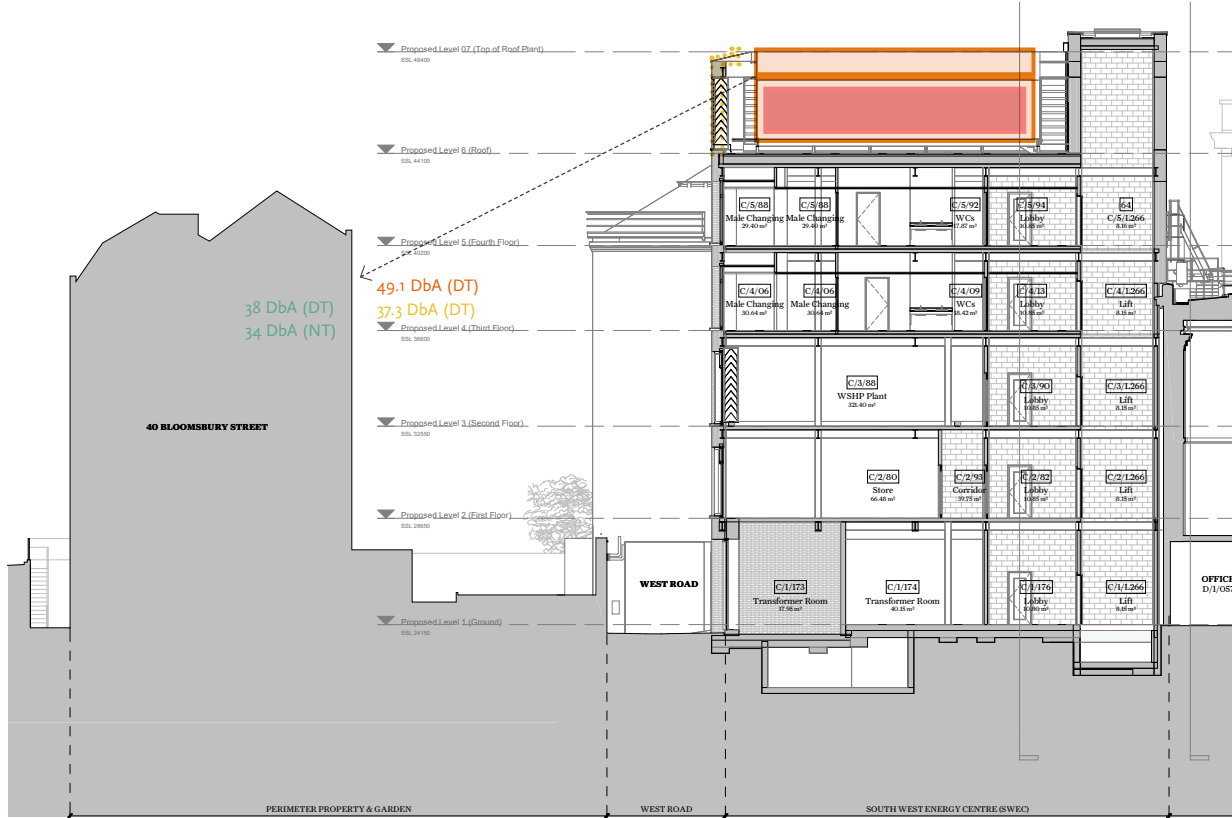
- Key:
- Plant noise
- Primary Attenuation
- Secondary Attenuation
- Noise limits at receptor
(Hotel window)

Left:

Illustrative section of SWEC rooftop plant acoustic attenuation

Right:

Proposed indicative sectional detail of the plant screen at roof level through the West Elevation



4.6.10

Mitigations to Reduce Height

Top: Height Reductions:

- 1

Revised detail to plant screen reduced its overall height by 800mm
- 2

ASHP units lowered by 300mm into the roof raised access floor zone
- 3

200mm insulation omitted from level 4 slab and included below ground floor slab (+25mm reduction to align with brick coursing)
- 4

A more efficient structure allows for a reduced structural zone depth, allowing a 225m total reduction across 3 lower floors

Key:

- Plant
- Office
- Mess Areas

Bottom Left to Right

West elevation based on initial acoustic survey and attenuation advice

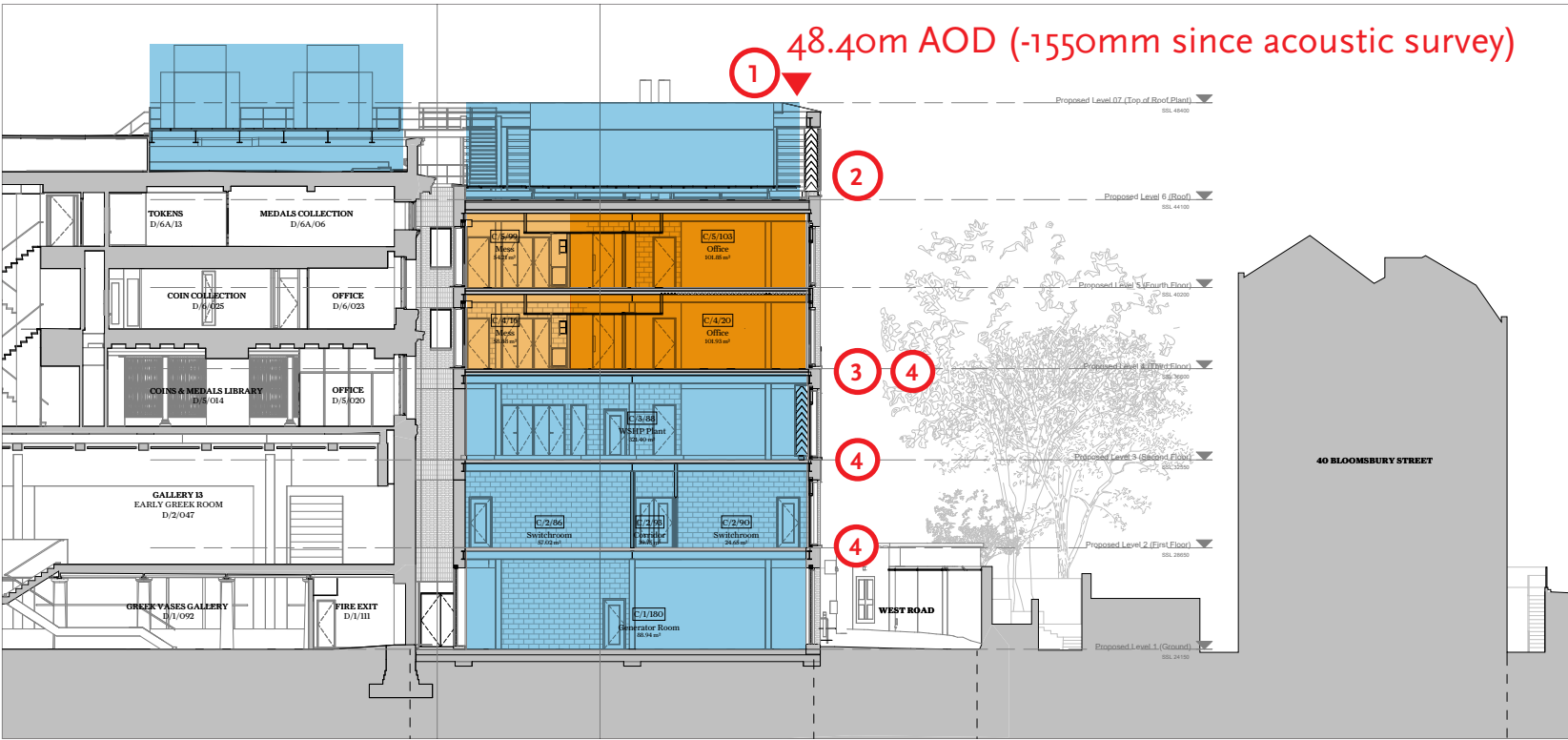
West elevation as proposed following development of bespoke screen detail with acoustic specialists.

Initially, the recommendations following external noise survey would have increased the height of the building by over 1.5m, and presented a dominant plant screen at roof level. The Design Team has however worked with specialist acoustic consultants to develop a bespoke detail which lowers the screen height required and integrates it aesthetically with the overall elevational design, using materials reflective of the surrounding conservation area and lower level elevations.

In addition, a full review of floor to floor heights at every level was undertaken, and where possible without adversely affecting the operations or future flexibility heights were reduced.

The sections adjacent illustrate where savings in height were found within the section stack of the building. The elevational and detail images on the following two pages illustrate the comparative design development between the initial recommendations made following the acoustic noise survey and the current proposals.

Overall, the through the design development proposals the height was lowered by 1550mm in total.



Section CC - Current



Initial proposal based on preliminary advice from acoustic specialists following noise surveys

5.4m High Screen
(all acoustic louvres flush with the facade)



Submitted proposal

4.3m High Screen
(acoustic louvres (3.2m high) integrated into brick piers and metal coping (1.1m high))