

2.18 Feasibility Study

The starting point for the Proposed Development was a considered and rigorous investigation into the current condition of the existing Euston Tower.

The aim of this study was to bring the disused building back to life, minimise waste and carbon emissions, and create a world leading science, technology and innovation building and public realm for Camden and the Knowledge Quarter.

This meant exploring opportunities for retention, reuse, and recycling while transforming the building into a building fit for the future. Notwithstanding the policy position which protects against losing existing office space, the study also explored alternative uses (including mixes of laboratory, residential, hotel, and student accommodation) for the existing building.

These explorations were detailed in a comprehensive, three-part feasibility study summarised in Volume Zero.

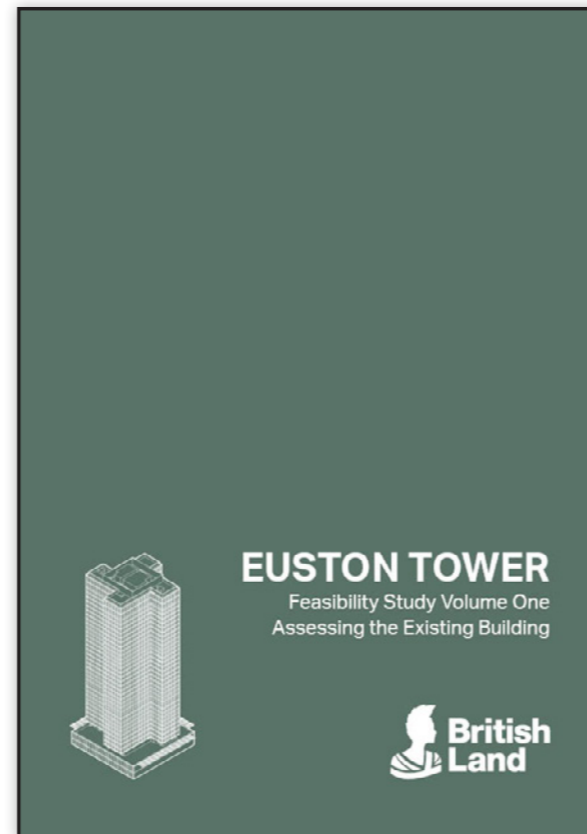
The feasibility study has been updated to reflect revisions to the application, noting that the principles of the Feasibility Study are unchanged. Only those volumes that are impacted by the revisions to the pending planning application are superseded.

Third-party Review

Throughout the process, which began in February 2022, there has been constant dialogue and review with the London Borough of Camden.

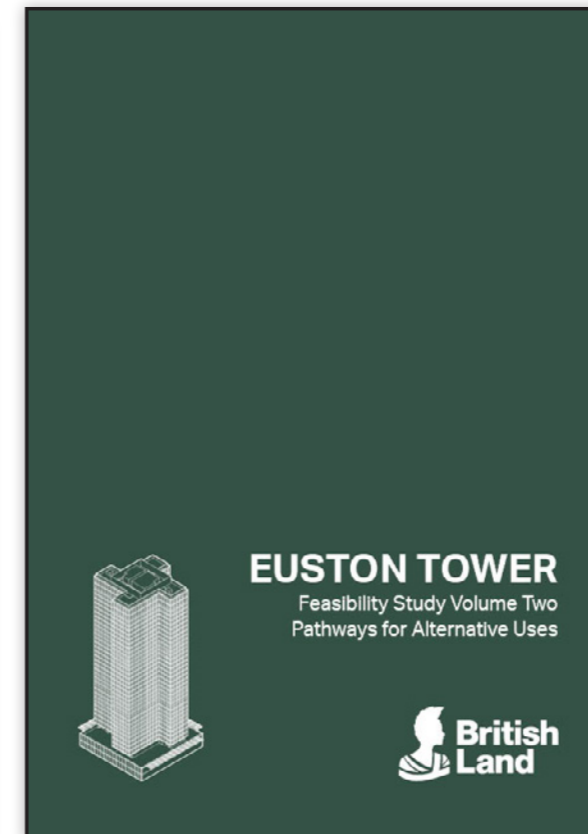
In April 2023, London Borough of Camden appointed third-party experts to conduct a technical review on their behalf. There have been several meetings with the third-party reviewers as they have examined the feasibility studies, and additional detail and information has been provided where requested.

Please refer to Feasibility Study documentation for further information.



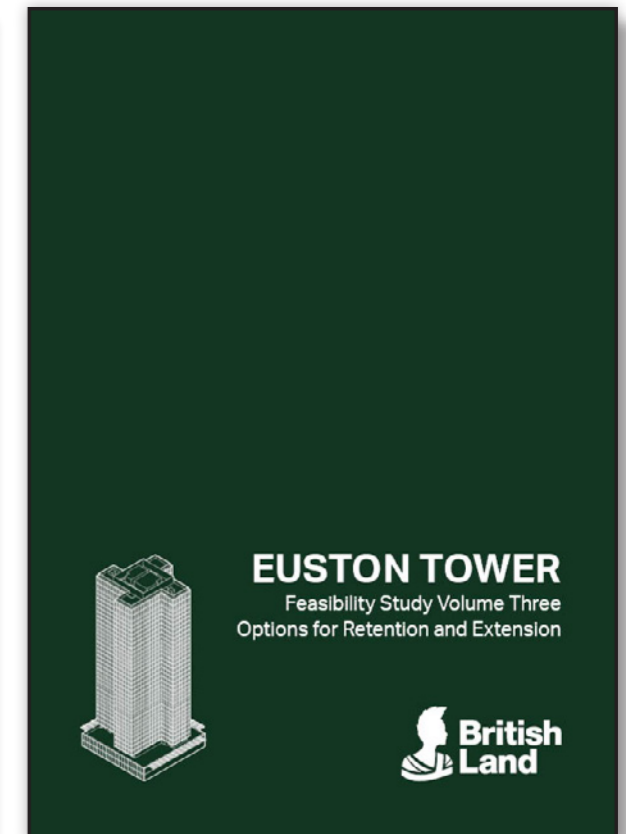
Volume One (unchanged from submission dated December 2023)

Volume One explored the condition of the existing tower. It considers the planning policy relating to the future use of Euston Tower, as well as market requirements for continued commercial use of the tower.



Volume Two (unchanged from submission dated December 2023)

Volume Two explored pathways for alternative uses within the existing tower. It studies a spectrum of realistic use cases, including mixes of laboratory, residential, hotel, and student accommodation.



Volume Three (superseded by submission dated 2024)

Volume Three explored options for retention and extension of the existing tower.



Photographs - Intrusive surveys have been conducted to understand existing condition

Feasibility Study: Volume 1

Volume 1 explored, in detail, the condition of the existing tower. It considered the planning policy relating to the future use of Euston Tower, as well as market requirements for continued commercial use of the tower. It presented an appraisal of the operation of the existing building, including an assessment of the building services. Finally, it set out the upgrades required to comply with current legislation, based on a technical review looking at the condition of the architecture, structures, and facade.

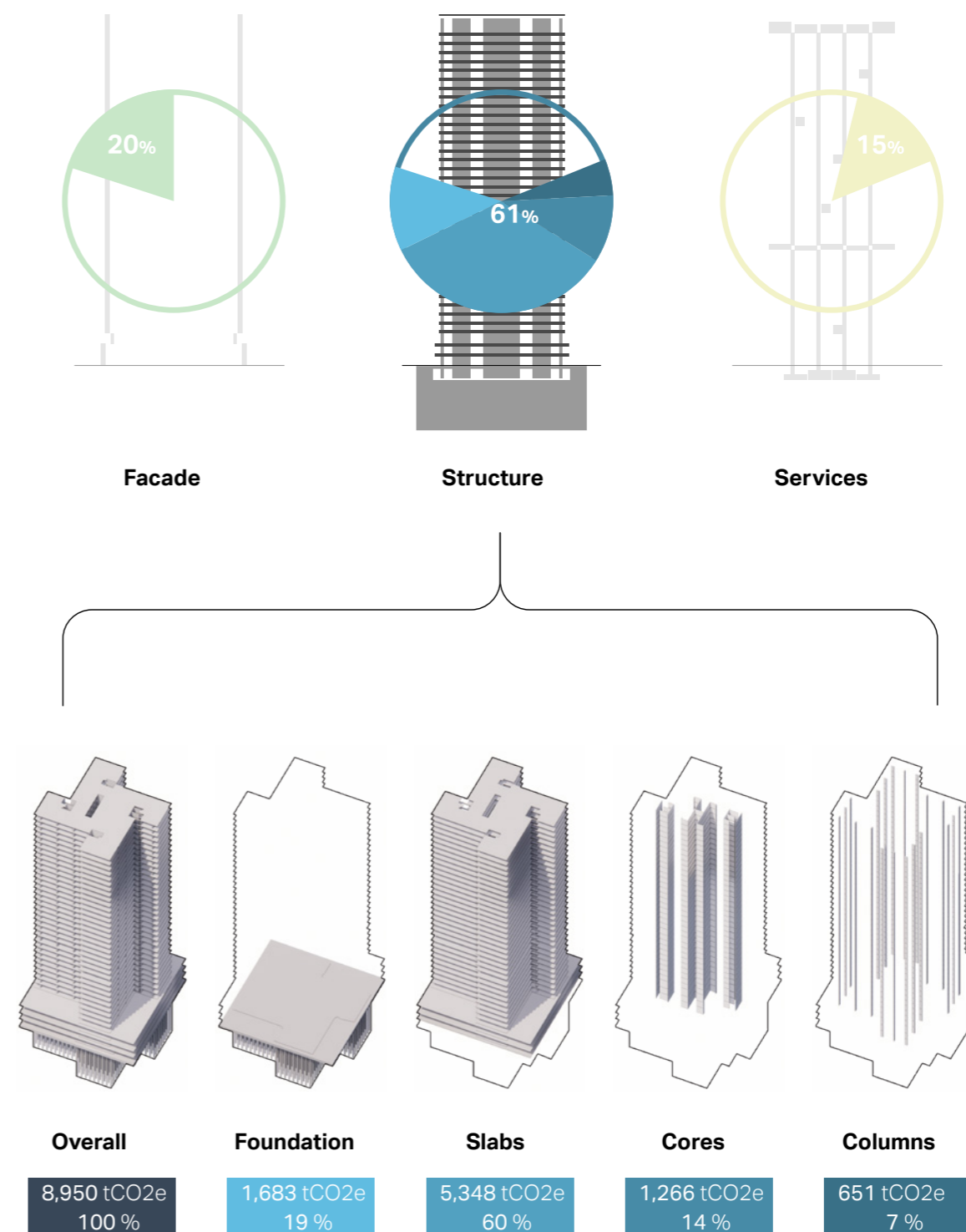
The assessment identified the following primary points about the existing building:

- Concrete structure is generally in a reasonable condition and able to support the current building loads
- The layout of the floorplates is disconnected meaning that the existing space is not easy to occupy and hard to navigate
- Uninviting and closed-off building with a reflective glass façade that does not meet modern fire or performance requirements
- No current connection or use to local residents or the wider community
- A challenging structure to adapt and improve through minor refurbishment
- Unattractive and undesirable to modern occupiers
- Low floor to ceiling heights, meaning that it would be challenging to accommodate modern occupiers' needs as well as lab-enabled commercial space, fit for the future
- MEP equipment is beyond its serviceable life
- The existing tower doesn't comply with current Building Regulations and would need significant changes to make it safe and suitable for modern occupiers including fire safety measures such as sprinklers, mechanical smoke ventilation and dedicated firefighting lifts.

Volume 1 concluded that the works required to suitably upgrade the existing building would result in a significant carbon impact to produce a low-quality office building that would address few of the current tower's failings, would not deliver on, nor contribute to, the Knowledge Quarter, and severely limit future adaptability. A refurbishment of the existing building was clearly identified to not be feasible.

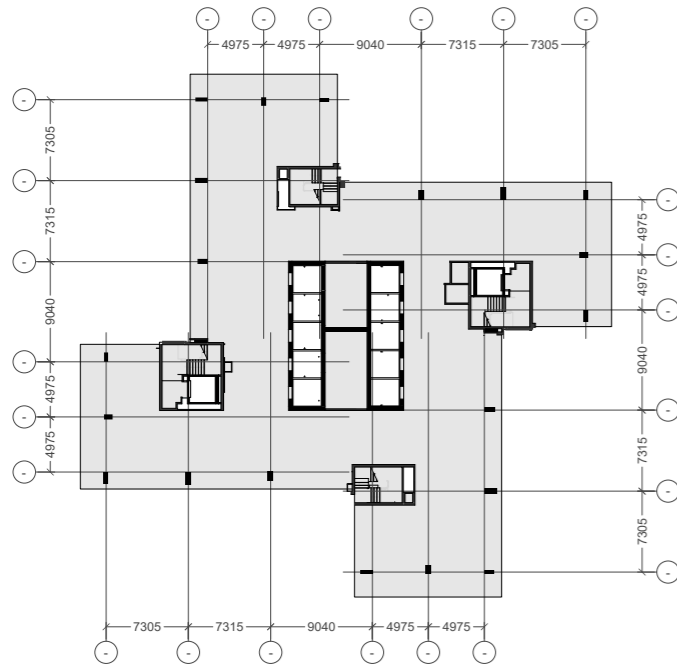
Please refer to Feasibility Study Volume 1, submitted as part of the planning application, for further information.

Existing Euston Tower Carbon Distribution



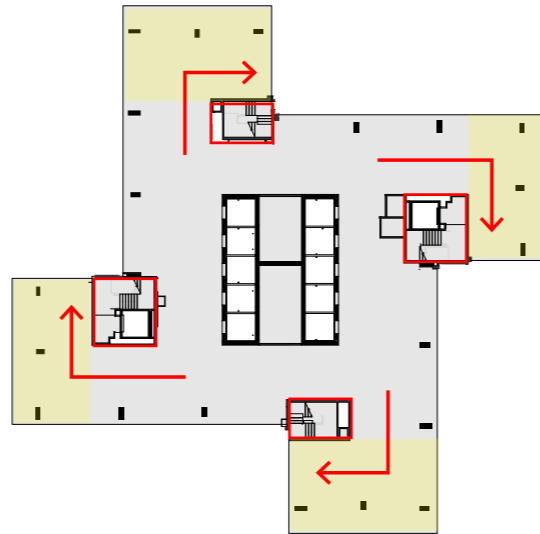
Existing Building Spatial Analysis

Below analytical studies highlight some of the spatial constraints of the existing Euston Tower in relation to modern day requirements.



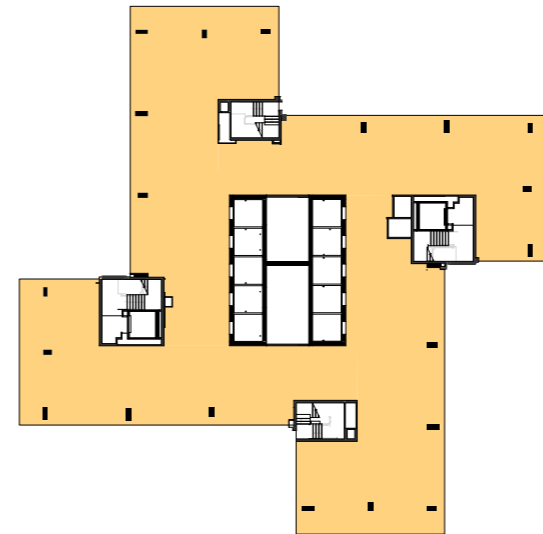
Grid

Irregular column grid is difficult to subdivide, not lending itself to a modular system.



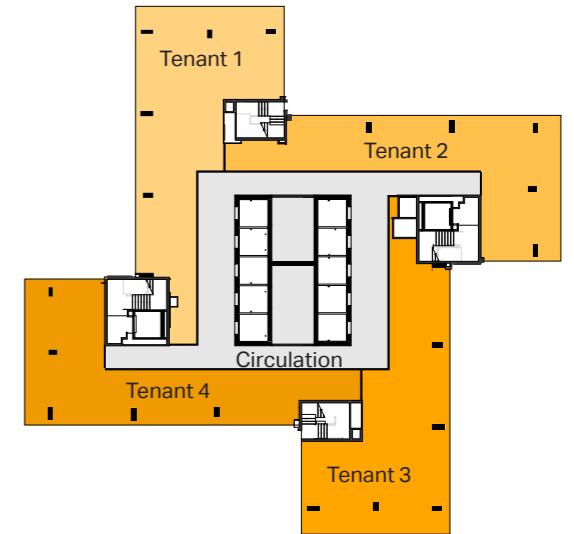
Satellite Cores

Four satellite cores impede circulation, resulting in a disconnected floorplate.



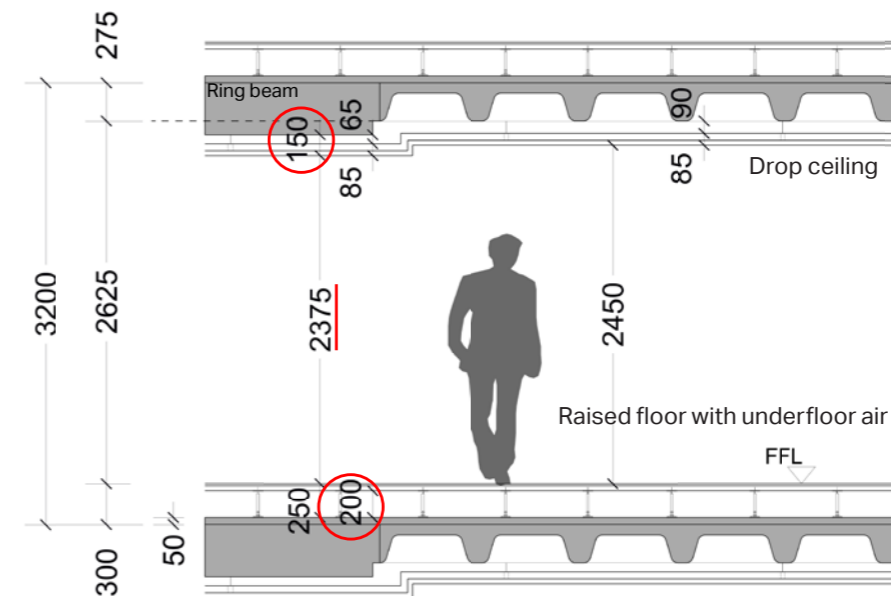
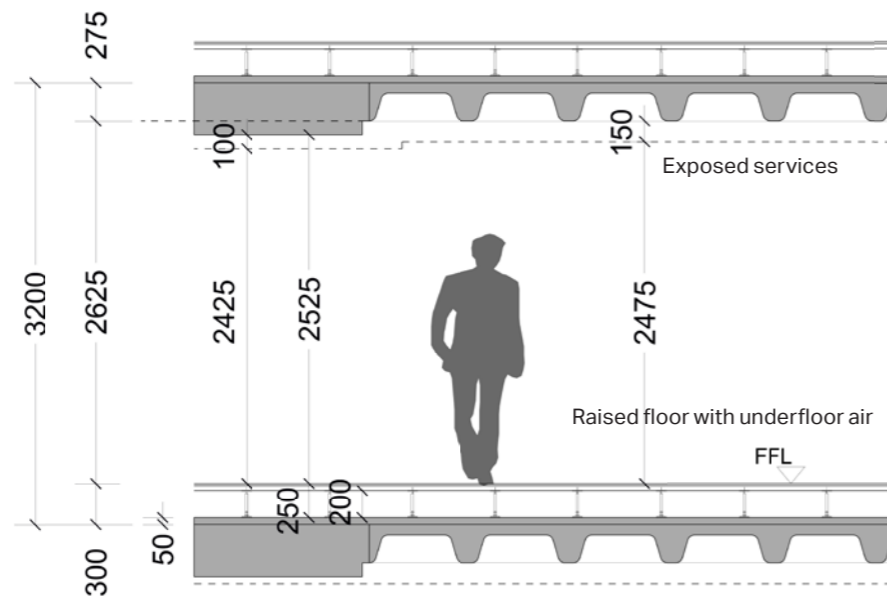
Space Planning

In a single-tenant scenario, the existing floor plate could work at reasonable efficiencies. Additional lifts would be required.



Space Planning

In a multi-tenant scenario, main circulation takes up a significant portion of the floor plate. Additional lifts would be required.



Feasibility Study: Volume 2

Volume 2 studied various options for “alternative uses” for the existing tower within its current footprint, including residential, student accommodation, hotel and combinations of these uses. Mixed use scenarios were especially challenging as they require separate, diversified fire escapes which erodes usable area.

The following options were studied in detail:

- Commercial-led developments
- Commercial office only
- Commercial office with laboratory (life-sciences)

Residential-led mixed use

- Residential with commercial office
- Residential with laboratory
- Residential with hotel

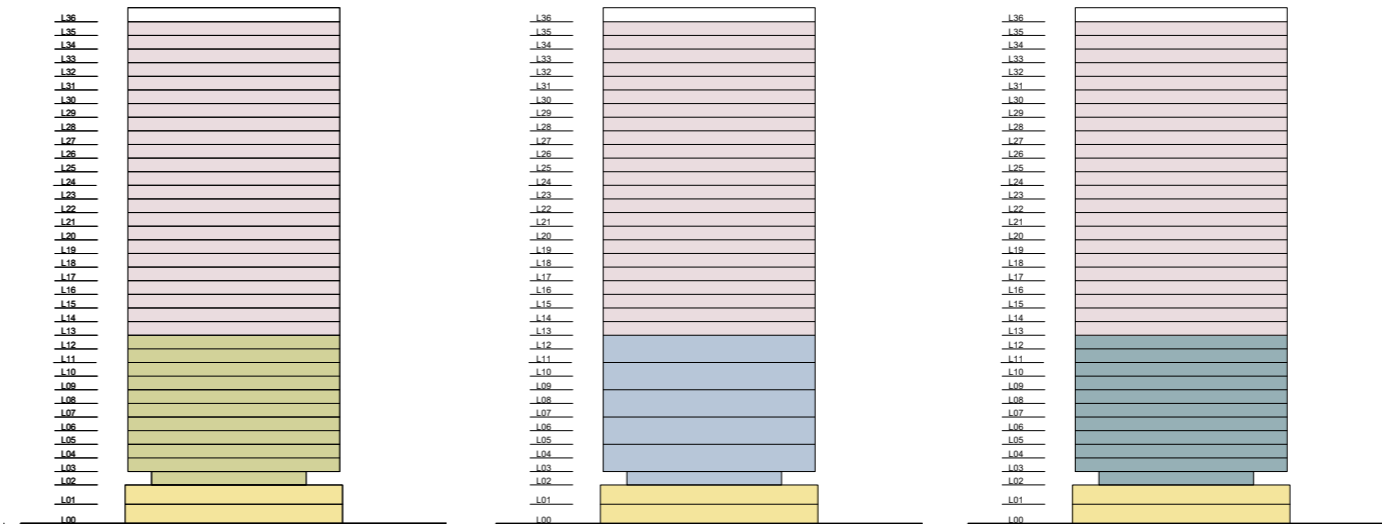
Hotel/Student Housing developments

- Hotel only
- Hotel with student housing

Notwithstanding the policy protection for commercial land use, none of these options were optimal and if pursued would generally result in low quality, compromised accommodation that doesn’t meet current GLA guidelines, or would deliver a product which there is not a market for in this location. Accordingly, the alternative uses studied were identified to not be feasible alternatives to continued commercial use.

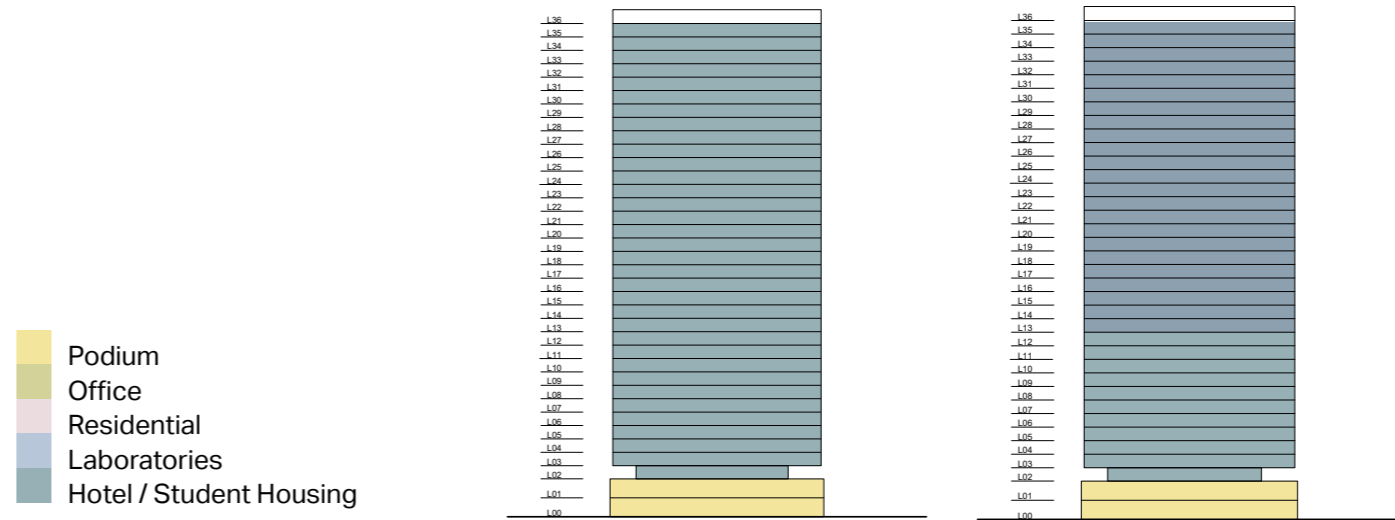
Please refer to Feasibility Study Volume 2, submitted as part of the planning application, for further information.

Residential-Led Development Stacks



- ✗ Low floor to ceiling heights
- ✗ Inefficient floorplates
- ✗ Noise and pollution issues
- ✗ No outdoor amenity
- ✗ Single aspect units
- ✗ Loss of commercial space

Hotel/Student Housing Development Stacks



- Podium
- Office
- Residential
- Laboratories
- Hotel / Student Housing

- ✗ Low floor to ceiling heights
- ✗ Inefficient floorplates
- ✗ Noise and pollution issues
- ✗ Single aspect units
- ✗ Loss of commercial space



Typical Office Plan



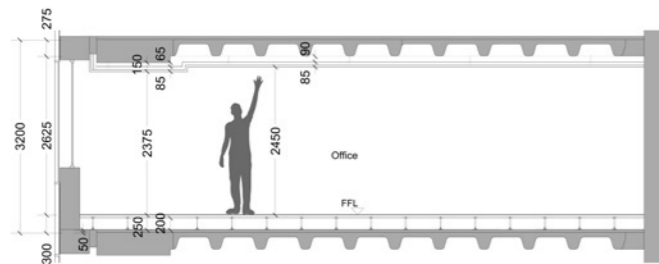
Typical Laboratory Plan



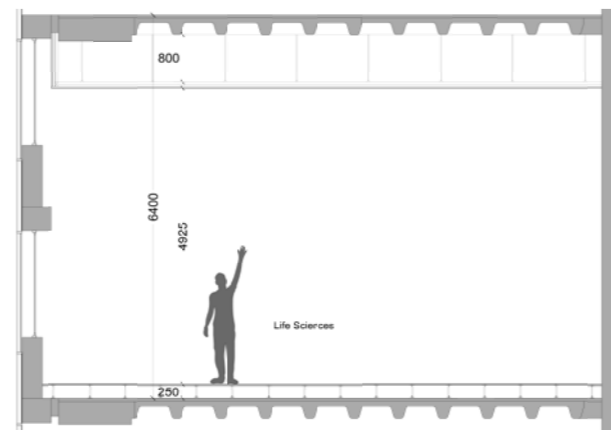
Typical Hotel / Student Housing Plan



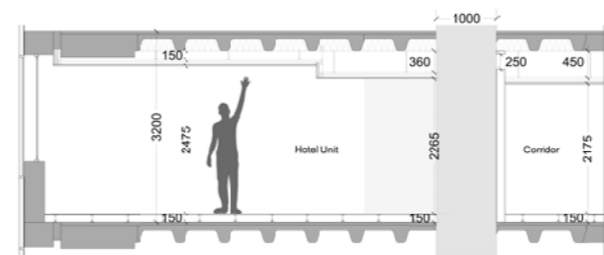
Typical Residential Plan



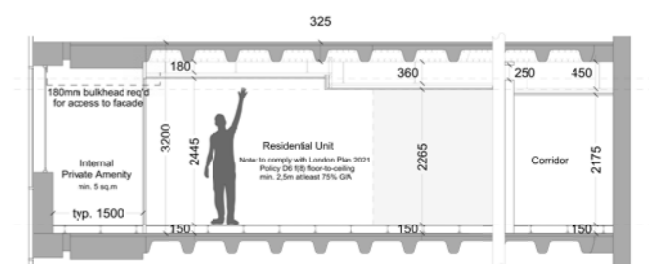
Typical Office Section



Typical Laboratory Section (utilizing 2 floors)



Typical Hotel / Student Housing Section



Typical Residential Section

Feasibility Study: Volume 3

Following the conclusion of the previous studies, it was agreed that best use of the tower is continued commercial use.

Volume 3 explored multiple, realistic options for delivering the project vision, generating high quality workplaces and improving public benefits, whilst retaining as much of the existing building as possible.

This meant looking at several ways of retaining the structure, including solutions where we kept portions of the existing floors and cores.

The following options were studied in detail:

- Major Refurbishment
- Retention and Partial Extension
- Retention and Extension
- Partial Retention and Extension (Disassemble and Reuse)
- New Build

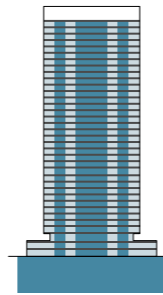
Alongside structural retention and carbon, each option was considered for its floor layout (it has to be attractive to a modern occupier to be feasible as a future development), future flexibility and adaptability (the tower must be fit for the future), and health & safety (it must be buildable in a safe way).

Acknowledging that more retained structure would result in lower upfront carbon today, achieving this would keep many of the limitations of the existing building, and risk obsolescence in the near-term future requiring additional refurbishment, and its commensurate carbon emissions.

Accordingly, the option that retains the foundation, basement, and central core was chosen as an optimal proposal. It presents the best balance of retention, carbon, quality, future-proofing, and health & safety.

The following pages describe in further detail the proposed strategy of retaining the central core and foundations. Please refer to Feasibility Study Volume 3 for further information.

Parameters of Appraisal



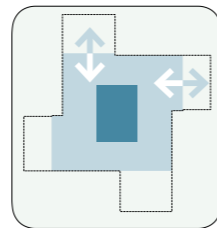
Retain Structure

Endeavour to retain as much structure as possible



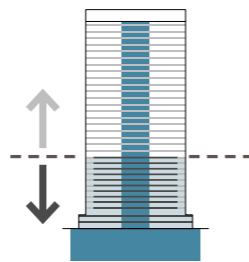
Floorplate Layout

How the grids and core locations work for the floorplate layout



Extent Of Slab Retained

How much of the slab could be retained to produce plausible solutions



Extent Of Section Retained

How many of the existing slabs and cores could be retained

Overview of Options Studies

Least Deconstruction

Most Deconstruction

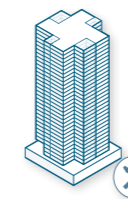
Existing Envelope



Major Refurbishment

Shown not to be feasible in Feasibility Volumes 1 and 2

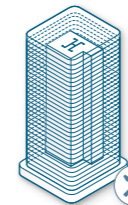
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Retention & Partial Extension

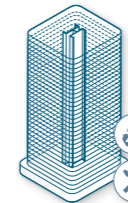
Maximum Retention

Extended Floorplates



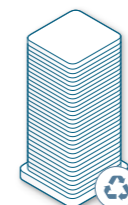
Retention & Extension

"Full" Retention & Extension



Partial Retention & Extension Disassemble & Reuse

Retain Consecutive Slabs (Office)
Retain Consecutive Slabs (Office and Lab)
Retain Interstitial Slabs (Office)
Retain Interstitial Slabs (Office and Lab)
Retain the Core

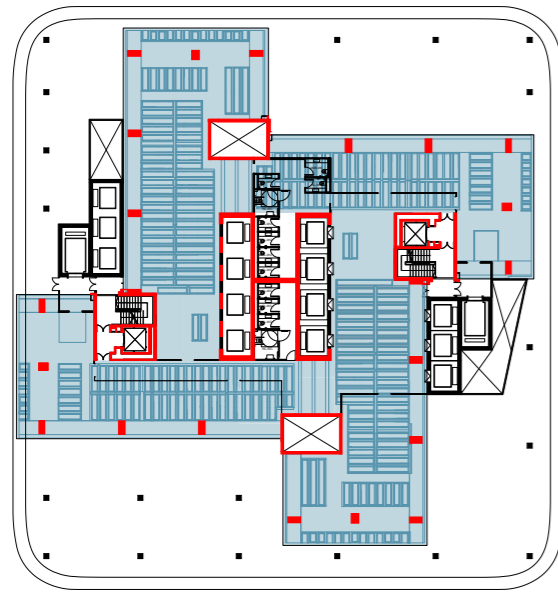


New Build

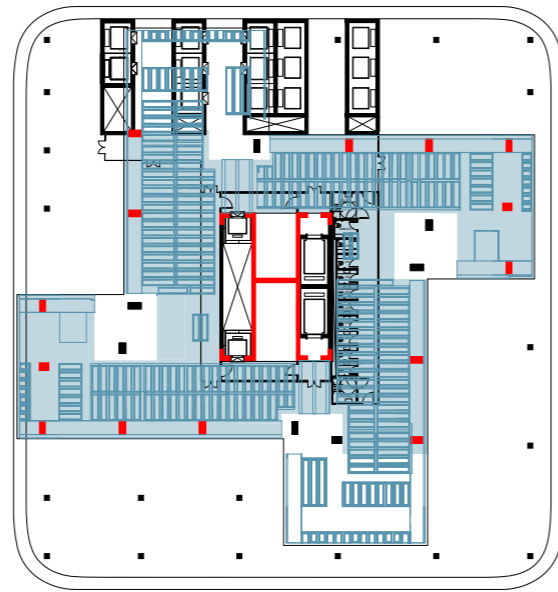
New Build

Structural Options

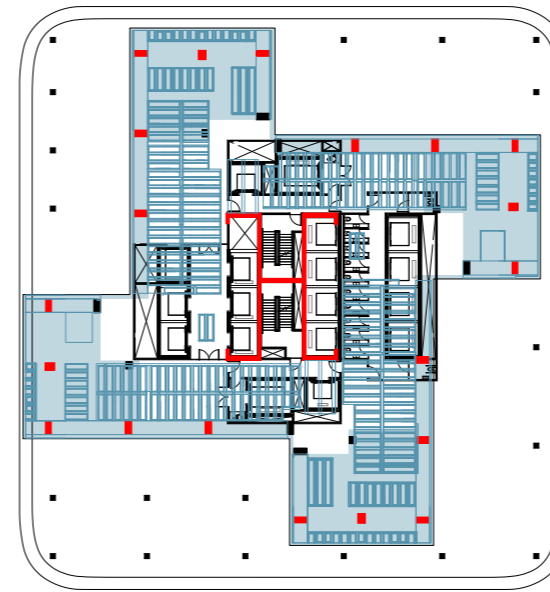
Retained cores & columns
Retained slab areas



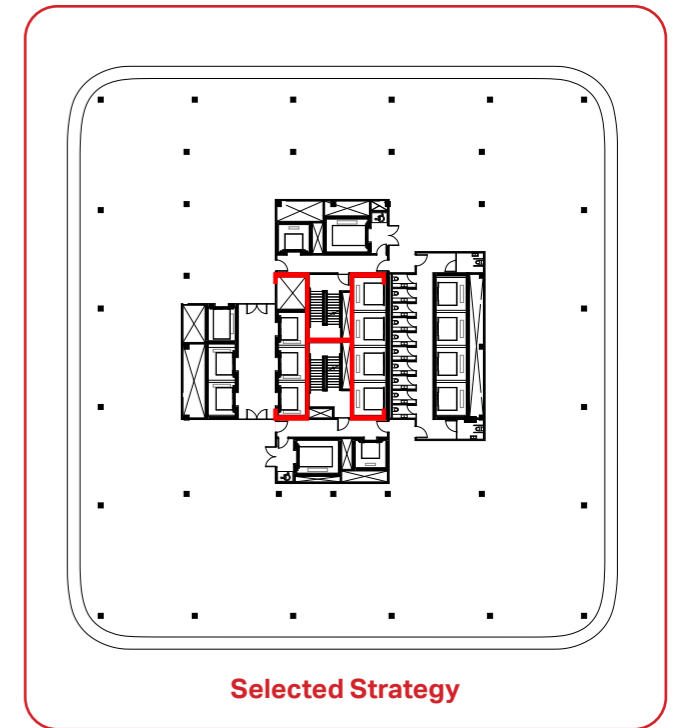
Retain Everything Existing



Retain Central Core & East/West Arms



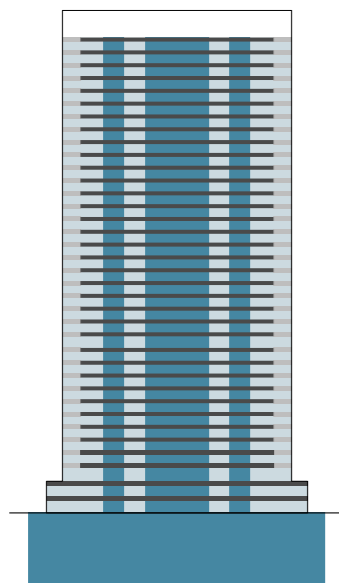
Retain Central Core & All Arms



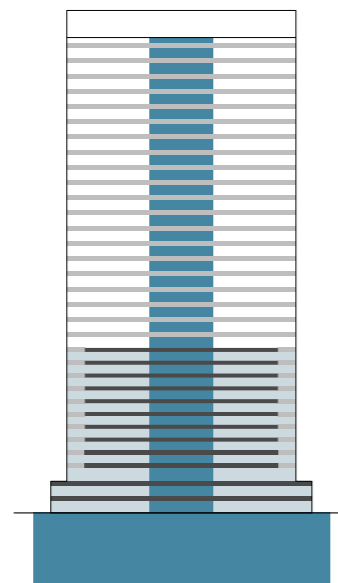
Retain Central Core Only

Retention Options

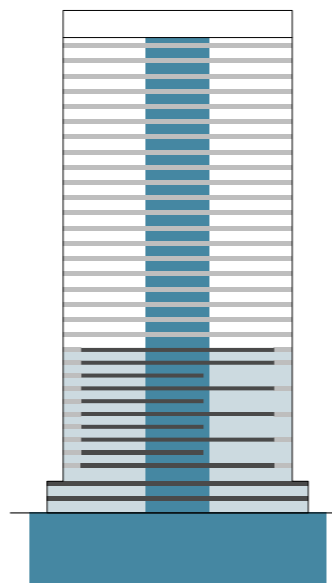
Existing structural elements
Existing floor slabs
New floor slabs



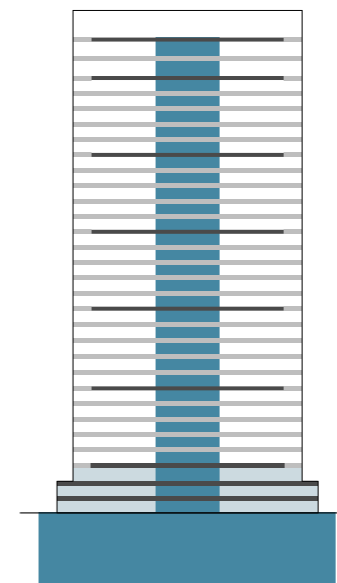
"Full" Retention



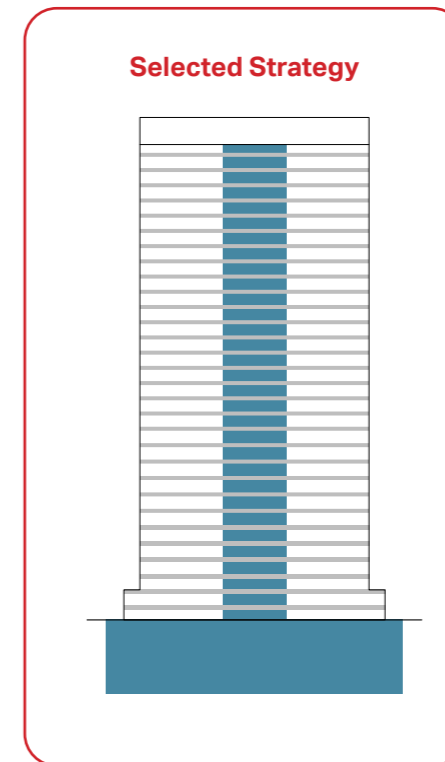
**Retain Consecutive Slabs
Office**



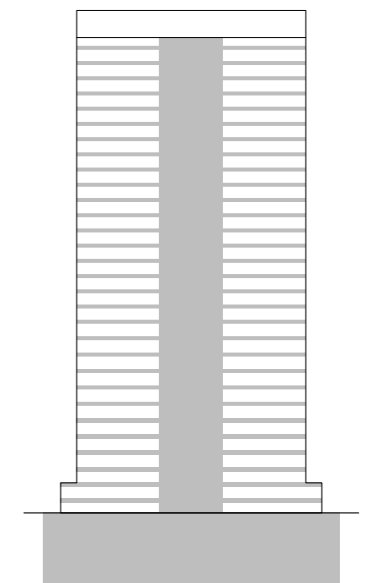
**Retain Consecutive Slabs
Office & Laboratory**



Retain Interstitial Slabs



Retain Core & Foundations



New Build

2.19 Proposed Retention Strategy

Retaining the Central Core and Foundations

The proposed partial retention strategy for the Proposed Development retains the central core, the below ground substructure and the foundations of the existing Euston Tower.

All slabs are proposed to be removed and built from new, enabling freedom to choose floor to floor heights for optimum efficiency. The floor footprint is proposed to be extended to deliver an expanded floorplate.

This provides the flexibility to include lab-enabled space with floor to floor height of 4,100mm in the lower portion of the tower, with office floors above with a floor to floor height of 3,800mm.

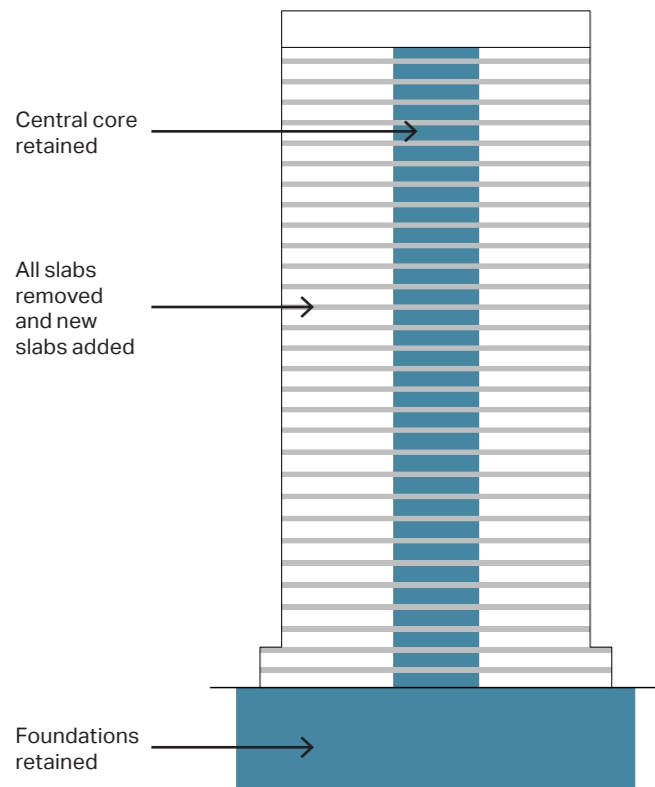
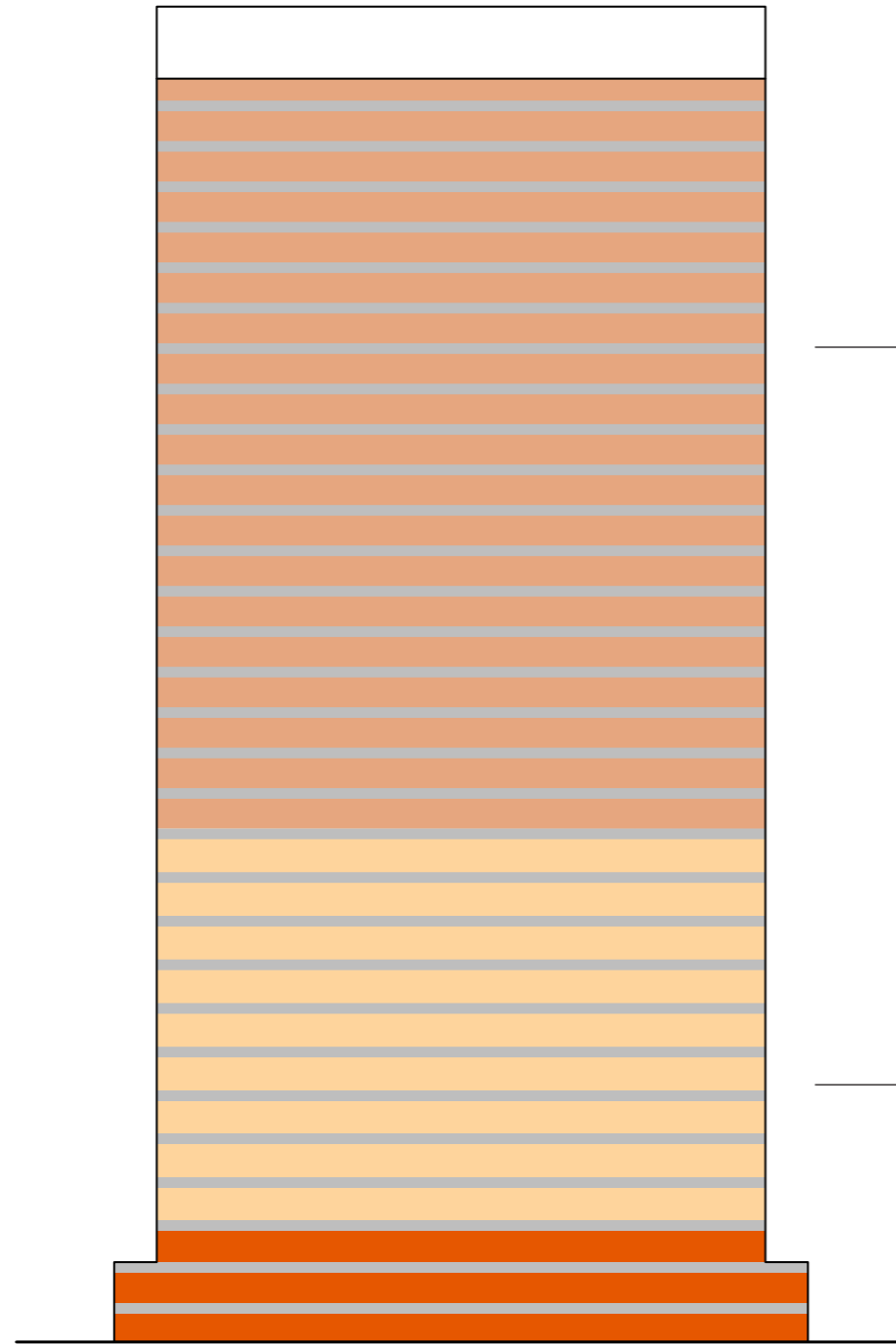


Diagram - Retained structural elements in section

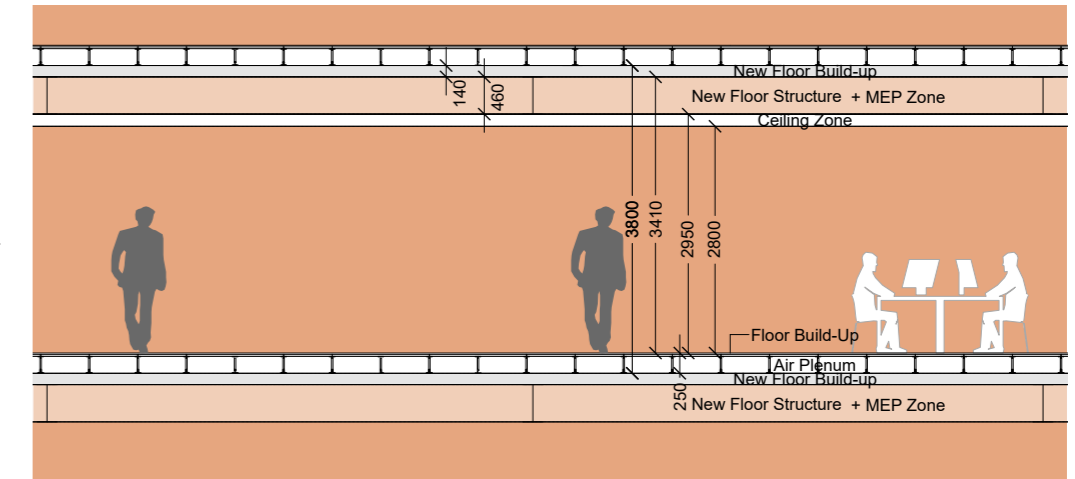


Programme & Section Stack

3.8m floor to floor office
 4.1m floor to floor lab-enabled space
 Podium amenity
 New-build floor slab

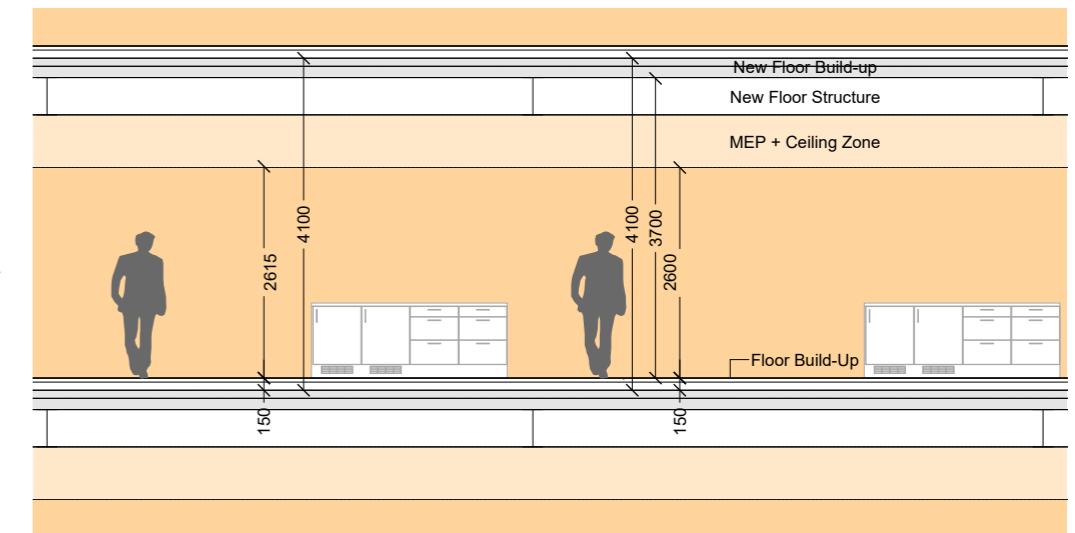
Office Space

Floor to floor 3,800mm
 Floor to ceiling 2,800mm



Potential Lab-Enabled Space

Floor to floor 4,100mm
 Floor to ceiling 2,600mm



Floor Sections

Diagram - Sections illustrating programme distribution and proposed floor-to-floor heights

Structural Retention

Structurally, the strategy for the Proposed Development is to retain the existing central core, with all four existing satellite cores removed. The new-build extended floorplates allow freedom to choose optimised grids which improve flexibility compared to the floorplates that retain grid elements.

This results in approximately 25% of the structure retained by carbon (or 31% by volume). This is shown schematically in diagram opposite.

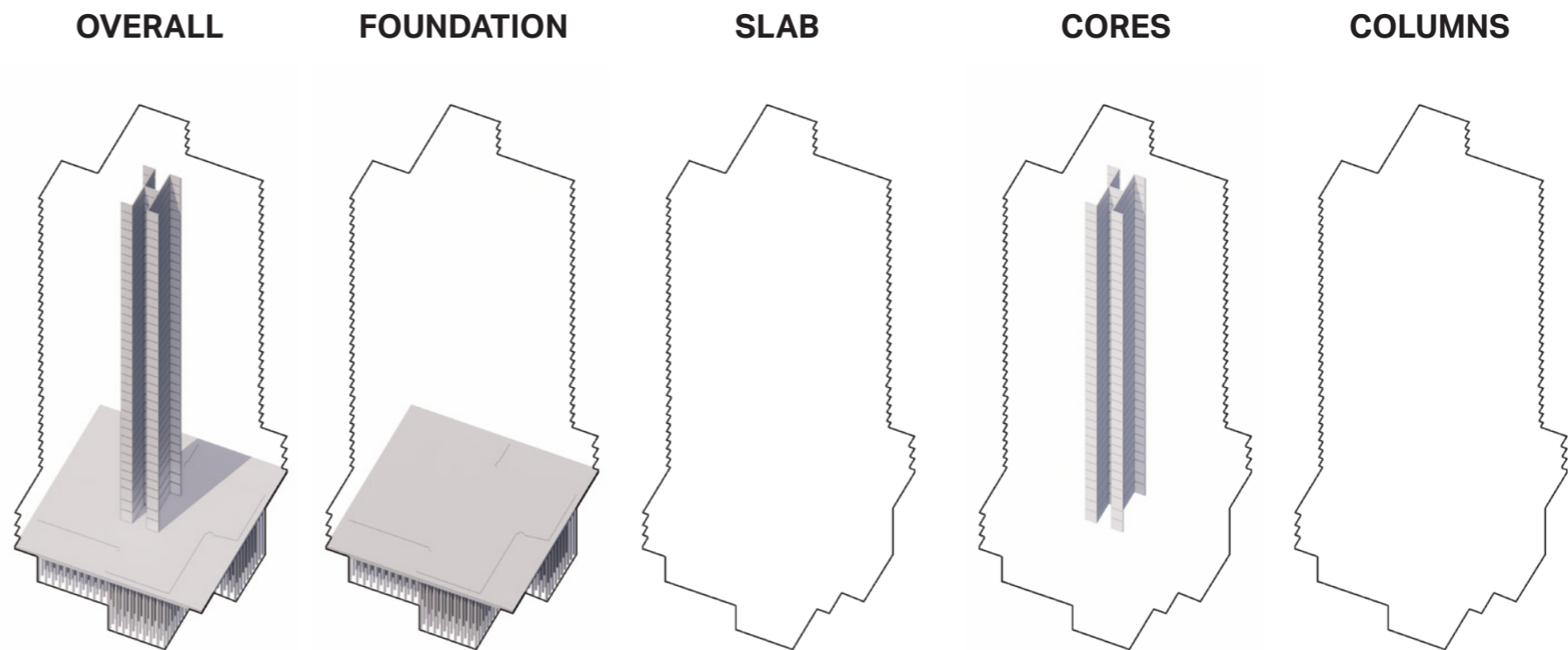
During construction, temporary works would be required to brace the free-standing core (see diagram below). However, the extent of temporary works would be significantly less onerous than in the studies that retain floor slabs (further explored in Feasibility Study Volume 3) as there would be no slabs to support, and no slab edges to prop.

Future-proofed

Flexibility of the floorplates would be uninhibited by existing column arrangements. The column grid can therefore be optimised to best suit the floor layouts, leading to clear spans that enable flexible layouts.

While the lower stack is enabled for lab space, it would be suitable for use as office space if desired. With its floor to floor height of 4,100mm, it is not over-dimensioned for an office, so this flexibility comes at little cost to efficiency.

From an adaptability perspective, all floor structure is proposed as new-build, so all areas would present the opportunity to design in double-height amenity spaces, or additional soft spots.



MAXIMUM POSSIBLE WITHOUT EXTENSION*
89 %

* Assumes no floorplate extension (i.e. working within the existing envelope), meaning new risers need to be cut out of the existing floorplate. Refer to Section 15. With extended floorplates, possibility exists to position risers outside of this existing footprint, resulting in potential higher degrees of retention.

| | | | | | |
|------------------------|--------------------|--------------------|----------------|------------------|----------------|
| Embodied Carbon | 2,235 tCO2e | 1,683 tCO2e | 0 tCO2e | 552 tCO2e | 0 tCO2e |
| Ratio of Carbon | 25 % | 19 % | 0 % | 6 % | 0 % |

Diagram - Embodied carbon and retention of structure broken down by structural element

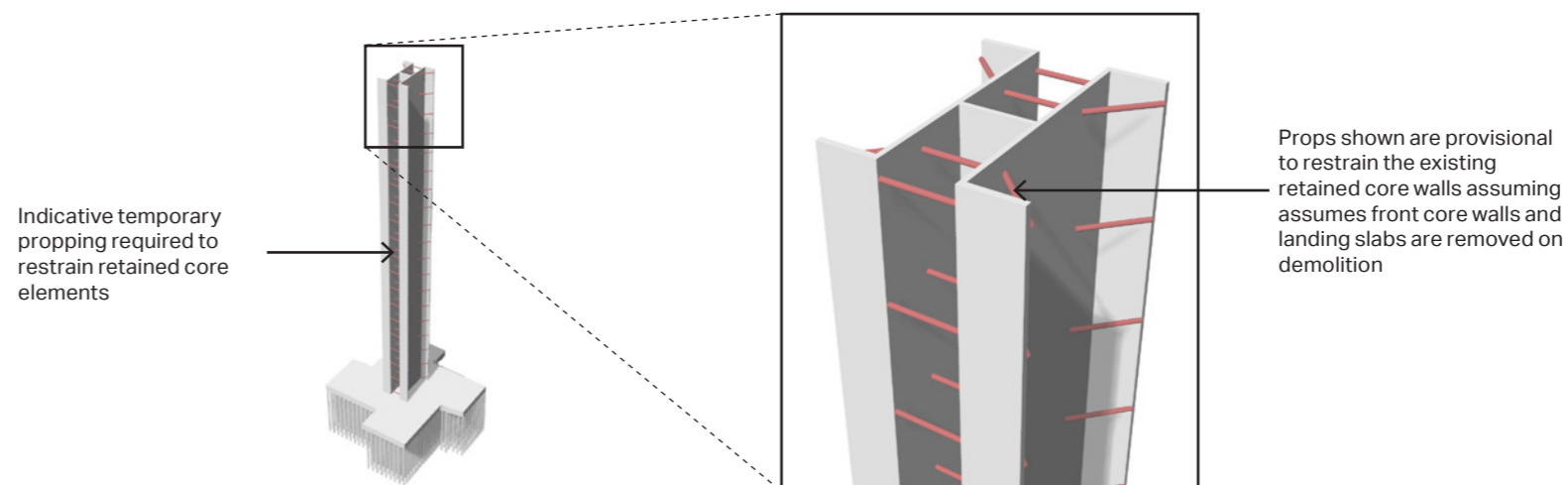


Diagram - Indicative temporary works required to brace retained core

Health & Safety and Buildability

The proposed indicative deconstruction and construction sequence is shown schematically in diagram opposite.

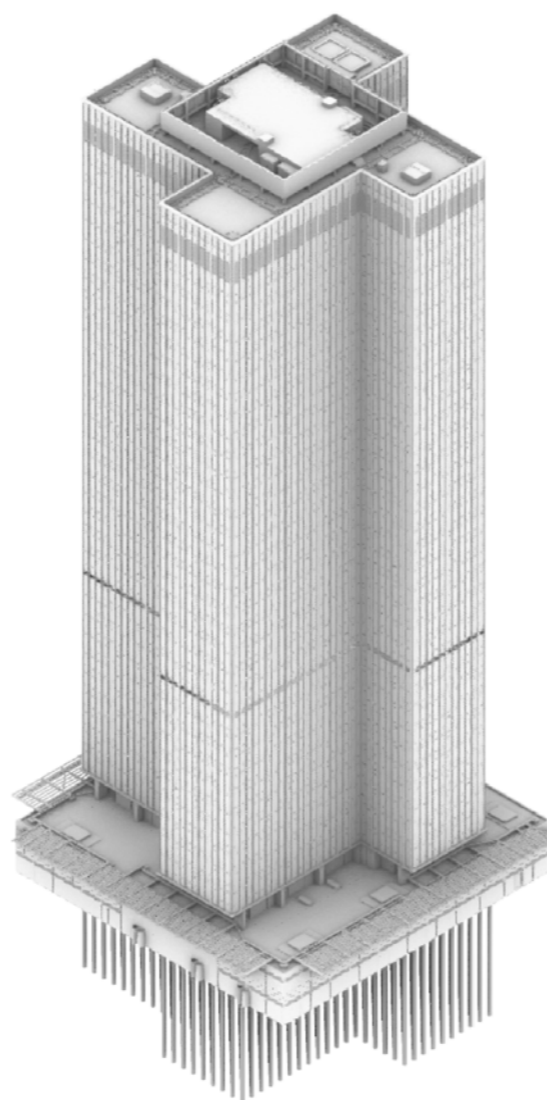
Following the existing facade being carefully deconstructed, the slabs would be removed back to the core top down. To minimise the temporary works required to brace the core, it would be intended to leave the front walls of lift shafts in place during demolition to reduce temporary propping. Some propping would likely still be required, a diagram of a provisional solution to restrain the existing front core walls against out of plane buckling is shown on the previous page. These walls would be retained on the floors where the lifts do not stop. In addition to these temporary works, it is anticipated some back propping would be required to the below grade retaining walls where the ground floor slab would be removed.

Once the slabs are entirely removed, construction of the permanent steels could begin using conventional, "blue sky" methods. Working without overhead constraints, means pre-fabricated, "drop in" structural systems could be used, reducing time on site and the associated risks to health & safety.

Efficiency and Viability

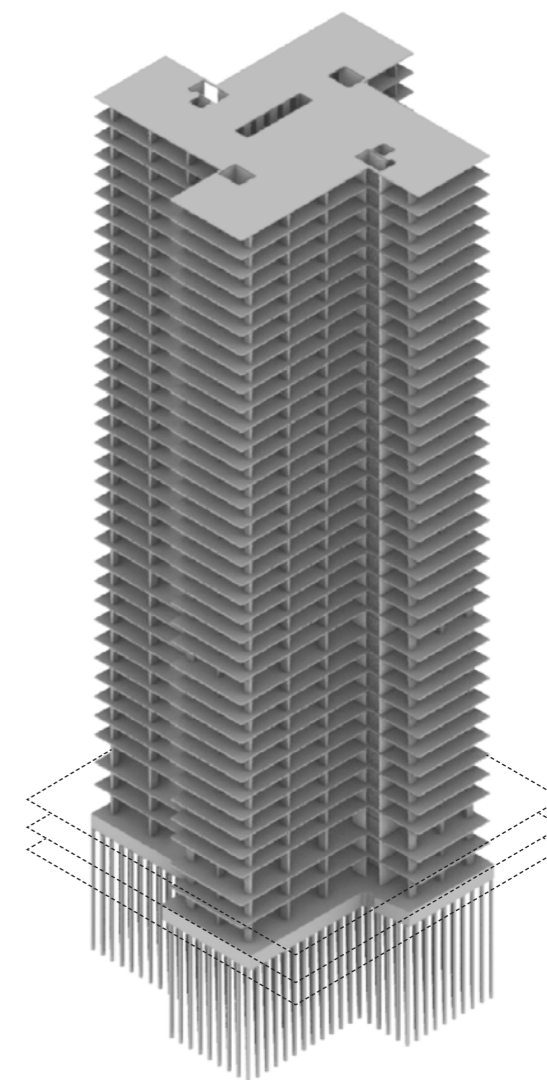
This proposed strategy would deliver a solution that balances structural retention with construction complexity and its associated risks. It would provide efficient floorplates with regular inter-storey heights, meaning it works with a compact core based on a double-decker vertical transportation strategy.

With regards to volumetric efficiency, this option would generate as much area as possible within the massing envelope, while delivering the desired floor to floor heights for both lab and office spaces.



1. Existing Building

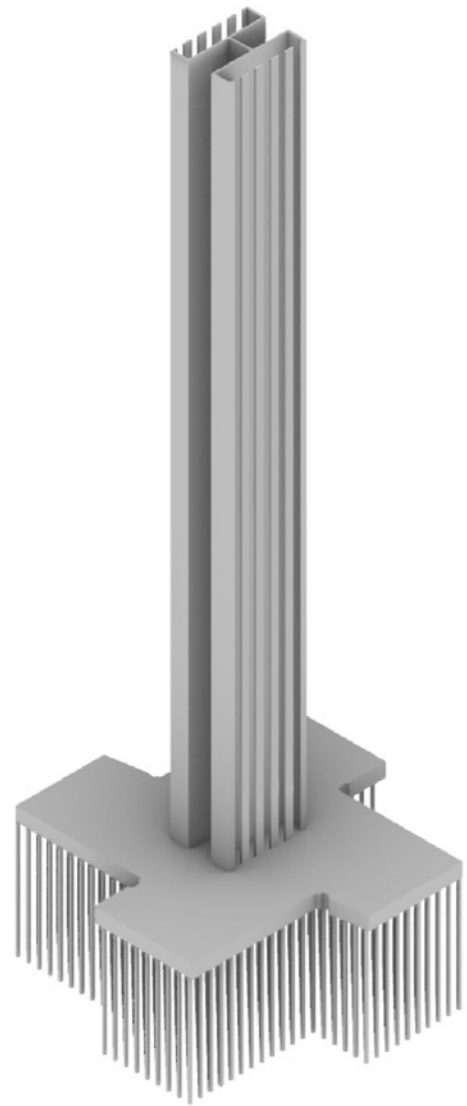
Construction sequence is moderately complex due to the unrestrained core



2. Remove Facade

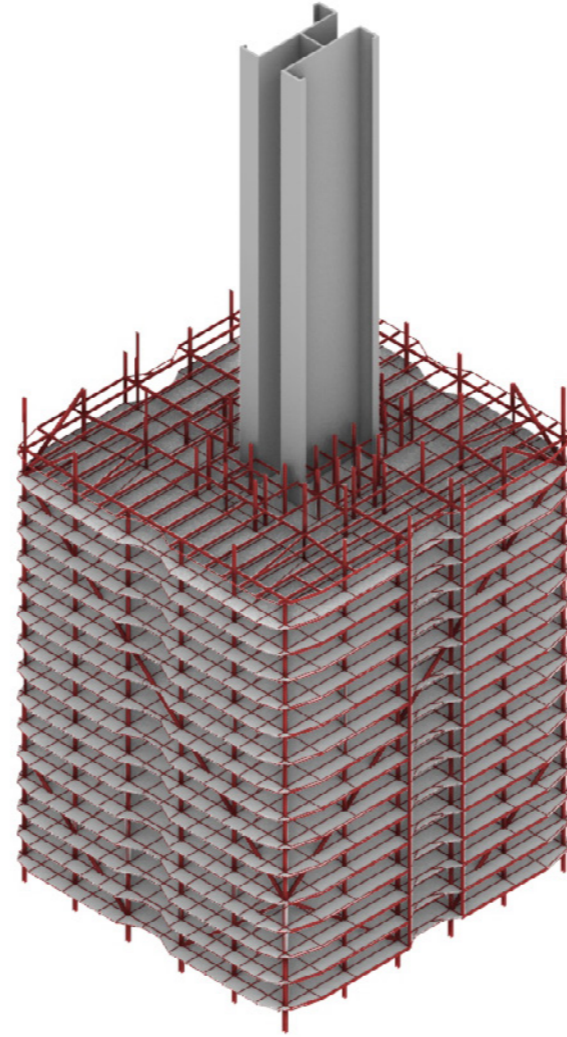
Existing facade carefully deconstructed and materials used in recycling and upcycling

Diagram - Indicative deconstruction and construction sequence



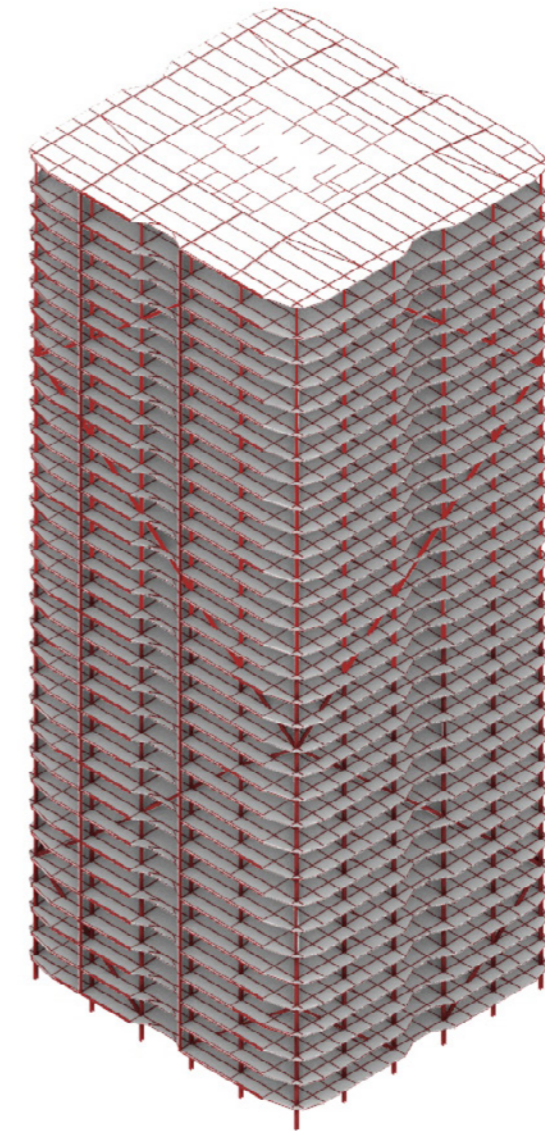
3. Remove Slabs

Slabs are removed back to the core, further temporary works may be required to restrain the free-standing core



4 Extend Floorplates

Construction of the permanent steels and floorplates can begin using conventional methods



5. Completed Structure

The structure is completed and installation of facade, services, vertical transport, etc. can follow