Tavis House

Addendum to Design and Access Statement to provide supplementary information in support of Section 73 application for amendment to planning permission ref. 2021/6105/P

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Contents

This document has been prepared by Gort Scott on behalf of Tempus Realty Holdings 1 (Jersey) Ltd. with project team input including structural engineers Elliott Wood, building services engineers Hoare Lea and acoustic engineers Southdowns Environmental Consultants.

To be read in conjunction with the Design and Access Statement Update submitted under Section 73 issued as part of an amendment to 2021/6105/P.

Document Control

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Executive Summary

This document outlines the scope and rationale for the proposed limited additional demolition at Tavis House, under a Section 73 amendment to approved application 2021/6105/P.

This document provides supplementary information to the Design and Access Statement Update P04 28/03/24, which outlines the proposed amendments to the approved permission.

The proposals adapt the consented scheme to allow the building to accommodate life science occupiers, contributing to the growing specialism in this locale of world class research-based institutions within the internationally significant King's Cross Knowledge Quarter.

In order to provide the laboratory accommodation associated with life science occupiers, a number of key technical requirements must be met, including:

- Lab to desk space ratio of 60:40
- Vibration response factor of <0.5
- Loading requirement of 4kNm^2
- Minimum floor to ceiling heights of 2.4-2.7m

Sustainable design principles have been employed throughout the scheme, with particular emphasis on increasing flexibility of use to extend the life of the building. The majority of the existing fabric is retained and refurbished including the external façades onto Tavistock Square and Tavistock Place. However, in order to meet the needs of life science users, selected internal areas need to be removed and replaced.

The existing planning permission already allows for the demolition and reconstruction of the main lift and stair core and the existing rear facade. This amendment application seeks consent to remove and replace additional areas of the floor slab in order to deliver the required building specifications.

This document has been prepared to explain why additional demolition is required and focuses on the application of policy CC1, outlining how proposals have considered the retention and improvement of the existing building (Part E) and seek to optimise resource efficiency (Part F).

The majority of the existing building fabric is retained and refurbished

Elements of the existing structure

Design Approach

The team carried out a careful assessment of the existing fabric against the requirements of the project brief, which established that parts of the existing structure need to be replaced in order to provide the loading and vibration measures required for laboratory users.

The current proposals, therefore, include additional demolition and reconstruction of a proportion of each typical internal floor, in comparison to the existing planning permission. At basement level part of the slab is also demolished to accommodate new foundations to support the loading requirements above. In order to accommodate plant at high level, the proposal also involves the replacement of the roof slab, whereas the approved scheme proposed to build an additional slab on top of the existing.

Both the existing consent and current proposal retain the façades to Tavistock Place and Tavistock Square, with both including minor demolition for enhancements to the entrance from Tavistock Square. Both the existing consent and current proposal replace the rear facade. The current proposal also involves a small amount of additional facade reconstruction at the upper level towards Tavistock Place in order to resolve construction sequencing and improve buildability.

As such, the demolition strategy carefully balances the technical requirements of the brief against the existing building structure, whilst also responding to aspects of sustainability and heritage considerations.

Proposals deliver the 60:40 split between laboratory and write up space by combining the new build area with two zones of replaced slab to create high quality laboratory space wrapped around a new symmetrical core. This symmetry allows the floor plate to be split into two tenancies containing both lab and write up areas promoting the overall flexibility of the building for future use.

1 Laboratory within new and replaced slabs

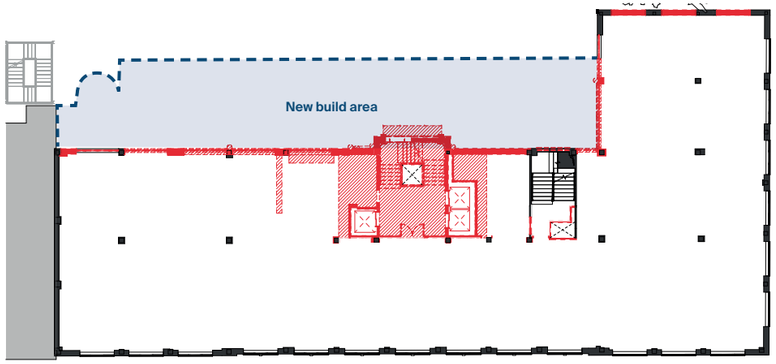
The laboratory floor area makes up 60% of the net area across a typical floor and is strategically located within the new build area and where replacement slabs can be provided. New slabs allow the accommodation to meet the vibration and floor to ceiling heights within the brief.

2 Write up within existing slab

Write up space makes up 40% of net area and is located within existing structural slabs fronting Tavistock Square, so maintaining the presence of office life and activity in this position of prominence and outlook.

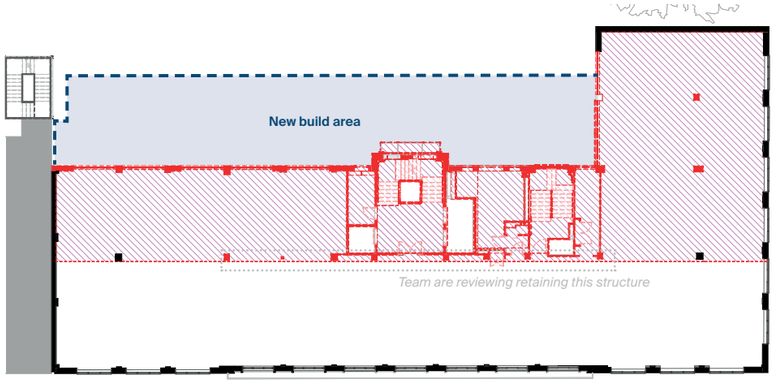
Key

- Existing building fabric to be retained
- Existing building fabric to be demolished - shown in cut
- Existing building fabric to be demolished - shown in elevation/ plan beyond
- Proposed laboratory space ~60% NIA
- Proposed write up space ~40% NIA
- Footprint of proposed and approved extension



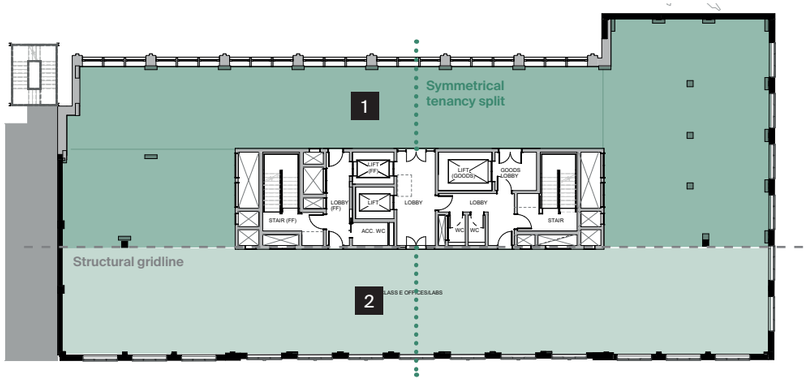
Slab area removed: approx. 80sqm

2023 Planning Permission: Typical internal floor demolition



Slab area removed: approx. 370sqm

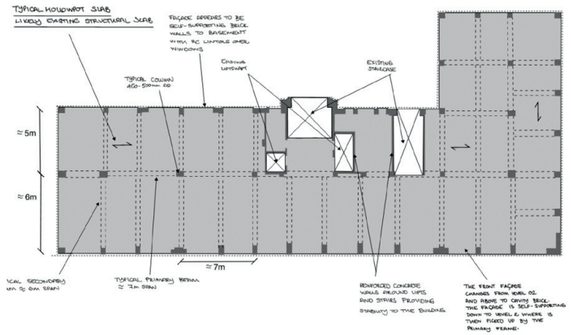
Proposed Section 73 Amendment: Typical internal floor demolition



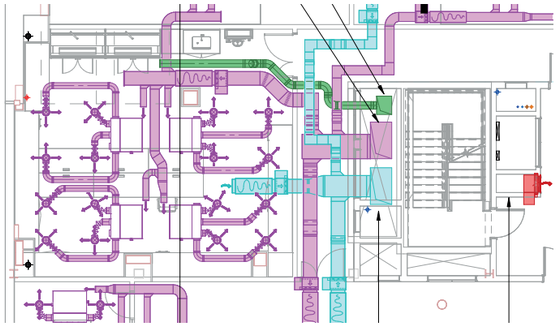
Proposed Section 73 Amendment: Typical internal floor laboratory strategy

Technical Constraints

A number of key technical requirements for life science occupiers have informed the assessment of the existing structure and fabric.



Structural engineer's sketch showing existing typical floor structure and beam locations



Extract from mechanical engineer's model showing lab servicing

Structural beams to underside of slab, typical floor

Vibration Criteria

[With input from Elliott Wood and Southdowns Environmental Consultants]

In order to support the use of sensitive equipment, the structure to the laboratory spaces must meet a vibration response factor of <0.5. This will allow for a sensitive vibration criteria of VC-A, which is a measure of vibration magnitude categorised under BS 5228-2:2009 and ASHRAE guidance and is required for laboratories. The existing structural framing does not meet the higher vibration requirements for laboratory use. The team explored methods for achieving VC-A though refurbishment of the existing. Details are outlined on the next page.

Loading Capacity

[With input from Elliott Wood]

The structural engineers have assessed that based on historical data, the existing structure may have limited capacity to support additional imposed and finish floor loading for life science users. To improve the overall existing floor load capacity extensive strengthening of the existing superstructure (floor, beam, columns) and sub structure (foundation) is be required. Whilst this approach would allow all of the existing structure to be retained, it would compromise the integrity of the existing structure and the building fabric and increase the depth of the existing beams, reducing floor to ceiling height.

Services

[With input from Hoare Lea]

The most pressing building services obstacles to incorporate into the building relates to the significantly large volume of air that a life science building requires, particularly within this scheme where the building originally relied on natural ventilation. Lab servicing must provide an environment with good air quality which is safe for occupants to work in. The air handling for science use is therefore primarily fresh air ventilation (supply and extract) and dedicated fume extract. This has significant impact on spatial co-ordination of internal services distribution as the extent of the ductwork servicing runs is greater and the ducts tend to be larger in size when compared to non-lab provision.

Slab to Slab Heights

[With input from Hoare Lea]

The existing building slab to slab height spacing of about 3.2m presents a significant challenge to the introduction of lab facilities, with most new build laboratory slabs set at about 4.2m spacing. At Tavis House the floor to ceiling zone is further reduced by a series of downstand beams which are up to 450mm deep and frequently spaced.

Whilst the space between beams can be utilised for ceiling mounted equipment, ductwork must be brought under beams in order to distribute across the floor, creating a pinch point of restricted head height beneath the duct.

Design Development

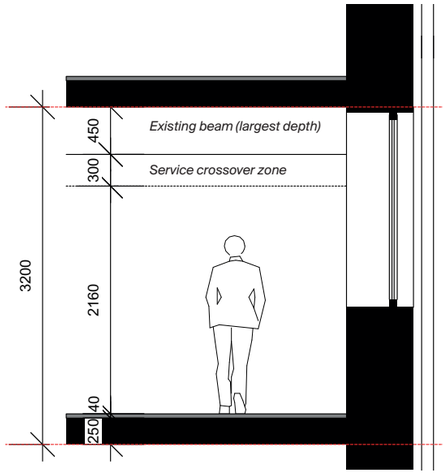
The team explored options to provide the required strengthening, vibration reduction and servicing whilst retaining the existing floor slabs.

Vibration tests carried out on site established two options;

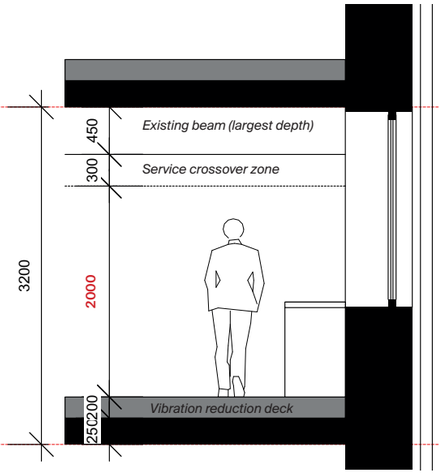
- Additional floating floor 200-300mm thick leaving a floor to service zone height of 2.0m beneath crossovers [refer to table and Fig. 2].
- Strengthening of the existing structure resulting in an increased beam depth, in combination with a steel floor 100-150mm thick [refer to table]. This offered no improvement in floor to ceiling height when compared to the above.

Although these options provided technical solutions to vibration, they do not provide sufficient floor to service zone heights for laboratory spaces. By replacing the existing structure with a new flat reinforced concrete slab, servicing, vibration and strengthening requirements can be met with a floor to ceiling height of 2.4m [Fig 3].

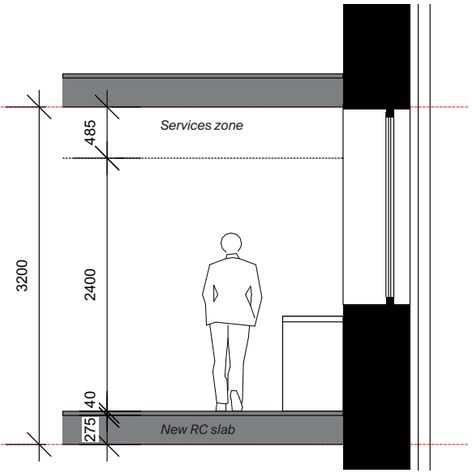
The collective decision was made to partially demolish and replace the existing structure at the rear, while retaining the front portion for write up space to maximize utilisation of the existing structure.



1 Typical existing floor to ceiling section. The structure has inadequate strength for vibration reduction for laboratories but is appropriate for write up areas



2 Option exploring structural enhancement and vibration reduction deck to meet VC-A for laboratory spaces. This was discounted as it reduces floor to ceiling heights to be non-compliant with acceptable standards. It also results in a clash between lab benches and existing window cills.

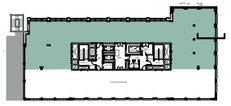


3 To resolve the technical requirements for laboratory spaces new structural floor slabs are required. There are now downstand beams to interrupt ceiling mounted services and the floor build up is minimised.

Building Fabric Key

Existing walls/floors

New walls/floors



Scenario	Mitigation	Approximate Vibration Reduction, dB	Approximate System Thickness (mm) [1]
No Structural intervention *required reduction = 32dB at 12.5Hz*	Floating Floor – Steel Springs	30 – 35	200 – 300 (required for VC-A)
	Floating Floor – Steel Springs	5 – 10	100
	Floating Floor – Rubber Pads	0 – 2	100
Structural intervention *required reduction = 30dB at 20Hz*	Floating Floor – Steel Springs	30 – 35	100 - 150 (required for VC-A)
	Floating Floor – Rubber Pads	18 – 25	100 - 150
+ Zoning	Floor breaks using spacing material	No transmission	N/A
+ Bench Isolation	Inertia Base – Steel Springs	10 – 30	N/A

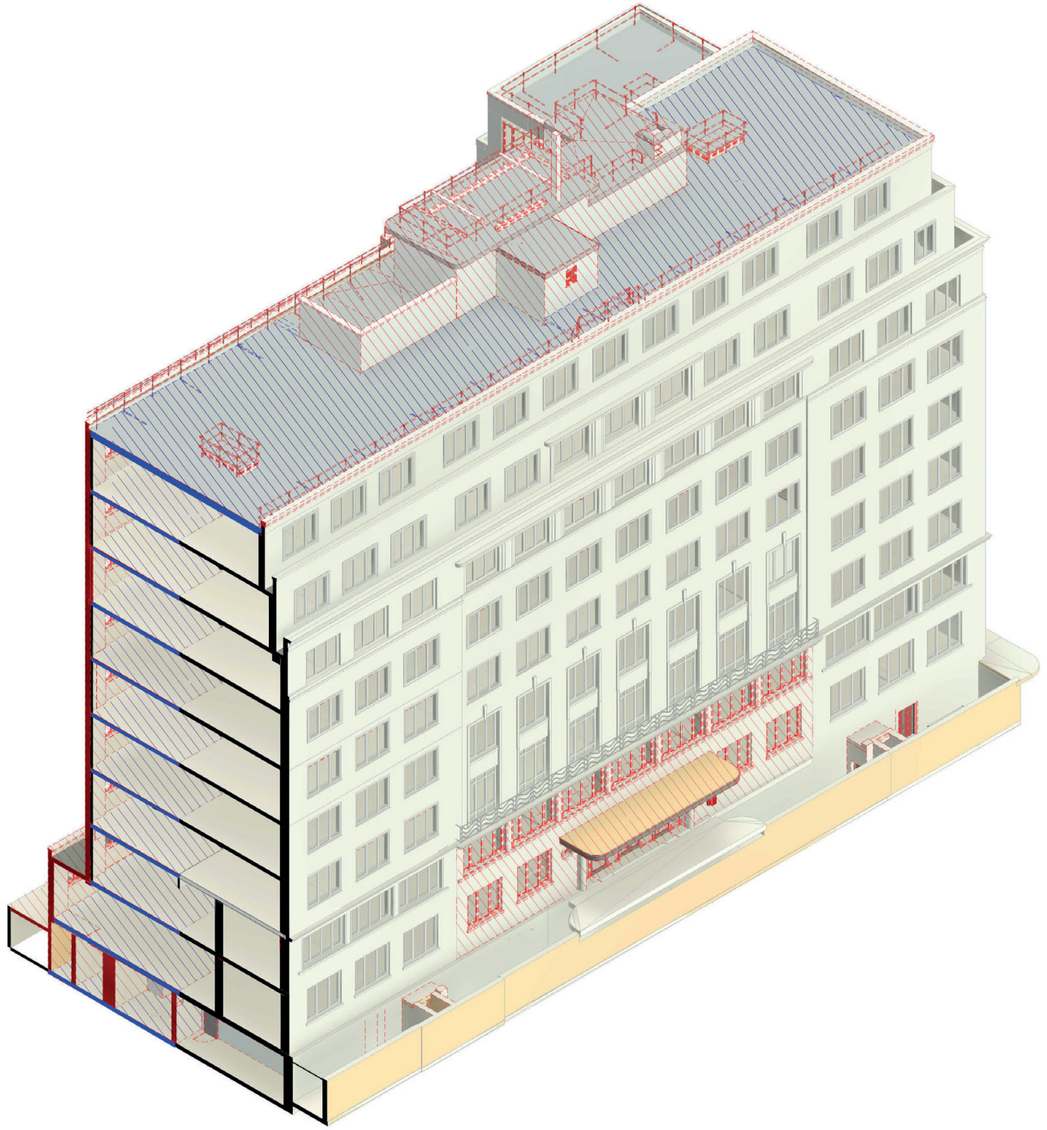
Vibration mitigation options reviewed with acoustic engineer

Conclusion

The scheme aligns with resource efficiency in that the majority of the existing building fabric is retained and optimised for a new, flexible use. The façades are retained and refurbished to provide a positive contribution to the public realm and streetscape.

A variety of factors were considered in deciding the optimal approach to providing lab enabled office space within the existing building. Of these, a key consideration has been the existing floor to floor height of about 3.2m, as this is extremely constrained compared to current office accommodation and other life science allowances.

We have sought to minimise the amount of additional demolition needed to provide a lab-enabled office and have followed a thorough design process to determine this. As such, we consider that the proposal best resolves performance requirements for strengthening and vibration control and services space allowances. This aims to prolong the life of the building and allows for future flexibility and adaptability.



Key

- Existing building fabric to be retained
- Existing building fabric to be demolished under permitted scheme
- Additional existing building fabric to be demolished under proposed amendment

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