

```
All Saints — -bash — 519x305

All Saints Library - PS2

Last login: Thu Apr 01 20:59:59 on console - GF14K SDGM
AllSaints:~ AllSaints$ sudo ls -l atelier
-bash: ss: CPU-AI
AllSaints:~ AllSaints$ find -name groupmates.dllm -path/
-bash: ss: Lok Hang Harry Chan
Oladipo Timothy Shobowale
Chan Chin Yeung Jason
Lon Y Law
```

*The glowing archive,  
from ground level, All saints park*



## Introduction

The project work with MMU estates to explore the future resiliency of the MMU library. Through research it envisions 3 plausible trajectories of future and strive to provide for them through a new spatial strategy.

The design reuses the bricks from the existing library to make a new perforated facade and float a hat above that mimics the bricks with a new aluminium panel system. It draws out the hidden archive of the existing library and celebrates it, creating a center pillar that stands the full height of the building visible from all angles.

contents— -bash — 519x305

# Contents

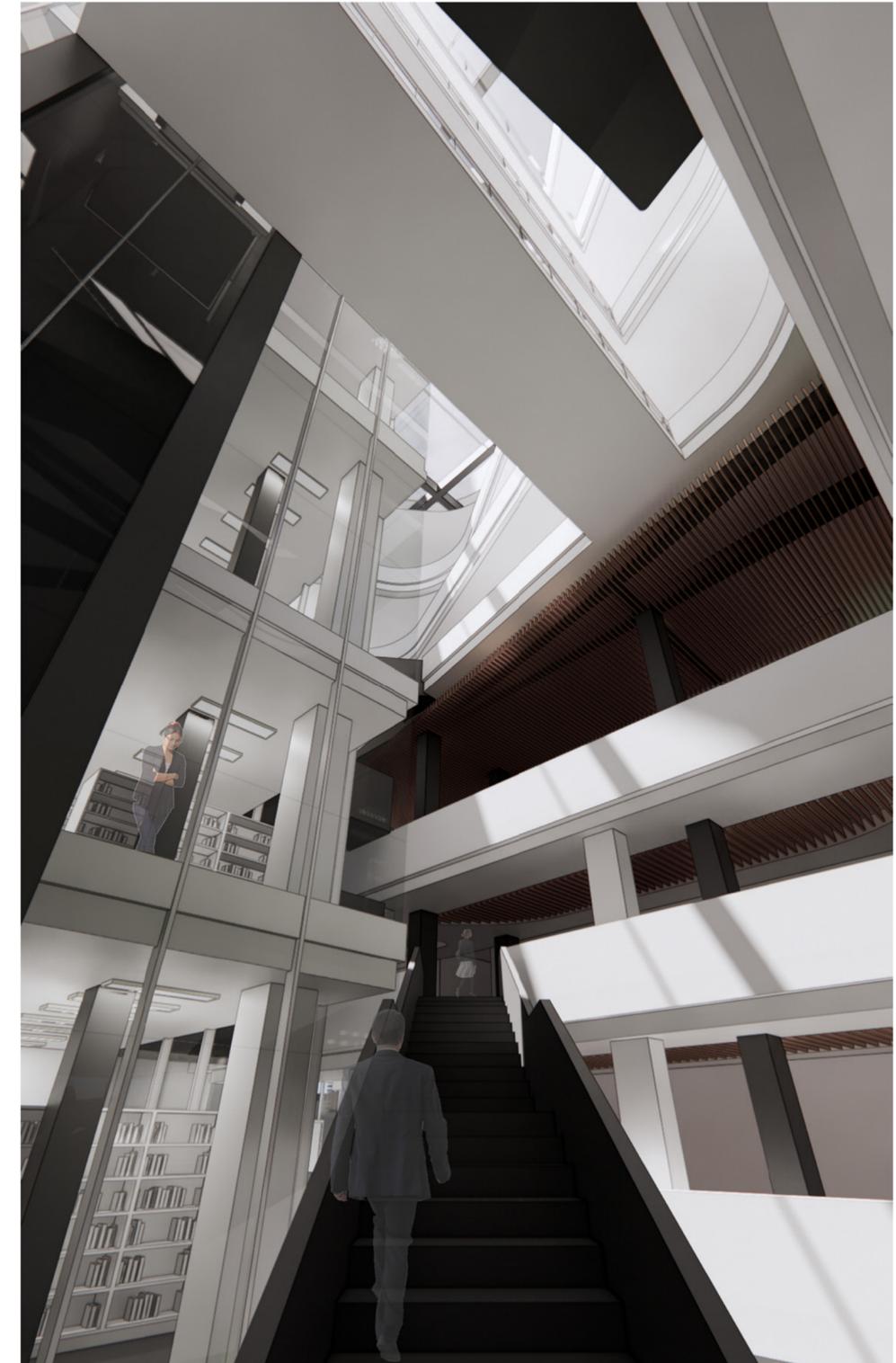
Introduction	2	Building structural strategy	25
<b>Client and the site</b>		Existing, proposed, demolition & addition	26
The client: MMU Estates	4	Building structure: details	27
The Oxford Road Corridor	5	Building services	28
The site of All Saints Library & its forces	6	Environmental strategy	29
The Existing All Saints Library	7-8		
<b>Scheme development</b>		<b>Regulatory &amp; Project programme</b>	
The old library in a new age: a design framework	9	Regulation compliance	30
The old library in a new age: plausible futures	10	RIBA staged & construction sequence	31
A renewed programme	11		
Adaptive re-use: project	12	Bibliography	32
Adaptive re-use: precedents & their strategies	13	Reflection & conclusion	33
The archive center piece	14		
Spatial strategy: a generative spatial algorithm	15		
Massing development	16		
Facade development	17		
<b>Scheme proposal</b>			
Site plan	19		
Proposed plans	20		
Section: East-West	21		
Section: North-South	22		
Building elevation	23		
Adapting to the ever changing world	24		

**button** 

*For the interactive content to work properly, please use Adobe Acrobat Reader*

**Abbreviations**

MMU      Manchester Metropolitan University



**The juxtaposition of archive, staircase and atrium twisting, from staircase from LV2 to LV3**

# The client: MMU Estates

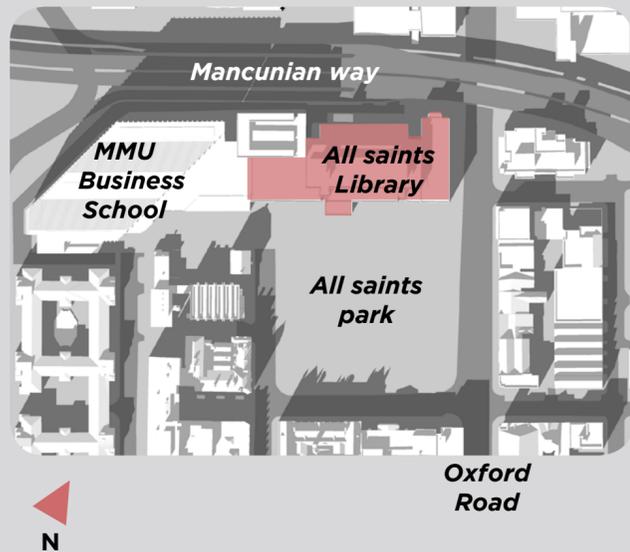
The project works alongside the MMU Estates (the department that oversees all development of the university) to explore the resiliency and a redevelopment proposal on the current existing Library on the MMU All Saints Campus. It forms a key component of the MMU Estate Strategy 2017-2027 and is located along the prominent Manchester Oxford Road Corridor redevelopment scheme.

*A strategic conversation with the Library services team and the Estates before the starting the project provided key strategic insights, aims and vision into the expectations from both parties.*



Site located in Manchester

## MMU All saints Campus



## Client profile



**Matt Hill**  
Assistant Director Capital Development, Estates, Facilities and Capital Development

- It is important that the new library meets the University's sustainability targets.



**Rachel Beckett**  
Director of Library Services

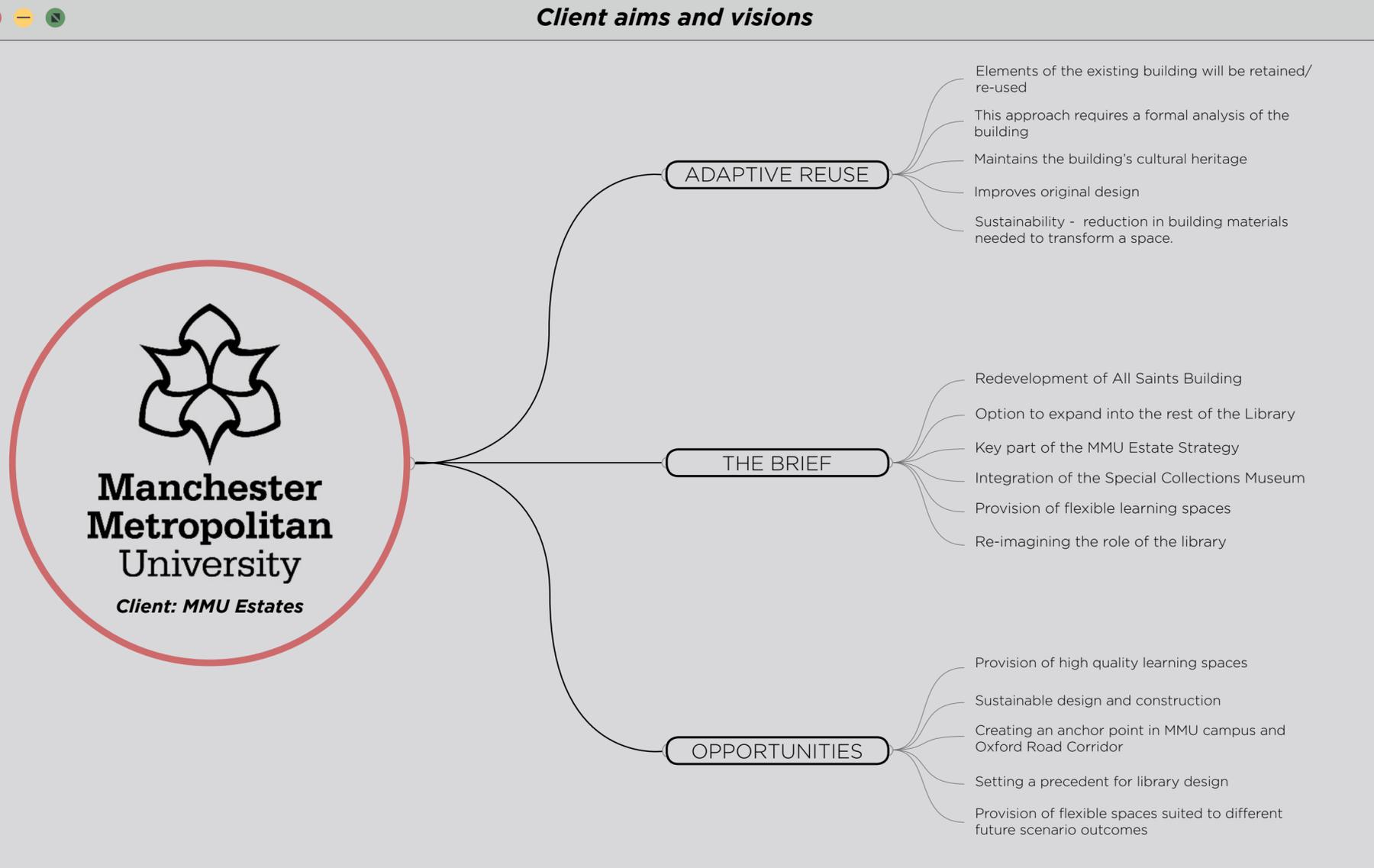
- The library should be a hub, digital connectivity is important.
- The typology of libraries has changed - "Libraries should be noisy places"
- Flexibility is needed throughout the academic year.



**Peter Fallon**  
Chief Engineer

- Utilise system efficiencies to reduce unit energy costs
- Improve environmental credentials ie less fuel per unit generated
- Excess heat captured and re-circulated through the network

## Client aims and visions



# The Oxford Road Corridor

The site is situated on Oxford road and is part of the wider Oxford road corridor strategic vision 2025, a strategic plan to develop the corridor into an innovative district located south of the city centre home to a unique concentration of knowledge, business and cultural assets.

The aim of the partnership is to support and grow innovation clusters, enhance job creation, economic growth, and create new neighbourhoods.

*The building strategically position itself in the corridor as a beacon for the information, communication and arts sectors.*

## Oxford Road corridor strategic vision goals



### Economy

- Supporting the Growth of World Class Institutions
- Accelerating Innovation, Commercialisation and Company Growth
- Championing Transformational Investment



### Place

- Creating a Special Place for People
- Putting Culture at the Heart of Place
- Developing Smart City Infrastructure & Services



### People

- Raising The Bar: Increasing Corridor Manchester's Contribution to Economic and Social Inclusion

## Oxford Road corridor

### Oxford Road Corridor Strategic Vision - sector division

The Corridor has a 60,000 people workforce and 70,000 students but is heavily focused on the education (18,300 people), health (13,800 people) and professional sectors (10,000), which sums up to a combination of 42,100 people and lack in information and communication (2,900 people) and Arts, entertainment recreation and other services (1,800 people) sectors, with an extremely unbalanced human capital being distributed.

Although the corridor vision pushes for development in every aspect, the presence of the 2 universities skew the specialist they attract in favour of education and profession.

The project sees an strategic opportunity to position itself as a starting beacon to attract more people in the recreational sector and to provide relevant provisions to foster such specialist.

Sector	Oxford Road Corridor	Manchester	Greater Manchester	Great Britain
Education	18,300	38,000	114,000	2,607,000
Health	13,800	46,000	166,000	3,924,000
Professional, scientific and technical	10,000	48,000	123,000	2,636,000
Business administration and support service activities	6,200	44,000	126,000	2,652,000
Financial and Insurance	3,600	21,000	46,000	1,054,000
Information and communication	2,900	14,000	41,000	1,247,000
Accommodation and food services	5,600	33,000	86,000	2,248,000
Arts, Entertainment recreation and other services	1,800	12,000	26,000	1,409,000

Deloitte, 2018



# The site of All Saints Library & its forces

The All Saints library building is located in the center of the MMU campus, adjacent to the All Saints park and MMU business school. It is also enclosed by the Mancunian Way to the North and Oxford road to the East. Surrounded by different aspects of the city, it provides a huge amount of opportunities for the design.

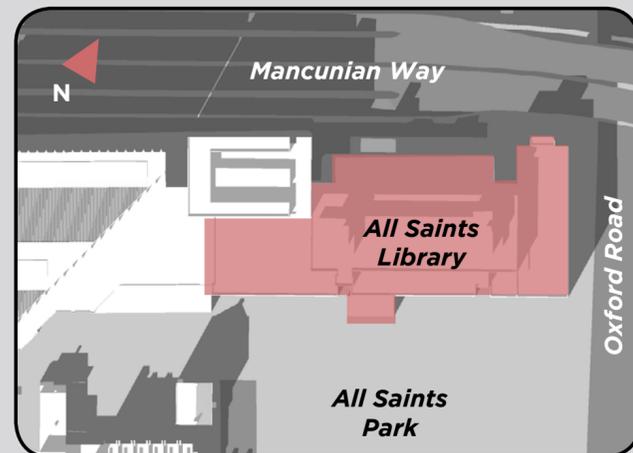
The library is also part of the university's strategic development (MMU Estates Strategy 2017-2027). Under the plan of development, the library is the first to be developed, which would be the first in a series of future development to re-imagine the future of not only the library but the positioning of the university as an institution in the Oxford road corridor, in Manchester, in the UK and in the world as a renowned institution attracting top students from all over the world.



# The Existing All Saints Library

The existing All Saints library building was constructed in the 1973 using a reinforced concrete frame work with an open plan layout and had since had multiple refurbishment works from 2015-2019.

Built in the 1970s means that regulations as well materials were completely, introducing issues that would have to be dealt with before adapting, such as asbestos and thermal bridging.





# The Existing All Saints Library

The All Saints Building has a total of 4 stories and consist a majority of Offices and Meeting room spaces along with a few archived documents/books spaces. A lecture hall is situated at 1st and 2nd floor. It connects the All Saints Library long the circulation core towards the East.

Because of the age and missed opportunities of the original design, the building provided a lot of chances to reuse certain elements, enhance them as well as taking those opportunities.

# The old library in a new age: a design framework

The library have existed since the 7th Century B.C. in the Assyrian kingdom in modern day Iraq (8 *Legendary Ancient Libraries, 2016*) and have evolved alongside society. As we stand on the verge of the 4th industrial revolution, the library is about to undergo a massive change in its intrinsic meaning, which begs the question - what should the library of tomorrow look like, specially the MMU archive, which is a creation of the 17th Century?

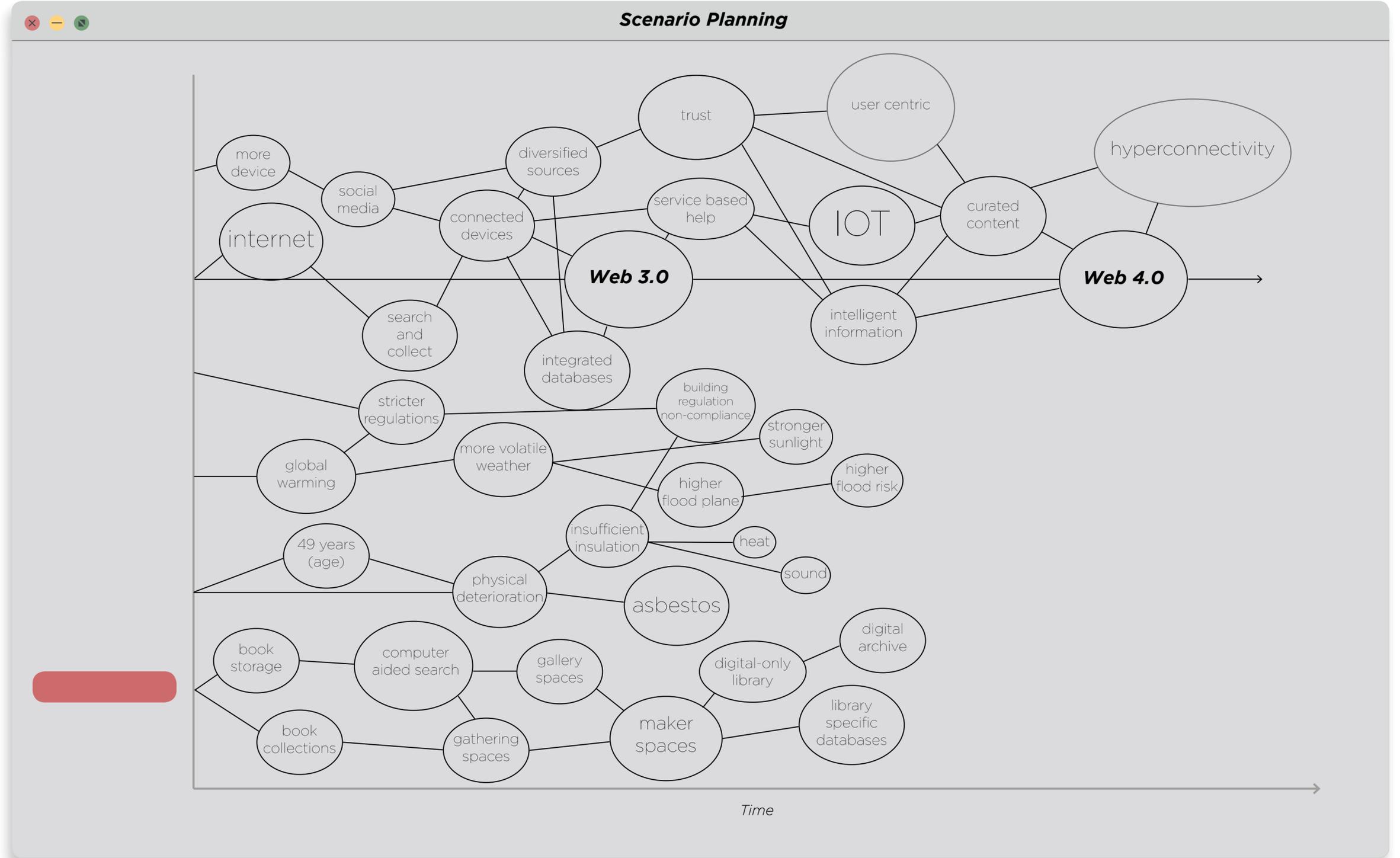
## Scenario Planning

### PESTLE

P (Political) E (Economical) S (Social) T (Technological)  
L (Legal) E (Environmental)

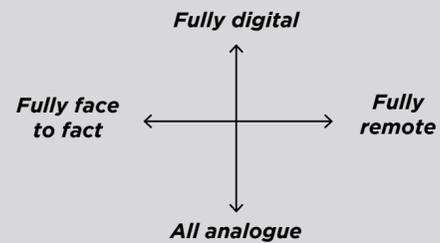
Since it is impossible to accurately predict the future, the pestle method take known factors and generate multiple plausible futures, an educated guess. Scenario planning famously helped Shell (*the oil company*) predict and avoid the 1970 oil crisis.

For each of the category, actors that can affect the future of the library are recorded to find correlations to derive possible scenarios of the future. *However, politics and economy is less related to the library, it would be substituted by related adaptive re-use actors - P (physical) and F (functional) futures of a library.*



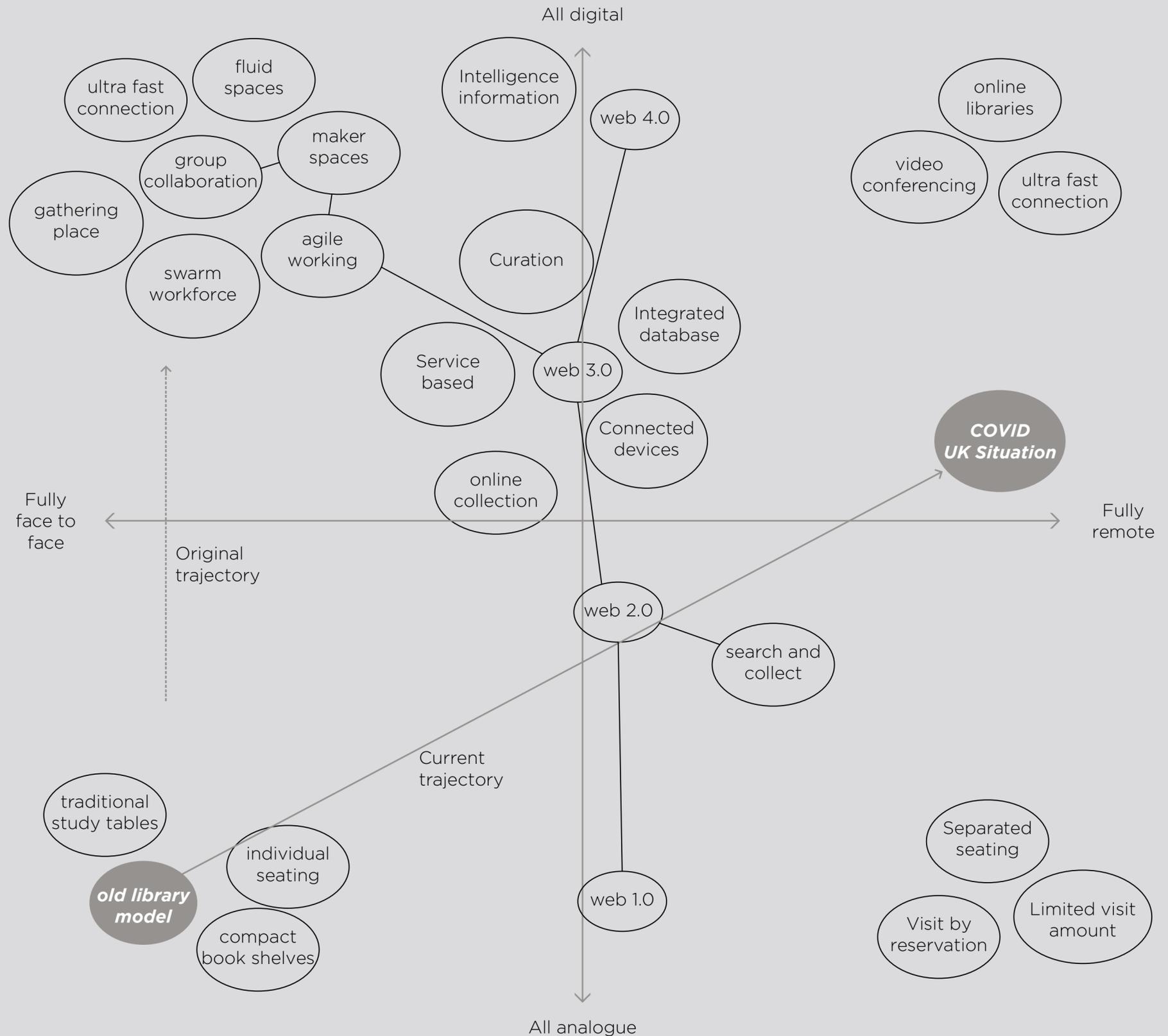
# The old library in a new age: plausible futures

Scenario analysis take the identified actors that affect the futures in different categories and plot it against the 2 most prominent categories on the x & y axes. The analysis for the library's future plots the actors against remoteness and digital-ness.



*Through the analysis 3 Plausible scenario are identified and would be an addition to the existing library building model, retaining current library functions as well as accommodating future changes*

## Scenario Planning - Plausible future analysis





# A renewed programme

As this is an existing building, when designing the programme for the new building an analysis of the old building was done to both categorise by functions and levels as well as to evaluate the relevancy of these spaces.

Informed by the Estates that the offices are no longer in use, combining with the focus of the design drivers the proposed programme is divided into 3 parts -

***Special collections (archive)***

a central pillar of a library, the history of knowledge

***Library***

the core function of the building

***Community***

an anchor in the Oxford road corridor



# Adaptive re-use: Project

Adaptive reuse is a type of refurbishment that can take many forms, from simple redecorations to major retrofit or reconstruction. Often times adaptive reuse is done to buildings that are of value - to culture, society or history. Rather than a complete demolition adaptive reuse seeks to preserve them and retain their intrinsic heritage and values.

## ***All saints library building***

The All Saints library building is a key building in the MMU campus. *The typology of the building makes it the central hub drawing students and staff together.* The significance of the building is huge, spanning along All Saints Park as well as serving as the gateway to the library from Oxford Road.

The aim for adapting All Saints Library is to utilize the strengths of the existing building whilst also providing interventions that enhance and improve the building's existing function.



## Adaptive re-use: Precedents & their strategies

2 precedents were chosen for their brilliant play of space, circulation and relationships between old and new. The first one is the *Museo Nacional Centro de Arte Reina Sofia* in Madrid, which see a new roof added on top of the existing building and the second one being the *Morgan Library* in New York, which saw a new block addition in between the existing buildings.

*Both buildings have a central element that connects all the existing and serves as the center point for the building, channeling visitors from and to different spaces. They also have special way to introduce light into the building as well as framing views.*



## The archive center piece

*To celebrate the library archive, the idea was to bring it forward into a prominent space and create a focal point visible from all sides of the building, similar to that of Rena Sofia & Morgan library.*

Taking the notion of "The past is a pillar supporting the future", the design took shape of a central tower that stands in the middle of the building, surrounded by an atrium.

# Spatial strategy: a generative spatial algorithm

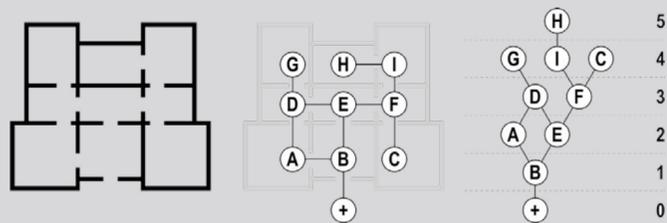
The generative spatial algorithm, based on the Space syntax theory, takes user input spatial relationships, area and attractor point and calculate the most efficient route in between spaces that incorporate all given instructions. The result is analysed further to choose 1 to take forward.

## Space syntax & Axial depth map

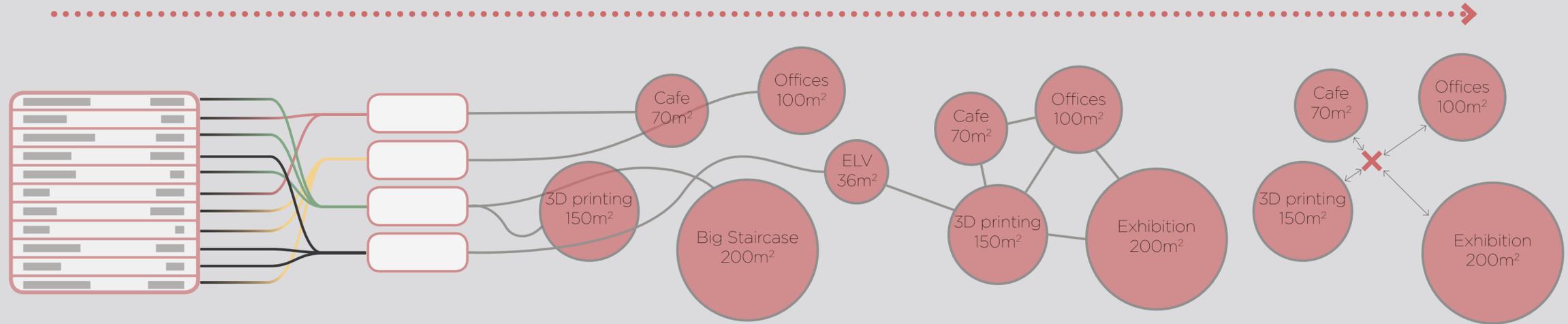
The generative spatial algorithm draws its framework from space syntax theory, which is a set of theses that analyse spatial layouts and spatial behavioural actions in buildings and the urban fabric. It is how they move, choose and adapt base on spatial layout.

One of the space syntax thesis is axial mapping, by drawing linear connections in the different spaces and creating a depth logic to show circulation logic.

The algorithm is used for the ground floor and the additional 3 floors on top of the existing building.



## Generative Spatial Algorithm



### Building Programme update

The existing building programme is recategorised and new programme generated by scenario planning design framework is added

### Spatial requirements

By calculating the new GFA, area can be allocated to individual programme

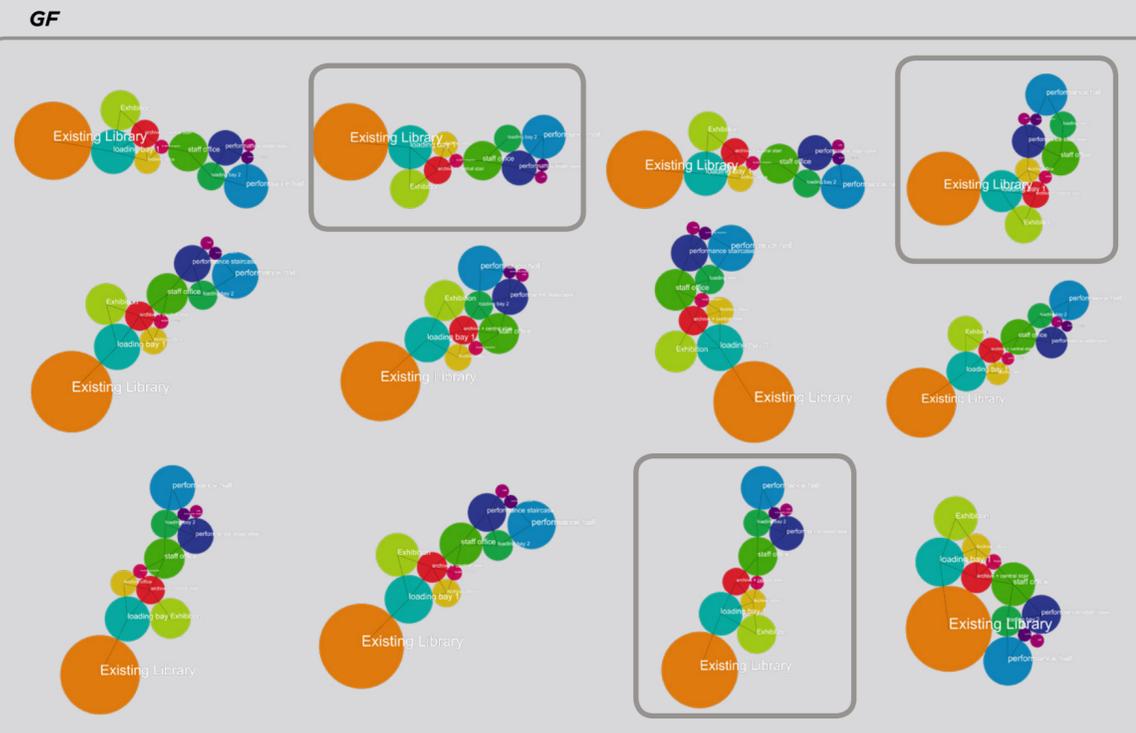
### Spatial relationships

Grasshopper is used to visualise and establish the relationships and adjacencies between spaces

### Archive as the center point

Based on the spatial relationships, an attractor is utilised to find the distance to the archive, and moving them closer or further based on programme

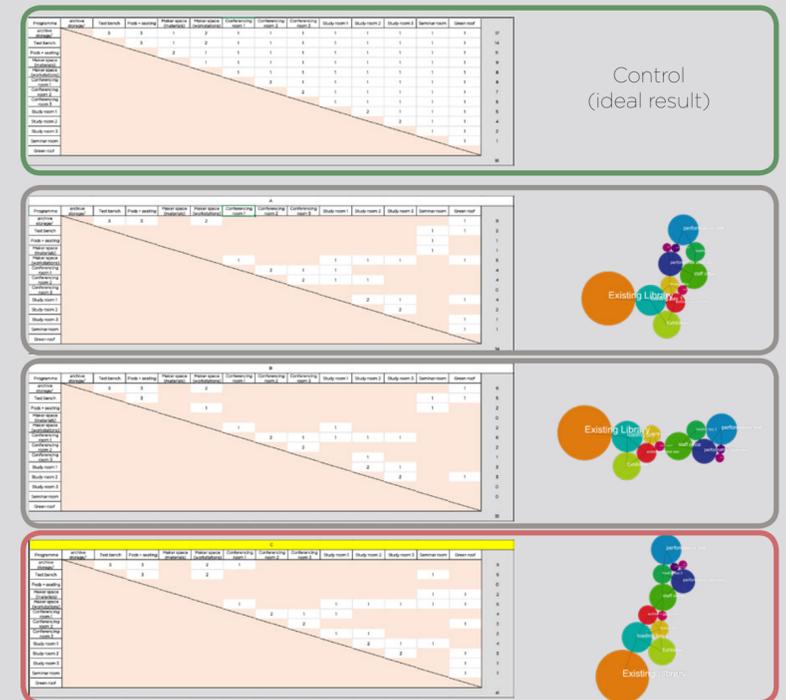
## Generated Results & further analysis



### Spatial separation analysis correspond table

Solid separation	0
See through	1
Operable/openable	2
No separation	3

3 iterations with the closest generated spatial relationship compared to the given relationship links are then reviewed using a spatial separation analysis, evaluating spaces and given a number based on how separated they are. The analysis compare the 3 iterations with an ideal result and the best performing result is then selected to further develop in detail.



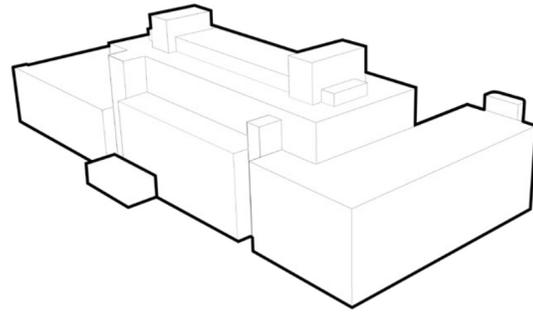
### chosen iteration



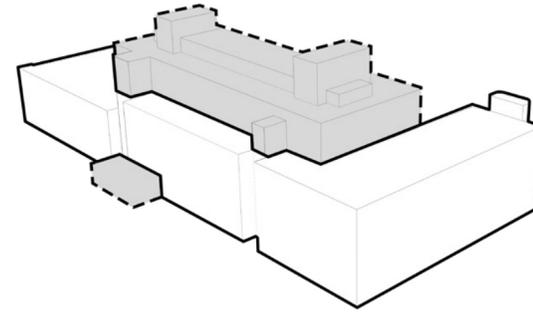
# Massing development

*A new "hat intervention" floats a new volume above the existing library. The repositioning of entrances draw visitors into the central atrium, greeted with the center piece of the library - the archive, towering full height of the building. Following the archive up, visitors leave the old library to enter a new library era, signified by the twisting atrium and streamlined space planning.*

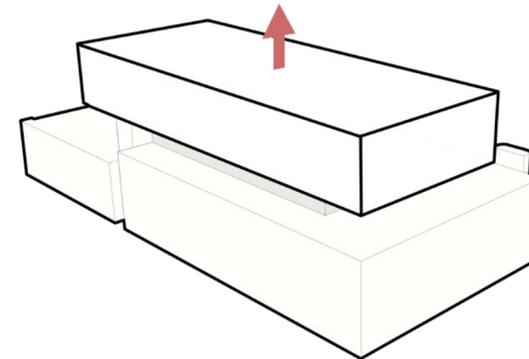
**00 EXISTING**



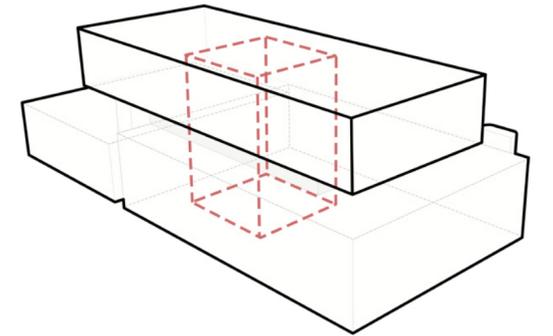
**01 UNIFY**



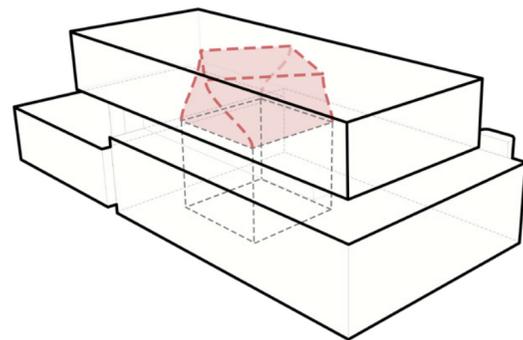
**02 HAT**



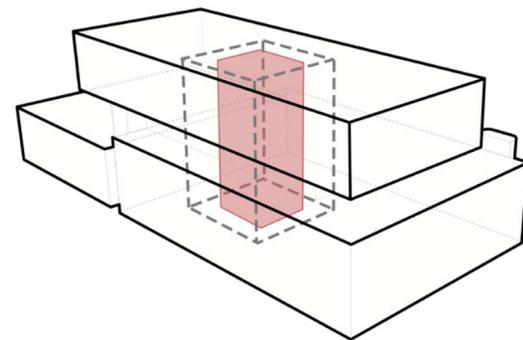
**03 ATRIUM**



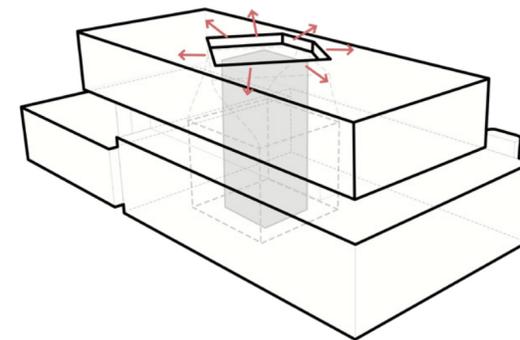
**04 TWIST**



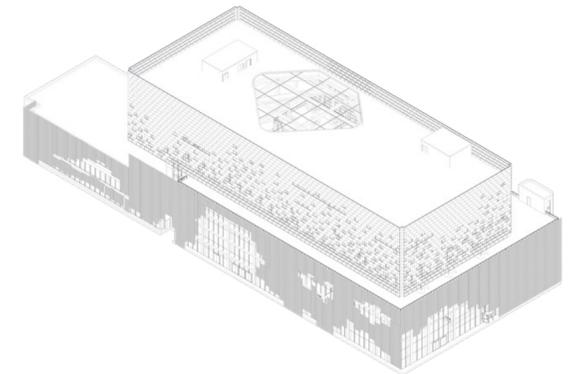
**05 "THE PAST IS A PILLAR OF THE FUTURE"**



**06 SKYLIGHT**



**07 ALL SAINTS LIBRARY**





# Facade development

## ***A new facade***

The project seeks to preserve the familiarity of the existing brick facade but to inject new life into the building. To achieve this, the existing bricks were re-cycled to be installed as a perforated double skin facade on the existing building. The feasibility of number were estimated based on the South facade of the building, given that parts of the building is to be demolished.

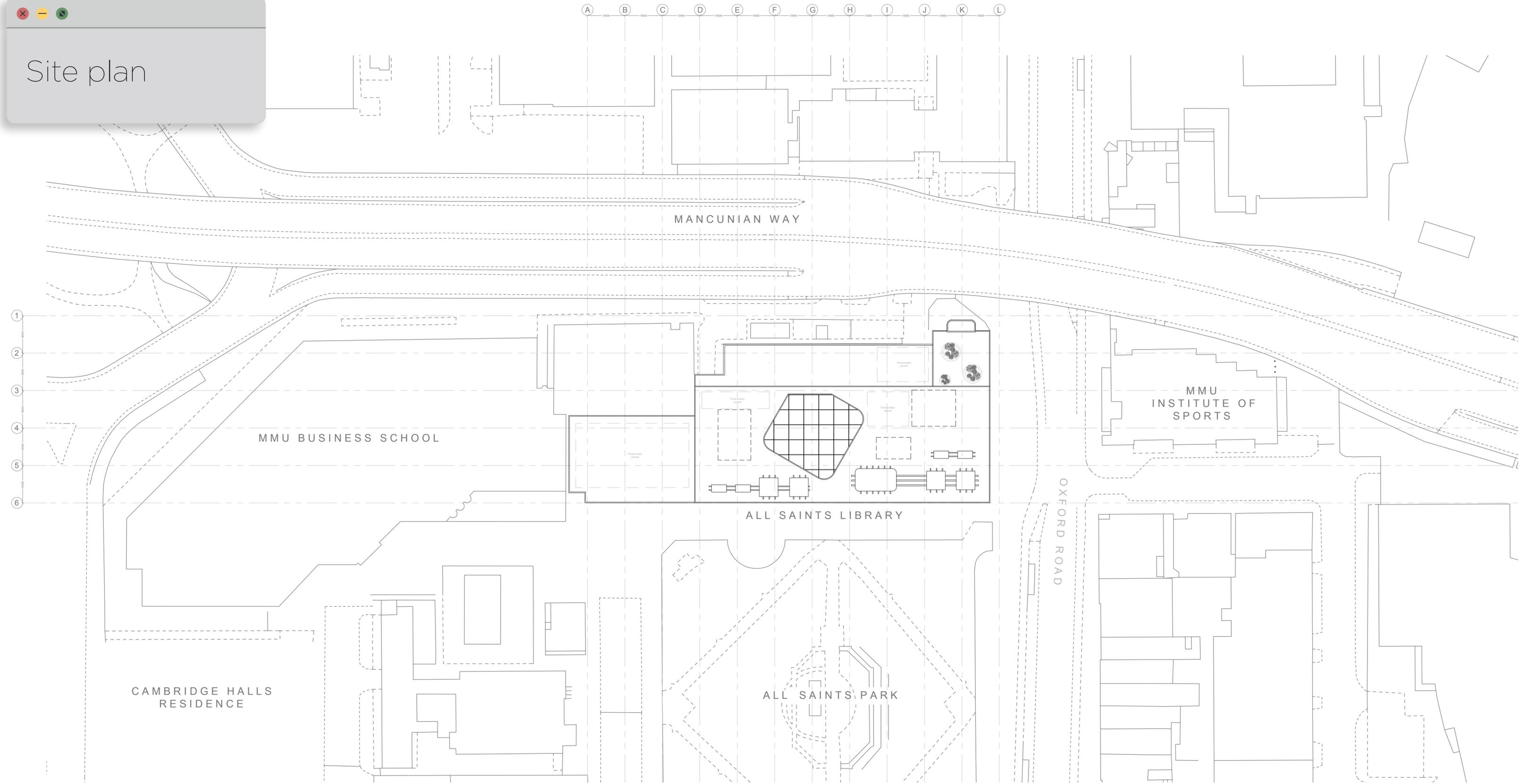
The design for the facade of the new extension above the existing building was to draw inspiration from the existing brick facade. However, due to the potential heaviness of the whole building, the design specified a semi-reflective aluminium panel, tilted at 2 degrees to reflect the sky, creating the illusion of lightness. Further development also incorporated frosted glass panels to increase the permeability of the building.

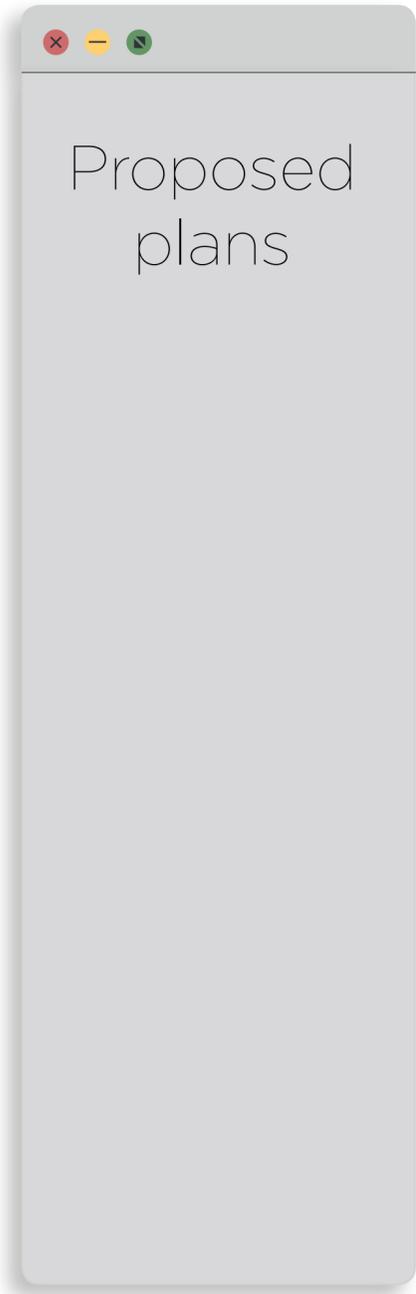


Night time exterior view  
from ground level, Oxford Road

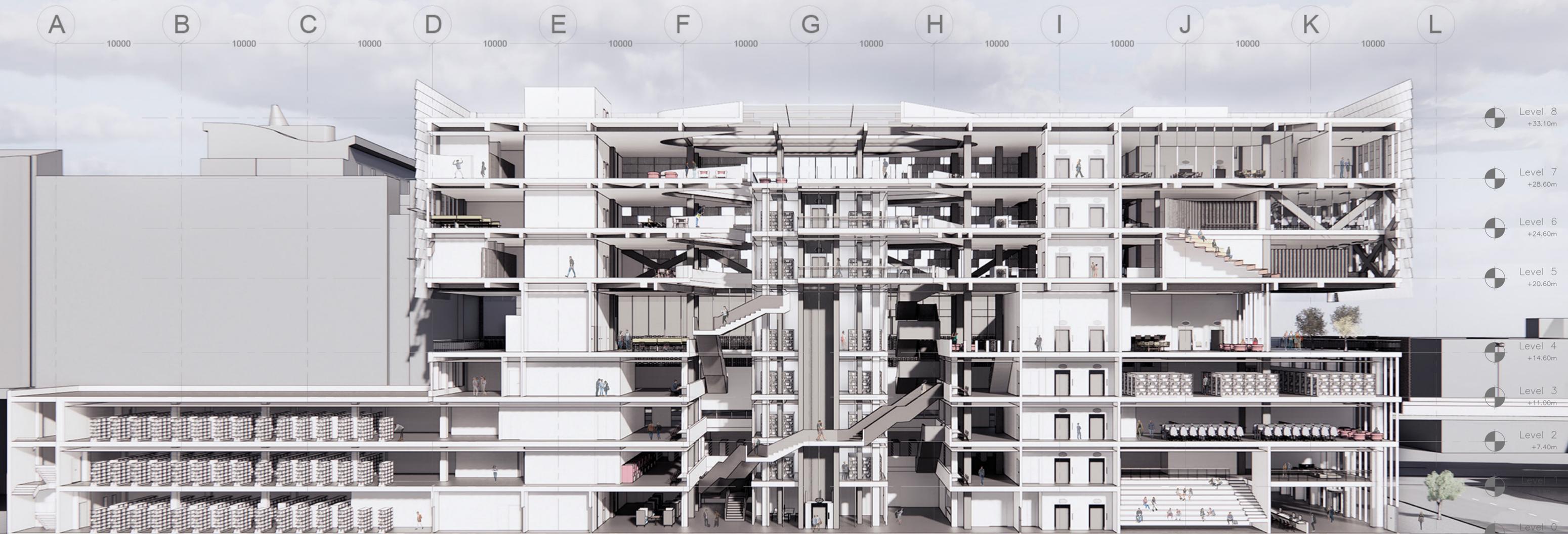
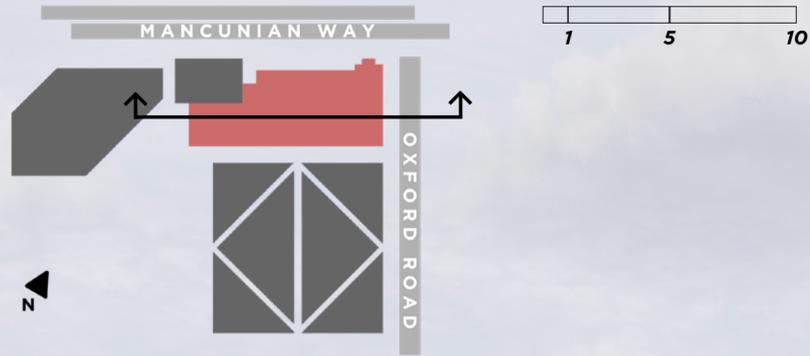


Site plan



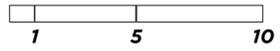
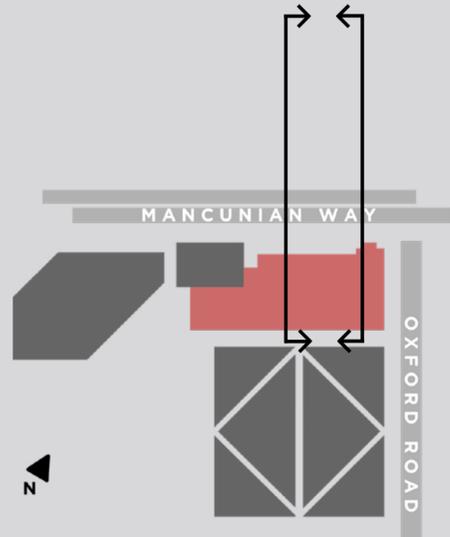


Building sections:  
East-West



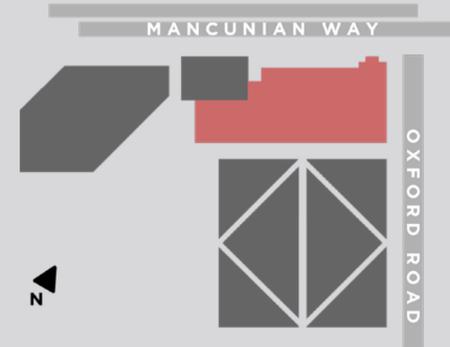
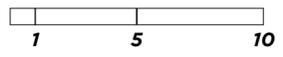


# Building sections: North-South





# Building elevations



# Adapting to the ever changing world

The primary framework during the design of the reuse of All Saints library was to create a more resilient library in the digital age through the ability to adapt to the different scenarios identified in the scenario planning analysis.

The three scenarios and their respective meaning in the future of the library:

- 1) Face to face but a fully digital future  
*(collaboration hub)*
- 2) Fully remote and digital future  
*(digital library)*
- 3) Fully remote and fully analogue future  
*(archive)*

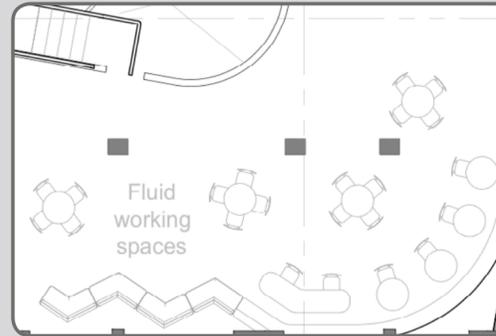
The 3 scenarios each fall into their own category of space, which the building design accommodated. On top of simply accommodating the scenarios, the design also allowed resiliency towards seasonal or short term changes such as an event or a exam season.

## Adapting to 3 scenarios

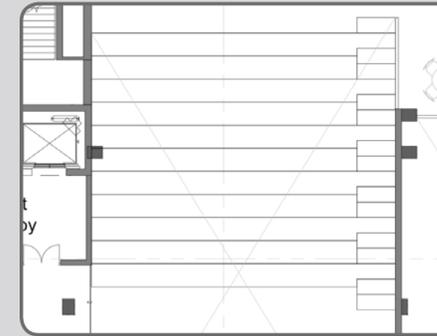
### Plausible scenario 1 fully face to face - all digital

The development of the web allows hyper connectivity through the cloud as well as instantaneous collaboration, disconnecting from the traditional table and chairs for a more fluid setting

**plausible spaces:**  
fluid study and work spaces  
gathering area  
makeshift furnitures  
collaboration area



5F, Grid F5-I6  
The long sofa and accompanied chairs and circular tables distance itself from typical library furnitures, also allowing various possibility of combination from the provided furniture



GF - 1F, Grid I4-K6  
The big steps allow visitors to sit anywhere, to have small talks or huge performance, enabling collaboration and fostering new ideas



5F, Grid E3-F4  
The disconnection towards the table and chairs arrive at the furthest, allowing work to be conducted at the most comfortable position

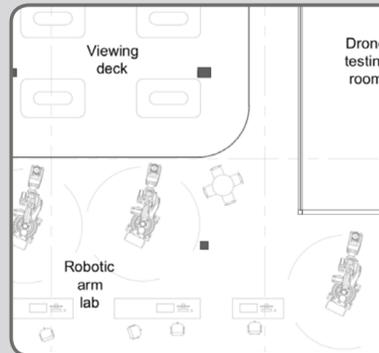
### Adapting to short term/seasonal change

The provision of fluid working spaces allow change base on the amount of people, in exam period furnitures can be separated to create more individual revision spaces, while a short term exhibition can have all the furnitures removed.

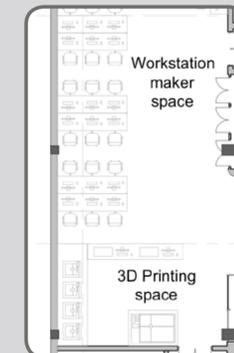
### Plausible scenario 2 fully remote - all digital

Cloud based databases means users can access the library without being present inside a library, opening up possibilities to much more diversified spaces

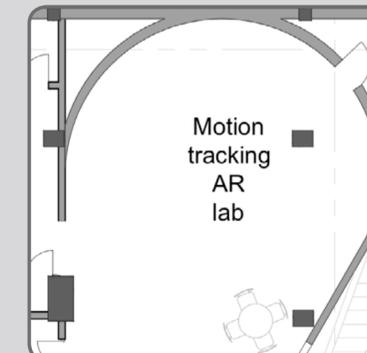
**plausible spaces:**  
scattered seating  
"anywhere" working spaces  
conference spaces  
untethered specialist spaces



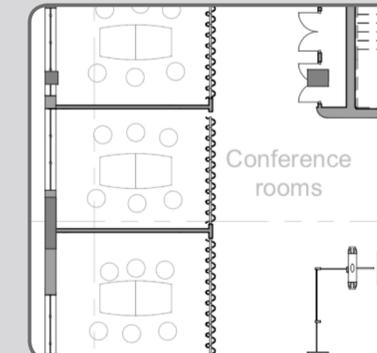
7F, Grid J5-K6  
The ultra fast high bandwidth cloud database together with 5G allows the the creation of truly wireless spaces at any location, even those that require a large amount transfer and low latency, such as mixed reality spaces.



6F, Grid D4-E6



7F, Grid E3-F4



5F, Grid D4-E5  
A fast network allows hot-swapping peripherals, turning mobile device into workstations and conference center.

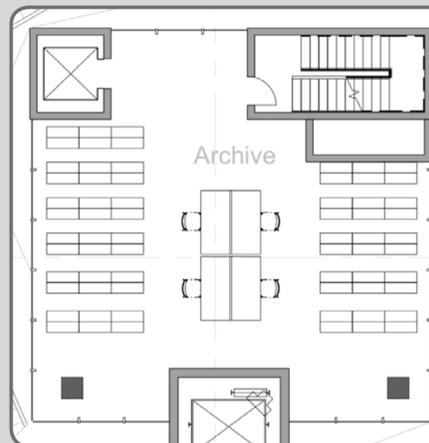
### Adapting to short term/seasonal change

The generous space planning and transition spaces allows sudden demand surge for certain specialist spaces, scalable from 1 person to a dozen working on the same project.

### Plausible scenario 3 fully remote - all analogue

Analogue means physical presence in the library, but being fully remote requires users to be separated, this could happen in an archive, and often times dealing with analogue requires a lot of space

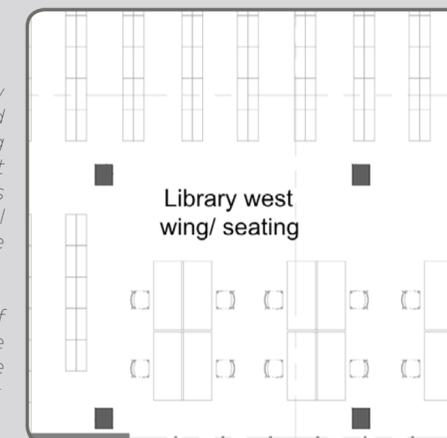
**plausible spaces:**  
reserved visit  
separated seating  
large tables



Every floor, Grid F3-H5

A quiet space separated by low emission double glazing and insulated by sound absorbing panels guarantee the perfect environment and spacious tables to study the archival material that the university have to offer.

With only a certain amount of work desk provision, the archive is the central sacred place accessed only by appointment



GF - 2F, Grid A5-E6

Insulated by sound absorbing panels the west wing of the library preserve the original space layering, providing large and separated seating, retaining a familiarity to the old library.



# Building structural strategy

*A steel superstructure with a ring truss system enabled the “hat” intervention to “float” above the existing building.*

## **New steel superstructure**

The structural system for the new building utilised steel construction, erecting columns directly from the foundation to support the new intervention. In addition, 3 columns from the existing structure are strengthened to support part of the new structure. A ring truss system around the structure enabled cantilevered slab on all sides of the building, up to 10.5m.

## **Existing structure**

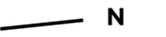
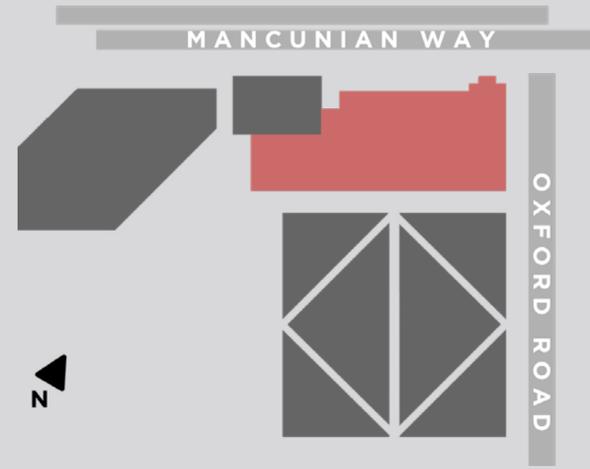
Inside the existing building, the atrium is carefully positioned to minimise stress as well as unbalanced loads. Since part of the existing building is to be demolished, overall load is reduced on the existing building.

## **Foundation**

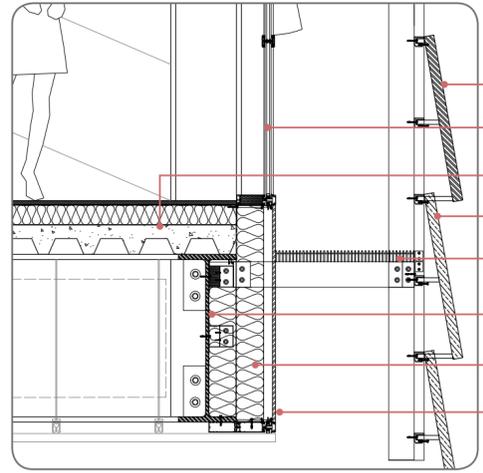
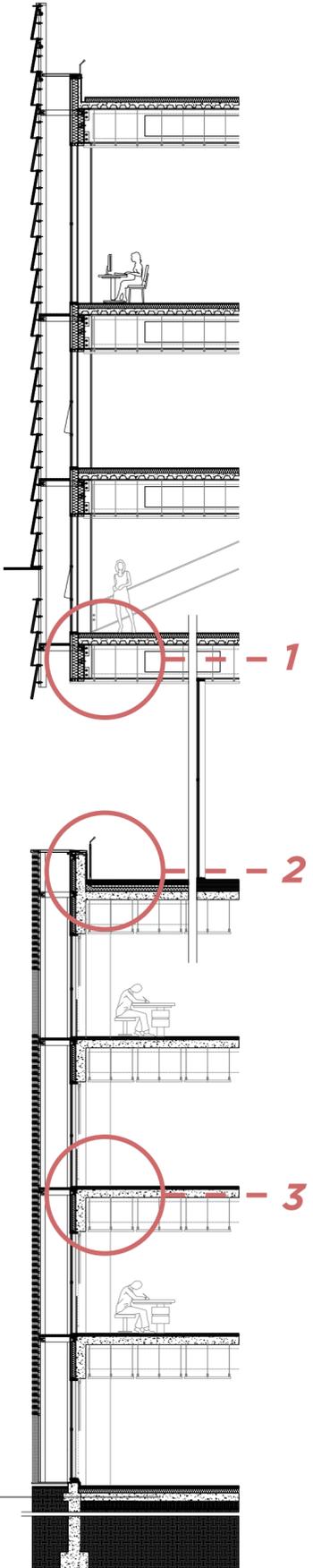
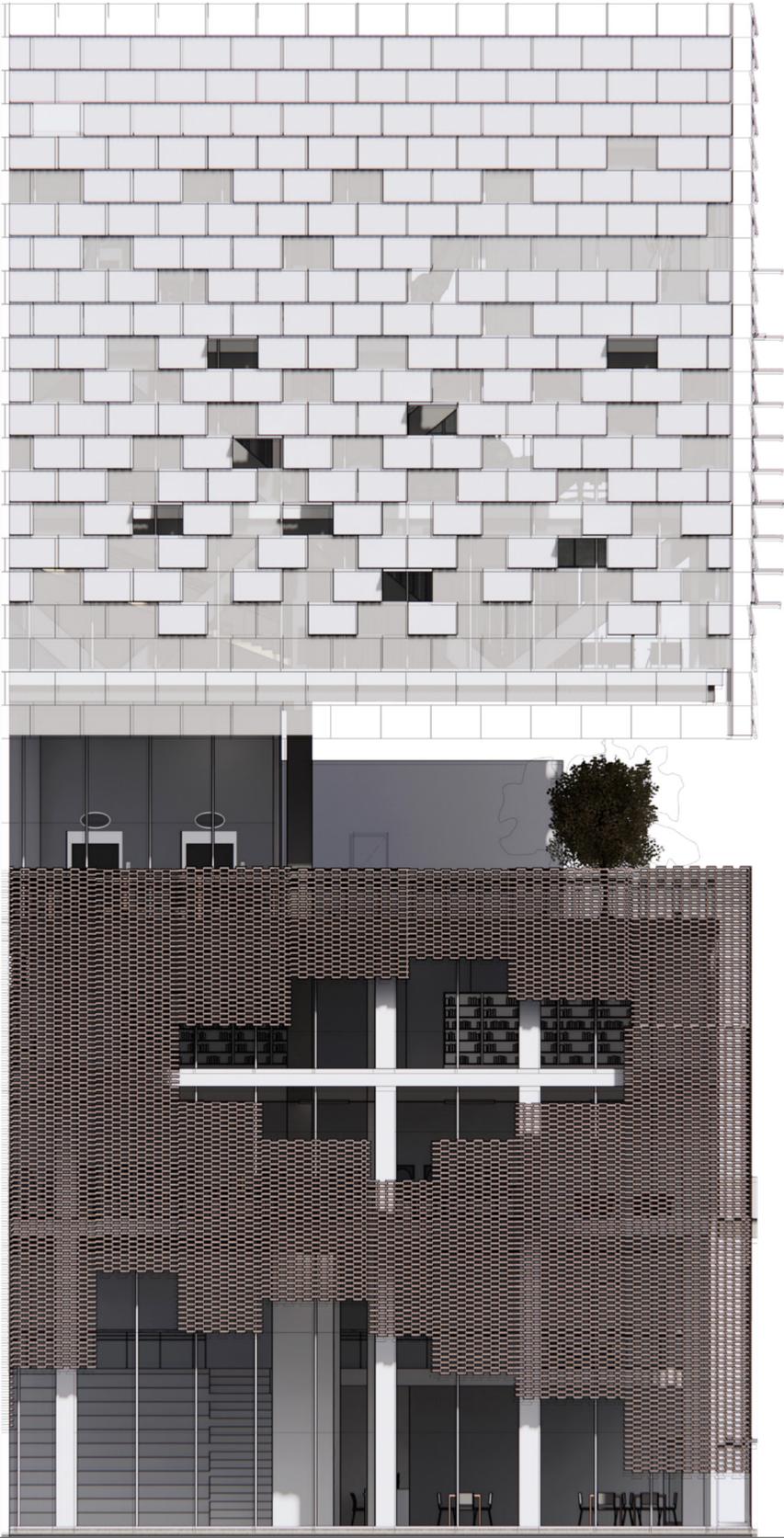
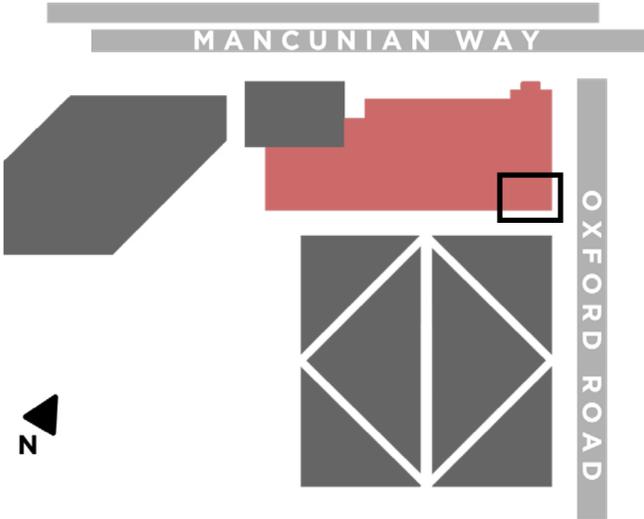
Part of the foundation of the existing library building is strengthened to support the strengthened columns above, adding new piles and pile caps. The new steel structure is supported with a pile foundation.



# Existing & proposed, demolition & addition

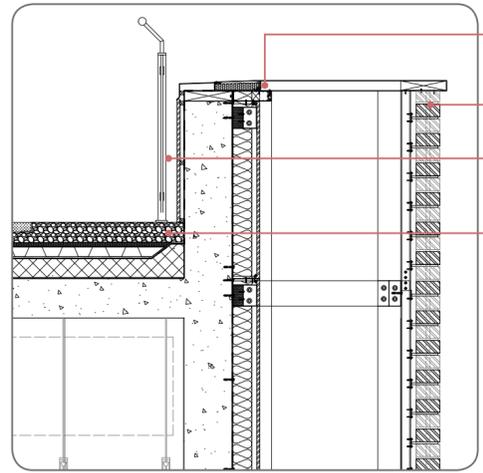


Building structure: details



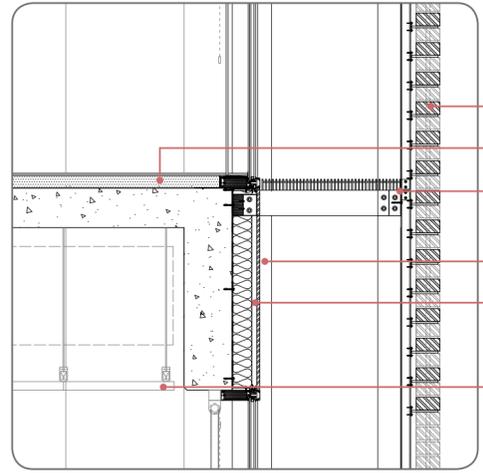
- Aluminium Panel (1200x800mm)
- Double-Glazed Curtain Wall
- Metal Deck and Concrete Slab
- Frosted Glass Panel (1200x800mm)
- Stainless Steel Grate & Curtain System
- H-Beam (850.9(D) x 293.8(W))
- Thermal Insulation (100mm)
- Lacquered Aluminum Cassette

1. Floor Detail (New Extension Part)



- Stainless Steel Coping
- Perforated Brick Curtain Wall
- Glass Guardrail with Steel Top Rail
- Green Roof Floor Build Up:
  - Granular Mix and Vegetation Layer
  - Filtering Layer
  - Drainage Layer
  - Damp Proof Membrane
  - Thermal Insulation
  - Vapour Control Layer
  - Concrete Slab

2. 4/F Terrace Parapet Detail



- Perforated Brick Curtain Wall
- Screed and Floor Finish
- Stainless Steel Grate & Curtain System
- Lacquered Aluminum Cassette
- Thermal Insulation (100mm)
- Acoustic Suspended Ceiling Panel

3. Perforated Brick Curtain Wall Detail

# Building services

## Air and ventilation

The building would be serviced through mechanical ventilation to keep books and people at an optimal temperature and humidity. In order to service such a large building, the building is divided into zones with sensors that dynamically adjusting the temperature between 20-22 degrees Celsius.

One of these zones is the central atrium, which the system would only provide supply air, allowing natural stacking effect to occur and exhausting the air through the skylight side windows.

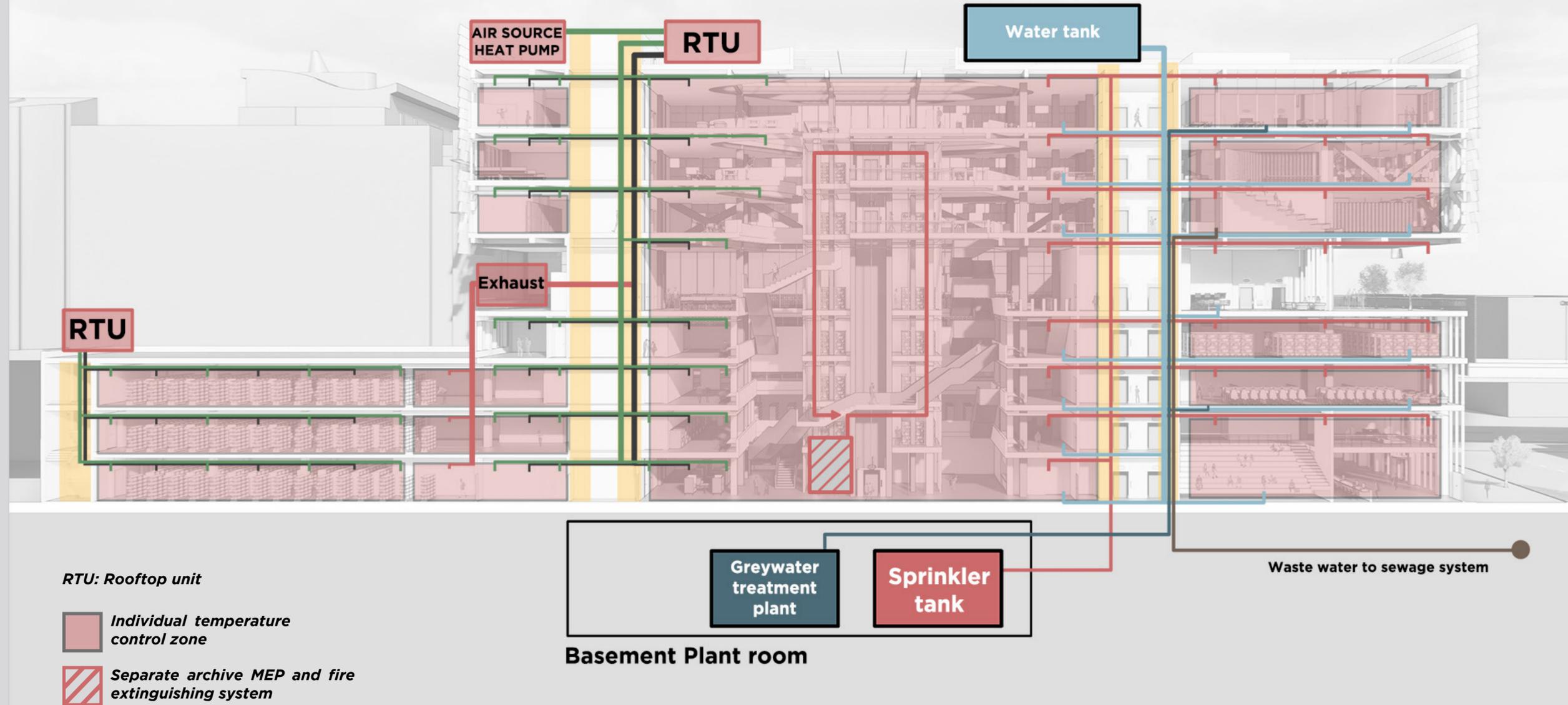
*Suggested by the MEP engineer, the existing boiler would be demolished and replaced by air source heat pumps situated on the roof, delivering both heating and cooling to the building.*

## The Archive

*The archive MEP system is separated from the building's main delivering system and openings are sealed to prevent disruption. Air inside is also constantly monitored and controlled for pollutant. The archive also utilise a powder fire suppressing system delivered through sprinklers to prevent damage on archival materials.*

## Water

The building stores its main water supply on the roof, with a domestic water treatment plant at the basement of the building to recycle greywater from rain and washing basins.



# Environmental strategy

## Lack of Natural light in the building

One of the difficulties of the building is that it has a deep plan where natural light can hardly penetrate into. Although this is good for the typology of a library, it is bad for wellbeing of people inside the building.

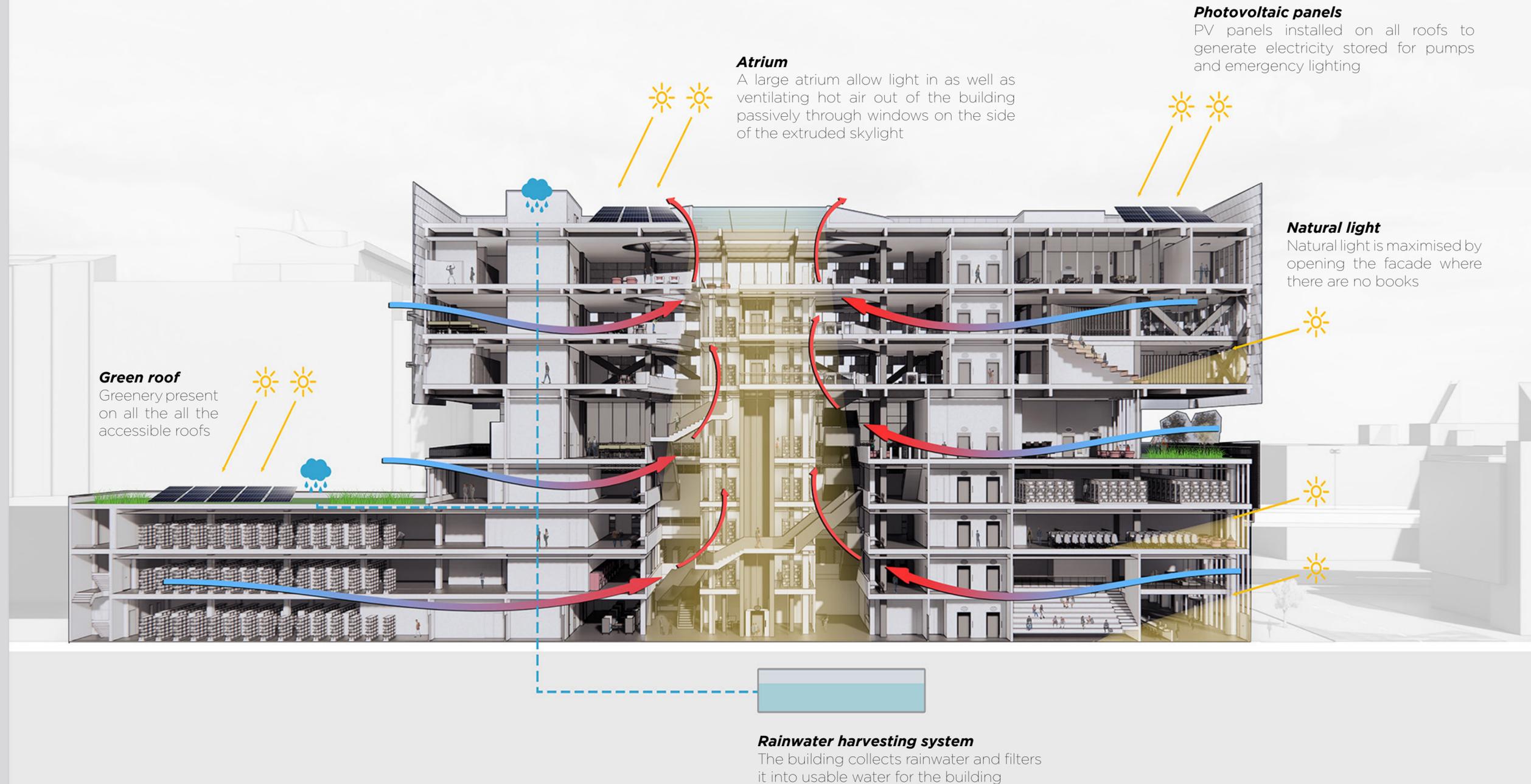
As the definition of a library changes, less and less spaces are required to house books, replaced by digital functions such as 3D printing and robotics labs, allowing the building to bring daylight in.

## Archive - UV "death" rays

UV light to books alone are already damaging and cause deterioration, let alone archival materials. To preserve the treasured materials, the building utilise low emission polarized glazing that blocks out UV light as well as reducing half of the light entering the archive with polarizers.

## Thermal bridging

Another issue that plagued the existing building is that the concrete upstands are not insulated. The new proposal re-insulates them and where opening are needed use triple glazed panels.



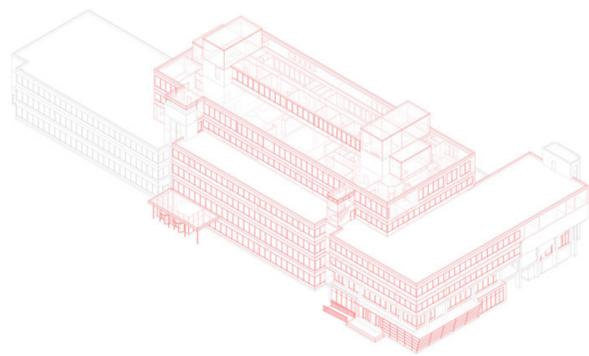


Regulation  
compliance

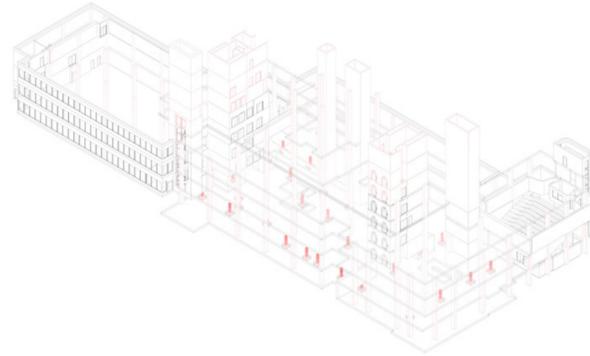




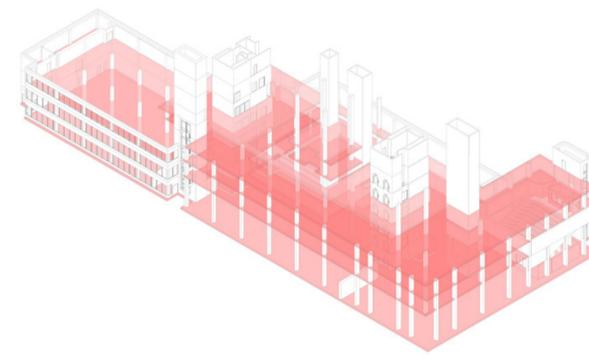
# RIBA stages & construction sequence



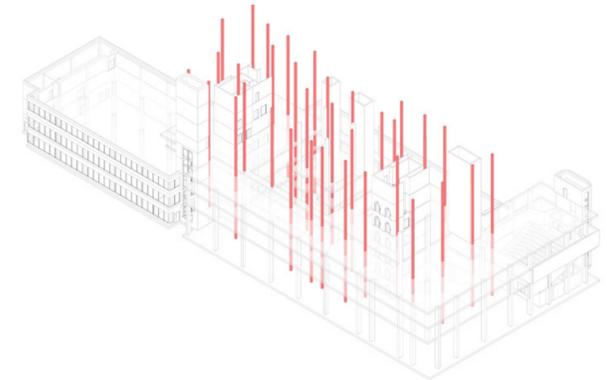
**1) Existing building demolition**



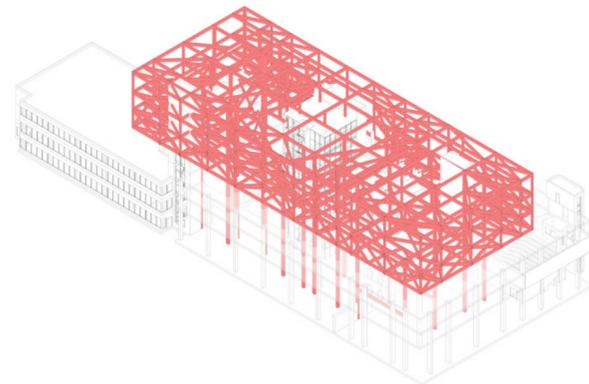
**2) Superstructure foundation construction**



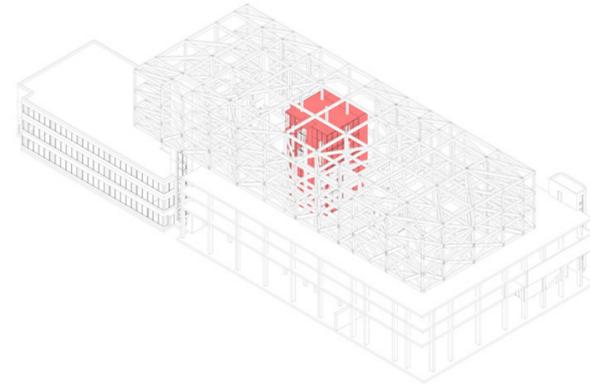
**3) Slab reformation**



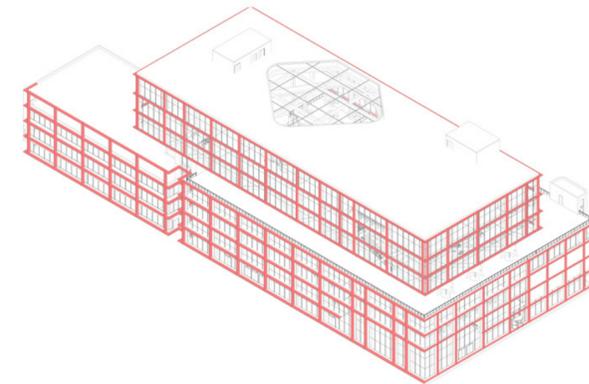
**4) Erect columns for superstructure**



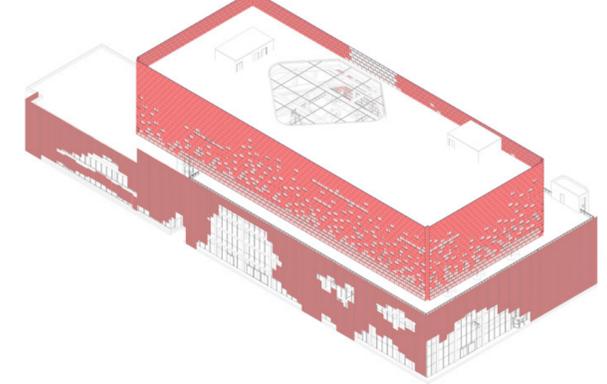
**5) Building frame construction**



**6) Archive tower construction**



**7) Facade skin and frame installation**



**8) Install facade panels**

## Building programme according to RIBA stages

Month/Week		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RIBA Stage		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Stage 0: Strategic definition	Client meeting & aspirations	█																														
	Request for fee proposal & Risk analysis	█	█																													
	Planning application		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Stage 1: Preparation & Briefing	Project brief & requirements	█	█																													
	Feasibility studies	█	█	█	█																											
	Site surveys		█	█	█	█	█																									
	Confirm fee proposal, budget and programme		█	█	█	█	█																									
Stage 2: Concept Design	Concept Design			█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Stage 3: Spatial coordination	Schematic Design				█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Detailed Design					█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Construction Documentation						█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Stage 4: Technical Design	Building Regulation application									█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Invitation to tender										█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Contractor appointment											█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Shop drawing & specification confirmation												█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Lead in																															
Stage 5: Manufacturing and Construction	Demolition start																															
	Asbestos removal																															
	LV4-6 demolition																															
	Facade demolition																															
	Structural Strengthening																															
	Erect new steel columns																															
	Slab opening and reformation																															
	Build superstructure																															
	Core extension																															
	Install floor plates																															
	Facade construction																															
	Internal construction																															
	Licensing application																															
	Internal fitout & furnishing																															
Stage 6: Handover	Site inspection																															
	Site queries resolve																															
	Fire inspection																															
	Licensing & Fire certificate issuance																															
	Handover																															
Stage 7: Use	Opening																															



# Bibliography

- Anglada, L., 2014. Are libraries sustainable in a world of free, networked, digital information?. *El Profesional de la Informacion*, 23(6), pp.603-611.
- Asian Libraries, 1998. Seminar on Convergence in the Digital Age: Challenges for Libraries, Museums and Archives, 7(6).
- Barnett, J., 2017. What Will Libraries of the Future Look Like?. [online] Wiley. Available at: <https://www.wiley.com/network/librarians/library-impact/what-will-libraries-of-the-future-look-like> [Accessed 15 January 2021].
- Baleiko, R., 2019. Libraries of Today and Tomorrow: How Architecture Can Help Craft a Responsive New Language. *Public Library Quarterly*, 38(4), pp.369-387.
- Bentham, J., 2014. The scenario approach to possible futures for oil and natural gas. *Energy Policy*, 64, pp.87-92.
- Borgman, C., 2001. Where is the librarian in the digital library?. *Communications of the ACM*, 44(5), pp.66-68.
- Connolly, E., Fredrickson, J., Millar, J. and White, L., 2019. Digital Transformation for UK Public Libraries: Five approaches to a 'Single Digital Presence'. [online] Carnegie UK Trust - The British Library. Available at: <https://www.carnegieuktrust.org.uk/publications/digital-transformation-for-uk-public-libraries-five-approaches-to-a-single-digital-presence/> [Accessed 7 March 2021].
- Corridor Manchester STRATEGIC VISION TO 2025, 2021. Home - Oxford Road Corridor. [online] Available at: <https://oxfordroadcorridor.com/#:~:text=Our%20Vision,one%20of%20Europe's%20leading%20cities.%E2%80%9D> [Accessed 3 February 2021].
- Cox, A. and Pinfield, S., 2013. Research data management and libraries: Current activities and future priorities. *Journal of Librarianship and Information Science*, 46(4), pp.299-316.
- Democracy.manchester.gov.uk. 2021. [online] Available at: <https://democracy.manchester.gov.uk/mgConvert2PDF.aspx?ID=18798> [Accessed 28 March 2021].
- Duffy, S., 2019. Financial Statement 2018-2019. [online] Annual Report and Financial Statements. Available at: <https://www.mmu.ac.uk/financial-statement/> [Accessed 12 February 2021].
- Finch, M., 2021. How public libraries can help prepare us for the future. [online] The Conversation. Available at: <https://theconversation.com/how-public-libraries-can-help-prepare-us-for-the-future-120074> [Accessed 6 February 2021].
- Gershon, L., 2019. The Invention of the Archive | JSTOR Daily. [online] JSTOR Daily. Available at: <https://daily.jstor.org/the-invention-of-the-archive/> [Accessed 13 March 2021].
- Gordon, A., 2016. You Say VUCA, I Say TUNA: How Oxford Helps Leaders Face The Complex And Uncertain Future. [online] Forbes. Available at: <https://www.forbes.com/sites/adamgordon/2016/04/06/oxford/?sh=d3ffbf4314a> [Accessed 28 January 2021].
- Gov.scot. 2021. Building Standards technical handbook 2017: non-domestic buildings - gov.scot. [online] Available at: <https://www.gov.scot/publications/building-standards-2017-non-domestic/3-environment/312-sanitary-facilities/> [Accessed 28 February 2021].
- HISTORY. 2016. 8 Legendary Ancient Libraries. [online] Available at: <https://www.history.com/news/8-impressive-ancient-libraries#:~:text=The%20world's%20oldest%20known%20library,organized%20according%20to%20subject%20matter.> [Accessed 20 March 2021].
- Humbersidefire.gov.uk. n.d. [online] Available at: <https://humbersidefire.gov.uk/uploads/files/OCCUPANCY\_CALCULATIONS.pdf> [Accessed 28 March 2021].
- Kass, A., 2018. Atlanta Central Library seeks space for the future to meet new needs. *The Atlanta Journal-Constitution*.
- Koltsova, A., Schneider, C. and Schmitt, G., 2011. Components for parametric urban design in Grasshopper from street network to building geometry. *Proceedings of the 2011 Symposium on Simulation for Architecture and Urban Design (SimAUD)*, 8.
- Lankes, R., 2020. Library as Place: Comments to Advisory Group for the National Strategy for Public Libraries in Scotland – R. David Lankes. [online] Davidlankes.org. Available at: <https://davidlankes.org/library-as-place-comments-to-advisory-group-for-the-national-strategy-for-public-libraries-in-scotland/> [Accessed 1 March 2021].
- Langston, C., Wong, F., Hui, E. and Shen, L., 2008. Strategic assessment of building adaptive reuse opportunities in Hong Kong. *Building and Environment*, 43(10), pp.1709-1718.
- Lewis, D., 2013. From Stacks to the Web: The Transformation of Academic Library Collecting. *College & Research Libraries*, 74(2), pp.159-177.
- Librarian to Librarian. 2018. What Will Public Libraries Look Like in 10 Years?. [online] Available at: <https://librariantolibrarian.wordpress.com/2018/06/22/what-will-public-libraries-look-like-in-10-years/comment-page-1/> [Accessed 20 January 2021].
- Manchester.gov.uk. 2018. [online] Available at: <https://www.manchester.gov.uk/download/downloads/id/27290/oxford\_road\_spatial\_framework\_-\_march\_2018.pdf> [Accessed 17 January 2021].
- MMU. 2021. Public Realm Masterplan. [online] Available at: <https://www.mmu.ac.uk/media/mmuacuk/content/documents/public-realm/PublicRealmConsultationBoards-Sept2020.pdf> [Accessed 9 February 2021].
- n.d. Rena Sofia. [image] Available at: <https://www.totem-madrid.com/wp-content/uploads/2017/10/museo\_reina\_sofia-1.jpg> [Accessed 13 March 2021].
- Noh, Y., 2015. Imagining Library 4.0: Creating a Model for Future Libraries. *The Journal of Academic Librarianship*, 41(6), pp.786-797.
- Pew Research Center: Internet, Science & Tech. 2021. Library Services in the Digital Age. [online] Available at: <https://www.pewresearch.org/internet/2013/01/22/part-5-the-present-and-future-of-libraries/> [Accessed 17 February 2021].
- Smithson, C., 1999. What is the Hybrid Library?. *Journal of Information Science*, 25(2), pp.97-112.
- Skelly, L., 2015. What will Africa's future libraries look like?. [online] World Economic Forum. Available at: <https://www.weforum.org/agenda/2015/08/what-will-africas-future-libraries-look-like/> [Accessed 21 January 2021].
- Townsend, A., 2008. IFTF: The Future of Libraries as Places. [online] Iftf.org. Available at: <https://www.iftf.org/future-now/article-detail/the-future-of-libraries-as-places/> [Accessed 8 February 2021].
- Wenborn, C., 2021. How Technology Is Changing the Future of Libraries. [online] Wiley.com. Available at: <https://www.wiley.com/network/librarians/library-impact/how-technology-is-changing-the-future-of-libraries#:~:text=One%20of%20the%20major%20changes,use%20of%20new%20innovating%20technologies.&text=These%20innovations%20could%20also%20%E2%80%9Chelp,and%20redefining%20access%20for%20researchers.> [Accessed 18 February 2021].

## Conclusion & reflection

### **Lok Hang Harry Chan**

Adaptive re-use as the theme of this project has been both challenging and informative. It was the first building re-use project that I have done, it has taught me a whole new building design process. Having to analyse the existing building in such depth in order to decide what to keep and what to demolish was something new to me. Through this re-use project, I have discovered new tools and developed my modelling skills in Revit such as using the phasing tool. Through understanding the needs in current and future libraries, we desire to create a library that would be stepping into a digital world yet retaining the essence in library. We struggled to create a rational relationship between the old and the new. We then decided to use the archive space which collects rare books and collections as the link of our approach of moving from the traditional to the future.

The term genetic algorithms was introduced to us in the project to encourage us to design our special planning with the aid of software such as Grasshopper. It was a steep learning curve and was definitely one of the most challenging parts of this project. Using the space syntax plugin in Grasshopper for the special planning was a good practice for me to develop my skills in both Rhino and Grasshopper.

After all, I am pleased with our attempt in the adaptive re-use approach and I wish to take this knowledge into my future projects or into professional work.

### **Chan Chin Yeung Jason**

The refurbishment of the All Saints Library allowed me to have a better understanding on adaptive reuse in terms of analysing the formal and spatial attributes of a building, different extension tactics and approaches, and the exploration of the relationship between the old and new.

This project makes us rethink and redefine the setting and characteristic of a library in our new, digital and ever-changing age. It is quite challenging to consider what to retain and demolish, especially the existing All Saints Library has little architectural and historic values. Our approach, by making contrast in materiality, utilising and reusing existing features such as bricks and arches as a new emphasis of the building, have respected and refined the old. Structurally, we have difficulties in intervening the existing with our "hat" strategy. From that, I have learnt more about the use of steel superstructure as a transferring floor and the details of strengthening columns.

In the future, I aim to further develop my computational skills and thinking. PS2 has provided me an opportunity to engage with some basic computational knowledge such as space syntax, generative design and 3D model making by using Grasshopper, Revit and Rhino. Computational thinking has been an integral part of this project, influencing our concept, spatial and facade design. In general, all the skills and knowledge acquired in this project are very useful and practical for my future works and projects.

Without the time, help and effort from MMU Estate, collaborators, tutors and my teammates, we would not have made this far.

### **Oladipo Timothy Shobowale**

The opportunity to re-envision MMU's All Saints library has provided me with a valuable experience, not just to learn about the intricacies of adaptive reuse, but also allowing me to gain a deeper understanding of how spatial strategies can inform a design. This project has encouraged me to approach the design process in a completely different way, as it involved working within the constraints of an already existing building. Conducting a detailed analysis on the All Saints library motivated me to view the building as an opportunity rather than a design constraint, despite it being one of the most challenging parts of the project - this made the design outcome all the more rewarding.

To develop a new spatial strategy for the library, we used computational design tools to help inform our design decisions, using Rhino and Grasshopper. Through the use of these processes, I discovered the immense benefits of integrating computation in design, and this is something I will aim to develop and apply to my future projects.

Overall, this project has been insightful; both building my skills in computer software and broadening my knowledge on the benefits of adaptive re-use. Working completely online with such a large and detailed model also presented some challenges, however, as a team we managed to work together effectively to achieve our desired design outcome.

### **Lon Y Law**

In general, PS2 was a fun project that engaged with the theme of adaptive re-use. I reckon I had a slight upper hand in the technical knowledge as I was engaged in 2 re-use projects during part 1 practice. The formal analysis that was introduced however provided me a new point of view when analysing a reused building. I enjoyed the project a lot as adaptive reuse is one of my personal interests in my approach to architecture.

The introduction of a genetic algorithm was a steep learning curve and was hard to implement into the project, given that the whole group was rather new to Grasshopper, but the discovery of spatial syntax as a framework gave us a clear path in realising space layout by parameters. The most valuable information delivered was the workflow from Grasshopper to Rhino to Revit presented by one of the tutors, although I have yet to fully understand.

The most challenging part of the project was the management of a 4-person team in terms of work division and exchanging ideas. Along with the online aspect of this year the difficulty is even higher. However, the production and quality of work had been good and most targeted schedule met.

Overall I enjoyed researching into the future of libraries and having a chance to imagine what the future would be. This project had provided me with a massive amount of experience as well as knowledge and I wish to learn more.



*External view,  
from Mancunian way*