

**KING'S LYNN MUCH
MULTI-USE COMMUNITY HUB
46 NEW CONDUIT STREET**

**STAGE 1 REPORT
REVISION P02 - FINAL DRAFT
SEPTEMBER 2022**



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1.1 INTRODUCTION

Executive Summary

This report sets out the work undertaken by Hudson Architects and the Design Team (Elliot Wood, Hoare Lea, Better Deliver and Turner & Townsend) during RIBA Stage 1 'Preparation & Briefing' for the proposed King's Lynn Multi-use Community Hub. Summaries outlining other disciplines work is included within the body of the document, and full reports can be found in the accompanying appendices.

The key objective of RIBA Stage 1 is to set out the project objectives and aspirations, space requirements and design principles for the concept design.

The report includes feasibility studies to test the viability of the project, and outlines guiding principles to ensure the successful development of concept designs during RIBA Stage 2 that realise Norfolk County Councils ambitions and sustainability aspirations.

The User Requirements Brief has been developed through consultation with the Client and Stakeholders and is included in this document. The emerging layouts and organisational strategies will be refined through further consultation during RIBA Stages 2 and 3.

Design Team

ROLE	ORGANISATION	CONTACT
Lead Designer	Hudson Architects	Louise Boddie
Structural Engineer	Elliott Wood	Thomas Hesslenberg
Sustainability	Elliott Wood	Penny Gowler
Mechanical & Electrical Engineer	Hoare Lea	James Mackenzie-Burrows
MMC Consultant	Better Delivery	Paul Inch
Cost Consultant	Turner & Townsend	Cameron Pocock

Project Stakeholders

Client	Norfolk County Council	Jeannine De Sousa
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Historical Photograph of the site prior to construction of the existing building

elliottwood

HUDSONArchitects

HOARE LEA 

1.2 PROJECT VISION

Sustainability Vision

Tackling climate change has never been more important, the effects of which are hard to miss and evident all across the Globe. The amount of heat trapping carbon dioxide in our atmosphere has increased by as much as 50% than in pre-industrial times and a momentous effort will need to be made to slow this down and give nature some prospect at recovery

We might always, in one way or another, need to maintain and upgrade our current infrastructure, so we must look to embed sustainability and the plight of the environment in everything that we do.

Norfolk County Council as a tier one authority and a major client of the built sector is committed to making a difference and to put the conversation around sustainability and whole life carbon emissions, at the heart of all its projects. Our brief to the design team who produced this report was twofold: firstly, to limit the embodied carbon by retaining and using elements of the existing concrete frame, supplemented by MCC and secondly to reduce the demand for daily energy and water consumption through application of sustainable materials and interventions such as a blue roof and PV panels.

Those who work in the built sector recognise that a linear production and consumption model is no longer viable, but that through a circular economy products and materials can be kept in the value chain for longer periods, we will therefore engage with a contractor and their supply chain at RIBA stage 2 so that we may consider how waste creation across the project life cycle can be minimised.

This report will demonstrate how NCC can achieve a very ambitious LETI 2030 ‘A’ design rating which will ensure that this new asset will contribute to the environment in a sustainable and positive manner, encompassing all three pillars of sustainability and in the words of Brundtland ensure that our operations and future development ‘meet the needs of the present (communities) without compromising the ability of future generations to meet their needs’

Jeannine de Sousa
Head of Construction and FM

MUCH Vision

We have an ambition at Norfolk County Council to use our network of Libraries and capitalise on our Adult Learning offer to curate the rights services and support offers in a single, accessible place. The King's Lynn Multi Use Community Hub Project enables us to create a flagship version of this in the heart of King's Lynn.

King's Lynn residents have less access to opportunities than they should: Wages are below regional and national levels, and firms struggle to recruit to certain roles, with the availability of skills cited as one of the main reasons. Too many young people don't get the opportunities they deserve, GCSE attainment is low and significantly fewer than average school leavers stay on in post 16 education.

Alongside skills shortages and limits on aspiration, residents are more likely to be impacted by social and financial vulnerabilities compared with surrounding areas, including digital exclusion, poor health outcomes and debt. Covid-19 has made this difficult situation worse, with JSA claimants rising faster than elsewhere and declining footfall in the town centre.

The project will provide residents with a single destination for learning, employment support, careers and skills advice, information and signposting, community, and voluntary resources; to get online, to pursue hobbies, and to meet with others all in one space. These activities will be complimented by exhibition spaces, a café and flexible spaces that can incorporate a multitude of uses from art classes to health screenings. It will offer local businesses, start-ups, and entrepreneurs the skills, facilities, and services to thrive and grow, and voluntary and community partners will have the flexibility to operate either permanently or spot hire spaces to provide a rich and diverse community offer.

We are striving to create a ‘no wrong door’ approach, and the design and construction of this building is integral to enabling us to achieve this vision of an aspirational, accessible and inviting place to learn, to meet other and to have fun.

Natasha Hayes
Head of Communities

1.2 PROJECT VISION

Project Vision

Norfolk County Council have developed a vision for the new Multi-User Community Hub at King's Lynn. The MUCH should be a place where residents can access a range of public services they value, alongside information and advice they trust, with library and learning at the heart. A welcoming, safe space where a range of partners offer support and people can connect, learn, be inspired and find the resources they need to thrive.

The project aims to:

- Provide inspiring spaces and facilities for individuals, communities and businesses that encourage connection and innovation
- Deliver flexible layouts and resources that adapt to the needs of different people and purposes
- Create a strong base for outreach and community support work
- Support smaller community groups and partners to have a local presence
- Encourage a sense of identity and pride in a local place
- Transform the landscape of the town centre with an aspirational building and associated public realm
- Attract more people to town centres as a cultural anchor, helping to strengthen communities
- Provide modern and fit-for-purpose services for customers; broaden offer to support small business
- Create a new town centre one-stop shop for a range of services and skills development opportunities for King's Lynn residents, with close access to public transport
- Drive skills progression for the workforce - encouraging lifelong professional development, up-skilling and re-skilling
- Equip young people for success by unlocking the abilities, confidence and potential of young people
- To limit embodied carbon by retaining and using elements of the existing concrete frame partnered with modern methods of construction and sustainable material choices
- To minimise operational carbon, reducing the demand for daily energy and water consumption through sustainable interventions

Project Principals

The following principals have been developed during RIBA Stage 1 to guide the project through subsequent stages of development.



Sustainable Design

Use sustainable design-led thinking and strategies that focus on using less...less materials, less carbon, less energy, less natural resources. Exploring re-use of existing structures, minimising environmental impact and operational costs and aligning with Norfolk County Councils goal to be Net Zero by 2030.



Community Value

Provide inspiring spaces and amenities for individuals, communities and businesses developed through local grass-roots engagement and listening. Encourage connection, innovation and skills growth, and create a home for the local community of King's Lynn.



Transformational

Create a cultural anchor and encourage a sense of identify and pride through an aspirational building and public realm, transforming the landscape of the town centre.



Financial Value

Optimise cost, value, viability, and delivery, through intelligent and innovative design solutions, modern methods of construction and procurement, meeting Norfolk County Councils budget and financial requirements.



Map of King's Lynn

1.3 PROJECT OBJECTIVES

Project Brief

The project brief has been updated and developed from the original King's Lynn Community Hub Development Report prepared by Hudson Architects in April 2020. Additional information and consultation has been gathered during RIBA Stage 1 to form the revised brief for the Multi-User Community Hub. The MUCH will be home to King's Lynn Library, Adult Learning services and Community Hub.

The main brief requirements and assumptions at this stage are listed in the Following pages and detailed within the Design Brief document appended to this report. This document should be updated as the project develops in subsequent stages through consultation with Stakeholders.

MUCH Multi-Use Community Hub

The Library

The library will act as the anchor for the development of the project where public and voluntary sector partners are brought together under one roof. Libraries are trusted, welcoming spaces where people can improve skills, develop literacy, access information and try something new. They are place where inequalities in society can be tackled. Libraries contribute to employment and business support, supporting children and families, supporting vulnerable people, promoting healthy lifestyles and offer access to cultural activities. Libraries are fundamental place builders.

In any new multi function hub, the library needs a dedicated physical space, with access to multifunction rooms and spaces. All spaces need to be disability and age friendly, offering appropriate facilities for people with disabilities.

Community Learning

The MUCH will provide a suite of spaces to support community learning through Norfolk County Council Adult Learning. The Learning Hub will provide access to a range of activities and class sizes as identified through Norfolk County Councils internal stakeholder engagement.

Community Hub

In addition to learning spaces, the MUCH will provide open workspace and bookable meeting rooms to support the local community, business innovation and self-directed study. A suite of accessible and flexible spaces should support the wider community and complement the services provided by the Library and Adult Learning Spaces.

Accessibility

The MUCH should be fully accessible and remove as many barriers to engagement as possible. The building should be safe, with welcoming and accessible physical and virtual environments freely open to all encouraging participation, creativity and mutual learning and support.

The location of the most frequently used services and users needs should be well thought through and consideration should be made to parents and families with buggies. The MUCH should include a changing places facility, which should be accessible to the public at all times.

Security

The library will operate as an "Open Library" with hours from 8am to 7pm Monday to Friday, 9am to 5pm Saturday and 10am to 4pm Sunday. The Community Workspace and Learning hours are to be defined, but likely to operate at different times. The building layouts should allow the Open Library and Community Hub spaces to operate independently when necessary.

Customers should feel safe in the building which can operate with minimal staffing levels. The Children's library should be located within a secure barrier or area of the building.

Look & Feel

The new MUCH should be an aspirational building. It should be inviting, welcoming, have a strong sense of arrival and be connected to its surroundings. The building should maximise natural light and visual connections between spaces.

Flexibility & Adaptability

The spaces should be adaptable, flexible and future proofed. The building should support future population growth and increased use. The environmental controls and building fabric should support our changing climate.

Place-making

Public Plaza

The project should create a new public destination and anchor within the town centre. Transforming the spaces to the front of the site, improving connections and visibility of the Majestic Cinema and creating a new welcoming, connected public plaza as a forecourt to the new MUCH.

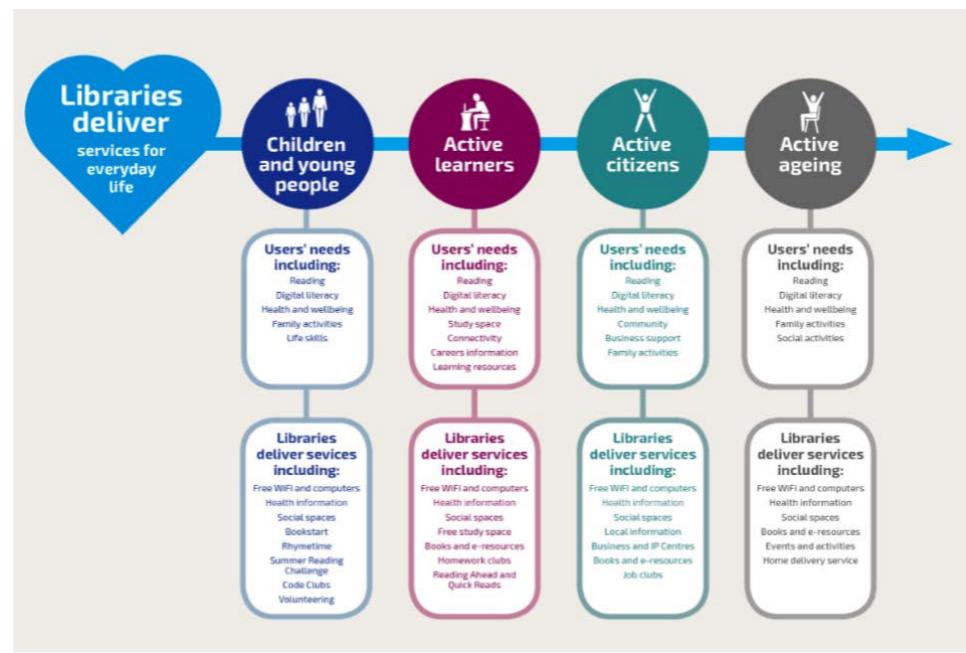


Diagram from Gov.uk - Libraries are for everyone, throughout their lives

Operations & Maintenance

The operating costs of the MUCH should be minimised through the use of sustainable interventions such as PVs, high performing building fabric, and carefully considered servicing strategies. Energy efficient systems should be used for lighting (LED) and water usage (grey water systems)

The library spaces should be located within two floors of the new building to work within existing staffing and supervision levels. Facilities to support cleaning and maintenance should be located on every floor.

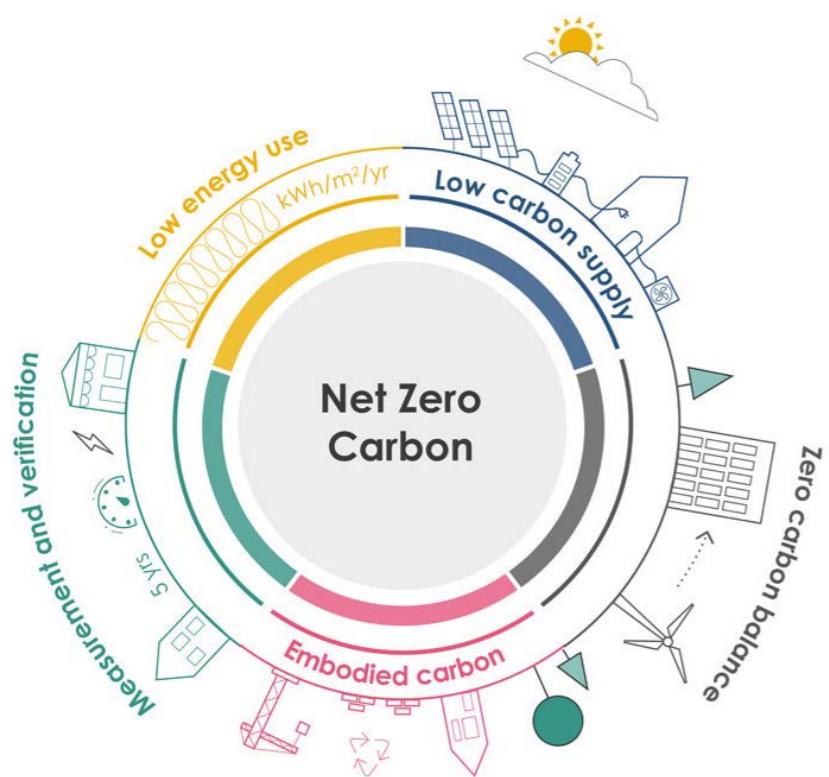
1.4 SUSTAINABILITY OBJECTIVES

Sustainability Aspirations

The client's brief is for a highly sustainable building which provides an exemplar for the de-carbonisation of their county-wide portfolio. Ambitious targets have been set for carbon and other sustainable goals. By opting to re-use the existing structural frame, the project has already made significant steps towards a sustainable future which should be pushed further in subsequent RIBA Stages.

BREEAM

The contractor is to register the project with BREEAM, under BREEAM UK Refurbishment (Non-domestic), and will achieve a certified 'Excellent' rating. Elliot Wood's Pre-Assessment is included as an appendix C and indicates how this rating might be achieved. Additional appointments and modelling will be required



Embodied Carbon

Minimising embodied carbon is essential if net zero targets are to be met. This includes the carbon associated with the production, transport, construction, maintenance / replacement and disposal of all materials through the lifespan of the building (nominally 60 years).

The Stage 1 feasibility studies explore and validate the retention and reuse of existing structural frame. This has significantly reduced the embodied carbon when compared with demolition and new build. All materials should be reviewed with a view to reducing embodied carbon wherever possible.

The embodied carbon of modules A1-A5 (Upfront Carbon / Cradle to Gate) shall be calculated at the design stage, in accordance with the RICS methodology, and will target a carbon factor of no more than 275KgCo2e/m². This includes all elements of the build including structure, architecture and M&E. Elliot Wood's Stage 1 Carbon Analysis suggest this target is achievable. The upper limit which could be accepted is 325KgCo2e/m² (LETI band A).

In line with best practice, the embodied carbon of all modules A1-C4 (Whole Life / Cradle to Grave) should also be reported. The embodied carbon is to be monitored and as-constructed results reported at practical completion.

Operational Energy

The client aspires to have a low energy building with all operational uses minimised. The total operational energy (EUI - Energy Use Intensity) of the building shall be calculated using a combination of the TM54, and dedicated thermal/energy model and the results from the SBEM calculations and will target an energy use below 70kWh/m²/year. The upper limit which could be accepted is 85kWh/m²/year.

Key to achieving a low operational energy use is the minimisation of heat loss. This is to be achieved via a 'fabric-first' approach, including passive design measures (eg optimising solar gains) and fabric performance (eg high levels of insulation). The contractor should consider targeting a space heating demand of 15kWh/m²/year.

It is anticipated that higher than current Building Regulation fabric elements will be required such as improving the wall U value to 0.12 W/(m²·K) or better, for the roof improving the value to around 0.14 W/(m²·K).

Where mechanical systems are being employed the use of efficient equipment such air source heat pumps for heating/cooling and hot water generation, heat recovery ventilation equipment such as the MVHR units, efficient lighting design and the installation of energy efficient FFE devices and equipment. Low temperature under-floor heating is to be used throughout the public areas.

The main library areas shall be ventilated via an automatic natural ventilation system, utilising actuated windows, indoor sensors and the stack effect created by the open atria and high-level actuated louvres, including the use of over-night purging routines. Other enclosed areas, such as adult learning, will be ventilated by mechanical ventilation with heat recovery (MVHR).

	ASPIRATIONAL TARGET	NON-NEGOTIABLE TARGET
Embodied Carbon	275KgCo2e/m ²	325KgCo2e/m ²
Operational Energy	70kWh/m ²	85kWh/m ²
Airtightness		<1 (m ³ /h. m ² @50Pa)
Thermal Performance	Walls - 0.12 W/(m ² ·K) Roof - 0.14 W/(m ² ·K)	Building Regulation Requirement

1.4 SUSTAINABILITY OBJECTIVES

Demolition & Strip out

Existing buildings contain huge amounts of material, all of which have embodied carbon. The contractor shall seek to reuse existing building components wherever possible. Those that cannot practically be re-used must be properly recycled. A pre-demolition waste audit shall be carried out within Stage 2 - at least 95% of demolition waste (by weight) should be diverted from landfill.

Most of the existing structure is to be retained but significant parts of the concrete frame are to be demolished, including the roof, tower, south-east corner and the creation of internal voids. The design has limited use for crushed concrete (infill of the existing lift pit and possibly public realm build-up). Crushed concrete which cannot be used on site is to be re-used as aggregate and all steel re-bar is to be recycled.

Design for Disassembly

The building shall be designed in accordance with circular economy principles and designed for disassembly wherever possible to allow materials to be removed and reused at the end of life. Use of adhesives, nails and expanding foam is to be minimised and reversible mechanical fixings (such as screws) used instead.

On Site Energy Generation

The design will maximise the use of photovoltaic panels on the roof, allowing for MEP plant and building elements such as rooflights, lifts and stairs. This is essential to achieve the client's long term objective of a net zero estate. BREEAM requires a Low / Zero carbon Feasibility Study which will provide guidance on the most suitable renewable technologies.

Airtightness

An air-tight building is essential to achieving a low energy building and ensuring the efficient operation of MVHR. The building is to be pressure tested prior to practical completion and meet an air permeability target of <1 (m³/h. m²@50Pa).

Water Use & Sustainable Drainage

Norfolk is one of the driest areas of the UK and potable water should be treated as a precious resource. Low-flow / dry sanitary-ware and appliances are to be considered wherever possible. Rainwater harvesting should also be seriously considered for flushing toilets as this would reduce the reliance on the wholesome water supply for most of the year and reduce the storage capacity by around 20 l/person/day. However, the available water storage would need to cover the 'dryer' period and would be sized to cope with the flushing requirements.

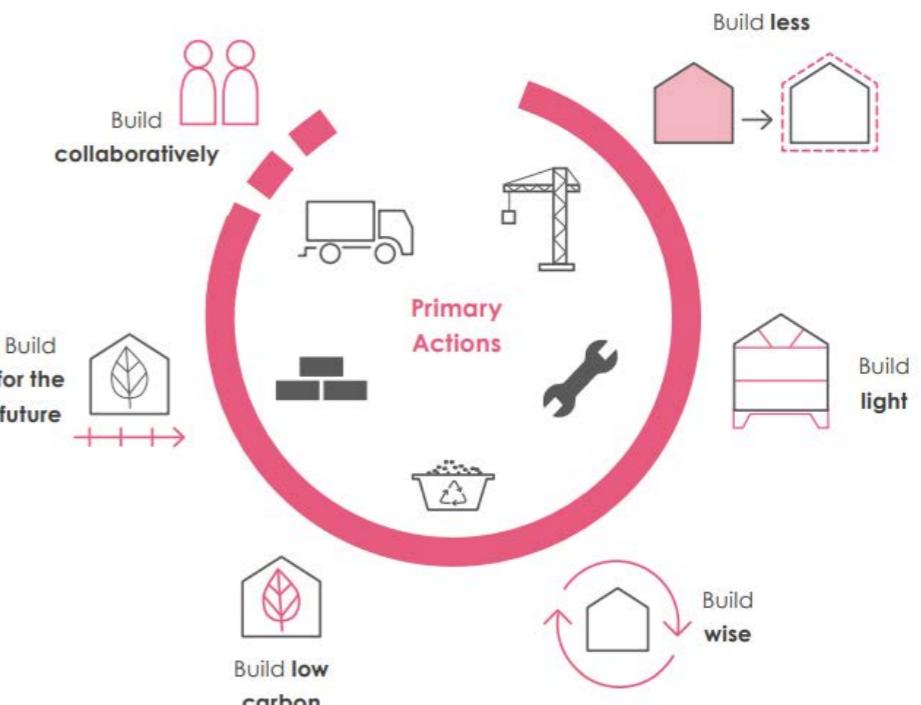
Water usage is to be calculated based upon a potential population use profile with the aim to target the 2030 RIBA water consumption target of 10 litres/person/day of wholesome water usage.

Whilst there is not believed to be a local authority requirement for storm water attenuation, consideration should be given to the option of having a blue roof, or preferable a blue-green roof which would both attenuate rainwater and enhance biodiversity. These benefits should not reduce the prioritisation of photovoltaics but may be used in combination.

Daylight & Glazing

The benefits of natural daylight over artificial lighting are widely known. Daylight should be maximised within all habitable spaces, although the design must carefully balance the benefits of daylighting with the downsides of excessive glazing (carbon content, heat loss, overheating etc). Internal daylight modelling shall be used to calculate an average daylight factor in accordance with the BREEAM requirements.

In achieving the balance of overheating and daylight it is anticipated that the glazing G-values and/or shading devices will have to be utilised while balancing the light transmission ability ensuring that the extent artificial lighting is rarely needed in day time use. To reduce the energy losses/gains the glazing U values would need to play its part in the overall heat gain and losses and therefore techniques such as gas filled glazing, triple glazing and glazing sizes should be considered.



Biodiversity

An ecologist shall be appointed in Stage 2 to advise on protection and enhancement of site ecology. Consideration shall be given to the benefits of ecology enhancements such as a green roof and bat and bird boxes.

The existing street trees are to be retained and protected during construction.

Overheating

Overheating will be assessed using CIBSE TM52 Thermal Comfort Analysis, as required under Part O of the building regulations to assess the risk of overheating. The building shall not exceed the RIBA target of a 25-280C maximum for 1% of occupied hours.

1.5 CONSULTATION

Stage 1 Consultation

During RIBA Stage 1 Hudson Architects undertook high level Stakeholder consultation with the Client Team to establish the Project Brief. The consultation focused on the following outcomes:

- Develop project objectives, including quality objectives and project outcomes, sustainability aspirations, project budget, other parameters or constraints and develop initial project brief.
- Undertake feasibility studies and review of site information.

The outcome of this consultation has been detailed in the preceding Project Vision and Objectives pages, and the following Spatial Requirements section and approved by the Client Team.



Future Consultation

During subsequent RIBA stages in depth consultation should be carried out to gain further understanding of stakeholder requirements. The Project Brief and Vision should be further tested, developed and refined. A schedule of meaningful stakeholder consultation should be planned in collaboration with the Client team.

The following key Stakeholder Groups have been identified.

MUCH Project Governance

- MUCH Project Board
- Town Deal Board
- Norfolk County Council Portfolio Holder & Cabinet

Building Users

- Local Community & Residents
- Focused interest Groups
- Programme Partners
- Local Members

Building Staff

- Library staff
- Adult education staff

NCC Estates Stakeholders

- NCC Maintenance & Infrastructure Team
- NCC Facilities Management

Statutory Consultation

- Building Control
- Planning Authority
- Local Fire Brigade

Consultation Sessions

Stakeholder Engagement sessions should be undertaken by the Project Team with Design Team members and representatives from the Stakeholder groups attending relevant sessions. The following consultation types should be included, with frequency and timing agreed through a detailed consultation plan. Feedback from each engagement session should be recorded by the Design Team Lead and shared with the wider Project team and stakeholders.

Vision Sessions (5 -10 people)

Vision Sessions with core Stakeholders to develop, review and refine the Project Vision and aspirations established during RIBA Stage 1. These sessions may take place as small group discussion or 1 to 1 interviews. Vision sessions should be held at the start and end of each Stage to check the project remains aligned to its aspirations.

Key Stakeholder Workshops (5 - 10 people)

Regular workshops with representatives from each Stakeholder Group to develop the briefing and design proposals. This will include the presentation of relevant design solutions and approaches, scheme options the client may wish to consider, and the facilitation of discussion to provide answers for areas of design development. The representatives should be consistent throughout the process.

Focused Workshops (2 to 4 people)

Focused workshops with invited representatives to develop key areas of the briefing and design proposals. These may take the form of technical briefing workshops with members of the design team present.

Community Workshops (10 to 20 people)

Workshops and drop in sessions with the wider community to update on developing proposals and gain feedback. Focused Community workshops will explore specific requirements of the building design.

Building Visits (3 to 10 people)

Building Visit with Key Stakeholder Groups to relevant built projects that will help inform the briefing and design development conversation. Building visits should include a visit to the existing King's Lynn Library to reflect on the facility and discuss what works well and what doesn't work well.

Presentations

Formal Presentations as required to update Stakeholders on the design development, receive feedback and achieve approval where necessary.

1.5 CONSULTATION

RIBA Stage 2 Concept Design

Design Team Overview

Prepare concept design, including outline proposals for structural design, building services systems, outline specifications and preliminary cost information along with relevant project strategies in accordance with design programme. Agree alterations to brief and issue final project brief.

Consultation overview

During RIBA 2 the following aspects of design will be consulted on:

Developing the brief

- Project Vision - likes and dislikes, hopes and fears, exemplar building visits
- Functional requirements - building detailed briefing for operational and functional requirements.
- Internal adjacencies & areas - testing and agreeing schedule of accommodation, building layouts and co-location of spaces
- Key room design - establishing principles for key rooms - ie archive storage / secure rooms
- Outline building specifications - concept design of internal spaces and external appearance
- Outline engineering systems specifications
- Arts co-ordination

Outcomes

- Options appraisals and studies (where req)
- Design Brief approved (evolving)
- Strategic site and building layouts signed-off
- Statutory advice collated and incorporated into proposals
- Updated Stakeholder Consultation Tracker

Stage 3 – Developed Design

Design Team Overview

Prepare developed design, including co-ordinated and updated proposals for structural design, building services systems, outline specifications, cost information and project strategies in accordance with design programme. Submit planning application at the end of the stage.

Consultation overview

During RIBA 3 the following aspects of design will be reviewed and consulted on. Wider Stakeholder Consultation will be concluded at the end of RIBA 3.

Developing the design

- Functional content - developed strategies for operational and functional systems.
- Detailed internal building layouts - review and agree detailed building layouts
- Elevation design and treatment - developing proposals
- Outline building specifications
- Interior design concepts
- Key mock-ups (where req)
- Loaded plans of key rooms showing fixtures, fittings and equipment
- Arts co-ordination

Outcomes

- Revised Design Brief approved (evolving)
- Sign-off building layouts
- Sign-off key room layouts
- Sign-off elevation design intent for Planning Application Submission
- Statutory advice collated and incorporated into proposals
- Updated Stakeholder Consultation Tracker

Stage 4 – Technical Design

Design Team Overview

Prepare technical design in accordance with design responsibility matrix and project strategies to include all architectural, structural and building services information, specialist subcontractor design and specifications, in accordance with design programme.

Consultation overview

During RIBA 4 the following aspects of Technical design will be developed and shared with Stakeholder representatives. Key decisions around detailed layouts, final choice of fittings and fixtures for tender will be agreed,

- Detailed internal building layouts
- Elevation design - detailed proposals
- Detailed building specifications
- Innovations, product design
- External spaces
- Interior design
- Artwork co-ordination
- Key room mock-ups and testing
- Loaded plans of key rooms showing fixtures, fittings and equipment

Outcomes

- Revised Design Brief approved (Final Issue)
- Fully co-ordinated design for sign-off
- Building Regulations application submission
- Tender information sign-off

Stage 5 – Construction

Design Team Overview

Off-site manufacturing and on-site construction in accordance with the construction programme and resolution of design queries from site as they arise.

Consultation overview

During RIBA 5 final decisions and selections will be agreed for construction.

- On-site mock-up testing - review and approval of any mock-ups agreed during RIBA 3 and 4.
- Final setting out
- Final interior design - review and approval of final colour choices.
- Final equipping
- Key decisions if site conditions dictate a design change
- Site familiarisation and training

Outcomes

- Site visits through-out construction

Stage 6

Design Team Overview

Handover of building and conclusion of building contract. Evaluate performance and provide feedback for use on future projects.

Preparing for handover

- Final artwork co-ordination
- Site familiarisation and training

Outcomes

- FM handover

1.6 SPATIAL REQUIREMENTS

The spatial requirements for the MUCH were developed and tested with stakeholders during RIBA Stage 1, and build on previous consultation carried out as part of the King's Lynn Community Hub Development Report.

Welcome area

A warm, welcoming arrival space - the shop front of the Community Hub

- Arrival and main entrance to building with good visibility and connections to the open library and adult learning areas
- Opportunity to use arrival space as an exhibition and display space to showcase collections within.
- Well considered and visible digital signage and wayfinding within arrival space and throughout building
- Space for storage of buggies and prams, allowing users to leave large items at ground floor with local storage throughout open library
- Open, welcoming, typically unstaffed with no requirement for a security or reception desk
- Information points and hubs, allowing flexible meet & greet arrangement

Open Library

A welcoming, fully accessible and inclusive library

- Open library floors with flexible, shared space for open collections, readers and activity spaces.
- A library over two floors, allowing passive supervision of spaces within existing staffing numbers
- Flexible, movable shelving to allow transformation and multi-use of spaces.
- Spaces for self-issue machines close to collections
- Readers spaces to browse, work or study, with comfortable reading spaces, study carrels, shared desks and open access computers.
- Space for local history heritage collections, stored in protected cases with opportunity to display and exhibit in entrance area.
- A Young persons library with collection and readers space
- A dedicated Children's library with collections, readers, activity space and somewhere to store buggies.

- Activity zones throughout the open library, allowing flexible, adaptable use of space for classes and events to support library use
- A Business IP hub providing dedicated space for business advice and book access, with space for 1 to 1 meetings, advice desk, collections, and information and display.

Rare Reference

- Safe storage of significant rare reference material
- Storage solutions to support range of materials, shelving, roller racks and plan chests.

Staff Spaces

Staff spaces to support open library, catering and FM staff.

- A staff office providing a flexible, private space for small meetings or quiet working
- A staff workroom to process and sort collections
- A private staff room with kitchenette, soft seating and tables for breaks and quiet working. Places to securely store personal belongings.
- Touchdown spaces through open library floors to allow flexible working and support

Community Learning

A suite of flexible, multi-use spaces to support a variety of activities and class sizes through the Adult / community Learning programme.

- Spaces to support range of activities from art classes, core skills, yoga classes, family learning, cooking to bike workshops .
- A fully accessible and inclusive learning environment to support all users needs.
- Adaptable spaces to support future change in use and size of classes.
- Support spaces, quiet rooms for 1 to 1 conversations with staff and students.
- Breakout spaces with tea making facilities.
- Spaces to store materials and equipment.
- A training kitchen providing opportunity for social enterprise and adult learning.

Community Workspace Hub

Workspaces and meeting rooms to support local community, business innovation and self-directed study

- Open workspace with shared desks and informal meeting space to support local business users, for 20no users.
- Bookable community meeting rooms for 6 to 8 users

Cafe

A welcoming cafe pop up, for building users and visitors with places to stop and eat and drink throughout library

- A small cafe counter as part of the community Hub, encouraging users to stay and use the hub throughout the day.
- Self-service hubs to every floor

Ancillary

Spaces to support King's Lynn's new Library and Community Hub

- WCs, accessible WCs,
- A changing places facility with 24/7 access
- Cleaners stores and general stores to support facilities and maintenance teams.
- Security and CCTV strategy to support open library
- General circulation stairs and lifts
- Delivery bay
- Waste storage with direct access to the street

Briefing Items to be Confirmed in RIBA 2

- Size and operation of cafe to be developed
- Size of the Rare Reference storage room and environmental conditioning requirements to be defined
- Access to controlled reading rooms / associated spaces to be developed
- Size and interaction of adult learning rooms to be developed further

1.6 SPATIAL REQUIREMENTS

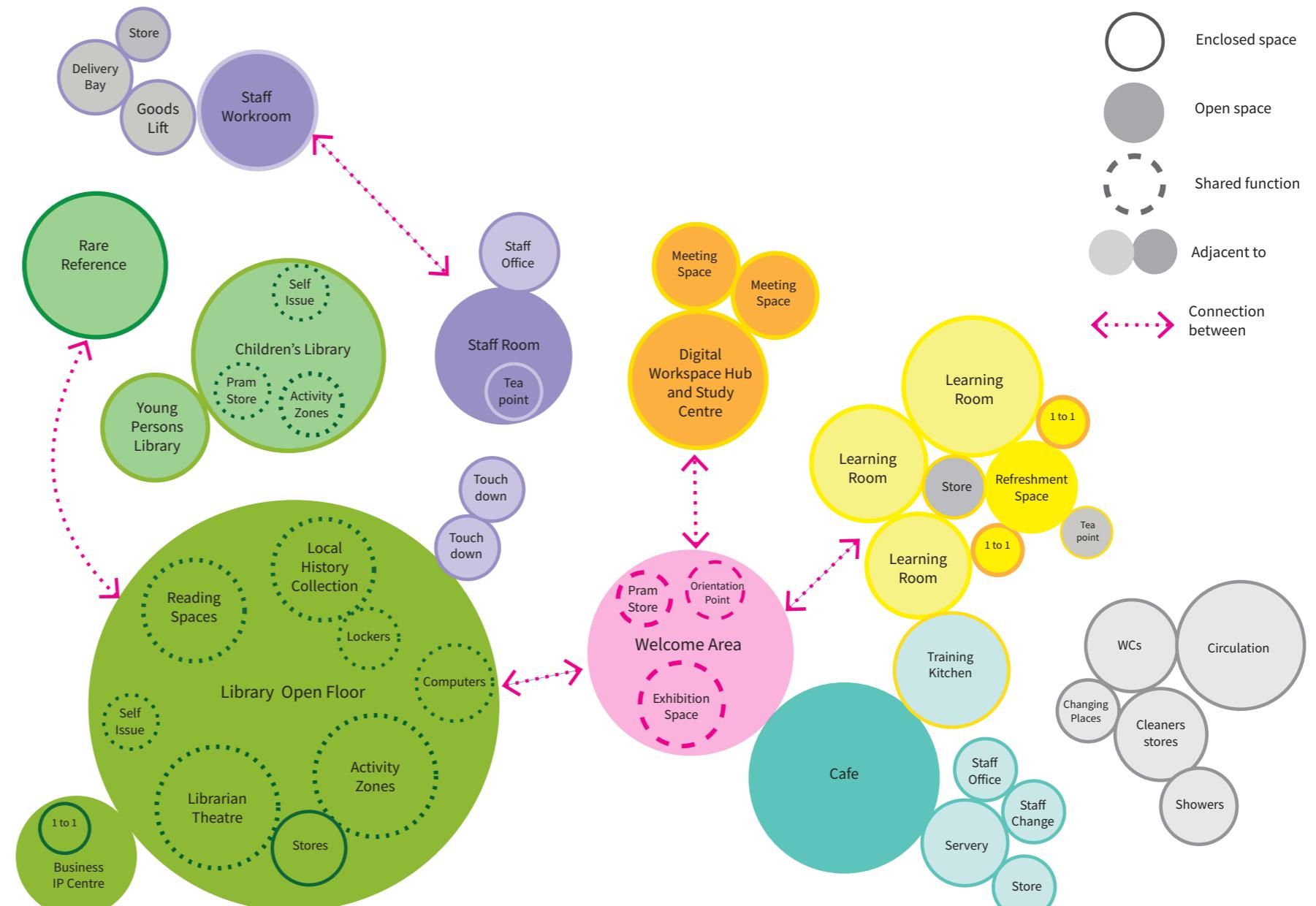
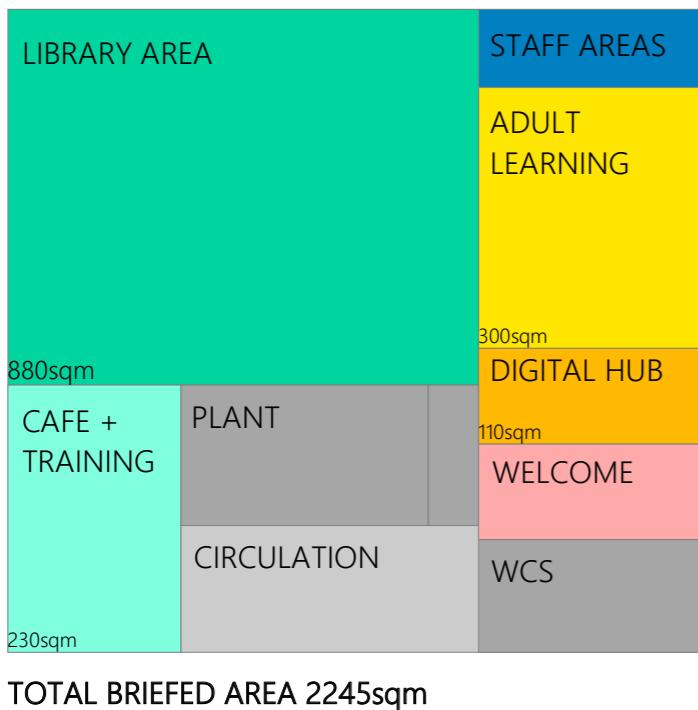
Area Requirements

The area requirements for the MUCH were developed and tested with stakeholders during RIBA Stage 1. The new MUCH should provide an area of 2,245sqm gross internal area, comprising of the following allowances. Detailed area schedules are included in appendix A.

Key Adjacencies

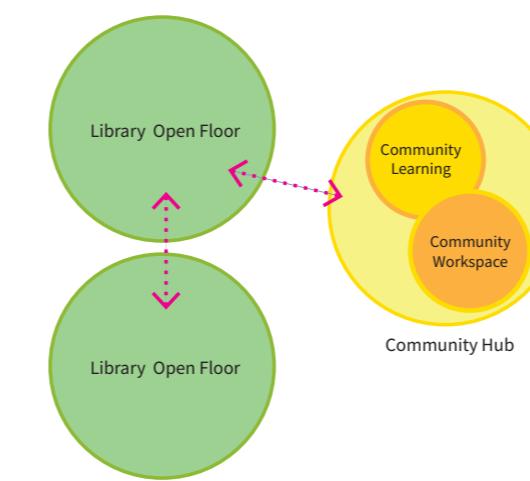
The following key adjacencies were developed and agreed during RIBA 1

- Open library spaces should be co-located over 2 floors
- Adult Learning and Community Hubs spaces should be co-located
- The Children's library should be located on the ground floor and close to the main entrance
- The library should be located on the ground floor
- Staff workroom should be located close to the goods lift and delivery bay.

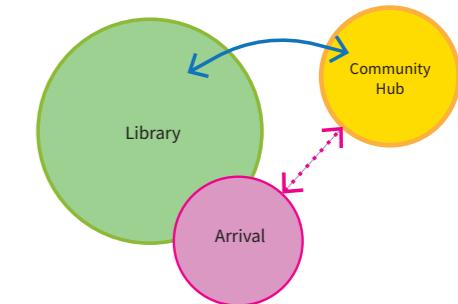


Adjacencies and connections diagram

Open library over 2 floors, with connection to Community Hub on separate floor



The library should be located on the ground floor, connected to the main entrance. The layout should allow the Open Library and Community Hub spaces to operate and be accessed independently when necessary.



02 SITE INFORMATION

- 2.1 The Site
- 2.2 Historical Context
- 2.3 Local Context
- 2.4 Site Materiality
- 2.5 Existing Building
- 2.6 Site Opportunities

2.1 THE SITE

Site Location

46 New Conduit Street is located in the market town of King's Lynn, in West Norfolk. King Lynn plays host to wealth of historical building and assets, however, as with many market towns, the retail footprint of the town sector is less vibrant than it once. The MUCH will provide a driver for change:

- Attract more people into the town centre as a cultural anchor
- Provide services that will benefit the local community
- Create a focal point which will be attractive to the local community and visitors and boost the local economy
- Transform and rejuvenate an under-utilised area of the town centre

The site is in a significant location within the town centre on the eastern edge of the central retail area where the old meets the new. It is strategically placed between the key transport hubs for the town - the railway and bus stations and multi storey car park.

Placing the hub in a prime location surrounded by retail outlets and with transport close by allows the MUCH to become a key social and education resource within the community. It gives all residents the ability to use the hub with minimum effort and allows news about the events and facilities to permeate through the town. With the new plaza, pedestrianised streets and high foot fall the hub is poised to become a keystone of King's Lynn.



2.1 THE SITE

Surveys & Research

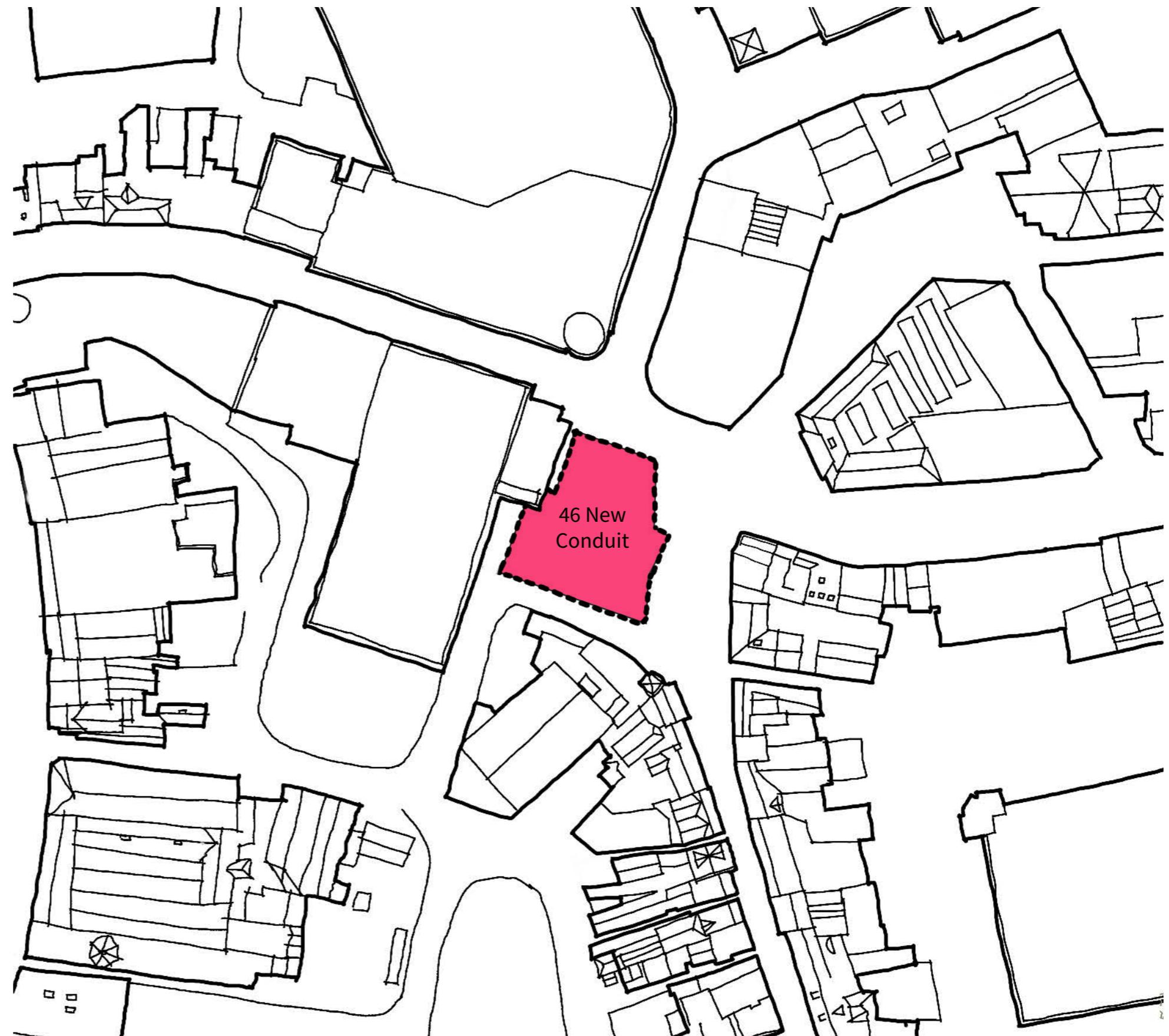
The following archive information and measured surveys were used to develop outline feasibility studies:

- Construction CAD drawings of the Vancouver Centre by Arup, dated 1998-1999
- Building survey drawings by NPS Property Consultants Ltd dated August 2020

In addition, the following surveys and searches were carried out as part of our Stage 1 works.

- CCTV drainage survey – conducted by Sewer Surveys on 07.07.22
- Structural Investigations – intrusive and non-intrusive investigations undertaken by Construction Testing solutions on 07.07.22
- Utility and Energy Infrastructure Searches – searches undertaken by Groundwise Searches Ltd on 15.07.22
- GOV Flood Map searches

It is recommended that new and additional topographical surveys are undertaken during RIBA 2 to validate the proposals following further strip out of the internal fittings and fixtures. Further Structural investigations should also be carried out to reduce risk and allow further development of the structural retention proposals. Refer to Elliott Wood's Stage 1 report for more details.



2.2 HISTORICAL CONTEXT

Site History

Through studies of Historical records and photographs show that prior to the construction of the existing building, the site was occupied by Victorian terraced houses. A row of three storey houses faced towards Sedgeford Lane with two storey houses facing north towards New Conduit Street.

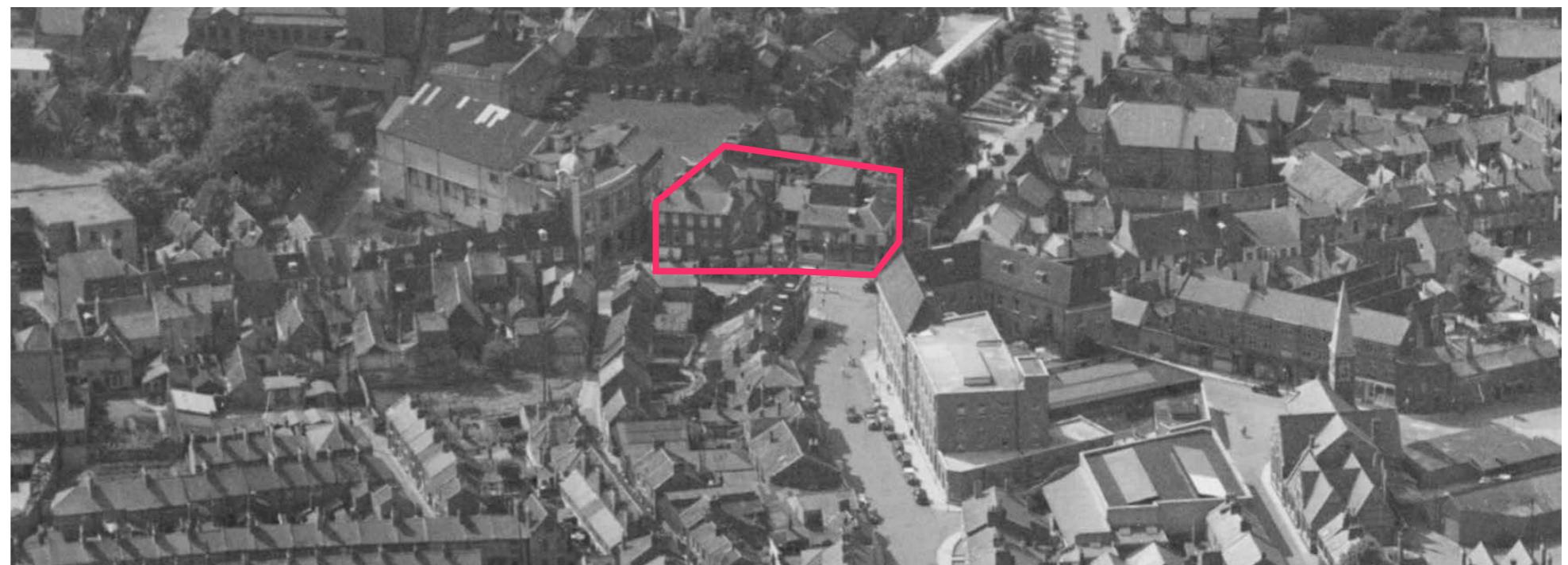
The central area between these two blocks formed a garden area which linked to a parade of trees along the length of New Conduit Street. New Conduit Street has seen a dramatic transformation since the early 1900's. The road was realigned, and the parade of trees replaced with commercial units. Around 1970 the Victorian houses on the proposed site were demolished and replaced with the current commercial building.



Historical photograph showing Victorian Terrace housing



Map from 1938



Aerial photograph

2.3 LOCAL CONTEXT

Local Context

The existing building is surrounded by roads, many of which are pedestrianised. The site is bordered by the Vancouver Quarter, King's Lynn's central retail area to the north and west and the King's Lynn Conversation area to the south and east.

To the north, the pedestrianised Baxter's Plain is a rather undefined and has been compromised by the recent extension of the Vancouver Centre H&M building which encroaches onto the street. The pedestrianised street continues West along New Conduit Street which is home to commercial properties with little architectural significance.

Tower Street to the south east of the site is an attractive street within the Conservation area and is a continuation of the pedestrianised shopping centre of King's Lynn. Sedgeford Lane to the south is part pedestrianised and part vehicular. To the east, the Old Post Office occupies a large island site on the end of Blackfriars street.

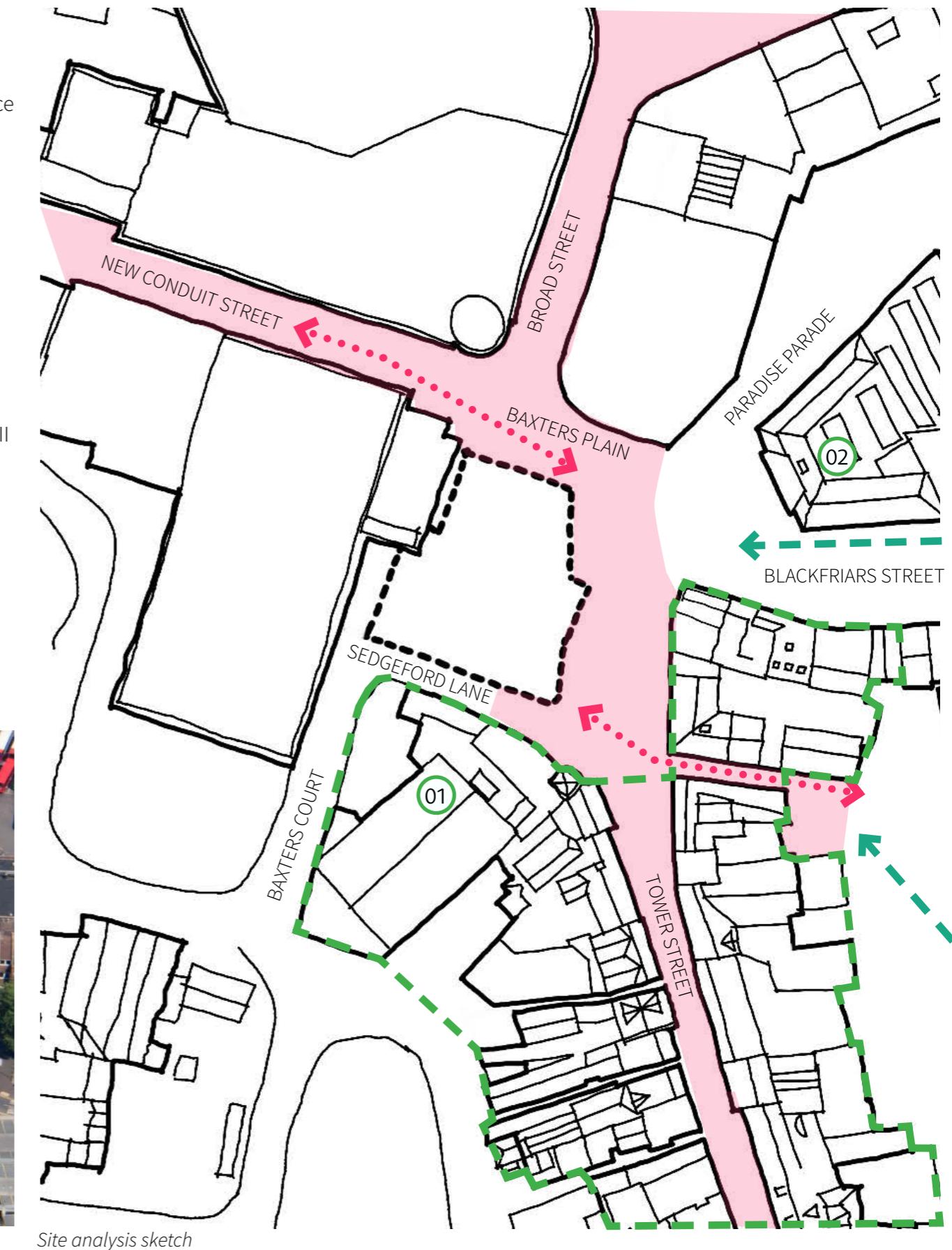
Conservation Area

While the site itself does not sit within a conservation area, it sits within a historically significant context. The King's Lynn Conversation area is located to the south of the site from the junction of Tower Street and Blackfriars Street. The conservation area includes the Majestic Cinema, a Grade II listed cinema built in 1927.



Aerial photograph

- KEY**
- Back of house and service
 - Pedestrian urban realm
 - Transport routes
 - Key pedestrian routes
 - King's Lynn Conservation Area
 - 01 Majestic Cinema (Grade II listed)
 - 02 Old Post Office



Site analysis sketch

2.3 LOCAL CONTEXT



Vancouver Centre at junction of Baxters Plain and New Conduit Street



View down Tower Street



View down Tower Street from the existing Argos building



Vancouver Centre along New Conduit Street



View towards the old Post Office from the existing Argos building

2.4 MATERIALITY

The material palette of King's Lynn is as eclectic as might be expected from a sea-port town with historical links to European trading.

The local brick is red, but there is a great deal of brown brick from the yards around Wisbech. The Flemish bond of many building frontages has a pronounced change of tone between the headers and stretchers, giving a 'speckled' appearance. Sometimes the headers are lighter than the stretchers, and sometimes the reverse, giving subtle interest and relief to the building façades. Opportunities to reference this 'speckled' effect could be explored, to bring some additional vitality and local relevance to the new MUCH.

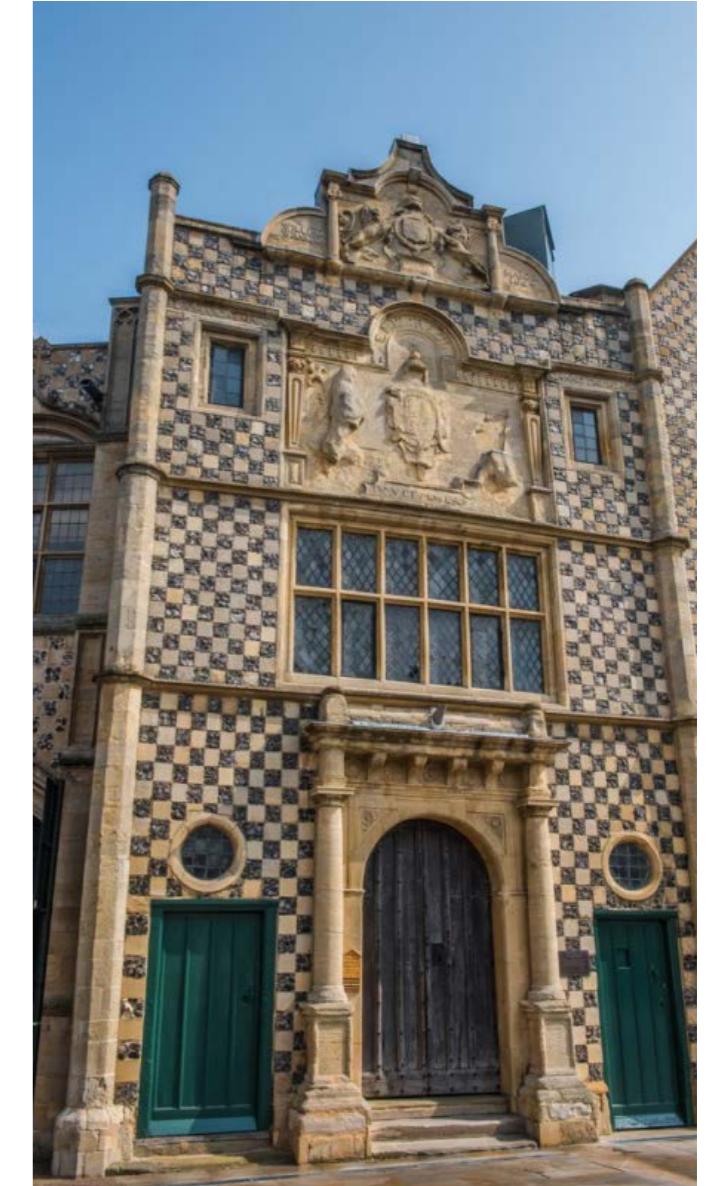
Colour-washing of façades, or the application of stucco in the 18th and 19th Centuries is favoured in some of the more prestigious buildings.



Image of coloured facades taken from significant buildings in hanseatic towns



Photograph of the Majestic Cinema



Photograph of King's Lynn Guildhall



Photograph of 'speckled' brickwork in King's Lynn

2.5 EXISTING BUILDING

The existing building is a four storey commercial building, most recently used as a retail unit with associated office space on ground and first floor. The second floor houses an out of use car park and the third floor was most recently used as a bar and night club.

The ground and first floor facade is set back from the building line over. The ground floor is a typically fronted commercial facade, with fully glazed windows inter-spaced with brick clad columns, while the first floor has more conventional glazed elements and solid brickwork.

The second floor car park is open to the elements on three sides, and the concrete superstructure is largely exposed. The third floor windows have been externally clad with fixed metal cladding to prevent light ingress into the nightclub within.

The existing roof is flat with a low parapet. There is a telecommunications antenna mounted on the roof. The height of the roof parapet is only surpassed by an assumed stair core on the eastern elevation by approximately 2.5m.

Existing Structural Frame

The existing primary structure is a reinforced concrete (RC) frame with concrete beams and clay pot floors and roof. Initial findings site investigations and the condition of the existing structure is described in more detail in Elliott Wood's report.

As identified through the previous studies, the existing building and structural frame presents an opportunity for reuse. Such reuse gives the opportunity to create an exemplar building that saves energy, lowers carbon emissions and gives a precedent for both the architectural community and other local authorities to look to.

Creating the conditions to keep the current building frame could be a difficult balancing act however, it is one worth perusing as there has never been a more pressing time to create good examples for low carbon strategies.



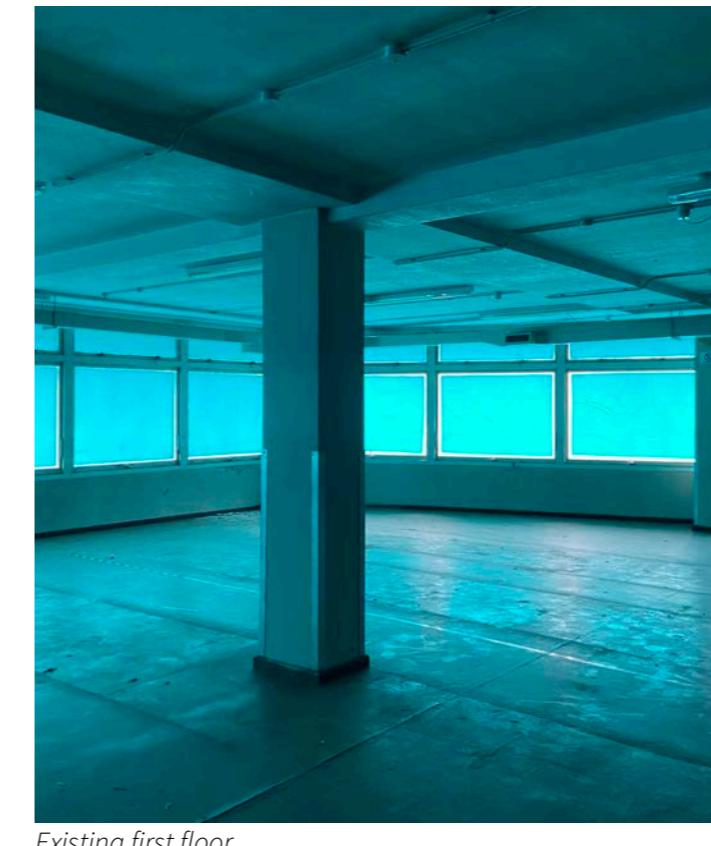
Photograph of the Argos building from Tower Street



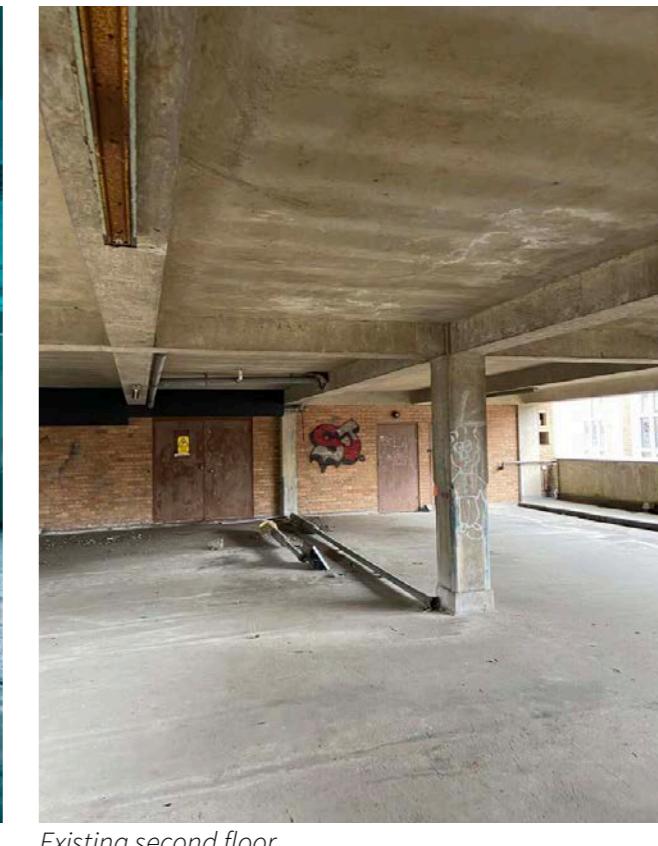
Photograph of the Argos building from Baxters Plain



Existing ground floor



Existing first floor



Existing second floor

2.6 SITE OPPORTUNITIES

A New Public Space

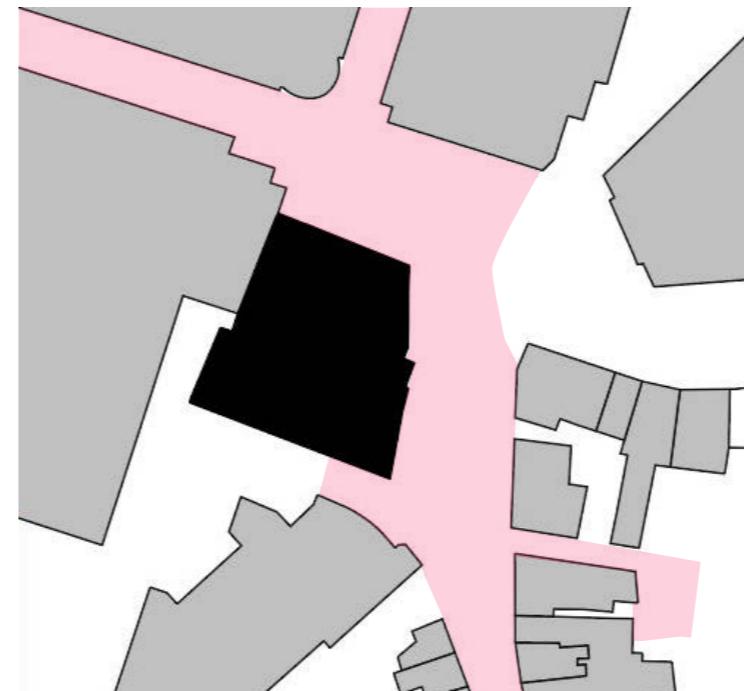
We have identified an opportunity to redefine the edge of the existing building and create a new, public destination and plaza in front of the new Community Hub. Pulling back the building line will open up views towards, and connections to the Majestic Cinema building, showcasing this fantastic example of an almost unaltered Jacobean Baroque Style cinema complex.

Creating a new public space, nestled between the buildings will provide a welcome place to sit, dwell and rest within this busy shopping area. The new public, open space would be south facing, creating a warm and pleasant place to sit.

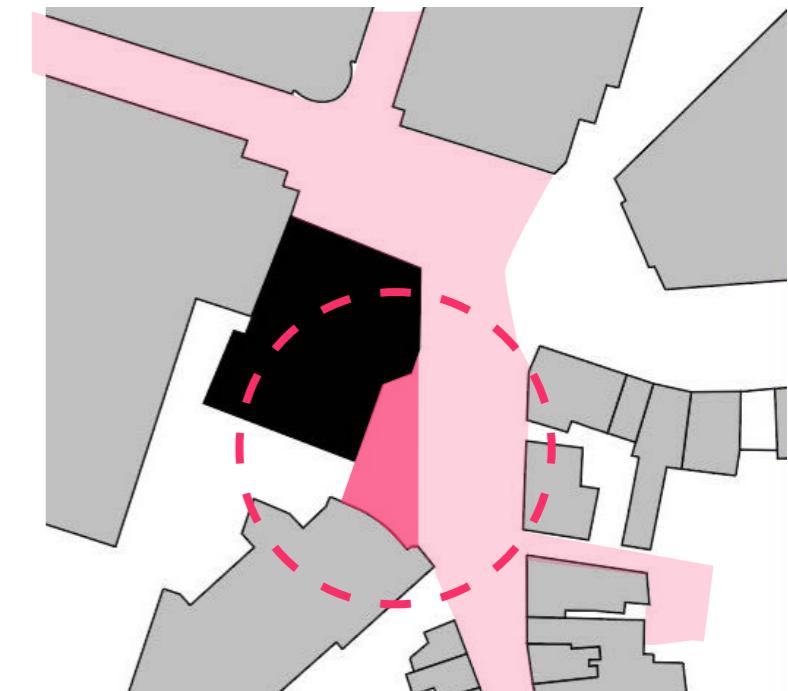
Exploring the use of planting and vegetation will help temper the plaza, keeping the space cooler in summer, improving air quality and adding greenery to this significant junction. Built in seating and terracing would create a flexible, shared space that can be used by the public with minimal maintenance and upkeep.



Historical Photograph of the Majestic Cinema prior to construction of the existing Argos building



Existing Site Plan



Opportunity to create new public plaza



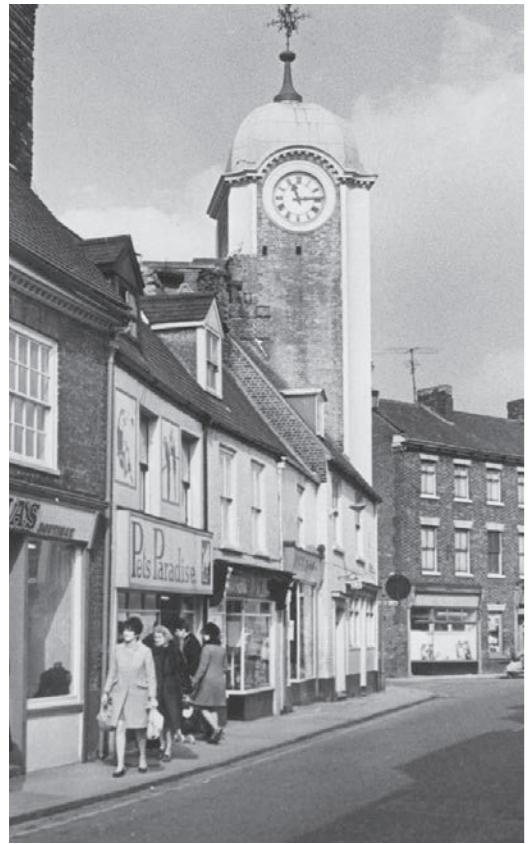
2.6 SITE OPPORTUNITIES

A Distinct Building

The existing tower of the Argos building creates a significant focal point at the end of the long views down Tower Street and Blackfriars Street. The tower sits comfortably against the clock tower of the Majestic Cinema and the towers throughout King's Lynn.

While the architectural language of the existing building has not aged well and has little architectural merit, the use of the tower is a successful beacon and signifier for this important site.

Creating a contemporary tower as part of the redevelopment of the site will continue to draw the public towards this junction and highlight the civic importance of the new Community Hub.



Historical Photograph of the Majestic Cinema tower, King's Lynn



Greyfriar's Tower, King's Lynn



Clifton House, King's Lynn



03 OPTIONS STUDIES

- 3.1 Massing Studies
- 3.2 Structural Studies
- 3.3 Structural Appraisal
- 3.4 Option B Design Development
- 3.5 Modern Methods of Construction
- 3.6 Cladding Studies

3.1 MASSING STUDIES

Overview

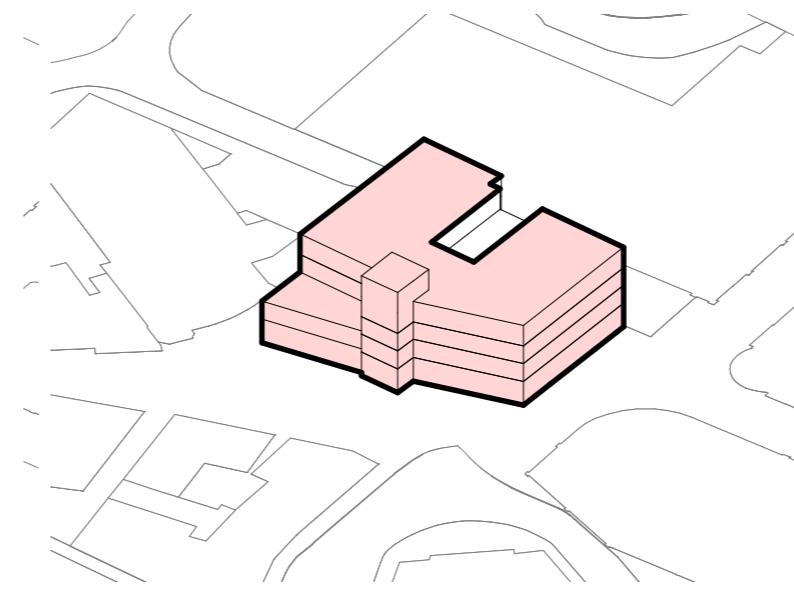
During the initial stage of RIBA 1 we developed massing studies to explore the form and scale of the proposed development to meet the following key briefing requirements:

Area	Provide a building of 2,245sqm gross internal area.
Scale	Provide a building with the library over 2 storeys to meet NNC management requirements
Public Plaza	Transform the public realm and create a new public plaza and anchor within the town centre.
Place making	Improve connections and visibility of the Majestic Cinema.

In addition, we considered the following:

Planning	The existing building is over-dominant on the site and sits above the surrounding two and three storey buildings. The scale and massing creates a heavy book end to the end of the street. Exploring lower massing and scale on the site will open opportunities to create a building congruent with its surroundings.
Sustainability	Developing a building on site that meets, but does not exceed the clients space requirements. A lower, smaller development with less facade, less material and less energy to heat and cool the building.

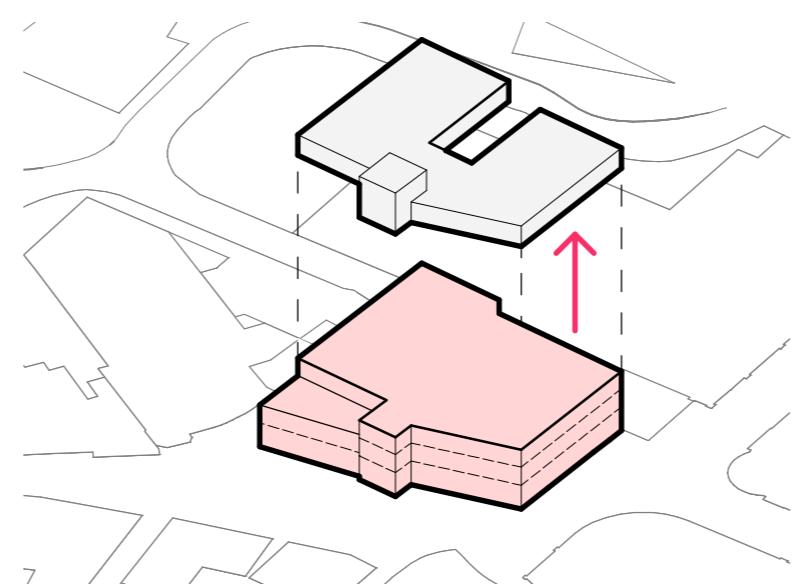
Each of the massing studies were evaluated against the briefing requirements and considerations listed above. The options on this page are included as a record of design development, with reasons for discounting each option noted.



Existing 4 Storey Massing & Footprint

Reasons for discounting option:

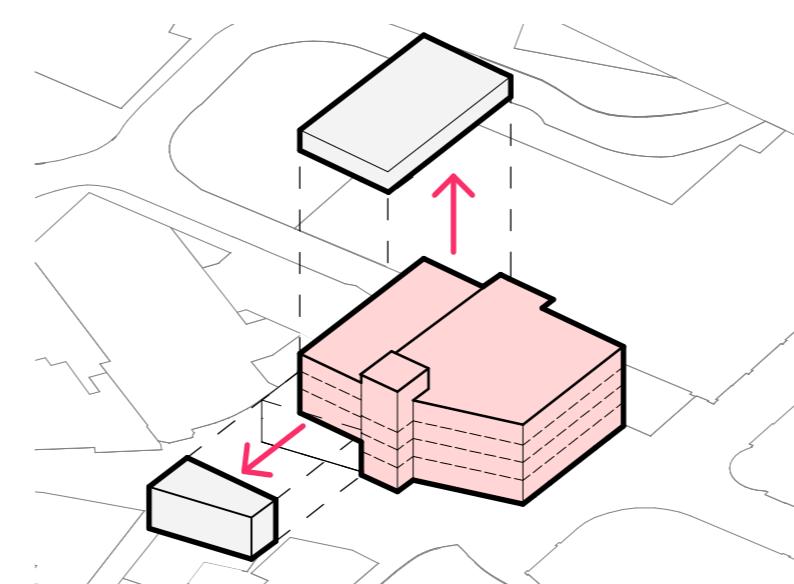
- Overall area provided in excess of briefed area requirements
- Number of storeys does not align with building management strategy
- Missed opportunity to reshape the footprint of the building to improve views the Majestic Cinema
- Missed opportunity to transform the public realm and create a new public plaza
- Massing and scale over-dominant on site, missing opportunity to develop and more appropriate and congruent building form



3 Storey Massing & Existing Footprint

Reasons for discounting option:

- Overall area provided in excess of briefed area requirements
- Missed opportunity to reshape the footprint of the building to improve views the Majestic Cinema
- Missed opportunity to transform the public realm and create a new public plaza and improved connections to the MUGH



3 and 4 Storey Massing with Cutback

Opportunities

- Pushing the building line back creates views and connections to the Majestic Cinema.

Reasons for discounting option:

- Overall area provided in excess of briefed area requirements
- Number of storeys does not align with building management strategy
- The existing tower limits views from the corner of Baxter's Paling towards Tower Street and the Majestic Cinema

3.1 MASSING STUDIES

Preferred Option

In this study we further explored the 3 storey massing option, setting back the building line to the south east to create a public square and connection with the Majestic Cinema. We also explored the form of the tower, pushing the projection back to the building line, improving views and connections between Baxter's Plain and Tower Street.

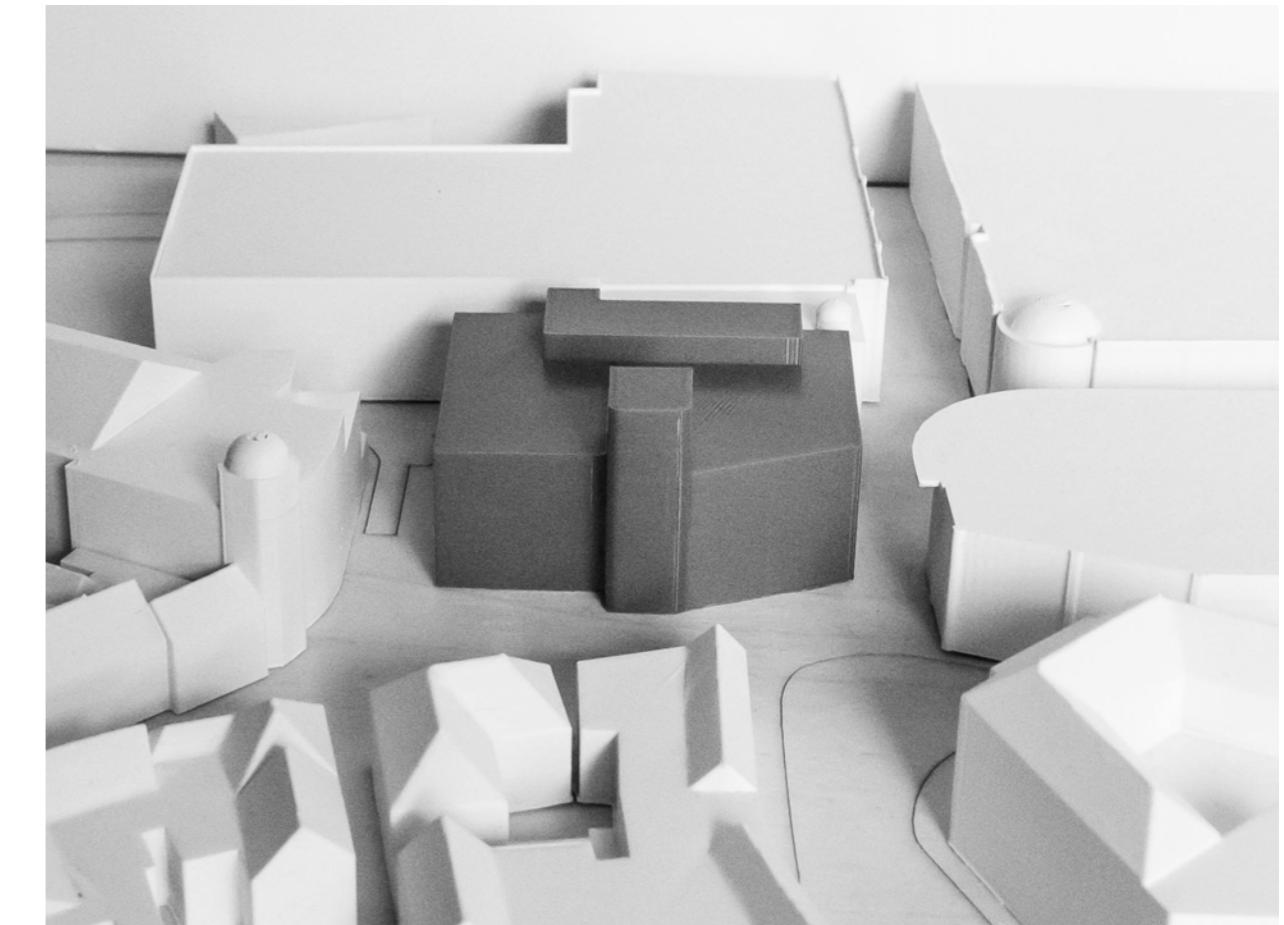
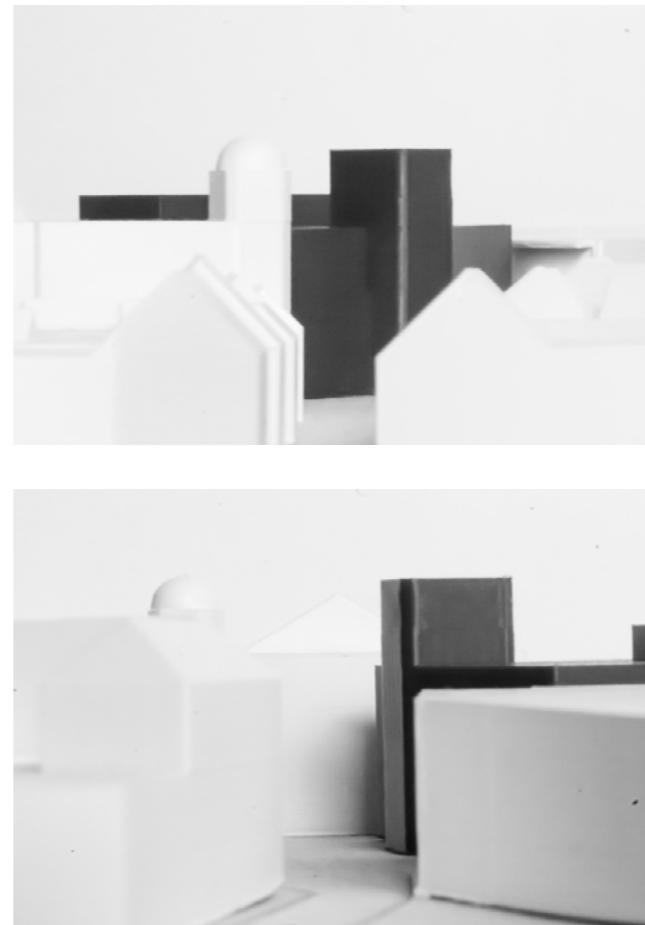
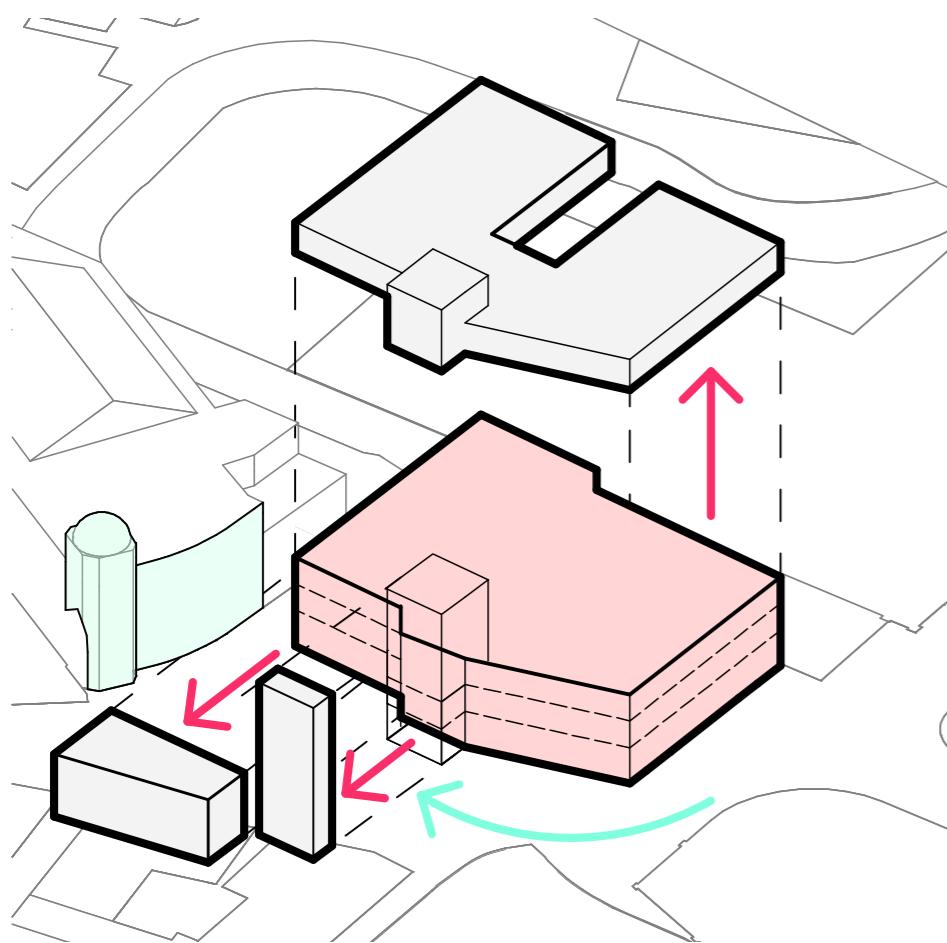
This option was reviewed with Stakeholders and developed as the preferred massing option, addressing the following key briefing requirements:

- | | |
|---------------------|--|
| Area | usable floor area meets briefing and budget requirements |
| Scale | massing appropriate to context and scale of development in line with brief, allowing for a 3 storey MUCH |
| Public Plaza | opportunity to create a new public plaza and focal point in front of the Majestic Cinema |



The resolution of the massing should be explored further during RIBA 2. Opportunities to sculpt the massing and connections to the tower element should be explored.

Massing opportunities should be explored through pre-app meetings with the planners.



3.2 STRUCTURAL STUDIES

Structural Studies

Following the conclusion of the massing studies, the design team undertook a feasibility study to explore structural options for the re-use of the existing frame vs new build. The aim of this study was to meet the following requirements:

Massing & Area Provide a building on site over 3no stories meeting the briefing requirements for the MUCH

Carbon Carry out embodied carbon assessment of each structural option working towards NNC ambitions to achieve Net Zero

Cost Provide cost analysis for each option

The proposals allow for cutting and carving of the existing 4 storey massing to reshape the building to meet the architectural ambitions detailed in the section above. All options allow for the complete transformation of the external appearance of the building. The existing brickwork facade will be removed and replaced with a new, thermally improved, and more appropriate skin. New internal layouts and cores will be designed to suit the brief for the MUCH. Further explanation and detailing of the structural alterations are stated in Elliott Wood's report. An overview is included here for reference and to contextualise further design development.

Structural Options

Throughout the preliminary design stages, a number of options have been considered by Elliott Wood, initially with a feasibility study in December 2021. As part of our subsequent Stage 1 work the Design Team undertook an assessment and review of the initial study.

During RIBA 1, a further three options in collaboration with Hudson Architects, Hoare Lee M&E Engineers and Better Design were developed. For the purpose of this report, the following comparative studies we undertaken:

Stage 0 Review of previous Feasibility Study undertaken by Elliot Wood in December 2021

Option A Structural Refurbishment

Option B Structural Remodelling

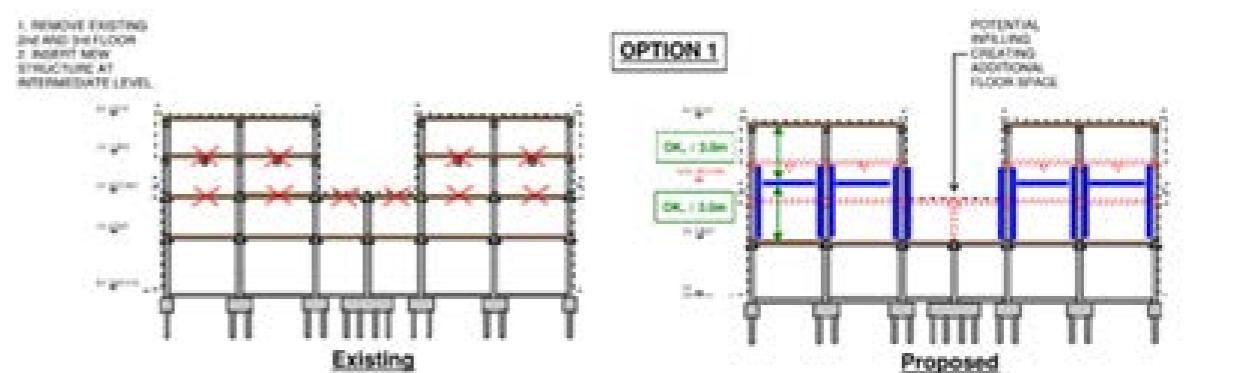
Option C New Build

Stage 0 - Feasibility Study (December 2021)

During the initial Feasibility Study, and due to the low floor to ceiling heights at first, second & third floor levels, Elliott Wood were asked to explore the options for achieving 3.0m floor to ceiling height at three levels. Three options for achieving this were explored, all whilst retaining as much of the existing structure.

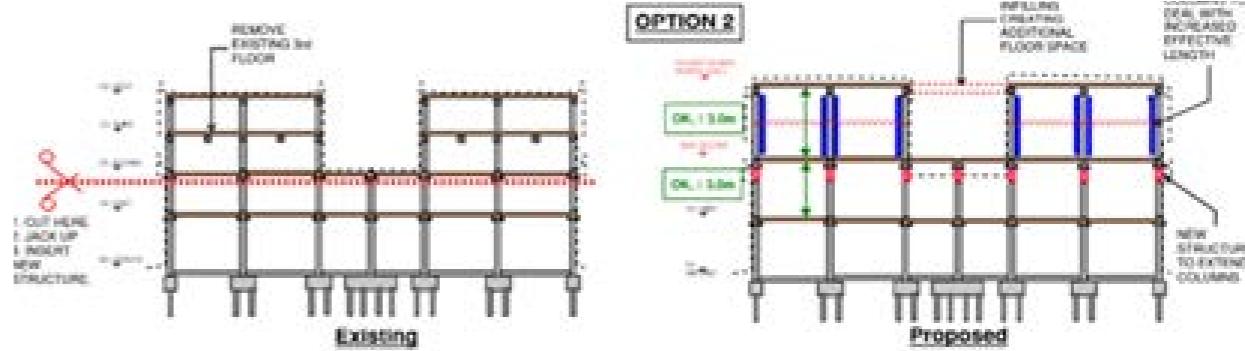
Option 1

Demolish second & third floors and install a new second floor at the desired level, whilst strengthening the existing columns



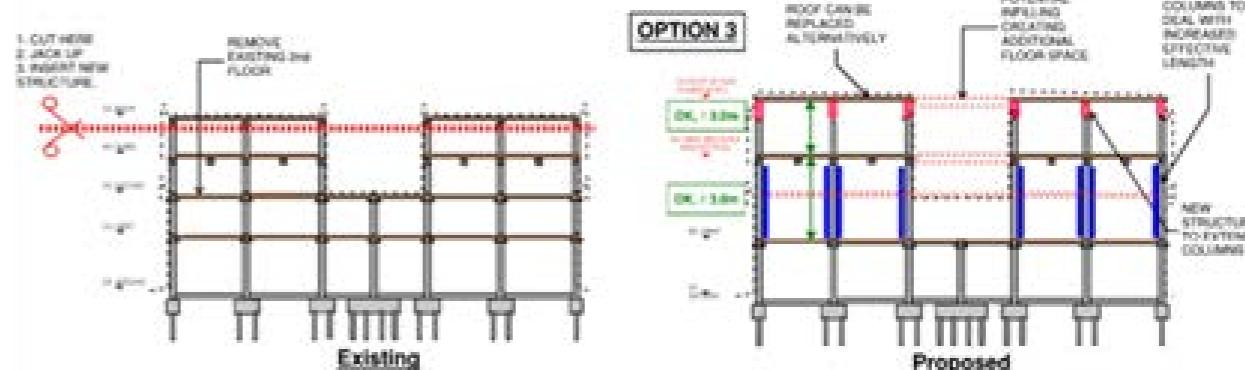
Option 2

Cut the building at underside of second floor and jack the structure up (including existing second floor) by extending the existing column heights. Third floor demolished.



Option 3

Cut the columns at underside of roof slab and extend the existing columns whilst jacking up the existing roof level. Second floor to be demolished to form a double height space.



3.2 STRUCTURAL STUDIES

Stage 0 Review

Whilst all three options were feasible structural alterations to the existing building to allow it to function for the proposed use, the construction works are intensive. These options were further considered by the Design Team during RIBA 1.

Slab Heights

As part of the Design Team's analysis of the existing building, the feasibility of working with the existing slab levels was reconsidered. A key requirement of the previous study was to increase the floor to ceiling heights to 3m. The existing floor to soffit heights range from 3m at ground floor to 2.7m at first floor and 2.6m at second floor, with reduced height to the underside of existing structural beams. While these heights are lower than a new build development would allow, they are not unworkable and have potential to create some interesting spaces and volumes.

Working with the Design Team, we explored opportunities to retain the existing slab heights. The following strategies were developed:

- Forming voids and rooflights within the deep footprint of the building to create a sense of volume and space, with connections to the sky and daylight
- Using voids and atrium spaces to explore natural ventilation options.
- Considering servicing strategy to minimise service zones within the floor and ceiling build up.
- Exposing the existing structure, giving access to thermal mass, and minimising new ceilings

The retention of the existing slabs has the following advantages:

- Reduces construction risks and unknowns by simplifying the alterations to the existing frame.
- Reduces construction cost through working with the existing slab levels

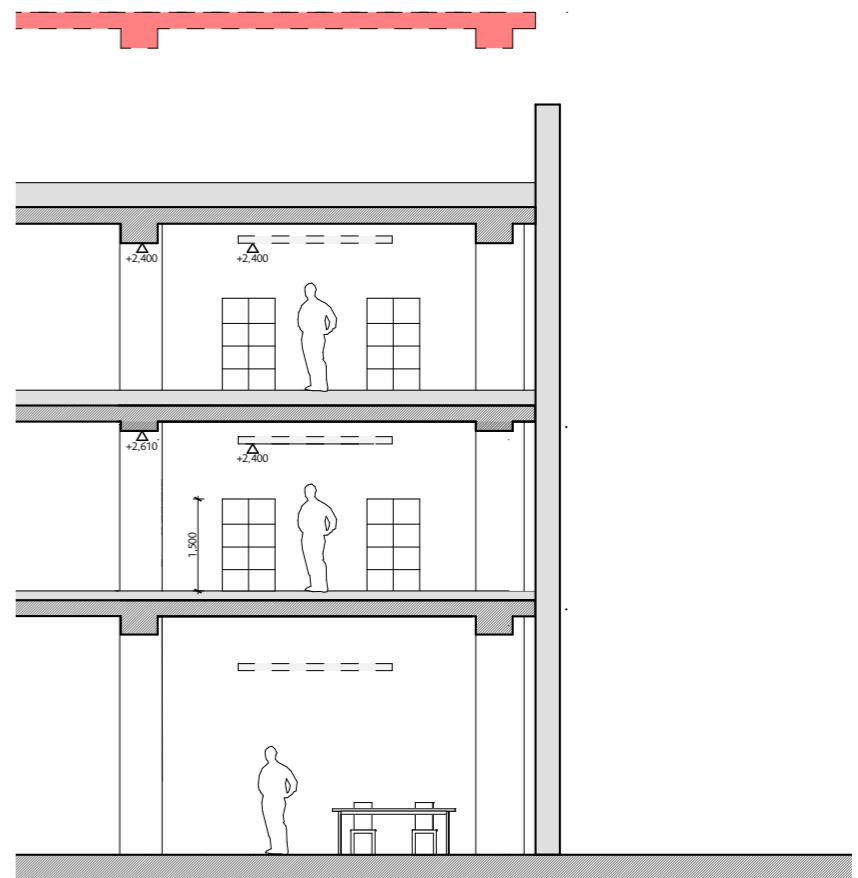
Massing & Scale

The feasibility studies explored alterations to the slabs within the massing of the existing building. Option 1 retains the existing roof level slab, while options 2 and 3 increased in height of the existing roof slab.

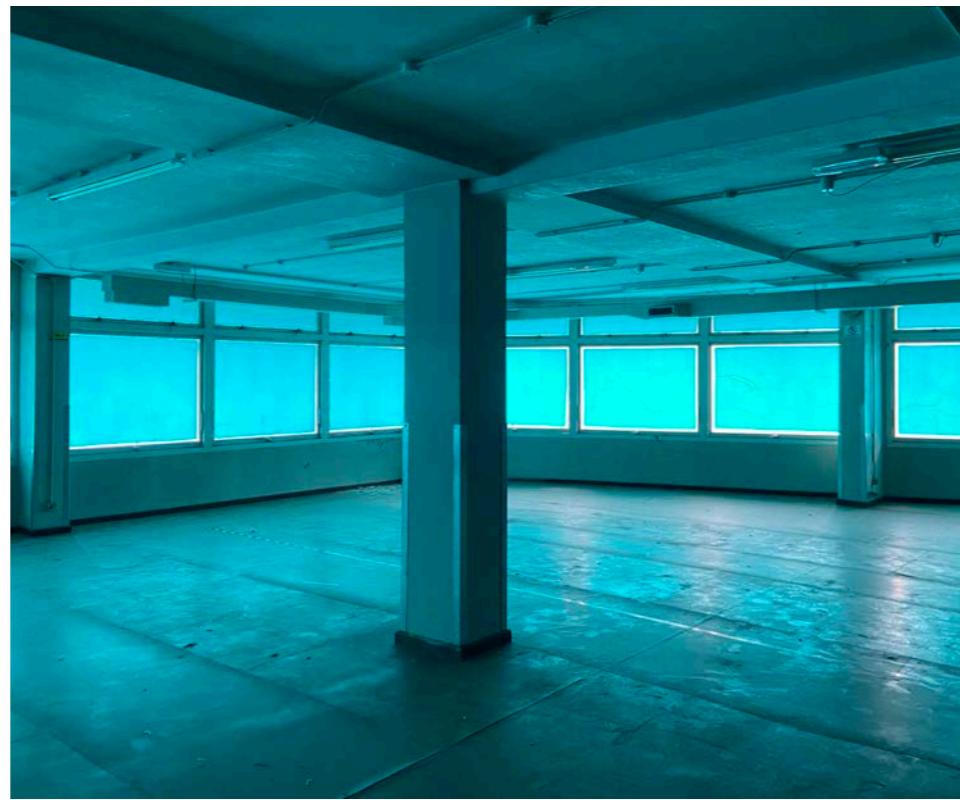
Through our massing studies, we explored the opportunity to reduce the scale of building on site, developing a more appropriate form fitting in with its surroundings. The options within the feasibility study did not address this concern, and would result in the continued over development of the site.

There would also be associated building costs through the additional area of materials (facade, taller internal walls etc) and the larger volumes would require more energy to heat and cool the building.

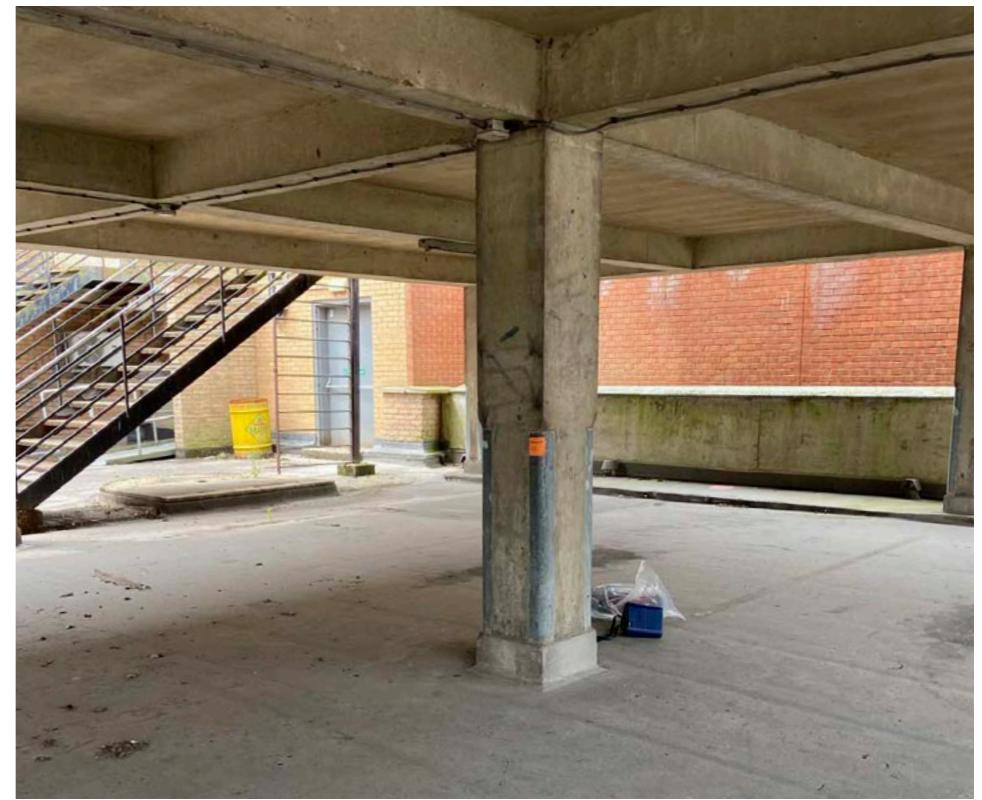
Following the conclusion of our analysis, we explored a further two options looking at the retention of the existing slab and structural frame. Working with the team, we developed and understanding the existing building to determine what can be retained. We also developed a new build option to compare the benefits and disadvantages of rebuilding the frame. These are outlined in the following section.



Existing section showing ceiling heights



Existing first floor - exposed structural frame



Existing second floor - exposed structural frame

3.3 STRUCTURAL APPRAISAL

Structural Appraisal

	AIM	STRUCTURAL OVERVIEW	MEP OVERVIEW	EMBODIED CARBON	COST	NOTES
Option A Structural Refurbishment	<ul style="list-style-type: none"> - Low carbon, low cost option. - Working with the existing reinforced concrete frame, with minimal structural interventions and alterations. 	<ul style="list-style-type: none"> - Existing ground to third floors retained with architectural and services strategies to suit. - Introduction of new voids at all floor levels to form atrium and introduce daylight into the deep floor plan - Introduction of voids at new roof level to form rooflights over - Partial demolition of roof existing structure - New façade - Removal of existing lift shafts and installation of new lifts - Infilling of the external rear courtyard with new slabs at third floor - Removal of two bays at the south-eastern corner of the site to create public space - Demolition of existing first and second floor in south western corner of the building and new floors to match existing levels. 		- Lowest carbon	- Low cost	<ul style="list-style-type: none"> - Minimising structural alterations and working with existing sheer walls limits potential for development of internal layouts - Retention of the existing stair core restricts opportunities to improve public plaza and connections to surroundings
Option B Structural Remodelling	<ul style="list-style-type: none"> - Low carbon, low cost option - Working with the existing reinforced concrete frame, with more significant structural alterations. 	<ul style="list-style-type: none"> - As Option A, with the following additional alterations proposed - Removal of the eastern RC stair core and installation of a new RC stair & lift core to access all floors. - Due to the alterations to the existing stability system and location of the new voids, new RC shear walls are proposed between floors to reinstate lateral stability. 		- Low to medium carbon	- Low to medium cost	<ul style="list-style-type: none"> - Preferred option following Client review. - Allows greater flexibility of internal layouts - Allows better opportunities to reshape public space to front of building
Option C New Build	<ul style="list-style-type: none"> - New build structure over existing retained foundations 	<ul style="list-style-type: none"> - Complete demolition of the existing super structure - Existing foundations retained, with new, light weigh structure over 		- High carbon	<ul style="list-style-type: none"> - High cost - Increased construction time-frame 	- Option discounted due to high cost

3.4 OPTION B DESIGN DEVELOPMENT

Preferred Option

Following a Design Team and Client review of the three structural options, the preferred option was agreed for further development - Option B, Structural Remodelling.

- Sits within the agreed project budget and construction cost
- Meets client briefing requirements for area
- Delivers first step towards Net Zero carbon development, minimising embodied carbon through the reuse and alterations to the existing structure.

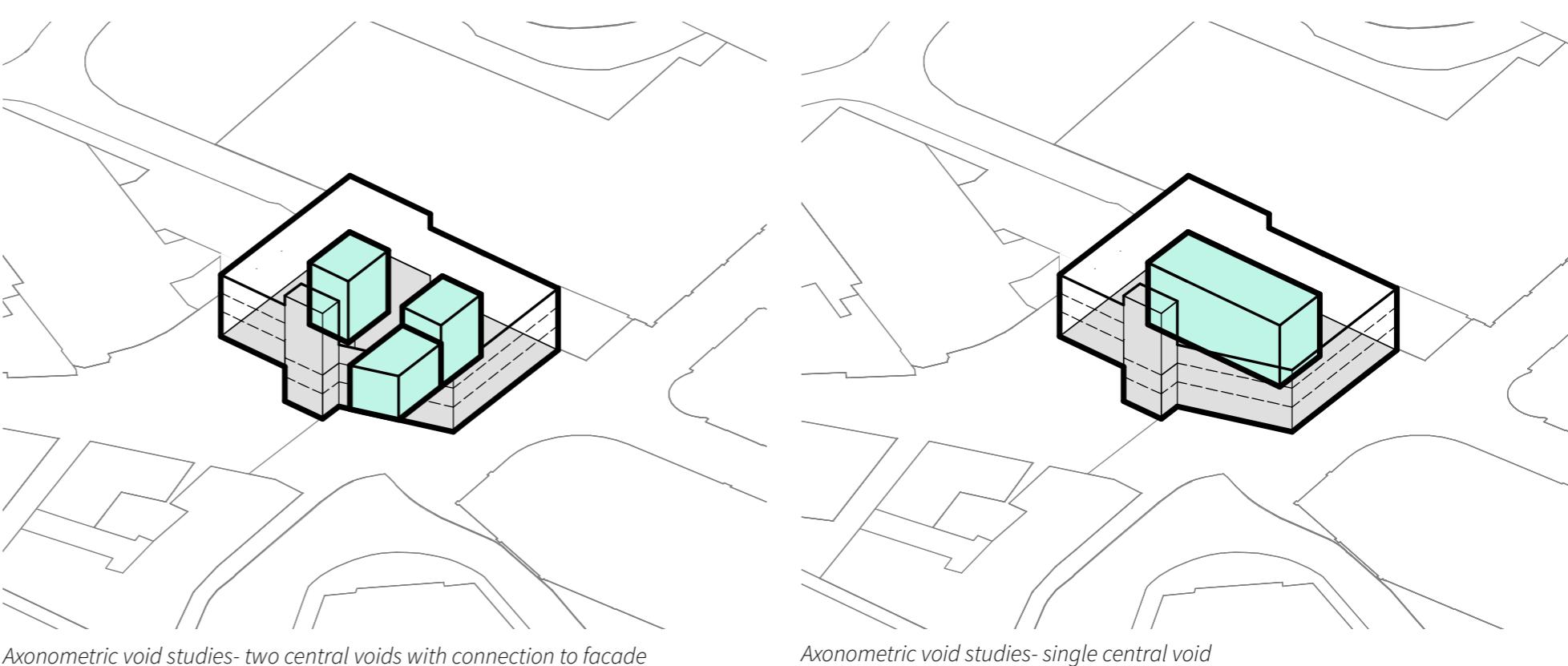
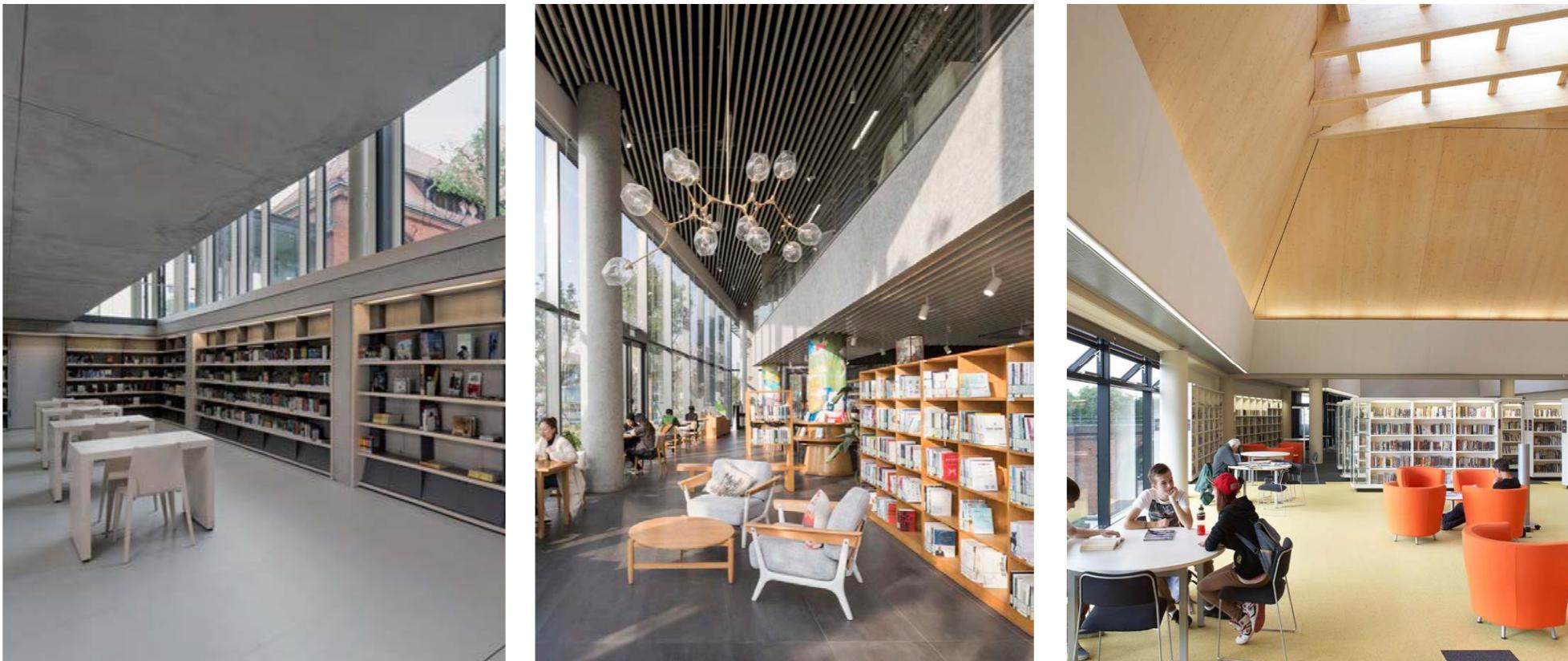
Void Studies

As part of the feasibility study to retain the existing slabs, the Design Team carried out studies to explore creating openings and atrium within the building to maximise daylight, improve opportunities for natural ventilation and create a sense of volume and space. The key principles were:

- Openings formed within slabs located within existing structural grid to minimise requirement for secondary structure
- Openings formed at roof level, creating lanterns to the top floor, improving perception of space within low ceiling heights and maximising potential for natural ventilation and daylight
- Internal voids stacked to create atrium allowing for development of natural ventilation strategy
- Voids enclosed at second floor level to work with ventilation strategy

Layout Studies

During RIBA Stage 1 and in parallel with the massing and structural studies, the following layout studies were tested and developed with NCC Stakeholder.



3.4 OPTION B DESIGN DEVELOPMENT

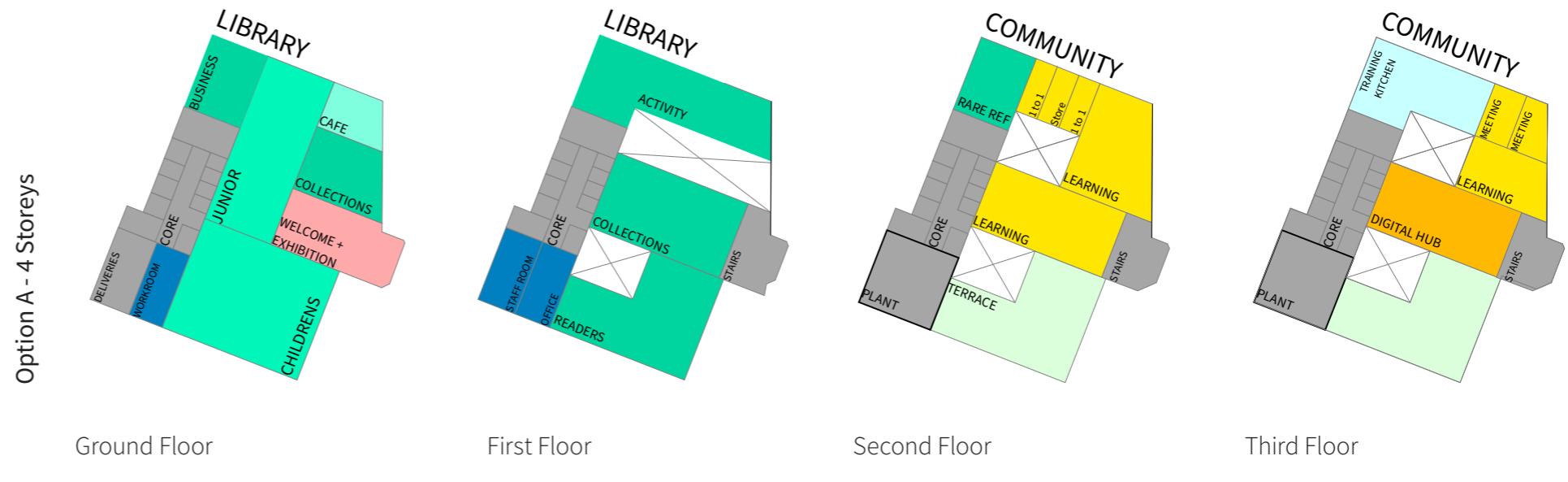
Layout Studies

Option 01 - The 4 Storey MUCH

- Library on ground and first
- Adult learning and community spaces on second and third floor with access to roof terrace

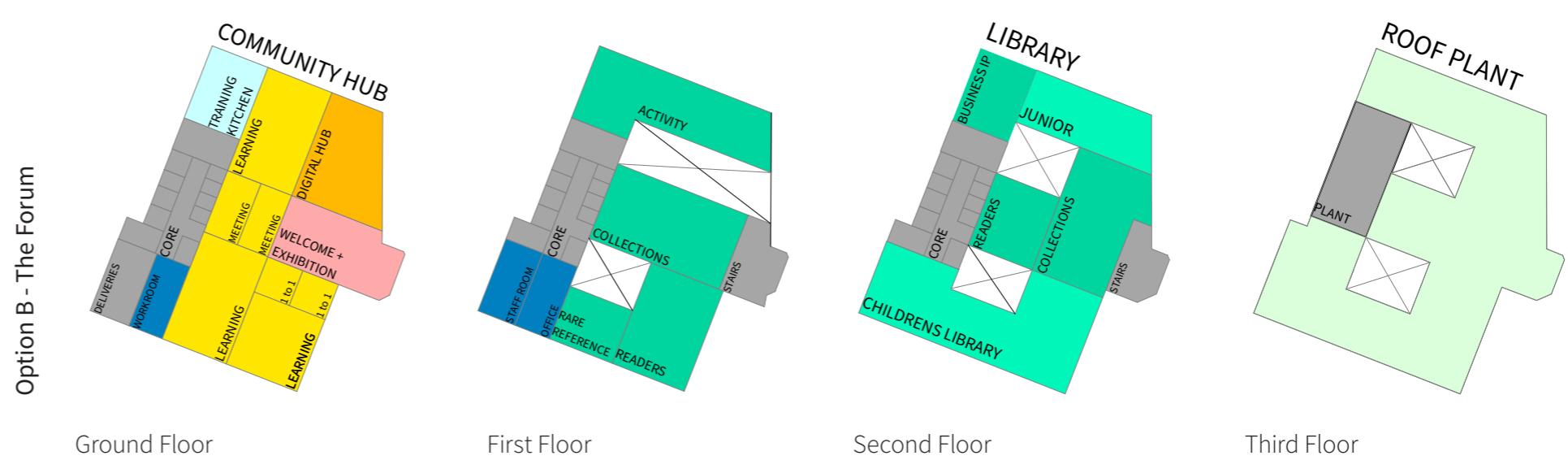
Stakeholder Feedback

- *Management of a 4 storey building does not work with existing staffing and supervision levels.*



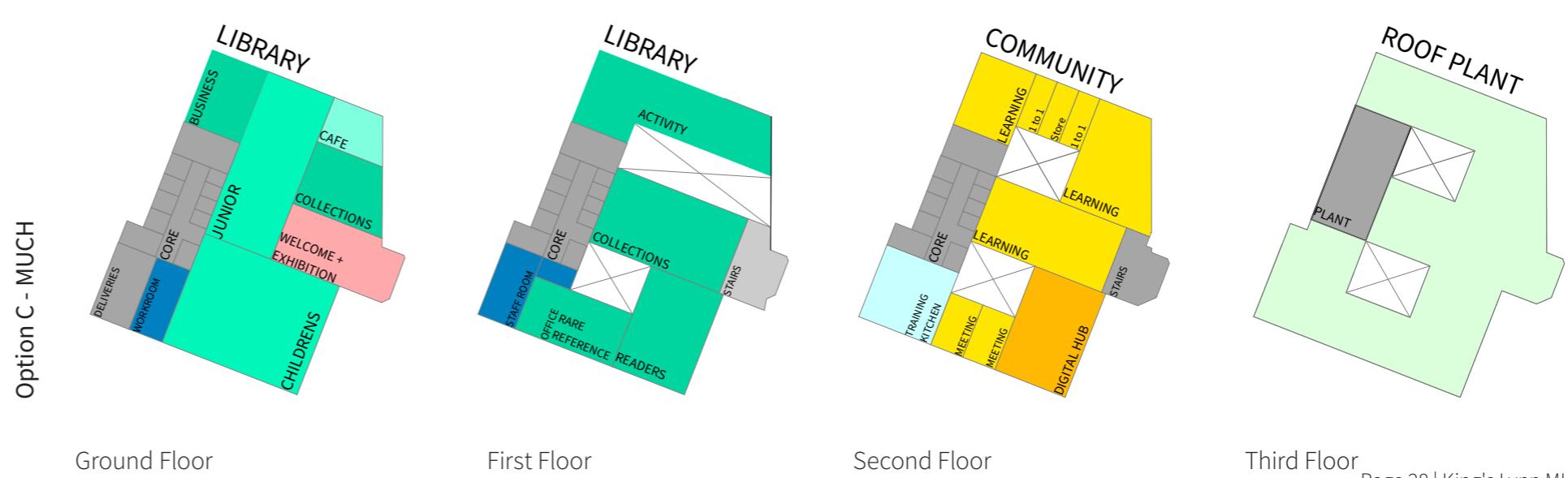
Option 02 - The Forum Model

- Ground floor as open community hub, adult learning, cafe, training kitchen and welcome space
- Library located on first and second floor



Option 03 - MUCH Preferred Option

- Open library on ground and first
- Adult learning and community spaces on second floor



3.5 MODERN METHODS OF CONSTRUCTION

Overview

During RIBA Stage 1 the team worked alongside Better Delivery to explore opportunities to embed the principles of Modern Methods of Construction within the developing proposals. The options were considered alongside the site logistics plan, as shown on the next page.

Off-site Manufactured Solutions have the potential to deliver wide benefits to the Project - greater resource efficiency, increased construction speed, reduced load on the existing structural frame, and a drive towards zero waste and a circular economy.

The use of off-site solutions will also have wider benefits for King's Lynn - reduced number of deliveries, less time on site, and opportunity's to reduce noisy works - will benefit local ecology, surrounding building users, visitors, and the wider community.

Retention of Existing Frame

The developing proposals allow for the retention of the existing RC frame, with a new facade transforming the external appearance of the building. The new skin will need to wrap or infill the existing frame, and should significantly improve the air permeability and thermal performance for the building. The external skin will need to support cladding and glazing systems appropriate to the local context, matching the architectural ambition and civic importance of the MUCH. A facade study is included in Section 04.

Infill Walling

Steel Framing System (SFS), and Structural Insulated Panels (SIPS), are often specified as an infill to concrete structural frames, sitting inside the frame itself. Infill walling as a SIP is incredibly quick to install. SFS, comprising of engineered steel components is much slower and requires the storage of materials on site. The limited space available within our tightly constrained site is likely to make SFS impractical.

Further development of infill options would require a greater understanding of the tolerances of the existing frame, structural connection, and interface with support systems for the cladding and fenestration. For these reasons, it was felt that infill walling is not the optimal route for this project.

Full Structural Wrap

We considered options for forming a loadbearing full structural wrap, taking into consideration embodied carbon, building height, wall thickness, fire test data and suitability for use with the reinforced concrete frame.

SIPs

Structural Insulated Panels are an advanced method of construction, exploiting composite panel techniques - delivering excellent structural and thermal characteristics in one system. SIPS have two parallel faces – of Oriented Strand Board (OSB) - sandwiching a rigid core of Polyurethane (PUR) foam. The result is a lightweight system which is quick to erect, and free from the complications surrounding compression shrinkage and thermal bridging.

The rigid insulation core can be formed with PIR, EPS and PUR insulation. The combustibility rating of these products is Euro Class D or worse. As a public use building this would not be a suitable options to develop further.

Closed Panel Systems

Closed Panel Light Gauge Steel Framing (LGSF), and Timber Systems, deliver rapid and robust energy efficient buildings, structural strength and airtightness. The use of mineral wool insulation when combined with A1 or A2 facing boards allows for a compliant, non-combustible facade system.

Closed Panels can offer reasonably high thermal performance throughout the life cycle of the building. However, to achieve the required u-value, the wall thickness of a mineral wool panel will be thicker than the equivalent PIR insulated SIP. To achieve a target U Value of 0.16W/m²K, the Timber panel would have an overall thickness of 265mm. With an allowance for cladding system on top and overall external wall build up of 415mm is assumed. This is within acceptable tolerances of the project and would not have a significant impact on the overall building area.

Timber and LGSF systems produce similar structural, air permeability, and thermal performance, however the risk of thermal bridging is greater in LGSF. Targeting an overall air tightness below 3 m³/(m²·h) @50 Pa, with A1 Non-Combustible Mineral Insulation, the build-up includes an external layer of CP board, and an internal face of 15mm Fermacell.

The installation of Closed Panel systems should be developed further in the next stages. Pending detailed surveys and understanding of the existing structure, we have assumed that Closed Panels would installed out with the external face of Structural Frame, with structural supports tying back to the main structure. This would allow large panels to be lifted into place, over sailing the edge of the existing slabs.

Embodied Carbon of Closed Panel Systems

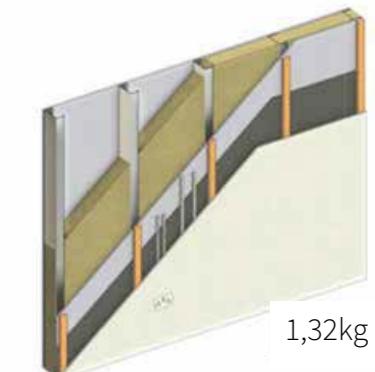
In addition to the performance of the LGSF and timber systems, embodied carbon is a key consideration when selecting options for further development. The measured embodied carbon of LGSF and timber systems varies considerably when calculated by evaluation of Boundary Definition and Embodied Carbon Simulation.

A1 - A3 Product Stage - The steel panel system has significantly hight emissions associated with creation at cradle, and transportation to the UK. The timber panel system has lower emissions as timber products can be locally grown and sourced.

A4-A5 Lifecycle Stage (Transport, Construction / installation) - This Stage focuses on the transport of the product from the factory to the construction site, as well as the energy used during the assembly of the material. There is a minimal difference between the two systems as supply chain partners for either system are assumed to be within 75 miles.



Closed panel timber



Closed panel light gauge steel frame (LGSF)

Recommendation

Based on the assessment above, the preferred option would be to develop proposals for a Closed Panel Timber system to form the external envelope.

Both the embodied carbon of timber panels, opportunity at end of life to contribute to the circular economy align with the projects Zero Carbon ambitions.

3.5 MODERN METHODS OF CONSTRUCTION

Fenestration

Where Closed Panel Timber system are used to form the external envelope the integration of windows will need careful consideration. Early engagement of specialist sub-contractors would allow designs to be developed to suit a panellised system.

Breaking the elevations with curtain walling offers the most simple construction method. Floor-to-floor curtain walling would be fixed top and bottom directly to the concrete slabs. Where the jambs meet the Closed panel system, secondary steelwork would be required to provide additional support.

The use of long expanses of horizontal windows is less compatible with panellised systems, over complicating the production, structural support and adding expense. Forming windows up to 2m wide within large format panels is a relatively straightforward option. The size and weight of windows should be compatible with the crane types include in the Site Logistics Feasibility Report (Appendix D).

Cladding

During RIBA Stage 1, options for cladding materials were considered and evaluated. Materials were assessed in relation to the local planning context and suitability for use in a civic building: weight & loading implications on the existing frame and panellised wall system: maintenance & durability: carbon content: alongside other relevant factors.

To develop the use of panellised systems, cladding options should be developed that are compatible with the loading limitations of the panels - estimated to be around 50kgs per sq metre. Cladding should be fixed back at 600mm centres to the structural studs, with appropriate fixings or secondary framing. The most viable cladding solutions should be lightweight, and be fixed on-site to further reduce lifting weights. Heavier and larger format panels will impact crane type and position.

Roofs

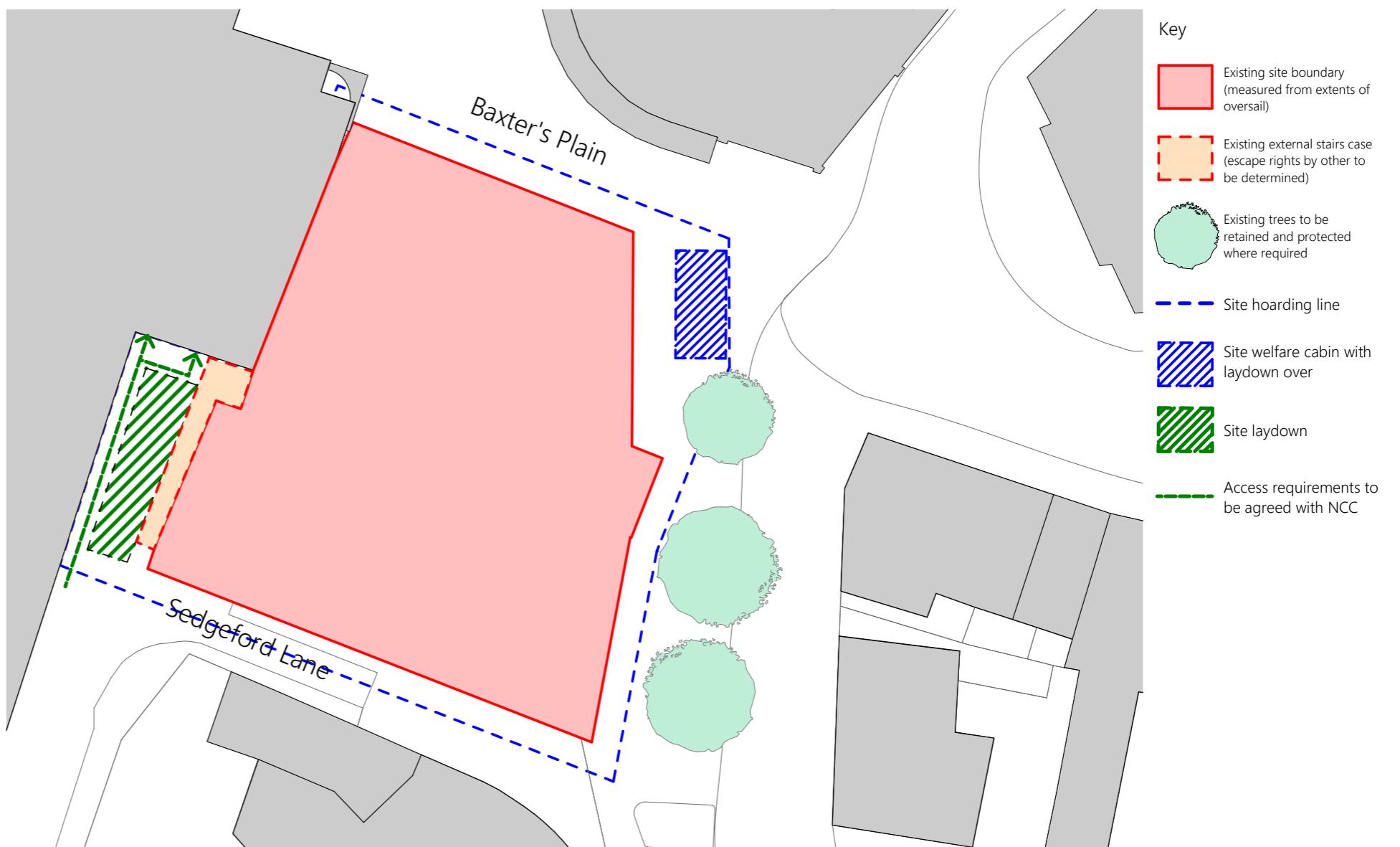
Where the existing slab is in-filled, new infill roof structure will be required. The preferred option would be use a lightweight timber cassette or CLT panels. Details of options are included in Elliott Woods Stage 1 report.

Opportunities for pre-fabrication of the roof is limited through the design intent to retain and re-use the existing slab. Waterproofing membranes, insulation and green roof would be fitted on site. There are opportunities to explore prefabrication and lightweight construction of new roof-lights.

Logistics

To support the strategy and opportunities to use panellised MMC systems. Better Delivery in partnership with DGP Logistics produced a Logistics Feasibility Report and assessment of the site, surrounding areas and access to 46 New Conduit Street.

While the assessment identified several risks with regards to access for logistics, measures were identified to mitigate them, allowing panellised options to be a viable option for considered in later stages. The full Logistics Feasibility Report is included in Appendix D.



3.6 CLADDING STUDIES

CLADDING MATERIAL	SUITABILITY (local context and use in civic building)	OPPORTUNITIES	CHALLENGES	EMBODIED CARBON	PRODUCT REFERENCES	NOTES / CONSIDERATIONS
New Brick	- Fits with local vernacular - Appropriate for use in a civic building - requires high standard of detailing and brick selection	- hard wearing, durable and long lasting	- traditional brickwork is heavy / unsuitable for lightweight construction - long on site construction time	HIGH		
Existing Brickwork re-used	- Fits with local vernacular - opportunity to mix existing bricks with new bricks to create higher quality finish	- hard wearing, durable and long lasting - Reduces demolition waste and fits with projects Sustainability aspirations	- traditional brickwork is heavy / unsuitable for lightweight construction - long on site construction time	LOW		- Should be explored further in next stages. - opportunity to use in some areas of the building.
Brick slips	- Fits with local vernacular - lacks gravitas for civic building	- Lower carbon than full bricks - Suited to pre-fab construction	- Perception of cheap / low quality - Suitability for civic building - unless detailed well and combined with other, higher quality materials	MEDIUM - HIGH	https://www.marble-mosaic.co.uk/brick-tile-faced	
Ceramic tiles	- fits with language of other Hanseatic towns - high quality finish- fitting for a civic building	- Suited to pre-fab construction - Low construction time (depending on size and format of tiles) - low to medium weight	- higher cost cladding	MEDIUM	https://www.mosa.com/en-gb/products/façade	- outline sketch design based on ceramic tiles. Other high quality, similar cost options to be developed.
Limestone	- high quality finish - high quality finish - fitting for a civic building	- Suited to pre-fab construction - Low construction time (depending on size and format of tiles / panels)	- higher cost cladding	LOW (unless backed with concrete panel)	https://www.marble-mosaic.co.uk/natural-stone-faced	- weight and loading to be considered
Flint	- Fits with local vernacular - high quality finish	- Suited to pre-fab construction - hard wearing, durable and long lasting - Low construction time when used in panels (depending on size and format of tiles)	- typically associated with domestic projects - long on site construction when used traditionally	LOW		- Weight and loading to be considered - Could be considered for use at low level
Pre-cast concrete / reconstituted stone	- no reference to local vernacular - Relates to local modern developments	- Suited to pre-fab construction - Multiple options with finishes, design and colours - High quality, solid appearance	- high carbon cost	MEDIUM / HIGH	https://evansconcrete.co.uk/products/precast-concrete-cladding/	
Glass reinforced concrete (GRC)	- no reference to local vernacular	- Suited to pre-fab construction - Multiple options with finishes, design and colours - Flexible forms	- suitability for use a low level / durability	MEDIUM / HIGH		
Timber	- Reference to Kings Lynn as historic importer of timber from hanseatic countries - lacks gravitas for a civic building - unless detailed well and combined with other, higher quality materials	- Could be suited to pre-fab construction (panel size and format)	- Suitability for civic building - Limited lifespan - Combustibility	LOW		
Fibre cement boards	- no reference to local vernacular - lacks gravitas for a civic building	- Suited to pre-fab construction - multiple finishes / colours available - Opportunity to use at high level	- Perception of cheap / low quality - Longevity of life / durability at low level	VARIES - MEDIUM	https://www.vivalda.co.uk/products/decorative-cladding/	- carbon content related to specific products / manufacturers
Copper / metal cladding	- Copper fits with local context - Majestic cinema - lacks gravitas for a civic building unless detailed well / in combination with other high quality materials	- fully recyclable - Suited to pre-fab construction - lightweight - long lasting, low maintenance	- durability at low level - high cost	HIGH	https://www.kme.com/en/copperdivision/architecture https://www.rheinzink.com/architects-planners/inspiration/facade-systems/	

04 PROPOSAL

- 4.1 Overview
- 4.2 Proposed Layouts
- 4.3 Proposed Ground Floor
- 4.4 Public Realm
- 4.5 Proposed First Floor
- 4.6 Proposed Second Floor
- 4.7 Proposed Roof Level
- 4.8 Area Schedule
- 4.9 External Appearance

4.1 OVERVIEW

Following conclusion of the options studies, the preferred structural strategy (Option B) and preferred building layout (Option 03) were explored further with the Design Team to develop outline sketch proposals. The following architectural ambitions were developed:

Welcoming	An open and inviting place to be with a warm, and welcoming arrival at the core of the library
Connecting	A building that connects spaces and people, with excellent visibility and awareness of the activities within
Transforming	A building that transforms the public realm and creates a public anchor within King's Lynn
Inspiring	A building that is inspiring supporting growth and reinvigorating King's Lynn.
Leading the way	An exemplar building for the de-carbonisation of Norfolk's county-wide portfolio



Library Precedents - The Word - A Welcoming Building



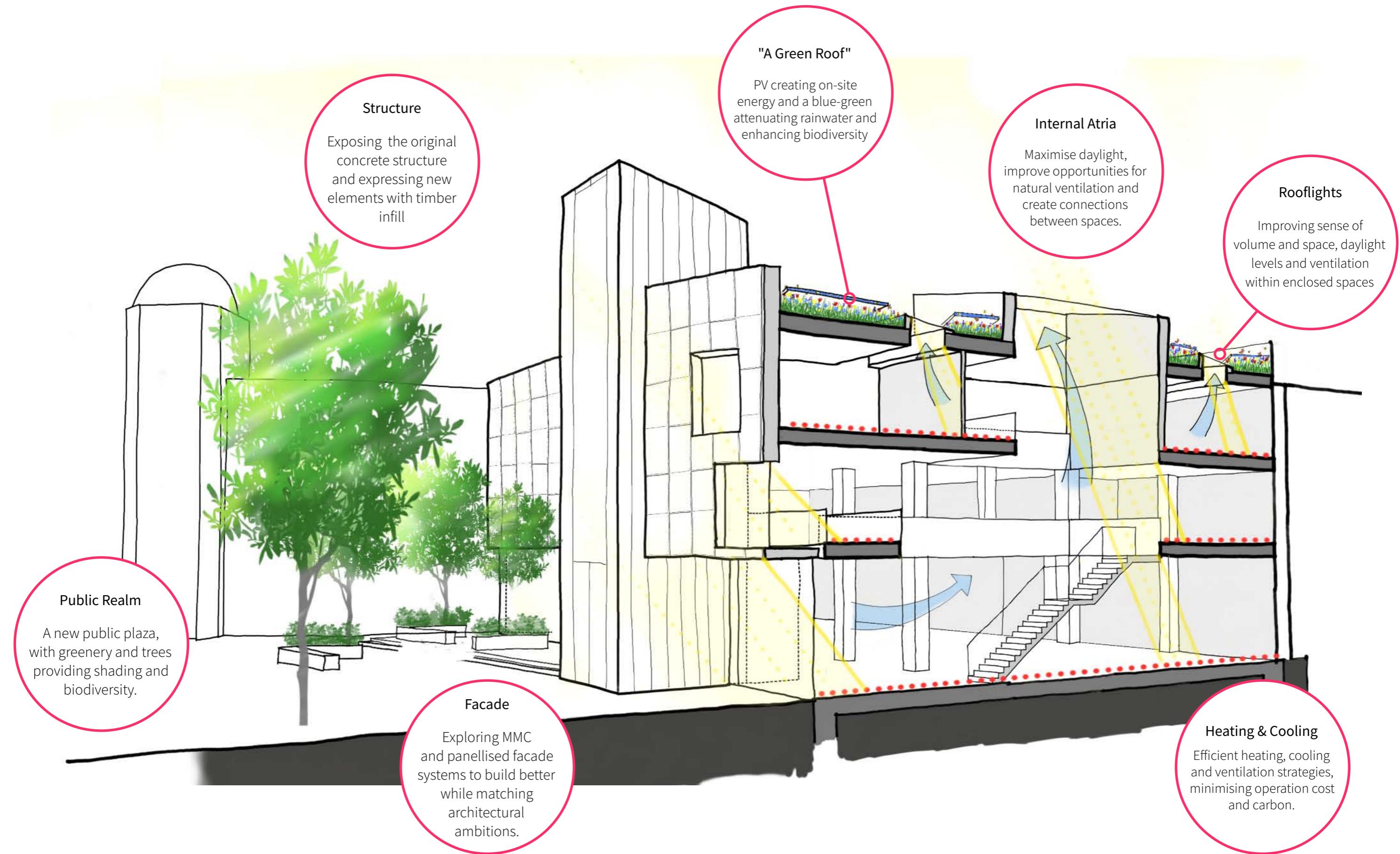
The key environmental, structural, and building strategies were developed by the Project Team during RIBA stage 1, as shown on the next page. Further design development and exploration of these early design strategies should be explored in Stage 2. The resolution of the proposals should work towards the projects ambition to minimise environmental impact and operational costs.



Library Precedents - The Hive



4.1 OVERVIEW



4.2 PROPOSED LAYOUTS

Through consultation with Stakeholders as outlined earlier in this report, stacking and adjacencies shown here have been developed. The stacking highlights key principles and adjacencies, but should be developed further during RIBA 2 with stakeholder engagement. The following principles have been agreed:

- Library Arrival - a library located on the ground floor, creating a welcoming and engaging destination
- Stacking - a library over two floors, with community and adult learning spaces on the top floor
- Progression - library and community spaces becoming more purposeful and focused as you travel up the building
- Community connections - creating an open and connected ground floor, with children's and young person libraries close to the entrance,
- Place making - creating a new public plaza with opportunity for activity rooms to connect directly with the public space.



Drawn Gross Internal Area (GIA)	
Ground Floor	745sqm
First Floor	680sqm
Second floor	710sqm
TOTAL AREA	2,135sqm

4.3 PROPOSED GROUND FLOOR

01 Welcome & Arrival

A warm, welcoming double height arrival and exhibition space - the shop front of the Community Hub.

02 Children's Library

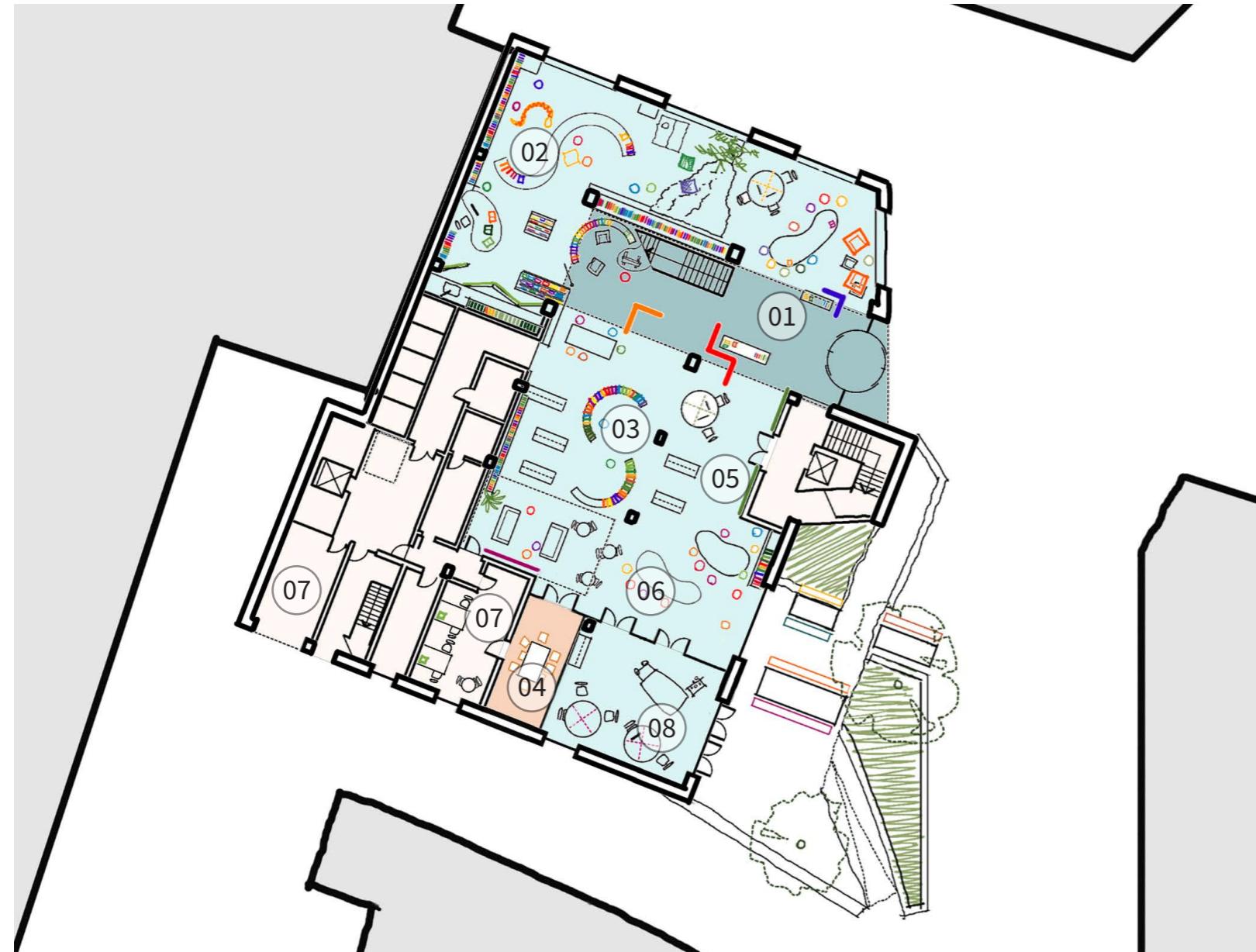
An active and engaging, secure children's library located close to the entrance and arrival space.

03 Young Persons Library

An active and engaging, young persons library located close to the entrance and arrival space.

04 Community Meeting Room

Flexible community meeting space connected to ground floor activity spaces



HUDSONArchitects

05 Open Library

Open library space with flexible, shared space for open collections, readers and activity spaces.

06 Cafe pop-up

A welcoming, convenient pop up cafe offer with seating throughout the library

07 Staff Workroom & Deliveries

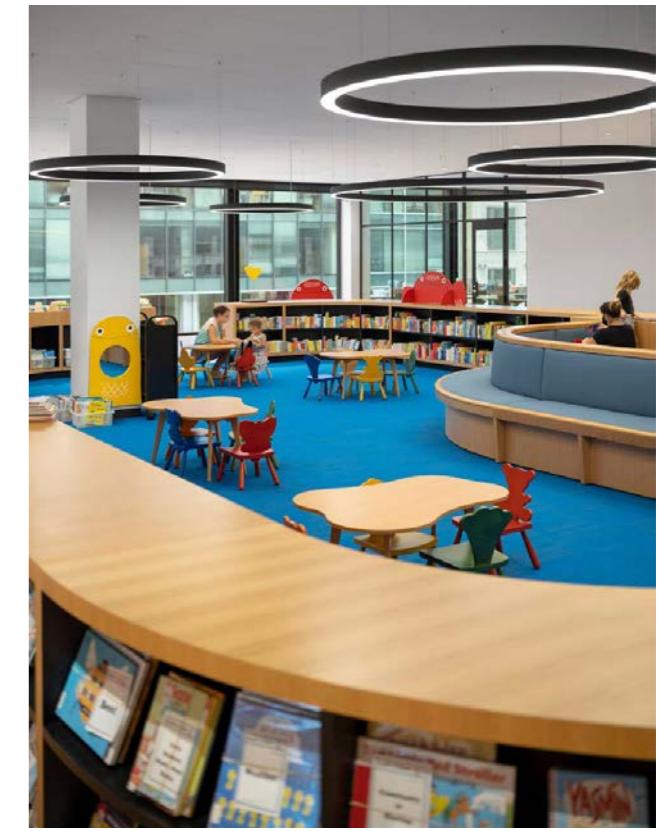
A staff workroom to process and sort collections, co-located with goods lift and delivery bay.

08 Activity Room

Enclosed activity room with connection to the street.



Welcome and Arrival Space
The Word



Children's Library

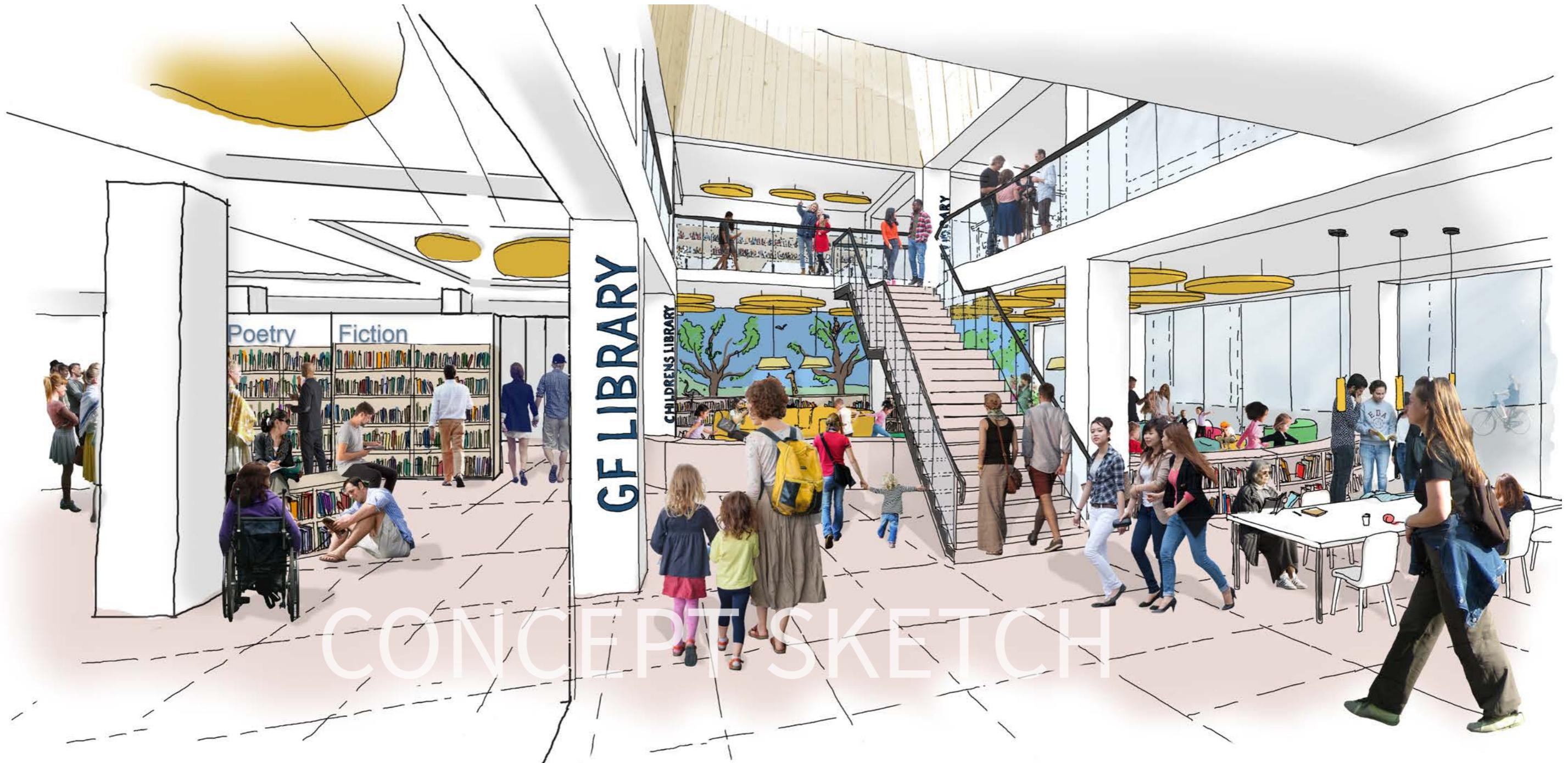


Central Atrium and connecting stairs
The Hive, Worcester



Coffee stand within ground floor

4.3 PROPOSED GROUND FLOOR



Sketch view of arrival space for inclusion in Business Case

4.4 PUBLIC REALM

Works to the public realm would sit out with the Main Contractors works and will be developed and procured separately. The design principles are captured here for future development and connections to the new MUCH.

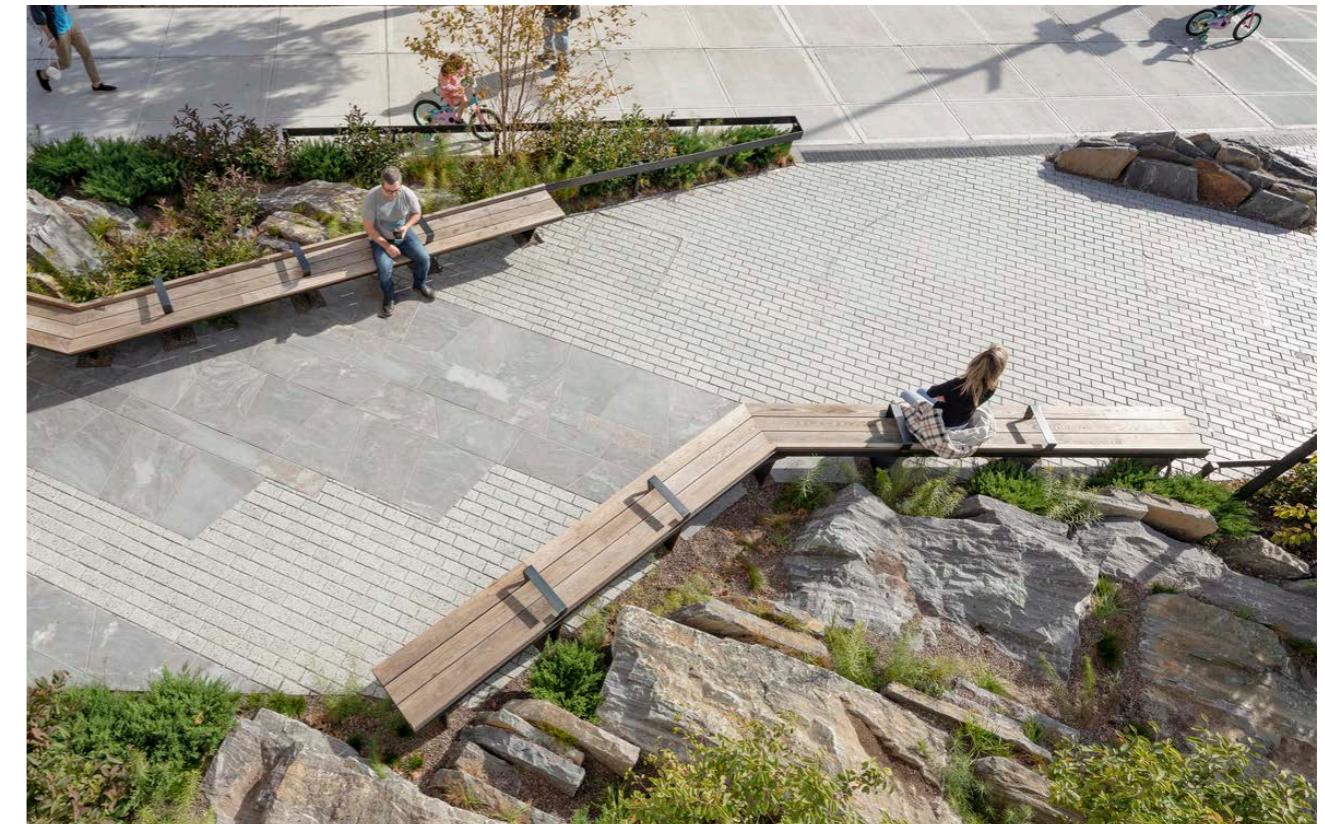
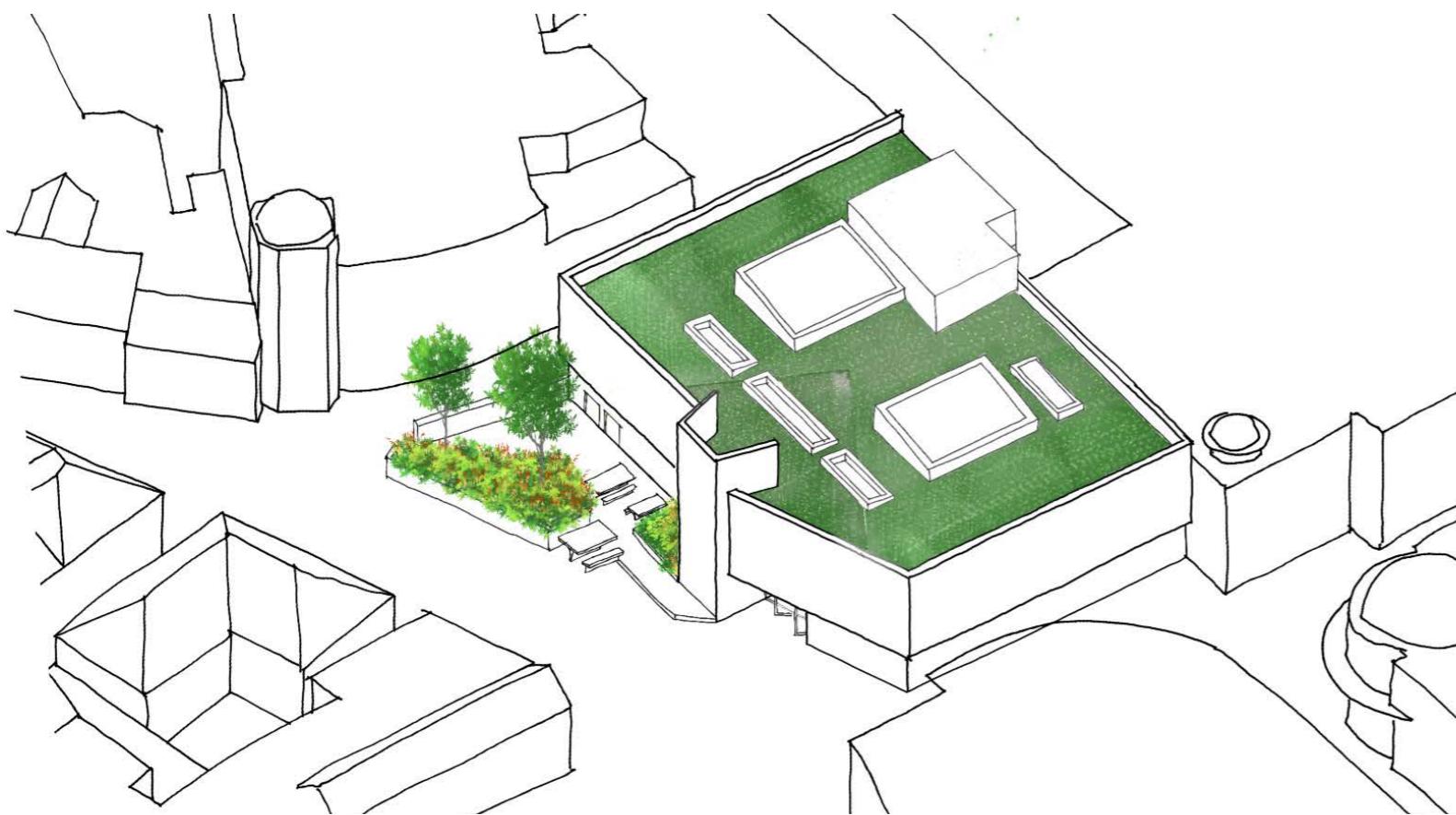


01 Public Plaza

New external plaza and public space. To be developed as part of wider townscape plan.

02 Access

Connection and opportunity to open enclosed activity spaces onto public plaza



Welcome and Arrival Space
The Word



Altringham Town

4.5 PROPOSED FIRST FLOOR

01 Open Library

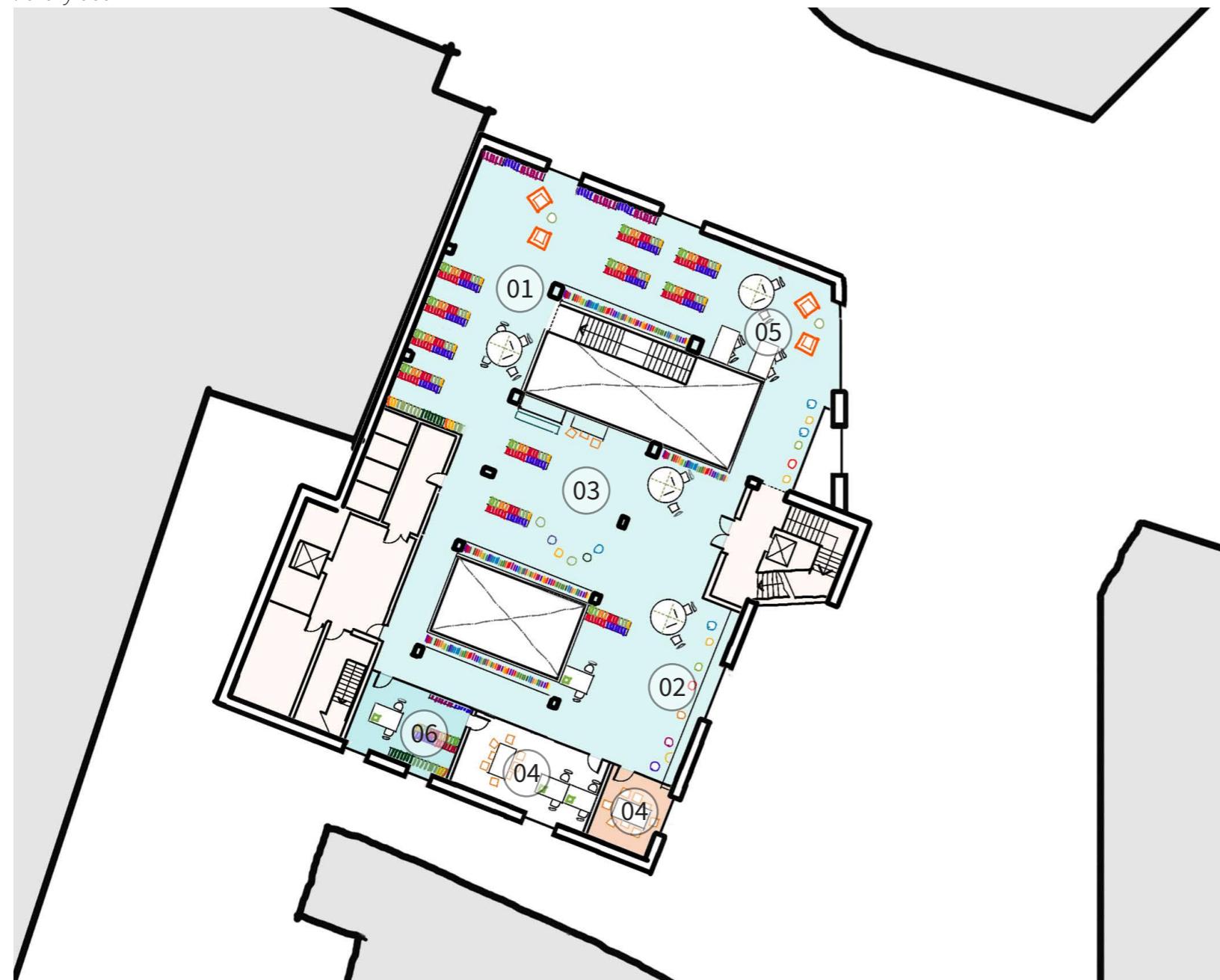
Open library space with flexible, shared space for open collections.

02 Readers Spaces

Readers spaces to browse, work or study, with comfortable reading spaces, study carrels, shared desks and open access computers.

03 Activity Spaces

Activity zones throughout the open library, allowing flexible, adaptable use of space for classes and events to support library use



04 Staff Spaces

A flexible, private space for small meetings or quiet working. Staff room with kitchenette, soft seating and tables for breaks and quiet working. Places to securely store belongings.

05 Business IP Hub

A Business IP hub providing dedicated space for business advice and book access, with space for 1 to 1 meetings, advice desk, collections, and information and display.

06 Reference Rare

Safe storage of significant rare reference material



4.6 PROPOSED SECOND FLOOR

01 Community Learning Rooms

Spaces to support range of activities from art classes, yoga classes, cooking to bike workshops.

02 Breakout Space

Breakout space with tea making facilities for community users. Flexible and adaptable space.

03 Community Workspace Hub

Flexible workspace to support local community, business innovation and self-directed study. Shared desks and informal meeting space to support local community.



04 Community Meeting Rooms

Bookable meeting rooms for community use

05 Training Kitchen

A training kitchen providing opportunity for social enterprise and adult learning.

06 Staff Space

A training kitchen providing opportunity for social enterprise and adult learning.



Community hub



Flexible Community Learning Rooms



Rooflights and breakout space
The Hive, Worcester



Meeting and breakout spaces

4.7 PROPOSED ROOF PLAN

01 Enclosed Plant Area

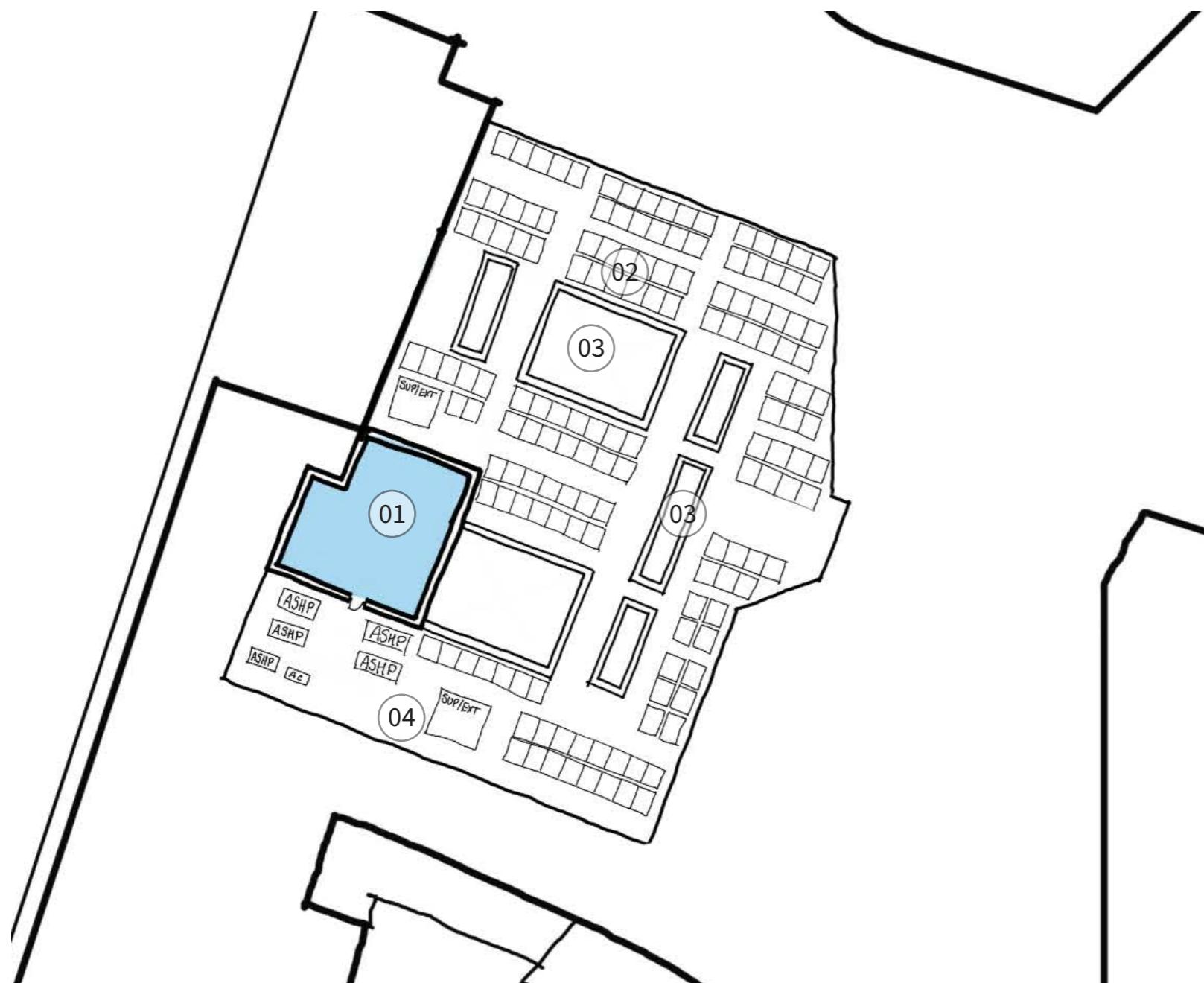
Enclosed plant room with roof access

02 PVS

The design will maximise the use of photovoltaic panels on the roof. This is essential to achieve the client's long term objective of a net zero estate

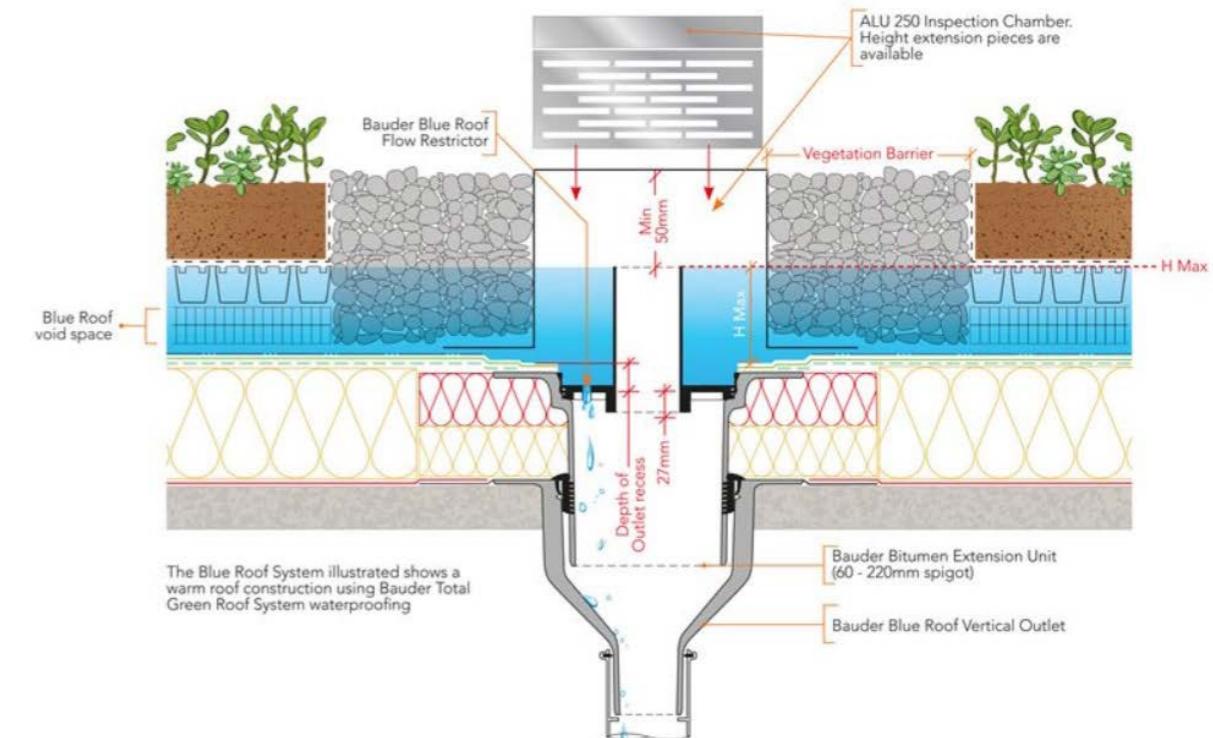
03 Rooflights

Rooflights providing daylight to the deep plan and providing opportunities for natural ventilation



04 Blue Green Roof

Aspiration to include a blue-green roof which would both attenuate rainwater and enhance biodiversity



4.8 PROPOSED AREA SCHEDULE

	Space Type	Location	Quantity	Area	Briefed Area Requirements	Notes	
Arrival & Welcome							
Welcome area	- Arrival and main entrance to building with good visibility and connections to the open library and adult learning areas - Opportunity to use arrival space as an exhibition and display space - no requirement for security desk / reception desk	Arrival + Exhibition Space	Ground Floor	1	90	100	
TOTAL Arrival				90	100		
Library - Open Floor							
Library Collections	- general collection spaces	Adult Fiction Adult non-fiction Large print fiction Large print non-fiction Local history collection Spoken word DVDs Library open space Self issue machines	First Floor First Floor First Floor First Floor First Floor Ground Floor First Floor First Floor	1 1 1 1 1 1 1 1	80 55 15 5 40 15 40 30	80 55 15 5 40 15 40 36	Area allows for 172 linear meters of storage. Area allows for 108 linear meters of storage. Area allows for 20 linear meters of storage. Area allows for 2 linear meters of storage. Collection space requirement to be confirmed. Collection space requirement to be confirmed. Collection space requirement to be confirmed.
Young person's library collections	- sections to cover all ages up to adult	Junior Fiction Junior non-fiction Junior readers space	Ground Floor Ground Floor Ground Floor	1 1 1	40 15 45	36 13 45	Area allows for 57 linear meters of storage. Area allows for 20 linear meters of storage. Area allows for 18no users
Children's library collections	- space for children's library and reading space - includes space for 1no self issue machine	Children's Library	Ground Floor	1	140	140	
Reference Rare	- storage for rare reference materials	Reference Rare	First Floor	1	40	85	Area requirement to be reviewed during RIBA 2
Reader spaces	- informal reading spaces - to be co-located with collections space	Open readers space	First Floor	36	90	90	Allowance based on 3no readers spaces per 1000 population, 2.5sqm each. 50% allocation of space required to readers space / 50% allocated to activity spaces.
Activity Zones	- flexible spaces within open library for range of activities	Ground floor open Ground floor enclosed First floor open	Ground Floor Ground Floor First Floor	2 1 1	80 50 50	80 50 50	2no areas to ground floor (40sqm each)
Business IP Centre	- Space for business advice and book access - Allow for 1 to 1 meeting room / pod / display and notice	Book access Meeting room	First Floor First Floor	1 1	40 10	40 10	
TOTAL Library - Open Floor				895	915		625
Staff Space							
Staff Workroom	- Workroom to process and sort books	Workroom	Ground Floor	1	25	30	Allow for 4no workspaces, storage and sorting space
Staff Office / Meeting space	- flexible staff space for small meetings / quiet working	Office / Meeting space	First Floor	1	15	12	
Staff touchdown space	- flexible touchdown work space for library staff	Office / Meeting space	Second Floor	1	15	20	
Staff room	- breakout space for staff with kitchenette / tea point - space for storage of belongings	Staff Room	First Floor	1	30	30	
Total Other				85	92		
Adult Learning and Community Spaces							
Adult Learning Rooms	- suite of rooms / flexible spaces to support a range of activities and class sizes - adaptable spaces to support future change in use	Large learning space Medium Learning space Small learning space	Second Floor Second Floor Second Floor	1 1 1	90 70 40	90 70 40	
1 to 1 room	- 1 to 1 room or pod for adult learning 1 to 1s	Quiet room	Second Floor	2no	30	30	15sqm each
Storage	- storage space to support adult learning	Storage	Second Floor	2	20	20	10sqm each
Breakout space	- shared breakout space with tea point	Breakout Space	Second Floor	1	70	30	Measured area includes open circulation space
Tea Point	- tea point co-located with Adult Learning	Tea point	Second Floor	1	10	10	
Community workspace Hub	- digital workspace to support local community, business innovation and self-directed study	Community workspace Community meeting rooms	Second Floor Ground Floor	1 1	90 20	70 20	Measured area includes open circulation space
Adult Learning and Community Spaces				480	420		
Café							
Cafe	- café	Café pop-up		1	10	10	Small café truck - to be developed in RIBA 2
Training Kitchen	- training kitchen for 10 no adult learners, including cold and dry storage space	Training Kitchen Storage space		1 2	65 15	80 20	
TOTAL - Café				90	110		
TOTAL BRIEFED AREA				1640.0	1637.0		
Other/ Ancillary							
Changing Places WC	Changing places facility			1	12	12	
Accessible WCs	Allow for 1no per floor (1.7 x 2.2m)			3	10	15	
WCs	Self contained WCs			15	43	53	Self-contained WCs allowed for - to be developed in RIBA 2
Cleaners stores	Cleaners store to each floor			3	10	12	
Showers and lockers	2no self-contained showers with changing space with separate area for lockers			2	20	15	Allowance for 5no staff
Delivery Bay				1	35	35	
Plant Rooms				4	105	180	Enclosed plant area. Open plant on roof not measured.
Total Other				235	321		
TOTAL				1875	1958		
Circulation and partitions	Standard allowance would be 15%. Reduced to 10% due to open plan nature of library			260	294	Allowance based on 15% of floor area	

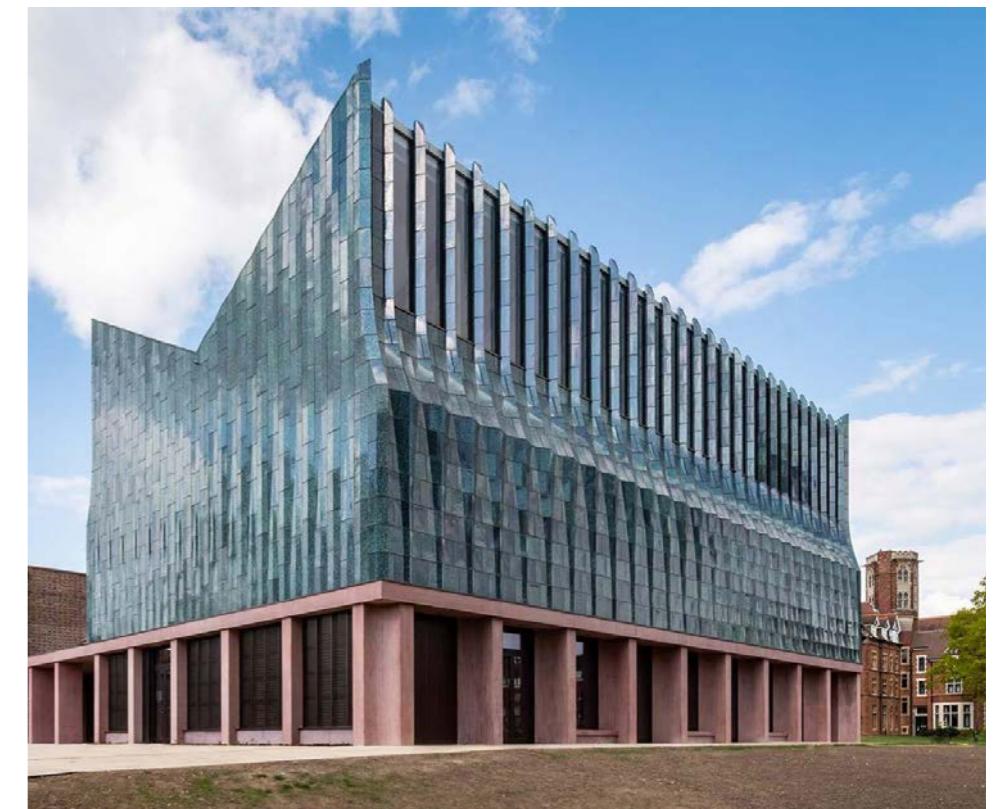
4.9 EXTERNAL APPEARANCE

The facade design was developed during RIBA Stage 1 to produce imagery to support the projects Business Case. Design options exploring massing, scale, form, rhythm, material, texture and colour were explored. The preferred option exploring the use of ceramic and terracotta tiles was included within the Business Case documentation and presented to Stakeholders.

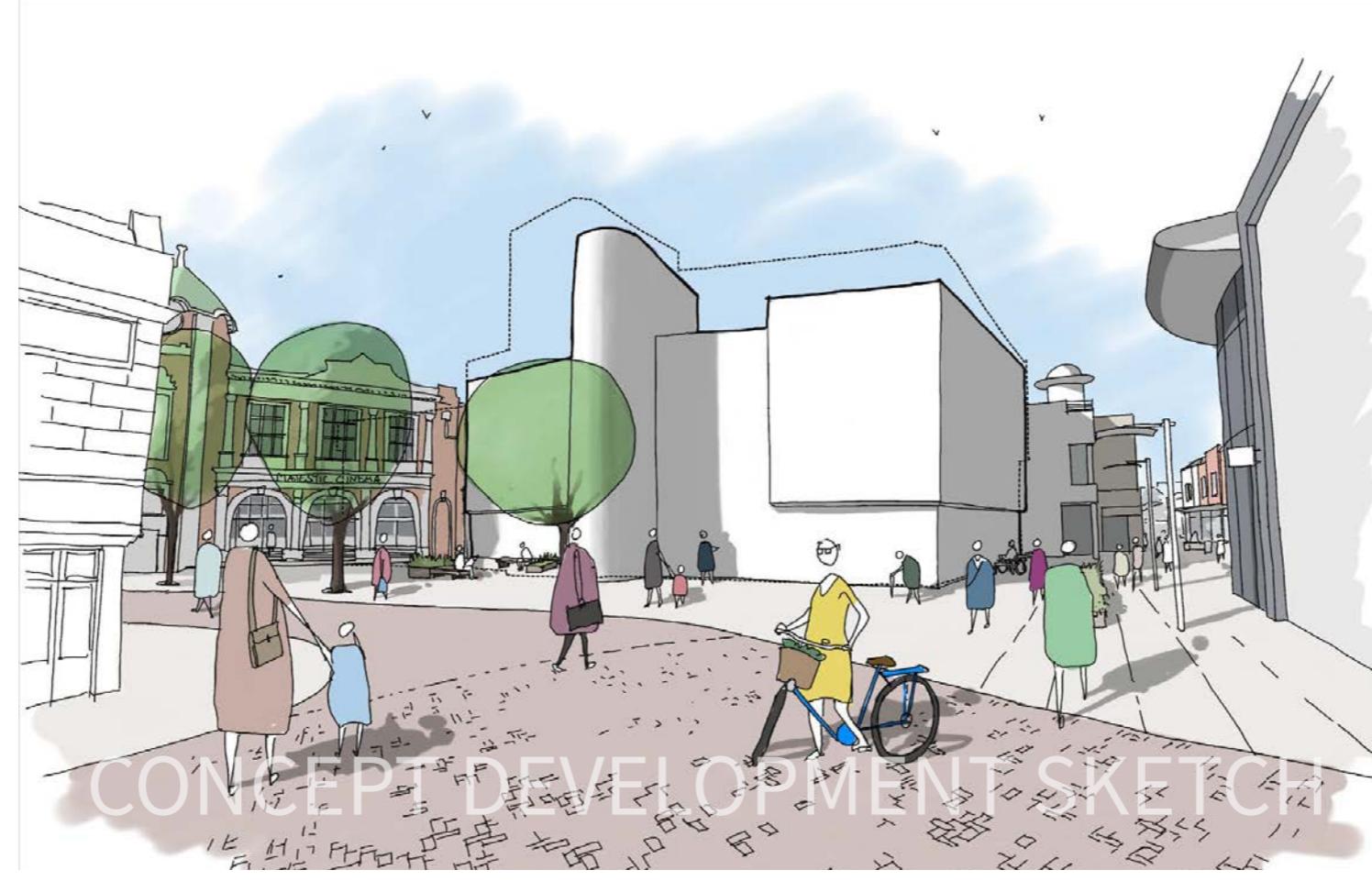
The preferred option creates a unified composition of two interwoven volumes, the heavy base extending towards the tower, supporting a lightweight, textured facade to the upper floors.

During RIBA 2 and 3, the facade design and massing should be developed to be environmentally responsive with the following considerations:

- Balancing daylight levels, minimising glare and reducing overheating
- Creating opportunities for natural ventilation through opening windows or perforated open-able panels.
- Considering noise attenuation and impact on building users
- considering operational impact of manual and actuated windows
- Exploring material choices that align with the projects ambitions to deliver an aspirational, civic building
- AND materials that align with the ambition to deliver a sustainable, low carbon building which provides an exemplar for the de-carbonisation of the county-wide portfolio
- Exploring MMC and cladding systems compatible with the proposed panelised facade system to build better while matching architectural ambitions



4.9 EXTERNAL APPEARANCE



4.9 EXTERNAL APPEARANCE



Sketch view of MUCH for inclusion in Business Case - Material and massing to be developed and tested further in RIBA 2

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