Mathematical Institute

The Mathematical Institute has been at the heart of the University's work since its foundation. It was one of two original honour schools created at the beginning of the 19th Century and today, it is one of the largest departments in the University, with around 1250 graduate and undergraduate students, and some 90 permanent faculty members, including nine fellows of the Royal Society.

The Mathematical Institute is currently on three sites, all of which are already significantly overcrowded. The dispersed community significantly inhibits collaboration between the research groups and individuals located in different buildings and fails to provide a clear focal point for undergraduate teaching. The inadequate facilities will have a long term impact on the department's ability to attract good students and staff in the future, ultimately impacting on the income of the department and its research output.

The space issues are now critical and demand a new building to meet an existing and identifiable need.

Objectives

- A 'wow' building creating a new identity for the department.

- A building to unify the Mathematics community from undergraduate through to professorial staff.

- A state of the art mathematical facility fit for the twenty first century and which responds positively to its historic setting, particularly the Radcliffe Infirmary and Observatory buildings.

- A building that works well providing efficient functional office accommodation.

- An environment that is a joy to work in with good quality daylight and views.

- A building that is aesthetically pleasing and contributes positively to its surrounding environment and neighbours.

- A flexible and adaptable building.

- A design that promotes circulation and interaction whilst respecting the need for private office spaces.

Above: The consolidation of the Mathematical Institute on the ROQ
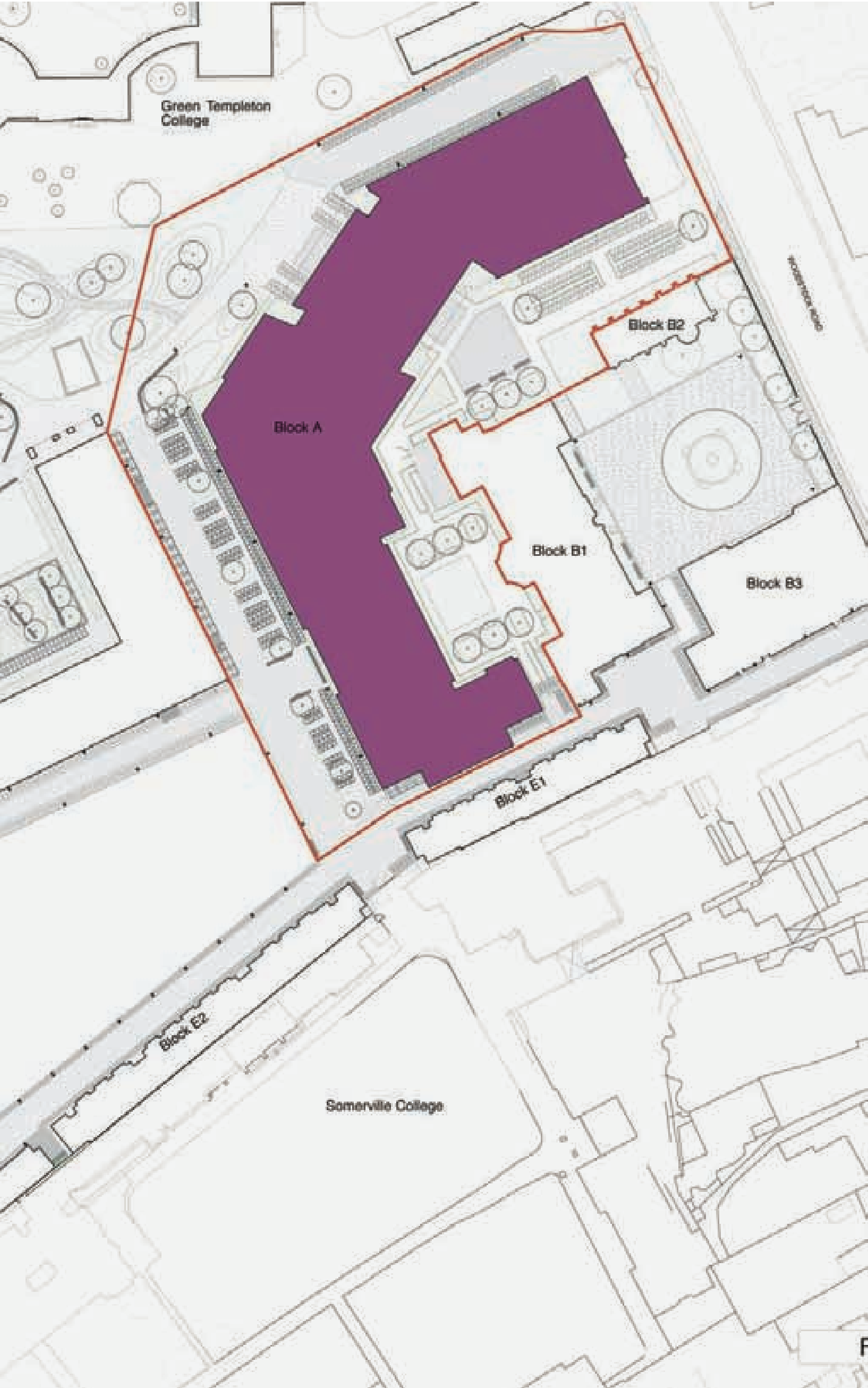
Above: Mathematics Site Plan
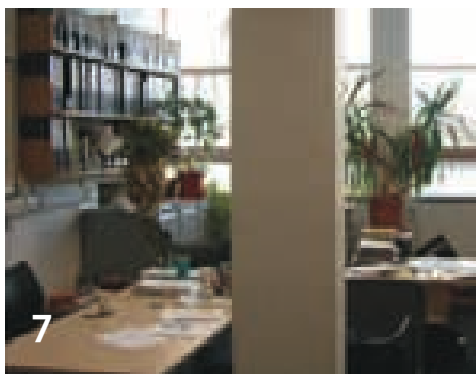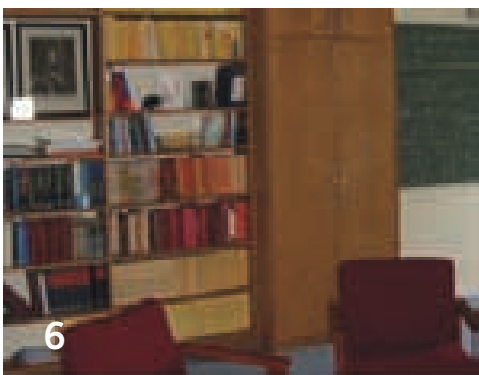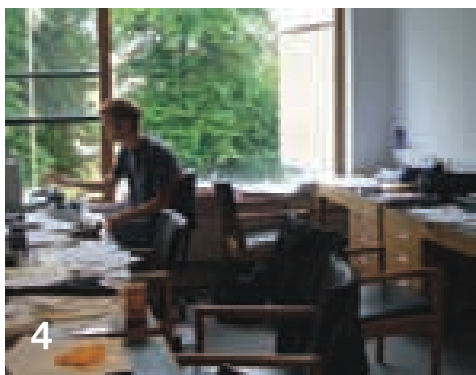
1. Mathematical Institute: 24 - 29 St Giles
2. Mathematical Institute: Gibson Building
3. Mathematical Institute
4. Mathematical Institute - Office
5-9. Mathematical Accommodation
     - Existing Accommodation
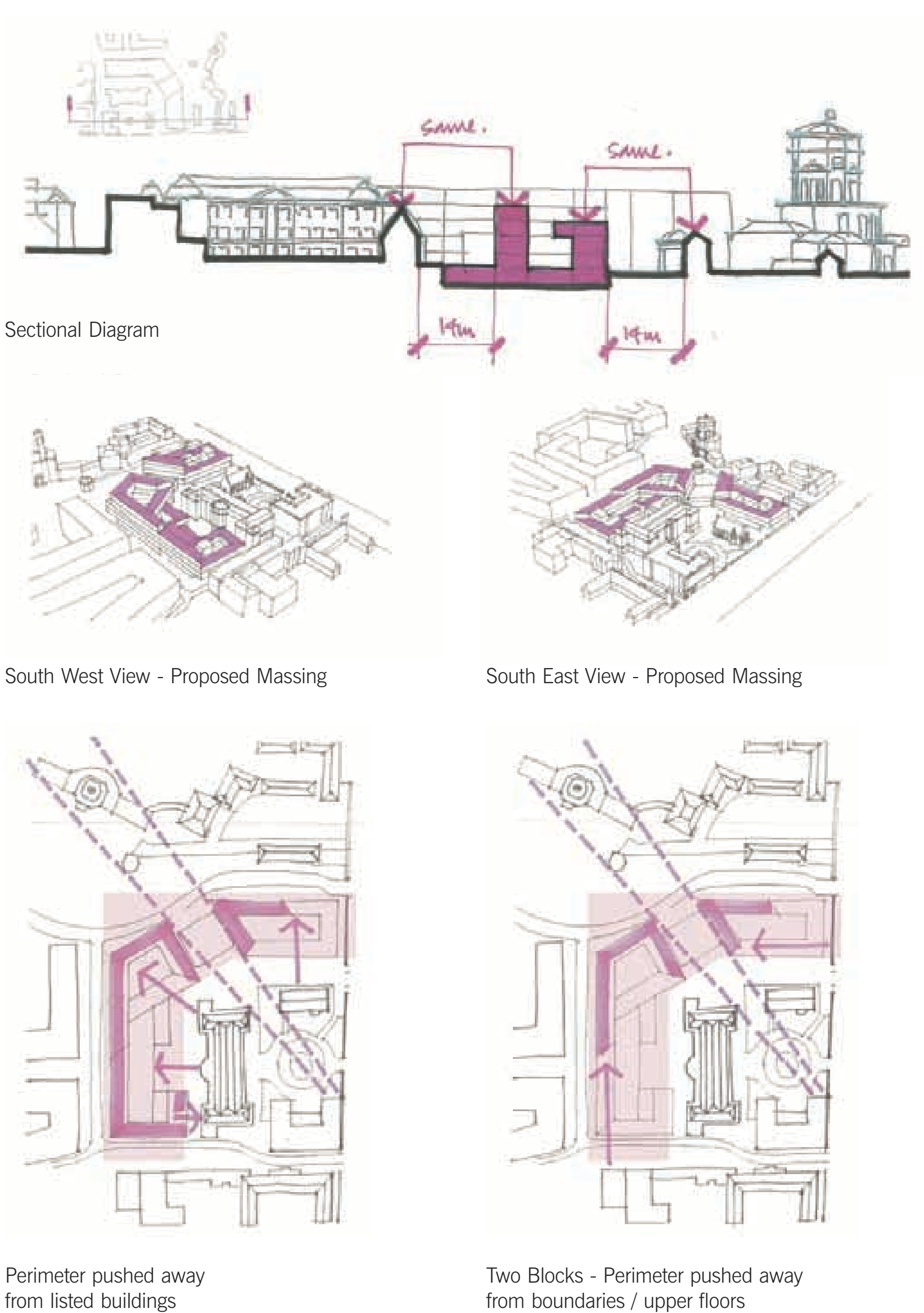10. Mathematical Institute: 24 - 29 St Giles

The Brief

The new building will be the main workplace for over 500 academics and support staff, as well as the focus of academic life of approximately 1000 undergraduates and a diverse community of college research fellows and lecturers.

The planned building will have a gross internal floor area of approximately 12,000m^2 providing more than 300 offices in a range of sizes, identifiable space for graduate taught course students and 4th year undergraduate students working on projects, an extensive suite of teaching and seminar spaces as well as a range of meeting rooms, breakout spaces and a large departmental common room.

Design Principles

The Mathematics building consists of two building blocks framing the view between the Main Infirmary building and the Radcliffe Observatory building.

- The setting-out of the two building blocks provides a generous buffer space around them, generating a respectful and considerate relationship with the setting of the surrounding listed buildings;

- The main access area to the building will be located in the space between the two building blocks at ground level, accessible from the entrance routes reachable from Gate 5 (adjacent to St. Luke's Chapel) and Gate 7 (adjacent to Green Templeton College);

- More than 300 academic offices and their associated support areas are located in the levels above ground. Below ground, teaching areas and a carpark are proposed;

- Offices are oriented towards the exterior of the building and circulation areas toward the internal courtyards;

- The inner courtyards provide natural light to lower floors and animate all circulation within the building, opening vistas both internally as well as towards the neighbouring historic buildings;

- The perimeter of the building varies in its alignment, generating a sequence of courtyards recessed and framed around the building- this further enhances the relationship of the building with the setting of the neighbouring listed buildings;

- The space in front of the Radcliffe Observatory is proposed as an open public space, planned and landscaped to encourage public use of the space immediately around the building.

Sectional Diagram

Sectional Diagram

South West View - Maximum envelope blocks

South East View - Maximum envelope blocks

South West View - Proposed Massing

South East View - Proposed Massing

Site outline and view cone to be protected

Two Blocks - Single loaded configuration & access link

Perimeter pushed away from listed buildings

Two Blocks - Perimeter pushed away from boundaries / upper floors

In the relationship with its immediate historic and urban context, the proposed building reveals one of its key design features: the Mathematical Institute building only presents an open view towards the Radcliffe Observatory building. Every other view can only be perceived from short distance, revealing its considerate scale and fine expression to the public realm and building context around it.

The proposed scheme is contextual by nature given the scale and proportions of its elevations and mostly by only being able to be perceived from close range, in narrow viewing angles.

Above: Concept sketch view from top of Radcliffe Observatory

Above: Aerial view from above Somerville College

Above: Aerial view above the Radcliffe Infirmary

Proposals

Routes and Spaces

The perimeter of the proposed building changes its alignment either generating recesses or protrusions. These provide either pockets of public space or lanes, the latter gently filtering people into more intimate spaces, enriching the pedestrian experience. The highest edges of the building are oriented towards these spaces, with the opening between the two blocks framing the view towards the Radcliffe Observatory from the Radcliffe Infirmary courtyard. The façades have also been carefully sculpted in order to respond respectfully to the setting of this Listed landmark.

Observatory Garden

The Masterplan has established a breathing space for the Observatory building to which the Mathematical Institute responds, enabling open vistas to the Observatory Tower and the development of a new Radcliffe Observatory Garden. This is the first of two break-out areas for the building.

Mathematics Garden

Located between the Mathematics building and the Triton Court, Mathematics Garden is located in a prominent position relative to the main viewing corridor between the latter and the Radcliffe Observatory. Conceived as having its own identity, its presence will complement and enhance the views

from Triton Court, operating as one of the two break-out areas at either side of the Main Lobby. It will therefore become a lively meeting point at times, and its landscape design will respond to this condition accordingly.

Pocket Square

Located behind the Radcliffe Infirmary building, the Pocket Square is conceived as an intimate and quiet space accessible to the public. The massing of the proposed building at the back of the RI building encloses the access from the East/West Link to the south, reducing movement and noise, and decreasing its focality as an access point. Towards the North, the transition into the Mathematics Square occurs through a similar arrangement, thus consolidating the Pocket square as a self-contained and intimate public space.
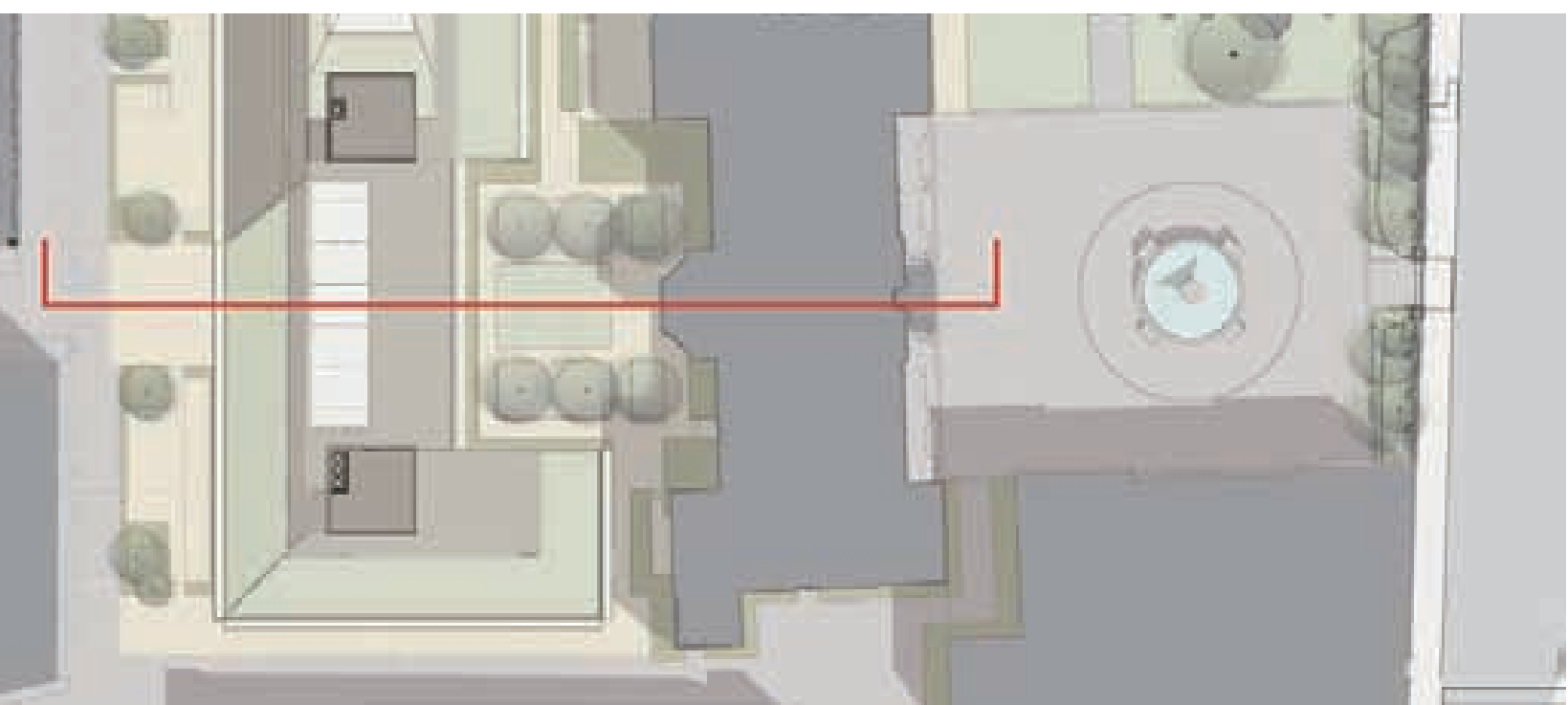

Above: South view - from top of Radcliffe Observatory

Above: West view from Woodstock Road - Gate 5

Above: Cross section of the Pocket Square

Above: Section line of the Pocket Square

Above: North view from Somerville College

Above: View from Triton Court towards the Radcliffe Observatory

Proposals

The Main Lobby and Common Room

Main access to the building occurs centrally through the access lobby. Inner courtyards will allow natural light to penetrate into the teaching areas below ground. The Main Common Room is a fundamental component promoting interaction and social activity, forming the centre of communal life for Oxford's Mathematics community. It is proposed to be located in the Main Lobby area, a space covered by a continuous inclined glazed roof which also covers the rest of the Main Lobby area. It is oriented towards the north side of the building, opening direct vistas towards the Radcliffe Observatory building and the landscaped areas in front of it.

Above: Internal view of the Main Lobby Area

Observatory Garden   Main Entrance   Mathematics Garden

Above: Cross section of the Mathematics building

Elevations

The proposed building's expression towards Woodstock Road has been carefully sculpted to:

• Reinforce the reduction (stepping-down) of building mass that takes place along Woodstock Road in a South - North direction;

• Present a balanced elevation that frames the view of St. Luke's chapel and does not compete with its pitched roof and elevational proportions;

• Not dominate the adjoining historic buildings, while defining the beginning of the ROQ and the entrance to the City.

The design of the main external cladding is conceived as a square grid shading device in stone or precast stone, expressive of the internal arrangement.

The other main objective of the design development of the façade and elevation treatment was to minimise solar heat gains to the building. The proposed external perimeter design including a sliding timber panel was therefore added to combat the effects of solar heat gain, internal comfort, and glare.

Above: South view from Woodstock Road

Above: Elevational detail and cross section

Above: North view from Woodstock Road