

# Transformation of new Engineering Library, University of Auckland

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## **Abstract:**

*The Engineering Library, University of Auckland's latest state-of-art completely remodelled subject-specific library, is proving extremely popular with its users. This paper will look at the successful design of a library building to cope with new roles, new goals and new futures. It will look at planning and implementation, provide illustrations of innovative solutions and services, and outline the key drivers and outcomes. This paper will describe the transformation of a late 1960s library, crowded, stuffy and lacking in natural light, to a striking new learning environment with many enhanced services.*



## Introduction

A completely redesigned and much expanded Engineering Library was officially opened on 24 November 2006 as part of the celebrations marking The University of Auckland Faculty of Engineering centenary. The road to the new Library had been long and arduous, as is not unusual with building projects, and it had required much lobbying over many years before it was firmly placed on the University's building programming in April 2004. Many versions of the plans were prepared in consultation with interested parties and final approval was granted in November 2004. The project was completed in September 2006.



## Justification for expansion

In 2004, student numbers clearly exceeded the capacity of the current premises. The Engineering Library had been built in 1969 for 700 students and was on a single floor with a small mezzanine. A conscious Faculty decision in subsequent years to dramatically increase the student intake resulted in 2,662 students by 2004, with numbers projected to rise steadily to 3,000. This had indeed been achieved by 2006. The current number of library seats at the time was 211, a ratio of 1 seat for every 12.6 students. The recommended ratio is 1 seat for every 4 - 5 students. The *Rodski Library Customer Satisfaction Survey* in October 2003 identified the need for increased individual and group study space and computer availability.

The Library shelves were already 97% full in 2004, reaching well over 100% by moving date. There was a growth rate of 3000 volumes per year despite the increase in electronic materials. The special collections, such as rare volumes, microtexts and audiovisual material needed appropriate accommodation and convenient access.

The Engineering Library had four subject librarians with no adjacent teaching facilities. Two of the subject librarians were housed in the staff workroom which was open to the front desk, making it unsatisfactory for giving research help or tutorials. There were no audiovisual facilities for viewing of library materials, no meeting room and no hands-on computer training facilities. There was no disabilities resource room.

Group study facilities were increasingly important to engineering teaching but the Library didn't have facilities to support this.

The existing security system to protect the collection was scheduled for replacement.

The Engineering Library suffered from deferred maintenance and needed air conditioning, toilet upgrades, perimeter lighting for efficiency, CCTV improved security for staff and equipment over all levels, and a PA system extended to all levels.

## **Planning and procedure**

The decision was made by the University that the new facility would be redeveloped on its present site in the School of Engineering and extend over two and a half floors. Ashton Mitchell Architects were appointed, with Gibson O'Connor as the building contractors. A project working group was formed which included representatives of the University Property Services Department, the Library, the Faculty, architects, building contractors and key subcontractors. Much detailed work was done on the plans which went through many versions, with final approval gained in November 2004.

## **Librarians' Design Concept**

The following student requirements were essential:

- Group study rooms
- Disabilities resource room
- Audiovisual room
- Computer training room
- Teaching/meeting/seminar room
- Photocopy/print zones

The architectural requirements were:

A well-ventilated Library with temperature control  
Natural light and large windows to provide a feeling of openness  
A full lift accessing each floor for both disabled person use and to transport heavy objects including book trolleys.  
Direct access trolley access from a loading bay  
Subject Librarian offices and teaching facilities  
Clear external and internal signage  
One entrance only for security reasons  
A readily accessible external slot for book returns after hours.

Provision was essential for the general collection which was around 113,000 print volumes in 2004 in addition to extensive electronic holdings, special collections, some with climate control, the short loan collection, hold book shelves, and books awaiting re-shelving.

Technical services requirements included security services, electrical services, telecommunications and audiovisual services, and plumbing services.

Library services needed to be maintained at all time except between Christmas and New Year. Inter-semester Break in July is generally the quietest time of the year and Summer School occurs place in January & February.

## **Architects' Design Statement. (S. Marlo, personal communication, 2004)**

### **1. Brief Outline**

The design concept revolved around four main principles:

- \* To reveal the student activity of the Engineering complex to the Symonds Street frontage creating an interactive façade, and stimulating interest and vitality between the users of the building and the public realm.
- \* To ensure new materials and built forms lightly touched the existing building, complementing the Brutalist architectural design of the original School, built in the 1960s.
- \* To ensure maximum use of controlled natural light.
- \* To ensure the existing and new building resources were operating as efficiently and economically as possible.

### **2. Architectural Approach**

The scheme opens up the entire Symonds Street façade at pedestrian level by replacing the blank, block work walls with full height glazing panels. The use of full height glazing and glazed solar control panels allows controlled natural daylight to penetrate deep into the building which improves the feel and quality of the interior space. This approach also provides Symonds Street with a new and revitalized

façade as students can be seen to move and circulate through the building. This renews and reinforces the link to the student activity which happens along Symonds Street and in the Kate Edgar Information Commons opposite. This visual interaction is crucial to the building becoming part of the Symonds Street streetscape. The new glazing and activity behind it continues the illusion that the building is still part of the street. The library wing is also open late at night and it follows that the Symonds Street façade is visually active and interesting during this time.

By setting the new glazed infill panels back from the concrete frames the scheme allows the rhythmic clarity of the existing exposed, precast concrete Brutalist structure to be retained. The scheme introduces a new heart to the centre of the building in the form of a new central main staircase and lift. This is reflected in the façade by inserting a new glazed cube into the façade, behind which is located the new central stair and lift. The glazed cube subtly reveals the existing precast frame continuing behind it, respecting the rhythm and integrity of the existing building. The new glazed cube inserted into the building facade gives the building a new presence on Symonds Street enhancing its profile within the urban streetscape without overpowering the original building.

The street presence of the existing building is further reinforced by the shape and form of the new plant room level located on the roof. The new plant room is extended along the roof as a screened walled enclosure for roof ducts. This ensures that it reads as an integrated and balanced element on the Symonds Street façade.

The scheme re-addresses the Symonds Street/Grafton Road intersection in two ways. Firstly, the façade upgrade is continued with new full height glazing panels and glazed solar control screens wrapping around the building on the upper level. Users can enjoy the panoramic harbour views to north and the vistas up Symonds Street, while also having the benefit of controlled daylight penetrating the building.

Secondly, a new strong focal element is created centrally on the north façade to screen the jumble of existing concrete shear wall panels that occur on various levels. This gives the building a stronger presence on the intersection of Symonds Street and Grafton Road and reinforces the urban context. Feature lighting further reinforces the dramatic simplicity of the concept.

The material palette consists of durable materials sympathetic to the existing building and those of its immediate neighbours. Glass, steel, and metal claddings such as zinc and aluminium louvre panels, have the same colour palette as the existing building.

### **3. Interior Approach**

The interior environment is designed to create a vibrant space. The entry lobby and foyer contrast with the external linear concept by providing an organic flow which is repeated down the spine of the library space. The organic elements are juxtaposed along the colonnade to provide a softer feel and more inviting environment as the user traverses the length of the building. The use of a variety of materials and colour create a lively environment in a quiet area.

There is a strong central artwork wall running along the audio visual room with the work still to be commissioned. This separates the lift/stair well and provides a buffer between the work environment of the library administrative area and the more sedate pace expected in the library proper.

The emphasis has been on colour, texture, and form to create a modern library which stimulates the users while providing the right environment to complete research and study.

The quality and material selection of the internal finishes responds to the function of the space to which it relates with the hard wearing surfaces generally to the high traffic areas, colourful components to the gathering areas and quiet subtle elements to the study/reading areas. The varying materials represent the busy and diverse nature expected of a modern library facility.

Lighting is used to further emphasise the spatial function by providing dramatic effect at circulation zones, impact lighting to the gathering and buffer zones and subtle light to the library proper. This coincides with the material selection and enhances the overall effect.

## **Process of redevelopment**

In July 2005, building noise and dust began in earnest as the first of three moves took place. The front of the Library was moved into what had been part of the Faculty's administration area. A large hole was cut in the floor in the centre of the Library, with a temporary wall subsequently built around it in order to start building the internal lift and stairs; one hundred and twenty large holes were drilled in the floor for air conditioning purposes and a trough was ground in the concrete ledge outside the windows of the offices and workroom. The roof was partially removed so that a plant room could be built on the roof and staff became experts at dealing with water leaks and foreign materials descending from above. Decisions were made on furniture, colours and directional signs.

The second move was in February 2006. The entire Library was relocated to the floor directly underneath the original site, the major part of which was now a completed part of the new Library. The main floor was then gutted and transformed.

Many subcontractors were involved with the move and there were frequent meetings about keys, swipe cards, security, IT, builders, collection movers, public address system, shelving, and lighting.

The third and final move took place in September 2006 when services and monographs returned upstairs, leaving serials on the floor below and a computer training room, meeting room and storage on the ground floor.

Communication with users was a vital part of the transition period. This was achieved by e-mail bulletins, notices on the Library's webpage, and noticeboards inside and outside the Library. The Library was closed for a minimum time – only four days for the second move and five days for the final move. All moves took part during university vacation periods.

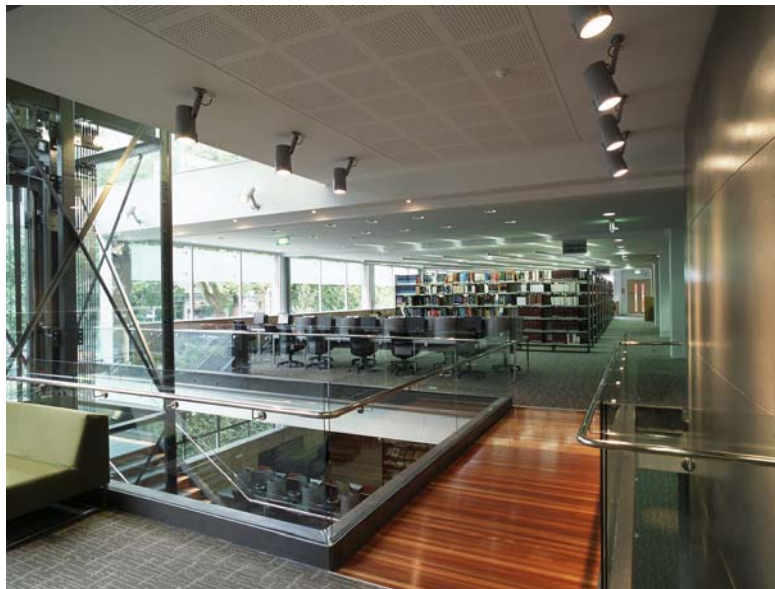


## Outcome and achievements



User reaction to the redesigned and transformed building has been overwhelmingly positive and all are delighted with the much improved facilities.

On entering the Library there is a sense of space and natural light, with wide vistas of the surrounding campus. The palette of colours is green, red, aubergine and grey. Liberal use of glass and metallic surfaces emphasize the engineering theme. This emphasis is continued with the lift which is encased in glass with visible machinery.



The Library is nearly three times its previous size at 2,809 sq metres, spreads over two and a half floors and provides 337 seats.

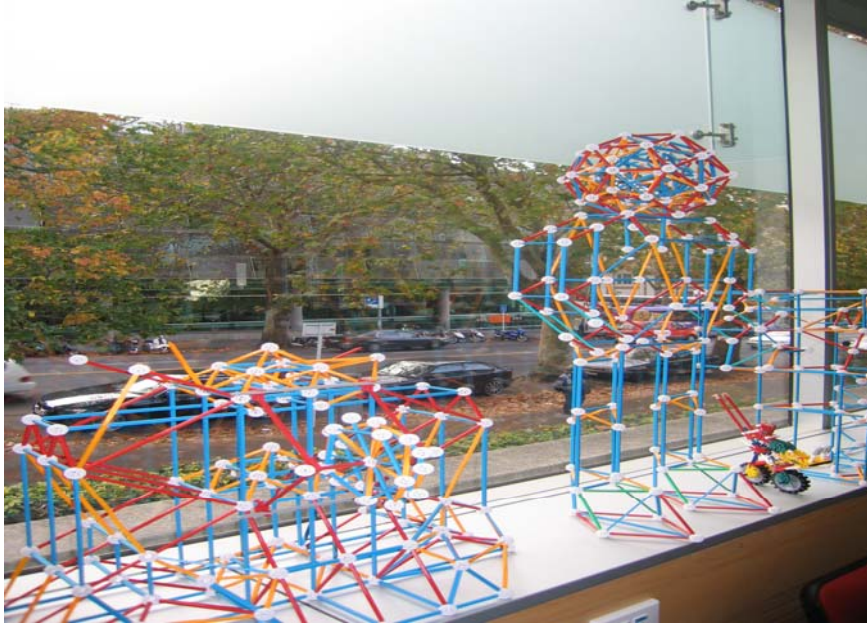
An attractive architectural feature, the new book display, attracts attention opposite the front desk. It is designed as an enclosed area to give the reader the sense that they can browse peacefully. The following quote is from a member of the academic staff "I find the new display area very relaxing and quite enjoy taking a breather there."



Close by is a special area allocated to engineering displays portraying the Faculty's research activities. These give a different flavour to the Library and illustrate the breadth of research in the School. The very successful displays have included a Formula One racing car built by the students and a huge meccano crane built by one of the academic staff.

Unique in the southern hemisphere is the Creativity Centre. The idea originally came from a conference session given by an engineering librarian from Olin College in Massachusetts. It is considered that the new core competencies in engineering are creativity, imagination and innovation and that students should be encouraged to develop these skills. Much of the left-brain, digitised analytical work associated with knowledge is increasingly being shipped off to lower-paid workers. The Creativity Centre fosters right brain skills and the students really appreciate a chance to take a break from their formal studies in the Library and be creative. Zome and K'nex rods have been supplied together with software such as 'Civilization' and 'City Life.' Following on from the real success of the Centre, a competition was organised as a collaborative project between the Engineering Library, the Faculty of Engineering and Fletcher Construction. This was intended to challenge teams of students to see what they could make using their engineering design skills and a set number of plastic Zome sticks and balls and collaborative brain power and students did themselves great credit.





A twenty-nine seat computer training room was made possible on the lowest level of the Library by lifting the roof and creating a raised platform above. This platform provides an attractive, glassed study area with its natural light and is very popular with the students. The four Subject Librarians teach classes in the computer training room from first year undergraduates to doctoral level. They now have a choice of using this room, a meeting/teaching room, or their offices as appropriate for the size of the group, when giving small group and individual sessions and helping staff and students with research, assignments and projects. The Computer Training Room is also available to library staff in other disciplines and students when there is no teaching session. The number of public computers in the Library has increased from 14 to 73.



One of the most popular features with students is the group study rooms. The Faculty encourages teamwork and group study. A Disability Resource Room is also available, as is a meeting room and teaching room for groups. Flexible tables were chosen for the main seating in the Library and these may be pushed together when required.

The lighting is a particularly pleasing feature of the Library. Over the stacks the lights are slanted diagonally and inside the entranceway they resemble candy sticks. Feature lighting at night creates a spectacular show from Symonds Street.

The front desk has ample workspace. The design features an attractive curve and accommodates three staff workstations, including a reference desk. Staff have a choice of standing or sitting at the desks of different heights. The Short Loan collection is housed on an attractive, free-standing stack with the hold and re-shelving shelves close by. A public address system extends over all levels.

A 3M RFID security system was installed which is compatible with other parts of the system and speeds up circulation functions. Staff can check materials out by passing them over the counter above a sensor instead of opening them individually for scanning. The Digital Library Assistant is a scanning device which allows for easier checking of the order of material on the shelves, and facilitates stocktaking. A self-issue system enables users to check out their own materials. A gate counter is a new feature. The highest number of users in one day is, so far, 3957 people.

The improvement in library staff areas is significant. Each staff member housed in the workroom has their own partitioned work area. Some separation from the front desk area has been maintained by means of incorporating a large window into the wall between workroom and front desk. This enables staff to see when extra help is needed at the front desk. The staffroom, toilets and shower are shared with the Faculty's administrative staff. Subject Librarians have their own offices.

A long feature wall/notice board flows along the wall opposite the senior staff offices enabling posters and notices to be pinned up on coloured squares of felt. Art from the University's collection is placed strategically on all levels.



An audiovisual room may be booked by tutorial groups as well as by individuals for viewing videos and DVDs. There is an extensive and growing collection of these engineering-related productions.

The Library is air conditioned. There are security cameras on each floor. There is a new serials display and scattered throughout this area and on the floor above are sofas in sunny spots for serendipitous reading. Ample photocopiers/printers are available on each main floor.

There is room on the shelves for ten years collection growth. Storage is available on each floor.

Wired and wireless Internet access is also available through the building. A large fire curtain is activated when there is a fire alarm, thereby protecting the Library in case of fire.

## **Conclusion**

The new Library is a success both inside and out. It delivers not only superior study and work areas to the students and staff in a vibrant and attractive environment but also, the new exterior enhances the Symonds Street area of the campus. This end result was achieved by careful planning and collaboration, by having architects who could understand and interpret the brief, and by staff and students who were able to endure the disruptions necessary to achieve completion.

At the recent Rider Levert Bucknell Property Awards 2007, the Engineering Library obtained the Award of Merit in the Education and Arts section.

## **Endnote**

I would like to acknowledge the significant contribution of Ashton Mitchell Architects to this paper.