MOLECULAR LIFE + SCIENCES BUILDING UNIVERSITY OF WOLLONGONG

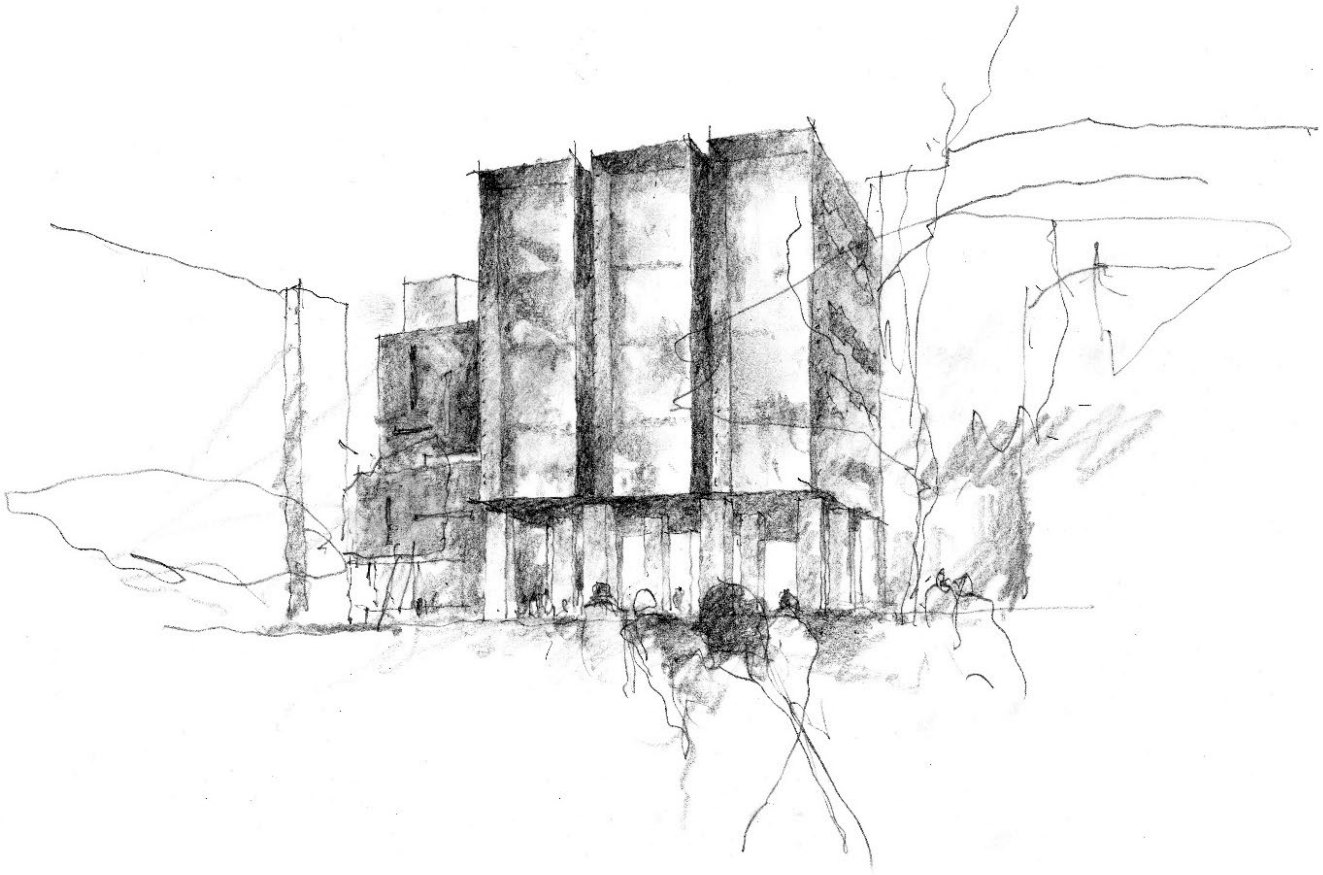
DESIGN STATEMENT

20 JANUARY 2017
UPDATED 10 MAY 2017

DENTON
CORKER
MARSHALL

architecture + urban design

Table of Contents



1 Introduction

Jacobs | Denton Corker Marshall have been engaged by the University of Wollongong (UOW) as the Architects for the design and documentation of the new Molecular + Life Sciences Facility (MLS) building.

The building is one of several new buildings in the UOW Master Plan and will be a key connecting piece of the Science, Medicine and Health (SMAH) faculty, hosting teaching spaces, and new generation health and molecular research in the campus East Precinct. The project 'Molecular Horizons' was launched in Canberra by the Prime Minister on 19 October 2016.

The project is currently at Schematic Design approval stage, representing the design vision and outcome of engagement between the University's major stakeholders and the architectural, specialist laboratory and engineering teams.

2 Site Opportunities | Campus Integration

The Site

The site is located in the UOW main campus East precinct. The selection of the site took into consideration Electromagnetic Interference (EMI) on specialist equipment to be housed in the building and suitability for Atmospheric Chemistry research.

The site currently comprises an existing on-grade car park and a number of existing structures to be demolished, including:

- Substation 10;
- Building 66 and Solvent Store near Building 32, housing Substation, LV switchboard and laboratory services, specifically gas storage and solvents.

The site is bounded by:

- Building 32, Illawarra Health and Medical Research Institute (IHMRI), to the North.
- Building 41, Science, Medicine and Health Building (SMAH) to the West.
- Building 43, Sciences Teaching Faculty (STF) to the South East.
- Sciences Road to the South.

High voltage easements pass through the site, as well as campus telecommunications infrastructure.

Site Opportunities and Campus Integration

The MLS building will be a research hub and organising focus for the Campus East precinct. It is one of several new buildings identified in the 2016-2036 Wollongong Campus Master Plan. Although located on a spatially constrained site, its important function and location within the network of 'identified areas of improvements in public realm and streetscape' on campus, provides opportunities for synergies and inter-connections with adjacent buildings, as follows.

- Pedestrian connections running East-West and North-South, between core destinations such as the Recreation & Aquatic Centre (URAC) and the Library, intersect at the building;
- Sciences Rd to the South of the proposed MLS building is to be transformed into a shared road, with paving treatment and landscaping prioritising pedestrians and cyclists, while still allowing service vehicular access.
- The design of the spaces surrounding the MLS building reinforce the connections in the Master Plan vision. An informal learning terrace, new 'pocket' gardens and extensive native landscaping help to achieve this. Refer to landscape report and drawings for more detail on the proposed site landscape.
- An aerial bridge links the proposed MLS building with Building 32 (IHMRI) to the North;

- Ground floor entry doors to the South-East and the East-West route through the building ground plane acknowledge and reinforce pedestrian thoroughfares and outdoor gathering spaces.
- The North-South pedestrian link to the West of the MLS building ('Civic Walk') is flanked by the masonry + metal pavilions and landscaping along Building 41, also allowing service access by way of removable bollards. The North-South pedestrian link to the East of the MLS building ('Green Walk') is strengthened to help activate the various landscape zones and gathering spaces.
- By sharing and consolidating storage resources with Building 32 (IHMRI) to the North and Building 41 (SMAH) to the West, the remaining ground plane surrounding the MLS building is freed up to have a pedestrian and landscape focus.

3 Building Form +Expression

Building Form + Expression

The proposed MLS building is composed of three primary building elements: dark metal-clad South Wing, transparent atrium link and light metal-clad North Wing.

The North wing 'block' houses laboratories and offices and is expressed as a single rectilinear volume, supported on columns. The end of the volume is open to the East, taking advantage of views over the ovals and the coast beyond, with Mt. Kiera visible from the upper levels to the West. This block is supported over the crystalline volumes of the ground floor which house specialist equipment. These crystalline blocks, visible from the various pedestrian paths and gathering spaces on site and the broader campus context, highlight the significance of this building to the University, and facilitate the celebration of science via display glazing.

The South volume accommodates meeting rooms, interconnecting stairs, lift cores, building amenities, common spaces and some office/ research uses. Each wing adopts a different expression in response to its functionality. Simple, straightforward, rectilinear geometries with regularised structural grids are adopted throughout for efficiency and rational internal planning.

The North wing is long in form, clad in mid grey metal horizontal panels and window glazing to the North, West and South. The East facade broken into three vertical 'fingers', elegant in proportion, articulated by expressed projecting frames, which also provide some shading to the window wall.

The South wing, by contrast, has more limited glazing. It is a dark grey metal block with glass in linear strips, arranged in an abstract pattern of vertical and horizontal dashes inspired by the molecular systems being studied within the complex. Forming the social and meeting hub of the building, a diverse range of meeting spaces and informal collaboration opportunities are provided, including the central 'break-out area with larger areas of glazing opening onto an outdoor terrace.

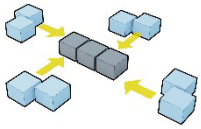
Connecting the two largely solid wings, the atrium is clear, open, clean and transparent, bridging between the two wings, and with interconnecting stairs between floors, encouraging 'incidental' research and interaction.

The aerial bridge link connecting the MLS building with IHMRI Building 32 is clear glazed, lightweight in appearance.

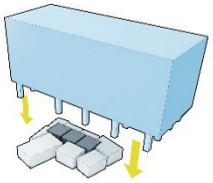
Roof forms are clearly articulated and well-considered. On the North wing, a double-height plant room is wrapped in louvred metal cladding on all sides. On the South Wing, a sculptural cubic volume disguises the goods lift overrun and scientific equipment. This cube floats above the parapet and is clad on all sides in perforated metal sheeting with molecular patterning.

The various building elements and finishes of the building form are separated and articulated, for example by way of recesses ('re-entrants'), adding richness to the expression. The building elements come together in a total composition that makes a highly memorable addition to the campus and reflects the cutting edge scientific enquiries taking place within.

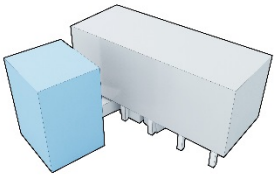
CRYO-TEM CENTREPIECE | THICK SOLID VOLUMES



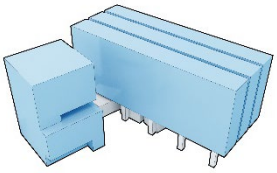
CRYO-TEM SUPPORT | CRYSTAL BLOCKS



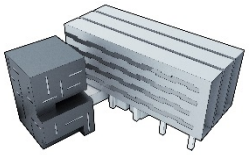
LAB VOLUME PLACED ABOVE ON TIMBER CLAD COLUMNS



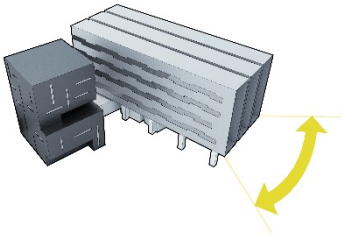
SEPARATE LIFT + COMMON SPACE VOLUME



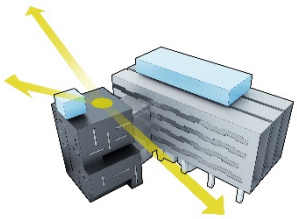
VOLUMES ARTICULATED



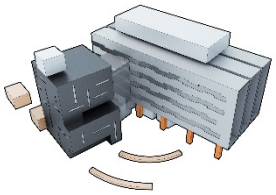
MOLECULAR + LIFE SCIENCES | UNIQUE IDENTITY



OPEN EAST END FRAMES VIEWS



ROOF TOP PLANT + SERVICE VOLUMES | ROOF PLATFORM SOLAR



INTEGRATION OF LANDSCAPE + SERVICES PAVILIONS INTO CAMPUS VERNACULAR

Building Height | Campus Context

The proposed building is surrounded to the North, East and West by buildings that are four storeys high plus plant. The MLS building height is proposed as five storeys plus plant, consistent with the UOW Master Plan.

Viewed from the Campus Ring Road and eastern playing fields, the landscaping rises up and the building presents its North Wing, with the laboratory and office volume resting on large timber clad columns. Nestling beneath are the crystalline blocks visible between the columns.

Viewed from Sciences Road, stairs and ramped paths invite one into the highly glazed entry foyer and the landscaped gathering and learning spaces surrounding the building.

Façade + Materiality

The predominant façade material will be aluminium panels in neutral charcoal and grey colours. Timber clad columns at Ground under the North wing will lend warmth and an inviting feel to the covered informal learning space. 'Guernsey Tan' brickwork service pavilions and landscape elements lend dialogue with surrounding campus buildings.

The 'crystalline blocks' at ground floor in luminous white opaque glazing, utilising U-channel formed glass, articulate the cutting-edge research within.

At roof level, louvred cladding is proposed to fully enclose roof plant equipment, in neutral metal tones.

Typically, materiality is based on a contemporary neutral palette, with a limited splash of colour proposed to the lift overrun and link bridge support. Proposals are consistent with the aims of the University Master Plan in acknowledging, extending and freshening the campus materiality and colour palette, and in recognition of this being a building of significance for the University. The feature colour is currently shown red, however is subject to final confirmation.

4 Shadow Studies

Shadow analysis has been carried out using a detailed Revit BIM model based on survey information. Revit facilitates real-world coordinate accuracy of longitude/ and latitude and calculates precise sun angles for the particular location at chosen times and dates.

Analysis has been carried out hourly on the 21st of June from 8am to 4pm. The additional areas of shadow to the site and context over and above existing shadows, are highlighted in red. Impacts on the surrounding campus buildings are summarised as follows:

- Due to the site's orientation, the analysis shows no impact on Building 32 (IHMRI) to the North.
- Building 41 West – no additional overshadowing by the proposed building.
- Building 41 North – 1no. window receives additional overshadowing at 8am; 5 of 6 windows receive additional shadows at 9am; otherwise no additional impact.
- Building 43 North – 6 of 33 windows receive additional overshadowing at 2pm; 10 of 33 windows receive additional overshadowing at 3pm; 9 of 33 windows receive additional overshadowing at 4pm; otherwise no additional impact.

The analysis shows that the landscaped area between the proposed MLS building and Building 43 to the East, will be fully overshadowed from 12:00pm onwards on 21st June. Minor additional shadows are cast on the western North-South pedestrian route between 8:00am and 11:30am.

5 Crime Prevention through Environmental Design (CPTED)

Crime Prevention through Environmental Design (CPTED) is a crime prevention strategy that focuses on the planning, design and structure of cities and neighbourhoods. It reduces opportunities for crime by using design and place management principles that reduce the likelihood of essential crime ingredients (law, offender, victim or target, opportunity) from intersecting in time and space[1].

UOW implements a comprehensive Security Strategy recognising that the UOW campus is used by staff and student 24 hours a day, seven days a week.

The design of the proposed MLS building aims to integrate with the overall UOW Security Strategy and reduce the risk of a crime occurring by taking account of the four key CPTED strategies of territorial re-enforcement, surveillance, access control and space/activity management.

Territorial re-enforcement

Community ownership of public space sends positive signals to the community. Places that feel owned and cared for are likely to be used, enjoyed and revisited. People who have guardianship or ownership of areas are more likely to provide effective supervision and to intervene in crime than passing strangers, and criminals rarely commit crime in areas where the risk of detection and challenge are high.

The spatial legibility and design of the areas surrounding the MLS building will communicate to people where they should/ should not be and what activities are appropriate. The physical connection of internal and external spaces, as well as perceived connections using highly glazed facades, aims to encourage communal responsibility for these public areas.

[1] http://www.police.nsw.gov.au/community_issues/crime_prevention/safer_by_design

Surveillance

People feel safe in public areas when they can see and interact with others, particularly people connected with that space, such as building occupants. Criminals are often deterred from committing crime in places that are well supervised. Natural surveillance is achieved when normal space users can see and be seen by others.

The layout, orientation and location of the proposed MLS building has been designed to maximise passive surveillance of the surrounding spaces from within the MLS building and adjacent buildings. Areas that do not receive adequate natural surveillance, and that are deemed higher-risk by UOW Security and the design team, will be supervised via CCTV. Additional security and surveillance will be achieved via UOW security officers who patrol the campus.

Recognising that the UOW campus is a '24/7' campus, external lighting will be designed to ensure adequate lighting levels to create a secure environment through the hours of darkness. There are a number of considerations for external lighting for the MLS building, including

- Crime prevention (deterrence);
- Personal safety after dark (perceived levels of anxiety of either staff or students using the area after dark);
- Support of CCTV camera operations;
- Support of security officers on patrol around the campus facilities;
- Integration with existing campus external lighting infrastructure.

Access Control

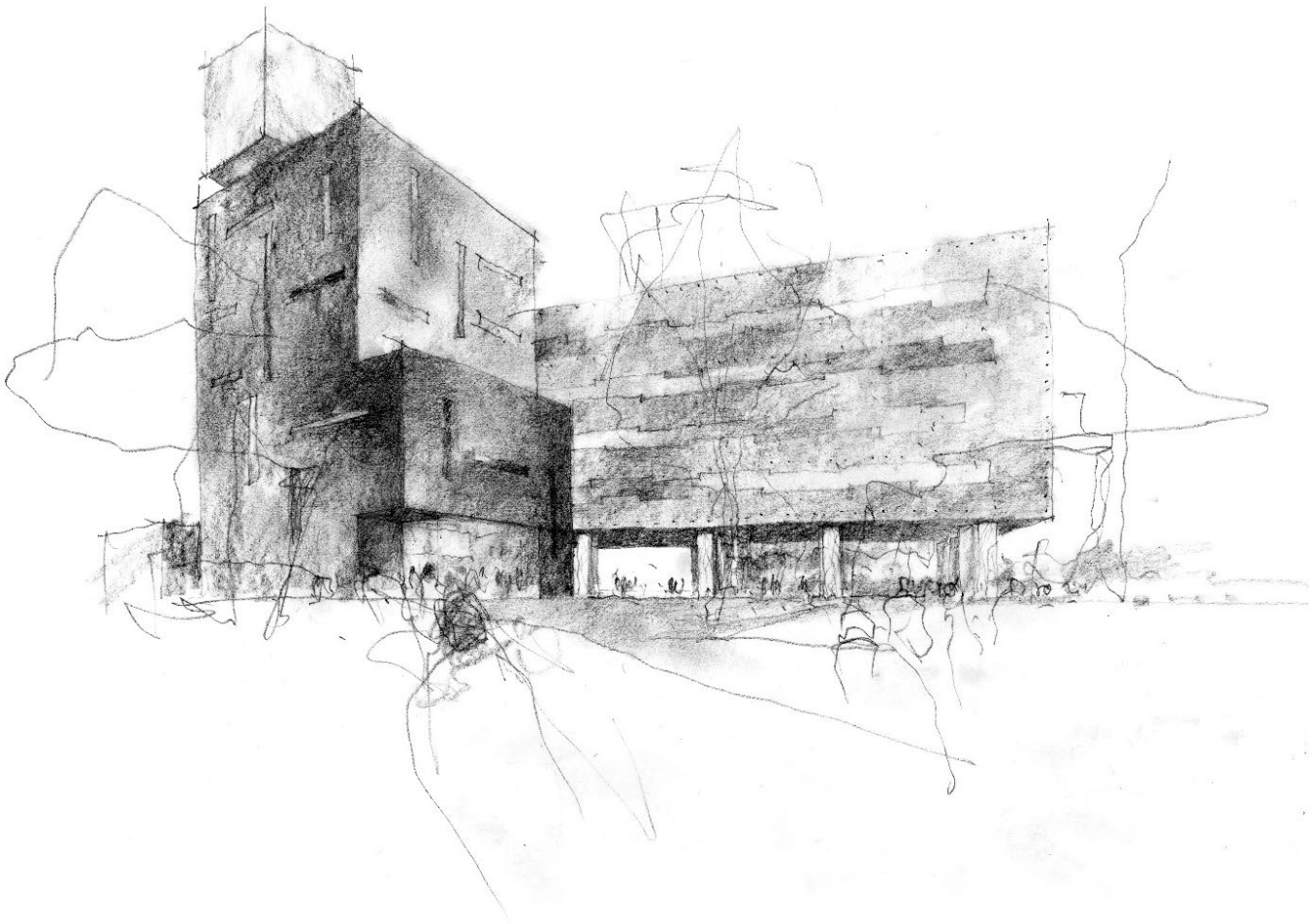
Access control treatments restrict, channel and encourage people and vehicles into, out of and around the development. Way-finding, desire-lines and formal/informal routes are important crime prevention considerations.

The proposed landscaping and pathways clearly define pedestrian routes around the proposed MLS building. Public building entrances are clearly visible, identifiable and accessible. Security access measures at entrances will control out-of-hours access 24/7. Maintenance and restricted access areas will be controlled to ensure access is achievable by approved persons only.

Space/Activity Management

Space/Activity Management strategies are an important way to develop and maintain natural community control. Places that are infrequently used are commonly abused. All space, even well planned and well-designed areas need to be effectively used and maintained to maximise community safety. There is a high correlation between urban decay, fear of crime and avoidance behaviour.

In accordance with the UOW Master Plan, pedestrian routes and gathering spaces are provided around the MLS building. In addition, UOW Facilities Maintenance Division (FMD) in collaboration with UOW Security ensures the formal supervision, control and care of the area. For example, UOW Security staff conduct weekly lighting surveys on campus, which are forwarded to the FMD electricians and landscape staff for any remedial action.



Prepared by

Denton Corker Marshall Pty Ltd
ABN 84 615 019 443 ACN 131 308 088

Level 19, 55 Collins Street Melbourne Victoria 3000
Australia

Telephone +61 3 9012 3600

Facsimile +61 3 9012 3601

Email MLSB@dentoncorkermarshall.com