THE UNIVERSITY OF SYDNEY

LEES 1 PROJECT

ARCHITECTURAL DESIGN STATEMENT

ARCHITECTURAL DESIGN STATEMENT
PREPARED FOR THE UNIVERSITY OF SYDNEY

MAY 2016

THE UNIVERSITY OF SYDNEY

RICHARD CROOKES CONSTRUCTIONS 40 years

HDR | RICE DAUBNEY

PREPARED FOR

THE UNIVERSITY OF SYDNEY

Date of Issue: 16 May 2016
Revision: FOR SUBMISSION
Issue to: USYD
Checked: AM
Approved: AM

CONTACT

Alex Matovic
Director/ Architect 9196 (NSW)
HDR | Rice Daubney
Level 1, 110 Walker St
North Sydney
NSW 2060

T +61 2 99562666
D +61 2 99562633
M +61 402 776 233

alex.matovic@hdrricedaubney.com

CONTENTS

01

EXECUTIVE SUMMARY

Universities everywhere have been experiencing a shift in their traditional forms - from structured academic hierarchies and teacher-centred learning to the demand of the millennial generation for equality and group-decision making that is associated with their working, research, and learning preferences.

Implicit in this change is the convergence of technology and pedagogy. Given the acceptance and comfort with technology, team-oriented behavior has substantially impacted on not only on the nature of working and learning, but also on the nature of the spaces that enable these activities. These impacts are becoming well understood, and the University of Sydney's pursuit of new learning spaces within traditional teaching laboratories is arguably world-leading in this respect.

Similarly, but perhaps less well understood, are the demands being driven by this same shift onto the campus and its role in facilitating learning and working behaviors that extend well beyond the traditional confines of offices, labs and classrooms.

Where the campus might once have been the true common ground, the rise of cross- and multidisciplinary research and study has blurred the boundaries between faculty or academic spaces, and the great 'student commons' of the campus.

While what defines the recognised quality and identity of the campus core in the University of Sydney has not changed, the expectations of the new 'internal campus' and its relationship with external space has evolved how a campus building must behave within its context.

Our design has taken clues from our own work in this field, and from the cues presented by the conceptual F23 design, that begins to develop a palette of techniques for expressing this new relationship between the faculty space and the campus.

As well as tackling these larger questions of the nature of the campus, the LEES1 building needs to function superbly, service its users effectively, and be a memorable asset to the University and its identity. We explore the resolution of these issues through this design statement.


THE UNIVERSITY OF
SYDNEY

02

BUILT FORM & URBAN DESIGN

INTRODUCTION

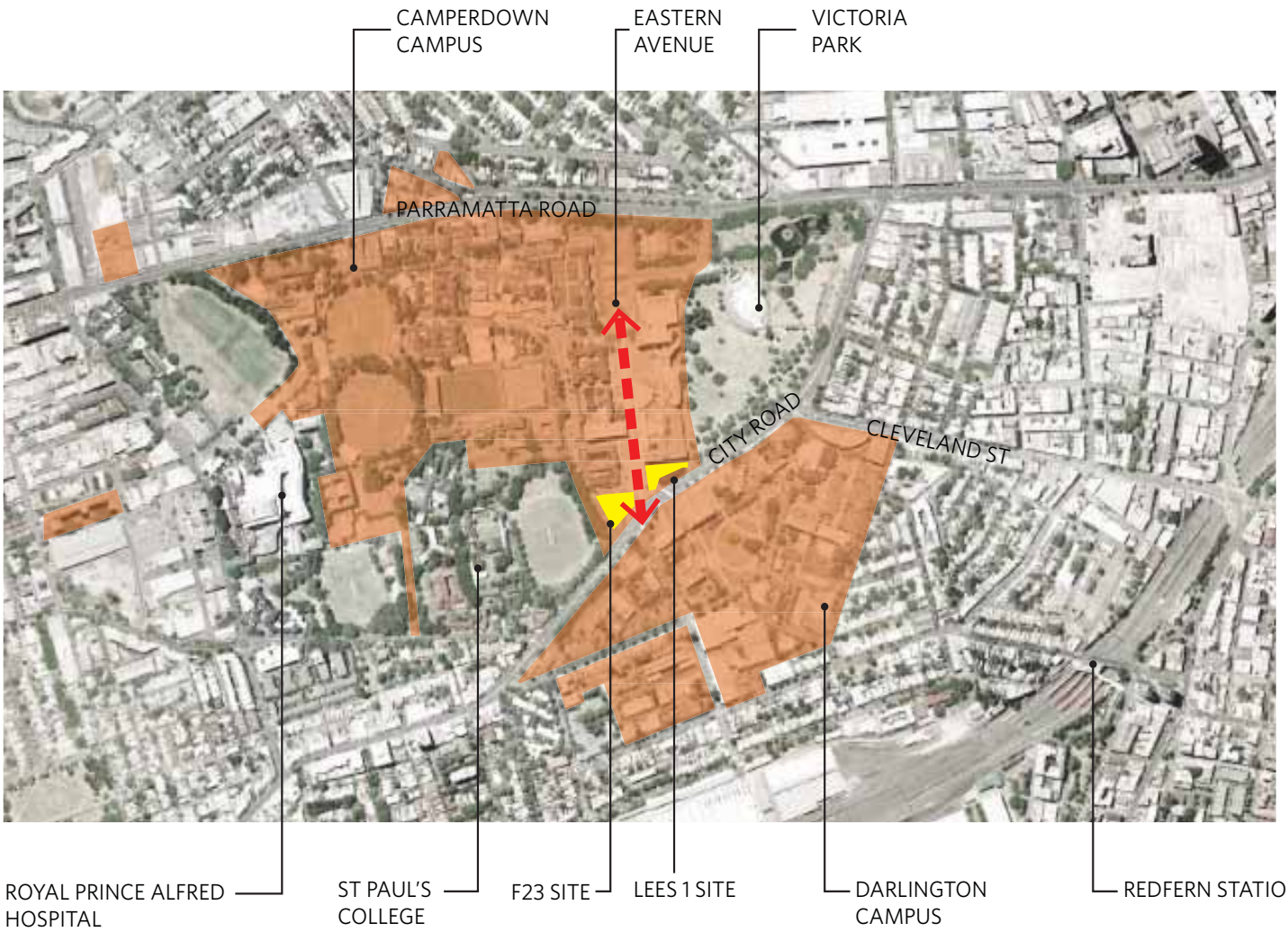
Positioned at a major gateway to the campus, the LEES1 project articulates the importance that University of Sydney places on investment in research and teaching excellence. The University's fundamental commitment has been, and will remain, research excellence while at the same time developing a supportive, inclusive, and high performance teaching culture across the entire University.

LEES1 places science on display to the campus and the broader community through a highly transparent facade to City Road and carefully framed views into the building from Eastern Avenue.

The building occupies a tapering site between the existing Carslaw Building and a row of significant fig trees. Responding to these constraints is a building layout that provides flexible and reconfigurable teaching and research laboratories able to suit a variety of occupants. Teaching labs are large and will compliment adjacent labs in the Carslaw Building to establish a teaching lab hub.

LEES1 is set out to enable future connection to the Carslaw Building across all teaching levels and on alternating research floors. The layout will enable the orderly redevelopment of the Carslaw Building in the future.

BUILDING SITES IN THE CAMPUS CONTEXT



Not to scale

02

BUILT FORM & URBAN DESIGN

SITE CONSTRAINTS

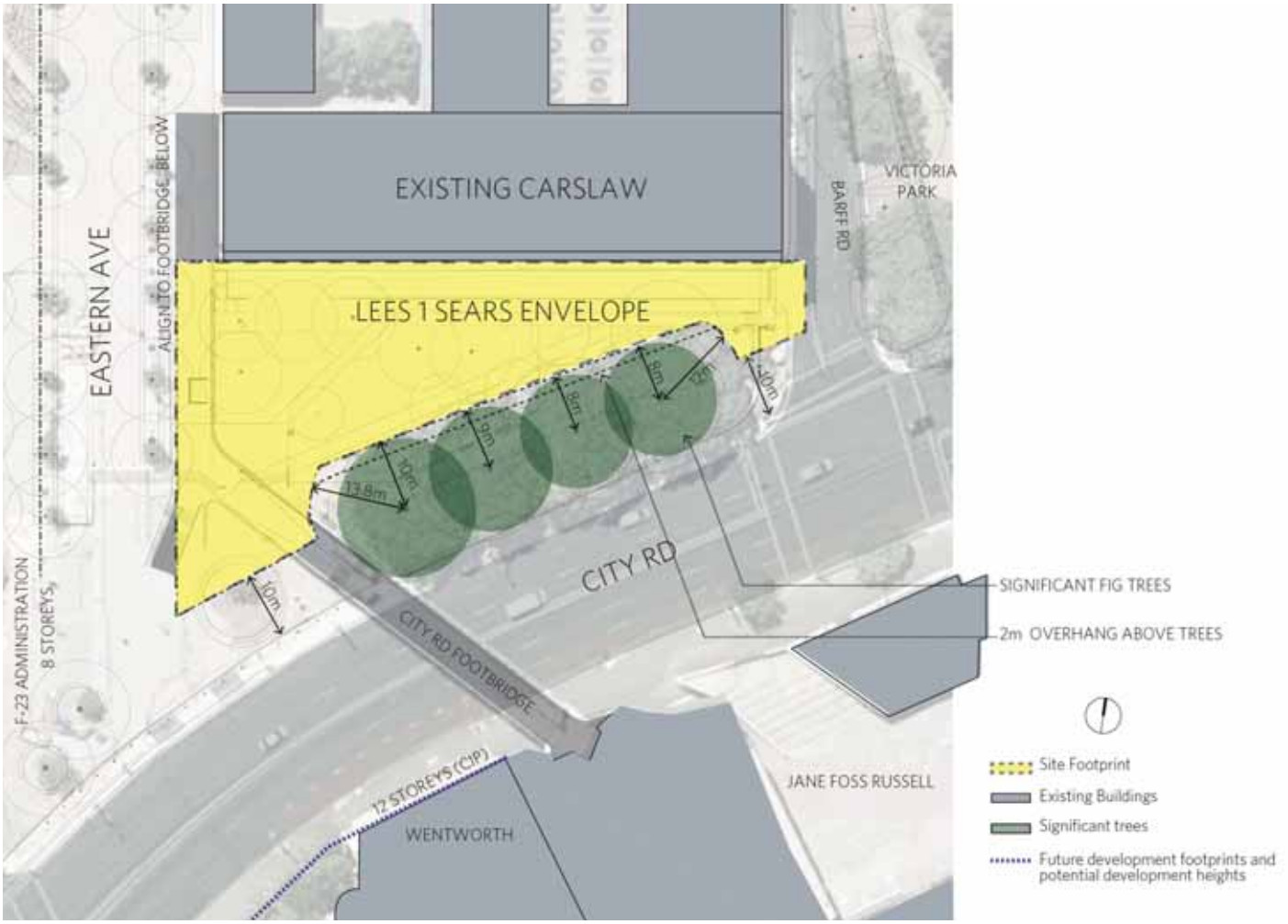
The LEES1 site is an unusual geometry. This has developed through a response to the existing fig trees that line the edge of City Road, and form an important and distinctive landscape asset for the University and the City of Sydney.

Setbacks from these were established for the SEARS envelope through an arborists report (Tree-IQ Report No: LEES/USYD/AIA/B).

The northern edge of the site is constrained by the existing Carslaw building. This is a functioning existing building, with need for amenity (daylight and ventilation) through the southern facade, limiting utilisation of the full length of this northern boundary.

This creates a wedge shaped site, with a minimum throat width of approximately 11m.

The diagram below indicate the setbacks determined by the arborist's investigation, and an overlay of the submitted SEARS development envelope.



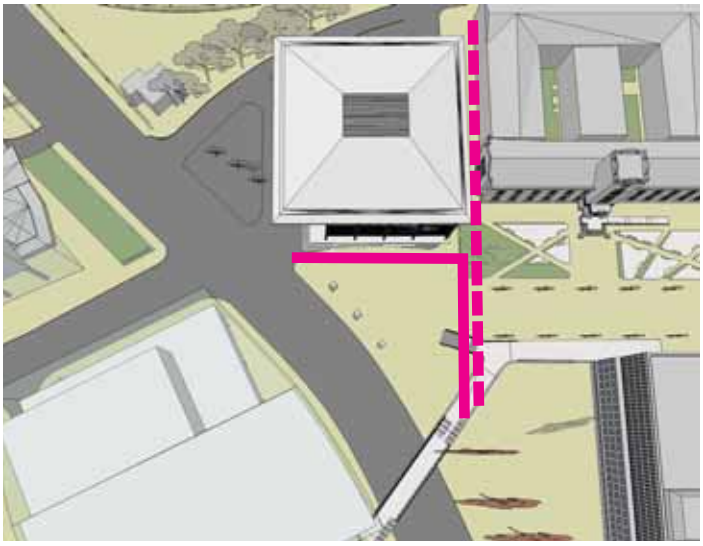
INVESTIGATING THE CORNER

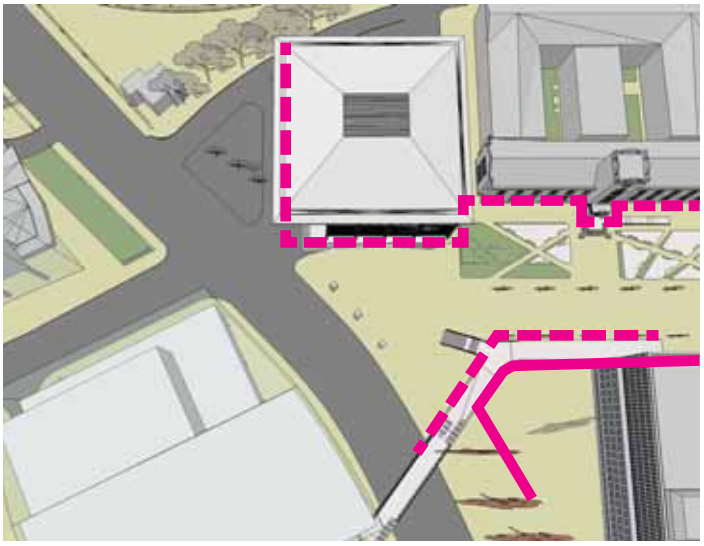
The City Road end of Eastern Avenue does not terminate in a traditional highly structured urban street intersection.

In the traditional habit of university campus' across the globe, desire lines strike literally through the campus structure, in this case resulting in the Eastern Avenue ramp and City Road pedestrian bridge, plus associated connections navigating the change in level this results in.

Additionally, the framing of the end of Eastern Avenue is skewed by the bend in City Road, and does not continue through to the 'South campus' due to the shift in alignment of Butlin Avenue.

Given the complexity of this intersection, the decision was made to boldly address the framing of Eastern Avenue through an implied forecourt - establishing a setting for F23 - and at the same time suppressing the complexity of the City Road pedestrian bridge interface.





Framing the end of Eastern Avenue, and structuring a forecourt to City Road was considered a stronger response to an important University entry than following the edge of the City Road pedestrian bridge.

The multiplicity of edges on the corner requires clarifying, not reinforcing.

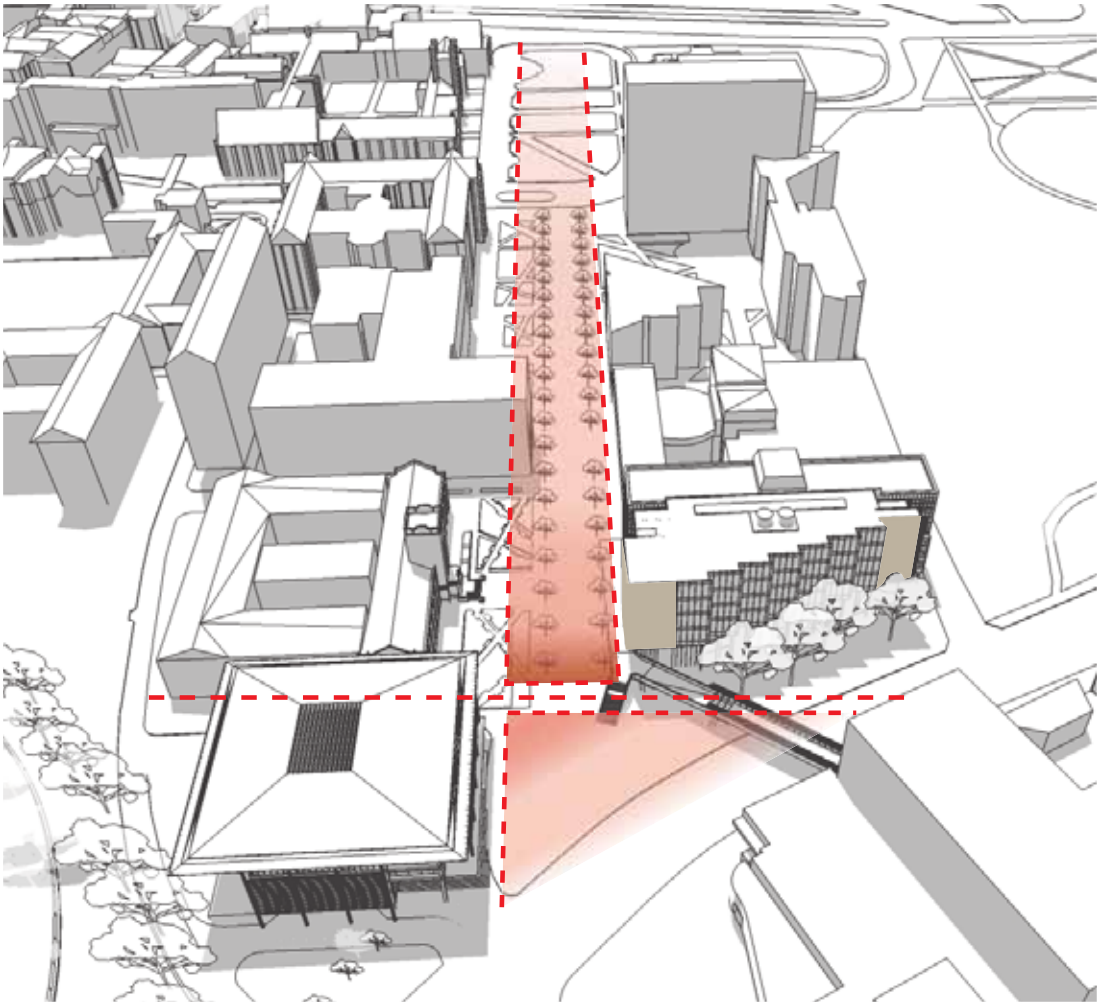
02

BUILT FORM & URBAN DESIGN

UNIVERSITY OF SYDNEY'S CITY ROAD ADDRESS

The ordered geometry of Eastern Avenue's principle edges, and the regular geometry established by F23 lead to a desire to find a mannered resolution to the intersection of Eastern Avenue and City Road.

Squaring the corner establishes an easy relationship to F23, and addresses an urban conversation with the Madsen building. This frames a forecourt space in front of F23 at the head of Eastern Avenue.



RELATIONSHIP WITH F23 AND EASTERN AVENUE

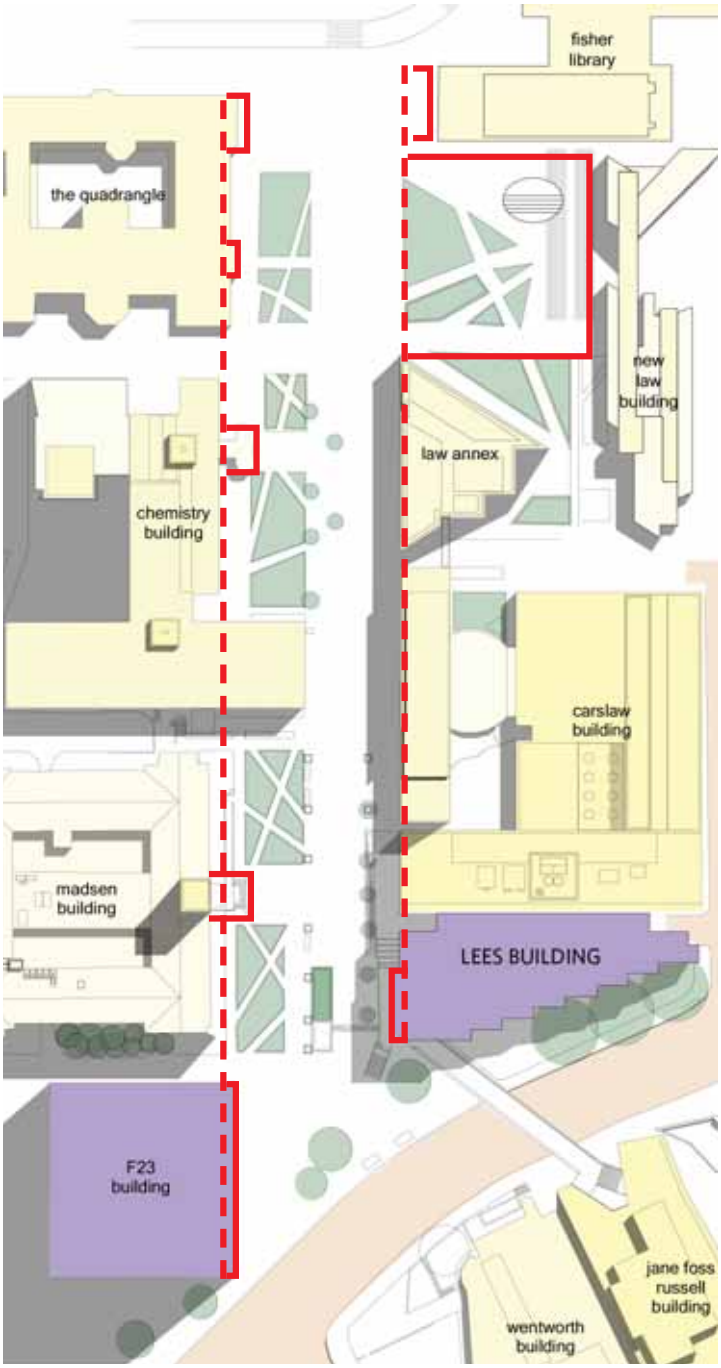
At the scale of the campus, the project is configured to reinforce the primacy of Eastern Avenue, and in conjunction with F23 create and frame a threshold to the campus at City Road.

The project is conceived as a contrasting composition of a primary lab floor plate and articulated secondary forms each of which responds to the influences of the site, built context and orientation.

02

BUILT FORM & URBAN DESIGN

EASTERN AVENUE FORM & MORPHOLOGY

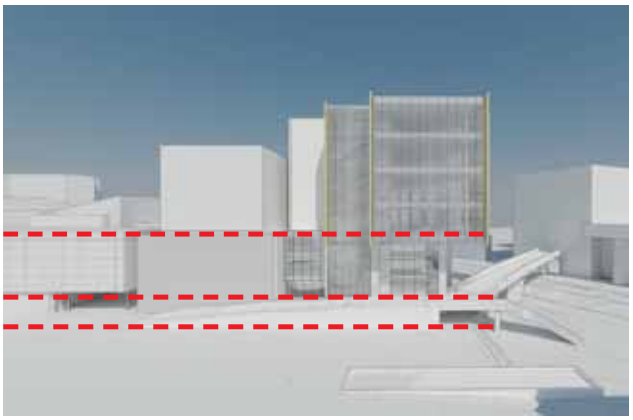


A campus morphology defines a majority of the edge characteristics on Eastern Avenue.

Existing buildings along Eastern Avenue suggest an implied principal edge line, but also interrupt this rigour, giving definition of individual buildings while also forming a larger legible urban form.

Importantly, Eastern Avenue also establishes a series of datum that are relatively consistently applied across most of the western edge, and lend it an intermediate scale despite the variety and proportions of building forms.

The LEES1 building continues these, and extends them across the southern face to resolve them at the Victoria Park aspect as the building turns the corner into City Road.

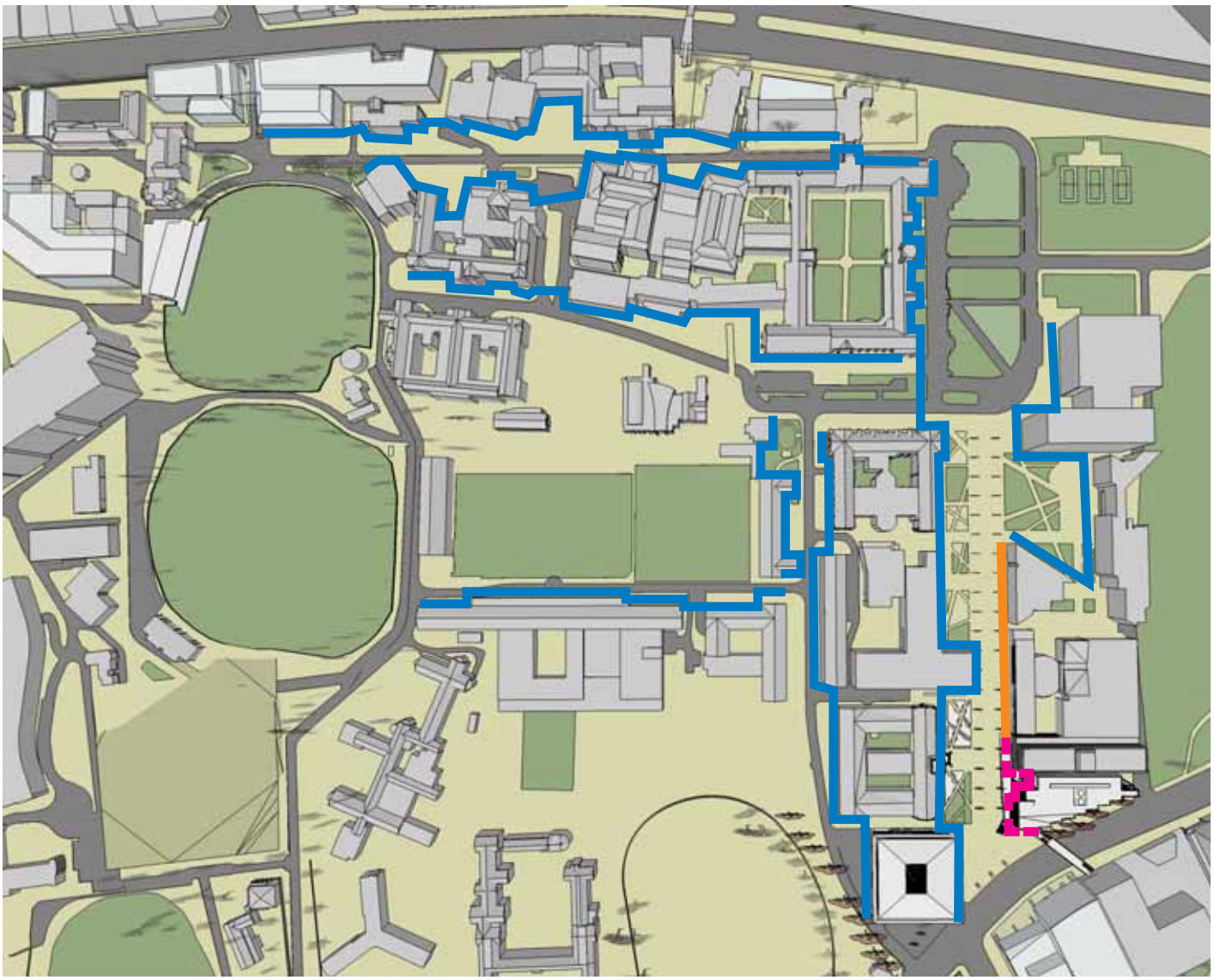


CONTEXT IN THE GREATER CAMPUS MORPHOLOGY

The cantilever extension of the upper floors on the LEES1 building was considered to be appropriate in the context of the campus structure of the University of Sydney, and a positive reinforcement of the campus morphology.

Although the momentum of an implied edge formed by the Law Building Annex and the Eastern Avenue Auditorium appears strong, both these buildings are very recent in the context of the campus.

In actuality, reinforcing the latent edge of these two buildings would cause an aberration in the consistency of the wider campus morphology.



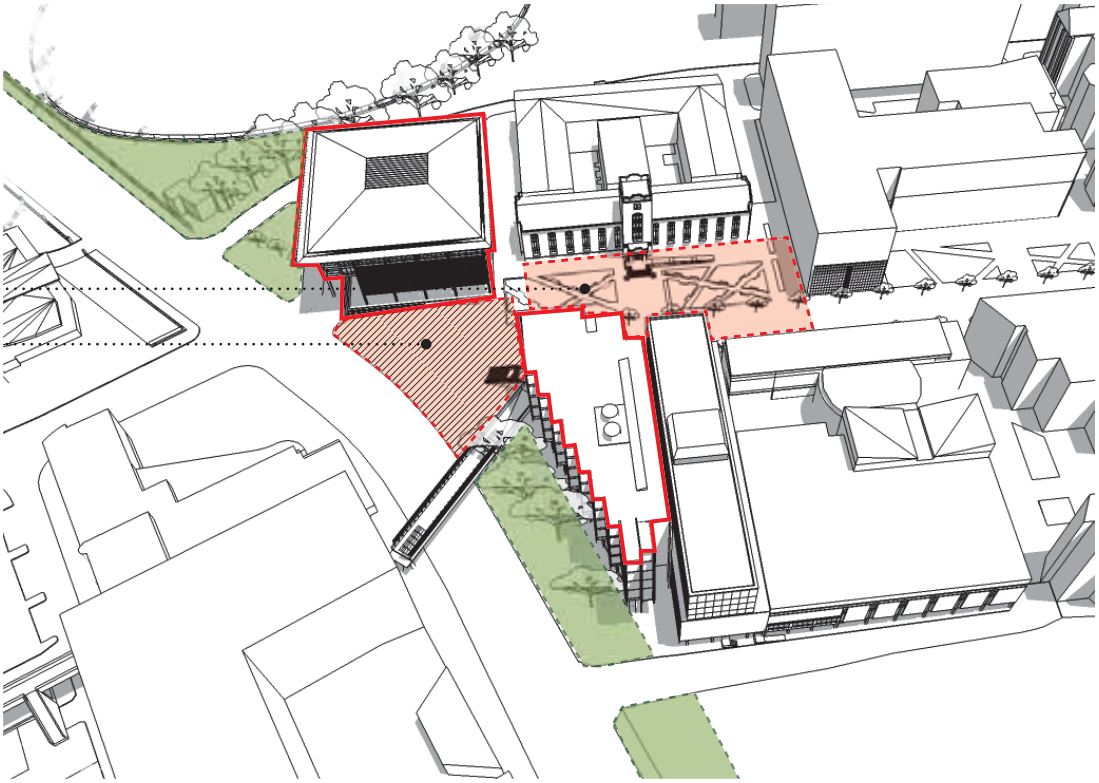
02

BUILT FORM & URBAN DESIGN

FRAMING EASTERN AVENUE

The new buildings framing the Eastern Avenue entry - LEES1 and F23 - establish an edge which defines the boundary of the 'old campus' which is distinctly different to the forms and manner of the new campus to the south. The buildings together resolve the intersecting geometry of City Road by landing at a newly framed forecourt space. LEES1's site is significantly more constrained for access and open edges, so the architectural expression of LEES1's design is a foil in some ways to F23.

Given the forecourt framing of F23 established by LEES1 and Madsen, we have developed a relationship to the Madsen building, setting a frame of vertical proportion and material context across Eastern Avenue in contrast to F23's light horizontal edges.



FRAMING EASTERN AVENUE

1

2 Potential links to Carslaw Building

3 Improve location of public transport connection

4 Potential to define urban square

5 Improve integration of footbridge landing with Eastern Avenue

6 Improve pedestrian shared zone

7 Road re-alignment, drop off to F23 rationalises site entry/ exit and reduces number of vehicle crossings

8 Vehicle access to campus maintained via Fisher Road

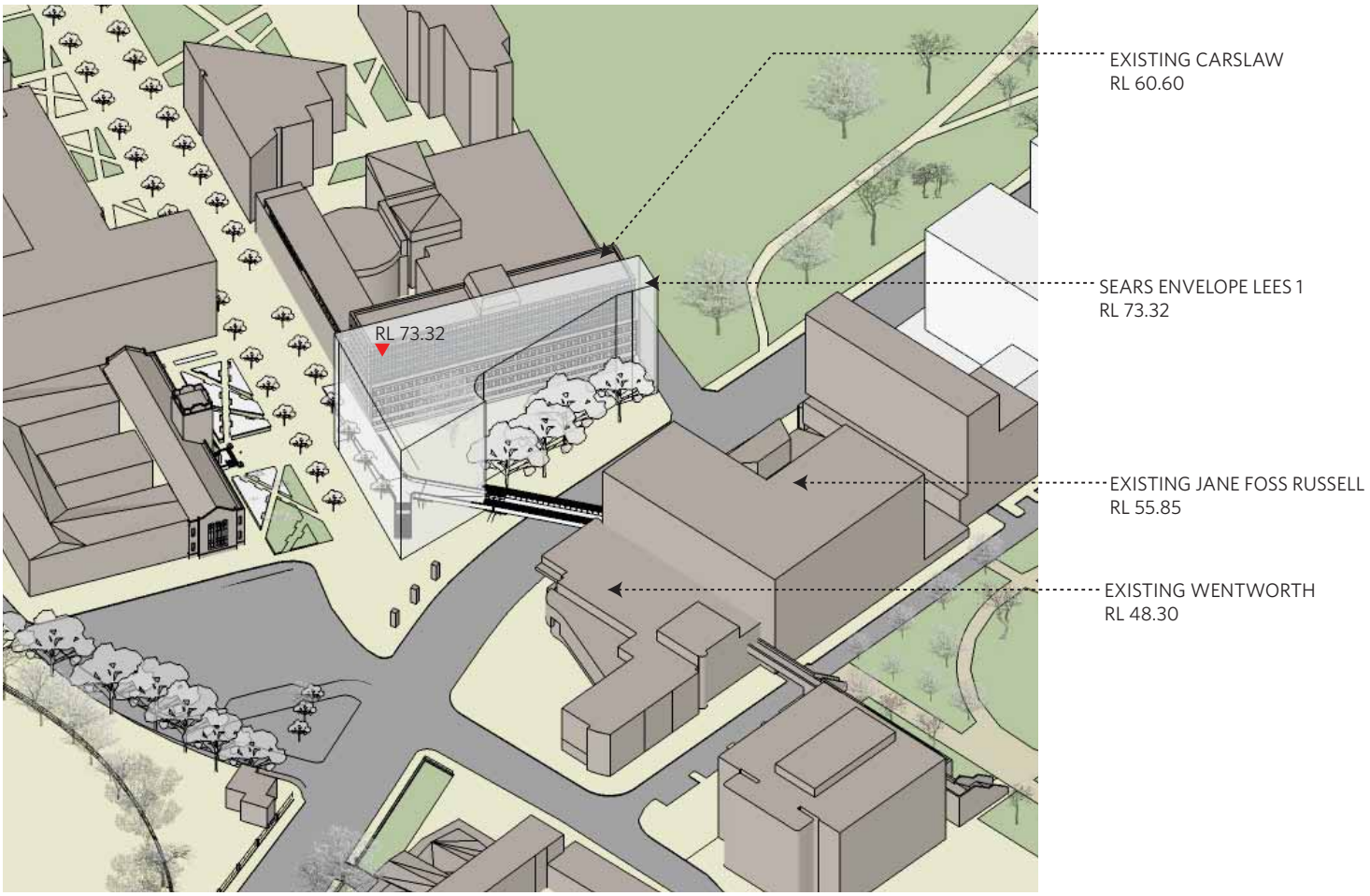
9 F23 floor-plate layout optimised to respond to views across St Paul's Oval

10 F23 and LEES1 Buildings to give definition to City Road end of Eastern Avenue

02

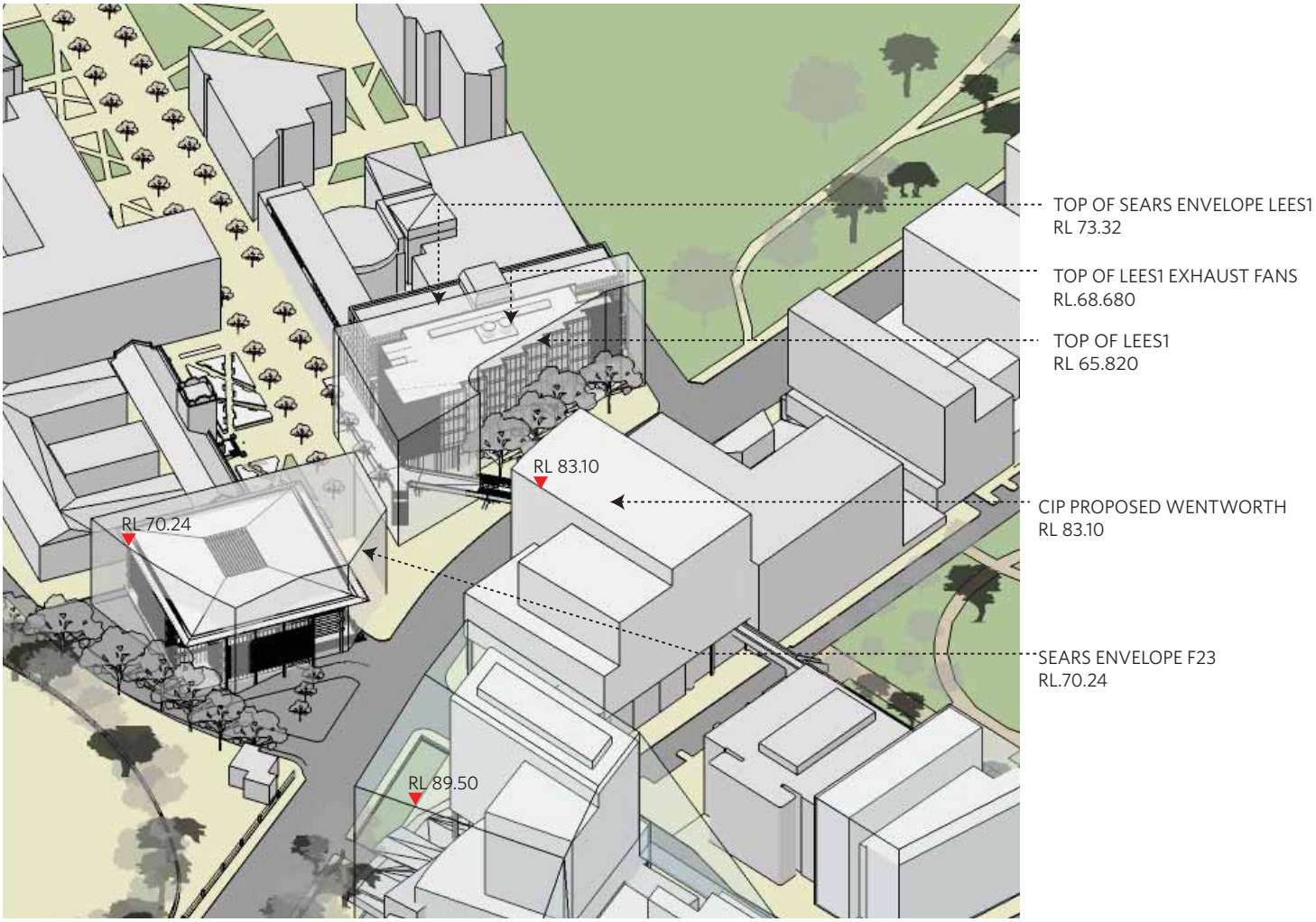
BUILT FORM & URBAN DESIGN

HEIGHT, BULK, SCALE



LEES1 SEARS envelope in context

LEES 1 AND F23 WITHIN SEARS ENVELOPE

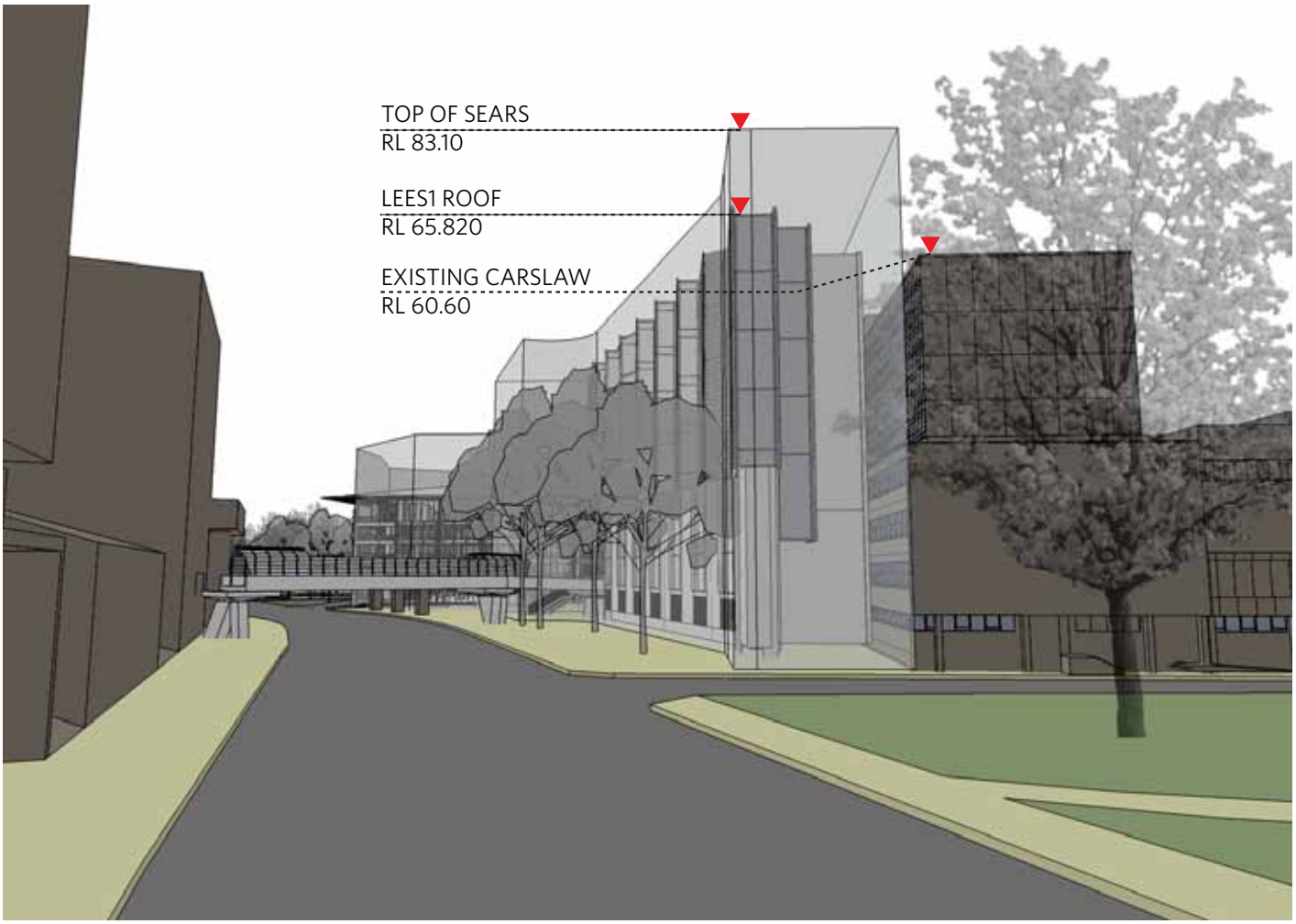


Current LEES1 and F23 proposals within their SEARS envelopes.

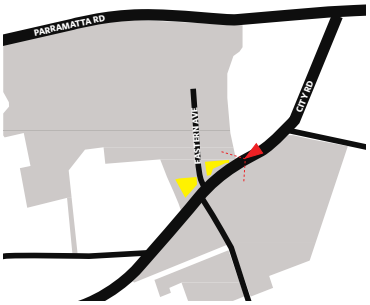
02

BUILT FORM & URBAN DESIGN

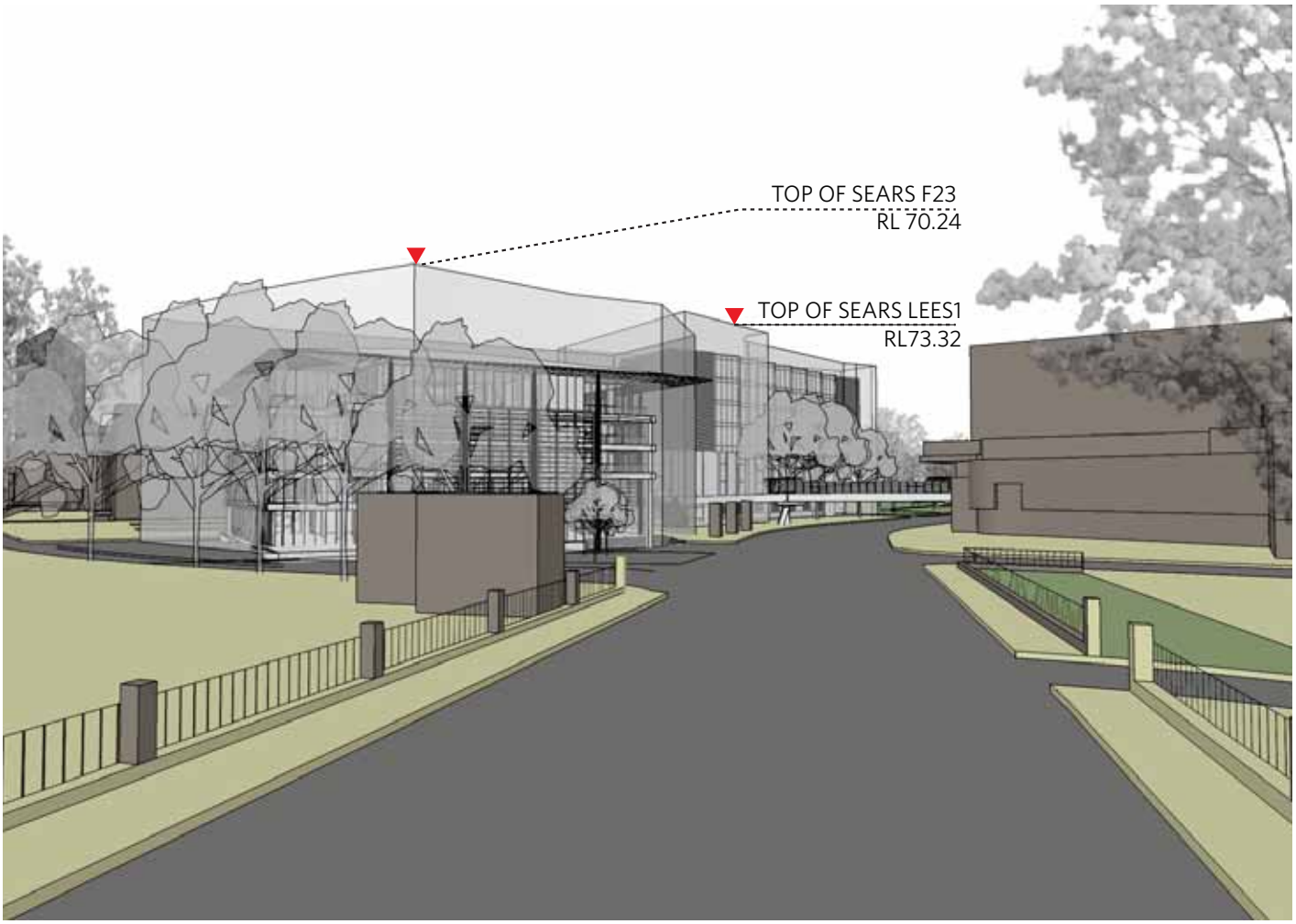
APPROXIMATE MASSING SHOWN IN CONTEXT



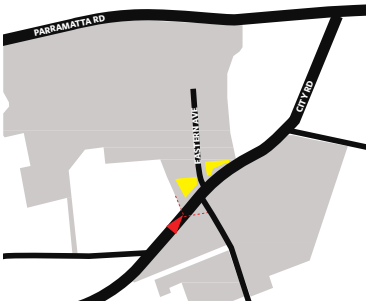
VIEW FROM CITY ROAD



HDR RICE DAUBNEY



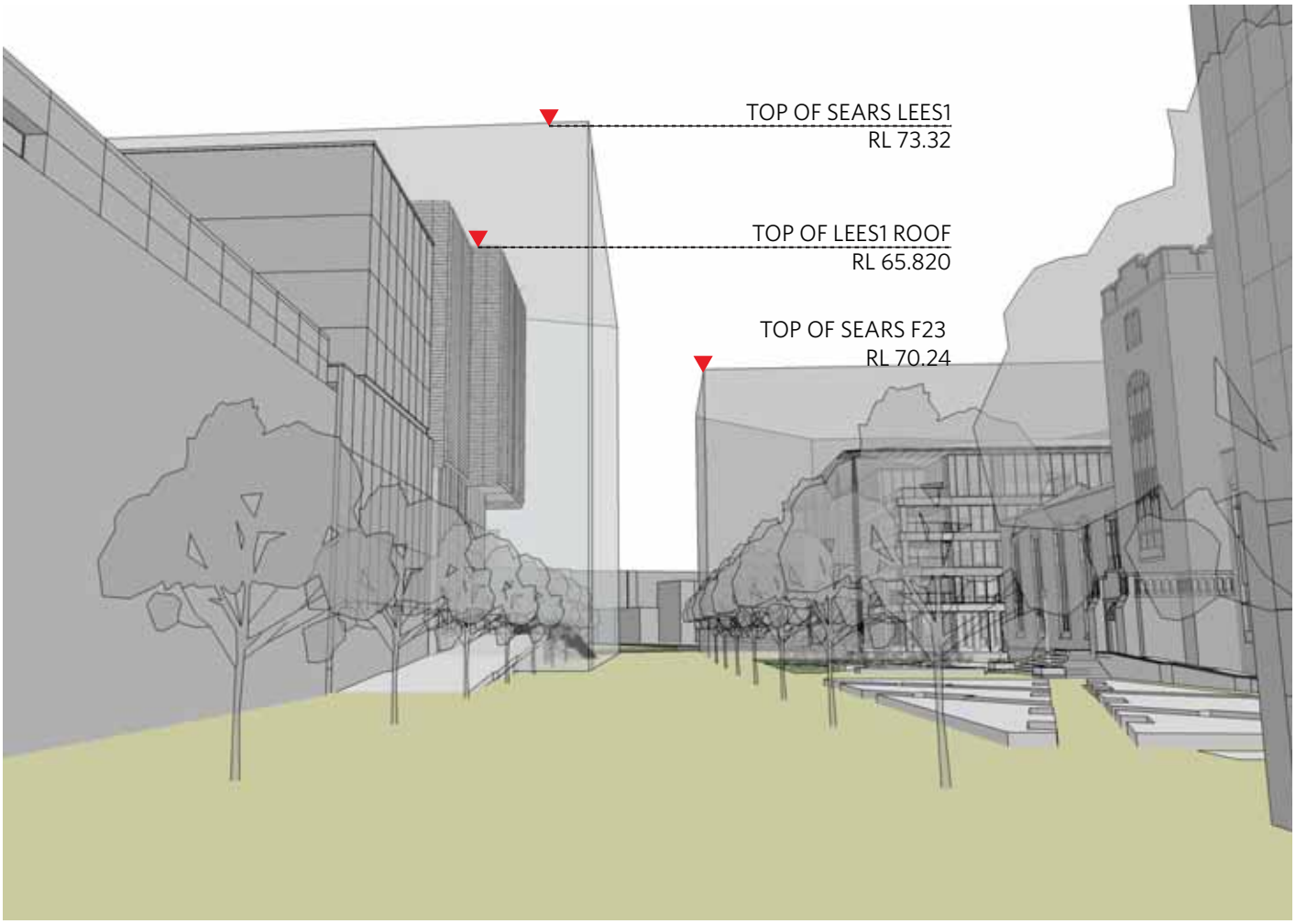
VIEW FROM CITY ROAD TOWARDS F23 & LEES1



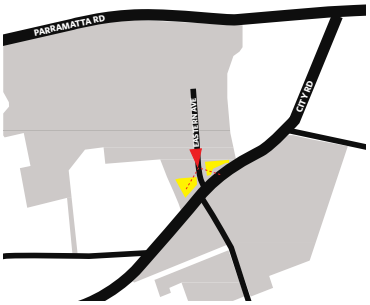
02

BUILT FORM & URBAN DESIGN

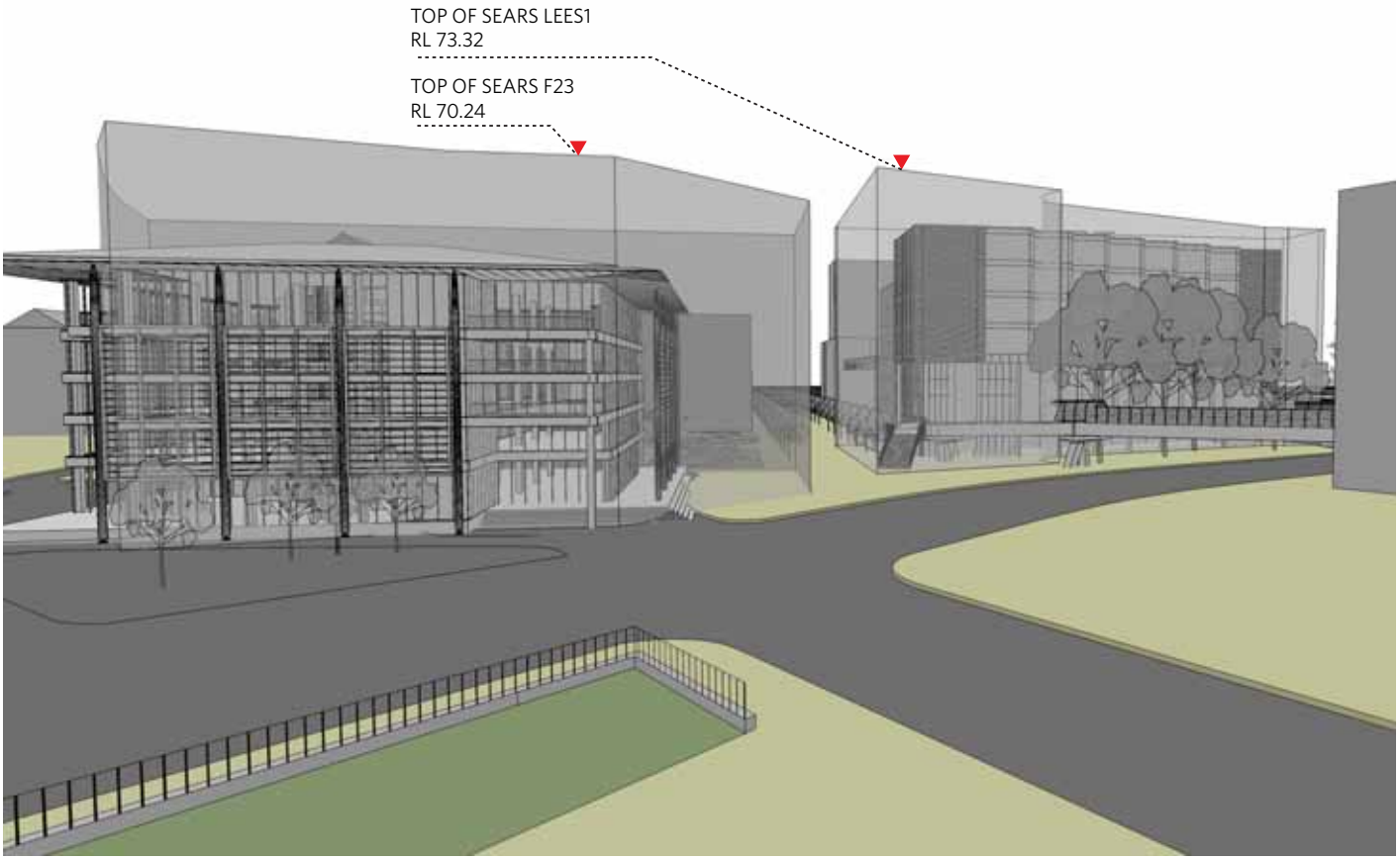
APPROXIMATE MASSING SHOWN IN CONTEXT



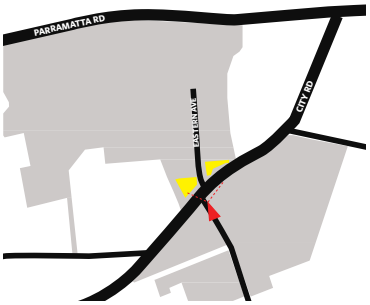
View from Eastern Avenue to City Road



HDR RICE DAUBNEY



View towards Eastern Avenue gateway



02

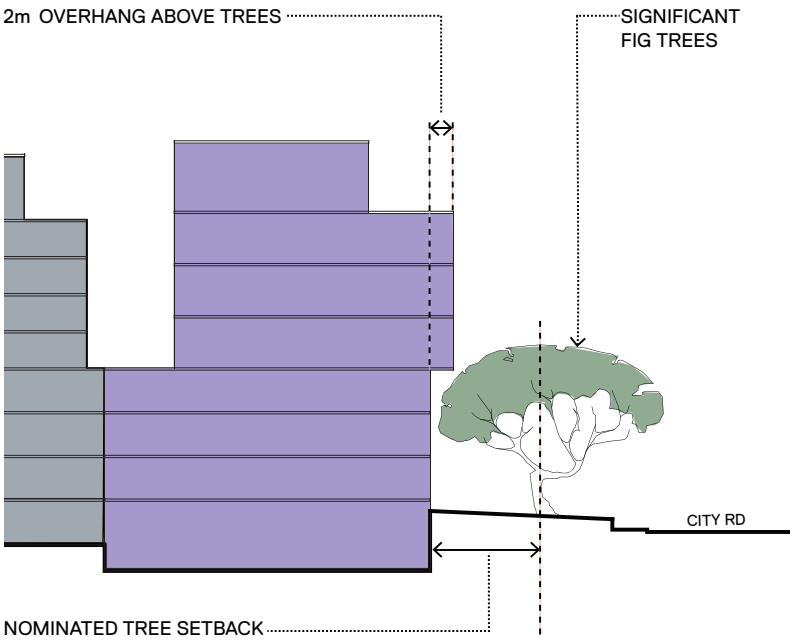
BUILT FORM & URBAN DESIGN

SETBACKS

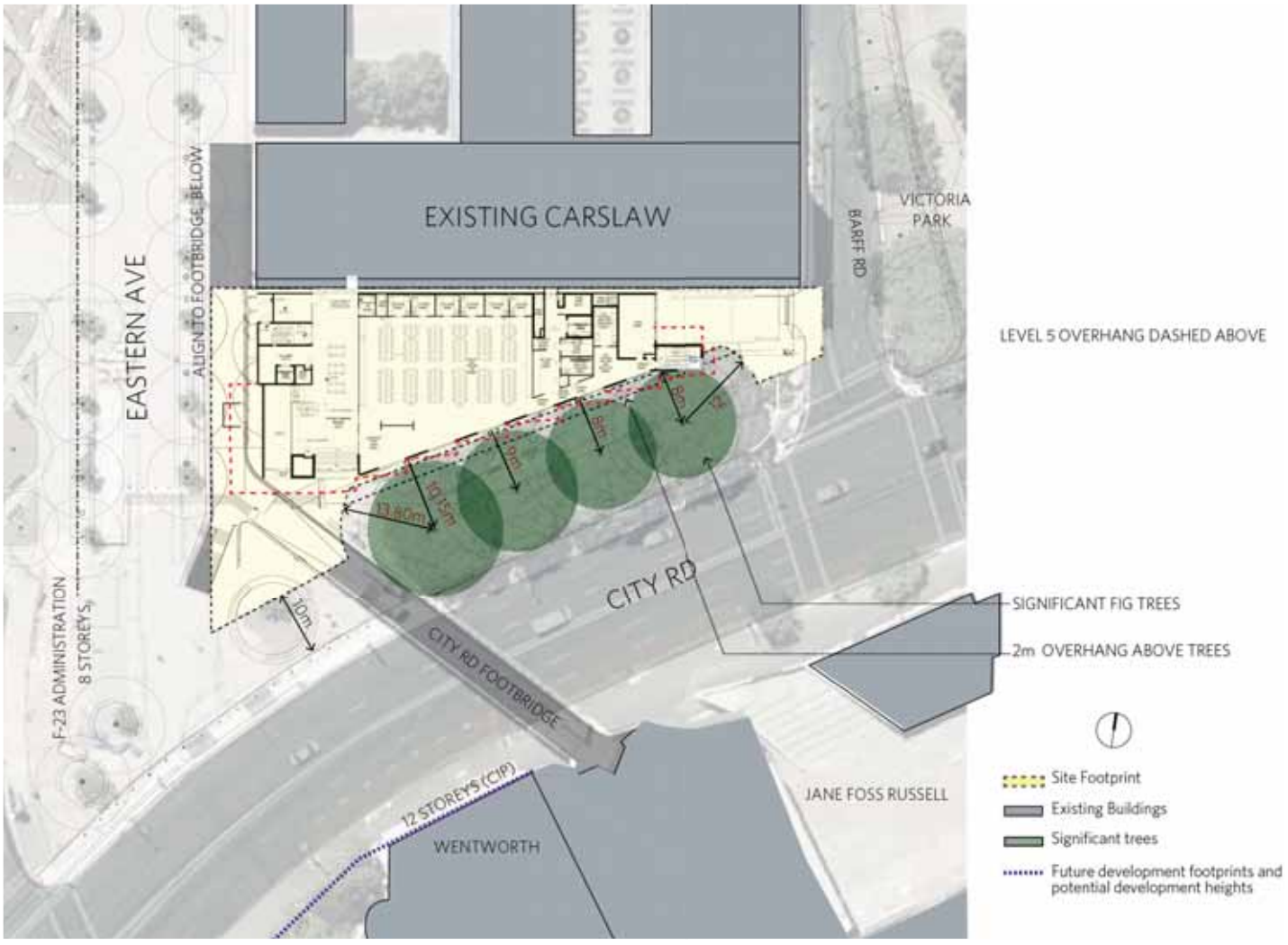
Setbacks on the site have been driven by the safeguarding of the existing 4 major figs against the City Road boundary. The setbacks from these were established for the SEARS envelope through an arborists report (Tree-IQ Report No: LEES/USYD/AIA/B).

The diagrams below indicate the setbacks determined by the arborist's investigation, and an overlay of the current LEES1 design which improves on the setback.

RICE DAUBNEY



A limited overhang for level 5 and above is indicated on the setback plan. The overhang has been reduced in the cuurent design.



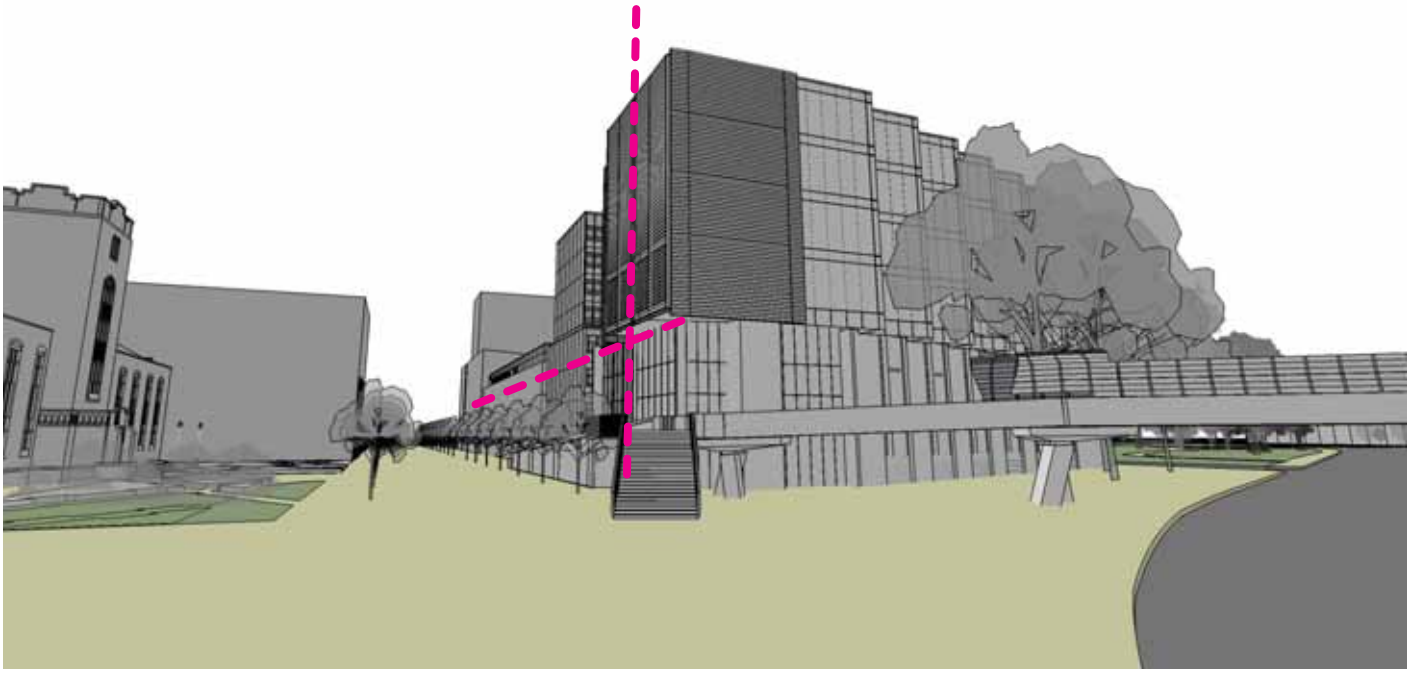
02

BUILT FORM & URBAN DESIGN

RESOLUTION OF THE CORNER

To suppress the complexity of the intersecting geometries at the junction with City Road, the corner of LEES1 'shepherds' the ramp and bridge knuckle through a simple form defined by the upper level mass.

This reinforces both the intermediate scale of Eastern Avenue, and the new urban structure between City Road and Eastern Avenue.



03

DESIGN QUALITY

INTRODUCTION

The design of the LEES1 building recognises that both the functionality as a biosciences laboratory, and the siting framing the gateway to Eastern Avenue require respectful consideration. A building that priorities one aspect over the other would either become an expensive folly or a missed opportunity in the campus consolidation.

Three key design ambitions gave shape to the initial conceptual framework of the design:

- creating contemporary research and teaching environments

- creating a rational and efficient 'chassis' of services and structure

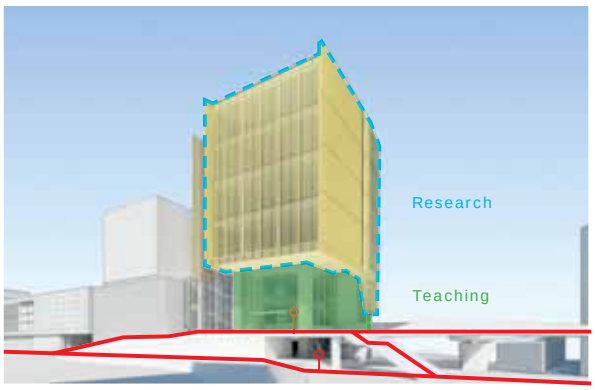
- creating a dialogue with City Road and Eastern Avenue that speaks to principles of an open and engaging campus.


SYDNEY

03

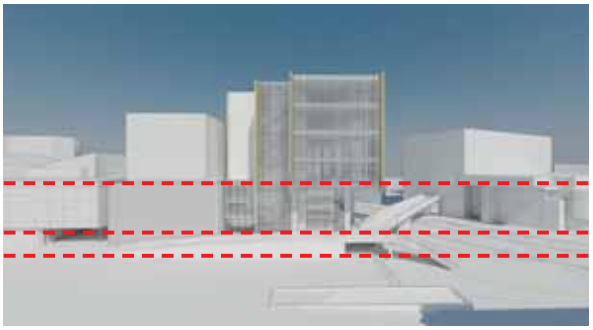
DESIGN QUALITY

MASSING & MODULATION & ARCTICULATION



Articulated distinction between teaching and research levels

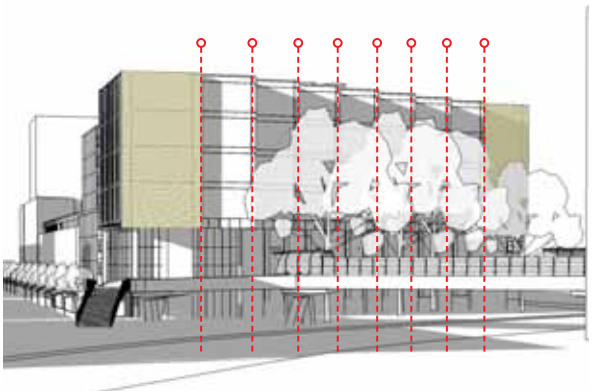
The functional planning of the teaching and research spaces is quite distinct, and the building reflects this in the mass and articulation.



Responding to the datum of Eastern Avenue

Eastern Avenue establishes a series of datum that are relatively consistently applied across most of the western edge.

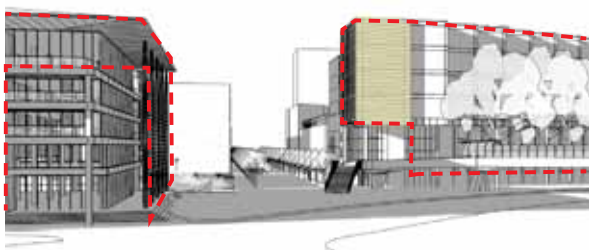
The LEES1 building continues these, and extends them across the southern face to resolve them at the Victoria Park aspect.



Re-emphasising a vertical articulation.

Although newer Eastern Avenue buildings have propagated a horizontal massing, the older buildings - as well as the proposed F23 - create a more considered play between horizontal massing and vertical articulation.

The laboratory functions are driven by a strong bay-sized grid system internally. Reflecting this grid-bay through the vertical proportioning in the building develops a dialogue between the internal use, the wedge-shaped site, and the modulation of



Opening up corners

The F23 response to an aspiration for campus engagement by opening up corners to break down the solidity of the form landing on the ground. At the same time, it also presents well defined implied corners that establish strong urban spaces.

The design of the LEES1 follows these cues by locating entry points on the corners and de-materialising these at the lower levels

FACADE

The tessellated facade facing City Road is developed from both practical and poetic aspects. It is a key part in re-orientating the primary geometries of the building to the existing Carslaw grid, improving use of space and planning layout on the wedge shaped site.

Rather than presenting a slipping edge to City Road, it resolves the rational geometry of Eastern Avenue with the angle of the road to form a mannered, contextual massing.

The short ends open up views for the whole floor plate to Victoria Park and the city, while the geometry speaks to each of the 3 sides of the building, rather than compromising the important Eastern approach up City Road.

With the high visibility and narrow site, the high quality facade is extended to the top of the plant room level, so no plant room louvres on Level 8 are expressed on any of the major vantage points.

03

DESIGN QUALITY

MATERIAL PALETTE AND RELATIONSHIPS

A simple palette of terracotta, off-form concrete, and clear glazing is used. This speaks to the enduring timelessness and permanence of the university. It establishes a similarity to the surrounding buildings forming the edges of Eastern Avenue.

Honesty of material is an important part of the expression. Concrete used to define the base and structural support of the dynamic cantilevers above, while the terracotta - which is integrated into the curtain wall system - is expressed as light-weight dynamic material. Rather than using the thin stone as over-cladding to portray solidity, we use and detail it in a way that expresses its fineness and delicateness.

University identity signage

Terracotta panels or similar solid material

Aluminum screen (estimated to be similar detail/finish to F23) over performance glazing

Clear curtain wall glazing panls

Exposed concrete soffit

Clear entry glazing

Off-form concrete panels

Clear curtain wall glazing panls

Off-form concrete panels

Clear glazing to stair

Clear glazing to teaching labs

Weather louvres

Off-form concrete panels

Loading bay door

Concrete fins to base over weather louvres

03

DESIGN QUALITY

MATERIAL PALETTE AND RELATIONSHIPS

Roof finish
- Colorbond roof sheeting
- Colour: Light

Southern facade glass
- Clear glass

Solid Cladding
- Terracotta tile system
- Colour: Ivory

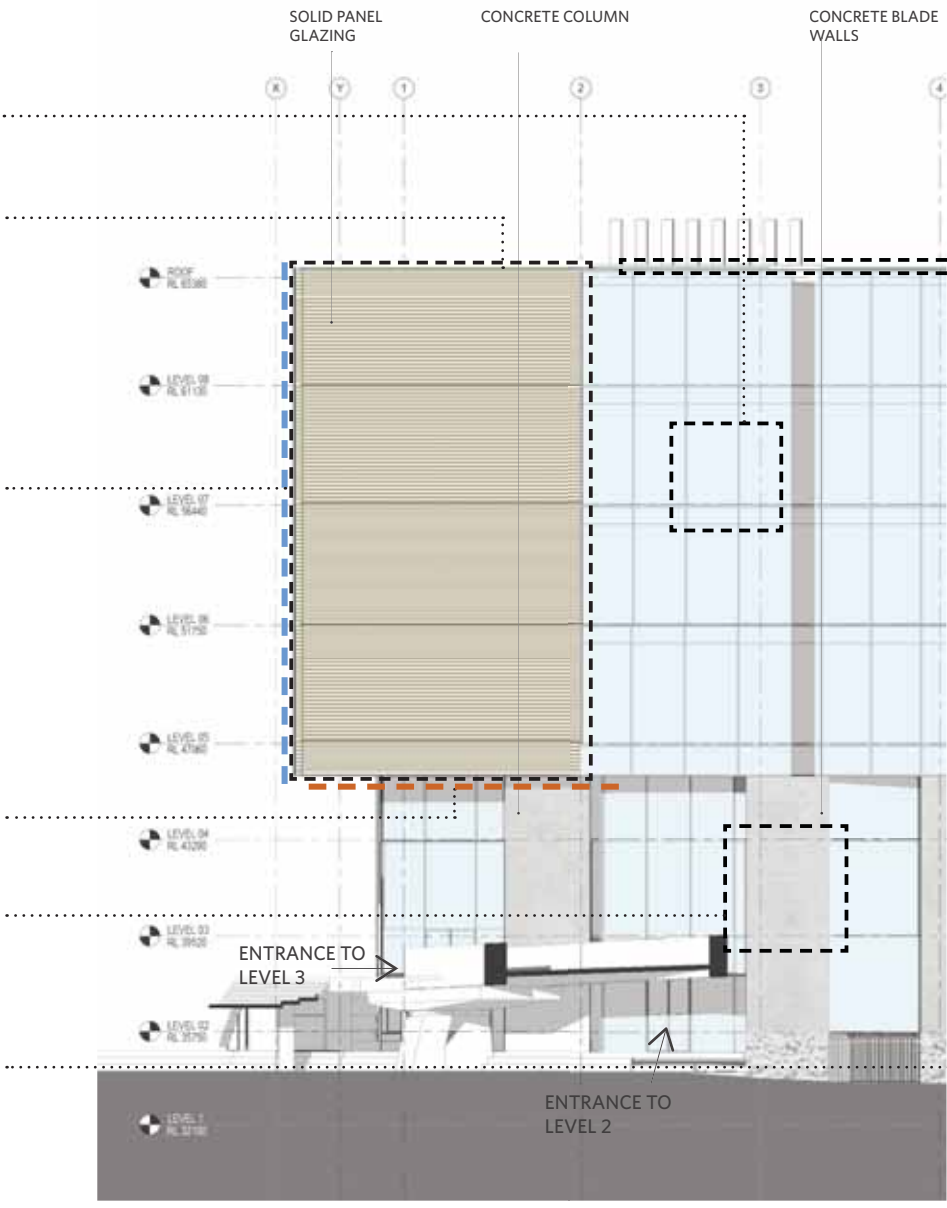
Aluminium screens
- Powdercoated aluminium
- Colour: RAL 9006

Soffit
- White solid board

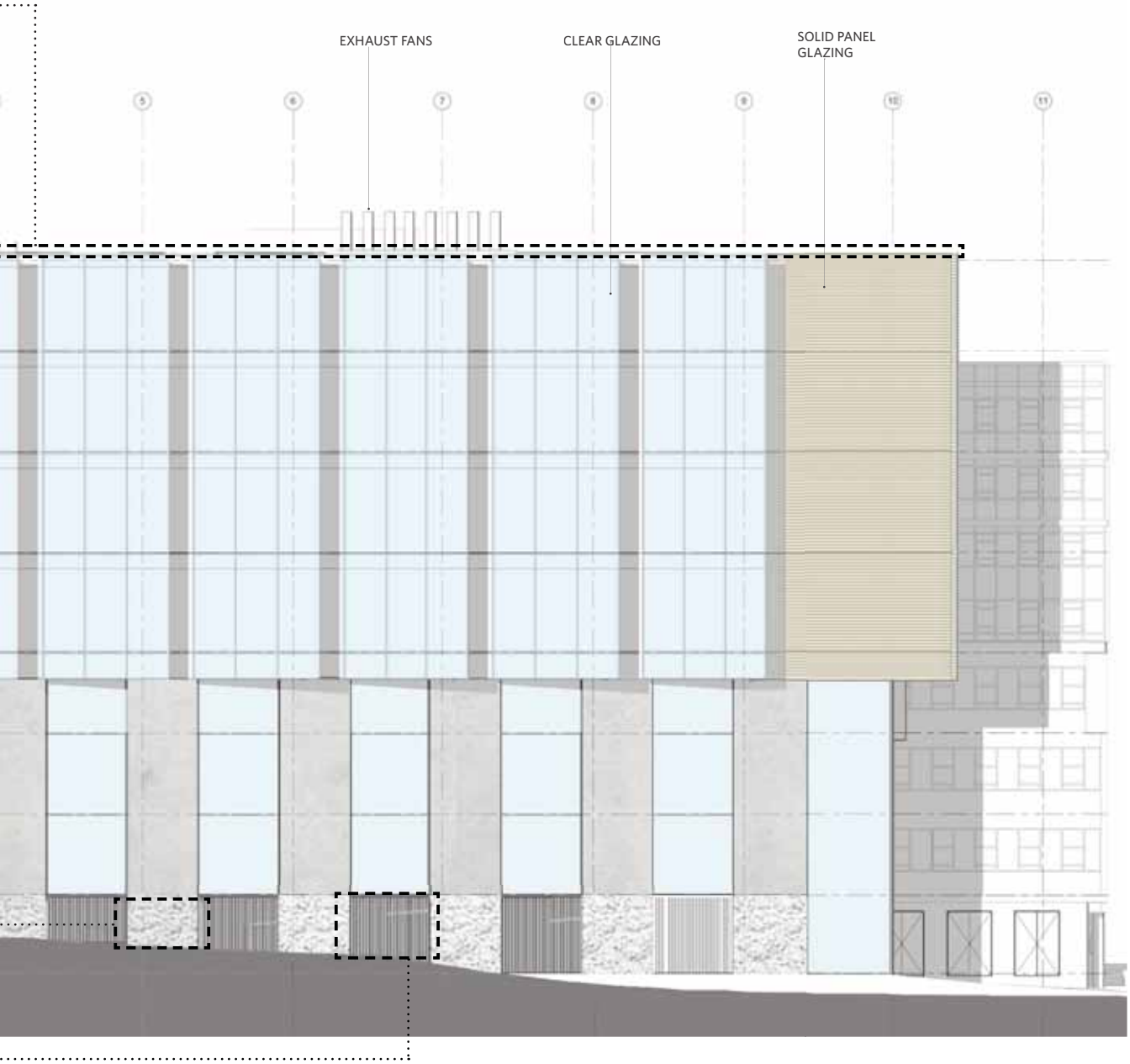
Concrete
- Class 2 finish

- Textured finish

Concrete louvres
- Concrete louvres over weather louvres or blanking as required



RICE DAUBNEY


EXHAUST FANS
CLEAR GLAZING
SOLID PANEL GLAZING

03

DESIGN QUALITY

SCALE RELATIONSHIPS TO THE CAMPUS

The existing 'old campus' is defined largely by horizontal-mass buildings that express vertical facade proportions through modulation of openings and material.

The LEES1 building responds to and extends this relationship between horizontal mass and vertical proportions to the City Road interface (Fig. 1).

As well as responding to the existing campus, the LEES1 building has a dialogue with the proposed F23 building on the opposite corner of Eastern Avenue.

Both buildings articulates a positive evolution of the modern university building engaging with its campus, treating internal space as an extension of the campus - blurring the boundary between what is 'in the campus' and ' in the building'. Corners are opened for direct entry and a number of permeable connections to the campus are made rather than relying on a single formal entry.

This theme is extended to an important consideration in the character of play between horizontal and vertical in F23 and LEES1, and the expression of building planes rather than building edges as these forms engage with the campus plane and surrounds. The expression of these buildings is less about establishing unassailable solidity, and more about a loose engagement with campus spaces.

LEES1 provides a foil to the expression of this in F23 and develops a language of vertical planes that defines the LEES1 envelope, and speaks to a permeable campus relationship. (Fig.2)

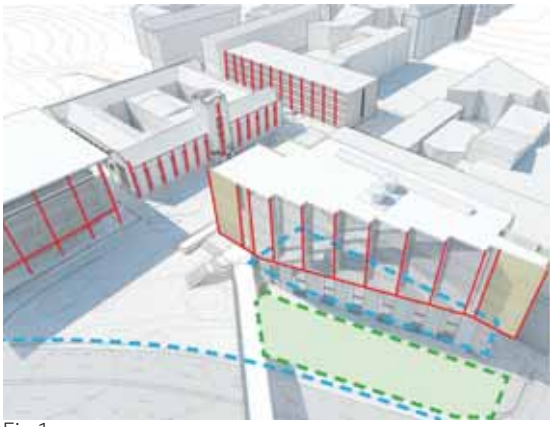


Fig.1

Fig.2


SYDNEY

03

DESIGN QUALITY

OPEN SPACE ANALYSIS

1. Strengthen definition of primary Eastern Avenue axis and vista
2. Potential links to Carslaw Building
3. Improve location of public transport connection
4. Potential to define urban square
5. Improve integration of footbridge landing with Eastern Avenue
6. Improve pedestrian shared zone
7. Road re-alignment, drop off to F23 rationalises site entry/ exit and reduces number of vehicle crossings
8. Vehicle access to campus maintained via Fisher Road
9. F23 floor-plate layout optimised to respond to views across St Paul's Oval
10. F23 and LEES1 Buildings to give definition to City Road end of Eastern Avenue

RICE DAUBNEY

LANDSCAPE RESPONSE

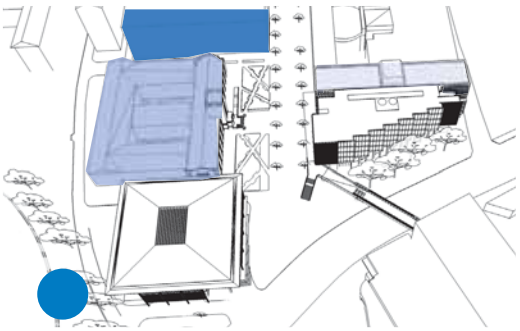
- **A** F23 site Western boundary defined by St. Paul's Oval tree line.
- **B** LEES1 Southern facade defined by required setbacks to significant fig trees to City Road.
- **C** Building alignments defined by edges of Madsen and Carslaw Buildings.
- **D** Madsen forecourt provides landscape opportunity and high amenity public space.
- **E** Landscape opportunity at corner of Fisher Road and City Road responds to St. Paul's Oval tree line, significant figs at Mereweather corner, and provides landscape setting for existing Attendant's Lodge.

03

DESIGN QUALITY

HERITAGE CONTEXT

- **A** Chemistry Building of high historical significance being notable early example of curtain wall construction.
- **B** F23 aligns to predominant face of Madsen Building, respecting the heritage alignment.
- **C** Madsen Building of moderate historical significance.
- **D** Carslaw Building of low historical significance.
- **E** Attendants Lodge of high historical significance. A University building located at the end of the original Fisher Road, and later gifted to St Paul's College.
- **F** Heritage fence line repositioned.



RICE DAUBNEY

VEHICHLE & PEDESTRIAN MOVEMENT

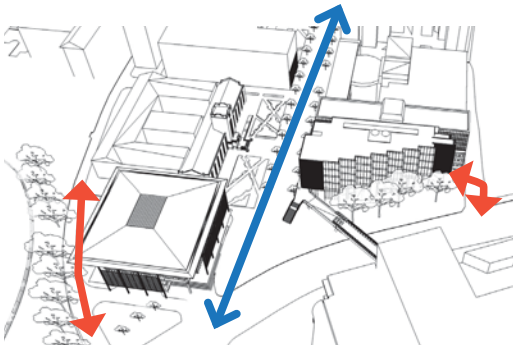
A Cross campus vehicle access provided via reconfigured connection from City Road to Fisher Road and shared zone to F23.

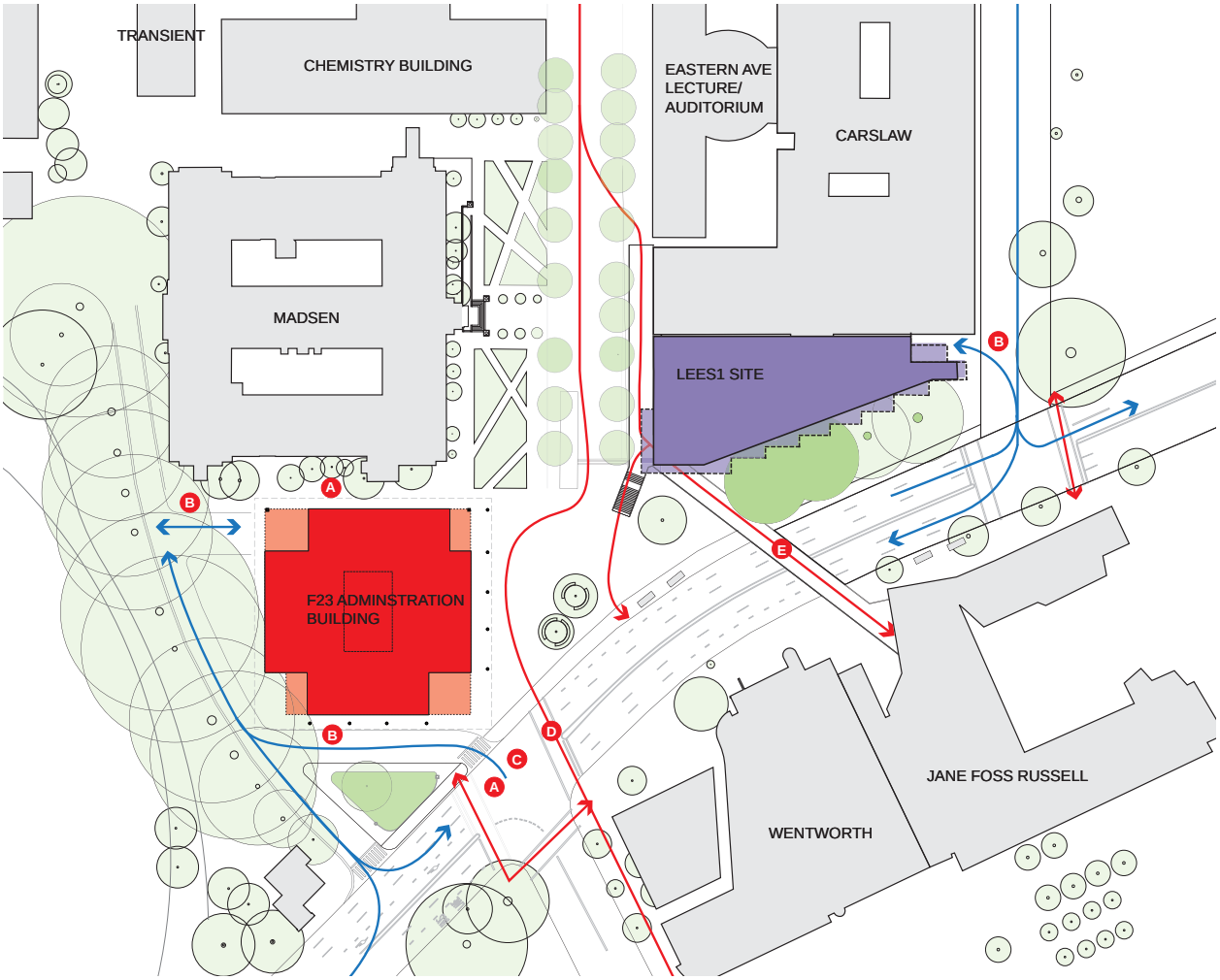
B F23 carpark entry located away from Eastern Avenue at low point of site. A secondary access road. LEES1 to maintain existing service vehicle/delivery access from Barff Road.

C Separation of pedestrian and vehicle movement improved by reconfiguration of cross campus vehicle traffic.

D City Road is an RMS arterial road. No modification to pedestrian crossings proposed.

E Existing pedestrian overpass.



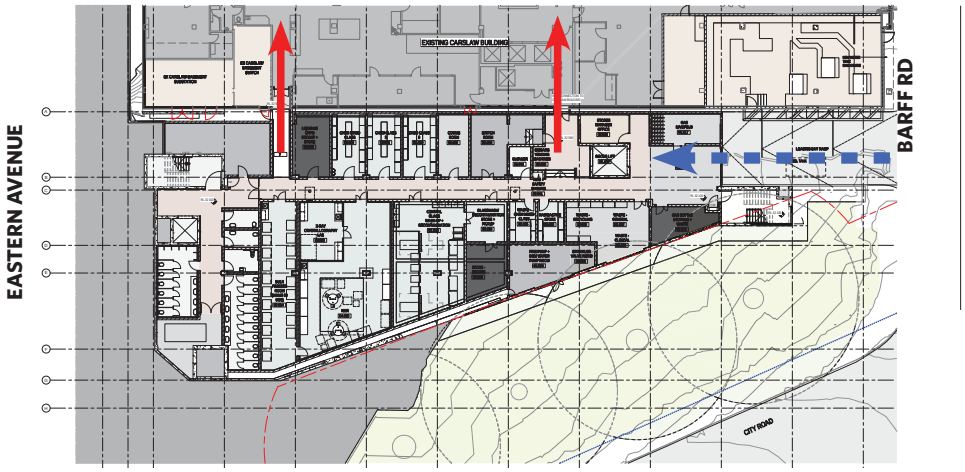


03

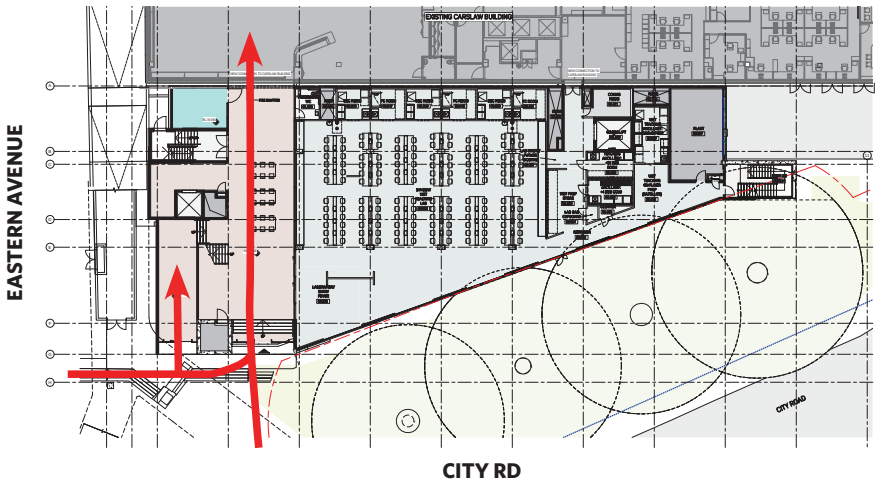
DESIGN QUALITY

BUILDING ADDRESS, ENTRY, AND PASSIVE SURVEILLANCE

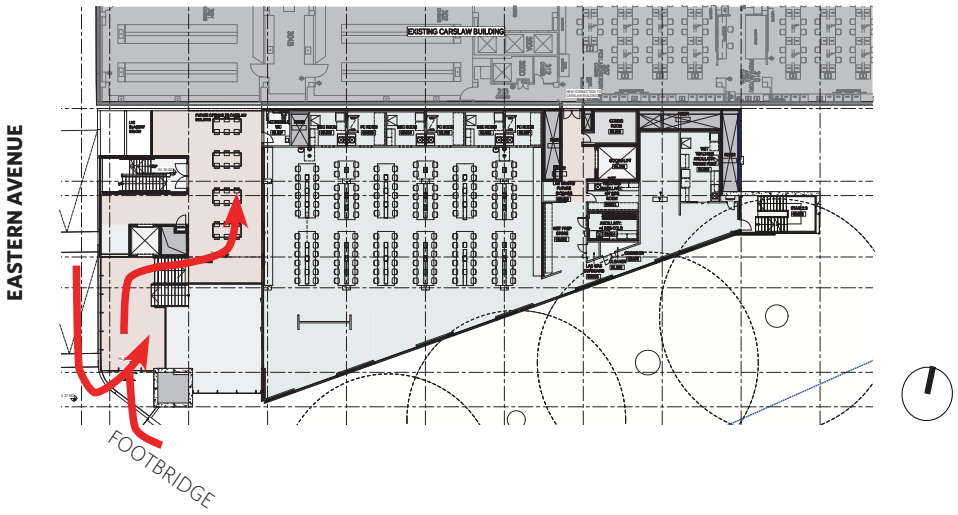
New connections to existing Carslaw building



LEVEL 1
Vehicular access from Barff Rd

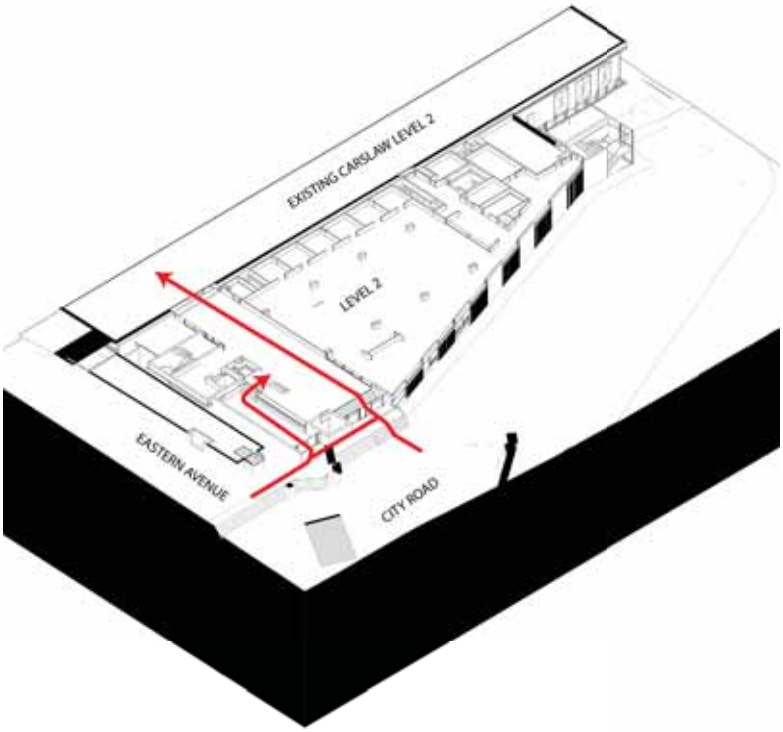


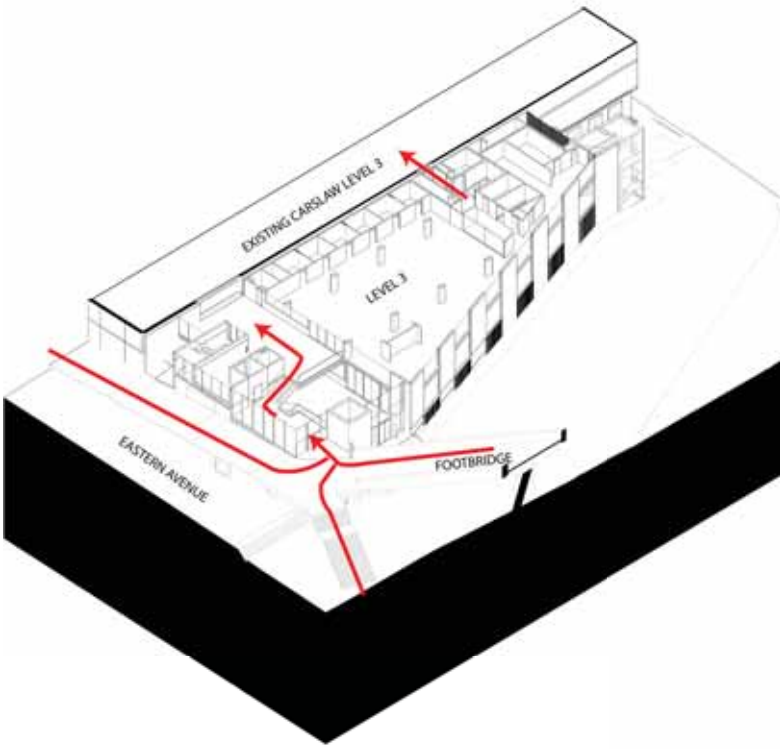
LEVEL 2
Pedestrian entry from City Rd and Eastern Ave



LEVEL 3
Pedestrian entry from Footbridge

BUILDING ADDRESS, ENTRY, AND PASSIVE SURVEILLANCE





The LEES1 building is at an unusual connection point in the campus - spanning multiple levels and integrating with the existing Carslaw building.

To create an immediate connection to the campus, the south western corner has been developed to be the primary integrator of these various routes. This creates a visual accessibility between the external levels and the three teaching floors.

Lift access from City Road bridge level to City Road pavement level is made possible with this configuration - and may be able to facilitate after-hours access depending on campus security arrangements.

Access is also made from the internal student commons to the City Road garden space.

Large format windows provide views from active spaces on Level 2, 3, and 4 into the garden space against City Road - providing amenity and passive surveillance to this space and the City Road footpath.

03

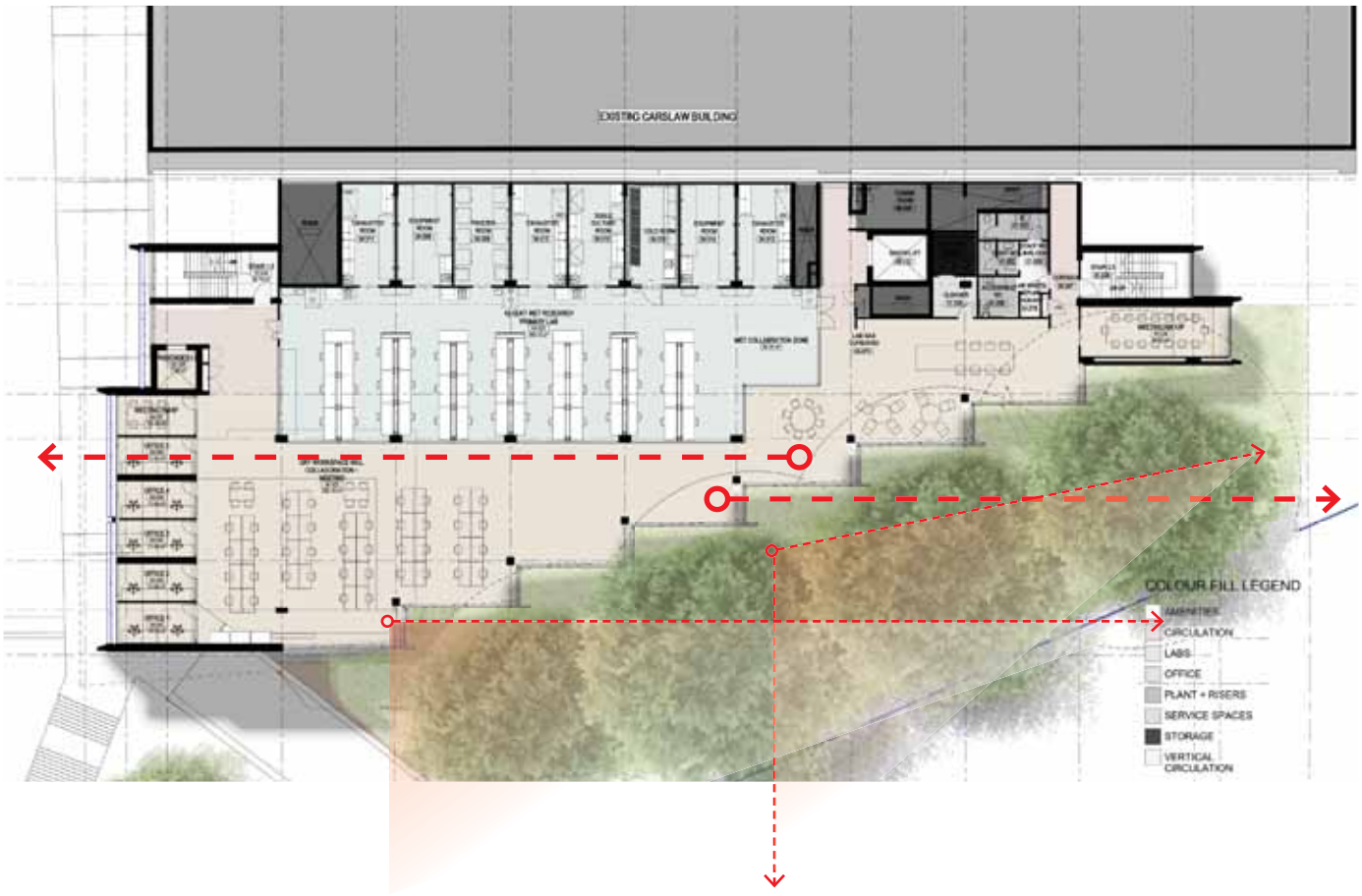
DESIGN QUALITY

VIEWS AND AMENITY

The floors have been arranged to maximise views from the office and lab spaces. In particular, opening up eastern views to Victoria park and the central city.

The primary feature that creates this opportunity is the 'tessellated facade', that opens view up along the diminishing edge of the City Road boundary.

Placing the open collaborative zones on the eastern half of the floor creates a great depth of views along the corridor spaces and from within the labs, creating a sense of openness in what is a relatively constrained site and floor plan.



Office views also open up to Eastern Avenue, and the large glazed eastern stair provides views out from the main lab corridor, as well as encouraging inter-floor circulation.

LEGIBLE AND VISUALLY CONNECTED STUDENT SPACES

The scale of internal student-level spaces provides clear views both in and out of the building. Cores and structure are pushed away from corners, so entry points connect visually to major teaching spaces as well as each other.

The student spaces are framed to maintain connection with the campus plane, so they are understood as an extension of the campus, rather than contained spaces inside isolated buildings.

04

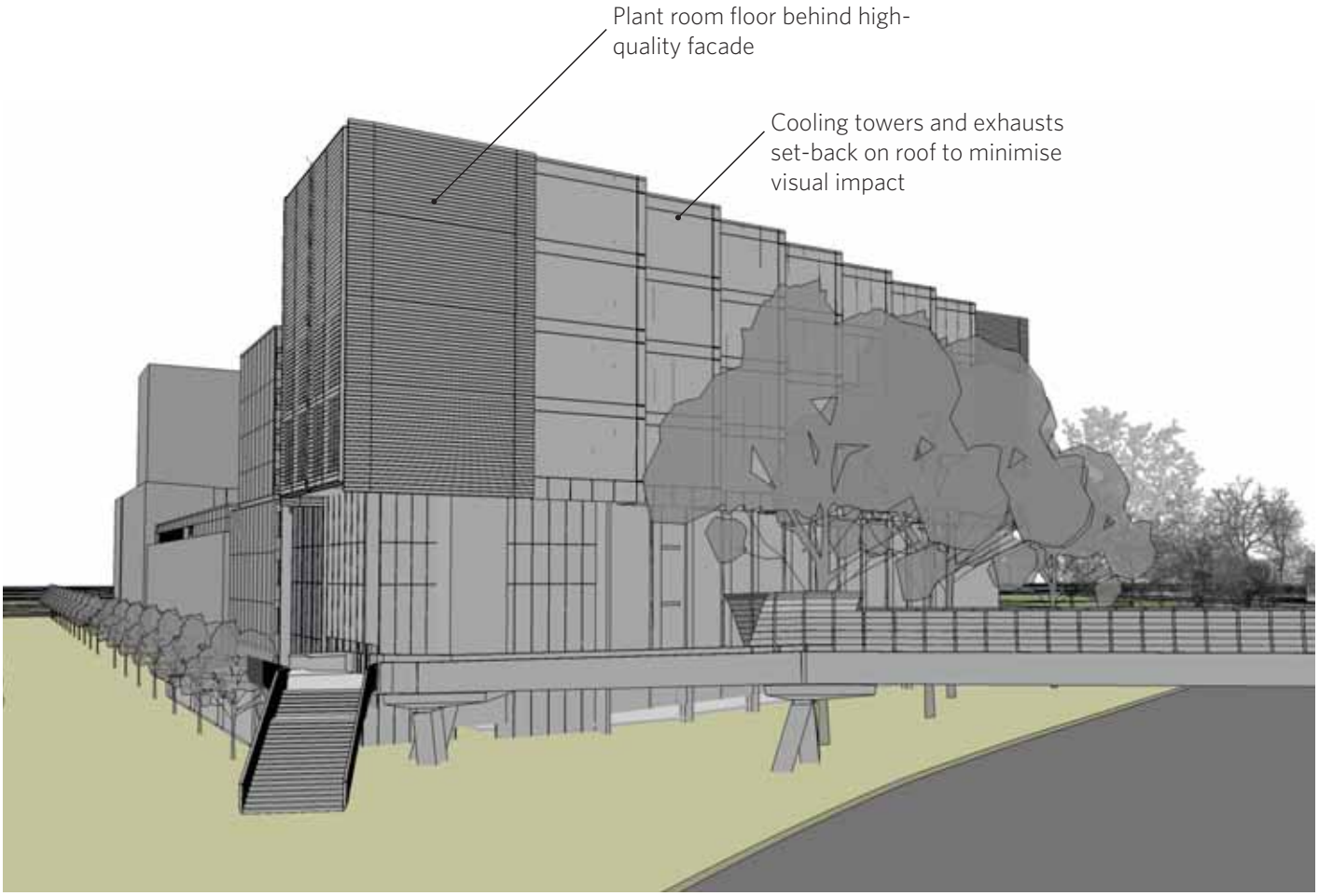
INTEGRATION OF SERVICES

SERVICES INTEGRATION AND VISUAL PROMINENCE

Laboratory buildings - by their functional nature - require large plant areas and exhausts.

Given the prominent location of the LEES1 building on City Road and framing the entry to Eastern Avenue, care has been taken to minimise the visual impact of plant and exhausts.

Louvre and grilles for air intakes are carefully located to minimise visual prominence - high quality facade materials are positioned to presented to street and campus views where ever possible.

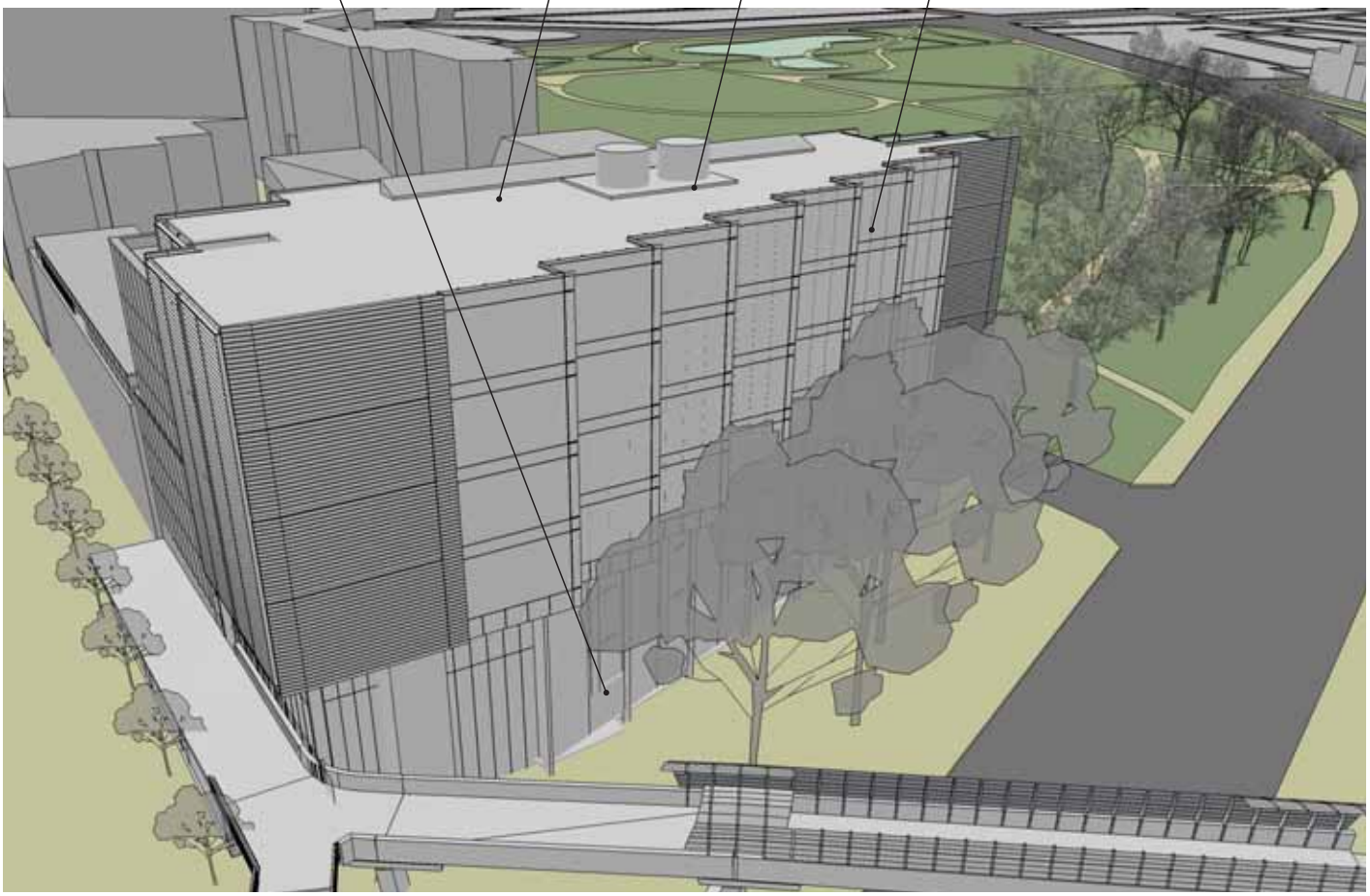


Air intake louvres within high-bay 'pop-up' to minimise visual impact

Low-level louvres integrated behind concrete facing screen within garden zone to minimise visual impact

Cooling towers and exhausts set-back on roof to minimise visual impact

Plant room floor behind high-quality facade



04

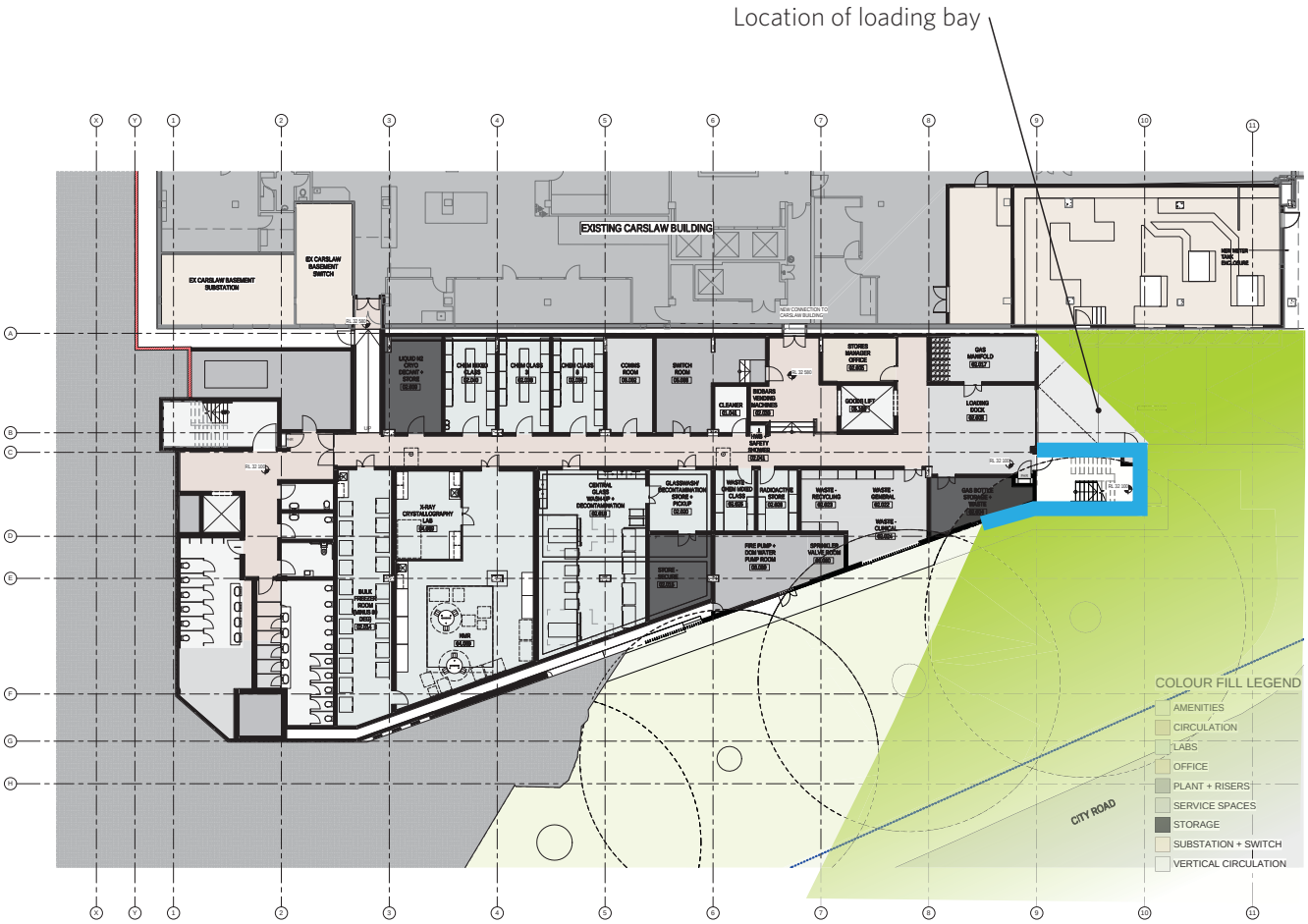
INTEGRATION OF SERVICES

SERVICES INTEGRATION AND VISUAL PROMINENCE

The location of plant rooms and major utility spaces are indicated on the architectural drawing.

Most plant and utility spaces not incorporated into the Level 8 plant room are contained on Level 1, and clustered around the loading bay.

The glazed stair from Levels 2 - 4 on the East of the building is designed to partially screen the loading bay from direct City Road views.



RICE DAUBNEY

Integration of services - Level 1

1. General waste and recycling holding
2. Laboratory waste holding
3. Empty gas bottle holding
4. Loading bay (internal)
5. Gas stores
6. Substation
7. Loading bay (external)

Layout and size of rooms subject to design development.

04

ENVIRONMENTAL AMENITY

INTRODUCTION

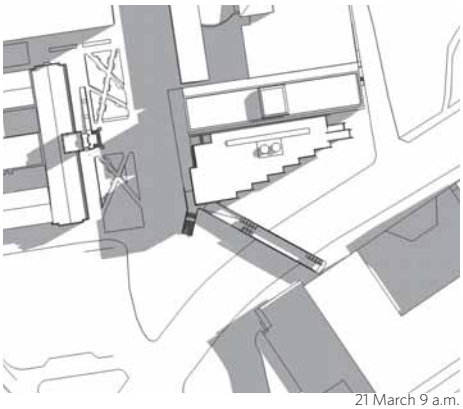
While attached technical reports cover most aspects, in brief there are no issues identified that cause unreasonable impact to noise, wind, reflectivity, acoustic privacy. The following items are notable:

Building plant areas have been concentrated on the roof as far as possible, minimising the number of air intakes and exhausts at lower levels that could cause noise, vibration, and visual amenity impacts.

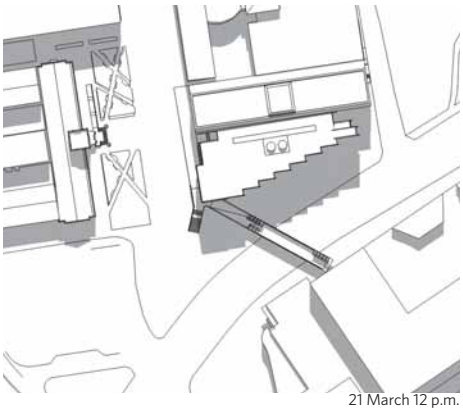
The building alignment follows the reference scheme to minimise impact on the existing fig trees. The upper level stepped facade sits on an average setback line compared to the reference scheme (that is, the outer edge protrudes beyond the reference scheme, but the inner edge is set back further).

Amenity for the existing Carslaw building is one of the most significant areas of investigation, and multiple versions of the concept design were tested to identify a most appropriate response. This has included consideration of the overall quality of future integration with the Carslaw building.

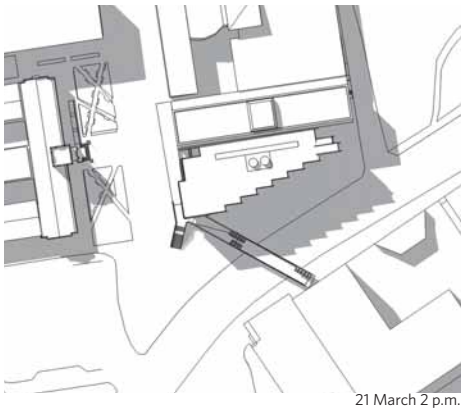
SOLAR ACCESS



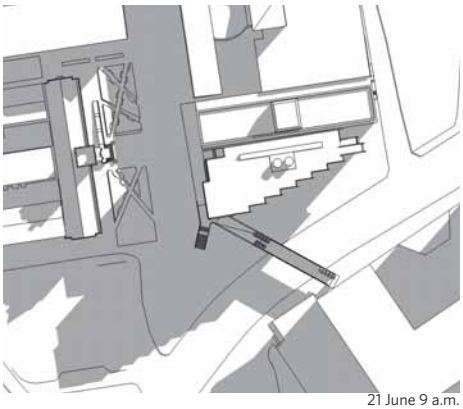
21 March 9 a.m.



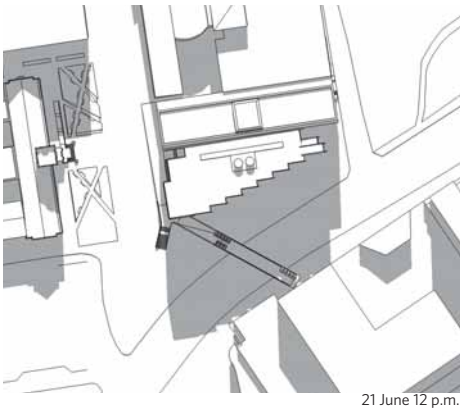
21 March 12 p.m.



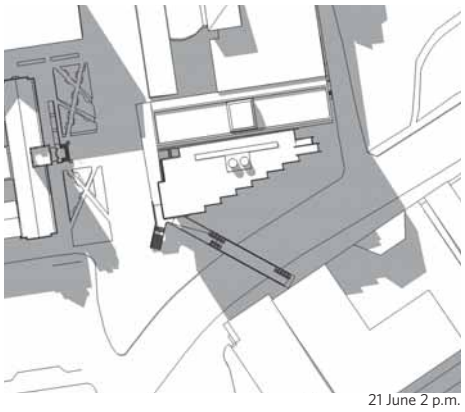
21 March 2 p.m.



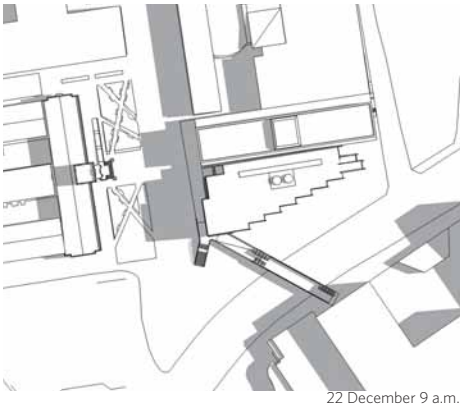
21 June 9 a.m.



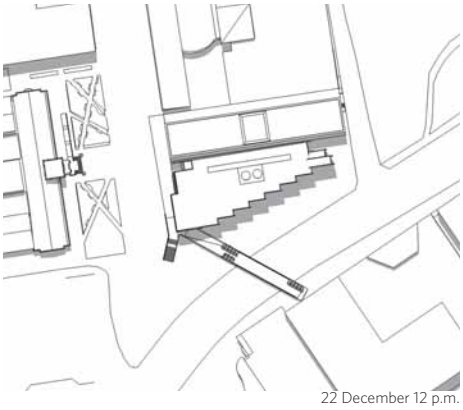
21 June 12 p.m.



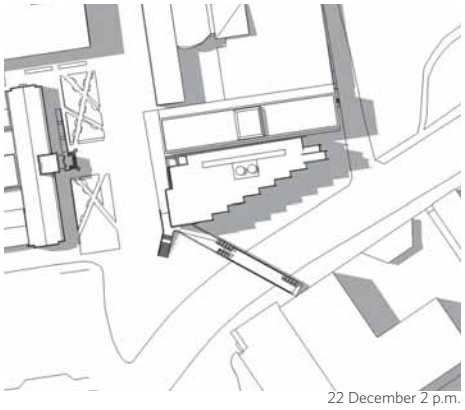
21 June 2 p.m.



22 December 9 a.m.



22 December 12 p.m.



22 December 2 p.m.