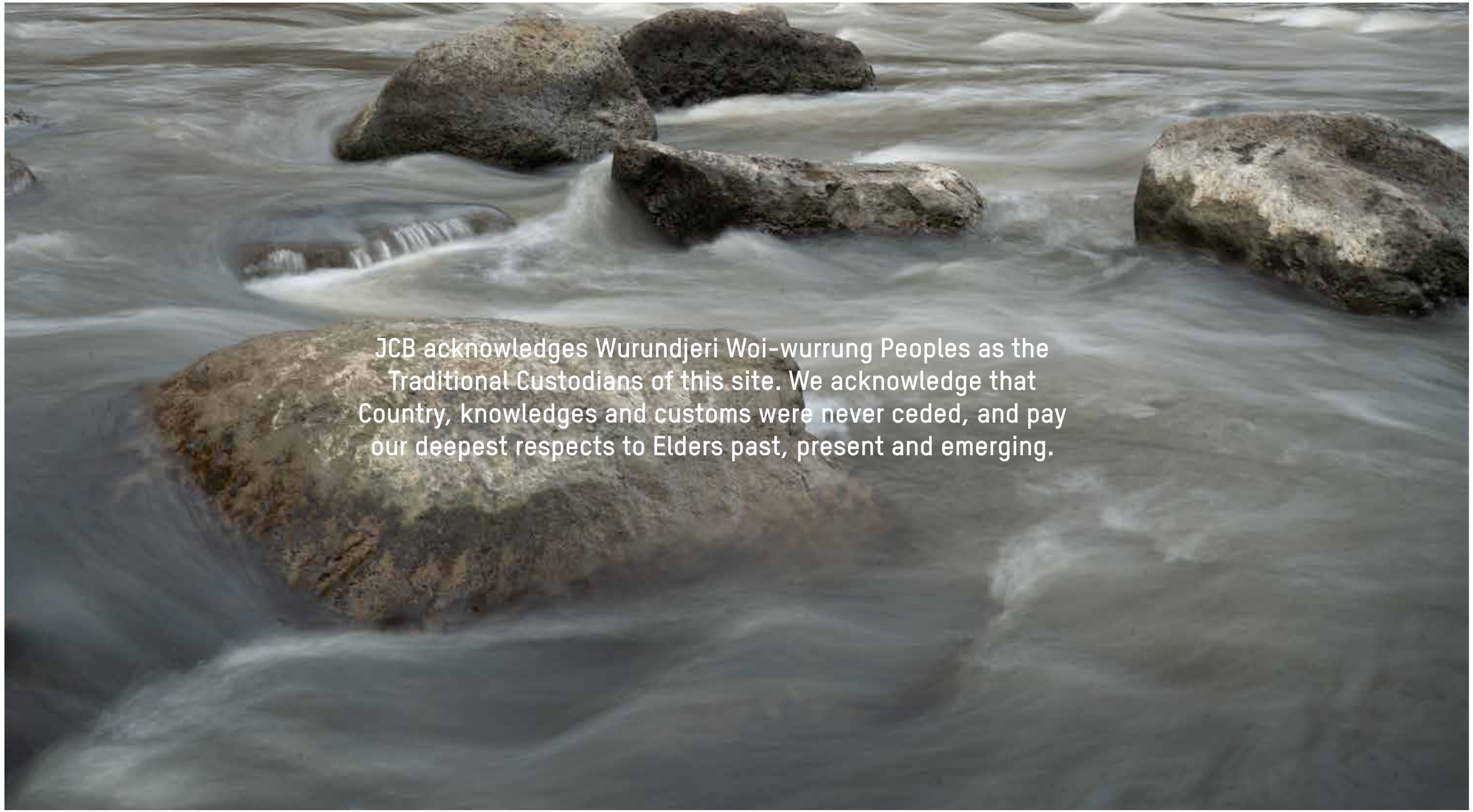
Architectural Innovation with Engineered Wood Construction

Wood Solutions June Seminar

28.06.2023

Jackson Clements Burrows Architects


JCB acknowledges Wurundjeri Woi-wurrung Peoples as the
Traditional Custodians of this site. We acknowledge that
Country, knowledges and customs were never ceded, and pay
our deepest respects to Elders past, present and emerging.

Mass timber expertise

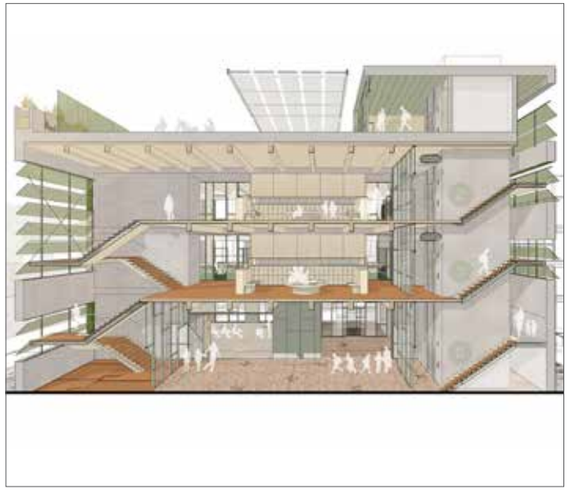
Monash University Gillies Hall

36 Wellington Street

La Trobe University North & South Apartments

Chapel St Hotel

Cowes Cultural and Community Centre



Clifton Hill Primary School Senior Year Vertical Campus

Balmain Street

St Kevins College Heyington Campus

Monash University Gillies Hall

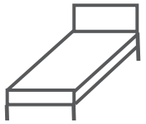
Client:
Monash University

Location:
Peninsula Campus, Frankston

Cost:
$34M

Duration / Completion:
2017–2019

Brief

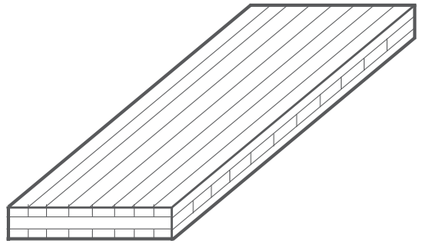


150
STUDENT
ROOMS
+
SUPPORT
ACCOMMODATION

+

ATTEMPT
PASSIVE
HOUSE
CERTIFICATION

+

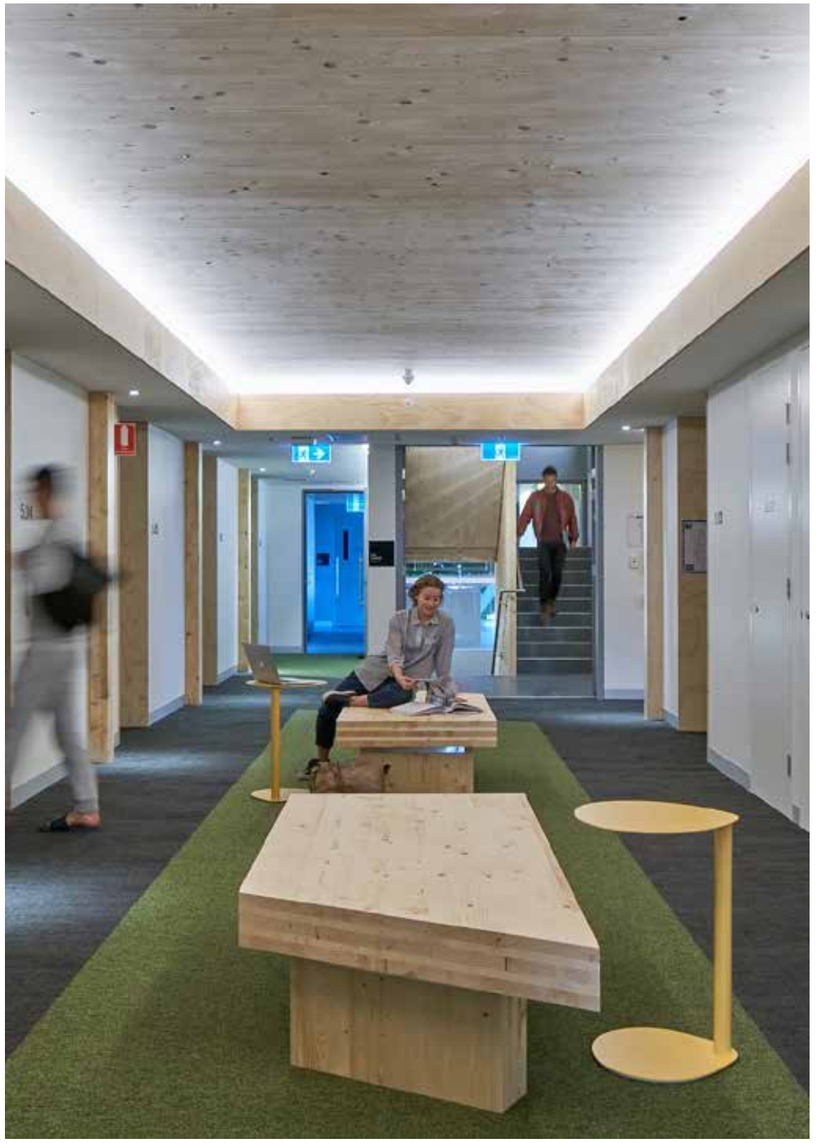


EXPLORE
MASS
TIMBER
CONSTRUCTION

+

19

OPEN
FOR
STUDENTS
19
MONTHS



La Trobe University North and South Apartments

Client:
La Trobe University

Location:
Bundoora Campus

Cost:
$100M

Duration / Completion:
2018–2020

Brief

624 student beds

including support accommodation

Sustainability Target

Achieve 5 Star Green Star with a high performance envelope

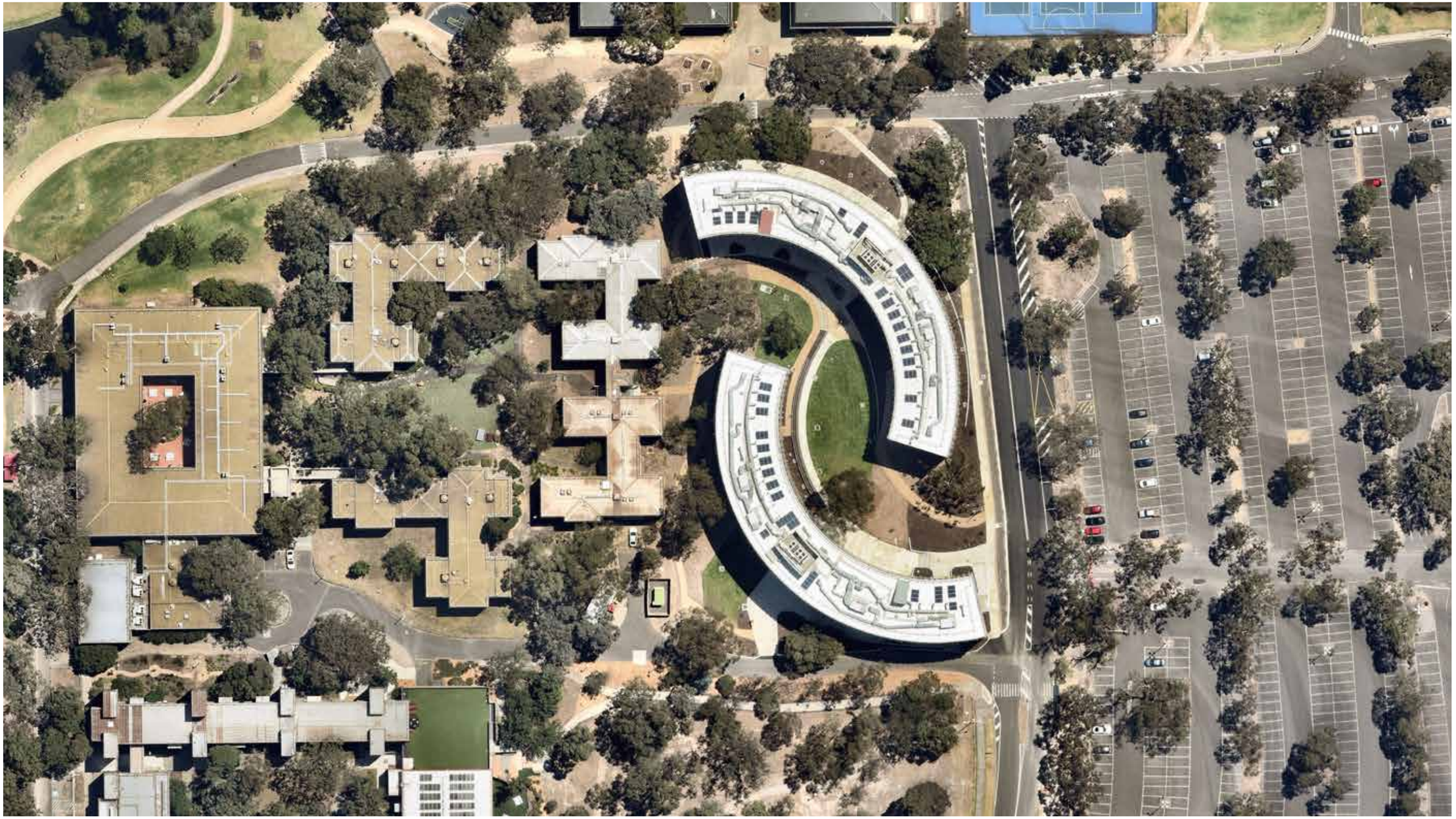
Mass timber construction

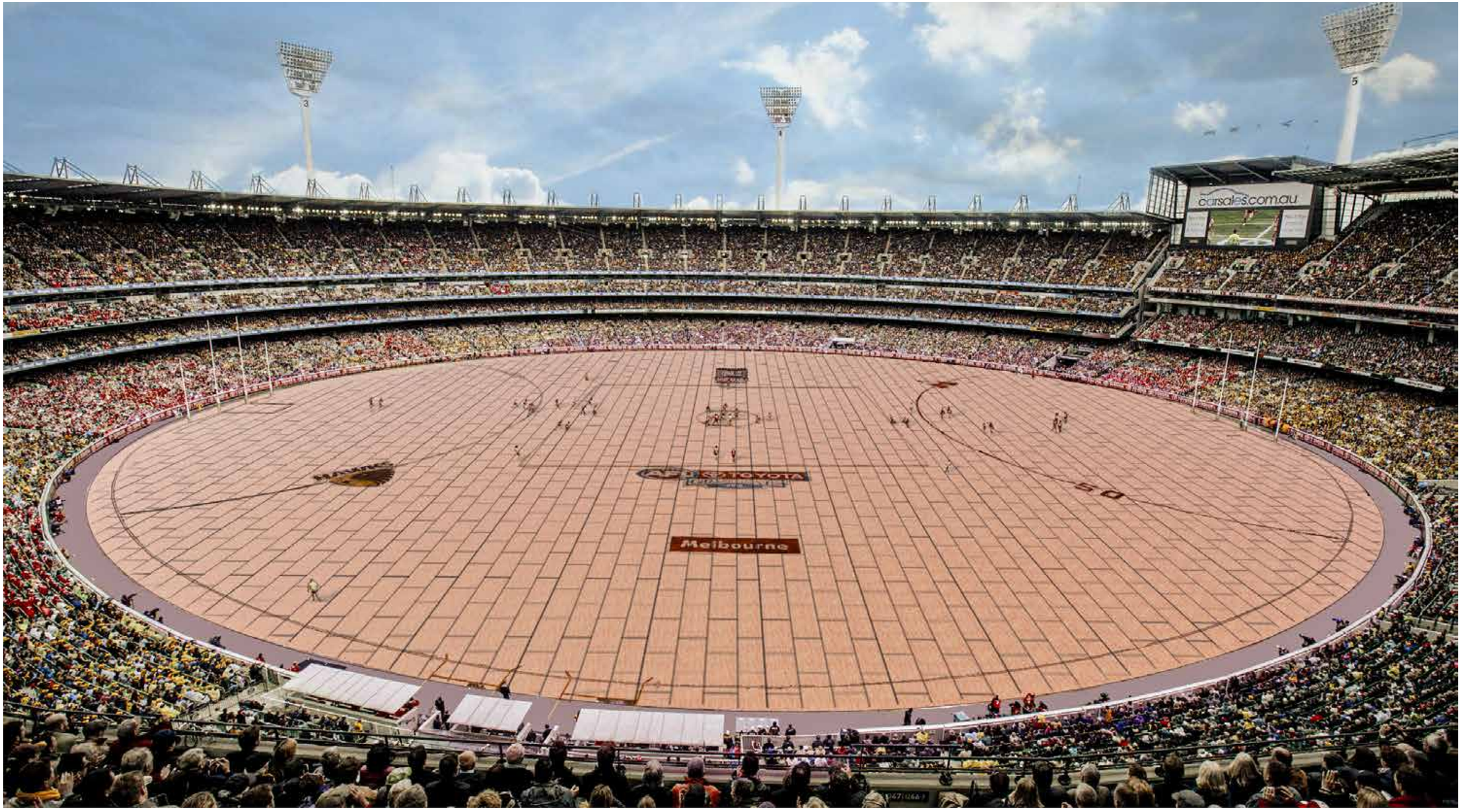
investigation for construction efficiency

24 months

to practical completion for students to move in

Site





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CLT construction & staging

Wellington Street

Site Area:
2100 m^2

Building Height (above NGL):
62m

Gross Building Area (GFA):
29,300m^2

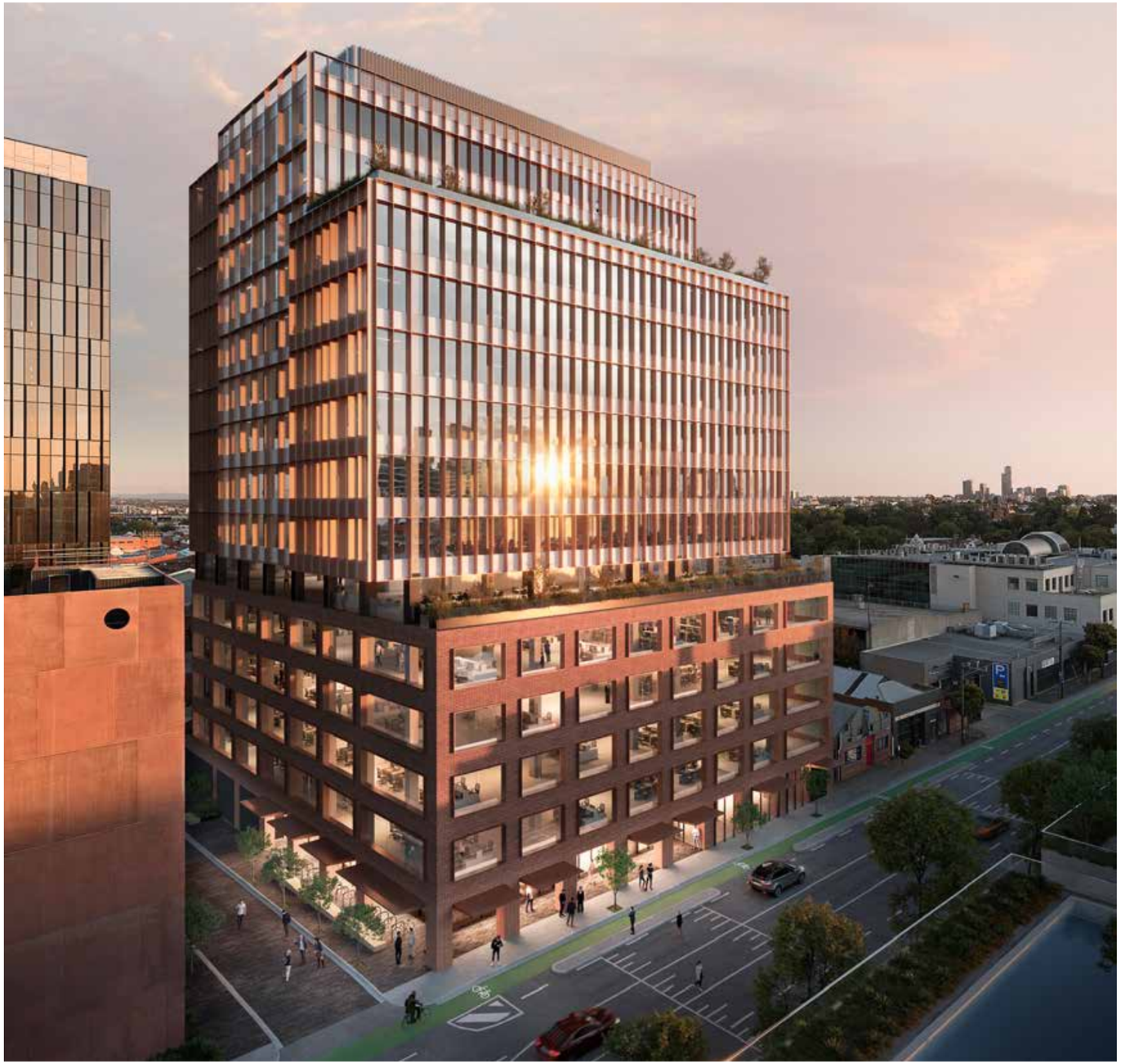
Gross Net Lettable Area (NLA):
18,010m^2

Total Car Spaces:
73

Client:
Hines Property

Location:
Collingwood, Victoria

Duration / Completion:
2023 (expected)



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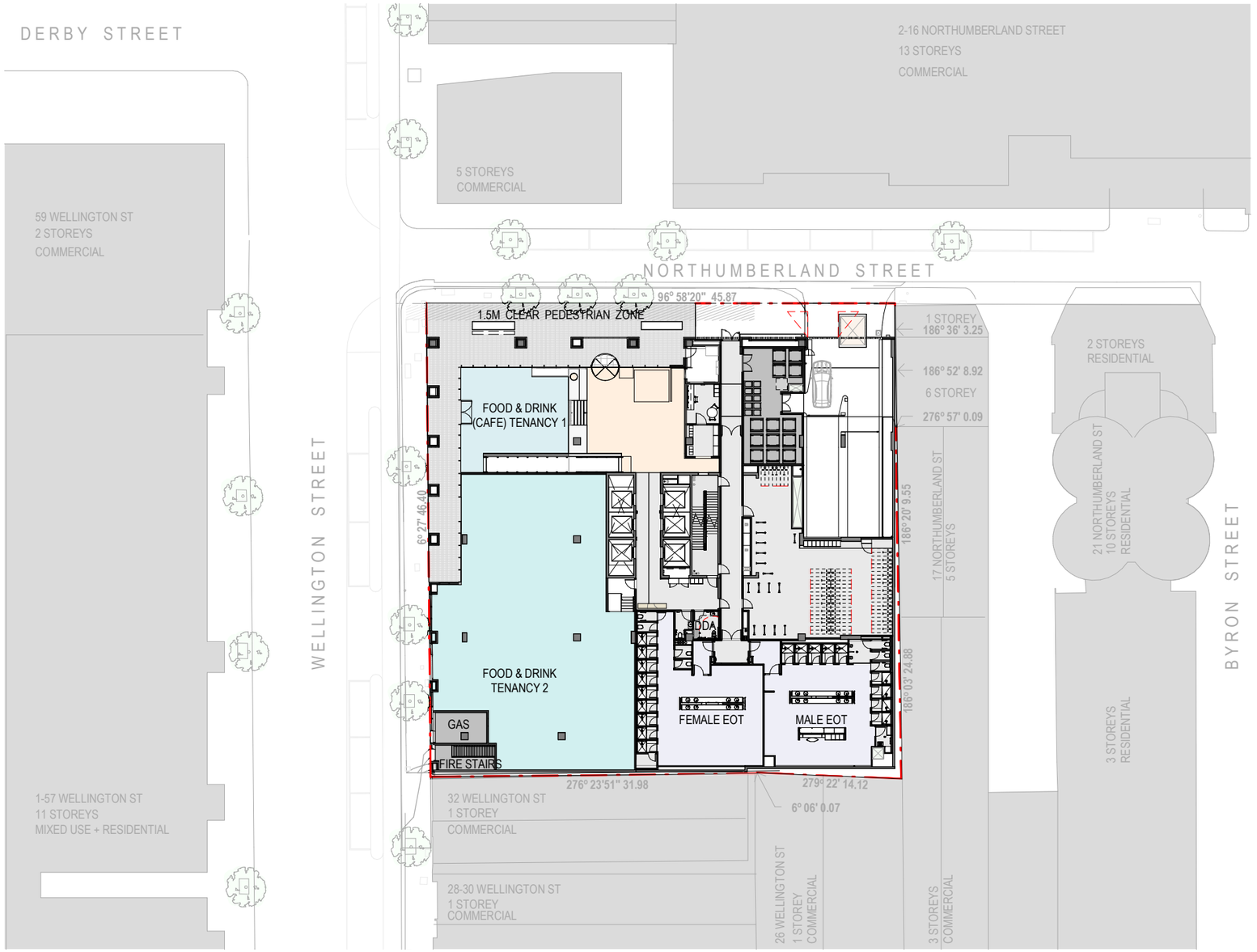
Context



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Site Plan

ESD Initiatives

Best-practice ESD initiatives, including targeting a minimum 5.5 star NABERS Base Building energy rating, and a 6 Star Green Star rating.

1. **Services:** Energy efficient services and PV array to roof contributing to 5.5 Star NBERS target.

2. **External Terraces:** Levels L5 & L12 External spaces provide communual amenity for tenants. Rainwater collected and reused in the building.

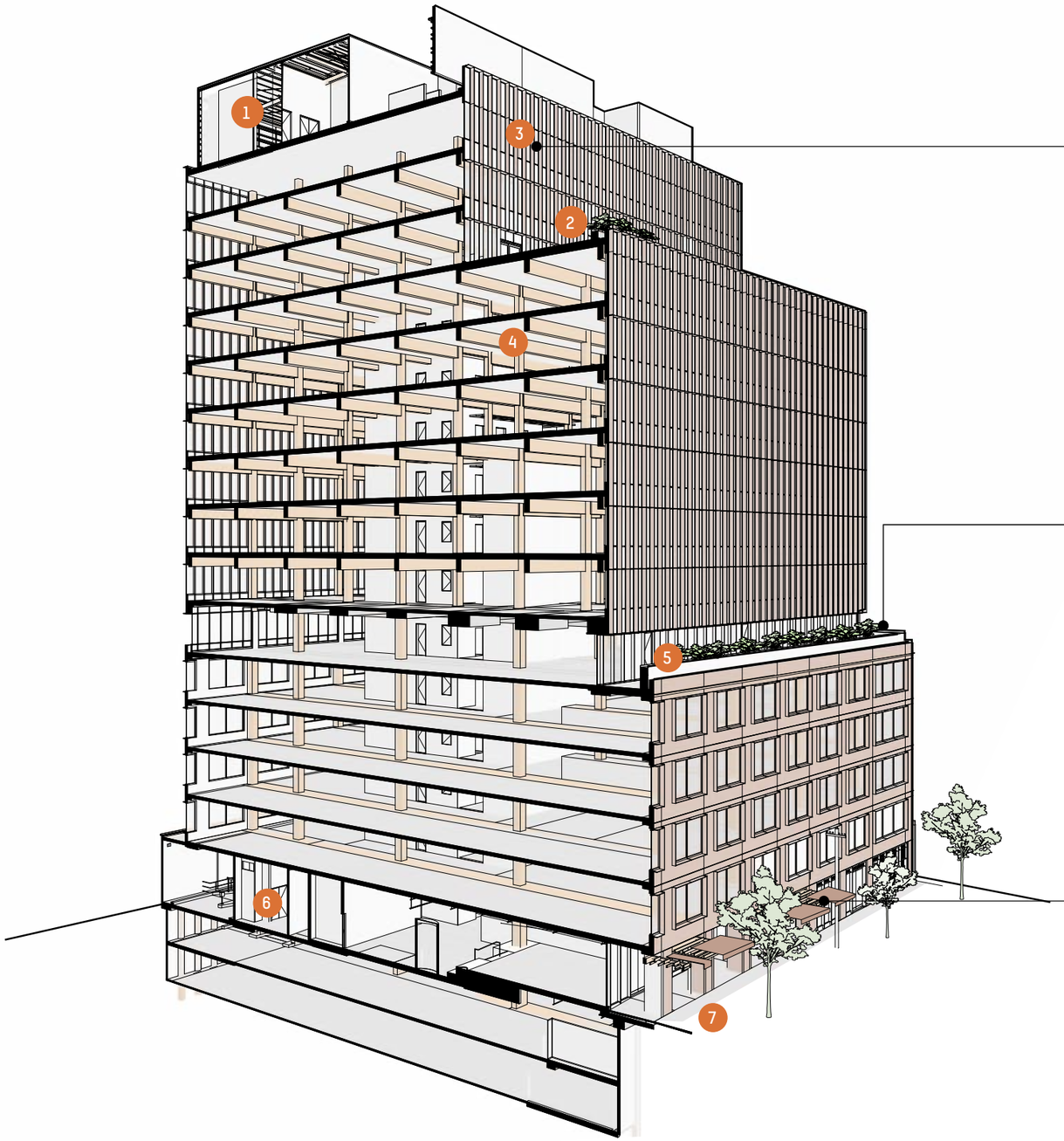
3. **High Performance Facade:** High performance glazing to allow daylight to penetrate to the floorplates, while reducing glare and internal heat gain. Vertical and horizontal solar shading to north and west facades to reduce heat gain. U-Value 2.5 & SHGC 0.25 (whole of system), VLT 50%, Spandral R1

4. **Timber Construction:** Upper floors in timber construction to reduce building carbon footprint, provide biophilic connections and improve office aesthetic.

5. **External Planting:** Planting to external areas provides shading, biophilic connection and reduces affect of wind.

6. **End of trip facilities:** Provision for high quality end of trip facilities and bicycle spaces with dedicated direct access off Northumberland Street.

7. **Community Amenity:** Building setback at Ground Floor allows the creation of a pedestrian streetscape with planting and brick landscaping. Cafe, lobby and tenancy spaces create an active street frontage.



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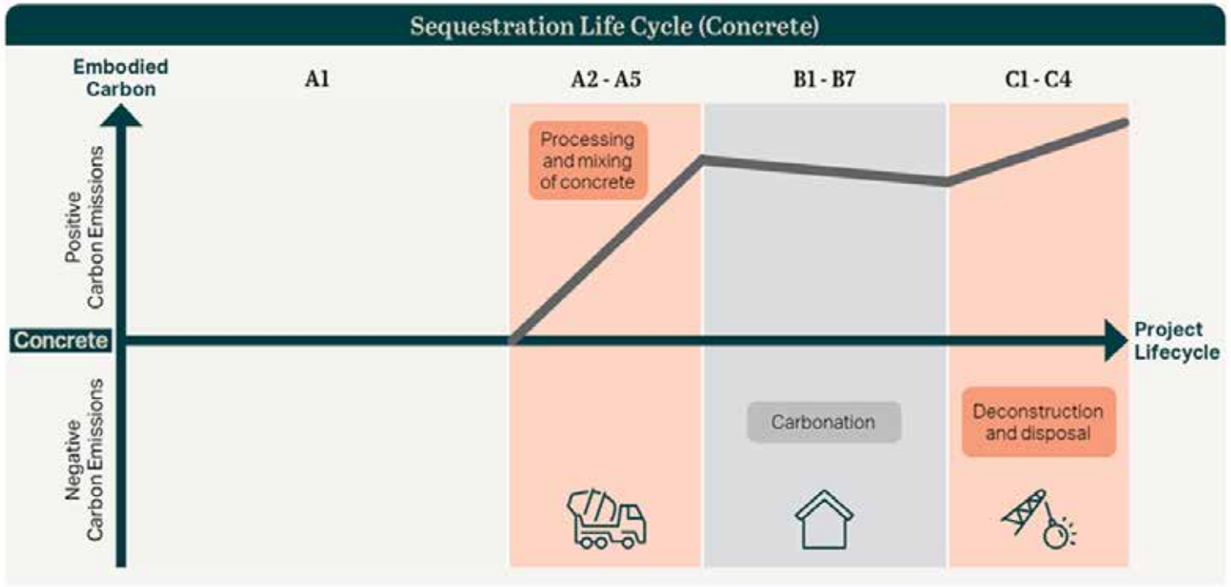
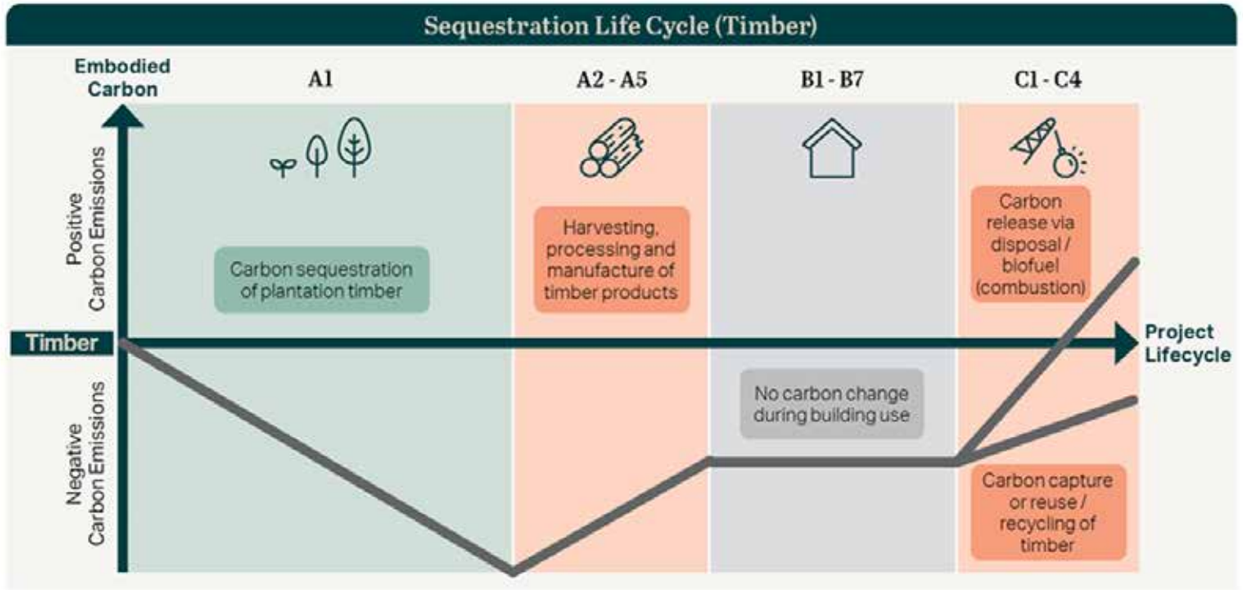
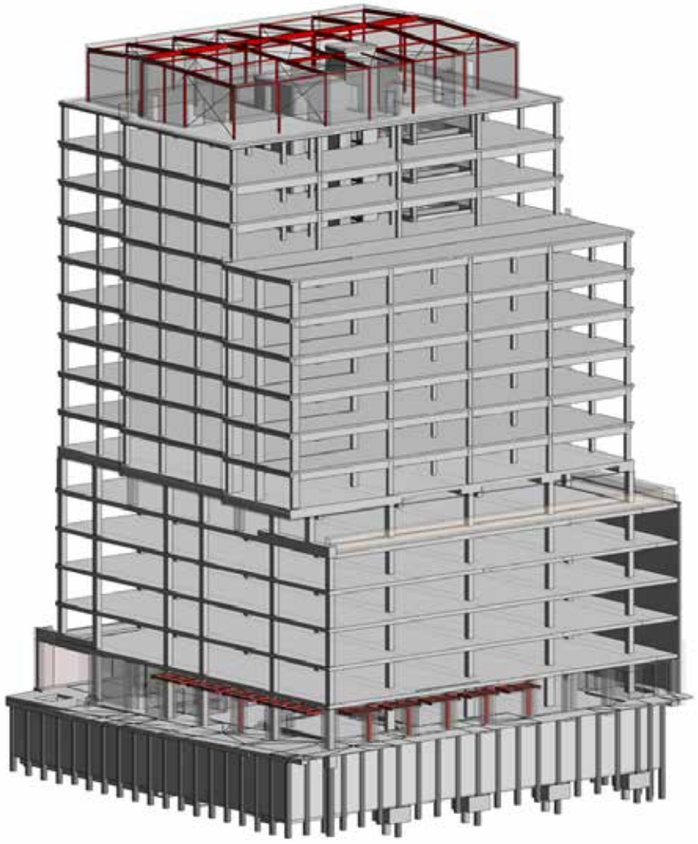
Embodied Carbon

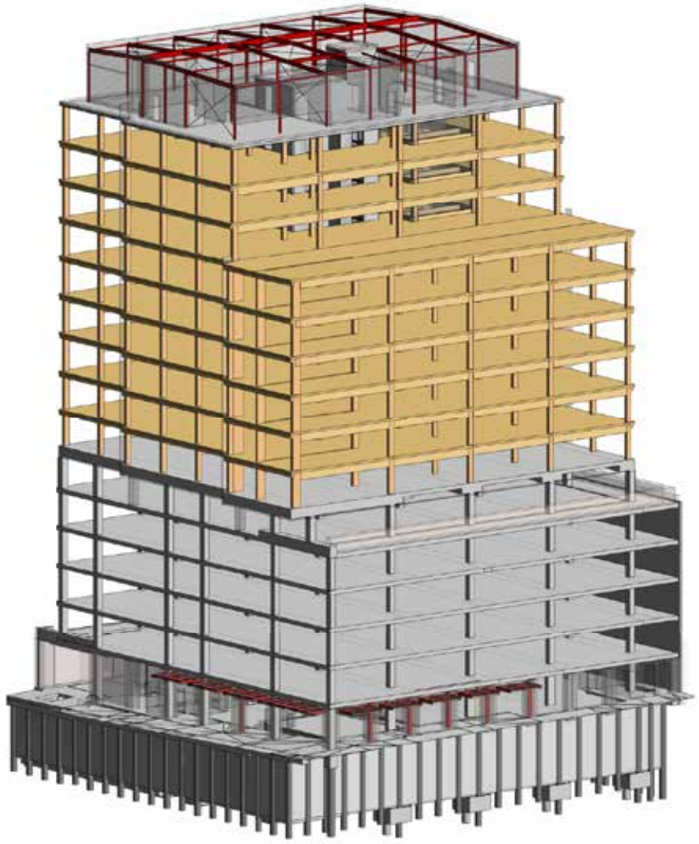




Embodied Carbon



Concrete Scheme



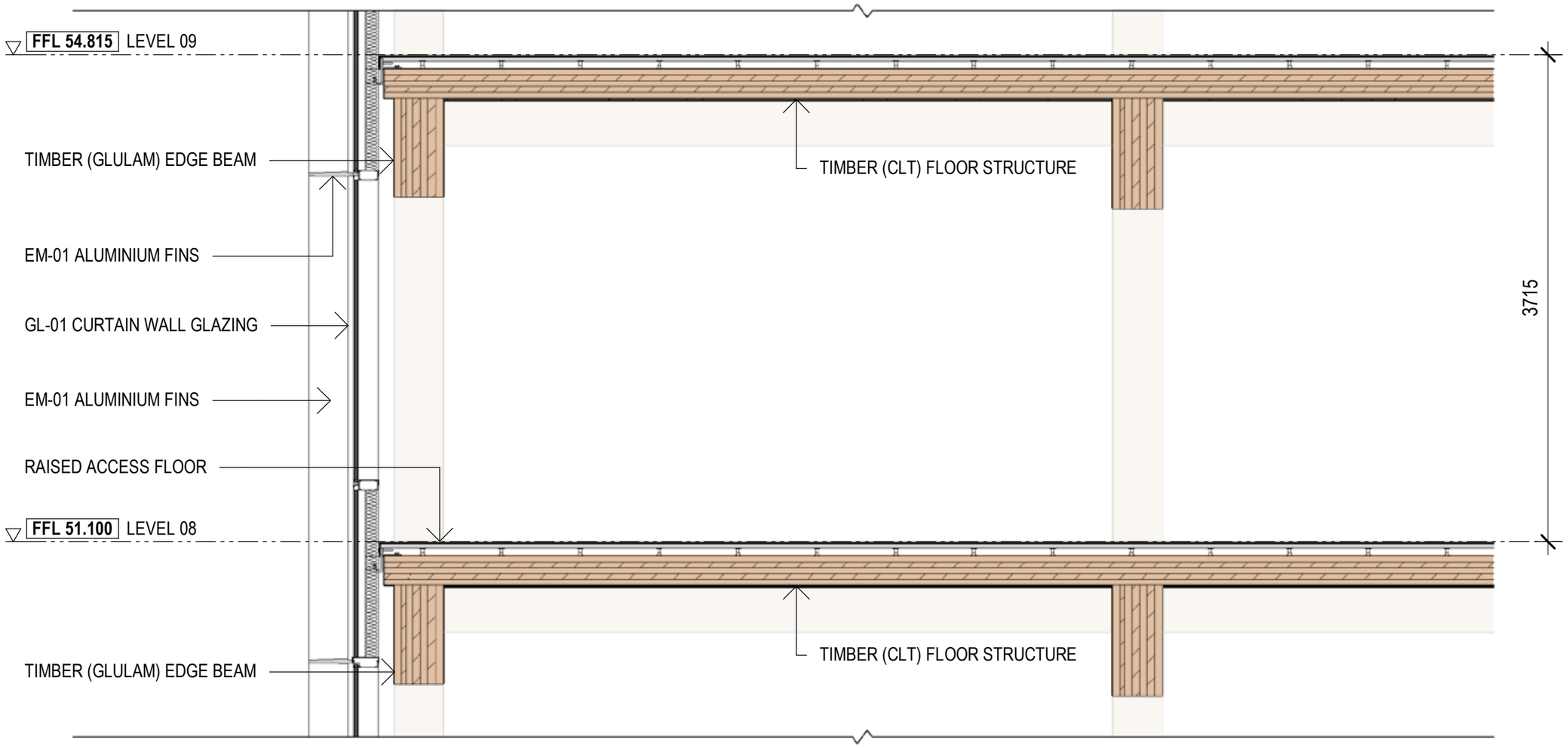
Timber Scheme

*Using Greenstar Credit 21 Methodology (A1-A5, pre 2023)

Grids

Concrete Grid - 11 x 9.6 m

Timber Grid - 5.5 x 9.6 m



TOWER WALL SECTION - TIMBER STRUCTURE DETAIL
SCALE 1:50 @ A3

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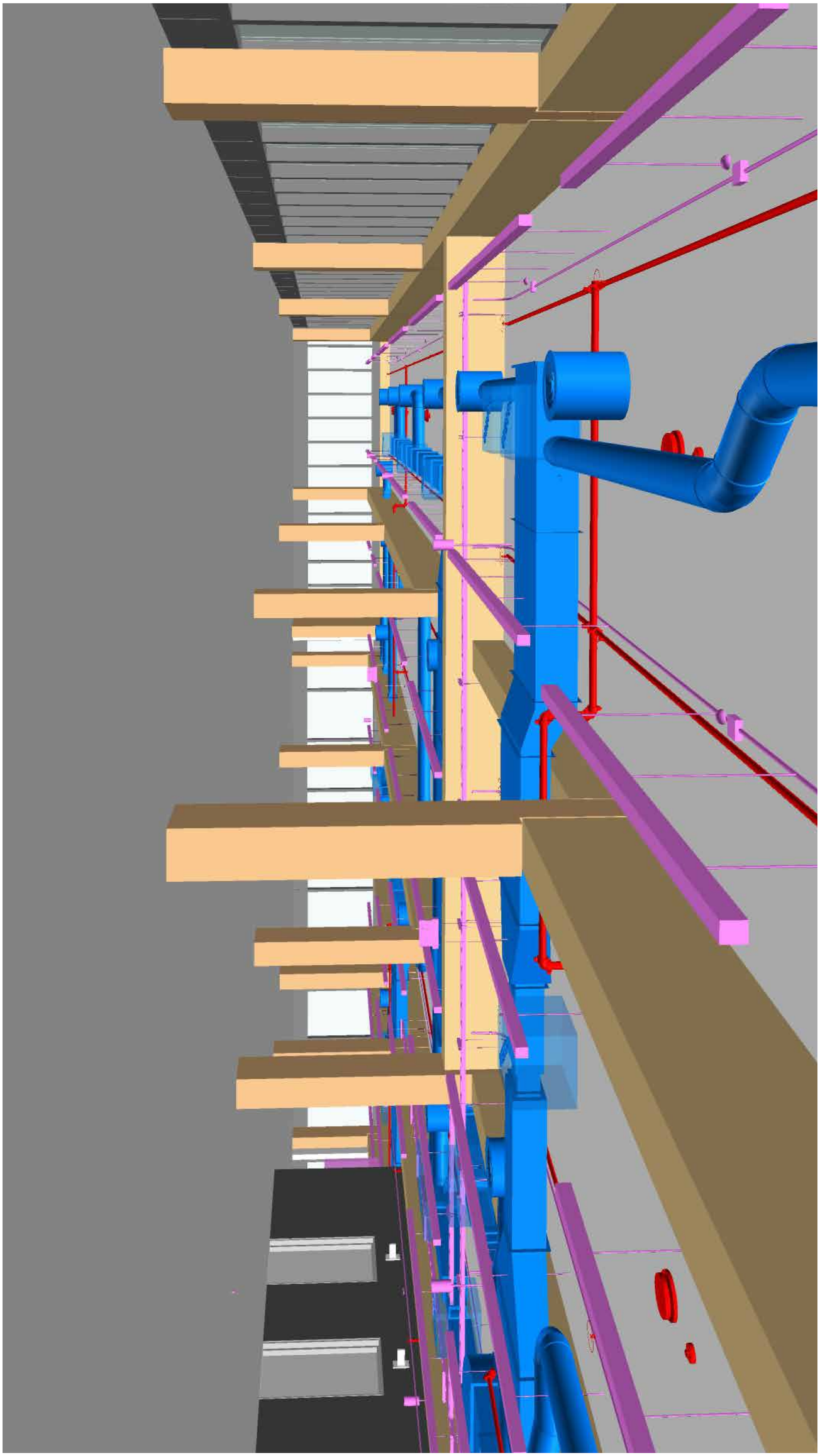
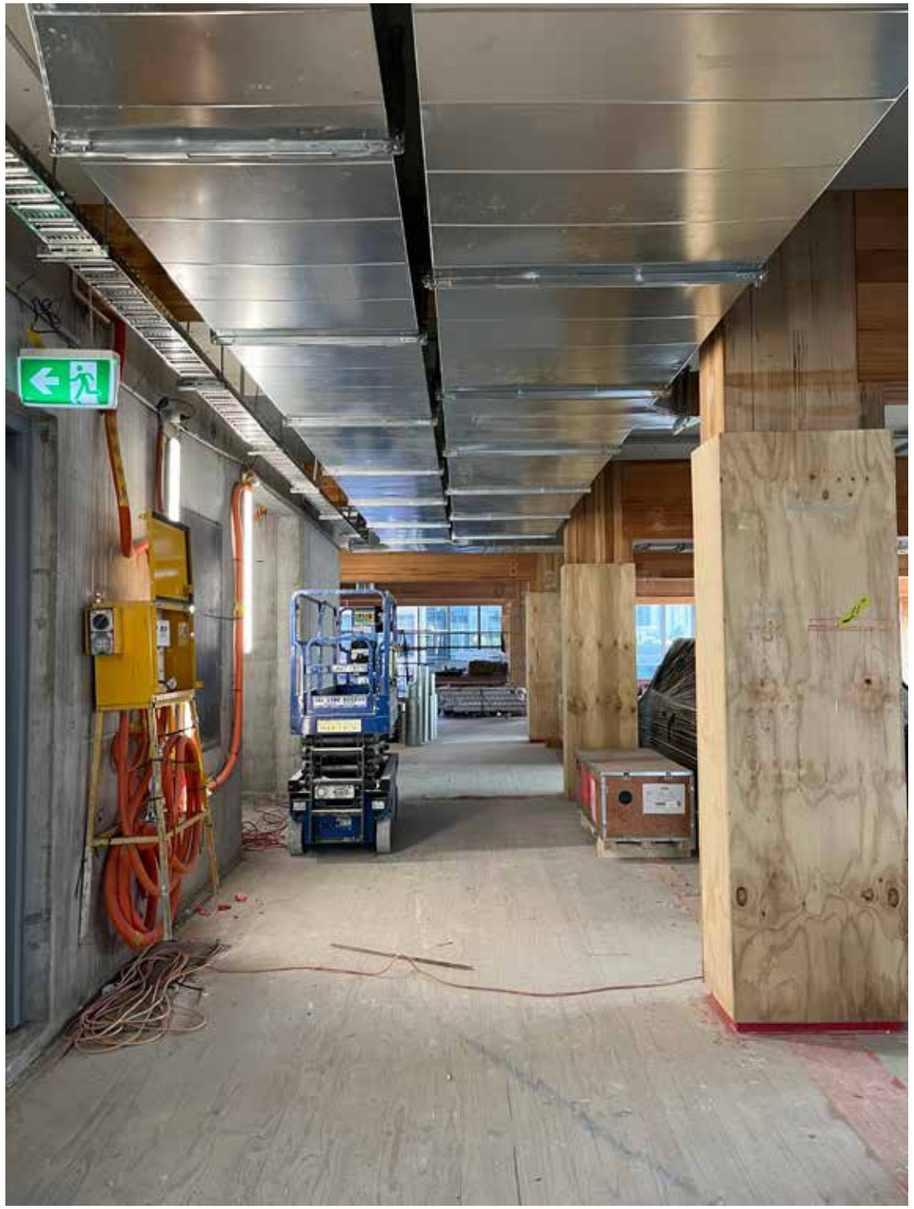
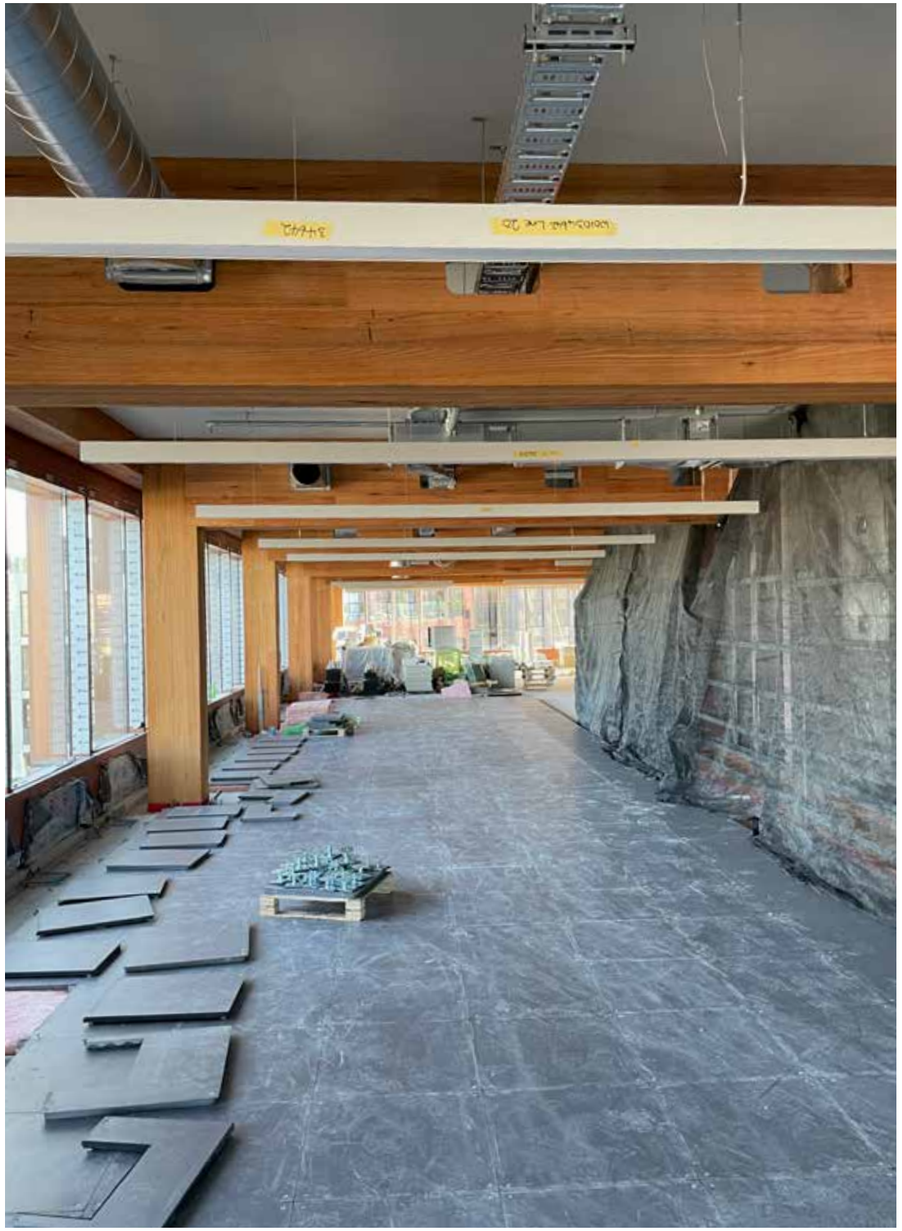


Services coordination



Services Highway & Hydraulic Setout



Raised Access Floor

Acoustic considerations

XLam - Albury/Wodonga

CLT Floor Slabs

ASH - Heyfield

GluLam Columns & Beams

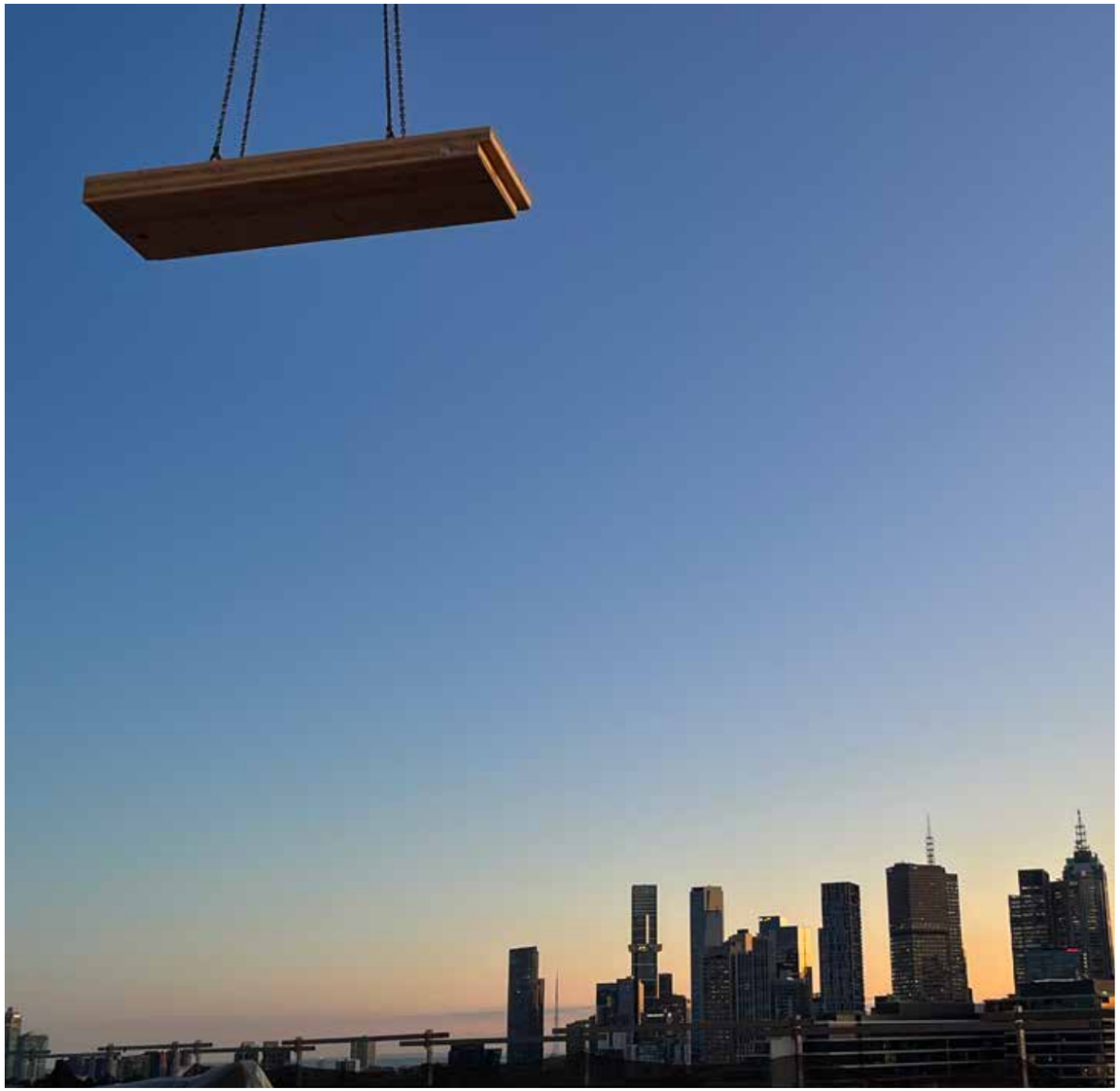
T3 Collingwood

Locally sourced timber suppliers

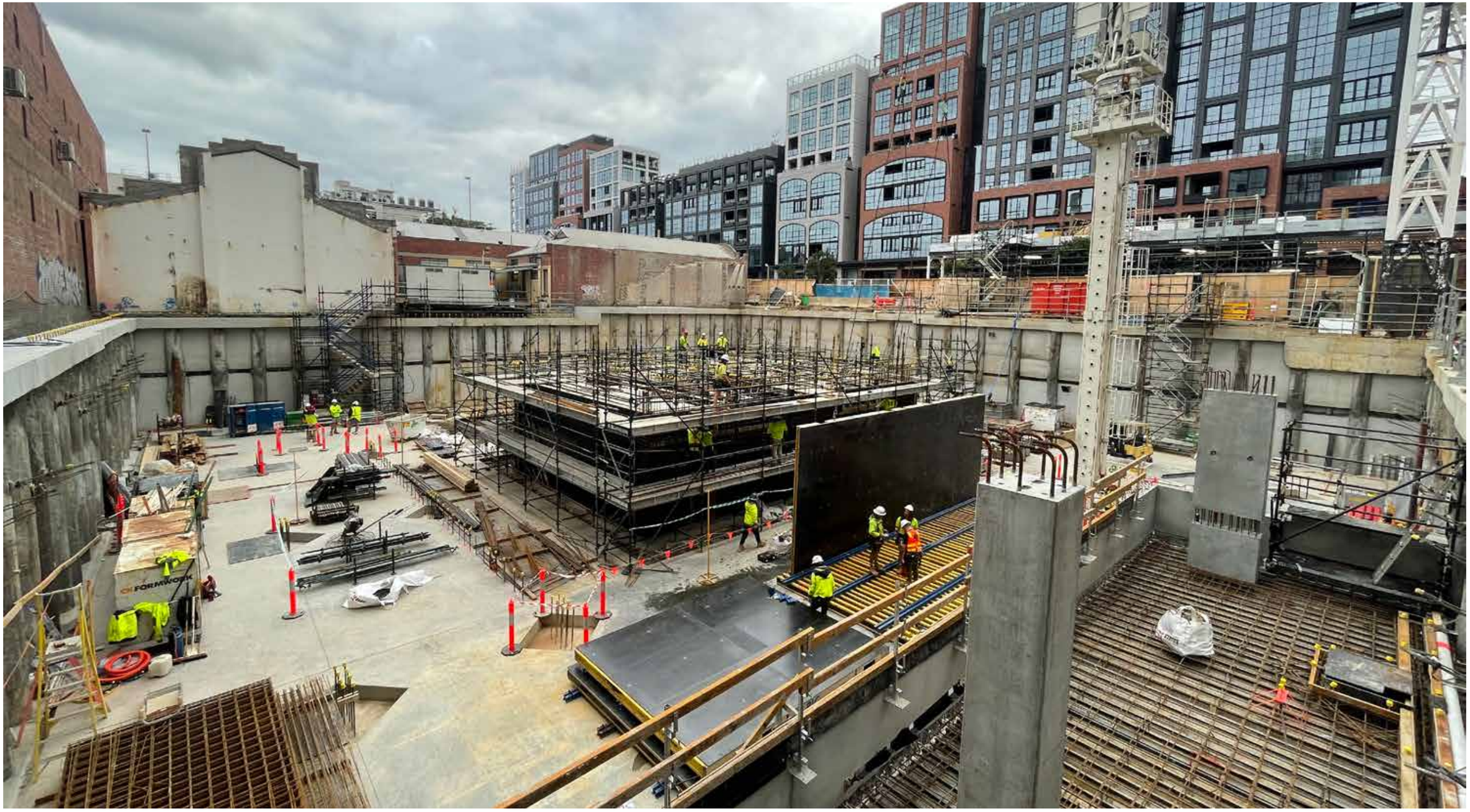
Glulam - Australian Sustainable Hardwoods (ASH)

- >950m3 of ASH MASSLAM 45 hardwood glulam
- 738 GluLam components made from 231,855 lineal metres of finger jointed timber
- Equates to over 391,400kg of equivalent CO2 captured (after embodied energy of production is deducted) .
- Species includes Euculaptsus regnans and delegatensis sourced locally from Victoria re-growth forests (third party verified, PEFC Certified)
- 1 tree yields approximately 20m3 and is grown in 80 years. The total volume of timber on 36WS is regrown in Victoria every 5 minutes
- 28% of the total timber volume was salvaged from bush fire affected forests.

CLT - XLAM



- 2,360m3 of CLT was sourced from PEFC certified, sustainable softwood plantations in Southern NSW
- The Radiata Pine timber used in the CLT is regrown in Australian softwood plantations in 118 minutes.
- This timber sequesters 1.84 Tonnes of C02 through its growth.
- Even when accounting for the energy used in manufacturing (LCA stages A1-A3) the CLT has a negative embodied carbon of -1,161 T.C02eq.
- XLAM CLT is Declare certified as being Red List free, free from adhesive polyurethane formaldehyde and 100% recyclable at the end of life.w
- XLAM CLT panels are optimised by feedstock strength across their depth, using stronger MGP10 timber in the outer lamellas and lower strength MGP6 timber in the internal layers, thereby achieving a greater utilisation of the tree fibre.
- The feedstock for XLAM CLT is cut by Hyne at their Tumbarumba mill, and the CLT is manufactured at XLAM's factory in Barnawartha.



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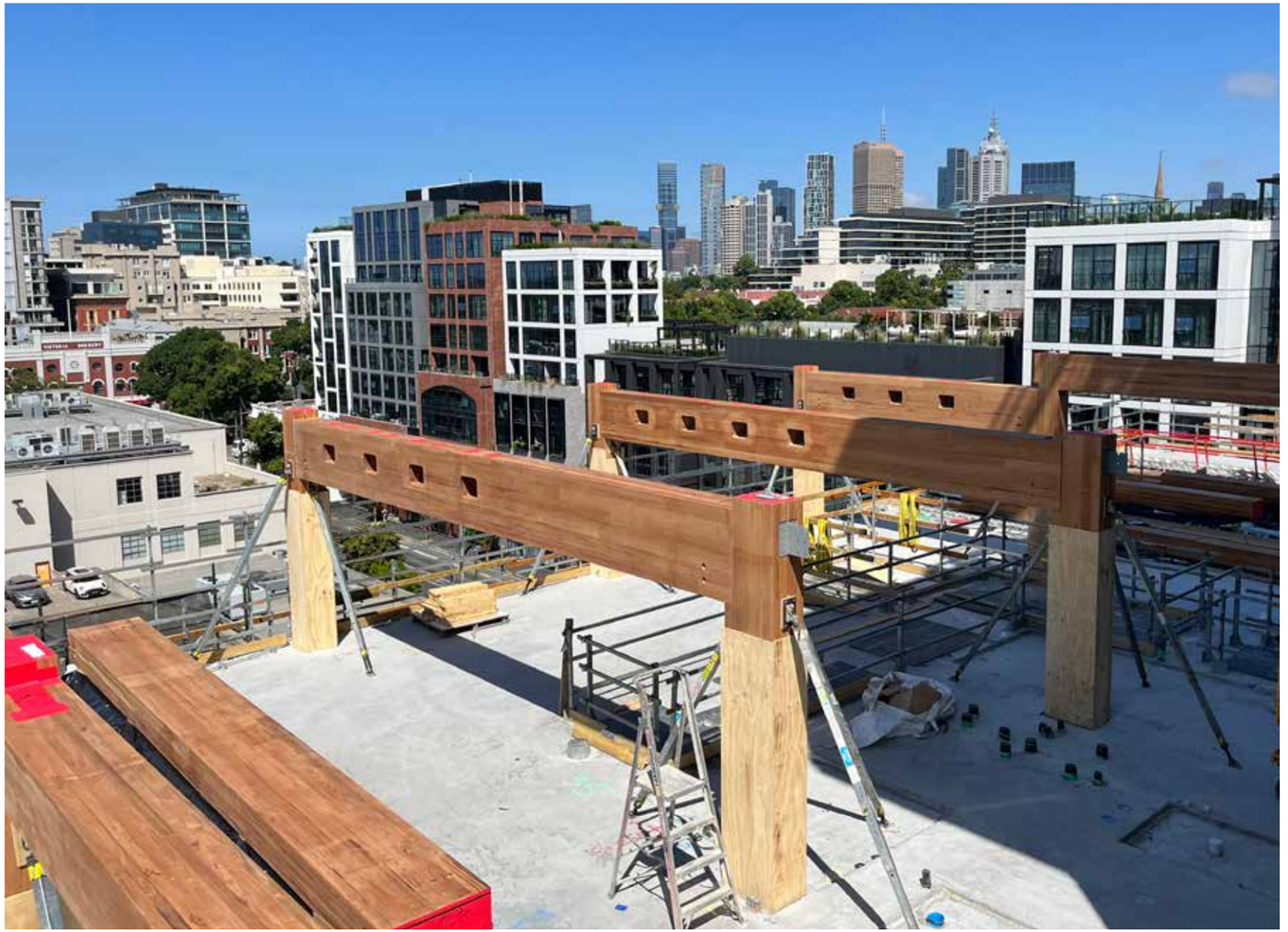
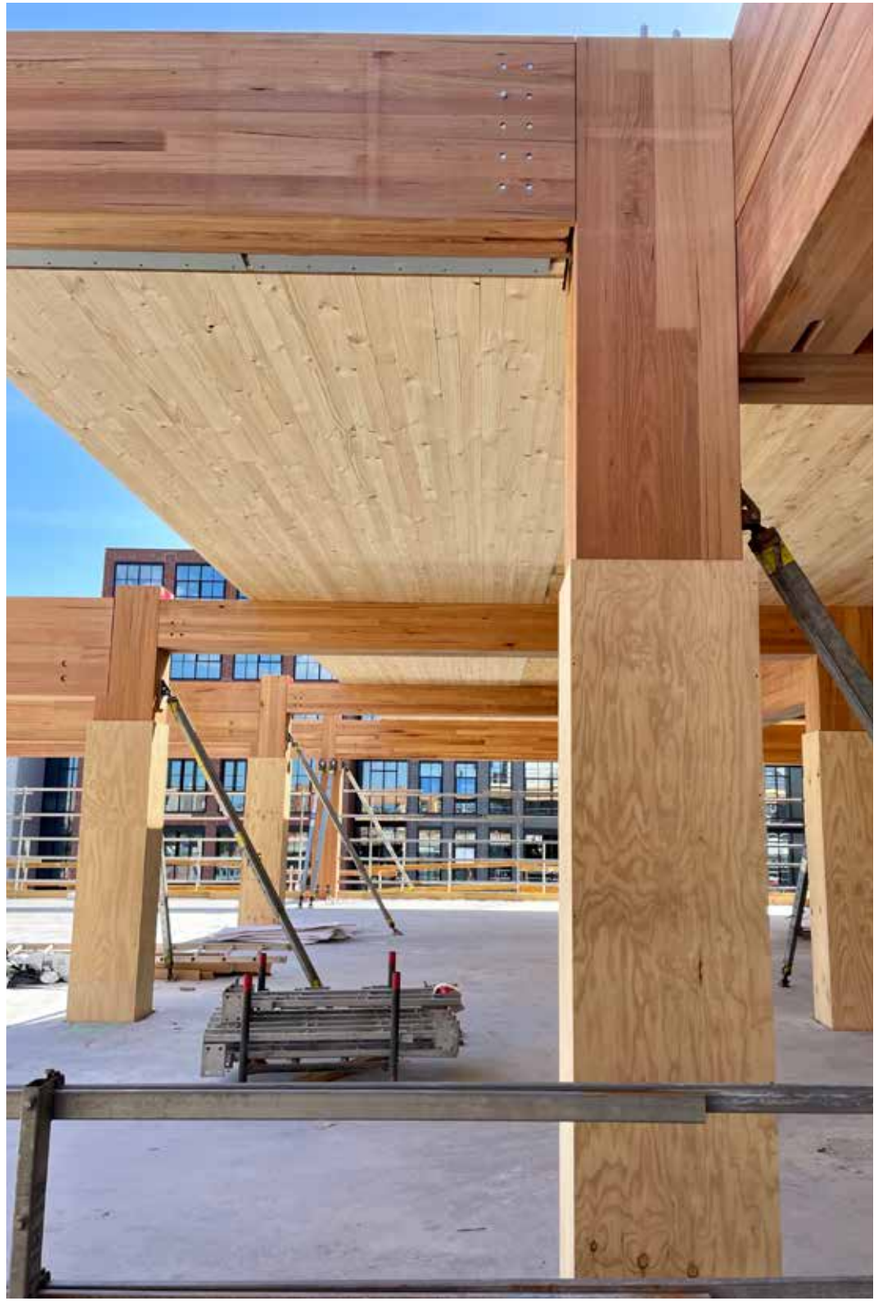


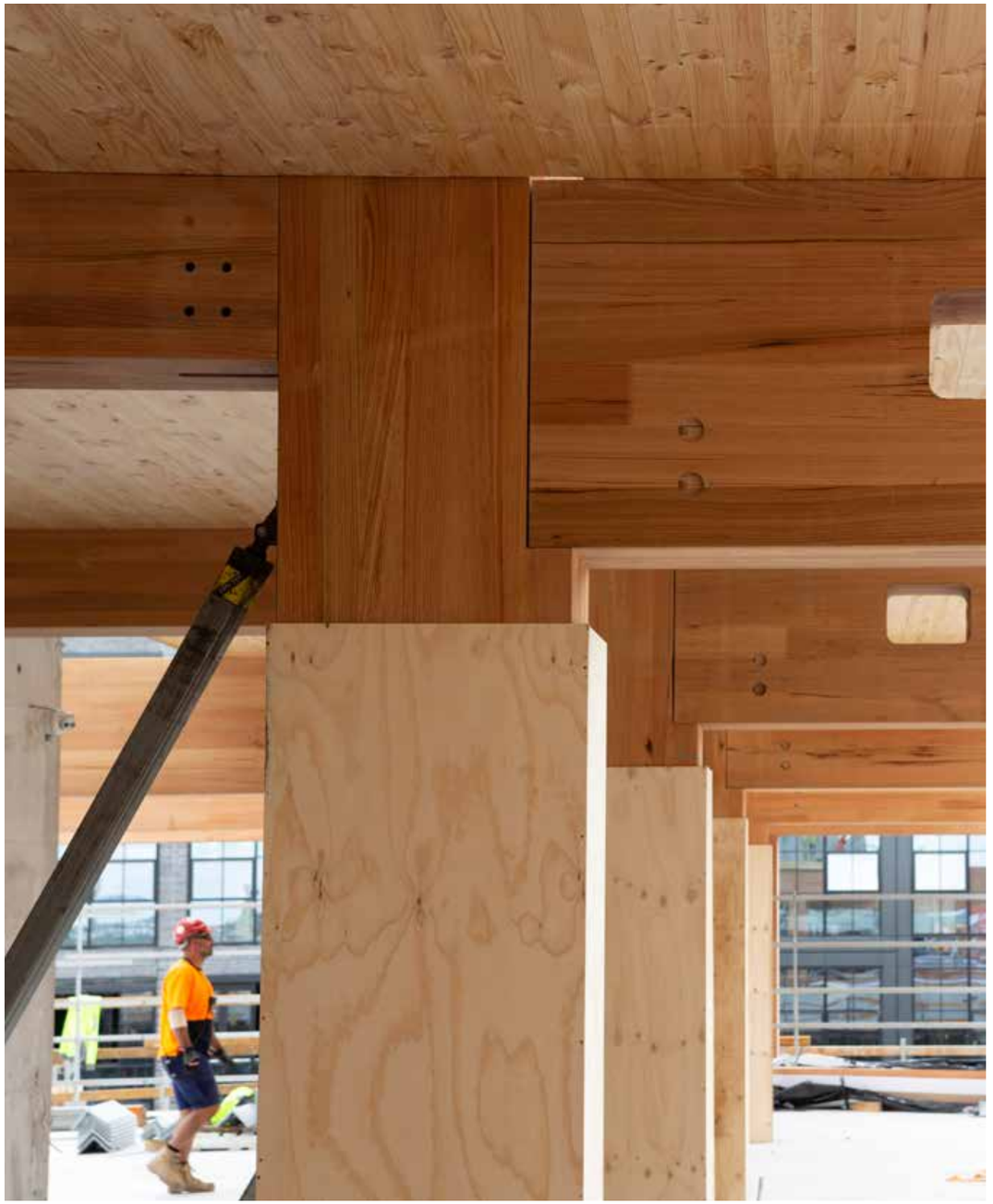
Glulam arriving on site

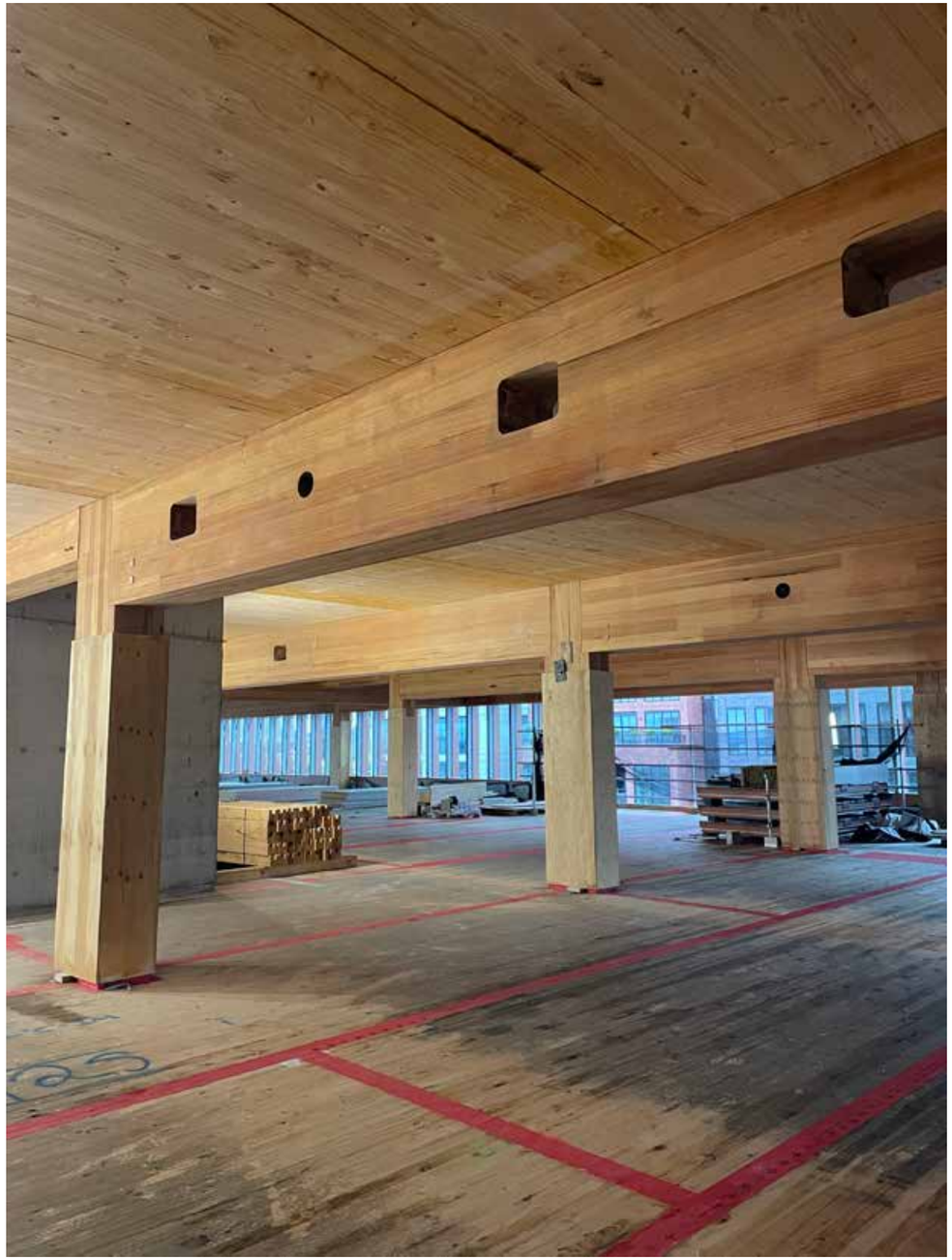
CLT arriving on site

Towards one full floor cycle



Details





Pure timber structure

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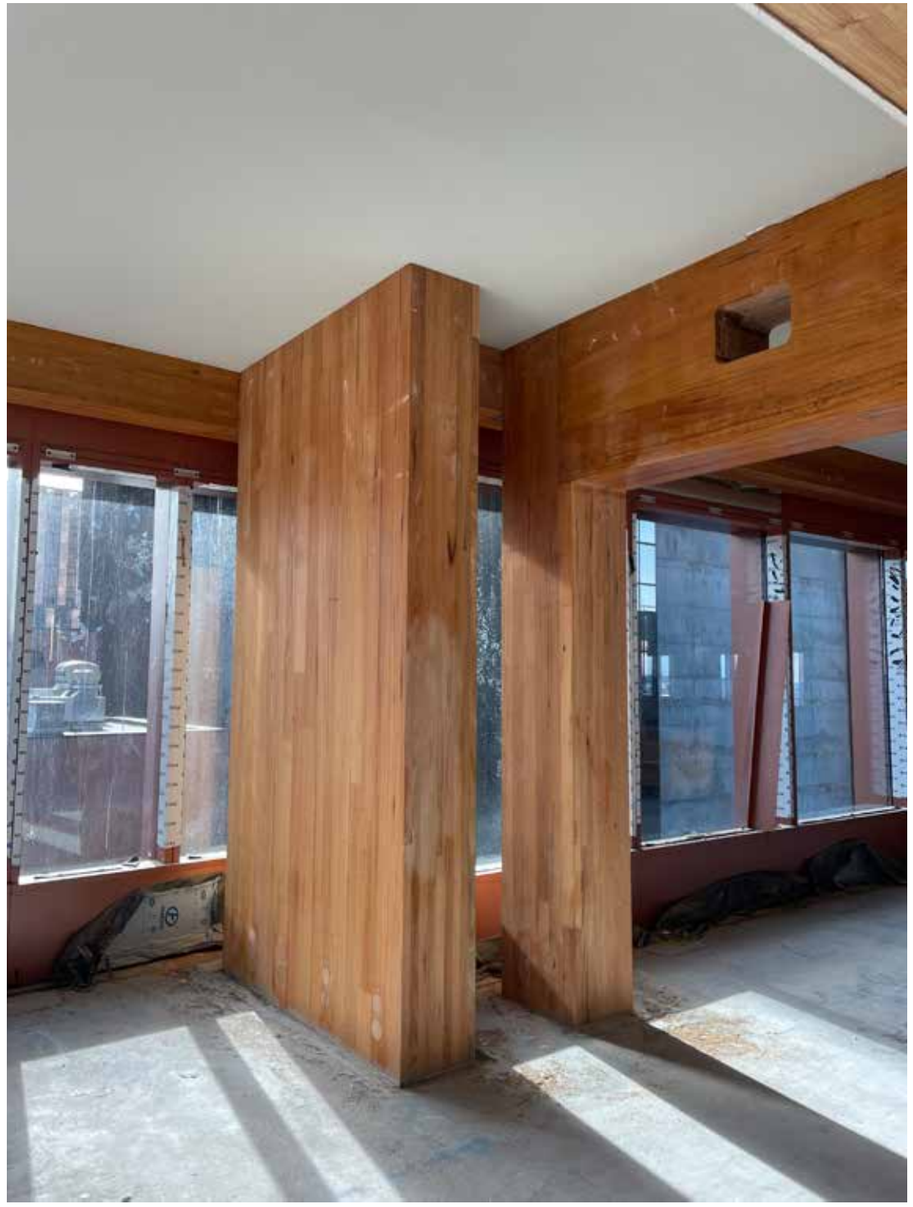
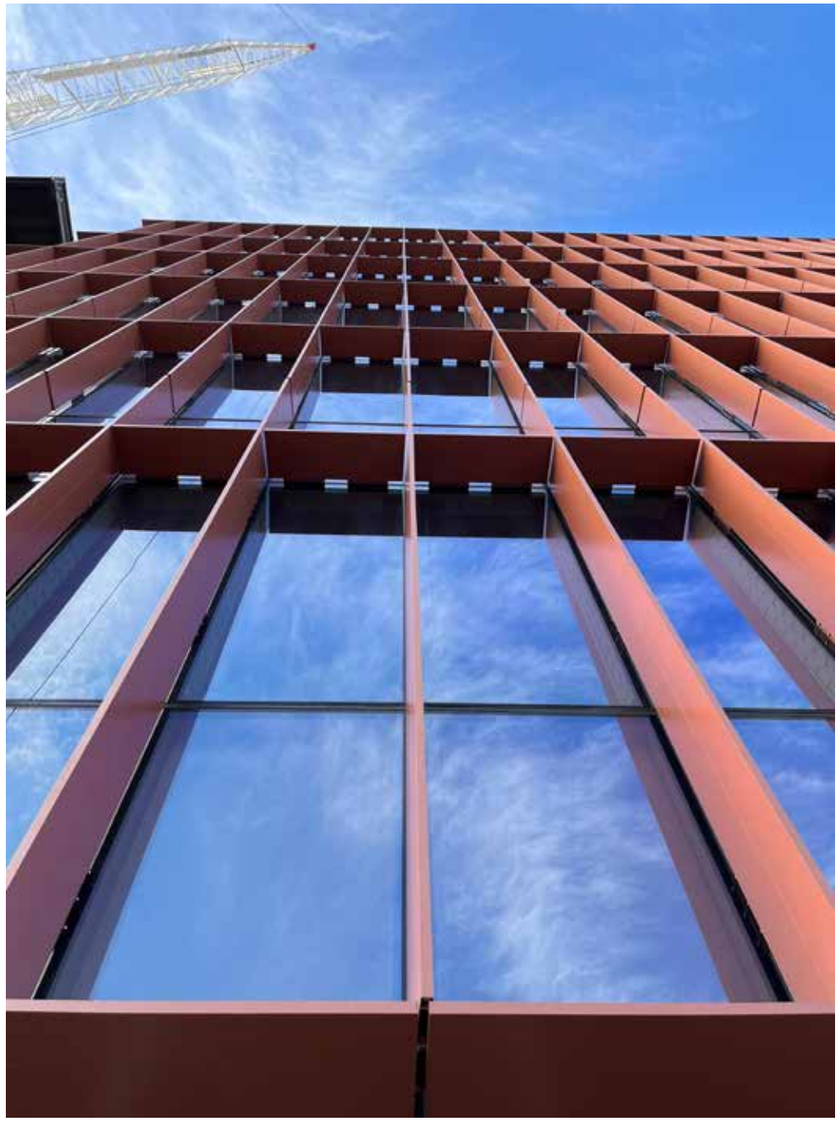


Fire rated ceiling

Services installation



Scaffolding down, facade up

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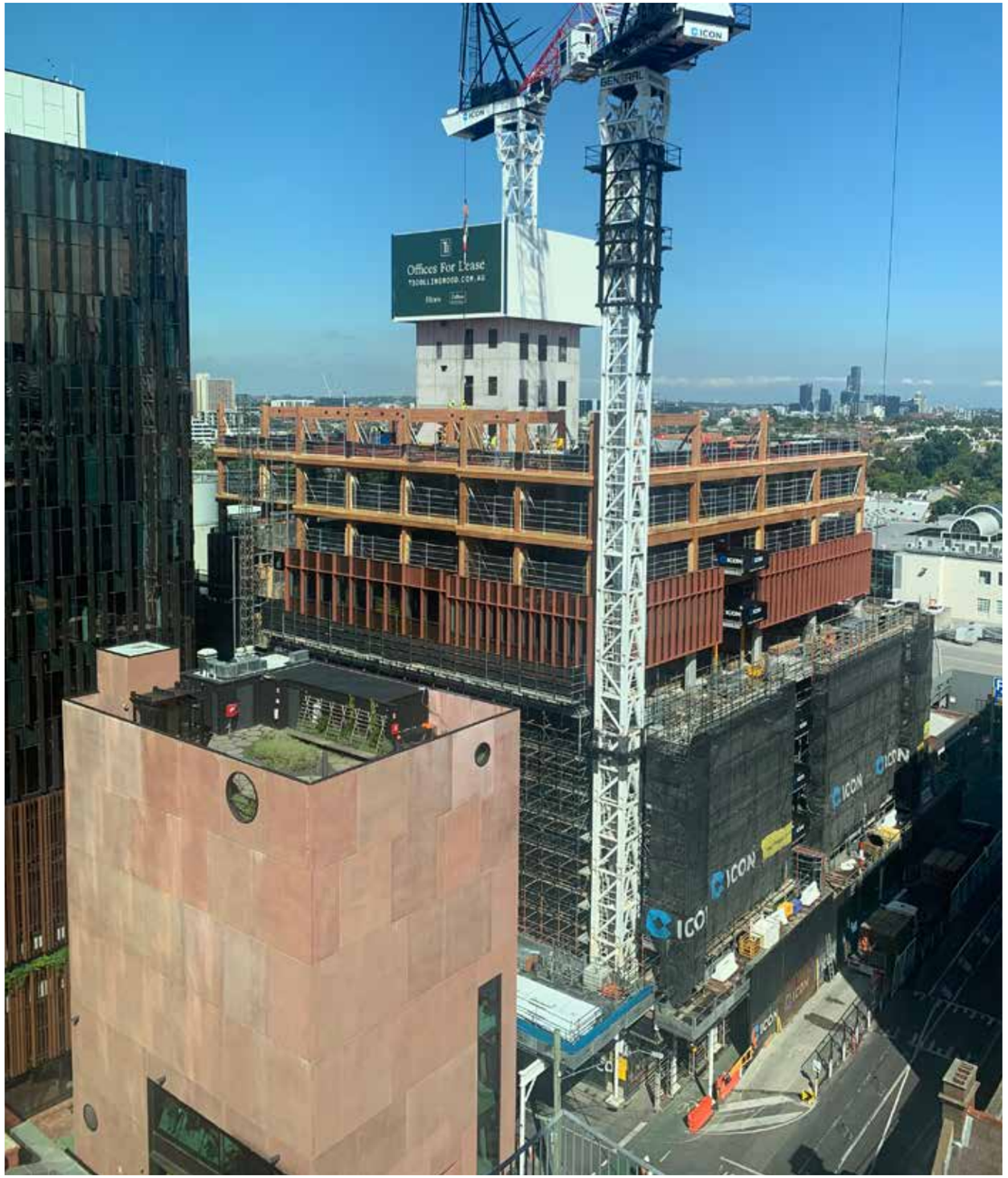

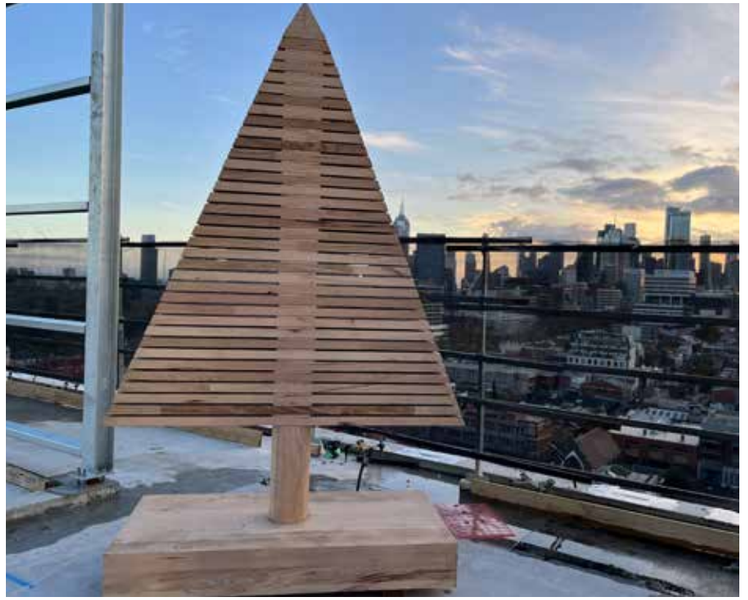

Rising up & topping out

Q & A?

Thank you