



# MET Building, Melbourne Connect

## Melbourne, Australia

At the heart of Melbourne Connect—a 74,000 m<sup>2</sup> innovation precinct developed by the University of Melbourne—stands a quietly radical structure: a five-storey hybrid mass timber building housing Australia's first vertical early learning centre. Known as the MET building, it is structurally distinct within the precinct's ensemble of concrete towers, engineered as a prefabricated glulam and CLT superstructure and integrated into a shared "superfloor" that links three buildings with differing structural systems. The MET building contributes to Melbourne Connect's mission to foster innovation through planned and incidental collaboration across education, research, industry, and community spaces. What sets this project apart is not just its typology, but its technical ambition. Locating a childcare centre on the top floor of a timber building is rare and structurally demanding, requiring precise coordination of vibration control, load mapping, and waterproofing—especially for the rooftop playground.

The project also served as a live testbed for digital construction innovation, piloting the Sylva™360 app for real-time tracking of timber components and geo-fenced delivery coordination in Melbourne's congested central business district. On the roof, embedded sensors and graphene membranes monitor moisture levels in CLT panels, marking a pioneering approach to timber durability.

This convergence of vertical childcare, hybrid timber integration, and smart construction technologies positions FROEBEL Carlton as a benchmark in mass timber design—where structural performance, digital precision, and environmental responsibility meet in a dense urban setting.

### Timber lattice "super-ceiling"

FROEBEL Carlton is Australia's first vertical early learning centre, spanning three levels within the MET building. Designed by Silvester Fuller and built by MPA, the centre features age-segregated zones for children aged 6 months to 5 years, a rooftop playground, semi-open winter gardens, a chef's kitchen, and a private Family Lounge. A timber lattice "super-ceiling" organises interior space, dampens acoustics, and conceals services.

### Structural system and timber typology

The structural logic is straightforward yet refined: glulam frames carry gravity loads, while CLT between the beams serve as one-way and two-way plates. This configuration offers high stiffness-to-weight ratios and enables rapid erection through off-site prefabrication. Fire safety was addressed through bespoke strategies, including charring calculations, encapsulation, and protected connections. Vibration analysis ensured comfort thresholds were met, particularly important in educational and childcare settings. Connection detailing focused on ductile load paths and redundancy at joints, supporting progressive-collapse robustness.

Arup's superfloor design required careful rationalisation of geometry and stiffness to accommodate differential movement and environmental responses across the precinct. The timber building's integration into this system reflects a high level of coordination between architectural intent and structural performance.

FROEBEL Carlton occupies three irregular floorplates within this timber framework. Outdoor play areas and a rooftop playground were designed in coordination with the structural grid, requiring landscape architects to map soil and equipment loads to specific beams and supports. The original CLT slabs were not designed for heavy planters, prompting adaptive detailing to ensure long-term durability.

### Landscaping on a wooden roof



StoraEnso

The landscape team (Openwork) notes they had to locate play equipment, fall-attenuation and soil loads carefully on the CLT structure—a hint that the original base-building CLT was not designed for heavy planters, so loads were mapped to beams/supports.

### Waterproofing solutions

The rooftop play area—an unusual feature for a childcare centre—required innovative waterproofing solutions. Pedestals were installed to support play equipment, with future flexibility in mind. To mitigate risks of water ingress, the roof was fitted with moisture monitoring systems, including graphene membranes, RFID tags, and embedded sensors that track humidity and temperature. These systems were trialled in collaboration with Wiiste and a local graphene specialist, marking a pioneering approach to timber roof protection.

### Mass timber tracking: a digital construction sandbox

The MET building served as a live testbed for digital construction tools, including one of the first international pilots of the Sylva™360 app by Stora Enso.

The project combined mass timber with concrete cores and steel beams, while geo-tracking was trialled to coordinate "last mile" deliveries in Melbourne's congested central business district.

Containers were unpacked off-site at the haulage company's yard and never delivered directly to the construction site. Instead, only the final delivery trucks—transporting CLT and GLT—were tracked using live alerts and geofencing, helping to streamline logistics and reduce disruption in a dense urban environment.

### Sustainable by design

Sustainability is central to both the building and the centre's operations. Melbourne Connect holds a 6 Star Green Star Design rating and 4.5 NABERS Energy certification. The childcare fit-out uses low-impact materials and energy-saving lighting, aligning with precinct-wide goals to reduce energy use by 33% and water consumption by 20%.

### Recognition and Awards

FROEBEL Carlton has received multiple awards, including Architizer A+Awards (Popular Choice), Better Future Melbourne Design Awards (Gold), and Victoria School Design Awards (Best Kindergarten/Early Learning Facility).



Architizer A+Awards (Popular Choice)



Better Future Melbourne Design Awards (Gold)



Victoria School Design Awards (Best Kindergarten/Early Learning Facility)



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## General

### Delivery year

2020

### Building type

Commercial

### Area (m<sup>2</sup>)

74,000

### Storeys

5

### Units

92

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## Products

### Products and Services

Sylva™ CLT Floors and Roofs,  
Sylva360™

### Product quality

NVI / PEFC Certified

### Product volume (m<sup>3</sup>)

894

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## Team

### Developer

FROEBEL Carlton Early Learning  
Centre  
University of Melbourne

### Architect

Silvester Fuller

### Structural Engineer

Northrop  
Arup

### Main contractor

Lendlease Australia