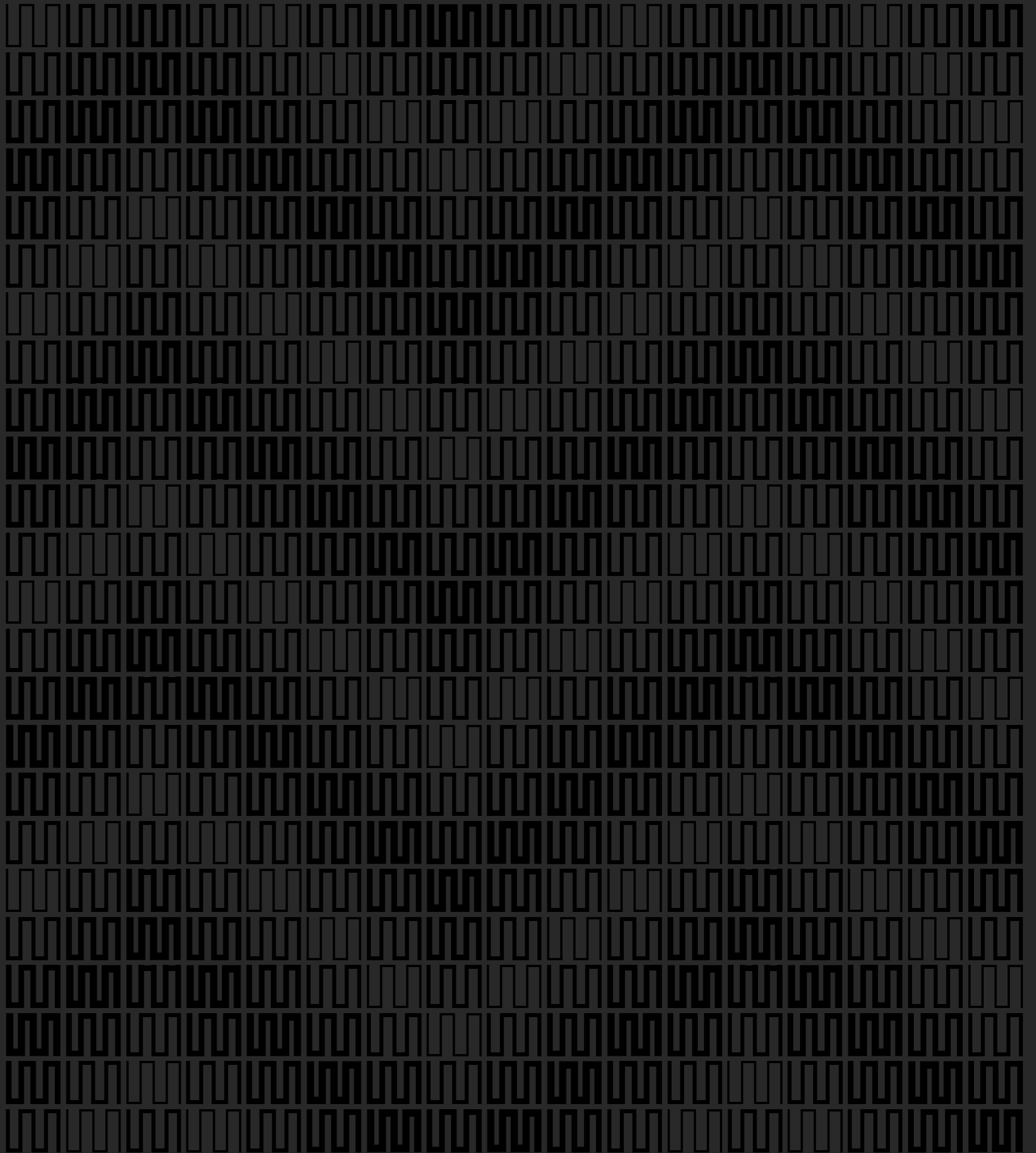


# Advanced Timber Unit



# Welcome

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Global warming is the challenge of our generation. There are few who would disagree with the need to hold global temperature rises to less than 1.5 degrees. Mass timber construction forms part of the climate solution.

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As designers and as an industry we can and must respond to the challenge for action by building the expertise, the technology and the knowledge to drive change.


Our team at Warren and Mahoney believe that mass timber has the potential to not only reduce the carbon emitted in the construction of our buildings but also create beautiful, cost effective architecture.

Warren and Mahoney has formed an Advanced Timber Unit to help support the advancement of low carbon mass timber design. Over the last few years, we have brought together a team of specialists with proven experience in the design and delivery of mass timber and low carbon buildings.

The Advanced Timber Unit has been conceived not just as a team of experts but as the gateway to a wider network of regional specialists to enable our clients the ability to access mass timber design expertise from inception through to procurement and construction.

If mass timber is a viable alternative for your project, our team can confidently offer you the support you will need to achieve a successful outcome.



An aerial photograph of a dense, lush green forest, likely a coniferous forest, with sunlight filtering through the trees, creating a dappled light effect. The text is overlaid on the right side of the image.

Warren and Mahoney is an international practice of designers and architects who solve complex challenges to create enduring legacies for our clients.

Our process is grounded in driving conversation before design, sharing our ideas and expertise with generosity, and creating spaces that connect people and enhance their sense of belonging.

We believe in the power of design to create change for the better and our work is signified by a commitment to the environment, to cultural identity and to embracing the potential of technology.

We seek out projects that matter, with clients who are bold, future focused and committed to driving positive change.

With a 65-year history and a 400+ strong team, we work as one connected studio across our six Australasian locations.



## The Team - Design Leaders



### **Simon Topliss**

Principal - Melbourne

Mass Timber Specialism: CLT and Glulam design, detailing and delivery

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Simon is a leading voice in Australia on CLT and mass timber and is a key member of the Warren and Mahoney Advanced Timber Unit. He is committed to reducing the embodied and lifecycle carbon impact of every project. Before joining us, he was in the senior leadership team at Jackson Clements Burrows Architects, where he led several major mass timber construction and passive house projects.

### **Benchmark Projects:**

Lygon Street, Melbourne  
La Trobe University Student Accommodation, Melbourne  
Gilles Hall Student Accommodation  
Cowes Community & Cultural Center  
St. Kevins Learning & Teaching  
Clifton Hill Primary

Warren and Mahoney

### **Tom Locke**

Principal, Head of Design - Auckland

Mass Timber Specialism: Large scale Glulam, complex geometry and bridges

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Tom is passionate about the potential of mass timber architecture and its ability to reduce global warming. His first introduction to timber design was leading the LVL design for the extraordinary Zaha Hadid London Aquatics Centre. Tom works at the confluence of buildings and infrastructure and leads the design of multiple mass timber projects from large scale buildings to bridges.

### **Benchmark Projects:**

Fisher & Paykel Healthcare Link Building  
Papakura to Drury, Stage 1B1  
Pedestrian & Cycle Bridge  
Site 6, Wynyard Quarter, Auckland  
NEL, Australian Infrastructure Project  
Zaha Hadid London Aquatics Centre

### **Simon Hardy**

Associate Principal - Wellington

Mass Timber Specialism: LVL and long span timber design and delivery

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Simon has joined Warren and Mahoney to help lead our Advanced Timber Unit. He is a recognised leader in the New Zealand mass timber industry. Simon has successfully delivered numerous mass timber building projects in his previous role at Studio Pacific Architecture, most notably, he led the large scale timber terminal build for Nelson Airport, one of New Zealand's most significant mass timber projects.

### **Benchmark Projects:**

Nelson Airport, New Terminal  
Air NZ Hangar 4, Auckland Airport  
Blenheim I-Site Visitor Centre

## The Team - Subject Matter Experts



### Emily Newmarch

Low Carbon Design Specialist - Wellington  
Specialism: Carbon specialist,  
LCA modelling

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Emily is passionate about the environmental performance of buildings and supporting data driven design decision making. Her deep understanding of embodied carbon guides decisions and selections early in the design process to reduce overall emissions.

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### Darren Kho

BIM Specialist and Timber  
Engineer - Christchurch  
Mass Timber Specialism: Supply chain  
logistics, structural timber connections

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Darren is a trained structural engineer, with a specialism in mass timber. He is also an expert in BIM technology. He brings a unique perspective to our projects with his understanding of design to manufacture and the engineering potential of timber.

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### Fiona Short

Principal - Christchurch  
Mass Timber Specialism: Carbon  
measurement and operational sustainability

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Fiona is a specialist in sustainable and low carbon design. Her experience in the design of the Otago Polytechnic trades building combined with her in-depth knowledge on sustainability provides a bridge between timber design, sustainable design, carbon modelling and green rating tools.

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### Iain Nicholls

Senior Associate - Christchurch  
Mass Timber Specialism: Timber  
specification, sourcing and certification

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Iain has developed a specialist knowledge in sustainable sourcing of timber. Over the last 10 years he has worked with suppliers, Greenpeace, Ministry for the Environment and industry experts to establish a database of over 200 timber types available in New Zealand - all assessed against environmental standards.

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Global building floor area is expected to double by 2060. The equivalent of adding an entire New York City to the world, every month, for 40 years.

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In October 2021, at COP 26, governments controlling over 85% of the global economy committed to a path of carbon neutrality.

The use of mass timber will play a critical role in achieving that target.

Mass timber has the potential to replace carbon intensive concrete and steel structures not only reducing a building's upfront carbon but also sequestering carbon for the life of it.

Enabled by recent research to better understand the structural properties of timber, and widespread industry education to better understand its use, timber is being rediscovered as an alternative structural material for buildings of all scales.



Otago Polytechnic Trades Training Centre





Fisher & Paykel Link Building, Tamaki Campus

Timber is not just a low carbon option. With a skilled, experienced team it can be an elegant, cost effective solution which is quicker to construct than traditional alternatives.

The use of mass timber in building design is undergoing exponential growth.



Mass timber cycle and pedestrian bridge, South Auckland





90 Devonport Road  
Tauranga



Nelson Airport Terminal,  
Simon Hardy pre Warren  
and Mahoney

## Is timber right for your project?

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The industry is beginning to embrace the benefits that mass timber can bring to a project.

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All design strategies must be tailored for the specific project and the use of mass timber is no different. The benefits and risks of each design decision must be weighed against the budget and the brief. Mass timber may not be the right choice for every project but it can offer a number of significant advantages.

### **Part of the climate solution**

Mass timber has a significantly lower embodied carbon footprint than comparative steel and concrete structures. There are industry dynamics that influence carbon savings on a project-by-project basis, but if you are carbon conscious, this is one of the best solutions we have to lower emissions right now.

### **Beautiful, natural and elegant**

Timber has a quality unmatched when compared to other traditional materials. It is natural, tactile and beautiful. It engages our senses of sight, touch and smell and its aesthetic offers endless design opportunities.

### **Wellbeing**

Wood has been used as a construction material for thousands of years. People respond well to the warmth of timber structures, and individual wellbeing is reportedly improved in exposed timber buildings. As designers we love working with natural materials and we believe timber has a timeless, enduring aesthetic that will stand the test of time.



## Other considerations

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Timber is more than just an aesthetic - it links us back to our place, the Pacific Rim.

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As with all construction, there are numerous considerations that need to be investigated to develop the optimal design solution. Key considerations the Advanced Timber Unit can help navigate with specific regard to mass timber construction include:

### Fire performance

Contrary to popular belief, mass timber performs exceptionally well in a fire event and certainly better than steel. Early engagement of a fire engineer and experienced design team will ensure this pathway is navigated successfully.

### Co-ordination

Design for manufacturer and assembly means greater co-ordination throughout the design process is required. Early inputs from both supplier and contractors can be enormously beneficial bringing bottom line saving and de-risking procurement and design.

### Pathways to procurement

The procurement pathway of mass timber in buildings needs to be carefully negotiated. The market is still relatively young and there is a small field of local and overseas players. Lead times are challenging and can easily be anywhere from 12-26 weeks depending on complexity and whether overseas supply is required. Project managers see programme and delay risk – there are straightforward pathways to address this and generally this means having the contractor and supplier at the table early.

Mass timber will not be right for every project; we should certainly remain aware of its procurement and design challenges. But, where possible, we should be embracing it as a legitimate construction technology that delivers benefits across the board.



Te Rauhitanga:  
Manaaki Whenua  
Landcare Research,  
Canterbury



## Will it cost more?

At surface level, timber currently costs more than raw steel and concrete, due to the lack of processing capacity in Australasia (this is changing). However, when whole-of-life and time-on-site costing is considered, timber can provide a very a highly economic alternative. Key cost consideration should include:

### **Less preliminary and general costs**

Less labour (and specialised labour), less wastage, less traffic, less noise on site and less health and safety risk equals less construction costs.

### **Less financial holding costs**

Less financial holding costs due to faster completion of construction.

### **Re-deploy profits faster**

Faster construction means you can re-deploy your profits more quickly into your next development.

### **Tenant attraction**

The market is increasingly demanding highly sustainable buildings. The more environmentally sustainable a building is, increasingly the more desirable it will be to occupy — through both mandated procurement considerations and also personal values alignment.

In summary, mass timber builds can be cheaper when compared with other construction methods. Engaging a reputable Quantity Surveyor will assist you in understanding how best to leverage your financials in your mass timber build.



Flowers Building, Innovation Precinct Auckland



# Carbon

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Zero needs to become the gold standard, and then quickly become the standard, and eventually the starting point for all projects.

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All clients and consultants should be considering the climate impacts of their projects from the outset. And when we consider carbon in construction, a project's carbon impact is exactly the sum of it's parts.

# Zero

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The basics are simple — address both the carbon emissions from the use of the building and the carbon associated from the materials used in the construction of the building.

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The equation for ZERO (net zero carbon design) is something we must aspire towards to be part of a global climate solution and not a global problem.

The goal for new projects is to balance the energy demand with the energy generation. The embodied carbon emissions from manufacturing materials with biogenic carbon stored in materials — all with a balance of NET ZERO.

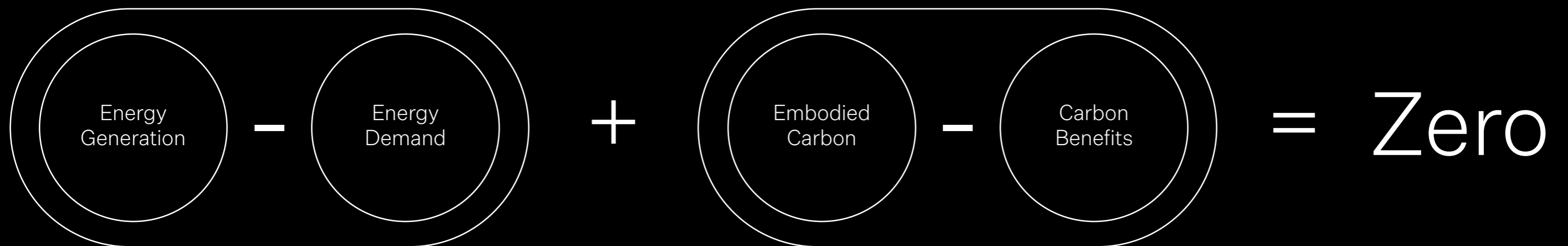
Our Advanced Timber Unit experts can talk you through this equation, and highlight how timber construction can help balance the equation towards more sustainable outcomes.



## Designing for Net Zero Carbon

### The Carbon Equation

When we consider carbon in construction, a project's carbon impact is exactly the sum of its parts. Our Advanced Timber Unit experts can talk you through this equation, and highlight how timber construction can help balance the equation towards more sustainable outcomes.





# Our 2030 Commitment

We have been a certified Toitū carbonzero business since 2007. Over the past 10 years we have reduced the carbon intensity of our operations by more than 40%. Over the next 10 years, we are committed to maintaining our carbon-neutral status and reducing the carbon intensity of our operations by a further 50%.

By 2030, our goal—with our clients—is that all new projects designed by Warren and Mahoney will be net-zero carbon in operation, be 50% more energy efficient and have 40% less embodied carbon. The increased use of mass timber is central to achieve these targets.



One studio  
6 locations  
400+ people  
43 principals  
67 years  
500+ awards