

CAPABILITY × EXPERIENCE

Design Services

SUSTAINABLE, EFFICIENT, SAFE





Access our expertise

For over a decade, XLam has been adding our brand of “X factor” to projects across Australasia. We lead the market in the manufacture and supply of CLT & GLT, and provide specialist technical advice and support to our clients and project partners.

We are proud to have contributed to the success of projects, including landmark buildings across Australia and New Zealand, where we have helped apply mass timber. Across these projects, XLam CLT (Cross Laminated Timber Panels) and GLT (Glue Laminated Timber Posts and Beams) are an integral part of the build using both mass timber and conventional “hybrid” construction methodologies.

An important part of the XLam “X factor” is the advice and support we are able to provide through our experienced technical team as we collaborate with our clients and their consultants.

XLam clients and project partners can access advice and expertise specifically relating to the DfMA process and the efficient use of mass timber construction (MTC) from our in-house team of registered professional engineers, technical specialists, and project managers.

Our support can be accessed on an advisory or full-service basis at exactly the level required to provide the specialist technical support needed through conceptualisation, design, procurement, and build.

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We all stand to benefit from mass timber

SUSTAINABLE

XLam makes an important contribution to improving environmental performance of the construction industry through the manufacture and supply of sustainable building products that create “greener” buildings. Our chain of custody is PEFC certified, we use sustainable, renewable plantation timber, our CLT is Declare Compliant and using timber provides carbon sequestration.

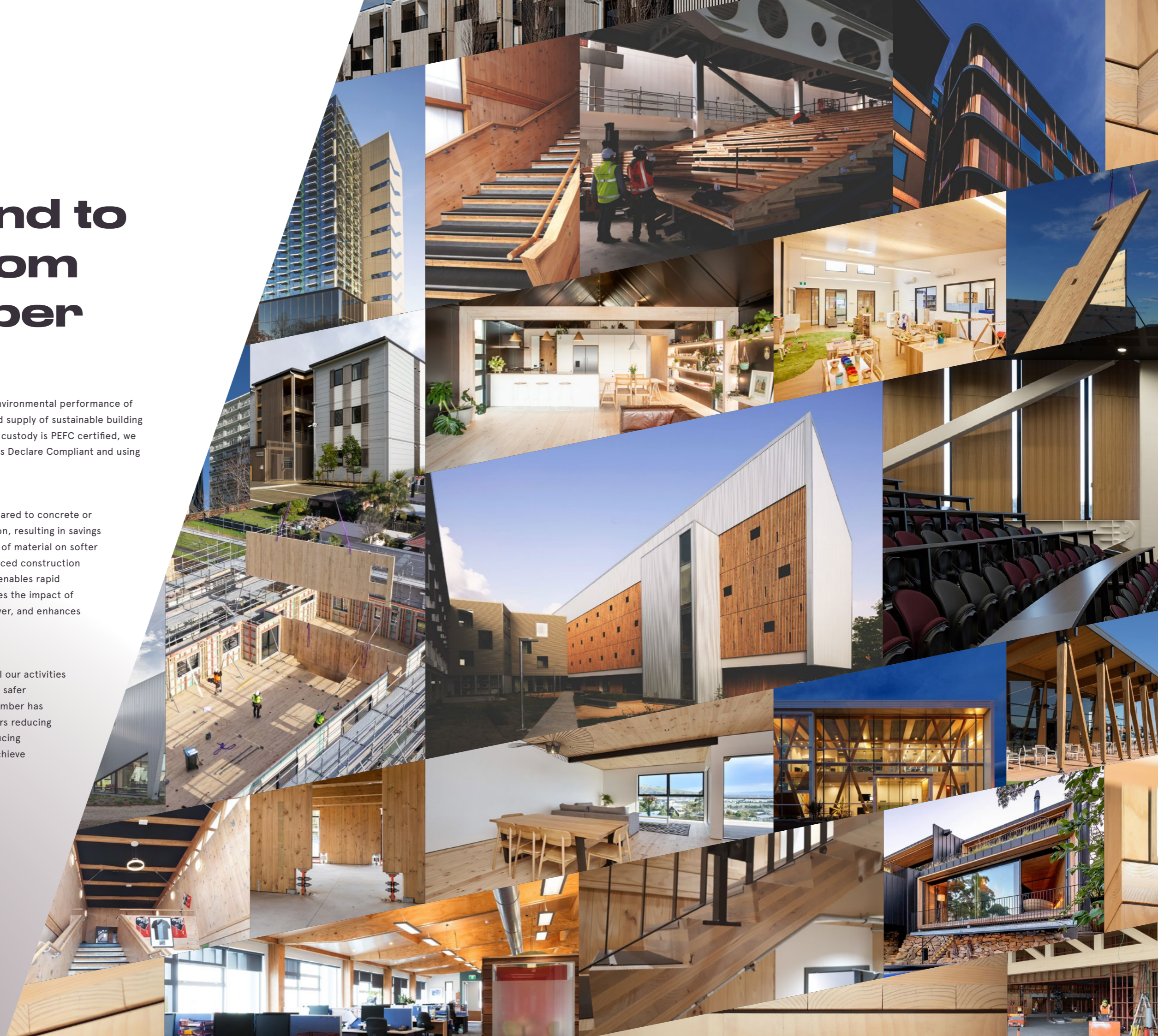
EFFICIENT

CLT has a superior strength to weight ratio when compared to concrete or steel, offering significant advantages in weight reduction, resulting in savings on structural elements and enabling greater quantities of material on softer ground. Project ROI is further improved through enhanced construction efficiency. DfMA and MTC provides for prefabrication, enables rapid construction, reduces time and labour on site, mitigates the impact of weather, reduces funding costs, enables earlier handover, and enhances operating, financing and profitability ratios.

SAFE

XLam place an emphasis on health and safety across all our activities and are proud that our building products contribute to safer construction sites. The prefabricated nature of mass timber has proven positive impacts on site safety for our customers reducing the number of processes to be performed at site, reducing headcount on site, and providing a safe approach to achieve rapid construction while reducing risk.

The XLam team have supported clients and project partners in the successful delivery of projects across all key industry sectors.





Expert team Focussed support

XLam's specialist technical expertise ensures the highest quality outcome at all stages of your project.

XLam projects benefit from a dedicated Project Manager and in-house registered professional engineers and technical specialists who have extensive DfMA and mass timber experience, including projects that are full mass timber builds, or where mass timber elements are used in conjunction with steel and concrete. XLam propose a collaborative approach between all parties to deliver the most value to the client. We have a strong appreciation of the need for actively engaging with all parties involved in the project to achieve a fully coordinated design and we are happy to provide as much or as little support as required based on the embedded knowledge in the clients project team.



Design Services

Our technical team works closely with our clients and project partners to provide technical advice, structural design, and guidance across all project phases. We have a specialist team of Engineers, Designers, Modellers, and Project Managers who live and breathe mass timber.



Expertise × Experience

HOW WE WORK

Typically, XLam is engaged in a supporting role for our clients existing project team. Our support can be provided on either an advisory or a full service basis with the scope set by the project requirements and the existing capability within the clients project team.

FULL SERVICE

XLam can provide comprehensive end-to-end design and engineering for a project however, our role typically is defined by working as part of the project team to support the lead architects and engineers with the specialist CLT, GLT and DfMA knowledge they may require.

XLam supports project partners during the detailed design and engineering phases through both our technical guides and our practical experience using mass timber. During design development, XLam will advise on structural considerations, panel thicknesses and spans, CLT layout and connection details.

ADVISORY

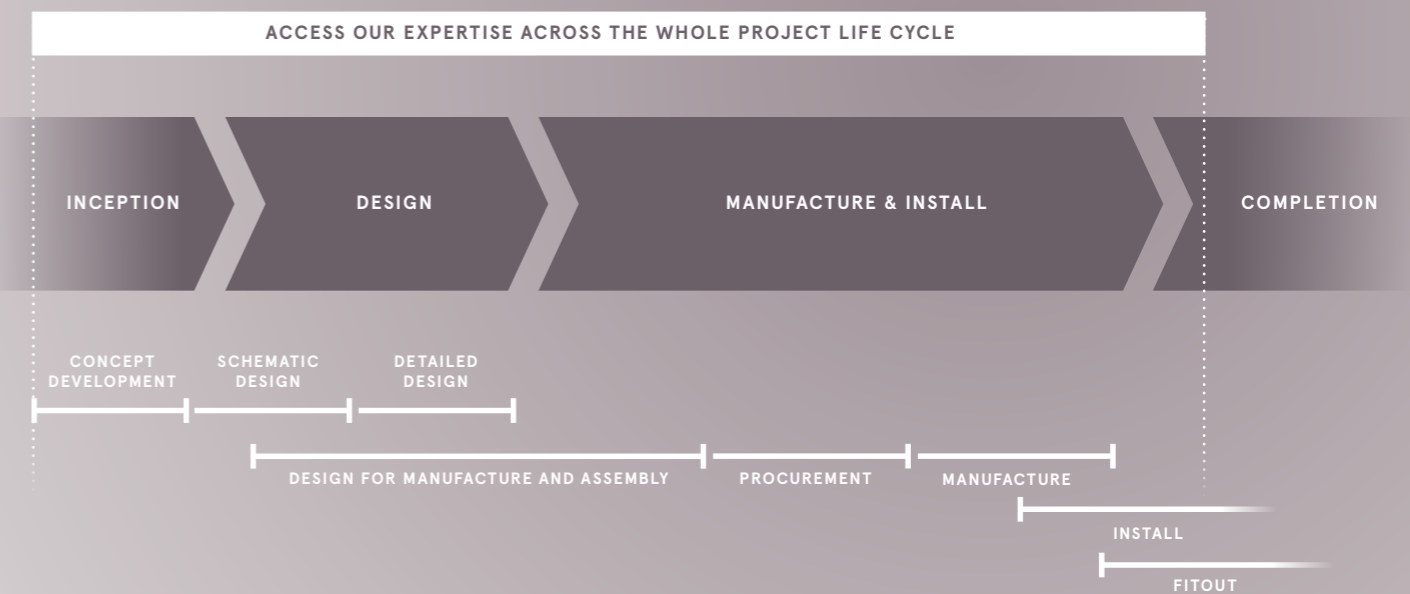
XLam welcomes the opportunity to provide advice and support to assist in shaping a project to gain the maximum benefit from the application of mass timber. This includes an early estimate of likely CLT and GLT supply costs to aid in project planning.

DRAFTING & PRODUCTION DRAWINGS

On receipt of fully dimensioned electronic drawings, the XLam team will prepare a 3-D model using advanced Cadwork CAD/CAM software. The location of proposed panel joints are added together with joint profiles to suit the engineer's connection details. These constitute the workshop drawings for final approval and sign-off.

The approved Cadwork model is then exported to Cambium which drives the manufacturing process from initial assembly of board layers through to CNC machining of the panels to precise dimensions, ready for delivery to site.

XLam Involvement



Access our expertise across the whole project life cycle

Feasibility Assessment & Advisory

XLam welcomes the opportunity to provide advice and support during the concept design phase where we can add the benefit of our experience to assist in shaping the project to gain the maximum benefit from the application of mass timber.

Our highly qualified people in engineering, architecture, construction and site management are available to guide and assist the project design team and provide advice relating to important factors that will inform the design, while maintaining and supporting the original vision of the client and the architect.

At the concept stage, XLam carry out a scoping design for the project. This service is intended to provide high level advice on panel thicknesses and types to suit your project, as well as design considerations and where other materials will be required. We encourage our clients obtain our input early to ensure the design adopted is economical, and suits both manufacturing, transportation and erection processes.

Fire & Acoustic Compliance

There are significant inter-dependencies between fire and acoustic solutions which require them to be considered together at an early stage.

Mass timber buildings can have a very high level of fire performance if properly designed, specified and detailed however the pathway to demonstrating compliance requires specialist knowledge and experience. XLam has significant experience in collaborating with project acoustic and fire engineers, testing and regulatory authorities in developing the performance solutions.

XLam's experience in mass timber and fire testing is unparalleled in Australia and New Zealand. Where XLam is engaged to provide fire compliance assistance services, we take a lead role in the development of any required fire testing programs and consultation with the fire engineer and local approval authorities and provide:

- A review of the project fire engineering report and provide comments on mass timber related items (inclusive of GLT, CLT and connections)
- XLam fire testing reports and assessments to support the fire compliance strategy. Thereafter, evaluating any project-specific gaps.

Design & Technical Assistance

Over the past decade the team have engineered ground-breaking mass timber structures, from full mass timber builds to hybrid builds that combine concrete and steel with CLT and GLT. Each project benefits from a dedicated Engineer and Project Manager who bring a wealth of experience working with mass timber and the DfMA process.

Our specialist team provides project-specific advice to ensure the building will perform as required, considering the building environmental performance, structural stability, loading, building movement, fixings, waterproofing, fire engineering and acoustic performance.

Depending on the requirements of the client and the project team, XLam can be engaged to provide technical advice and support or to complete the full design.

- Assistance with identifying the project -specific fire testing requirements in consultation with the project fire engineer and design team.
- Consult with the project fire engineer and the chosen testing laboratories to support any project specific fire testing requirements.

The sound insulation of CLT building elements relies on appropriate design and construction detailing. Compliant ratings can be effectively achieved by XLam wall and floor assemblies incorporating mass (CLT plus linings and overlays), de-coupled structure, resilient layers, air gaps, and absorbent insulation within cavities. XLam has carried out testing and received advice from leading acoustic engineers that may be used to assist the project acoustic engineer.

Structural Design

XLam work with project teams to offer structural design services, and we are well positioned to add value to our clients' projects with leading experience in designing mass timber structures and how to incorporate these efficiently with steel and concrete structures. Depending on the requirements of the project, XLam may be engaged to provide a certified structural design of the mass timber parts of the building or as a specialist subconsultant to assist the project structural engineer who provides a single overall certification for the structure. XLam's design services may also be utilised on an end-to-end or on an as-needed basis. This may also include the design of some steel elements where these are contained within the mass timber structure.

XLam strives to provide as much design and detailing assistance as our clients require. Our design phase involvement varies significantly across projects depending on our clients' preferences.

DETAILED CONNECTION DESIGN

To achieve a fully resolved mass timber building and smooth progression into the procurement phase of the project it is necessary to have all mass timber connections fully developed during the detailed design stages. Reliance on typical details alone may result in some locations not being covered. Identifying missing details during the shop drawing process can result in a slower approvals process.

XLam can offer detailed connection design services for CLT and GLT

elements. Depending on the project requirements, structural certification can be provided directly by XLam or as a structural assistance approach to the consulting structural engineer - with XLam providing the supporting design basis and calculations as required.

In providing the detailed connection design services, XLam is able to offer value to the project by drawing on our previous project experience to develop structural adequate and economical connections to suit the specific project.

All work is carried out with a strong appreciation of local compliance requirements, supplier capability and the needs of the mass timber installer.

MOVEMENT & TOLERANCE ANALYSIS

A key challenge faced in the construction of many DfMA projects is in the tolerances in connections between timber elements and at the interfaces to other materials. Understanding all elements of construction tolerances is vital to ensure the building is installed as quickly and efficiently as possible, minimising the surprises on site. Additional challenges are faced in large buildings where tolerance "stack up" and differential movements become more significant. XLam can assist the project team by:

- Analysing movements of the proposed mass timber structure including an estimate of the range of potential movements within mass timber elements at installation and in-service.
- Providing advice on typical installation/construction tolerances to be expected.

- Providing advice on the manufacturing tolerances.
- Providing advice on connections at structural interfaces to steel and concrete structures ensuring efficient installation without surprises on-site.

DESIGN DOCUMENTATION AND 3D MODELLING


The XLam team create a BIM (Building Information Modelling) model of the structural works which allows for the coordination of the design with the project team, preparation of structural plans for certification and permit a smooth lead in to subsequent shop drawing activities.

When XLam is providing structural design services, the team can offer a range of services to document the design to best suit the clients' needs and the project requirements. We focus on providing simple, clear information at the appropriate stage of projects and seek a collaborative approach with design teams to ensure all requirements are met while minimising waste by avoiding duplication.

VIBRATION ANALYSIS

Timber is a relatively lightweight form of construction and In many CLT buildings, floor design is often governed by footfall vibration. The dynamic performance of a floor is governed by three factors: stiffness, mass and damping.

XLam carries out vibration analysis using simplified and finite element based analyses to ensure the performance of the floor meets expectations while achieving an efficient structural design.



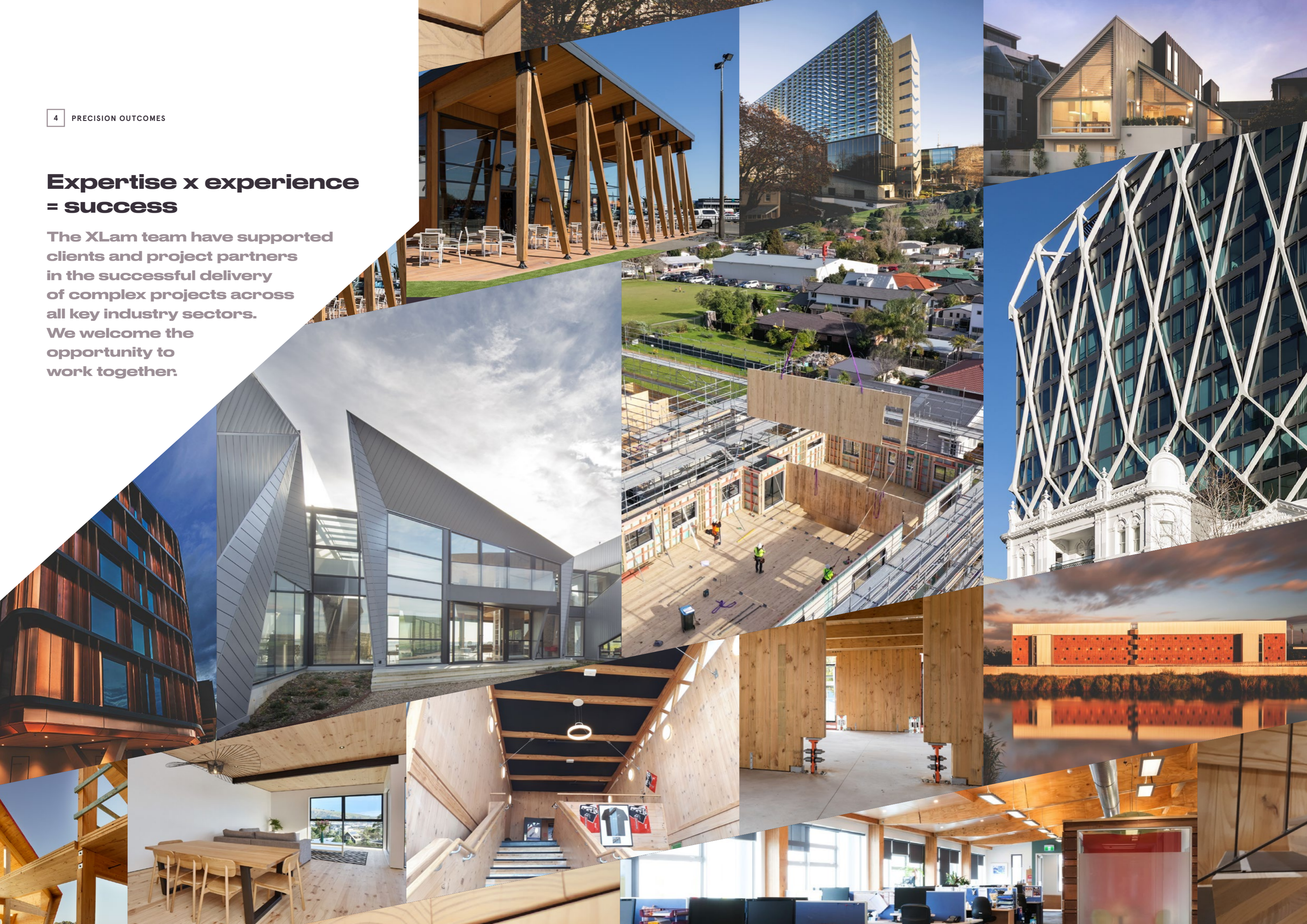
The team at XLam has over a decade of mass timber and DfMA experience

We produce cost efficient and buildable design solutions, leveraging off a comprehensive understanding of the manufacturing, scheduling, and installation process. This understanding of the end-to-end process allows XLam's design team to detail panels and connections in the most efficient way possible and leads into the full range of support services we provide throughout the project life-cycle.

Our expertise improves project ROI by reducing machining time and production costs as well as saving time on site resulting in sustainable, efficient and safe construction.

Expertise x experience = success

The XLam team have supported clients and project partners in the successful delivery of complex projects across all key industry sectors. We welcome the opportunity to work together.





XLAM

**XLam leads the market in the
manufacture and supply of
Engineered Timber Panels (CLT)
and Glue Laminated Timber (GLT)
for use in Hybrid Conventional
and Mass Timber Construction.**

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