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OPPORTUNITIES AND BARRIERS ASSOCIATED WITH THE USE OF TIMBER PRODUCTS IN COMMERCIAL BUILDINGS IN TASMANIA, AUSTRALIA

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ABSTRACT: The forest product sector is a key contributor to regional Tasmanian economy. Although opportunities have been identified for the production and supply of valued added structural and appearance timber products from the state resource, many of these markets are highly competitive. Many questions are being faced by the Tasmanian forest and timber product sector with changes in access and resource supply. This was the catalyst to this study to better understand the value chain and the factors influencing the selection of timber products in buildings. Extensive research exists on the opportunities and barriers of using timber products in buildings in Australia and overseas. However, most of these studies are based on online questionnaire surveys with large sample sizes and provide relatively general conclusions. In contrast, the study presented here focused on six recent commercial buildings built in Tasmania, with a view of capturing the experiences of the different stakeholders in the selection, design and use of timber products. It also identifies how the existing Tasmanian products fare in the market. This paper evaluates the feedback from interviews (n=30) associated with the building projects, conducted with clients, builders, project managers, architects, engineers, researchers and suppliers. The findings include, supply chain inefficiencies, a lack of technical expertise leading to project delays and redesigns, and limited knowledge and influence of the Tasmanian wood encouragement policy. There was great demand for local and Australian made timber products, however the consistent supply, service and knowledge (specification and detailing) impedes its selection and use, as well as its EPDs and certifications.

KEYWORDS: mass timber construction, supply chain, case study, stakeholders, perceptions

1 – INTRODUCTION

The forest and timber products industry is a significant contributor to Tasmania's regional economy, it was estimated to be worth $1.2 billion (2018) when considering flows-on to other industries through spending [1]. It is understood that there is a need to develop high-value-added products in-state for the sustainable survival of these industries and local communities. The Tasmanian Government has enacted a 'wood encouragement policy' since 2017 to facilitate a 'culture of wood' in state construction projects [3]. Recently, institutions such as the University of Tasmania and St Lukes' Health Insurance have committed to timber construction on a commercial scale, drawing significant attention both during construction phase and upon completion. While some locally produced timber was used in these projects, a susbtantial amount of timber-based materials was sourced from outside Tasmania, including international suppliers. Since many of these products are either already manufactured or could be produced locally, understanding the reasons behind external sourcing presents an opportunity to identify contributing factors and explore ways to enhance local and national supply.

This case study explores the use of solid timber products in recent commercial buildings in Tasmania. Commissioned by the Tasmanian Forestry Hub, the study aims to assess the opportunities and challenges associated with using locally grown and produced timber in commercial construction projects. The study was

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conducted during April to October 2024, and the complete report on the findings by the authors [4] has been published in the Tasmania Forestry Hub website. This paper provides an overview of the key findings in this case study with the expectation to share the knowledge with the international scientific community.

2 – BACKGROUND

Both the construction and operation of buildings is a significant carbon emissions contributor, approximately 40%. The global drive towards sustainability has encouraged the use of timber as a sustainable, renewable and carbon sequestering material. Yet, some critical barriers have been identified for the use of sustainable building materials. According to Gounder, Hasan [5], cost and profit considerations, the unwillingness of the key stakeholders to incorporate these materials into building projects and lack of incentives and government policies have restricted the use of sustainable construction materials in Australia. This research focuses on identifying specific factors influencing the decision making and implementation of using timber products in a regional island state and metropolitan centres. Therefore, the study was designed in a manner to capture the holistic overview of the construction by interviewing a wide range of stakeholders.

2.1 CONTEXT OF TASMANIA

Tasmania has the largest area of hardwood plantations in Australia, covering approximately 193,000 hectares, with 166,000 hectares privately owned [6]. Plantation forestry accounts for 18% of the state's agricultural land, far exceeding the national average of 0.5% [7]. As of 2017–2018, the forest industry supported 3,076 direct and 2,651 indirect jobs [1]. Recent studies by GSS [7], and Morton and associates [8] have forecasted significant opportunities for production and supply of timber building products from Tasmania's forest resources although competition remains high .

Tasmania's log supply has shifted significantly, with native forest contributions declining from 56% to 18% between 2009–2010 and 2022–2023 [7]. By 2027–2028, native Eucalypt yields are expected to drop to 58,000 cubic meters annually, while plantation sawlogs could add 79,000 cubic meters per year [9]. Currently, most sawlogs are exported to international or mainland processors [7], emphasising the need for alternative timber sources and value-added processing. Expanding mass timber product manufacturing using local resources is identified as a key investment opportunity for the state [8].

Tasmania has the capability to produce a range of timber products, including softwood and hardwood sawn timber, hardwood Cross Laminated Timber (CLT) and Glue Laminated Timber (GLT) panels, appearance-grade products, veneer, and plywood. Some facilities, such as the CLT/GLT plant, began operating at a pilot scale and have only recently begun expanding. Many appearance-grade processing businesses are long-standing, family-owned operations. In contrast, the softwood processor is a large scale operation with other Australian sites. To ensure the industry's long-term viability, developing high-value-added products within the state is crucial. Without this, the sector's future could be at risk. Therefore, identifying opportunities and challenges in utilizing local timber is essential for sustaining both the industry and the regional communities that rely on it.

2.2 KEY FINDINGS FROM LITERATURE REVIEW

Numerous studies have examined the advantages and challenges of incorporating timber products in construction. A survey by Ahmed and Arocho [10] on the use of mass timber in the U.S. construction industry identified key benefits, including reduced labor requirements, aesthetic appeal, and the ease of installing prefabricated timber panels. Additionally, a literature review by Abed, Rayburg [11] compared mass timber with steel and concrete across various factors such as environmental impact, seismic resilience, fire resistance, health benefits, and cost. The findings suggest that mass timber generally performs as well as or better than traditional materials. However, when evaluating specific factors individually, such as fire resistance or cost, timber may not always have the advantage in Australia. A recent study by Santana-Sosa and Kovacic [12] explores the challenges, opportunities, and recommendations for increasing timber use in multi-story buildings in Austria. The research highlights key factors influencing timber adoption across various stages of a construction project, including acquisition, design, production, and assembly.

Kremer and Simmons [13] examined the psychological barriers to the widespread adoption of mass timber construction (MTC) in Australia. Their study found that human-centered attitudes play a crucial role in linking positive perceptions of timber—such as its sustainability, durability, structural performance, and economic advantages—with financial factors like mortgage payments, interest rates, return on investment, and insurance costs. While much of the literature suggests that MTC can reduce overall costs, key challenges in Australia include high material expenses and limited industry experience, as noted by Gounder, Hasan [5].

Marfella and Winson-Geideman [14] further highlighted these Australian based issues such as increased insurance premiums, special disclosure requirements, and restrictions within traditional financing models. Zaman, Chan [15] emphasises that transitioning from conventional construction methods to MTC remains highly challenging, as high initial costs and associated risks deter many potential clients in Australia.

The existing literature primarily focuses on the use of timber in structural applications, while its use in appearance-related applications, such as interior linings, joinery, and flooring, is already a well-established market. Demand for these products has remained consistent over time. Specific market research for the Tasmanian timber flooring industry showed that Tasmanian Oak is widely recognised and regarded positively [16, 17]. Although the market now offers more options, such as imported engineered timber flooring and lower-priced alternatives that replicate the look of timber, there is still a significant portion of consumers who prefer to use natural timber products [18].

In summary, there are several opportunities to use MTC to reduce carbon emissions, shorten construction timelines, and enhance aesthetic and wellbeing benefits. However, challenges persist due to MTC being a relatively new building alternative in Australia compared to steel and reinforced concrete construction, there are gaps in knowledge and established practices in design and construction. These challenges include issues with supply, regulations, and insurance. While further research is needed to meet codes and standards, there is also a need for incentives to encourage building projects to move away from traditional practices. Despite the MTC industry being around in Europe and USA for more than 3 to 4 decades – there is still impediments and steel and reinforced concrete dominant construction practices in commercial buildings. In Australia, the first MTC building was completed in 2012, and have a number of examples in different cities across Australia (including two MTC companies) and other with GLT capacity.

3 – PROJECT DESCRIPTION

The initial literature review indicated that material selection for building projects is influenced by various factors across the design, implementation, and operational stages. However, many of the studies relied on large surveys, often containing data from overseas or major Australian cities like Sydney, Melbourne, and Brisbane. In contrast, this study aimed to understand the factors affecting timber use in a regional island state like Tasmania. The case study was designed to provide a comprehensive perspective on the design, procurement, and construction phases by interviewing a diverse range of stakeholders involved in recent timber-based building projects. The goal was to obtain a multi-disciplinary, 360° view of these projects and identify key factors influencing the use of timber. Fig. 1 outlines the overall research design and methodology used.

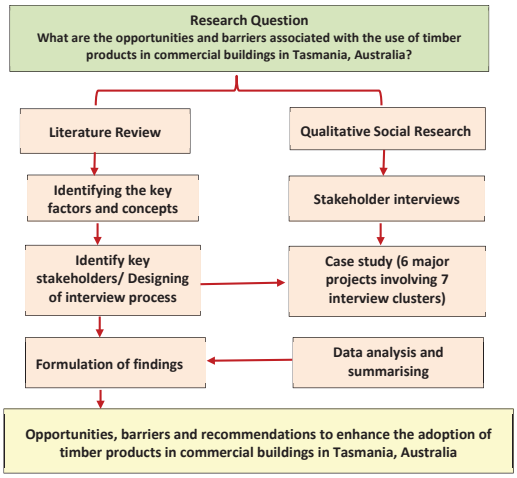

Figure 1. Research methodology [1]

4 – EXPERIMENTAL SETUP

The case study examined a selection of recent or upcoming commercial buildings in Tasmania (n=6) that aimed to incorporate significant amounts of timber in their structural and/or appearance design. These projects were either privately funded or received partial government support and included learning and teaching facilities, offices, and a large hall, with budgets ranging from $10 million to $131 million across the state. The projects utilised a variety of timber products sourced from Tasmania, Australia, and international suppliers. A summary of these building projects and their key characteristics is provided in Table 1.

Table 1. Summary of building projects used in the case study

Building	***Functions***	***Regional area in Tasmania***	***Timber products used***
A, B, C, D, E and F	Offices, Learning and Teaching facilities and large Hall	North (n=4), Northwest (n=2) and South (n=1)	veneer lining (n=6), solid timber (n=5), GLT (n=5), flooring (n=4) and CLT (n=2)

For each project, key stakeholders were identified and invited to participate, representing all stages of the design

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and construction process. These stakeholders had diverse professional backgrounds, including development, architecture, engineering, building construction and compliance, project management, timber supply/design, and consultancies. Stakeholders were recruited using a snowball sampling method, primarily through direct contact via email or referrals through networks and LinkedIn profiles. The main selection criteria were their involvement in the selected commercial building projects in Tasmania.

A total of 30 stakeholders participated, categorized into seven groups: architects (n=8), builders (n=3), clients and project managers (n=5), engineers (n=4), timber suppliers (n=6), building surveyors (n=3), and researchers (n=1) (see Fig. 2). It is noteworthy that Tasmania has three major building companies, and the three builders interviewed each represented one of these companies. These builders were often involved in more than one of the selected projects. The involvement of multiple participants on each project and different disciplines increased the trustworthiness and analysis of the data. Although quantity surveyors were identified as a key group and invited, no one chose to participate. The authors acknowledge the need to involve quantity surveyors in future research and suggest that the study design may need to be adjusted to encourage their participation.

5 – RESULTS

The findings from the case study are categorised into challenges, opportunities, and proposed initiatives. They highlight the performance requirements—market, regulatory, and client-imposed—that timber products must meet in larger building systems and commercial developments. These findings are specific to this Tasmanian case study, involving 30 stakeholders across six timber-focused commercial building projects. While the results are based on conditions in Tasmania, many of the insights are consistent with recent experiences in mainland Australia and studies from Europe.

The process of incorporating timber into a building project involves several stages, starting with clients and architects being inspired by concepts, previous projects, or images, and then exploring how to achieve the desired form, structure, or aesthetic using specific materials. The next step typically involves researching online for guides, details, and suppliers to understand how to properly detail and specify the materials.

Suppliers are often contacted at this stage to gather information about product options, capabilities, supply availability, and lead times, which then informs the tender documents and specifications. Structural products and details are usually investigated in more depth, while appearance-based products may be further refined during the construction process and are more flexible at this stage.

In interviews, architects and engineers were asked about the specification process and the sources they found most helpful. Architects noted that their primary source of information for specifying timber products, whether structural or appearance-based, was the internet. They would then contact suppliers, depending on the project's scale and timeline. However, there was some hesitation in reaching out to suppliers due to concerns about potential bias in product recommendations. Preferred websites for sourcing information included Wood Solutions, Wood Products Victoria, and Timber Queensland, which were seen as reputable resources. Interestingly, the Tasmanian Timber website was not mentioned by either local or interstate professionals. For mass timber applications, architects often wrote more generic specifications, even after consulting suppliers for more detailed product information.This reflects a tension, about whether a generic performance-based specification or a more specific one is preferable, as the latter could restrict the tendering process. It is also important to note that much of the information available online regarding mass timber products and details is based on European offerings.

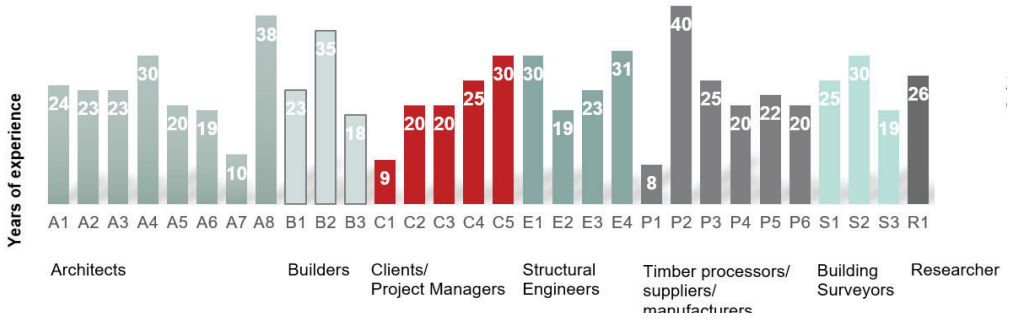

Figure 2. Interview participant groups and their years of experience on the job [1]

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When working on interior fit-outs, furniture, or joinery, architects typically collaborated with interior designers, who had access to the relevant specifications and details. This often based on learning from past projects, so when designing inter-state the timber specifications can be unfamiliar of local products or how best to qualify a local product but ensure a competitive tender. Figure 3 illustrates the sources of information referred by architects to specify timber products. This is both a mix of finding resources for structural and appearance-based products.

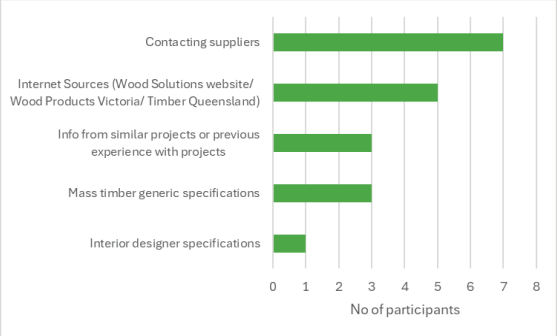

Figure 3. Information sources used by architects to specify timber products [1].

5.1 CHALLENGES OF USING TASMANIAN TIMBER PRODUCTS IN COMMERCIAL BUILDINGS

Many different challenges were identified along the value chain and these are presented under the headings of structural-based and appearance-based products. Even thought these findings are framed in relation to challenges for a locally produced product to be selected, most of the challenges relate more broadly to barriers for MTC.

Structural-based products

Highly competitive markets: the decision to source MTC products from a local, national or overseas suppliers involves balancing considerations of price, design and technical support, and environmental product declarations, all of which influence the overall feasibility and sustainability of the project.

There are higher production costs in Tasmania to use local feedstock (fibre managed *Eucalyptus nitens* timber) and there have been challenges in securing a consistent and high-volume supply. This contrasts with the availability of low-priced imported feedstock and products. To be competitive in the market, there is a need for either a high-volume processor or greater vertical integration between growers, processors, and manufacturers. Such integration could help streamline operations, reduce costs, and improve supply chain consistency to be cost-competitive.

Higher procurement and lead times in general for MTC are a notable challenge, as the time required to design for structural and service needs, as well as coordinate with production schedules from MTC manufacturers, can be lengthy. This can be especially difficult when dealing with tight building timelines and budgets. Extended lead times increase the risks of personnel changes and communication breakdowns, which can lead to delays and potential errors in the construction process. These challenges necessitate careful planning and coordination to ensure projects stay on track and within budget.

Competitive tendering and specification support: Commercial projects typically require a competitive tender process, meaning the specifications are often performance-based, referencing European or international standards, as Australian standards for MTC are either underdeveloped or more generic. As a result, MTC manufacturers need to demonstrate how their products meet specific requirements, such as engineering, fire safety, and acoustics. This approach can sometimes lead to the need for redesigns, which can cause delays in the project timeline and push back the start of construction for commercial projects. These factors highlight the complexity of aligning MTC products with local regulatory and design standards.

Limitations of conventional design and construction processes: MTC requires more upfront detail resolution and greater engineering services compared to conventional design processes, due to the longer lead times associated with MTC. This often necessitates the engagement of a specialist timber engineer to design and manage the approach, ensuring that the project meets all technical requirements and is competitive in the tender process. The involvement of such experts is important to address the specific challenges of MTC, including structural integrity, material behavior, and compliance with regulations. In Australia these expertise are growing but are relatively still limited.

Limited industry experience and capabilities with MTC. There is relatively limited industry experience and expertise with MTC across the architecture, engineering, and construction (AEC) professions and trades in Australia. It has grown since the first MTC building in 2012 in Australia, but there are still a number of Architecture firms entering this space for the first time and rely significantly on engineering and construction industry for these projects to be feasible for their clients. There was additional cost to the Tasmanian MTC

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buildings which the clients were comfortable to approve than the conventional reinforced concrete construction. For one of the buildings, MTC quicken the build, reduce the interior fit out costs and was over subscribed.

Timber processing capabilities and capacity: While the appearance product sector of the timber industry is well-established and experienced in delivering high-quality products, engineered wood product (EWP) suppliers face challenges related to expertise and technical skills. The lack of a skilled workforce, high labor costs, and limited production capabilities constrain the growth and competitiveness of the local EWP industry. These factors hinder the ability to meet the increasing demand for MTC and other advanced timber solutions in the market.

Limitations in design and construction management phase: During the design and construction management phases, several limitations were identified. The involvement of timber suppliers in the design phase is often limited, leading to misalignments between the design requirements and suppliers' capabilities. As a result, designs may need to be redone, extending timelines and increasing costs. On the whole, Architects and engineers have a relatively limited understanding of timber properties, and with few timber engineers available in Australia, design and construction teams often hesitate to engage them. This lack of expertise, along with limited experience among local builders and contractors, contributes to challenges in using timber. In some cases, mainland installers were brought in to mitigate risks. Additionally, contractors tend to prefer concrete or steel over timber, given their familiarity with these materials and the ease of working with them. Builders also face challenges with moisture control, weatherproofing, and understanding European MTC methods.

Limitations with prefabrication and construction times: Some builders noted that the upfront costs of mass prefabricated timber components were not offset by faster construction times. Prefabrication only sped up the construction process when the project involved repetitive work. In some cases, each column or design was unique, which limited the time savings. However, since the Tasmanian industry is still in the learning phase of MTC there is potential for improved timeframes as more experience is gained and this knowledge is integrated into future designs.

Limitations with Software platforms and engineering capacity: Engineers have access to tools like the "CLT Toolbox" for mass timber design, but compared to the more developed software for concrete and steel, timber-specific software is still relatively new, and users have less experience with it. Currently, timber designs are mostly understood on a domestic scale, and there is a need for a better understanding of feasible spans, timber connections, and concealed fixings to improve the design and application of mass timber in larger projects.

Compliance and fire related issues. There has been limited tested data available on local and Australian timber products, this continues to expand, as they are relatively new to the market. In some Australian juristrictions, Timber commercial constructions require third-party certification for compliance, which adds to the cost and involves reliance on an independent fire engineer to assess the risk and sign off on the project. The situation is further complicated by the lack of MTC buildings and experience for fire engineers and building surveyors in Australia. In contrast, the global MTC market is more mature and confident in meeting compliance standards. As a result, building insurance for MTC projects is often prohibitively expensive, and in some cases, it must be sourced from overseas providers due to the limited options available locally.

Issues with of Environmental Product Declarations (EPDs) and environmental credentials. Throughout the interviews, there was a general perception that timber is sustainable. Sustainability credentials were frequently discussed, particularly by architects. Local timber products were often viewed as sustainable due to their support of the local economy, creation of local jobs, and lower energy use in processes like transportation. Carbon footprint was also highlighted as a crucial factor in assessing a product's environmental impact. Architects noted that the use of EPDs is not widely encouraged in the Australian market in comparison to the EU. In contrast, European products typically come with detailed EPDs, making it easier to calculate carbon emissions associated with their use in design. This is due to the significant investment made by European manufacturers to obtain these EPDs in order to meet market demands and regulations. Overseas MTC products generally have significantly lower carbon emissions during production and supply compared to national MTC manufacturers [19]. This is primarily due to the greater reliance on fossil fuels in the production process, including operational energy and transportation, which contributes to higher emissions for locally produced timber products.

Appearance-based products

Length of lead times: Lead times are often extended due to communication gaps between the processor, architect, and builder. The processor and architect discuss design

and materials early on, but a delay occurs, generally because the processor does not know who won the building contract and often builders contact them for supply too late. This leads to supply challenges caused by limited stock availability and the time required for hardwood drying.

Competitive tendering and specification support: There is confusion regarding timber terminology and trademarks, such as Tas Oak, Vic Ash, and Plantation Oak, which can lead to misunderstandings in material selection and specifications. If clients want locally produced materials and manufactured products it is a challenge to currently specifiy this and allow for a competitive tender. The ambiguity here in timber terminology and trademarks means that contracts may be awarded to other look alikes or subsititutes (see below too).

Lacking guarantees/ warranties/ data for commercial product compliance: For example underfloor heated timber floor or fire / acoustic compliance of timber wall lining products – these products are not generally taken into consideration unless the client is ready to take the performance risk.

Substitutions for timber: This is often a result of value management at the project's final stage, combined with the need to meet performance requirements.

Time taken to acclimatise timber products: Timber products must be acclimatised before installation, but some still showed movement after installation, even after proper acclimatisation. This highlights the need to understand how climatic conditions and solar radiation affect timber products and the inherent organic properties of timber.

Perceptions towards environmental credentials There are concerns raised mainly by Architects, half of the engineers interviewed and one of the builders regarding environmental credentials, particularly related to Programme for the Endorsement of Forest Certification (PEFC) and the use of timber from native regenerated forest harvesting. In the context of Tasmania, and Australia there is significant debate about native regrown forest management and harvest practices in the media and this is being reflected in some parts of the community.

5.2 OPPORTUNITIES OF USING TASMANIAN TIMBER PRODUCTS IN COMMERCIAL BUILDINGS

Aesthetics/ appearance: Timber is valued for its visual appeal and warmth, contributing to enhanced user comfort. Architects often choose to showcase timber surfaces for their aesthetic benefits. Incorporating MTC in buildings helped lower fit-out costs for tenants and attracts high-end clients, including government agencies and Australian Securities Exchange (ASX) listed companies due to new environmental reporting for large companies in Australia.

Embodied carbon and sustainability: Overall timber is perceived to have merit as a more sustainable material compared to steel and concrete because it stores carbon throughout its lifespan. This helps reduce the overall carbon footprint, as timber products act as carbon sinks, absorbing and holding carbon dioxide from the atmosphere. However, there are mixed views as whether this is true depending on the siliviculture and harvesting practices. The debate in Australia is preference to first use salvalged timber, then certified plantation resources and susbquently certified native regrown resources.

Biophilic design: Timber is the material of choice for educational institutions and organisations focused on creating healthy buildings. Research on timber highlights its numerous benefits, including positive long-term effects on health, productivity and overall well-being.

Local availability of native regenerated and plantation hardwood timber. Timber is readily available in Tasmania and Australia, and locals are generally knowledgeable about its properties. It is a popular choice for household use, particularly in house framing and flooring, due to its familiarity and suitability for the domestic market.

Good performance in fit-for the purpose applications. Timber excels in applications where it is suited to its purpose and offers good acoustic properties.

Building identity/ connection to Tasmania: Tasmanians have a strong local connection to timber, with many family-owned businesses operating in the market for decades, earning a solid reputation for their products. Tasmanian Oak is particularly valued in the Australian market, especially for appearance-based applications like flooring and veneers. Additionally, locally grown plantation *E. nitens* is used as the feedstock for Engineered Wood Products (EWPs) produced within the state.

Easy workability or installation of engineered products due to prefabrication. While prefabricated mass timber is still a relatively new concept in the Tasmanian industry, the building projects analysed in this

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study showed that its installation was often easier than expected, though it still requires experience and, at times, can be quicker than traditional methods. However, successful implementation requires ongoing training and skill development.

5.3 PROPOSED INITIATIVES TO ENHANCE THE USE OF TASMANIAN TIMBER PRODUCTS

Requirement of an integrated design/engineering process. It is essential to understand and coordinate the specific parameters for designing and constructing with timber products during the early design phases. This approach helps maximise project efficiency and prevents unforeseen delays and costs.

Requirement for strategic communication and capability with timber products. Engaging timber suppliers and contractors at every stage of the design process, and ensuring a clear understanding of available materials, was identified as a key factor for successful project execution. Challenges with both MTC and appearance-based products in commercial projects stemmed from breakdowns in supply chain communication.

Standardisation and updating of building codes and regulations to facilitate timber use. Unlike the steel and concrete industries, standardisation is not as easily achieved with timber products and in the construction sector. This is due to the natural variability of timber, the diverse systems used by suppliers, and the various methods available for connecting timber. There is a need for greater consistency and transparency in the size and type of timber products, as significant variation in product size exists across processing plants in Australia. Challenges also arise with Australian Standards and the National Construction Code (NCC), which make it difficult to easily incorporate new timber products into buildings. This includes issues related to plantation resources, updated species properties, and Engineered Wood Products (EWPs).

Incorporate vertical integration of production processes. Tasmanian timber processors need to explore vertical integration strategies to remain cost-competitive and manage the transition to a more consistent resource supply. A more consistent and high volume supply would provide additional security. Tasmania benefits from having access to timber that grows quickly and is located near timber processors, offering great potential for further value-added production.

Policy incentives for timber-rich buildings: It was suggested that government procurement policies that prioritise carbon credits and the decarbonization benefits for local communities would have a significant impact. The development and implementation of national committees and policies aimed at improving the timber processing industry was also proposed. While the Tasmanian Wood Encouragement Policy is considered a positive initiative, it was noted that because it is voluntary rather than mandatory, it doesn't strongly influence decision-making. Architects currently face challenges in specifying timber, as it often requires additional work and fees.

Education opportunities (guides, seminars, workshops, short courses) the specifiers and improve the public awareness of timber products. Participants unanimously agreed that education and awareness about the use of timber products and their benefits in building construction should be prioritised. Currently, very few architects, structural and fire engineers, and builders possess the necessary experience to fully capitalise on the efficiencies offered by Mass Timber Construction (MTC) in Australia. These professionals need access to relevant skills and training in new technologies. Educational campaigns should be launched to develop timber engineers and scientists, while also ensuring access to accurate and reliable information for specifying timber in fit-for-purpose applications. Additionally, design techniques and manufacturing practices from Europe should be studied and adapted to suit Australian timber species and performance standards. It is worth noting that these experiences are still occurring in the EU too (Add Austraian reference, and it is partly due to the university education of archietcts and engineers).

Provide an up-to-date/ central information on industry capabilities and volume availability. It was noted that gaining a better understanding of local capabilities and available timber volumes would be beneficial for specifiers and could encourage greater use of timber products. This would help minimise delays, misunderstandings, and cost overruns. If there were a way to access real-time updates on available timber volumes from local industries, more projects could confidently choose timber products, and knowing supply.

Promote the key project stories to encourage the timber use. Recent timber construction projects in Tasmania have provided valuable insights for all parties involved, including the general public. These projects can serve as "Guinea Pig" projects to share knowledge more widely within the Australian industry. Clients are open to sharing their experiences and encouraging the public to visit their buildings. By sharing the costs,

experiences, and lessons learned, the industry can work towards achieving more successful timber buildings in the future.

6 – CONCLUSION

Although the focus of the case study was on Tasmania, the findings align with global trends, as evidenced by the similarities with the literature review, even though timber construction is still in its nascent stages. This paper provides a deeper understanding of timber design and specification process, its usage, availability, and the challenges in supply, which is crucial for identifying future opportunities in supply chain management, infrastructure planning, and policy development. There is a demand for timber in commercial buildings, with a desire to use Tasmanian or Australian-grown products, but this demand is influenced by pricing and the global market. If supply and availability are too limited or disrupted, and there is a lack of specification details such as warranties and guarantees, it will be challenging for the market to consistently grow without the client assuming the risk.

The findings of this study reveal a growing interest in using timber among architects and clients with feasible budgets. However, the identified challenges need to be addressed to overcome barriers related to local suppliers and their market competition. All participants agreed that there is significant potential for increasing the use of locally produced timber products in the future. These insights offer a comprehensive understanding of the current state of the Tasmanian timber construction industry and provide valuable guidance for future initiatives. The building process involves both design and risk management, and through these interviews, it became clear that the uncertainty of timber supply often led participants to choose alternative products. Another key issue is the highly competitive nature of both appearance and structural timber product markets. Additionally, environmental regulations such as EPDs and efforts to produce carbon-positive buildings do not necessarily make local products more attractive in comparison. There are opportunities for targeted market entry, although MTC products present challenges due to engineering, production requirements, certifications, compliance, and the need for builders to have a comprehensive solution or ways to mitigate construction risk.

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