ASH, ATC Social Housing Product

Australian Sustainable Hardwoods

MBM Job Number
3647-0001

Prepared By
Stephanie Tecli
Kelvin Perrie

Reviewed By
Richard Smith

19 August 2024

Contents

Quality System

Project Number: 3647-0001	**Revision Number:**	**Issue Date:** 28/8/24
Prepared By: Stephanie Tecli	Reviewed by: Richard Smith	

Profile

Established in 2002, MBM is a successful national, independent professional services firm specialising in quantity surveying and asset consulting. Our expertise ranges from quantity surveying, building consultancy, tax & asset services, PPP advisory, infrastructure, facilities management advisory, and expert witness.

Success Starts

MBM has grown from a small boutique firm to a national practice of over 130 staff, but we have retained our focus on relationships and delivering client service excellence. We are a values-driven business founded on precision, integrity, and reliability. We provide our clients with expertise and assurance on every project, large or small. Like you, we have high expectations when it comes to technical skills, experience, and advice you can count on.

Customised Solutions

We have worked on a diverse range of projects from residential refurbishments to multi-billion-dollar infrastructure projects. We work with property owners, investors, users, managers, developers, builders, government departments and private individuals to create customised solutions. We are experts who deliver certainty.

Delivering Value

Our diversity of experience means we can add value from the outset and hit the ground running.

We can identify the risks, opportunities and challenges you face, and come up with practical solutions.

Our Goals

- To be considered by our clients and staff as the leading professional services firm in our industry.
- To provide our clients with quality services and value for money.
- To provide our people with the opportunity to progress their career aspirations.

Executive Summary

MBM have been engaged by Australian Sustainable Hardwoods (ASH) to provide a cost comparison of traditional construction vs timber construction in relation to a 6-storey affordable apartment building.

A comparative cost analysis was conducted between timber frame and traditional concrete construction for the model apartment building (see Appendix A). This analysis aimed to identify any cost disparities between the two methodologies.

This report attempts to establish a like for like comparison across all trade elements taking into consideration how the methodologies impact each trade.

See below a high-level comparison of the proposed development.

Description	Traditional Construction Total	Timber Construction Total	Variance	%
Substructure	$ 534,240	$ 457,920	-$ 76,320	-14%
Superstructure	$ 13,988,540	$ 12,880,679	-$ 1,107,861	-8%
Finishes	$ 3,014,640	$ 2,556,720	-$ 457,920	-15%
Fittings	$ 1,144,800	$ 1,144,800	$ -	0%
Services	$ 8,128,080	$ 8,013,600	-$ 114,480	-1%
External Works/Services	$ 648,720	$ 534,240	-$ 114,480	-18%
Subtotal Construction Cost	**$ 25,665,500**	**$ 23,908,919**	**-$ 1,756,581**	**-7%**
Preliminaries	$ 4,619,790	$ 3,825,427	-$ 794,363	-17%
Margin	$ 1,211,412	$ 1,109,374	-$ 102,038	-8%
Subtotal Construction Cost	**$ 31,496,702**	**$ 28,843,720**	**-$ 2,652,982**	**-8%**
Contingency -10%	$ 3,149,670	$ 2,884,372	-$ 265,298	-8%
Subtotal Construction Cost	**$ 34,646,372**	**$ 31,728,092**	**-$ 2,918,280**	**-8%**

As depicted above, the timber construction method was approximately 8% more cost efficient than traditional construction.

Due to the conceptual nature of the documentation, MBM have made several assumptions, allowances, and exclusions in the preparation of the estimate and as such should be considered as indicative pricing only. MBM notes that no specifications or schedules are available at this stage and as such, the rates applied are based on projects similar in size and type. Where no design is available MBM have applied benchmarked elemental rates. More detailed costs can be prepared as design evolves.

To create stable costing conditions, it was assumed that the building would be constructed in Victoria.

Please refer to the following pages for a detailed breakdown

Cost Plan Summary – Comparison Timber vs Concrete

The below table summarises the current cost estimate for the timber framed option and the conventionally constructed option:

Description	Traditional Construction Total	Timber Construction Total	Variance
Substructure	$ 534,240	$ 457,920	-$ 76,320
Superstructure	$ -	$ -	$ -
Columns	$ 496,080	$ 492,493	-$ 3,587
Upper Floors	$ 4,229,425	$ 3,164,914	-$ 1,064,511
Staircase	$ 144,016	$ 104,253	-$ 39,763
Roof	$ 559,884	$ 559,884	$ -
External Walls/ Glazing	$ 698,175	$ 698,175	$ -
Windows	$ 6,258,240	$ 6,258,240	$ -
External Doors	$ 152,640	$ 152,640	$ -
Internal Walls	$ 1,068,480	$ 1,068,480	$ -
Internal Screens	$ 76,320	$ 76,320	$ -
Internal Doors	$ 305,280	$ 305,280	$ -
Finishes	$ -	$ -	$ -
Wall	$ 457,920	$ 305,280	-$ 152,640
Floor	$ 763,200	$ 648,720	-$ 114,480
Ceiling	$ 648,720	$ 457,920	-$ 190,800
Fittings	$ -	$ -	$ -
Fitments	$ 1,144,800	$ 1,144,800	$ -
Special Equipment	$ -	$ -	$ -
Services	$ -	$ -	$ -
Hydraulic Services	$ 1,679,040	$ 1,679,040	$ -
Mechanical Services	$ 2,289,600	$ 2,289,600	$ -
Fire Services	$ 1,144,800	$ 1,144,800	$ -
Electrical Services	$ 2,136,960	$ 2,136,960	$ -
Vertical Transport	$ 228,960	$ 228,960	$ -
External Works/Services	$ 648,720	$ 534,240	-$ 114,480
Subtotal Construction Cost	**$ 25,665,500**	**$ 23,908,919**	**-$ 1,756,581**
Preliminaries	$ 4,619,790	$ 3,825,427	-$ 794,363
Margin	$ 1,211,412	$ 1,109,374	-$ 102,038
Subtotal Construction Cost	**$ 31,496,702**	**$ 28,843,720**	**-$ 2,652,982**
Contingency -10%	$ 3,149,670	$ 2,884,372	-$ 265,298
Subtotal Construction Cost	**$ 34,646,372**	**$ 31,728,092**	**-$ 2,918,280**

Traditional (conc) Construction Cost Estimate

The below table summarises the current cost estimate for the conventionally constructed option:

TRADITIONAL CONSTRUCTION				
Description	**GBA**	**Uom**	**Rate**	**Total**
Substructure	7,632	m2	$ 70	$ 534,240
Superstructure				$ -
Columns	7,632	m2	$ 65	$ 496,080
Upper Floors	7,632	m2	$ 554	$ 4,229,425
Staircase	7,632	m2	$ 19	$ 144,016
Roof	7,632	m2	$ 73	$ 559,884
External Walls/ Glazing	7,632	m2	$ 91	$ 698,175
Windows	7,632	m2	$ 820	$ 6,258,240
External Doors	7,632	m2	$ 20	$ 152,640
Internal Walls	7,632	m2	$ 140	$ 1,068,480
Internal Screens	7,632	m2	$ 10	$ 76,320
Internal Doors	7,632	m2	$ 40	$ 305,280
Finishes				$ -
Wall	7,632	m2	$ 60	$ 457,920
Floor	7,632	m2	$ 100	$ 763,200
Ceiling	7,632	m2	$ 85	$ 648,720
Fittings				$ -
Fitments	7,632	m2	$ 150	$ 1,144,800
Special Equipment	7,632	m2		$ -
Services				$ -
Hydraulic Services	7,632	m2	$ 220	$ 1,679,040
Mechanical Services	7,632	m2	$ 300	$ 2,289,600
Fire Services	7,632	m2	$ 150	$ 1,144,800
Electrical Services	7,632	m2	$ 280	$ 2,136,960
Vertical Transport	7,632	m2	$ 30	$ 228,960
External Works/Services	7,632	m2	$ 85	$ 648,720
Subtotal Construction Cost	**7,632**	**m2**	**$ 3,363**	**$ 25,665,500**
Preliminaries	18%	%	$ 25,665,500	$ 4,619,790
Margin	4%	%	$ 30,285,290	$ 1,211,412
Subtotal Construction Cost	**7,632**	**m2**	**$ 4,127**	**$ 31,496,702**
Contingency -10%	10%	%	$ 31,496,702	$ 3,149,670
Subtotal Construction Cost	**7,632**	**m2**	**$ 4,540**	**$ 34,646,372**

Timber Construction Cost Estimate

The below table summarises the current cost estimate for the timber constructed option:

TIMBER CONSTRUCTION				
Description	GBA	Uom	Rate	Total
Substructure	7,632	m2	$ 60	$ 457,920
Superstructure				$ -
Columns	7,632	m2	$ 65	$ 492,493
Upper Floors	7,632	m2	$ 415	$ 3,164,914
Staircase	7,632	m2	$ 14	$ 104,253
Roof	7,632	m2	$ 73	$ 559,884
External Walls/ Glazing	7,632	m2	$ 91	$ 698,175
Windows	7,632	m2	$ 820	$ 6,258,240
External Doors	7,632	m2	$ 20	$ 152,640
Internal Walls	7,632	m2	$ 140	$ 1,068,480
Internal Screens	7,632	m2	$ 10	$ 76,320
Internal Doors	7,632	m2	$ 40	$ 305,280
Finishes				$ -
Wall	7,632	m2	$ 40	$ 305,280
Floor	7,632	m2	$ 85	$ 648,720
Ceiling	7,632	m2	$ 60	$ 457,920
Fittings				$ -
Fitments	7,632	m2	$ 150	$ 1,144,800
Special Equipment	7,632	m2		$ -
Services				$ -
Hydraulic Services	7,632	m2	$ 220	$ 1,679,040
Mechanical Services	7,632	m2	$ 300	$ 2,289,600
Fire Services	7,632	m2	$ 150	$ 1,144,800
Electrical Services	7,632	m2	$ 280	$ 2,136,960
Vertical Transport	7,632	m2	$ 30	$ 228,960
External Works/Services	7,632	m2	$ 70	$ 534,240
Subtotal Construction Cost	**7,632**	**m2**	**$ 3,133**	**$ 23,908,919**
Preliminaries	16%	%	$ 23,908,919	$ 3,825,427
Margin	4%	%	$ 27,734,346	$ 1,109,374
Subtotal Construction Cost	**7,632**	**m2**	**$ 3,779**	**$ 28,843,720**
Contingency -10%	10%	%	$ 28,843,720	$ 2,884,372
Subtotal Construction Cost	**7,632**	**m2**	**$ 4,157**	**$ 31,728,092**

An analysis of the two methods reveals that timber construction offers potential cost savings of $2,918,280, including contingency, compared to traditional concrete. These savings are primarily attributed to the following factors:

Cost Savings

- Reduced foundations and overall structure due to reduced weight of structural elements
- Reduced ceiling finishes as a result of ATC floors which allows for an exposed visually appealing soffit
- Reduced internal wall finishes – exposed timber replacing plasterboard
- Enhanced vibration and insulation performance
- Minor reduction in external works due to less site disruption and faster construction times.

Cost Savings on Preliminaries

Timber construction offers a compelling advantage over concrete in terms of program and streamlined preliminaries. The lighter weight of timber results in reduced foundation requirements and easier handling on-site, minimising the need for heavy machinery and extensive in ground work.

This allows for a significant reduction in early works and substructure works, often by as much as 30%. The remainder of the program is also accelerated by a similar margin resulting **in cost savings as a result of reduced labour, earlier occupancy, and a minimised environmental footprint from the reduced construction window.**

The timber solution includes an estimated saving in preliminaries of approximately $794,000 based on a construction program saving 6+ weeks over the concrete solution.

Additional Costs (potential)

- Additional costs for acoustic requirements
- Potential cost additions for concealing services
- The (fake) elephant in the room
  The reluctance of Australian builders and the construction industry to adopt timber construction has led to an inflated perception of its costs. This false premium, rather than reflecting the actual cost of timber construction, can be eliminated through increased awareness and education. ASH projects offer competitive rates without compromising quality, from sourcing the timber to delivering the finished product.

Other Potential Cost Savings

The following items include areas where cost saving potential exists in the timber solution.
NB These savings have not been included in the MBM estimates

REDUCED FOUNDATIONS

Timber structure's lighter weight translates to needing less substantial foundations compared to concrete. Concrete is much denser, on average, concrete weighs around 2400 kg/m^3, while timber used in construction typically comes in at approx 600/m^3, subsequentially a 20-50% lighter structure. This significant difference means a timber structure will exert a much lower overall load on the foundation. As a result, timber structures require smaller footings and a less complex foundation system.

SMARTER SCAFFOLD ERECTION

The timber structure only requires the use of scaffolding for the installation of the façade panels. The installation of aluminium cladding to the mass timber panels, before erecting, could remove the need for scaffold and be replaced with handrails already attached to floor panels. Joints in aluminium cladding could be completed by the use of mobile elevated platform.

FASTER BUILD TIME

MASSLAM projects consistently deliver construction timelines up to 30% faster than traditional methods. This accelerated pace is driven by the efficiency of MASSLAM's bearing connections, which require an average of only 3-4 minutes per member to install. Subsequently, rapid assembly translates to reduced time-related expenses, including crane and equipment rental, labor wages, insurance premiums, and permitting fees. Accelerated construction timelines can lead to substantial savings in these areas and earlier occupancy times.

EARLIER START TIME ON INTERNAL WORKS

The earlier completion of the main structure allows for an earlier start on internal work, resulting in significant time savings. Activities such as rough-in services and wet area construction can commence sooner compared to the concrete option. Additionally, subsequent trades can begin work on lower floors without delay due to the absence of propping.

EASIER SUBSTRATE FOR LININGS & FINISHES

The time to carry out fit-out activities in timber structures is generally less than for concrete. For instance, cordless screw guns and nailing can be used, which is light, quick and easy to use. Timber inherently provides ‘anywhere’ fixing points. Concrete structures require drilling into concrete, which is slow, noisy, and dirty, and requires anchor or friction-style fixings.

REDUCED FINISHES

Timber construction can offer an advantage over concrete in terms of reduced internal finishes and joinery as timber becomes an intrinsic design feature, eliminating the requirement for additional layers of plasterboard or other aesthetic finishes that conceal concrete structures. This translates to a simpler building envelope, streamlined construction processes, and potentially lower material costs.

CRANE SIZE

Crane savings discussed previously focus on the reduced hire period required for the timber solution, but there is also potential to use a lighter, remotely controlled crane (i.e. operated from the floor deck under construction). For instance, the ATC solution's maximum panel weight is only 2,000 kg.

DELIVERIES

Deliveries for the timber solution are significantly reduced, saving supervision, handling at the road level and traffic management. Just-in-time delivery of timber can avoid panel storage on site.

ENVIRONMENT

Timber boasts a significant environmental advantage. This stems from timber's role as a carbon sink, storing atmospheric carbon during growth. The manufacturing process of timber uses substantially less fossil fuel energy per unit volume than steel, concrete, or aluminium. Further to this point timber is carbon positive, locking up more carbon than produced during manufacturing. This carbon sequestration translates into a lower embodied carbon footprint for the building itself. Recognising this benefit, clean energy financiers are offering favourable loan terms and grants for projects utilising mass timber construction. ASH's project at T3, Wellington St, received $70m in funding and was the first project in Australia to receive such funding. This financial edge incentivises sustainable building practices, making timber a compelling choice for environmentally conscious developers and a potential game-changer in the race towards a low-carbon built environment. Accelerating the use of mass timber in Australia is a known pathway to significantly assist with decarbonising the construction sector and contributing to Australia's goal of achieving net zero by 2050.

SAFETY

Mass timber construction inherently prioritises safety. By assembling components and attaching connectors in controlled off-site environments, the need for hazardous tasks like working at heights is significantly minimised. Smaller crews equipped with simpler tools can efficiently assemble prefabricated elements, eliminating the risks associated with welding, hot work, handling heavy materials, and working at heights.

FIRE RESISTANT

Mass timber buildings offer superior fire resistance compared to traditional construction. Large timber sections are incredibly difficult to ignite, and when exposed to fire, they form a protective char layer while maintaining structural integrity. Unlike steel and concrete, which can weaken under extreme heat, mass timber retains its strength. Rigorous fire testing has proven MASSLAM's performance. By understanding how the char layer forms, designers can easily calculate fire resistance requirements.

DESIGN FEES

Whilst the upfront design cost for a timber structure may be higher due to the unique nature of mass timber projects, this initial investment can be a strategic advantage in the long run. Timber's inherent modularity and efficient use of prefabricated elements means that subsequent buildings using the same design can benefit from significantly reduced design fees. Essentially, the extra effort put into the initial timber design translates to cost savings for any future projects that replicate the structure, making timber a compelling choice for developers planning standardised or modular building systems.

AUSTRALIAN MANUFACTURED

There are multiple mass timber manufacturers in Australia. ASH, and their MASSLAM and ATC mass timber products, are owned and made in Victoria with Australian timber. ASH are vertically integrated and uniquely control from log to finished product, eliminating concerns of supply risk or price fluctuations.

LIFE CYCLE COST ANALYSIS & ENERGY EFFICIENCY

Studies conducted overseas have demonstrated the lower life cycle costs of mass timber construction. While Australian data is limited, it aligns with international findings. Mass timber excels in thermal insulation, moisture management, acoustics, air tightness, and fire resistance. These performance advantages lead to increased energy efficiency, reduced operational costs, and fewer maintenance requirements. Additionally, the recyclability of mass timber minimises waste and disposal costs, further contributing to its overall cost-effectiveness

MARKETING AND SALES INFORMATION

Demand for mass timber has steadily grown over the past five to seven years, and this trend shows no signs of abating. This increase is driven not only by the cost and time advantages of timber but also by a broader shift towards sustainability and environmental consciousness. Both the public and industry are recognizing the environmental, economic, and social benefits of timber design and construction. In Australia, the demand for affordable and innovative housing is evident in the rapid occupancy and sales of recent mass timber projects. Mass timber appeals to the sophisticated, innovative, and practical needs of homebuyers while also aligning with the principles of contemporary marketing and sales strategies.

Removal of the current perception that timber is ‘too hard’: Arguably the most important issue in the savings potential.

Conclusion

The timber solution was found to be more cost effective - not only in MBM's opinion but in fair and equitable market derived data.

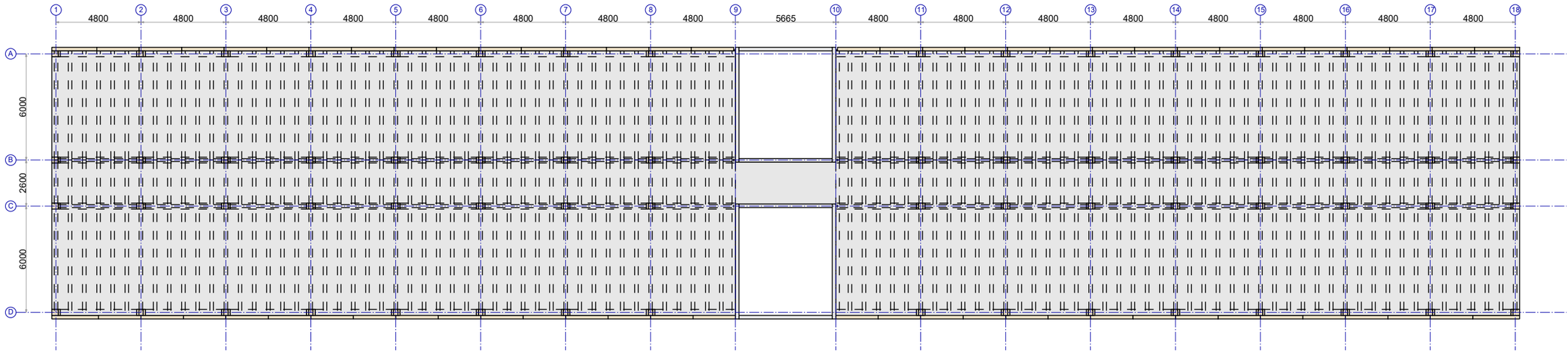
The savings are approx 8% (on the overall project) and it is MBM opinion that as the industry accepts the methodology as a viable alternative to concrete and steel, this saving will increase.

Put simply, the benefits of timber in terms of simplicity of design engineering, the speed of construction and the potential workmanship quality, translate to tangible cost savings as well as a host of other - more social, environmental gains.

Timber is a viable and necessary alternative to concrete construction.

APPENDIX A

ATC Social Housing Typical Plan



1 MASSLAM & ATC HOUSING - TYPICAL PLAN

Scale: 1:250

Rev No	Amendment	Date	By	Checked

LEGEND

PROJECT:

ATC Social Housing Proposal

CLIENT:

Scale: 1: 250

Date:

Job no.:

Drawn

Sheet: ASH

Australian Sustainable Hardwoods

4 Weir Road, Heyfield

(03) 5139 7000

www.ash.com.au

ASH®

Our Expertise

Quantity Surveying

- Feasibility studies
- Cost planning and estimating
- Bills of Quantities
- Tender estimates, analysis and evaluation
- Contract administration
- Financier reporting
- Replacement cost analysis

Tax & Assets Services

- Tax depreciation and capital allowance schedules
- Management of fixed asset registers
- Depreciation modelling and auditing
- Transaction support for acquisition, disposal and leasing

Asset and FM Advisory

- Business case and options analysis
- Procurement of FM services
- Transition and mobilisation support
- Asset management planning
- Life Cycle Plans / Whole-of-life asset management

Infrastructure

- Independent/Probabilistic estimating
- Cost planning
- Cost & contract administration
- Audits/assurance reviews
- Expert witness and dispute resolution

Expert Witness

- Financial evaluation of claims
- Negotiation of costs
- Dispute Resolution
- Tribunal and Court Proceedings
- Quantum Reports

Building Consultancy

- Technical due diligence
- Make good schedules
- Condition audits
- Life cycle costing
- Asset registers / Sinking funds
- Capital expenditure forecasting and analysis

Our Locations

MBM has offices in Sydney, Parramatta, Brisbane, Melbourne, Canberra, Perth and Adelaide.

We operate as a single entity and are able to utilise specialised skills from any office to deliver a successful outcome for your project or development.

Sydney

Level 5
1 Chifley Square
Sydney NSW 2000
02 9270 1000
nsw@mbmpl.com.au

Melbourne

Level 6
500 Collins Street
Melbourne VIC 3000
03 9603 5200
vic@mbmpl.com.au

Perth

Level 32
152 St Georges Terrace
Perth WA 6000
08 9322 1795
wa@mbmpl.com.au

Parramatta

Suite 1A Level 8
111 Phillip Street
Parramatta NSW 2150
02 9270 1000
nsw@mbmpl.com.au

Canberra

Level 1
68 Northbourne Avenue
Canberra ACT 2600
02 6152 0996
act@mbmpl.com.au

Brisbane

Suite 12.1 Level 12
100 Creek Street
Brisbane QLD 4000
07 3234 4000
qld@mbmpl.com.au

Adelaide

Level 5
60 Waymouth Street
Adelaide SA 5000
08 8223 3038
sa@mbmpl.com.au