

RED STAG TIMBER - CLT FACTORY BUILDING (CONSTRUCTED)

WAIPA STATE MILL ROAD, ROTORUA

CASE STUDY



Ministry for Primary Industries
Manatū Ahu Matua



MASS TIMBER MATERIALS USED, AND WHERE

Building Info:	
Year built	2019-2020
Dimensions (L/W/knee/apex)	157m/60m/11.55m/16.95m
M3 internal area	95,140m ³
Portal columns	1440x230 mm GL8
Portal beams/truss	1440x230 mm GL8 portal frames
Girts	290x45 SG8
Purlins	405x90 GL8 (9m span) 450x90 GL8 (10 m span)
End wall columns	720x180 GL8

MATERIAL SUPPLIER OF MASS TIMBER

Portal columns	Techlam
Portal beams/truss	Techlam
Girts	Red Stag Timber
Purlins	Techlam
End wall columns	Techlam

DESIGN/CONSTRUCTION TEAM

Engineer	Richard Spiers and Associates
-----------------	-------------------------------

V-QUEST ANALYSIS

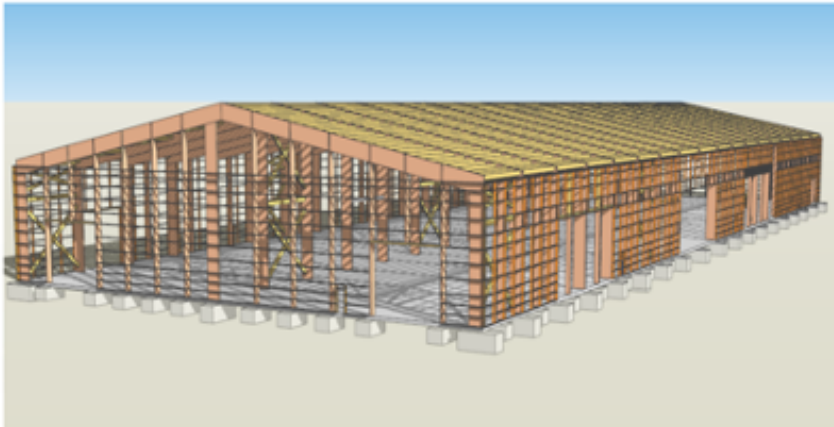


	Mass Timber	Hybrid ***	Concrete/Steel **
	\$	\$	\$
Cost	15,546,577	15,065,944	14,994,870
	Kgs	Kgs	Kgs
CO2-e	379,745	948,629	3,069,415
Weight	10,408,143	10,318,775	10,878,849

- All Carbon data based from Branz CO₂NSTRUCT
- CO₂ calculated for LCA modules A1 - A3 only
- Costs and carbon include all impacts associated with the core structure material selection, including connections, foundations, slab, piles, cladding, girts and purlins, and an allowance for the P&G difference associated with construction speed.
- All costs are exclusive of GST

** Assumes steel superstructure

*** A theoretical hybrid design was also modelled for this building using the assumption that the timber roof purlins could be changed out for steel. It is assumed that the timber purlins do form part of the integral structure of the roof. Therefore allowances have been made for additional structural steel bracing and support to accommodate the loss of timber structure. This theoretical design brings costs down slightly as shown, but increases the CO₂-e of the building.



ABOUT THE MID-RISE WOOD CONSTRUCTION PROGRAMME

Mid-Rise Wood Construction is a six-year partnership between the Ministry for Primary Industries (MPI) and Red Stag Investments Ltd. The aim of this \$6.75 million programme is to encourage widespread adoption of precision-engineered timber in mid-rise building construction. Since its inception in 2018, the programme has assembled a pool of New Zealand professionals experienced in mid-rise wood building design and construction to help share and grow knowledge and expertise with the broader industry.

Engineered timber is not only naturally beautiful but also provides a very strong, low carbon and comparably low-cost alternative to steel & concrete. It is easy to transport, relatively light, and has outstanding earthquake and fire resilience. The use of prefabrication can decrease construction time by as much as 30 percent, and reduces costs compared with traditional building methods. Combining cross-laminated timber (CLT), laminated veneer lumber (LVL), glulam and panelised framing timber creates a cost-effective, fast, resilient and sustainable system for mid-rise construction.

For more information, go to www.midrisewood.co.nz

