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SMART LAM GL17S Merbau

DESIGN GUIDE EDITION 1

2026

SMARTFRAME[®]
BY TILLING

Table of contents

Introduction	2
Ordering SmartLam GL17S Merbau	3
Installation	
- Preparatory work	2
- Deflection	2
- Verticality	2
- Holes for services	2
- Notches	3
- Birdsmouthing	4
- Eaves overhang	4
- Steel post and timber fixing	4
Multiple SmartLam GL17S Merbau section beams	
- Type 17 screw	5
- bolts	5
Durability and weather exposed application	6
Protection systems	
- During construction	7
- Covered alfresco beams	7
- Painted SmartLam GL17S Merbau	7
- Design and construction detailing	7
Fire rating (resistance)	8
Checking of SmartLam GL17S Merbau	8
Designing with SmartLam GL17S Merbau	
- Product specification	9
- Limit state design characteristic	9
- Strength reduction factors	9
- Duration of load	9
- Partial seasoning factor	9
- Length and position of bearing	9
- Load sharing	9
- Stability	9
- Temperature	9
Beam section properties	11
Design/Effective span	10
Storage and handling	11
List of table and charts	11
Span tables	12-35

SmartFrame Product Warranty*

Tilling Timber warrants that its SmartFrame Engineered Wood products will be free from manufacturing defects in workmanship and material.

In addition, provided the product is correctly installed and used, Tilling Timber warrants the adequacy of its design for the normal and expected life of the structure.

This warranty is backed by the full resources of Tilling Timber and by underwritten product liability insurance.

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Scope of this publication

This Design Guide and Load Tables assist in the selection of SmartLam GL17S Merbau for some of the common structural arrangements met in domestic construction.

Other than the limited examples uniquely associated with GLT shown, methods of developing lateral restraint and providing adequate support, adequate anchorage against wind uplift, and overall structural stability are outside the scope of this publication.

Information on the above matters can be obtained from AS 1684 Residential timber-framed construction or from a structural engineer experienced in timber construction.

Tilling Timber Pty Ltd have structural engineers within the Smart-Frame Design Centre who can be contacted for advice on matters concerning the use of its SmartFrame engineered timber products in timber construction via the technical support Helpline on 1300 668 690 or e-mail at techsupport@tilling.com.au

Substitution of other products

All load tables in this document are designed using the unique characteristic properties of SmartLam GL17S Merbau manufactured to AS/NZS 1328 by quality producers 3rd party audited by the GLTAA, exclusively distributed by Tilling Timber Pty Ltd.

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Certification

As a professional engineer, qualified and experienced in timber engineering, I certify that the use of the SmartLam GL17S Merbau members as shown in these tables, and installed in accordance with the provisions of this Design Guide, complies to the Building Code of Australia. These Span Tables have been prepared in accordance with standard engineering principles, the relevant test reports and Australian standards, ie:

- AS 1720.3 Timber structures Part 3: Design criteria for timber framed residential buildings
- AS 1720.1 Timber structures - design methods
- AS 4055 Wind loads for houses
- AS/NZS 4063 Characterisation of structural timber
- AS/NZS 1328 Glue laminated structural timber - performance requirements and minimum production requirements.



Ray Schneider RPEng, RPEQ, RPEV, IEAust
Principal Structural Engineer - SmartFrame



The information contained in this product brochure is current as at March 2026 and is based on data available to Tilling Timber Pty Ltd at the time of going to print. Tilling Timber Pty Ltd has used its reasonable endeavours to ensure the accuracy and reliability of the information contained in this document and, to the extent permitted by law, will not be liable for any inaccuracies, omissions or errors in this information nor for any actions taken in reliance on this information. Tilling Timber Pty Ltd reserves the right to change the information contained in this document without prior notice. It is important that you call the technical support customer Helpline on 1300 668 690 to confirm that you have the most up to date information available.

SmartLam® GL17S Merbau

Introduction

SmartLam GL17S Merbau beams are manufactured for Tilling Timber by 3rd party audited quality GLT manufacturers to AS/NZS 1328. SmartLam GL17S Merbau GLT beams are engineered timber products with high strength, dimensional stability, great load carrying capacity and superior fire resistance.

All timber used for laminating is carefully selected from production and graded according to specification. After trimming to the desired size, all stock is kiln dried to 12% average moisture content, to ensure efficient bonding in the gluing operations. The laminations are finger jointed by machine, with glue being cured by cold press system and controlled temperature.

Benefits of SmartLam GL17S Merbau

Cost Effectiveness - SmartLam GL17S Merbau beams high strength to weight ratio allows you to design for maximum loads over large spans with the smallest possible end sections.

Product Quality - All SmartLam GL17S Merbau beams are manufactured in accordance with AS/NZS 1328 Glue Laminated Structural Timber and the Glued Laminated Timber Association (GLTAA) Industry standard GLTAA-4-91.

Fire safety - Extensive fire test data shows that large end section timber performs well in fire situations due to the formation of a protective layer of char which usually occurs at a temperature around 250° C. This charred area inhibits the effects of the fire on the inner portion of the timber component, hence it maintains structural load support for measurable periods of time as the fire progresses.

Conversely, steel loses its strength rapidly as the temperature is raised. At about 550°C, it has lost about 50% of its original bending strength, and by 750°C it has lost 90%. Timber does not lose strength in the same way, with the loss of section size through charring the major reason for any strength reduction.

Fast easy erection - Timber is a user friendly building material, requiring no special tools other than those a normal builder would use, and with SmartLam GL17S Merbau beams, installation is fast, easy and efficient.

Environmental responsibility - SmartLam GL17S Merbau beams are made from timber from sustainable managed forests under the FSC Certification scheme SGS HK-COC-450019, License Code FSC-C129865.

Low maintenance - In most applications, SmartLam GL17S Merbau beams will require little or no maintenance other than that which you would ordinarily carry out to any structural material.

Natural beauty - The natural beauty of timber is desired and highly appropriate in many architectural applications. Appearance Grade B SmartLam GL17S Merbau beams allow you to build timber's natural warmth and beauty into your designs.

Ordering SmartLam GL17S Merbau

Stock SmartLam GL17S Merbau GLT is supplied straight (no pre-camber) and Appearance Grade B.

AS/NZS 1328.2 defines 3 appearance grades:

- Appearance Grade A - Sanded with any voids filled - intended for applications where appearance is important and clear or painted finishes are used
- Appearance Grade B - intended for applications where appearance is important but where a planed finish is acceptable

- Appearance Grade C - intended for applications where appearance is unimportant

SmartLam GL17S B grade

"C" indicates pre-camber
"S" indicates no-pre-camber (straight)

Appearance grade

Protection and handling

Care should be taken during delivery to avoid marking and to avoid damage. Unloading of trucks should be done by hand or with a crane, do not drop or dump members. During unloading with lifting equipment, use fabric or plastic belts or other slings which will not mark the wood. If chains or cables are used, provide protective blocking or padding. Guard against soiling, dirt, footprints, abrasions, or injury to sharp edges or corners.

Installation

Preparatory work

Carefully unload and handle the laminated members at job site to prevent surface marking and damage. If laminated timber is to be stored before erection, place it on blocks well off the ground with individual members separated by strips so that air may circulate around all four sides. The top and the sides of storage pile shall be covered with moisture resistant covering. Wrapping shall be left intact, but individual wrappings shall be slit or punctured on the lower side to permit the drainage of water that may have accumulated. Before erection, the assembly should be checked for any damage from water or handling, prescribed camber, and accuracy of anchorage connections.

Laminated beams can be nailed into place in the same way as solid timber beams. Alternatively, a range of plates are available for end fixing. For larger beams, special purpose, engineer designed end fixing should be used.

Deflection

All structural members deflect downwards when dead loads are applied, and therefore it is important to allow for this deflection structurally and/or aesthetically in the selection of the beam sizes. The "Deflection Limits" table on page 10 details deflection limits for various applications.

Verticality

SmartLam GL17S Merbau members must not be installed out of plumb more than height/500.

Holes for services

Horizontal Holes - Like notches, holes in a GLT beam remove wood fibre, reduce the net area of the beam at the hole location, and introduce stress concentrations. For this reason, horizontal holes in GLT beams are limited in size and location to maintain the structural integrity of the beam. The diagram on the next page shows the zones of a uniformly loaded, simply supported beam where field drilling of holes may be considered.

Field drilled horizontal holes should be for access only and should not be used as attachment points for brackets or other load bearing hardware unless specifically designed as such by the Engineer/Designer.

Regardless of the hole location, the net section of the beam remaining should be checked for flexure and horizontal shear.

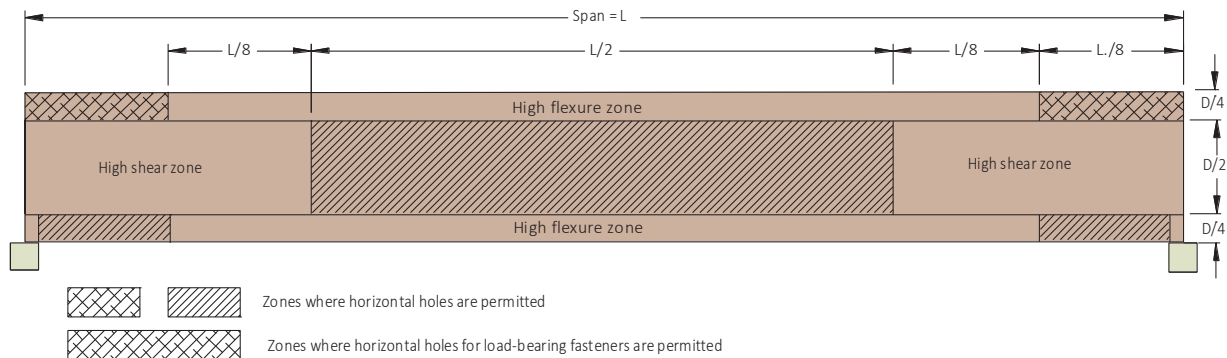
Vertical holes - As a rule of thumb, vertical holes drilled through the depth of a GLT beam cause a reduction in capacity at that loca-

Installation (cont'd)

tion directly proportional to the ratio of 1½ times the diameter of the hole. For example, a 25 mm hole drilled in a 150 mm wide beam would reduce the capacity of the beam at that section by ¼. For this reason, where it is necessary to drill vertical holes through a GLT member, the holes should be positioned in areas of the member that are stressed to less than 50% of the design in bending.

Holes for support of heavy equipment - Heavy equipment or piping suspended from GLT should be attached so that the load is applied to the top of the member to avoid tension perpendicular to the grain stresses. Any horizontal holes required for support of significant weight, such as suspended heating and cooling units or main water lines, must be located above the neutral axis of the member and in a zone stressed to less than 50% of the design flexural stresses.

Zones where horizontal holes are permitted in a uniformly loaded simply supported beam



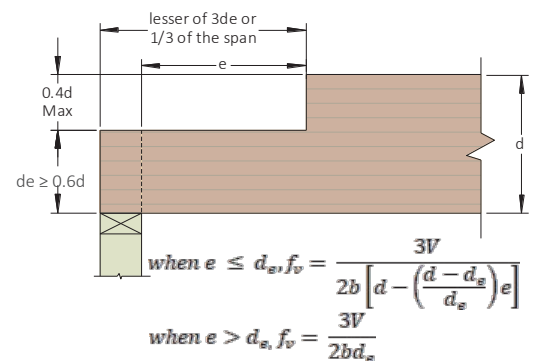
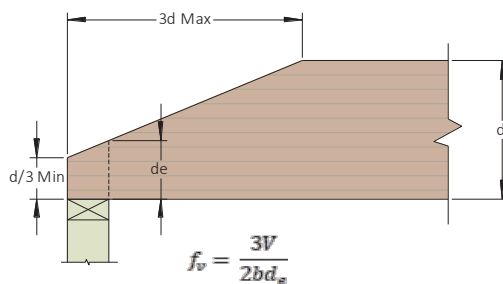
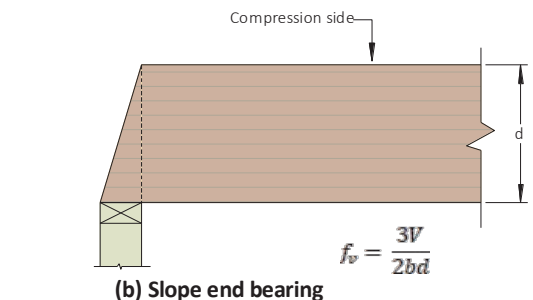
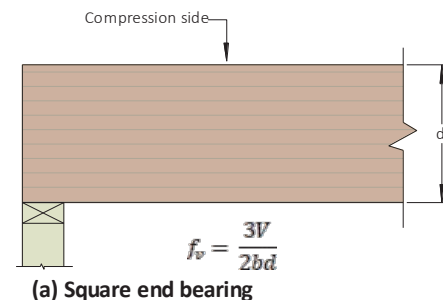
Notches

Notching of bending members should be avoided whenever possible, especially on the tension side of a member.

Tension-side notching of GLT beams is not permitted except at end bearings and then only under specific conditions. The notching of a bending member on the tension side results in a decrease in strength caused by stress concentrations which develop around the notch, as well as a reduction of the area resisting the bending and shear forces. Such notches induce perpendicular-to-grain tension stresses which, in conjunction with horizontal shear forces, can cause splitting along the grain, typically starting at the inside corner of the notch.

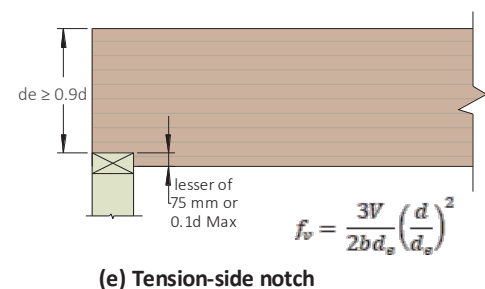
Where GLT members are notched at the ends for bearing over a support, the notch depth shall not exceed 1/10 of the beam depth. Figure (e) is provided to assist in evaluating the associated reductions to beam strength due to notching on the tension side.

For notches on the compression side, a less severe condition exists and equations for the analysis of the effects of these notches are also given in Figure (a) to (d). The equations given are empirical in nature and were developed for the conditions shown.



Where:

f_v = shear stress (MPa)
 V = shear force at notch location (kN)
 b = width of LVL beam (mm)
 d = depth of LVL beam (mm)
 d_e = effective depth as shown (mm)
 e = length of notch as shown (mm)



As this guideline is limited to single span, simply supported beams, the notches shown in Figure (b) and (c) occur in areas of high shear and effectively zero moment. For this reason, the design equations given are shear equations. In situations where compression side notches extend into areas of significant moment, the bending capacity of the beam should also be checked using the remaining section of the beam and the appropriate allowable

Installation (cont'd)

stresses for those laminations remaining at the notch location.

When it becomes necessary to cut a small notch in the top of a GLT beam (in the compression zone) to provide passage for small diameter pipe or conduit, this cut should be made in areas of the beam stressed to less than 50% of the design bending stress. The net section in these areas should be checked for shear and bending stresses to ensure adequate performance.

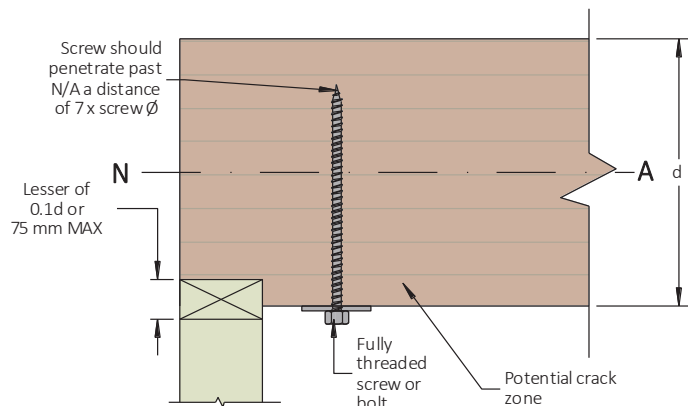
All field notches should be accurately cut. Avoid over-cutting at the root of the notch. Drilling a pilot hole in the member at the interior or corner location of a notch as a stop point for the saw blade provides both a rounded corner and minimizes over-cutting at the corner.

Stress concentrations due to notches can be reduced by using a gradually tapered notch configuration in lieu of a square-cornered notch. Rounding the square corner of a notch with a radius of approximately 12 mm is also recommended to reduce stress concentrations in these areas.

For square-cornered notches occurring at the ends of beams on the tension side, the designer may consider the use of reinforcement, such as full-threaded lag screws, to resist the tendency to split at the notch (See diagram below). A number of design methodologies exist for sizing such screws.

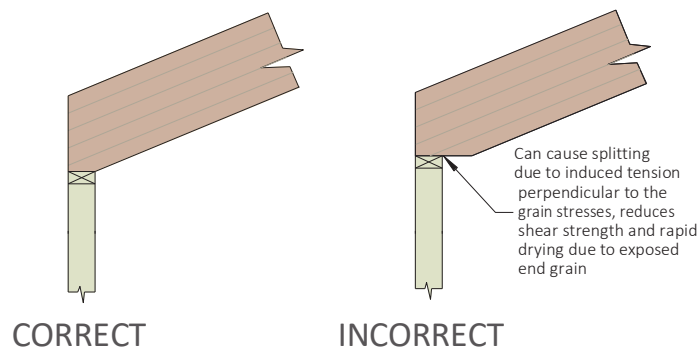
The design methodology selected and subsequent fabrication details are the responsibility of the project designer/engineer. If lag screws are used, lead holes shall be predrilled in accordance with accepted practice. This procedure can also be used as a field remedy to minimize further propagation of an existing crack.

Further information about the use of screw reinforcement can be obtained by contacting the technical support Helpline on 1300 668 690 or e-mail at techsupport@tilling.com.



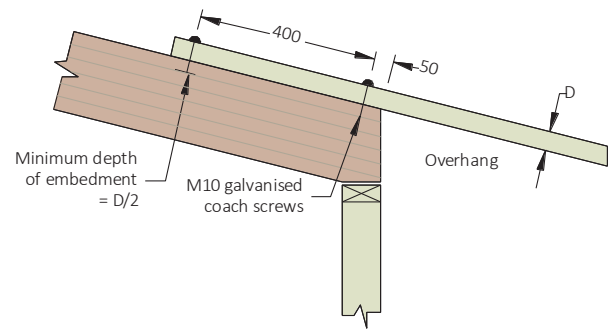
Birdsmouthing

Figure 3 - Birds mouting details for SmartLam GL17S Merbau



Eaves overhang

Figure 4 - Eaves overhang details for SmartLam GL17S Merbau



Note: Refer to AS 1684 Residential timber-framed construction code for overhang member size.

Allowable Eaves overhangs

1. Non Cyclonic Areas

Beams for flat or similar roofs - Not Birds mouthed: Eaves overhang shall not exceed 40% of the actual beam span.

Beams with conventional pitched roofs - Birds mouthed to one third their depth:

- I. Sheet roof - 20% of actual beam span
- II. Tiled roof - 30% of actual beam span

2. Cyclonic Areas

Recommendations as per above, but reduced as follows:

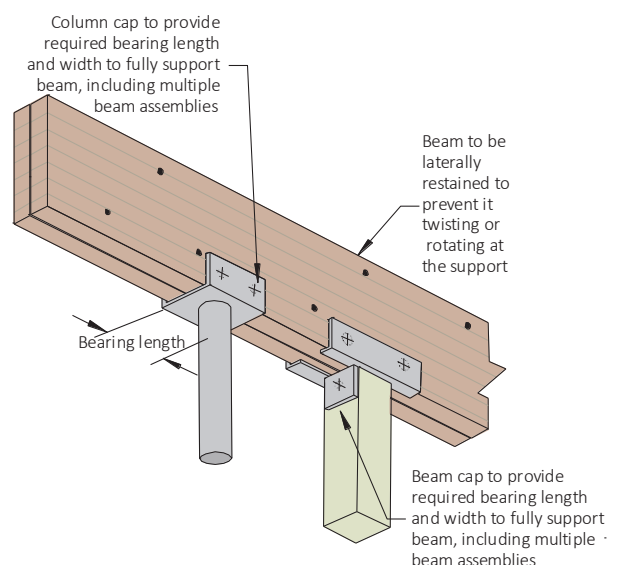
Non Birds mouthed:

- 25% of actual beam span

Birdsmouthed:

- Sheet roof - 10% of actual beam span
- Tiled roof - 20% of actual beam span

Steel and Timber fixing to SmartLam GL17S Merbau



Installation (cont'd)

Multiple SmartLam GL17S Merbau section beams

Vertical laminations may be achieved by adopting the principle described in clause 2.3 of AS 1684, however, due to the thickness of SmartLam GL17S Merbau, nails are NOT suitable for combining SmartLam GL17S Merbau beams.

Experience with GLT beams indicates that multiple member laminations individual components may cup as a result of the ingress of moisture between laminates during construction. The suggested method of vertical lamination shown below provides a greater level of fixity between individual components, and combined with

the use of a temporary waterproof membrane and an elastomeric adhesive prevents moisture penetration between the laminates.

Maximum floor load width tables for multiple member laminations of SmartLam GL17S Merbau:

1. Type 17 screw lamination
2. Bolt lamination

are shown below.

1. Type 17 screws

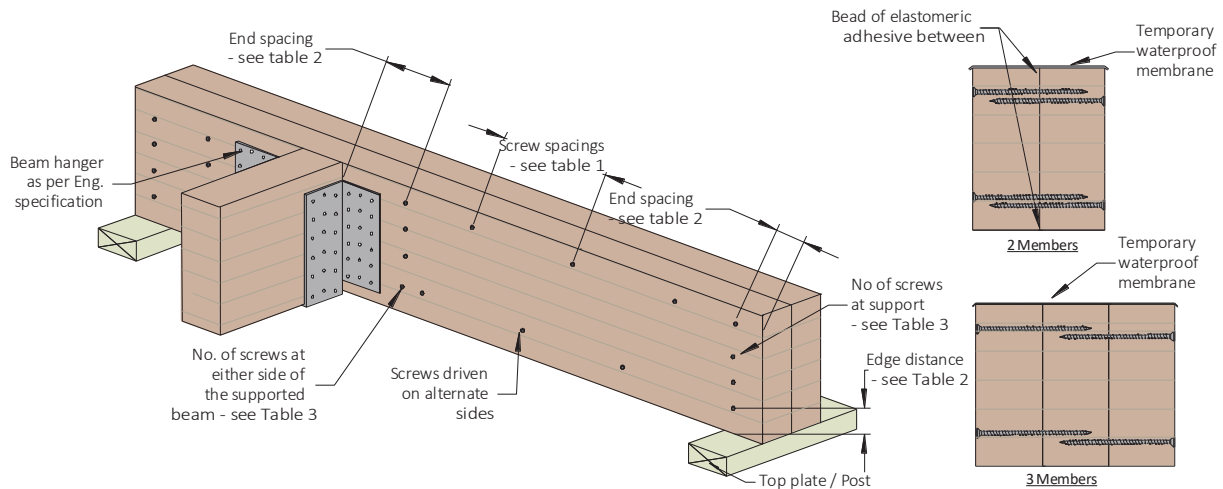


Table 1

Side (non-symmetrically) and top loaded beam				
Section width	Type 17 screw size	No of screw rows (both sides)	Screw spacing (mm)	Max. floor joist span supported by outer member (mm)**
2/75 & 3/75	14g x 100	2 or 3*	300	7700
2/60 & 3/60	14g x 125	2 or 3*	300	6000

* for beam depths ≥ 300 mm, use 3 rows of screws

** Floor loads $G = 1.25$ kPa, $Q = 2.0$ kPa

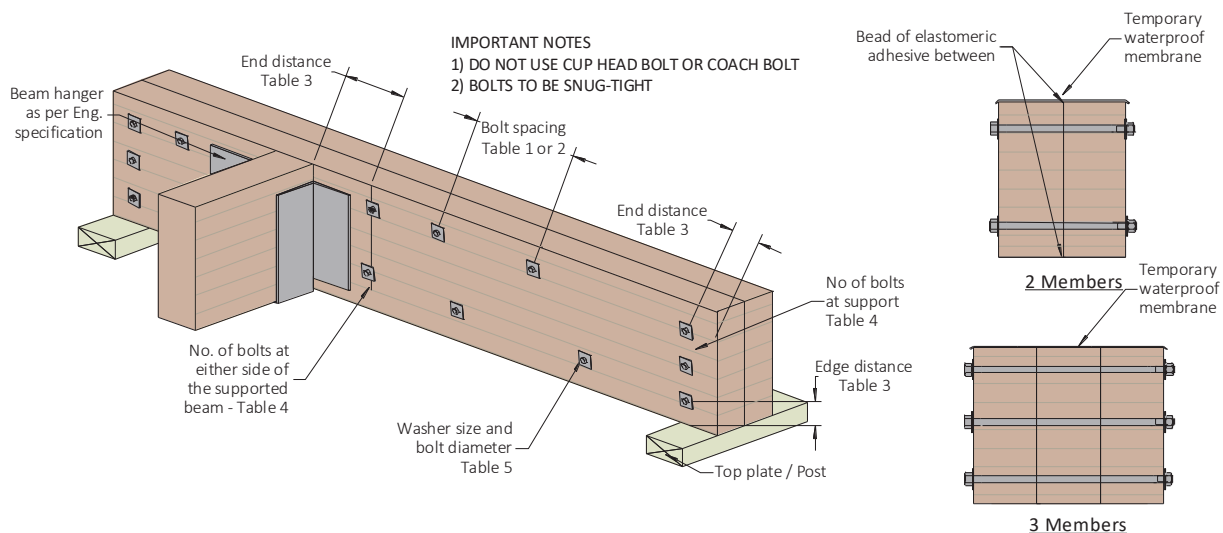
Table 2

Type 17 screw size	Min. edge distance (mm)	Min. end distance (mm)	Min. distance between screws (across the grain) (mm)
14g	40	70	30

Table 3

Beam depth (mm)	Min. number of screws required	
	At support	At either side of supported beam
90 – 240	3	3
> 240	4	4

2. Bolts



IMPORTANT NOTES

- 1) DO NOT USE CUP HEAD BOLT OR COACH BOLT
- 2) BOLTS TO BE SNUG-TIGHT

Installation (cont'd)

2. Bolts (Cont'd)

Table 1

Top (symmetrically) loaded beam - M12 Hex head bolt	
Beam depth ≤ 300 mm	Beam depth > 300 mm
2 rows of bolts at 600 mm ctrs	3 rows of bolts at 600 mm ctrs

Table 2

Side (Non symmetrically) loaded beam - M12 Hex head bolt		
Maximum floor joist span supported by the beam mm*		
2 rows at 600 mm ctrs	2 rows at 300 mm ctrs	3 rows at 600 mm ctrs
11,00 mm	>12	>12

* based upon floor loads of G: 1.25 kPa Q: 2.0 kPa

Table 3

Bolt size	Min. edge distance	Min. end distance	Min. distance between bolts (across grain)
M12 Hex head	60 mm	60 mm	60 mm

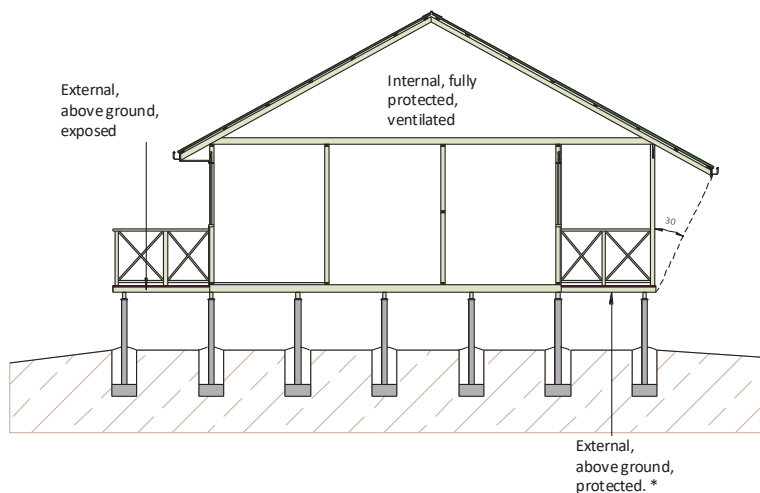
Table 4

Beam depth (mm)	Min. number of bolts required	
	At support	At either side of supported beam
90 –150	1	1
160 –240	2	2
> 240	3	3

Table 5

Bolt diameter (mm)	Washer dimensions		
	Thick-ness (mm)	Min. diameter of round washers (mm)	Min. side length of square washers (mm)
M12	3	55	50

SmartLam durability and weather exposure



AS 1684 definitions of exposure zones within a structure

* External timbers are regarded as protected in AS 1684 if they are covered by a roof projection (or similar) at 30° to the vertical and they are well detailed and maintained (painted and kept well ventilated).

SmartLam GL17S Merbau's are manufactured from kiln dried timber (MC less than 15%), and therefore need to be protected from moisture cycling that can occur from:

- Exposure to direct sun and rain (including during construction)
- Contact or close exposure with moisture laden porous material (e.g. Concrete blocks)
- Exposure to extreme environments such as dry heating systems (e.g. slow combustion wood heaters), air conditioning, large north or west facing windows or moisture laden environments such as pool enclosures.

SmartLam GL17S Merbau protection methods

During Construction (pre-water proof roof)

SmartLam GL17S Merbau's are supplied WITHOUT any short term construction sealer. However if SmartLam GL17S Merbau is expected to be exposed for an extended period or become wet, it is recommended that the beam be sealed with a construction sealer

that is compatible with the final paint or varnish finish, or wrapped in plastic to provide protection (plastic must allow for drainage and air circulation to breath).

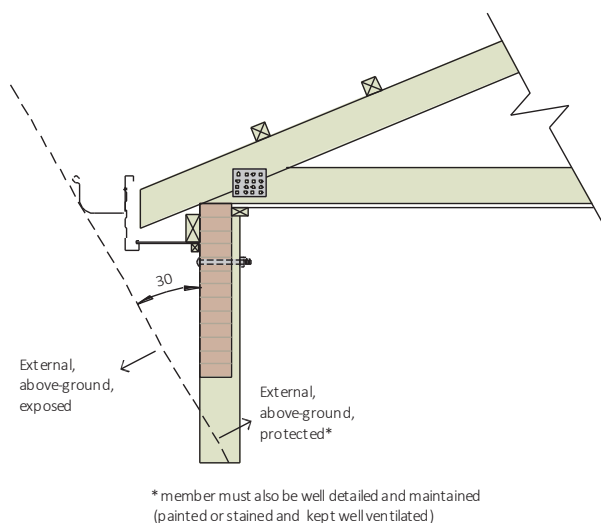
Examples:

- If the SmartLam GL17S Merbau is installed inside a building without direct exposure to air-conditioning such as in wall cavity, NO protection to the beam is required.
- If the SmartLam GL17S Merbau is installed inside a building with direct exposure to air conditioning or dry heat then a sealer is required.
- If the SmartLam GL17S Merbau is under the eaves and protected from direct rain and sun, it is recommended that the construction sealer be lightly sanded and a finish coat of compatible premium quality paint be applied. (In accordance with paint manufacturer's specifications).
- It is NOT recommended that ANY SmartLam GL 17 be used in **external, above ground, exposed** applications.

SmartLam durability and weather exposure (Cont'd)

Covered alfresco beams

Alfresco beams constructed to comply with the diagram below are technically classified in AS 1684 as **External, above-ground, protected**. (see previous page)



SmartLam GLT used in protected exterior applications must be:

- I. Correctly detailed by fully enclosing member with a mechanical barrier such a cement sheet if it is likely to get wet or experiences direct sun
- II. Mechanical barrier correctly painted with a premium quality protective finish (e.g. light coloured pigmented external paint system) to prevent moisture infiltration.

It is important that an inspection and maintenance programme, based on exposure level and the paint manufacturer's recommendations be prepared.

Painting SmartLam GL17S Merbau

General

To provide the longest service life of the SmartLam GL17S Merbau, it is recommended the SmartLam GL17S Merbau's are painted with an exterior paint with a Light Reflectance Value (LRV) greater than 30%. Heat reduction exterior paints should be used where the desired colour is dark or has a LRV of less than 30%. The heat reflective paints colours should be limited to a Total Solar Reflectance (TSR) value greater than 29%.

Any paint or stain must be recommended by the manufacturer as being suitable for the proposed application and must be applied in a manner in strict compliance to the manufacturer's recommendations.

1. The wood must be dry and clean prior to applying any finish coating. If initial cleaning of the treated wood is needed, it is recommended that the project be cleaned with a deck cleaning product and allowed to fully dry
2. At this time, a clear water repellent can be added to the project. If applied, allow 8 weeks prior to the application of a semi-transparent stain or paint

Users must always conduct their own tests on coatings in inconspicuous areas of the project to determine acceptability of colour, adhesion and appearance.

Design & Construction detailing tips

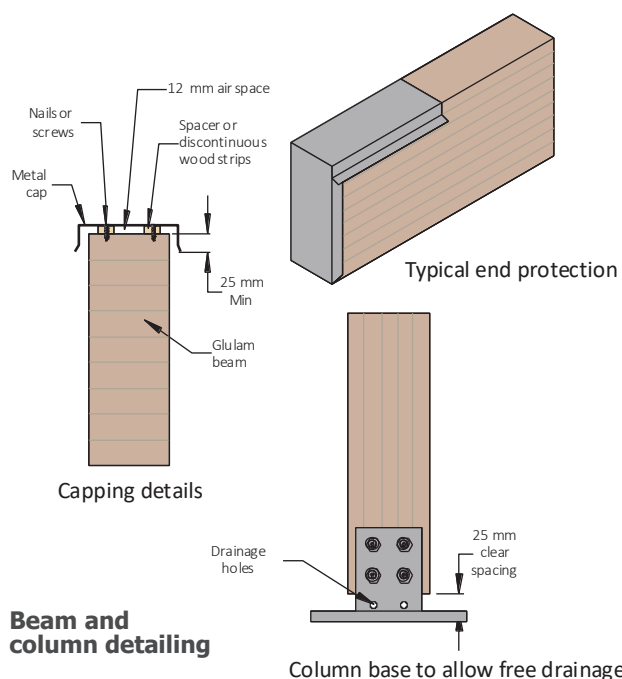
- i. The use of building overhangs and other structures

which protect the beams from excessive moisture movement and sun exposure.

- ii. Shielding of the beam from free moisture or direct sun. The use of metal, fibro or plastic shields on the exposed faces or ends of beams is highly recommended to help maintain the beam in an unstressed dry condition.
- iii. All beams should be provided with adequate ventilation so that moisture content within beams will not exceed 15% and moisture gradients across the beam will not occur.
- iv. The use of arrised or round edges on beams to reduce the likelihood of coating failures on sharp edges.
- v. The use of drip edges or other devices which provide a path for free moisture flow away from the timber beam. Refer to detail below opposite.
- vi. Joint detailing should, wherever possible, comply with the following:

- Keep horizontal contact areas to a minimum, In favour of self draining vertical surfaces.
- Ventilate joint surfaces by using spacers, wherever possible.
- Always use compatible fasteners which have adequate corrosion protection and do not cause splitting during installation e.g. Hot dipped galvanic coatings or stainless steel.
- Ensure any moisture entering a joint is not trapped but can adequately drain away from the joint.

- vii. Allow for thermal expansion/contraction in the joint design.



SmartLam GL17S Merbau and fire

Fire resistance

The Fire Resistance Level (FRL) is the performance criteria for fire resistance, i.e. the grading periods (in minutes) for the following criteria as specified in the BCA:

- Structural adequacy: (the duration for which the elements can carry its designated load)
- Integrity: (the duration for which the element can maintain its integrity to prevent the spread of fire to/from the compartment)

and

- Insulation: (the duration for which the element is insulating the adjacent space from excessive temperature rise)

and is expressed in that order e.g. 30/30/30. The method for determining the structural component of the Fire Resistance Period for timber (including LVL and GLT) is described in AS /NZS

1720.4 - 2019 Timber Structures Part 4: Fire resistance of timber elements.

$$c = 0.4 + \left(\frac{280}{\delta} \right)^2$$

where:

c = notional charring rate, in mm per minute

δ = timber density of SmartLam GL17 S- ~ 900 kg/m³

The effective depth of charring (d_c) after a period of time (t) shall be calculated in accordance with Clause 2.6.1 for surfaces exposed to fire and in accordance with Clause 2.6.2 for surfaces behind fire-resistant protective insulation.

Further information about using SmartFrame product in fire rated applications can be obtained by contacting the Techsupport Help-line on 1300 668 690 or email techsupport@tilling.com.au.

Checking in SmartLam GL 17C

One of the advantages of glued laminated timber construction is that while seasoning checks may occur for the same reasons that they do in sawn members, checking in glued laminated timber will generally occur to a much lesser degree because of careful control of the moisture content of timber used for laminating. Checks in wood are separations along the fibres normally occurring across the rings of annual growth resulting from stresses developed during changes in moisture content. Checks in glued laminate timber may appear as openings parallel to the grain on the sides of members.

As wood loses moisture to the surrounding atmosphere, the outer fibres of the member lose moisture at a more rapid rate than do the inner fibres. As outer fibres try to shrink, they are restrained by the inner portion of the member that has higher moisture content. The more rapid the rate of drying, the greater will be the differential in shrinkage between the outer and inner fibres resulting in higher shrinkage stresses.

These resultant stresses perpendicular to the grain of the wood can cause characteristic wood seasoning checks. The influence of checks on the structural performance of glued laminated timber members is generally minor. Checking can be minimized by careful installation practices that avoid prolonged exposure of the members during construction.

Identification of checking

Checks occur as transverse separations or openings that are nearly parallel to the grain direction in glued laminated timber and generally follow the grain direction around knots and along sloping grain. Differences in the shrinkage rate of individual laminations used in glued laminated timber tend to concentrate shrinkage stresses at or near glue lines, resulting in checks.

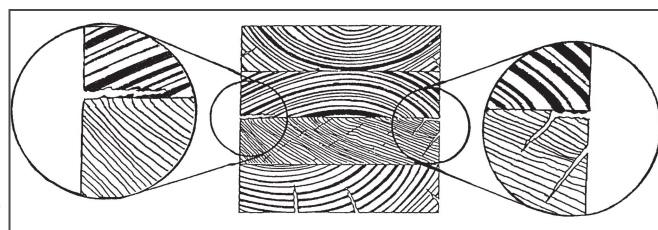
Checks are often confused with delamination that occurs when the glue bond is not adequate. The presence of wood fibre separation in these openings is the key distinguishing characteristic of seasoning checks. Openings due to inadequate adhesive bonding may appear as smooth wood surface separations, possibly darkened by the adhesive film, or as glossy surface areas of adhesive with an absence of torn wood fibres.

Checking often occurs along the first glue line adjacent to the out-

er lamination that may dry more rapidly because a larger surface area of that lamination is exposed to the air. This condition is sometimes aggravated when the outer lamination tends to cup, creating tension perpendicular to grain stresses along or near the first glue line.

Significance of checking

In general, checks have little effect on the strength of glued laminated members. Glued laminated members are made from laminations that are thin enough to season readily in kiln drying schedules without developing checks. Checks usually appear on the wide faces of the timber and do not materially affect the shear strength of the laminations. In cases where members are designed for loading parallel to the wide face of the laminations, checks may affect the shear strength of the beam their effect may be evaluated in the same manner as for sawn timber. Seasoning checks in bending members affect only the horizontal shear capacity.



In establishing allowable horizontal shear values, normal checking due to seasoning has been considered.

Checks are usually not of structural importance unless they are significant in depth, occur in the mid-height of the member near the supports, and the design of the member is governed

by shear. If these conditions exist, the reduction in shear strength is directly proportional to the ratio of the depth of checks to the width of the bending member. Checks in columns are not of structural importance unless the check develops into a split, thereby increasing the l/d ratio of the column.

Additional information

While checking is not considered to be of structural significance, the reason for the checking and the means by which further checking may be minimized should be determined.

If there is concern regarding structural adequacy, advice can be obtained from engineers from the SmartFrame Design Centre or a structural engineer experienced and qualified in glued laminated timber technology should evaluate the significance of the checking.

The SmartFrame Technical Note - "Evaluation of Checking in Glued Laminated Timber (GLT)" gives detailed analysis of the modification to structural capacity as a result of severe checking.

Designing with SmartLam GL17S Merbau

The design information contained within this Design Guide is for the properties of SmartLam GL17S Merbau only. Other manufacturers' LVL may have different properties and therefore cannot be designed using this information.

1. Product Specification

Lamella:	Thickness:	25-45 mm
	Species:	Keruing
	Strength Group	SD3
	Joints:	Finger joint
Dimensional tolerances:	Length:	± 10 mm
	Depth:	≤ 100 mm ± 1 mm ≥ 100 ≤ 302 mm ± 3 mm ≥ 301 ≤ 600 mm ± 4 mm ≥ 601 ± 6 mm
	Thickness:	- 0, +4 mm at 12% moisture content
Adhesive:	Complies with AS/NZS 4364:2010	
Treatment options:	Seek current treatment options before order ordering	

2. Limit state design characteristic properties

Timber Strength Properties: ⁽¹⁾		
Bending	f _b	40 MPa
Tension Parallel to grain	f _t	22 MPa
Tension Perpendicular to grain	f _{tp}	0.6 MPa
Compression Parallel to grain	f _c	33 MPa
Compression Perpendicular to grain - Edge	f _p	17 MPa
Shear	f _s	4.2 MPa
Average Elastic Modulus	E	16,700 MPa
Average Modulus of Rigidity	G	1110 MPa
Average Density		850 kg/m ³
Moisture Content		12-15%

(1) Dry conditions

3. Strength reduction factor

The strength reduction factor for calculating the design capacities of structural members shall be taken from the table below, referenced from AS 1720.1 –2010

Application of SmartLam GL17S Merbau as a structural member		
Category 1	Category 2	Category 3
Structural members for houses for which failure would be unlikely to affect an area greater than 25 m ² ; OR secondary members in structures other than houses	Primary structural members in structures other than houses; OR elements in houses for which failure would be likely to affect an area* greater than 25 m ²	Primary structural members in structures intended to fulfil essential services or post disaster function
Strength reduction factor Ø *		
0.95	0.85	0.75
* AS 1720.1:2010 Table 2.1		

4. Duration of load

The duration of load factor k₁ for strength is defined within clause 2.4 of AS 1720.1.

Duration	Service class / exposure classification		
	1, 2	3	Severe/ Adverse
Short term ≤ 1 Day	1.0	1.0	1.0
Long term > 12 months	1.5	2.0	3.0*

Notes:

- * Any beams to be used in service class 3 are outside the scope of these span tables, therefore specialist design advice should be sought from an engineer.
- In general, the size of this beam can conservatively be obtained by the following method:
 - Obtain the beam size for service class 1 & 2
 - Obtain the E_{I_{xx}} from the "Section Properties" table for this beam
 - Obtain from the "Section Properties" table a beam size with an E_{I_{xx}} => 2/1.5 x E_{I_{xx}} of the original beam
 - Follow the recommendations for SmartLam durability and weather exposure on page 6
- Service Classes 1,2 & 3 are defined in AS 1328

5. Partial seasoning factor

SmartLam GL17S Merbau is a seasoned timber product, generally k₄ equals 1. Where the GLT is subjected to conditions in which the average moisture content for a 12 month period is expected to exceed 15%, the characteristic capacity shall be decreased. The value of k₄ shall be the greater of:

- $k_4 = 1 - 0.3 \frac{EMC - 15}{10}$;
- $k_4 = 0.7$

Where EMC is the highest value of the annual moisture content (percent) that the timber will attain in service.

6. Length and position of bearing

The k₇ bearing factor is defined is clause 2.4.4 of AS 1720.1

7. Load sharing

Because of the reduced variability of strength values of GLT compared to solid timber, the load sharing factor k₉ = 1.0 as defined in clause 7.4.3 of AS 1720.1

8. Stability

The stability factor k₁₂ is defined within section 7 of AS 1720.1 beams. The methods for calculating k₁₂ for solid wood in section 3 of AS 1720.1 shall generally apply except that the material constant (ρ_b or ρ_c) for beams and column shall be as given in Tables 7.2(A) and 7.2(B)

9. Temperature

For covered timber structures under ambient conditions, no modification for strength need be made for the effect of temperature (i.e., k₆ equals 1.0) except that where seasoned timber is used in structures erected in coastal regions of Queensland north of latitude 25°S, and all other regions of Australia north of latitude 16°S, the strength shall be modified by a factor k₆ of 0.9.

SmartLam GL17S Merbau beam properties

Nominal size (DxB) mm	Beam mass kg/m	Nominal section area 10 ³ mm ²	Major axis			Minor axis	
			Zxx 10 ³ mm ²	Ixx 10 ⁶ mm ⁴	EIxx 10 ⁹ Nmm ²	Zyy 10 ³ mm ²	Iyy 10 ⁶ mm ⁴
90 x 42	3.1	3.8	56.7	2.6	42.6	26.5	0.6
120 x 42	4.2	5.0	100.8	6.0	101.0	35.3	0.7
140 x 42	4.9	5.9	137.2	9.6	160.4	41.2	0.9
190 x 42	6.6	8.0	252.7	24.0	400.9	55.9	1.2
240 x 42	8.4	10.1	403.2	48.4	808.0	70.6	1.5
290 x 42	10.1	12.2	588.7	85.4	1425.5	85.3	1.8
140 x 65	7.6	9.1	212.3	14.9	248.2	98.6	3.2
190 x 65	10.3	12.4	391.1	37.2	620.5	133.8	4.3
240 x 65	12.9	15.6	624.0	74.9	1250.5	169.0	5.5
290 x 65	15.6	18.9	911.1	132.1	2206.2	204.2	6.6
240 x 80	15.9	19.2	768.0	92.2	1539.1	256.0	10.2
290 x 80	19.3	23.2	1121.3	162.6	2715.3	309.3	12.4
330 x 80	21.9	26.4	1452.0	239.6	4001.0	352.0	14.1

SmartLam GL17S Merbau design / effective span

Normal structural analysis uses the centreline representation of the member. The term “span” can be defined in a number of ways and these are defined as follows:

Clear span. This is the distance between the faces of any support. It is generally the one easiest to measure and read from the drawings

Nominal span/centre-line span. This is the distance between the centre of the supports. This span is used to determine bending moments and deflections for continuous spanning members

Design span/Effective span. This is the span used for single span members to determine the bending moment, the slenderness of bending members and the deflections. In NZS 3603 this is the dimension referred to as “L”, and is defined below.

Design span/Effective span is the distance between -

- The centre of the bearing at each end of a beam where the bearing lengths have NOT been conservatively sized
- The centre of notional bearing that have been sized appropriately, where the size of the bearing IS conservative.

Diagram (a) shows beam where bearings have been designed appropriately. The effective span is taken as the distance between the centre of each bearing area

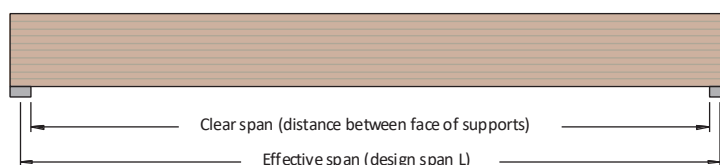
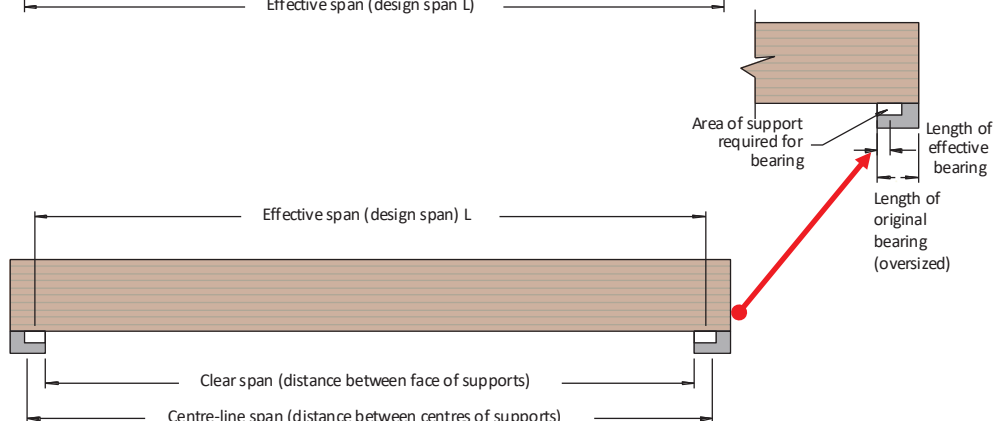


Diagram (b) shows beam where bearings at each end have been oversized. (This is frequently the case for beams that bear onto brickwork or concrete walls where the thickness of the wall is in excess of the area required to give the beam bearing capacity). To find the correct effective span:

1. Calculate the minimum bearing required to carry the loads satisfactorily
2. Add minimum bearing length to “clear span” distance



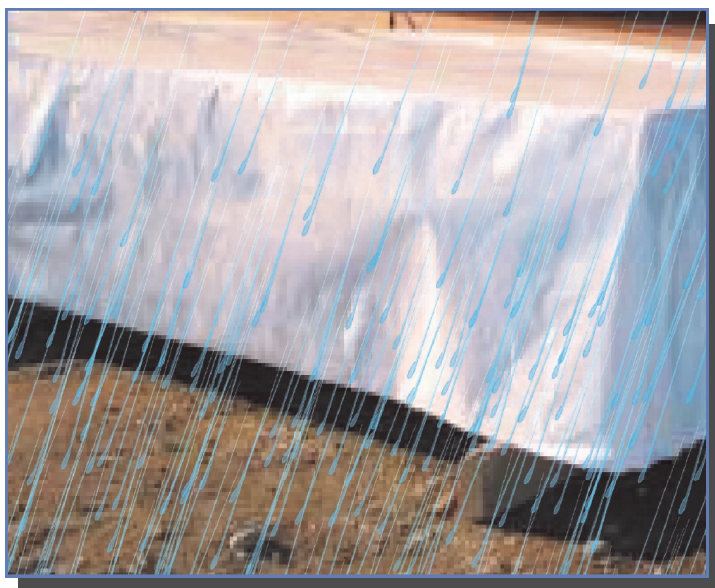
span difference	effective span	resultant span description
10% Max	main span	continuous
10 – 30%	1.1 x main span	continuous
Above 30% difference	main span	single

$$\text{span difference} = \frac{(\text{major span} - \text{minor span})}{(\text{major span} + \text{minor span})} \times 100$$

The span to use in the case of unequal continuous spans is the "resultant span description" as shown in the table above. (Note: It is recommended for the most accurate designs, that the SmartFrame software be used.)

Storage and handling of SmartLam GL17S Merbau

1. Store SmartLam GL17S Merbau's flat on a hard, dry surface
2. If surface isn't paved, the ground should be covered with a polythene film
3. Keep covered with waterproof material that allows bundles to "breathe"
4. Use bearers (bolsters) between the ground and the first bundle (4 metre max spacing)
5. Use 100 x 50 timber flat between bundles at same spacing as bolsters
6. Take great care to rewrap remaining material after opening bundles
7. Timber "grows" in thickness and depth when allowed to get wet....KEEP DRY!
8. Timber products with high MC has short term reduction in Characteristic Strengths KEEP DRY!
9. Under NO circumstances is stored SmartLam GL17S Merbau to be in contact with the ground.



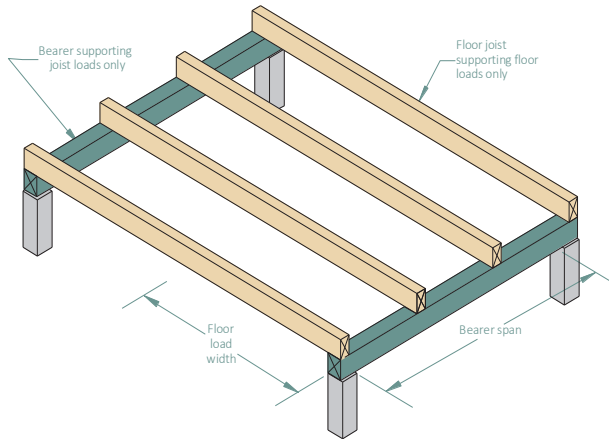
Span tables for SmartLam GL17S Merbau

List of tables and charts

Floor bearers - floor loads only	12
Bearers - wall and roof loads - sheet and tiled roof	13
Single/upper storey lintels	14
Lower storey lintels supporting load bearing walls and floors	15
Rafters/Roof beam - ceiling attached	16
Rafters/Roof beam -no ceiling attached	18
Ridge or intermediate beam	20
Verandah beam	
- single span wind classification N1-N3	22
- continuous span wind classification N1-N3	23
Verandah beam	
- single span wind classification C1-C3	24
- continuous span wind classification C1-C3	25
Hip or valley rafter	26
Hanging beam	27
Counter beam supporting hanging beam	28
Strutting beam supporting underpurlins	29
Strutting/counter beam supporting underpurlins and hanging beam	31
Strutting hanging beam	33
Carport beam—Ridge perpendicular	35
Carport beam—Hip and Dutch gable	36

Floor bearers supporting floor loads only

Floor mass - 40 kg/m²



EXAMPLE:

single span bearer = 4000 mm
floor load width = 4000 mm

Enter single span table at 4200 mm in floor load width column, read down to a span equal to or greater than 4000 mm

ADOPT:

SmartLam GL17S Merbau - 330 x 80 mm

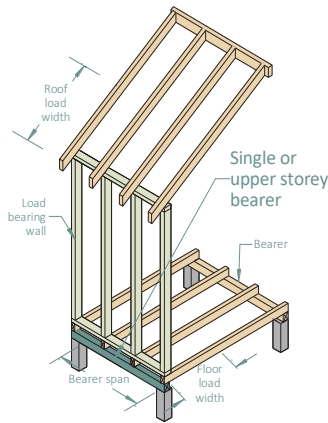
Loadings: Permanent - self weight + 40 kg/m² + 0.6 kPa of the live load, live load - 1.5 kPa or floor point load of 1.8 kN

Floor load width (mm)	1200	1800	2400	3000	3600	4200	4800	5400	6000	6600
Member Size DxB (mm)	Maximum recommended bearer span (mm)									
	Single span									
90x42	1500	1300	1200	1100	1000	NS	NS	NS	NS	NS
120x42	2000	1700	1600	1400	1400	1300	1200	1200	1100	1100
140x42	2300	2000	1800	1700	1600	1500	1400	1400	1300	1200
190x42	3200	2800	2500	2300	2200	2100	2000	1900	1800	1700
240x42	3900	3500	3200	3000	2800	2600	2500	2400	2300	2200
290x42	4500	4100	3800	3600	3400	3200	3000	2900	2800	2700
140x65	2700	2400	2100	2000	1800	1700	1700	1600	1500	1500
190x65	3700	3200	2900	2700	2500	2400	2300	2200	2100	2000
240x65	4400	3900	3700	3400	3200	3000	2900	2800	2700	2600
290x65	5000	4500	4200	4000	3800	3600	3500	3400	3200	3100
240x80	4600	4100	3900	3600	3400	3300	3100	3000	2900	2800
290x80	5300	4800	4400	4200	4000	3800	3700	3600	3500	3300
330x80	5800	5300	4900	4600	4400	4200	4100	4000	3800	3700
Continuous span										
90x42	1900	1600	1400	1200	1100	1000	NS	NS	NS	NS
120x42	2600	2100	1900	1600	1500	1400	1300	1200	1100	1100
140x42	3100	2500	2100	1900	1700	1600	1500	1400	1300	1200
190x42	4100	3400	2900	2600	2400	2200	2000	1900	1800	1700 ₅
240x42	4900	4300	3700	3300	3000	2800 ₅	2600 ₁₀	2400 ₂₀	2300 ₂₅	2200 ₃₀
290x42	5600	5100	4500	4000 ₅	3700 ₂₀	3400 ₂₅	3100 ₃₅	3000 ₅₀	2800 ₆₅	2700 ₇₅
140x65	3600	3100	2700	2400	2200	2000	1900	1800	1700	1600
190x65	4600	4100	3700	3300	3000	2700	2600	2400	2300	2200
240x65	5400	4900	4600	4100	3800	3500	3200	3100	2900	2700 ₅
290x65	6300	5700	5300	5000	4600	4200	3900 ₁₀	3700 ₁₅	3500 ₂₀	3300 ₃₀
240x80	5700	5200	4800	4500	4200	3900	3600	3400	3200	3000
290x80	6600	5900	5500	5200	5000	4700	4400	4100 ₅	3900 ₁₀	3700 ₁₅
330x80	7200	6500	6100	5800	5500	5300 ₅	5000 ₁₀	4700 ₂₀	4400 ₂₅	4200 ₃₀

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. End bearing lengths = 70 mm at end supports and 90 mm at internal supports for continuous members. Subscript values indicate the minimum additional bearing length where required to be greater than 70 mm at end supports and 90 mm at internal supports.
3. Restraint value for slenderness calculations is 600 mm. (floor joist centres at 600 mm max)
4. Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering

Floor bearers supporting single storey load bearing wall - sheet and tiled roof - single and continuous span



Floor mass - 40 kg/m²

EXAMPLE:

Sheet roof - 40 kg/m²
 floor load width = 2000 mm
 roof load width = 1950 mm
 bearer span = 3000 mm (single span)

Enter single span table at 2400 mm in floor load width column, 4500 roof load width column, read down to a span equal to or greater than 3000 mm in the 40 kg/m² row

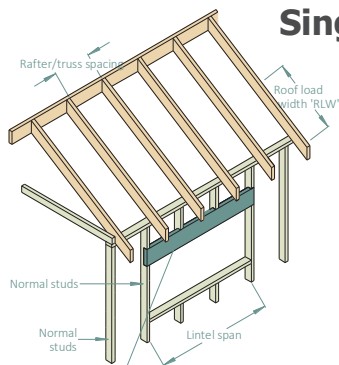
ADOPT:

SmartLam GL17S - 290 x 42

Floor load width (mm)		1200			2400			4800		
Roof load width (mm)		1500	4500	7500	1500	4500	7500	1500	4500	7500
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended bearer span (mm)								
		Single span								
120x42	40	1600	1400	1300	1400	1300	1200	1200	1100	1100
	90	1500	1200	1100	1300	1100	1000	1100	1000	NS
140x42	40	1900	1700	1500	1700	1500	1400	1400	1300	1300
	90	1700	1400	1300	1600	1300	1200	1300	1200	1100
190x42	40	2600	2300	2100	2300	2100	1900	1900	1800	1700
	90	2400	2000	1700	2100	1800	1700	1800	1700	1500
240x42	40	3300	2900	2600	2900	2600	2500	2400	2300	2200
	90	3000	2500	2200	2700	2300	2100	2400	2100	1900
290x42	40	3900	3500	3200	3500	3200	3000	2900	2800	2700
	90	3600	3000	2700	3300	2800	2600	2900	2600	2400
140x65	40	2200	1900	1800	1900	1800	1600	1600	1500	1500
	90	2000	1700	1500	1800	1600	1400	1600	1400	1300
190x65	40	3000	2600	2400	2600	2400	2300	2200	2100	2000
	90	2800	2300	2000	2500	2100	1900	2200	1900	1800
240x65	40	3700	3400	3100	3400	3100	2900	2800	2700	2600
	90	3500	2900	2600	3200	2700	2400	2700	2500	2300
290x65	40	4300	3900	3700	3900	3700	3500	3400	3200	3100
	90	4000	3500	3100	3800	3300	3000	3300	3000	2800
240x80	40	3900	3600	3300	3600	3300	3100	3000	2900	2700
	90	3700	3100	2700	3400	2900	2600	2900	2600	2400
290x80	40	4500	4100	3900	4100	3900	3700	3700	3500	3300
	90	4300	3700	3300	4000	3500	3200	3600	3200	3000
330x80	40	5000	4600	4300	4600	4300	4100	4000	3900	3700
	90	4700	4100	3700	4400	3900	3600	3900	3600	3400
Continuous span										
120x42	40	2100	1800	1600	1600	1500	1400	1200	1100	1100
	90	1900	1400	1200	1500	1300	1100	1100	1000	1000
140x42	40	2400	2100	1900	1900	1700	1600	1400	1300	1300
	90	2200	1700	1400	1800	1500	1300	1300	1200	1100
190x42	40	3300	2900	2500	2600	2400	2200	1900	1800	1800 ₅
	90	3100	2300	1900	2500	2100	1800	1900	1700 ₅	1600 ₁₅
240x42	40	4200	3700	3200	3300	3000	2800	2400 ₂₀	2300 ₂₅	2200 ₃₀
	90	3900	3000	2400 ₂₀	3100	2700 ₁₀	2300 ₂₅	2400 ₂₅	2200 ₃₅	2000 ₅₀
290x42	40	4800	4400	3900 ₁₀	4000 ₁₀	3700 ₁₅	3400 ₂₅	2900 ₅₅	2800 ₆₅	2700 ₇₀
	90	4500	3600 ₂₀	2900 ₅₅	3800 ₁₅	3300 ₃₀	2800 ₆₅	2900 ₆₀	2600 ₇₅	2400 ₈₅
140x65	40	2900	2600	2300	2400	2200	2000	1700	1700	1600
	90	2700	2100	1700	2300	1900	1700	1700	1500	1400
190x65	40	3900	3600	3200	3200	3000	2800	2400	2300	2200
	90	3700	2900	2400	3100	2600	2300	2300	2100	2000
240x65	40	4700	4300	4000	4100	3800	3600	3000	2900	2800 ₅
	90	4400	3700	3000	3900	3400	2900	3000	2700 ₅	2500 ₁₅
290x65	40	5400	4900	4600	4900	4600	4300	3700 ₁₅	3500 ₂₀	3400 ₂₅
	90	5000	4400	3700 ₁₅	4700	4100 ₅	3500 ₂₀	3600 ₂₀	3300 ₃₀	3000 ₄₀
240x80	40	4900	4500	4200	4500	4200	3900	3400	3200	3100
	90	4600	4000	3400	4300	3700	3200	3300	3000	2800 ₅
290x80	40	5600	5200	4800	5200	4800	4600	4100 ₅	3900 ₁₀	3800 ₁₅
	90	5300	4600	4100 ₅	5000	4400	3900 ₁₀	4000 ₁₀	3600 ₁₅	3400 ₂₅
330x80	40	6200	5700	5300	5700	5300	5100	4700 ₂₀	4500 ₂₅	4300 ₃₀
	90	5900	5100	4600 ₂₀	5500	4900 ₅	4400 ₂₅	4500 ₂₀	4100 ₃₅	3800 ₅₀

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a total ground floor mass of 40 kg/m², total wall mass of 37 kg/m², floor live load of 1.5 kPa, floor point load of 1.8 kN.
3. The above table was based on a wall height of 2700 mm
4. End bearing lengths = 70 mm at end supports and 90 mm at internal supports for continuous members. Subscript values indicate the minimum additional bearing length where required to be greater than 70 mm at end supports and 90 mm at internal supports.
5. Restraint value for slenderness calculations is 600 mm.
6. Not all sizes of SmartLam GL 19S in this table are stocked in each state. Please check with your supplier before ordering.



Single/Upper storey lintel

Single span lintels in single/upper storey walls AS 4055 classification N1, N2 and N3

EXAMPLE:

wind speed = N3
sheet roof - 40 kg/m²
roof load width = 3900 mm
rafter/truss spacing = 600 mm
lintel span = 3500 mm

Enter span table at 4500 roof load width column, rafter/truss spacing 600 mm, and read down to a span equal to or greater than 3500 mm in the 40 kg/m² row

ADOPT: SmartLam GL17S Merbau - 240 x 42

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended Lintel span (mm)									
		Single span									
120x42	40	2600	2700	2100	2100	1800	1800	16000	1600	1500	1400
	90	2000	2000	1600	1500	1400	1200	1300	NS	1200	NS
140x42	40	3000	3000	2500	2500	2100	2100	1900	1700	1700	1300
	90	2400	2400	1900	1900	1600	1500	1500	1300	1400	1000
190x42	40	3800	3800	3300	3200	2900	2900	2700	2600	2400	2300
	90	3200	3100	2600	2600	2200	2200	2000	2000	1900	1900
240x42	40	4600	4600	3900	3900	3500	3500	3300	3200	3100	2900
	90	3800	3700	3200	3200	2800	2900	2600	2600	2400	2400
290x42	40	5300	5300	4500	4500	4100	4000	3800	3800	3600	3500
	90	4400	4300	3700	3600	3300	3300	3100	3100	2900	2900
140x65	40	3400	3400	2800	2900	2500	2600	2300	2300	2100	2100
	90	2700	2800	2200	2200	1900	1900	1700	1700	1600	1500
190x65	40	4300	4200	3600	3600	3300	3300	3100	3000	2900	2900
	90	3500	3500	3000	3000	2600	2700	2400	2400	2200	2200
240x65	40	5100	5100	4300	4300	3900	3900	3700	3600	3500	3400
	90	4200	4200	3600	3500	3200	3200	3000	3000	2800	2800
290x65	40	5800	5800	5000	5000	4500	4500	4200	4200	4000	4000
	90	4800	4800	4100	4100	3700	3700	3500	3400	3300	3200
240x80	40	5300	5300	4500	4500	4100	4100	3900	3800	3600	3600
	90	4400	4400	3700	3700	3400	3400	3200	3100	3000	3000
290x80	40	6000	6000	5200	5200	4700	4700	4400	4400	4200	4200
	90	5100	5100	4300	4300	3900	3900	3600	3600	3500	3400
330x80	40	6600	6600	5700	5700	5200	5200	4900	4900	4600	4600
	90	5600	5600	4800	4700	4300	4300	4000	4000	3800	3800

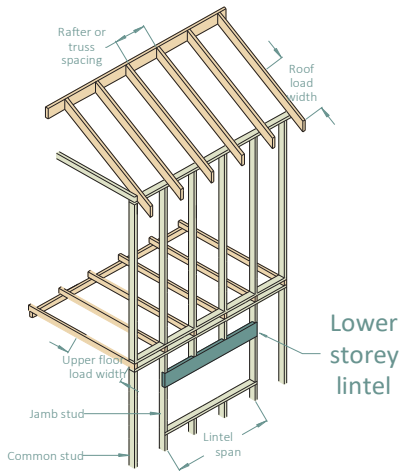
Single span lintels in single/upper storey walls AS 4055 classification C1, C2 and C3

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended Lintel span (mm)									
		Single span									
120x42	40	2200	2100	1500	1000	1200	NS	NS	NS	NS	NS
	90	2000	2000	1600	1200	1300	NS	1100	NS	NS	NS
140x42	40	2600	2500	1700	1400	1400	NS	1200	NS	NS	NS
	90	2400	2400	1900	1600	1500	1100	1300	NS	1000	NS
190x42	40	3600	3400	2500	2400	2000	1800	1700	1200	1500	NS
	90	3200	3100	2600	2600	2100	2000	1800	1500	1600	NS
240x42	40	4500	4500	3200	3000	2600	2500	2200	1800	1900	1400
	90	3800	3700	3200	3200	2700	2700	2400	2300	2100	1600
290x42	40	5300	5300	3900	3700	3100	3000	2700	2600	2400	1900
	90	4400	4300	3700	3600	3300	3200	2800	2800	2500	250015
140x65	40	3300	3100	2300	2200	1800	1500	1500	1100	1400	NS
	90	2700	2800	2200	2200	1900	1700	1600	1200	1400	NS
190x65	40	4300	4200	3100	3000	2500	2500	2200	2100	1900	1600
	90	3500	3500	3000	3000	2600	2600	2300	2200	2000	1900
240x65	40	5100	5100	4000	3900	3200	3100	2800	2700	2500	2400
	90	4200	4200	3600	3500	3200	3200	2900	2800	2600	2600
290x65	40	5800	5800	4900	4800	3900	3800	3400	3200	3000	2900
	90	4800	4800	4100	4100	3700	3700	3500	3400	3200	3100
240x80	40	5300	5300	4400	4400	3600	3500	3100	3000	2800	2700
	90	4400	4400	3700	3700	3400	3400	3200	3100	2900	2800
290x80	40	6000	6000	5200	5200	4400	4300	3800	3600	3400	3200
	90	5100	5100	4300	4300	3900	3900	3600	3600	3500	3400
330x80	40	6600	6600	5700	5700	5000	5000	4300	4200	3900	3700
	90	5600	5600	4800	4700	4300	4300	4000	4000	3800	3800

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. Minimum bearing length = 70 mm at end supports. Subscript values indicate the minimum additional bearing length where required to be greater than 70 mm.
3. Restraint value for slenderness calculations is 600 mm.
4. Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering.

Single span lintels in lower storey walls AS 4055 classification N1, N2, N3 & C1



EXAMPLE:

wind speed = N3
 sheet roof - 40 kg/m²
 rafter/truss spacing = 600 mm
 lintel span = 3500 mm
 roof load width = 3900 mm
 floor load width = 1200 mm
 Enter span table at 4500 roof load width column, floor load width 1200 mm, and read down to a span equal to or greater than 3500 mm in 40 kg/m² row

ADOPT:

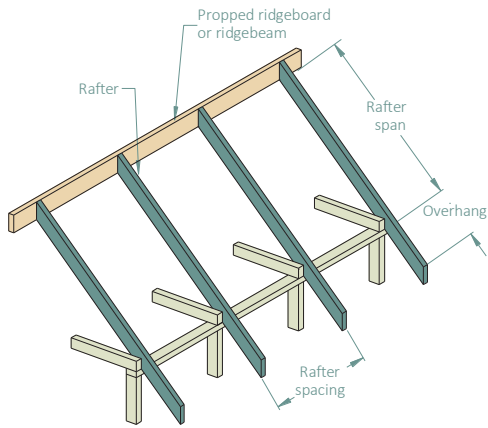
SmartLam GL17S Merbau - 290 x 65

Roof load width (mm)		1500			3000			4500			6000		
Floor load width (mm)		1200	2400	3600	1200	2400	3600	1200	2400	3600	1200	2400	3600
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended lintel span (mm)											
		Single span											
120x42	40	1500	1400	1300	1400	1300	1200	1400	1300	1200	1300	1200	1200
	90	1400	1300	1200	1300	1200	1100	1200	1100	1100	1100	1100	1000
140x42	40	1800	1600	1500	1700	1600	1400	1600	1500	1400	1600	1400	1400
	90	1700	1500	1400	1500	1400	1300	1400	1300	1300	1300	1300	1200
190x42	40	2500	2200	2000	2300	2100	2000	2200	2100	1900	2100	2000	1900
	90	2300	2100	2000	2100	1900	1800	1900	1800	1700	1800	1700	1700
240x42	40	3000	2800	2600	2900	2700	2500	2800	2600	2400	2700	2500	2400
	90	2900	2700	2500	2700	2500	2300	2500	2300	2200	2300	2200	2100
290x42	40	3500	3200	3000	3300	3100	2900	3200	3000	2900	3100	2900	2800
	90	3300	3100	2900	3100	2900	2800	2900	2800	2700	2800	2700	2600
140x65	40	2100	1900	1700	2000	1800	1700	1900	1700	1600	1800	1700	1600
	90	2000	1800	1700	1800	1700	1600	1600	1500	1500	1500	1500	1400
190x65	40	2800	2600	2400	2700	2500	2300	2600	2400	2200	2500	2300	2200
	90	2700	2400	2300	2400	2300	2100	2200	2100	2000	2100	2000	1900
240x65	40	3400	3100	2900	3200	3000	2800	3100	2900	2800	3000	2900	2700
	90	3200	3000	2800	3000	2800	2700	2800	2700	2600	2700	2600	2500
290x65	40	3900	3600	3400	3700	3500	3300	3600	3400	3200	3500	3300	3100
	90	3700	3500	3300	3400	3300	3100	3200	3100	3000	3100	3000	2900
240x80	40	3500	3300	3100	3400	3200	3000	3300	3100	2900	3200	3000	2900
	90	3400	3100	3000	3100	3000	2800	3000	2800	2700	2800	2700	2600
290x80	40	4100	3800	3600	3900	3700	3500	3800	3600	3400	3700	3500	3300
	90	3900	3600	3400	3600	3400	3300	3400	3300	3200	3300	3100	3100
330x80	40	4500	4200	3900	4300	4000	3800	4200	3900	3700	4000	3800	3700
	90	4300	4000	3800	4000	3800	3600	3800	3600	3500	3600	3500	3400

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. Total Upper floor mass of 40 kg/m², floor live load of 1.5 kPa, floor point load of 1.8 kN
3. Minimum bearing length = 35 mm at end supports. Subscript values indicate the minimum additional bearing length where required to be greater than 35 mm.
4. Restraint value for slenderness calculations is 600 mm.
5. Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering

Single/continuous span roof rafter - AS 4055 classification N1, N2 and N3 - with ceiling attached



EXAMPLE:

wind speed = N3
sheet roof - 40 kg/m²
rafter/truss spacing = 600 mm
rafter span = 5000 mm

Enter span table at rafter spacing of 600 mm, and read down to a span equal to or greater than 5000 mm in 40 kg/m² row

ADOPT:

SmartLam GL175 Merbau - 190 x 42

Rafter spacing (mm)		450	600	900	1200	450	600	900	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended rafter span (mm)							
		Single span				Continuous span			
90x42	30	2500	2400	2400	2300	3100	3100	3100	3100
	40	2500	2400	2300	2100	3100	3100	3100	2900
	75	2400	2200	1900	1700	3000	2900	2600	2300
	90	2200	2000	1800	1600	3000	2700	2400	2200
120x42	30	3800	3700	3400	3100	4700	4700	4600	4200
	40	3800	3500	3100	2800	4700	4700	4200	3800
	75	3200	2900	2500	2300	4300	3900	3400	3100
	90	3000	2700	2400	2200	4000	3700	3200	2900
140x42	30	4700	4400	4000	3600	6000	6000	5300	4900
	40	4400	4100	3600	3300	6000	5500	4900	4500
	75	3700	3400	3000	2700	5000	4600	4000	3700
	90	3500	3200	2800	2600	4700	4300	3800	3400
190x42	30	6300	5900	5300	4900	7800	7400	6800	6400
	40	5900	5500	4900	4500	7400	7000	6400	6000
	75	5000	4600	4000	3700	6500	6100	5400	5000
	90	4700	4300	3800	3500	6200	5800	5100	4700
240x42	30	7400	7000	6500	6100	9200	8700	8100	7600
	40	7000	6600	6100	5700	8700	8300	7600	7100
	75	6200	5800	5100	4700	7700	7200	6600	6200
	90	5900	5500	4800	4400	7400	7000	6300	5900
290x42	30	8400	8000	7400	7000	10400	10000	9200	8700
	40	8000	7600	7000	6600	9900	9400	8700	8200
	75	7000	6700	6100	5600	8800	8300	7600	7100
	90	6800	6400	5800	5300	8500	8000	7300	6800
140x65	30	5400	5000	4500	4100	6900	6500	6000	5600
	40	5000	4600	4100	3800	6500	6200	5600	5100
	75	4200	3900	3400	3100	5700	5200	4600	4200
	90	4000	3700	3200	3000	5400	4900	4400	4000
190x65	30	6800	6500	6000	5600	8400	8100	7500	7100
	40	6400	6100	5600	5100	8000	7700	7000	6600
	75	5700	5200	4600	4300	7100	6700	6200	5700
	90	5400	5000	4400	4000	6900	6500	5900	5400
240x65	30	7900	7600	7000	6700	9800	9500	8800	8300
	40	7500	7200	6700	6300	9400	9000	8300	7900
	75	6800	6400	5800	5400	8400	8000	7300	6900
	90	6500	6100	5500	5100	8100	7700	7000	6600
290x65	30	8900	8600	8000	7600	11100	10700	10000	9500
	40	8500	8200	7600	7200	10600	10200	9500	9000
	75	7700	7300	6700	6300	9600	9100	8400	7900
	90	7400	7000	6500	6100	9300	8800	8000	7600
240x80	30	8100	7800	7300	7000	10100	9800	9100	8700
	40	7800	7500	6900	6600	9700	9300	8700	8200
	75	7000	6700	6100	5700	8700	8300	7600	7200
	90	6800	6400	5900	5400	8500	8000	7300	6900
290x80	30	9100	8900	8300	7900	11400	11000	10300	9900
	40	8800	8500	7900	7500	11000	10600	9900	9400
	75	8000	7600	7000	6600	9900	9500	8700	8200
	90	7700	7400	6700	6400	9600	9200	8400	7900
330x80	30	9900	9600	9000	8700	12000	11900	11300	10800
	40	9600	9200	8600	8200	11900	11500	10800	10200
	75	8800	8300	7700	7200	10900	10400	9600	9000
	90	8500	8000	7400	7000	10500	10000	9200	8700

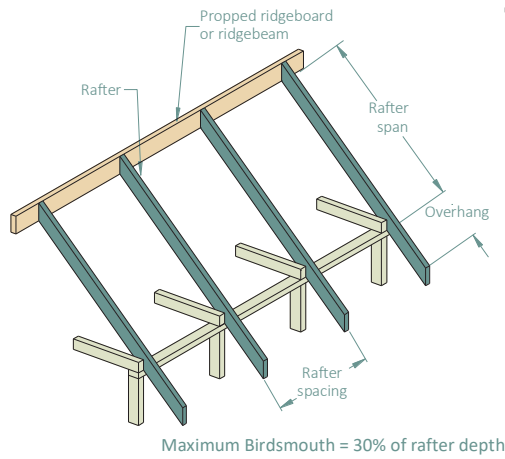
Single/continuous span roof rafter AS 4055 classification C1, C2 and C3 - with ceiling attached

Rafter spacing mm)		450	600	900	1200	450	600	900	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended Rafter span (mm)							
		Single span				Continuous span			
90x42	30	2500	2400	2200	1800	3100	2800	2200	1800
	40	2500	2400	2200	1900	3100	2900	2200	1900
	75	2400	2200	1900	1700	3000	2900	2300	1900
120x42	90	2200	2000	1800	1600	3000	2700	2300	2000
	30	3800	3700	3000	2500	4500	3900	3000	2500
	40	3800	3500	3100	2500	4600	3900	3100	2500
140x42	75	3200	29000	2500	2300	4300	3900	3200	2600
	90	3000	2700	2400	2200	4000	3700	3200	2700
	30	4700	4400	3600	3000	5300	4500	3600	3000
190x42	40	4400	4100	3600	3000	5400	4600	3600	3000
	75	3700	3400	3000	2700	5000	4600	3800	3200
	90	3500	3200	2800	2600	4700	4300	3800	3200
240x42	30	6300	5900	5000	4200	7300	6200	5000	4200
	40	5900	5500	4900	4300	7400	6300	5000	4300
	75	5000	4600	4000	3700	6500	6100	5200	4400
290x42	90	4700	4300	3800	3500	6200	5800	5100	4500
	30	7400	7000	6400	5400	9200	8000	6400	5400
	40	7000	6600	6100	5500	8700	8000	6400	5500 ₅
290x42	75	6200	5800	5100	4700	7700	7200	6600 ₅	5700 ₁₀
	90	5900	5500	4800	4400	7400	7000	6300 ₅	5700 ₁₅
	30	8400	8000	7400	6600	10400	9700	7800 ₅	6600 ₁₀
290x42	40	8000	7600	7000	6600	9900	9400	7900 ₁₀	6700 ₁₅
	75	7100	6700	6100	5600	8800	8300	7600 ₁₅	7000 ₂₅
	90	6800	6400	5800	5300	8500	8000	7300 ₁₅	6800 ₂₅
140x65	30	5400	5000	4500	3800	6700	5700	4600	3800
	40	5000	4600	4100	3800	6500	5800	4600	3900
	75	4200	3900	3400	3100	5700	5200	4600	4000
190x65	90	4000	3700	3200	3000	5400	4900	4400	4000
	30	6800	6500	6000	5300	8400	7900	6300	5300
	40	6500	6100	5600	5100	8000	7700	6400	5400
240x65	75	5700	5200	4600	4300	7100	6700	6200	5600
	90	5400	5000	4400	4000	6900	6500	5900	5400
	30	7900	7600	7000	6700	9800	9500	8100	6900
290x65	40	7600	7200	6700	6300	9400	9000	8100	6900
	75	6800	6400	5800	5400	8400	8000	7300	6900
	90	6500	6100	5500	5100	8100	7700	7000	6600
330x65	30	8900	8600	8000	7600	11100	10700	9800	8400
	40	8600	8200	7600	7200	10600	10200	9500	8500 ₅
	75	7700	7300	6700	6300	9600	9100	8400	7900 ₅
330x65	90	7400	7000	6500	6100	9300	8800	8000	7600 ₅
	30	9700	9300	8700	8400	12000	11700	10900	9600 ₁₀
	40	9300	8900	8300	7900	11700	11100	10400	9700 ₁₀
330x65	75	8400	8000	7400	6900	10500	10000	9200	8600 ₁₀
	90	8100	7700	7100	6700	10100	9600	8800	8300 ₁₀
240x80	30	8100	7800	7300	7000	10100	9800	9000	7700
	40	7800	7500	6900	6600	9700	9300	8700	7700
	75	7000	6700	6100	5700	8700	8300	7600	7200
290x80	90	6800	6400	5900	5400	8500	8000	7300	6900
	30	9100	8900	8300	7900	11400	11000	10300	9400
	40	8800	8500	7900	7500	11000	10600	9900	9400
330x80	75	8000	7600	7000	6600	9900	9500	8700	8200
	90	7700	7400	6700	6400	9600	9200	8400	7900
	30	9900	9600	9000	8700	12000	11900	11300	10700 ₅
330x80	40	9600	9200	8600	8200	11900	11500	10800	10200 ₅
	75	8800	8300	7700	7200	10900	10400	9600	9000 ₅
	90	8500	8000	7400	7000	10500	10000	9200	8700 ₅

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a batten spacing of 900 mm
3. Maximum birds mouth depth = 30 % of rafter depth
4. End bearing lengths = 45 mm at end supports and 45 mm at internal supports for continuous members. Subscript values Indicate the minimum additional bearing length where required to be greater than 45 mm at end supports and 45 mm at internal supports
5. Construction loads shall not be applied to overhangs until a 190 x 19 (minimum) timber fascia or other fascia of equivalent stiffness is rigidly and permanently attached to the end of rafter overhangs
6. Rafter spacing up to 1200 mm
7. Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering

Single/continuous span roof rafter- AS 4055 classification N1, N2 and N3 - without ceiling attached



EXAMPLE:

wind speed = N3
sheet roof = 40 kg/m²
rafter/truss spacing = 600 mm
rafter span = 5000 mm

Enter span table at rafter spacing of 600 mm, and read down to a span equal to or greater than 5000 mm in 40 kg/m² row

ADOPT:

SmartLam GL17S Merbau - 190 x 42

Rafter spacing (mm)		450	600	900	1200	450	600	900	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended rafter span (mm)							
		Single span				Continuous span			
90x42	10	2500	2400	2400	2300	3100	3100	3100	3100
	20	2500	2400	2400	2300	3100	3100	3100	3100
	40	2500	2400	2300	2100	3100	3100	3100	2900
	60	2500	2300	2000	1900	3100	3100	2700	2500
120x42	10	3800	3700	3600	3500	4800	4800	4800	800
	20	3800	300	3600	3500	4800	4800	4800	4700
	40	3800	3500	3100	2800	4700	4700	4200	3800
	60	3400	3100	2700	2500	4600	4200	3700	3400
140x42	10	4700	4700	4500	4400	6000	6000	6000	5700
	20	4800	4700	4400	4100	6000	6000	6000	5500
	40	4400	4100	3600	3300	6000	5500	4900	4500
	60	4000	3600	3200	2900	5300	4900	4300	3900
190x42	10	7300	7100	6700	6400	9300	8900	8400	7800
	20	6700	6400	5900	5500	8400	8000	7400	7000
	40	5900	5500	4900	4500	7400	7000	6400	6000
	60	5300	4900	4300	4000	6800	6400	5800	5300
240x42	10	8600	8300	7800	7500	10700	10400	9800	9400
	20	7900	7500	7000	6600	9800	9400	8700	8300
	40	7000	6600	6100	5700	8700	8300	7600	7100
	60	6500	6100	5500	5000	8100	7600	6900	6500
290x42	10	9600	9300	8900	8500	11900	11700	11000	10700
	20	8900	8500	8000	7600	11000	10700	9900	9400
	40	8000	7600	7000	6600	9900	9400	8700	8200
	60	7400	7000	6400	6000	9200	8700	8000	7500
140x65	10	5800	5700	5500	5300	7500	7500	7400	7000
	20	5800	5500	5000	4600	7300	7000	6500	6200
	40	5000	4600	4100	3800	6500	6200	5600	5100
	60	4500	4100	3700	3400	6000	5600	4900	4500
190x65	10	7800	7600	7200	6900	9700	9400	9000	8600
	20	7200	6900	6500	6100	8900	8600	8000	7700
	40	6500	6100	5600	5100	8000	7700	7000	6600
	60	6000	5600	5000	4600	7500	7100	6500	6100
240x65	10	8900	8700	8300	8000	11100	10900	10400	10000
	20	8300	8000	7600	7200	10300	10000	9400	9000
	40	7600	7200	6700	6300	9400	9000	8300	7900
	60	7000	6700	6100	5700	8800	8300	7700	7200
290x65	10	9900	9700	9400	9100	12000	12000	11700	11300
	20	9400	9100	8600	8200	11700	11300	10700	10200
	40	8600	8200	7600	7200	10600	10200	9500	9000
	60	8000	7600	7000	6600	10000	9500	8800	8300
330x65	10	10700	10500	10200	9800	12000	12000	12000	12000
	20	10100	9800	9300	8900	12000	12000	11700	11100
	40	9300	8900	8300	7900	11700	11100	10400	9800
	60	8700	8400	7700	7300	10900	10400	9600	9100
240x80	10	9000	8900	8500	8300	11300	11100	10700	10300
	20	8500	8300	7800	7500	10600	10300	9700	9300
	40	7800	7500	6900	6600	9700	9300	8700	8200
	60	7300	7000	6400	6100	9100	8700	8000	7500
290x80	10	10100	9900	9600	9300	12000	12000	11900	11600
	20	9600	9300	8800	8500	11900	11600	11000	10600
	40	8900	8500	7900	7500	11000	10600	9900	9400
	60	8300	7900	7300	6900	10300	9900	9100	8600
330x80	10	10800	10600	10400	10100	12000	12000	12000	12000
	20	10300	10100	9600	9200	12000	12000	11900	11500
	40	9600	9200	8600	8200	11900	11500	10800	10200
	60	9000	8700	8000	7600	11300	10800	10000	9500

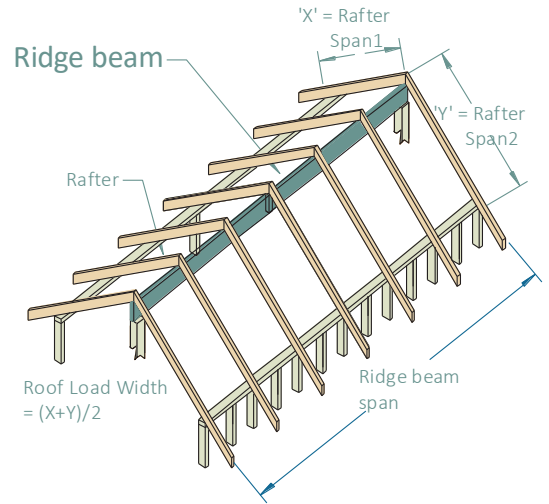
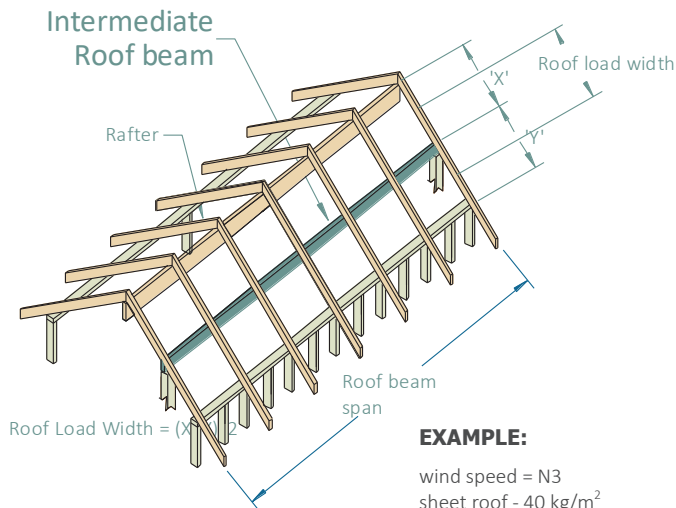
Single/continuous span roof rafter AS 4055 classification C1, C2 and C3 - without ceiling attached

Rafter spacing (mm)		450	600	900	1200	450	600	900	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended rafter span (mm)							
		Single span				Continuous span			
90x42	10	2500	2400	2100	1800	3100	2800	2100	1800
	20	2500	2400	2200	1800	3100	2800	2200	1800
	40	2500	2400	2200	1900	3100	2900	2200	1900
	60	2500	2300	2000	1900	3100	2900	2300	1900
120x42	10	3800	3700	3000	2400	4400	3800	3000	2400
	20	3800	3700	3000	2500	4500	3800	3000	2500
	40	3800	3500	3100	2500	4600	3900	3100	2500
	60	3400	3100	2700	2500	4600	4000	3100	2600
140x42	10	4700	4400	3500	2900	5200	4400	3500	2900
	20	4700	4500	3600	3000	5200	4500	3600	3000
	40	4400	4100	3600	3000	5400	4600	3600	3000
	60	4000	3600	3200	2900	5300	4700	3700	3100
190x42	10	6800	6100	4900	4100	7100	6100	4900	4100
	20	6700	6200	4900	4200	7200	6200	4900	4200
	40	5900	5500	4900	4300	7400	6300	5000	4300
	60	5300	4900	4300	4000	6800	6400	5200	4400
240x42	10	8600	7800	6200	5300	9100	7800	6200	5300
	20	7800	7500	6300	5400	9200	7900	6300	5400
	40	7000	6600	6100	5500	8700	8000	6400	5500 ₅
	60	6500	6100	5500	5000	8100	7600	6600	5600 ₁₀
290x42	10	9600	9300	7600	6500	11000	9500	7600	6500 ₅
	20	8900	8500	7700	6500	11100	9600	7700 ₅	6500 ₁₀
	40	8000	7600	7000	6600	9900	9400	7900 ₁₀	6700 ₁₅
	60	7400	7000	6400	6000	9200	8700	8000 ₁₅	6800 ₂₀
140x65	10	5800	5300	4500	3800	6500	5600	4500	3800
	20	5800	5300	4500	3800	6600	5700	4500	3800
	40	5000	4600	4100	3800	6500	5800	4600	3900
	60	4500	4100	3700	3400	6000	5600	4700	4000
190x65	10	7700	7200	6200	5200	9000	7700	6200	5200
	20	7200	6900	6200	5300	8900	7800	6200	5300
	40	6500	6100	5600	5100	8000	7700	6400	5400
	60	6000	5600	5000	4600	7500	7100	6500	5500
240x65	10	8900	8700	7900	6700	11100	9800	7900	6700
	20	8300	8000	7600	6800	10400	9900	8000	6800
	40	7600	7200	6700	6300	9400	9000	8100	6900
	60	7000	6700	6100	5700	8800	8300	7700	7100
290x65	10	9900	9700	9400	8200	12000	12000	9600	8200
	20	9400	9100	8600	8200	11700	11300	9700	8300
	40	8500	8200	7600	7200	10600	10200	9500	8500 ₅
	60	8000	7600	7000	6600	10000	9500	8800	8300 ₅
330x65	10	10700	10500	10200	9400	12000	12000	11000	9400 ₅
	20	10200	9800	9300	8900	12000	12000	11100	9500 ₅
	40	9300	8900	8300	7900	11700	11100	10400	9700 ₁₀
	60	8700	8400	7700	7300	10900	10400	9600	9100 ₁₀
240x80	10	9000	8900	8500	7500	11300	11000	8800	7500
	20	8500	8300	7800	7500	10600	10300	8900	7600
	40	7800	7500	6900	6600	9700	9300	8700	7700
	60	7300	7000	6400	6100	9100	8700	8000	7500
290x80	10	10100	9900	9600	9200	12000	12000	10700	9200
	20	9500	9300	8800	8500	11900	11600	10800	9300
	40	8800	8500	7900	7500	11000	10600	9900	9400
	60	8300	7900	7300	6900	10300	9900	9100	8600
330x80	10	10800	10600	10400	10100	12000	12000	12000	10500
	20	10300	10100	9600	9200	12000	12000	11900	10600
	40	9600	9200	8600	8200	11900	11500	10800	10200 ₅
	60	9000	8700	8000	7600	11300	10800	10000	9500 ₅

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a batten spacing of 900 mm
3. Maximum birds mouth depth = 30 % of rafter depth
4. End bearing lengths = 45 mm at end supports and 45 mm at internal supports for continuous members. Subscript values Indicate the minimum additional bearing length where required to be greater than 45 mm at end supports and 45 mm at internal supports
5. Construction loads shall not be applied to overhangs until a 190 x 19 (minimum) timber fascia or other fascia of equivalent stiffness is rigidly and permanently attached to the end of rafter overhangs
6. Rafter spacing up to 1200 mm
7. Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering

Ridge/intermediate roof beam AS 4055 classification N1, N2 and N3



EXAMPLE:

wind speed = N3
 sheet roof - 40 kg/m²
 beam span = 4500 mm
 $X = 2000 \text{ mm}$ $Y = 3000 \text{ mm}$
 roof load width = $(X+Y)/2 = 2500 \text{ mm}$
 Enter single span table at 3000 roof load width column and read down to span equal to or greater than 4500 mm in 40 kg/m² row

ADOPT: SmartLam GL17S Merbau - 290 x 42

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended ridge /intermediate beam span (mm)									
		Single span					Continuous span				
120x42	40	2600	2000	1700	1600	1400	3500	2700	2200	1900	1700
	90	2000	1600	1400	1200	1100	2700	2000	1600	1400	1200
140x42	40	3100	2400	2000	1800	1700	4100	3200	2600	2200	2000
	90	2400	1900	1600	1400	1300	3200	2400	1900	1600	1400
190x42	40	4200	3300	2800	2500	2300	5500	4300	3600	3100	2700
	90	3300	2600	2200	2000	1800	4300	3300	2600	2200	2000 ₁₅
240x42	40	5300	4100	3600	3200	2900	6700	5500	4500	3900	3400 ₅
	90	4100	3300	2800	2500	2300	5500	4100	3300 ₁₀	2800 ₂₅	2500 ₃₅
290x42	40	6200	5000	4300	3800	3500	7700	6400	5500	4700 ₁₀	4200 ₂₅
	90	5000	3900	3400	3100	2800	6400	5000 ₁₀	4000 ₂₅	3400 ₄₅	3000 ₆₅
140x65	40	3500	2800	2400	2100	1900	4700	3700	3200	2800	2500
	90	2800	2200	1900	1700	1500	3700	2900	2400	2000	1800
190x65	40	4800	3800	3200	2900	2600	6200	5000	4300	3800	3400
	90	3800	3000	2600	2300	2100	5000	3900	3300	2800	2500
240x65	40	6000	4800	4100	3700	3400	7400	6200	5400	4900	4300
	90	4800	3800	3300	2900	2700	6200	5000	4100	3500 ₅	3100 ₁₅
290x65	40	6900	5800	5000	4400	4100	8400	7200	6400	5900	5200 ₅
	90	5700	4600	4000	3600	3300	7100	6000	5000 ₅	4300 ₂₀	3800 ₃₅
330x65	40	7500	6400	5600	5100	4600	9200	7900	7000	6500	5900 ₁₅
	90	6400	5200	4500	4100	3700	7800	6600	5700 ₂₀	4900 ₃₅	4300 ₅₀
240x80	40	6300	5100	4400	3900	3600	7700	6500	5800	5200	4700
	90	5100	4000	3500	3200	2900	6500	5300	4600	3900	3500 ₅
290x80	40	7200	6100	5300	4800	4300	8800	7500	6700	6200	5700
	90	6100	4900	4200	3800	3500	7500	6300	5500	4700 ₁₀	4200 ₂₅
330x80	40	7800	6700	6000	5400	4900	9700	8300	7400	6800	6400 ₅
	90	6700	5500	4800	4400	4000	8200	7000	6300 ₁₀	5400 ₂₅	4800 ₃₅

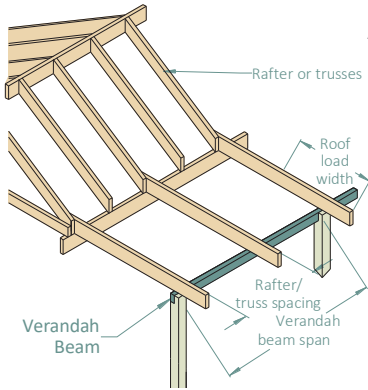
Ridge/intermediate roof beam AS 4055 classification C1, C2 and C3

Roof load width (mm)		1500	3000	4500	6000	7500	1500	3000	4500	6000	7500
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended ridge /intermediate beam span (mm)									
		Single span					Continuous span				
120x42	40	2300	1600	1300	1100	1000	2200	1600	1300	1100	1000
	90	2000	1600	1400	1200	1000	2400	1600	1300	1100	1000
140x42	40	2700	1900	1500	1300	1200	2600	1900	1500	1300	1200
	90	2400	1900	1600	1400	1200	2800	1900	1600	1300	1200
190x42	40	3800	2600	2100	1800	1600	3700	2500	2100	1800	1600 ₁₀
	90	3300	2600	2200	1900	1700	3900	2600	2100 ₅	1800 ₂₀	1600 ₃₀
240x42	40	4900	3300	2700	2300	2100	4800	3200	2600 ₁₀	2300 ₂₅	2000 ₄₀
	90	4100	3300	2800	2400	2100	5000	3400 ₁₀	2700 ₂₅	2300 ₄₅	2100 ₆₀
290x42	40	6000	4000	3300	2800	2500	5900	3900 ₅	3200 ₂₅	2800 ₄₅	2500 ₆₀
	90	5000	3900	3400	2900	2600	6100	4100 ₂₅	3300 ₅₀	2800 ₈₅	2500 ₁₀₀
140x65	40	3400	2400	1900	1700	1500	3400	2300	1900	1600	1500
	90	2800	2200	1900	1700	1500	3500	2400	2000	1700	1500
190x65	40	4800	3300	2700	2300	2100	4700	3200	2600	2300	2000
	90	3800	3000	2600	2300	2100	4900	3300	2700	2300	2100 ₁₀
240x65	40	6000	4100	3400	2900	2600	6100	4100	3300	2900 ₅	2600 ₁₅
	90	4800	3800	3300	2900	2700	6200	4200	3400 ₅	2900 ₂₀	2600 ₃₀
290x65	40	6900	5000	4100	3600	3200	7500	4900	4000 ₅	3500 ₂₀	3100 ₃₀
	90	5700	4600	4000	3600	3200	7100	5100 ₅	4100 ₂₅	3600 ₄₀	3200 ₅₅
330x65	40	7500	5700	4700	4100	3600	8600	5600	4600 ₂₀	4000 ₃₅	3600 ₅₀
	90	6300	5200	4500	4100	3700	7800	5800 ₁₅	4700 ₃₅	4100 ₅₅	3600 ₈₅
240x80	40	6300	4600	3800	3300	2900	6800	4500	3700	3200	2900 ₅
	90	5100	4000	3500	3200	2900	6500	4700	3800	3300 ₁₀	2900 ₂₀
290x80	40	7200	5600	4600	4000	3500	8400	5500	4500	3900 ₁₀	3500 ₂₅
	90	6100	4900	4200	3800	3500	7500	5600	4600 ₁₅	4000 ₃₀	3500 ₄₀
330x80	40	7800	6400	5200	4500	4000	9600	6300	5100 ₁₀	4400 ₂₅	4000 ₃₅
	90	6700	5500	4800	4400	4000	8200	6500 ₁₀	5200 ₂₅	4500 ₄₀	4000 ₅₅

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. End bearing lengths = 70 mm at end supports and 90 mm at internal supports for continuous members. Subscript values indicate the minimum additional bearing length where required to be greater than 70 mm at end supports and 90 mm at internal supports
3. Rafter spacing up to 1200 mm
4. Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering

Single span Verandah beam AS 4055 classification N1, N2 and N3



EXAMPLE:

wind speed = N3
sheet roof - 40 kg/m²
rafter/truss spacing = 600 mm
verandah span = 3500 mm (single span)
roof load width = 3900 mm

Enter span table at 4500 roof load width column, rafter spacing of 600 mm, and read down to a span equal to or greater than 3500 mm in 40 kg/m² row

ADOPT:

SmartLam GL17S Merbau - 190 x 42

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended verandah beam span (mm)									
		Single span									
140x42	10	4200	4300	4100	4200	3500	3500	3000	2900	2700	2600
	20	4000	4000	3700	3700	3300	3300	3000	3000	2700	2600
	40	3300	3300	3000	3000	2600	2600	2400	2400	2200	2200
	60	2900	2900	2600	2600	2300	2300	2100	2100	1900	2000
	90	2500	2500	2300	2300	2000	2000	1800	1800	1700	1700
190x42	10	5600	5600	5400	5400	4800	4700	4100	4100	3700	3700
	20	5000	5000	4700	4700	4300	4300	4000	4000	3800	3700
	40	4300	4300	4000	4000	3600	3600	3300	3300	3000	3000
	60	3900	3900	3600	3600	3100	3100	2900	2800	2700	2600
	90	3400	3400	3100	3100	2700	2700	2500	2500	2300	2300
240x42	10	6600	6600	6300	6300	5900	5900	5200	5200	4700	4600
	20	5900	5900	5600	5600	5100	5100	4800	4800	4600	4500
	40	5100	5100	4800	4800	4400	4400	4100	4100	3900	3900
	60	4700	4700	4400	4400	4000	4000	3600	3600	3400	3400
	90	4300	4200	4000	4000	3500	3500	3200	3200	2900	2900
290x42	10	7400	7500	7200	7200	6700	6700	6300	6300	5700	5600
	20	6700	6700	6300	6300	5900	5800	5500	5500	5200	5300
	40	5900	5800	5500	5500	5000	5000	4700	4700	4500	4500
	60	5400	5400	5000	5000	4600	4600	4300	4300	4000	4000
	90	4900	4900	4600	4600	4200	4100	3900	3900	3600	3600
140x65	10	4800	4800	4700	4700	4400	4300	3800	3800	3400	3300
	20	4400	4400	4100	4100	3800	3800	3400	3400	3200	3200
	40	3800	3800	3400	3400	3000	3000	2800	2700	2600	2500
	60	3300	3300	3000	3000	2700	2600	2400	2400	2200	2200
	90	2900	2900	2700	2600	2300	2300	2100	2100	2000	2000
190x65	10	6000	6000	5800	5800	5400	5400	5100	5100	4600	4500
	20	5400	5400	5100	5200	4800	4700	4500	4400	4200	4200
	40	4800	4700	4500	4400	4100	4100	3800	3800	3500	3500
	60	4300	4300	4100	4100	3600	3600	3300	3300	3100	3100
	90	4000	4000	3600	3600	3200	3200	2900	2900	2700	2700
240x65	10	7000	7000	6700	6700	6300	6300	6100	6000	5800	5800
	20	6300	6300	6100	6000	5600	5600	5300	5300	5000	5000
	40	5600	5600	5300	5300	4800	4800	4500	4500	4300	4300
	60	5200	5200	4800	4800	4400	4400	4100	4100	3900	3900
	90	4700	4700	4400	4400	4000	4000	3700	3700	3400	3400
290x65	10	7900	7900	7600	7600	7200	7200	6900	6900	6600	6600
	20	7200	7200	6900	6900	6400	6400	6000	6000	5800	5800
	40	6400	6400	6000	6000	5600	5600	5200	5200	5000	5000
	60	5900	5900	5600	5600	5100	5100	4800	4700	4500	4500
	90	5400	5400	5100	5100	4600	4600	4300	4300	4100	4100
330x65	10	8500	8500	8300	8200	7800	7800	7500	7500	7200	7200
	20	7800	7800	7500	7500	7000	7000	6600	6600	6300	6300
	40	7000	7000	6600	6600	6100	6100	5700	5700	5500	5500
	60	6500	6500	6100	6100	5600	5600	5200	5300	5000	5000
	90	6000	5900	5600	5600	5100	5100	4800	4800	4500	4500
240x80	10	7100	7200	6900	6900	6600	6500	6300	6300	6000	6000
	20	6600	6500	6300	6300	5800	5800	5500	5500	5300	5300
	40	5800	5800	5500	5500	5100	5100	4800	4800	4500	4500
	60	5400	5400	5100	5100	4600	4600	4300	4300	4100	4100
	90	4900	4900	4600	4600	4200	4200	3900	3900	3700	3600
290x80	10	8000	8000	7800	7800	7400	7400	7100	7100	6900	6900
	20	7400	7400	7100	7100	6600	6600	6300	6300	6000	6000
	40	6600	6600	6300	6300	5800	5800	5500	5500	5200	5200
	60	6200	6100	5800	5800	5300	5400	5000	5000	4800	4700
	90	5700	5700	5300	5400	4900	4900	4500	4500	4300	4300
330x80	10	8700	8700	8500	8400	8100	8000	7700	7700	7500	7500
	20	8000	8100	7700	7700	7300	7300	6900	6900	6600	6600
	40	7300	7300	6900	6900	6400	6400	6000	6000	5700	5700
	60	6700	6800	6400	6400	5900	5800	5500	5500	5200	5200
	90	6200	6200	5900	5800	5300	5400	5000	5000	4800	4700

Continuous span Verandah beam AS 4055 Classification N1, N2, N3 & N4

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended verandah beam span (mm)									
		Single span									
140x42	10	5000	5000	4300	4300	3500	3500	3000	3000	2700	2600
	20	5100	5100	4400	4300	3500	3500	3100	3100	2700	2700
	40	5100	5000	4400	4400	3600	3600	3100	3100	2800	2700
	60	4700	4700	4100	4100	3400	3300	2900	2900	2600	2600
	90	4400	4400	3800	3800	3100	3100	2700	2600	2400	2400
190x42	10	6800	6800	5900	5900	4800	4800	4100	4100	3700	3700
	20	6900	6900	6000	6000	4900	4900	4200	4200	3800	3800
	40	6900	6800	5900	5900	4900	4900	4200	4200	3800	3800
	60	6500	6400	5600	5600	4600	4600	4000	4000	3500	3500
240x42	90	6000	6000	5200	5200	4200	4200	3700	3700	3300	3300
	10	8600	8600	7400	7400	6000	6000	5200	5200	4700	4600
	20	8800	8800	7600	7600	6200	6100	5300	5300	4800	4800
	40	8600	8600	7500	7500	6200	6100	5300	5300	4800	4800
290x42	60	8100	8100	7100	7100	5800	5800	5000	5000	4500	4500
	90	7500	7500	6600	6600	5400	5300	4700	4600	4200	4200
	10	10500	10500	9000	9000	7300	7300	6300	6300	5700	5700
	20	10700	10700	9200	9200	7500	7500	6500	6400	5800	5800
	40	10400	10400	9100	9000	7500	7500	6500	6500	5800	5800
	60	9800	9800	8600	8600	7000	7000	6100	6100	5400	5400
140x65	90	9100	9100	7900	7900	6500	6500	5600	5600	5000	5000
	10	6200	6200	5400	5400	4400	4300	3800	3800	3400	3300
	20	6400	6300	5500	5500	4500	4400	3900	3900	3400	3400
	40	6300	6200	5400	5400	4500	4400	3900	3900	3500	3400
	60	5900	5900	5100	5100	4200	4200	3600	3600	3300	3200
	90	5500	5500	4700	4700	3900	3900	3400	3300	3000	3000
	10	8500	8500	7400	7400	6000	6000	5200	5100	4600	4600
	20	8700	8700	7500	7500	6100	6100	5300	5200	4700	4700
	40	8500	8500	7400	7400	6100	6000	5300	5200	4700	4700
	60	8000	8000	7000	6900	5700	5700	5000	5000	4500	4400
	90	7400	7400	6400	6400	5300	5300	4600	4600	4100	4100
	10	10900	10900	9400	9300	7600	7600	6500	6500	5900	5800
	20	11100	11100	9600	9500	7700	7700	6700	6700	6000	6000
	40	10700	10700	9300	9300	7700	7700	6700	6700	6000	6000
	60	10100	10100	8800	8800	7200	7200	6300	6200	5600	5600
	90	9300	9300	8100	8100	6700	6700	5800	5800	5200	5200
	10	12000	12000	11300	11400	9200	9200	7900	7900	7100	7100
	20	12000	12000	11600	11600	9400	9400	8100	8100	7300	7200
	40	12000	12000	11200	11200	9200	9200	8000	8000	7200	7200
	60	12000	12000	10600	10600	8700	8700	7600	7600	6800	6800
	90	11200	11200	9800	9800	8100	8000	7000	7000	6300	6300
330x65	10	12000	12000	12000	12000	10500	10500	9100	9000	8100	8100
	20	12000	12000	12000	12000	10700	10700	9200	9200	8300	8200
	40	12000	12000	12000	12000	10500	10500	9100	9100	8200	8200
	60	12000	12000	12000	12000	9900	9900	8600	8600	7700	7700
	90	12000	12000	11100	11100	9200	9100	8000	8000	7200	7100
240x80	10	12000	12000	10400	10400	8500	8500	7300	7300	6500	6500
	20	12000	12000	10700	10700	8600	8600	7400	7500	6600	6600
	40	11700	11700	10300	10300	8500	8500	7400	7400	6600	6600
	60	11100	11100	9700	9700	8000	8000	7000	6900	6200	6200
	90	10300	10300	9000	9000	7400	7400	6400	6400	5800	5800
	10	12000	12000	12000	12000	10300	10300	8800	8800	7900	7900
	20	12000	12000	12000	12000	10500	10500	9000	9000	8100	8000
	40	12000	12000	12000	12000	10200	10200	8900	8900	8000	8000
	60	12000	12000	11700	11700	9700	9600	8400	8400	7500	7500
	90	12000	12000	10900	10900	8900	8900	7800	7800	7000	7000
	10	12000	12000	12000	12000	11700	11700	10100	10100	9000	9000
	20	12000	12000	12000	12000	12000	12000	10300	10300	9200	9200
330x80	40	12000	12000	12000	12000	11600	11600	10100	10100	9100	9100
	60	12000	12000	12000	12000	11000	11000	9600	9500	8600	8600
	90	12000	12000	12000	12000	10100	10100	8800	8800	7900	7900

Single span Verandah beam AS 4055 classification C1, C2 and C3

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended Verandah beam span (mm)									
		Continuous span									
140x42	10	3300	3200	2800	2700	2300	2200	1900	1900	1700	1700
	20	3300	3300	2800	2700	2300	2200	1900	1900	1700	1700
	40	3300	3300	2900	2800	2400	2300	2000	2000	1700	1700
	60	2900	2900	2600	2600	2300	2300	2000	2000	1800	1800
	90	2500	2500	2300	2300	2000	2000	1800	1800	1700	1700
190x42	10	4500	4400	3900	3900	3100	3100	2700	2600	2400	2300
	20	4500	4500	3900	3900	3200	3100	2700	2600	2500	2300
	40	4300	4300	4000	4000	3200	3200	2800	2700	2500	2400
	60	3900	3900	3600	3600	3100	3100	2800	2800	2500	2400
	90	3400	3400	3100	3100	2700	2700	2500	2500	2300	2300
240x42	10	5700	5700	4900	4900	4000	4000	3500	3500	3100	3000
	20	5800	5700	5000	5000	4000	4000	3500	3500	3100	3000
	40	5100	5100	4800	4800	4100	4100	3600	3600	3200	3100
	60	4700	4700	4400	4400	4000	4000	3600	3600	3200	3200
	90	4300	4200	4000	4000	3500	3500	3200	3200	2900	2900
290x42	10	6900	6900	6000	5900	4900	4800	4200	4100	3800	3700
	20	6700	6700	6000	6000	4900	4900	4200	4200	3800	3800
	40	5900	5800	5500	5500	5000	5000	4300	4300	3900	3800
	60	5400	5400	5000	5000	4600	4600	4300	4300	3900	3900
	90	4900	4900	4600	4600	4200	4100	3900	3900	3600	3600
140x65	10	4100	4100	3600	3500	2900	2800	2500	2400	2200	2100
	20	4100	4100	3600	3600	2900	2800	2500	2400	2200	2100
	40	3800	3800	3400	3400	3000	2900	2600	2400	2300	2200
	60	3300	3300	3000	3000	2700	2600	2400	2400	2200	2200
	90	2900	2900	2700	2600	2300	2300	2100	2100	2000	2000
190x65	10	5600	5600	4900	4800	4000	3900	3400	3400	3000	3000
	20	5400	5400	4900	4900	4000	4000	3500	3400	3100	3000
	40	4800	4700	4500	4400	4100	4000	3500	3500	3100	3100
	60	4300	4300	4100	4100	3600	3600	3300	3300	3100	3100
	90	4000	4000	3600	3600	3200	3200	2900	2900	2700	2700
240x65	10	7000	7000	6200	6100	5000	5000	4300	4300	3900	3900
	20	6300	6300	6100	6000	5100	5100	4400	4300	3900	3900
	40	5600	5600	5300	5300	4800	4800	4500	4400	4000	4000
	60	5100	5200	4800	4800	4400	4400	4100	4100	3900	3900
	90	4700	4700	4400	4400	4000	4000	3700	3700	3400	3400
290x65	10	7800	7900	7500	7500	6100	6100	5300	5300	4700	4700
	20	7200	7200	6900	6900	6200	6100	5300	5300	4800	4700
	40	6400	6400	6000	6000	5600	5600	5200	5200	4900	4800
	60	5900	5900	5600	5600	5100	5100	4800	4700	4500	4500
	90	5400	5400	5100	5100	4600	4600	4300	4300	4100	4100
330x65	10	8500	8500	8300	8200	7000	7000	6000	6000	5400	5400
	20	7800	7800	7500	7500	7000	7000	6100	6000	5400	5400
	40	7000	7000	6600	6600	6100	6100	5700	5700	5500	5500
	60	6500	6500	6100	6100	5600	5600	5200	5300	5000	5000
	90	6000	5900	5600	5600	5100	5100	4800	4800	4500	4500
240x80	10	7100	7200	6900	6900	5600	5600	4900	4800	4300	4300
	20	6500	6600	6300	6300	5700	5600	4900	4800	4400	4300
	40	5800	5800	5500	5500	5100	5100	4800	4800	4400	4400
	60	5400	5400	5100	5100	4600	4600	4300	4300	4100	4100
	90	4900	4900	4600	4600	4200	4200	3900	3900	3700	3600
290x80	10	8000	8000	7800	7800	6800	6800	5900	5800	5200	5200
	20	7400	7400	7100	7100	6600	6600	5900	5900	5300	5300
	40	6600	6600	6300	6300	5800	5800	5500	5500	5200	5200
	60	6200	6100	5800	5800	5300	5400	5000	5000	4800	4700
	90	5700	5700	5300	5400	4900	4900	4500	4500	4300	4300
330x80	10	8600	8700	8500	8400	7700	7700	6700	6700	6000	5900
	20	8000	8100	7700	7700	7300	7300	6800	6700	6000	6000
	40	7200	7300	6900	6900	6400	6400	6000	6000	5700	5700
	60	6700	6800	6400	6400	5900	5800	5500	5500	5200	5200
	90	6200	6200	5900	5800	5300	5400	5000	5000	4800	4700

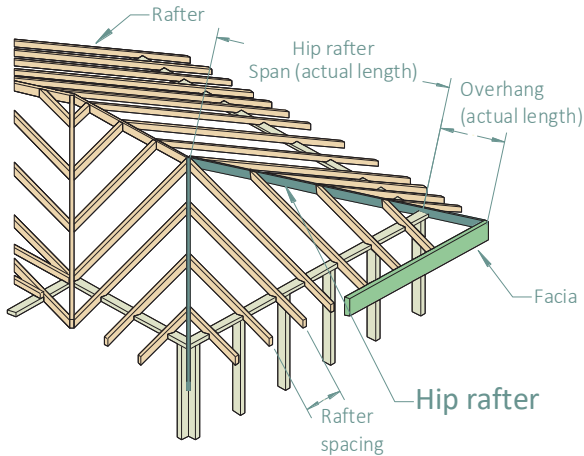
Continuous span Verandah beam AS 4055 Classification C1, C2 & C3

Roof load width (mm)		1500		3000		4500		6000		7500	
Rafter/truss spacing (mm)		600	1200	600	1200	600	1200	600	1200	600	1200
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended Verandah span (mm)									
		Continuous span									
140x42	10	3300	3300	2800	2800	2300	2300	2000	2000	1700	1700
	20	3300	3300	2900	2800	2300	2300	2000	2000	1800	1800
	40	3400	3400	2900	2900	2400	2300	2000	2100	1800	1900
	60	3400	3400	3000	3000	2400	2400	2100	2100	1800	1900
	90	3400	3400	2900	2900	2400	2400	2100	2100	1800	1900
190x42	10	4500	4500	3900	3900	3200	3200	2700	2700	2400	2400
	20	4500	4500	3900	3900	3200	3200	2800	2700	2500	2400
	40	4600	4600	4000	4000	3300	3300	2800	2800	2500	2500
	60	4700	4700	4100	4100	3300	3300	2900	2800	2600	2500
	90	4700	4600	4000	4000	3300	3300	2800	2800	2600	2500
240x42	10	5700	5700	4900	4900	4000	4000	3500	3400	3100	3100
	20	5800	5800	5000	5000	4100	4100	3500	3500	3100	3100
	40	5900	5900	5100	5100	4100	4100	3600	3500	3200	3200
	60	6000	6000	5200	5200	4200	4200	3600	3600	3300 ₅	3300 ₅
	90	5900	5900	5100	5100	4200	4200	3600	3600	3200 ₁₀	3200 ₁₀
290x42	10	6900	6900	6000	6000	4900	4900	4200	4200	3800	3800
	20	7000	7000	6000	6000	4900	4900	4200	4200	3800 ₅	3800 ₅
	40	7100	7100	6100	6100	5000	5000	4300 ₅	4300 ₅	3900 ₁₅	3900 ₁₅
	60	7300	7200	6300	6200	5100	5100	4400 ₁₀	4400 ₁₀	3900 ₂₀	4000 ₂₀
	90	7100	7100	6200	6100	5000 ₅	5100 ₅	4400 ₂₀	4300 ₂₀	3900 ₃₀	3900 ₃₀
140x65	10	4100	4100	3600	3600	2900	2900	2500	2500	2200	2200
	20	4200	4200	3600	3600	2900	2900	2500	2500	2200	2200
	40	4200	4200	3700	3700	3000	3000	2600	2500	2300	2300
	60	4300	4300	3800	3800	3000	3000	2600	2600	2300	2300
	90	4200	4200	3700	3700	3000	3000	2600	2500	2300	2300
190x65	10	5700	5700	4900	4900	4000	4000	3400	3400	3100	3100
	20	5700	5700	4900	4900	4000	4000	3500	3400	3100	3100
	40	5800	5800	5000	5000	4100	4100	3500	3500	3100	3100
	60	5900	5900	5100	5100	4100	4200	3600	3600	3200	3200
	90	5800	5800	5000	5000	4100	4100	3600	3500	3200	3200
240x65	10	7200	7100	6200	6200	5000	5000	4400	4300	3900	3900
	20	7300	7200	6200	6200	5100	5100	4400	4400	3900	3900
	40	7400	7400	6400	6300	5200	5200	4500	4400	4000	4000
	60	7500	7500	6500	6500	5300	5200	4600	4500	4100	4100
	90	7300	7300	6400	6300	5200	5200	4500	4500	4000	4000
290x65	10	8700	8700	7500	7500	6100	6100	5300	5300	4700	4700
	20	8800	8800	7600	7600	6200	6100	5300	5300	4800	4800
	40	8900	8900	7700	7700	6300	6200	5400	5400	4800	4800
	60	9100	9100	7900	7800	6400	6400	5500	5500	4900	4900
	90	8800	8800	7700	7700	6300	6300	5400	5400	4900 ₁₀	4900 ₁₀
330x65	10	9900	9900	8600	8600	7000	7000	6000	6000	5400	5300
	20	10000	10000	8600	8600	7000	7000	6100	6100	5400	5400
	40	10200	10200	8800	8800	7200	7100	6200	6200	5500 ₅	5500 ₅
	60	10400	10400	9000	8900	7300	7300	6300 ₅	6300 ₅	5600 ₁₀	5600 ₁₀
	90	10000	10000	8700	8700	7200	7100	6200 ₁₀	6200 ₁₀	5600 ₂₀	5600 ₂₀
240x80	10	8000	8000	6900	6900	5600	5600	4800	4800	4300	4300
	20	8100	8000	7000	6900	5700	5700	4900	4900	4400	4300
	40	8200	8200	7100	7100	5800	5800	5000	5000	4400	4400
	60	8400	8400	7200	7200	5900	5900	5100	5100	4500	4500
	90	8100	8100	7100	7000	5800	5800	5000	5000	4500	4500
290x80	10	9700	9700	8400	8400	6800	6800	5900	5900	5200	5200
	20	9800	9800	8500	8400	6900	6900	5900	5900	5300	5300
	40	10000	9900	8600	8600	7000	7000	6000	6000	5400	5400
	60	10100	10100	8800	8800	7100	7100	6100	6100	5500	5500
	90	9800	9700	8500	8500	7000	7000	6000	6100	5400	5400
330x80	10	11100	11100	9500	9500	7700	7700	6700	6700	6000	6000
	20	11200	11200	9600	9600	7800	7800	6800	6800	6000	6000
	40	11400	11400	9800	9800	8000	7900	6900	6900	6100	6100
	60	11600	11600	10000	10000	8100	8100	7000	7000	6300 ₅	6200 ₅
	90	11100	11100	9700	9600	7900	7900	6900	6900	6200 ₁₀	6200 ₁₀

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. End bearing lengths = 70 mm at end supports and 70 mm at internal supports for continuous members. Subscript values indicate the minimum additional bearing length where required to be greater than 70 mm at end supports and 70 mm at internal supports.
3. Restraint value for slenderness calculations is 1200 mm
4. Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering

Hip rafter - sheet and tile roof AS 4055 wind classification N1, N2, N3, C1, C2 & C3



EXAMPLE:

wind speed = N3
 roof load = 40 kg/m² (sheet roof)
 hip rafter span = 4500 mm (single span)
 rafter spacing = 600 mm

Enter column at (N1,N2 & N3) wind speed, 600 mm rafter spacing and read down to span equal to or greater than 4500 mm for a 40 kg/m² roof load

ADOPT:

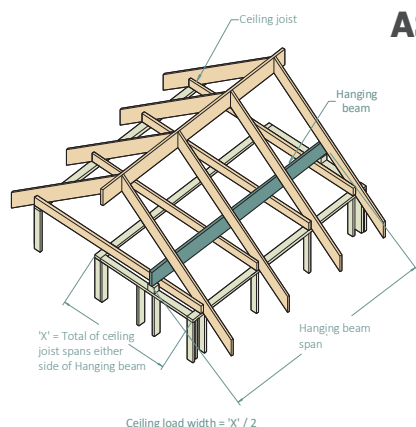
SmartLam GL17S Merbau — 290x42

Wind Speed		N1, N2 & N3				C1, C2 & C3			
Rafter spacing (mm)		600		1200		600		1200	
		Maximum Rafter span + overhang span (mm)				Maximum Rafter span + overhang span (mm)			
Member size DxB (mm)	Roof & ceiling mass (kg/m ²)	Span	Overhang	Span	Overhang	Span	Overhang	Span	Overhang
		Single span				Single span			
90x42	40	2300	300	2300	250	2100	300	2100	250
	90	1900	250	1900	250	1900	250	1900	250
120x42	40	2900	400	2900	350	2600	400	2600	350
	90	2400	350	2400	300	2400	350	2400	300
140x42	40	3200	500	3200	450	2800	500	2800	450
	90	2700	450	2700	400	2700	450	2700	400
190x42	40	3800	750	3800	650	3400	600	3400	650
	90	3300	650	3300	550	3300	650	3300	550
240x42	40	4400	800	4400	800	3900	700	3900	700
	90	3800	750	3800	700	3800	750	3800	700
290x42	40	4900	900	4900	900	4400	800	4400	800
	90	4200	800	4200	800	4200	800	4200	800
140x65	40	3500	700	3500	650	3100	600	3100	600
	90	3000	600	3000	550	3000	600	3000	550
190x65	40	4200	800	4200	800	3700	700	3700	700
	90	3600	700	3600	700	3600	700	3600	700
240x65	40	4800	950	4800	950	4300	850	4300	850
	90	4100	800	4100	800	4100	800	4100	800
290x65	40	5400	1000	5400	1000	4800	950	4800	950
	90	4600	900	4600	900	4600	900	4600	900
330x65	40	5800	1150	5800	1150	5200	1000	5200	1000
	90	5000	1000	5000	1000	5000	1000	5000	1000
240x80	40	5000	1000	5000	1000	4500	900	4500	900
	90	4300	850	4300	850	4300	850	4300	850
290x80	40	5600	1100	5600	1100	5000	1000	5000	1000
	90	4800	950	4800	950	4800	950	4800	950
330x80	40	6000	1200	6000	1200	5400	1000	5400	1000
	90	5200	1000	5200	1000	5200	1000	5200	1000

NOTES:

- D = member depth, B = member breadth, NS = not suitable.
- The above table was based on a batten spacing of 900 mm
- Minimum backspan = 200% of overhang
- Maximum birds mouth depth = 30% of depth
- End bearing length = 35 at end supports and 35 mm. Subscript values indicate the minimum additional bearing length where required to be greater than 35 mm at end support
- Construction loads shall not be applied to overhangs until a 190 x 19 mm (min) timber fascia or other fascia of equivalent stiffness is rigidly and permanently attached to the end of rafter overhangs
- Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering

Hanging beam supporting ceiling loads only AS 4055 Classification N1, N2 & N3



ceiling mass - 20 kg/m²

EXAMPLE:

Wind speed = N3

X = 5000 mm

Ceiling load width = X/2 = 5000/2 = 2500 mm

Hanging beam span = 4200 mm

Enter column at 3000 mm ceiling load width & read down to a span greater than or equal to 4200 mm

ADOPT:

SmartLam GL17S Merbau - 240 x 42

Ceiling load width (mm)	1800	2400	3000	3600	4200	4800
Member size DxB (mm)	Maximum recommended Hanging beam span (mm)					
90x42	2200	2000	1800	1700	1600	1500
120x42	3000	2700	2400	2300	2100	2000
140x42	3400	3100	2800	2600	2500	2300
190x42	4400	4000	3800	3600	3400	3200
240x42	5200	4800	4500	4300	4100	3900
290x42	5900	5500	5200	4900	4700	4500
140x65	3800	3600	3300	3000	2900	2700
190x65	4800	4500	4200	4000	3800	3600
240x65	5700	5300	5000	4700	4500	4300
290x65	6500	6100	5700	5500	5200	5000
330x65	7100	6600	6300	6000	5700	5500
240x80	5900	5500	5200	5000	4800	4600
290x80	6800	6300	6000	5700	5500	5300
330x80	7400	6900	6600	6300	6000	5800

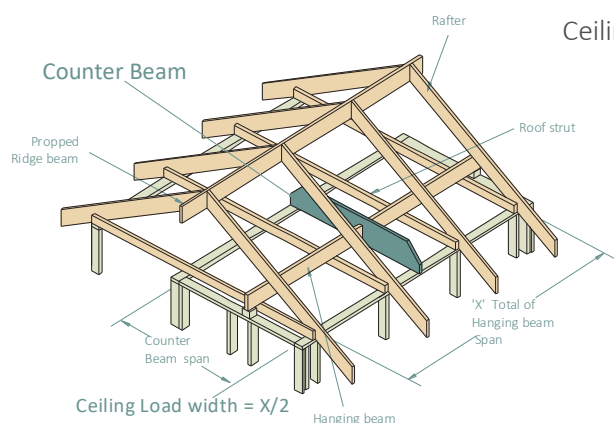
Hanging beam supporting ceiling loads only AS 4055 Classification C1, C2 & C3

Ceiling load width (mm)	1800	2400	3000	3600	4200	4800
Member size (DxB (mm))	Maximum recommended hanging beam span (mm)					
90x42	2000	1700	1500	1400	1300	1200
120x42	2700	2300	2000	1800	1700	1600
140x42	3100	2700	2400	2200	2000	1900
190x42	4200	3700	3300	3000	2700	2600
240x42	5200	4600	4100	3800	3500	3200
290x42	5900	5500	5000	4600	4200	3900
140x65	3800	3400	3000	2700	2500	2300
190x65	4800	4500	4100	3700	3400	3200
240x65	5700	5300	5000	4700	4300	4100
290x65	6500	6100	5700	5500	5200	4900
330x65	7100	6600	6300	6000	5700	5500
240x80	5900	5500	5200	5000	4800	4500
290x80	6700	6300	6000	5700	5500	5300
330x80	7400	6900	6600	6300	6000	5800

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum ceiling mass of 20 kg/m²
3. Minimum bearing length = 70 mm at end supports
4. Restraint value for slenderness calculations is 1500 mm
5. Not all sizes of SmartLam GL 19S in this table are stocked in each state. Please check with your supplier before ordering.

Counter beam supporting hanging beam AS 4055 Classification N1, N2 & N3



Ceiling mass - 20 kg/m²

EXAMPLE:

wind speed = N3

total of hanging beam SPAN = 6400 mm

ceiling load width = 'X' / 2 = 6400 / 2 = 3200 mm

counter beam span = 4500 mm

Enter column at 3600 mm ceiling load width and read down to a span greater than or equal to 4500 mm

ADOPT:

SmartLam GL17S Merbau - 240 x 42

Ceiling load width (mm)	600	1800	2400	3000	3600	4200	4800	5400	6600
Member size DxB (mm)	Maximum recommended counter beam span (mm)								
90x42	3400	2500	2300	2100	2000	1900	1800	1700	1600
120x42	4500	3300	3000	2800	2700	2500	2400	2300	2200
140x42	5000	3900	3600	3300	3100	3000	2900	2700	2600
190x42	6200	5000	4700	4500	4300	4100	3900	3700	3500
240x42	7200	5900	5600	5300	5100	4900	4800	4700	4400
290x42	8200	6800	6400	6100	5900	5700	5500	5400	5100
140x65	5400	4400	4100	3800	3600	3400	3300	3200	3000
190x65	6600	5500	5200	5000	4800	4600	4500	4300	4000
240x65	7700	6500	6100	5900	5600	5500	5300	5200	4900
290x65	8700	7400	7000	6700	6500	6300	6100	5900	5700
330x65	9400	8100	7700	7400	7100	6900	6700	6500	6200
240x80	7900	6700	6400	6100	5900	5700	5600	5400	5200
290x80	8800	7600	7300	7000	6800	6500	6400	6200	5900
330x80	9500	8300	8000	7700	7400	7200	7000	6800	6500

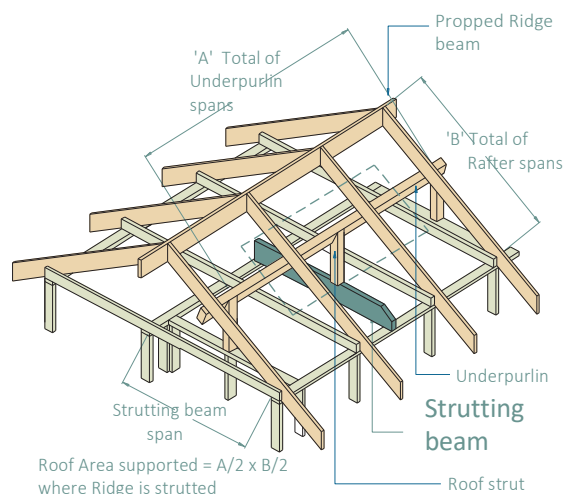
Counter beam supporting hanging beam AS 4055 Classification C1, C2 and C3

Ceiling load width (mm)	600	1800	2400	3000	3600	4200	4800	5400	6600
Member size DxB (mm)	Maximum recommended counter beam span (mm)								
90x42	3400	2000	1700	1500	1400	1300	1200	1100	1000
120x42	4500	2700	2300	2100	1900	1700	1600	1500	1400
140x42	5000	3100	2700	2400	2200	2000	1900	1800	1600
190x42	6200	4300	3700	3300	3000	2800	2600	2500	2200
240x42	7200	5400	4700	4200	3800	3500	3300	3100	2800
290x42	8200	6500	5700	5100	4600	4300	4000	3800	3400
140x65	5400	3900	3400	3000	2800	2600	2400	2300	2000
190x65	6600	5300	4600	4100	3800	3500	3300	3100	2800
240x65	7700	6500	5800	5200	4800	4400	4100	3900	3500
290x65	8700	7400	7000	6300	5800	5300	5000	4700	4300
330x65	9400	8100	7700	7200	6600	6100	5700	5400	4900
240x80	7900	6700	6400	5800	5300	4900	4600	4300	3900
290x80	8900	7700	7300	7000	6400	5900	5600	5200	4700
330x80	9600	8300	8000	7700	7300	6700	6300	6000	5400

NOTES:

1. D = member depth, B = member breadth, NS = not suitable
2. The above table was based on a maximum ceiling mass of 20 kg/m²
3. Minimum bearing length = 70 mm at end supports
4. Not all sizes of SmartLam GL 17S Merbau in this table are stocked in each state. Please check with your supplier before ordering.

Strutting beam supporting underpurlins AS 4055 Classification N1, N2 & N3



EXAMPLE:

wind speed = N3
 sheet roof = 20 kg/m²
 total of underpurlin span 'A' = 5000 mm
 total of rafter span 'B' = 4200 mm
 roof area supported = $(A/2) \times (B/2)$
 $= (5000/2) \times (4200/2)$
 $= 5250000 \text{ mm}^2$ (convert to m²)
 $= 5250000/1000000 = 5.25 \text{ m}^2$
 strutting beam span = 4500 mm

Enter column at 6m² roof area supported and read down to a span greater than or equal to 4500 mm in the 20 kg/m² row.

ADOPT: **SmartLam GL 17S Merbau**- 290 x 65

Roof area supported (m ²)		2	4	6	8	10	12
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended Strutting beam span (mm)					
120x42	20	2800	2400	2000	1600	1300	1000
	60	2300	1600	1300	1100	NS	NS
140x42	20	3600	3100	2500	2200	1700	1400
	60	2800	2000	1700	1400	1200	NS
190x42	20	5100	4700	4000	3500	3100	2700
	60	4400	3200	2700	2300	2100	1800
240x42	20	6500	5800	5200	4800	4400	4100
	60	5500	4500	3800	3300	2900	2700
290x42	20	7800	6900	6200	5700	5300	5000
	60	6600	5400	4800	4400	3900	3600
140x65	20	4300	3800	3100	2700	2500	2200
	60	3500	2500	2100	1800	1600	1500
190x65	20	5900	5300	4700	4300	3900	3600
	60	5100	4000	3300	2900	2600	2300
240x65	20	7400	6500	5900	5400	5100	4800
	60	6200	5200	4600	4100	3700	3300
290x65	20	8500	7600	6900	6400	6100	5800
	60	7300	6200	5500	5000	4700	4400
330x65	20	9300	8400	7700	7200	6800	6500
	60	8100	6900	6200	5700	5300	5000
240x80	20	7600	6800	6200	5700	5400	5100
	60	6500	5500	4900	4500	4000	3700
290x80	20	8700	7900	7300	6800	6400	6100
	60	7600	6500	5800	5400	5000	4700
330x80	20	9500	8700	8100	7600	7200	6900
	60	8500	7300	6600	6100	5700	5400

Strutting beam supporting underpurlins AS 4055 Classification C1, C2 & C3

Roof area supported (m ²)		2	4	6	8	10	12
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended Strutting beam span (mm)					
120x42	20	1800	NS	NS	NS	NS	NS
	60	2000	1100	NS	NS	NS	NS
140x42	20	2500	1300	NS	NS	NS	NS
	60	2700	1400	NS	NS	NS	NS
190x42	20	4700	2400	1600	NS	NS	NS
	60	4400	2600	1700	1000	NS	NS
240x42	20	6500	3900	2600	1900	1100	NS
	60	5500	4200	2800	2100	1300	NS

Strutting beam supporting underpurlins AS 4055 Classification C1, C2 & C3 (Cont'd)

Roof area supported (m ²)		2	4	6	8	10	12
Member size DxB (mm)	Roof mass (kg/m ²)	Maximum recommended strutting beam span (mm)					
290x42	20	7800	5700	3800	2800	2200	1300
	60	6600	5400	4100	3100	2400	1700
140x65	20	4000	2000	1300	NS	NS	NS
	60	3500	2200	1400	1100	NS	NS
190x65	20	5900	3800	2500	1900	1500	NS
	60	5100	4000	2700	2000	1600	1200
240x65	20	7400	6100	4000	3000	2400	2000
	60	6200	5200	4400	3300	2600	2200
290x65	20	8500	7600	5900	4400	3500	2900
	60	7300	6200	5500	4800	3800	3200
330x65	20	9300	8400	7600	5800	4600	3800
	60	8100	6900	6200	5700	5000	4100
240x80	20	7700	6800	5000	3700	3000	2500
	60	6500	5500	4900	4100	3200	2700
290x80	20	8700	7900	7200	5500	4400	3600
	60	7700	6500	5800	5400	4800	4000
330x80	20	9500	8700	8100	7200	5700	4700
	60	8500	7300	6600	6100	5700	5100

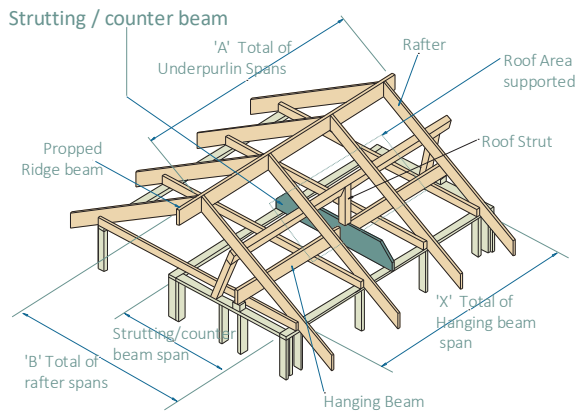
NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. Minimum bearing length = 70 mm at end supports.
3. Restraint value for slenderness calculations is 1500 mm
4. Not all sizes of SmartLam GL 19S in this table are stocked in each state. Please check with your supplier before ordering.

Strutting/counter beam supporting underpurlins & hanging beam

AS 4055 Classification N1, N2 & N3

Ceiling mass - 20 kg/m²



Roof area supported = $A/2 \times B/2$ counter/strutting beam spacing = $X/2$

EXAMPLE:

wind speed = N3

sheet roof = 40 kg/m²

total of underpurlin span 'A' = 5000 mm

total of rafter span 'B' = 4200 mm

roof area supported = $(A/2) \times (B/2)$

= $(5000/2) \times (4200/2)$

= 5250000 mm² (convert to m²)

= 5250000/1000000 = 5.25 m²

total of hanging beam span 'X' = 4500 mm

effective beam spacing = $'X' / 2 = 4500 / 2 = 2250$ mm

strutting/counter beam span = 4500 mm

Enter column at 3600 mm effective beam spacing, 6m² roof area supported and read down to a span greater than or equal to 4500 mm

ADOPT: SmartLam GL17S Merbau - 290 x 65

Effective beam spacing (mm)		1800						3600					
Roof area supported (m ²)		2	4	6	8	10	12	2	4	6	8	10	12
Member size (DxB (mm))	Roof mass (kg/m ²)	Maximum recommended strutting/counter beam span (mm)											
120x42	40	2200	1800	1500	1300	1100	NS	2000	1600	1400	1300	1100	NS
	90	1700	1300	1000	NS	NS	NS	1600	1300	NS	NS	NS	NS
140x42	40	2700	2200	1900	1600	1500	1300	2400	2000	1800	1600	1400	1300
	90	2200	1600	1300	1000	NS	NS	2000	1600	1300	1000	NS	NS
190x42	40	3800	3300	2900	2600	2300	2100	3400	3000	2700	2400	2200	2100
	90	3300	2600	2100	1800	1500	1300	3000	2400	2100	1800	1500	1200
240x42	40	4600	4200	3800	3500	3300	3000	4200	3900	3600	3300	3100	2900
	90	4100	3500	3000	2700	2400	2000	3900	3300	2900	2600	2300	1900
290x42	40	5400	4900	4500	4200	4000	3800	4900	4500	4300	4000	3800	3700
	90	4900	4200	3800	3500	3200	2900	4500	4000	3700	3400	3100	2800
140x65	40	3200	2700	2300	2000	1800	1700	2800	2400	2200	1900	1800	1600
	90	2600	2000	1700	1500	1300	1000	2400	1900	1600	1400	1200	1000
190x65	40	4300	3800	3500	3100	2900	2700	3900	3600	3200	3000	2700	2600
	90	3800	3100	2700	2300	2100	1900	3600	3000	2600	2300	2100	1900
240x65	40	5200	4700	4300	4100	3800	3700	4700	4300	4100	3900	3700	3500
	90	4700	4100	3700	3300	3000	2700	4300	3900	3500	3200	2900	2700
290x65	40	6000	5500	5100	4800	4600	4400	5400	5100	4800	4600	4400	4200
	90	5500	4800	4400	4000	3800	3600	5100	4600	4200	3900	3700	3500
330x65	40	6600	6100	5700	5400	5200	4900	5900	5600	5300	5100	4900	4700
	90	6100	5400	4900	4600	4300	4100	5600	5100	4700	4400	4200	4000
240x80	40	5400	5000	4600	4300	4100	3900	4900	4600	4300	4100	3900	3800
	90	5000	4300	3900	3600	3300	3000	4600	4100	3800	3500	3200	3000
290x80	40	6300	5800	5400	5100	4900	4700	5700	5300	5100	4800	4600	4500
	90	5800	5100	4700	4300	4100	3800	5300	4800	4500	4200	4000	3800
330x80	40	6900	6400	6000	5700	5500	5200	6200	5900	5600	5400	5200	5000
	90	6400	5700	5200	4900	4600	4400	5900	5400	5000	4700	4500	4300

Strutting/counter beam supporting underpurlins & hanging beam AS 4055 Classification C1, C2 & C3 (Cont'd)

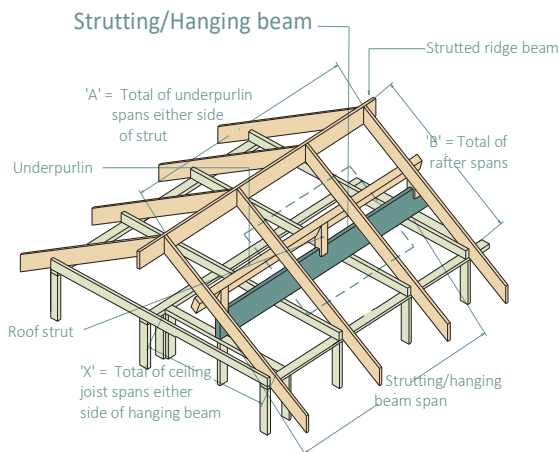
Effective beam spacing (mm)		1800						3600					
Roof area supported (m ²)		2	4	6	8	10	12	2	4	6	8	10	12
Member size (DxB (mm))	Roof mass (kg/m ²)	Maximum recommended Strutting/Counter beam span (mm)											
120x42	40	2000	1000	NS	NS	NS	NS	2000	1000	NS	NS	NS	NS
	90	1700	1000	NS	NS	NS	NS	1600	1000	NS	NS	NS	NS
140x42	40	2700	1300	NS	NS	NS	NS	2400	1400	NS	NS	NS	NS
	90	2200	1400	NS	NS	NS	NS	2000	1400	NS	NS	NS	NS
190x42	40	3800	2600	1700	1200	1000	NS	3400	2700	1700	1200	1000	NS
	90	3300	2500	1700	1300	1000	NS	3000	2400	1700	1300	1000	NS
240x42	40	4600	4100	2700	2000	1600	1300	4200	3900	2800	2000	1600	1300
	90	4100	3500	2800	2100	1700	1400	3900	3300	2700	2100	1700	1400
290x42	40	5400	4900	4100	3000	2400	2000	4900	4500	4200	3000	2400	2000
	90	4900	4200	3800	3000	2500	2000	4500	4000	3700	3000	2400	2000
140x65	40	3200	2100	1400	1000	NS	NS	2800	2200	1400	1000	NS	NS
	90	2600	2000	1400	1100	NS	NS	2400	1900	1400	1100	NS	NS
190x65	40	4300	3800	2700	2000	1500	1300	3900	3600	2700	2000	1600	1300
	90	3800	3100	2700	2000	1600	1400	3600	3000	2600	2000	1600	1300
240x65	40	5200	4700	4300	3200	2500	2100	4700	4300	4100	3300	2600	2100
	90	4700	4100	3700	3200	2600	2200	4300	3900	3500	3200	2600	2200
290x65	40	6000	5500	5100	4700	3800	3100	5400	5100	4800	4600	3800	3100
	90	5500	4800	4400	4000	3800	3200	5100	4600	4200	3900	3700	3100
330x65	40	6600	6100	5700	5400	4900	4000	5900	5600	5300	5100	4900	4100
	90	6100	5400	4900	4600	4300	4100	5600	5100	4700	4400	4200	4000
240x80	40	5400	5000	4600	4000	3100	2600	4900	4600	4300	4100	3200	2600
	90	5000	4300	3900	3600	3200	2700	4600	4100	3800	3500	3200	2700
290x80	40	6300	5800	5400	5100	4700	3800	5700	5300	5100	4800	4600	3900
	90	5800	5100	4700	4300	4100	3800	5300	4800	4500	4200	4000	3800
330x80	40	6900	6400	6000	5700	5500	5000	6200	5900	5600	5400	5200	5000
	90	6400	5700	5200	4900	4600	4400	5900	5400	5000	4700	4500	4300

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. Minimum bearing length = 70 mm at end supports
3. The above table was based on a maximum ceiling mass of 20 kg/m²
4. Restraint value for slenderness calculations is 1500 mm
5. Not all sizes of SmartLam GL17S Merbau in this table are stocked in each state. Please check with your supplier before ordering.

Strutting/hanging beam AS 4055 classification N1, N2 & N3

Ceiling mass - 20 kg/m²



Roof area supported = $A/2 \times B/2$ Ceiling load width = $X/2$

EXAMPLE:

wind speed = N3

sheet roof = 20 kg/m²

A = 5000 mm, B = 4200 mm

roof area supported = $(A/2) \times (B/2)$

= $(5000/2) \times (4200/2)$

= 5250000 mm² (convert to m²)

= 5250000/1000000 = 5.25 m²

strutting/hanging beam span = 4200 mm

ceiling joist span ('X') = 4400 mm

ceiling load width = $[X / 2] = 4400/2 = 2200$ mm

Enter column at 3600 mm ceiling load width, 6 m² roof area supported and read down to a span greater than or equal to 4200 mm in the 20 kg/m² row.

ADOPT: SmartLam GL17S Merbau - 240 x 42

Ceiling load width (mm)		1800						3600					
Roof area supported (m ²)		2	4	6	8	10	12	2	4	6	8	10	12
Member size (DxB (mm))	Roof mass (kg/m ²)	Maximum recommended Strutting/hanging beam span (mm)											
120X42	20	2400	2000	1800	1600	1300	1100	2000	1000	1600	1500	1300	1100
	60	1900	1500	1300	1000	NS	NS	1700	1400	1200	1000	NS	NS
140x42	20	2900	2500	2200	2000	1800	1500	2400	2100	2000	1800	1700	1500
	60	2400	1900	1600	1400	1100	NS	2100	1700	1500	1300	1100	NS
190x42	20	3900	3600	3300	3000	2800	2600	3300	3100	2900	2700	2500	2400
	60	3500	2900	2500	2200	2000	1800	3000	2600	2300	2100	1900	1700
240x42	20	4700	4400	4200	3900	3800	3600	4100	3900	3700	3600	3400	3300
	60	4300	3800	3400	3100	2800	2600	3800	3500	3100	2900	2600	2500
290x42	20	5500	5200	4900	4700	4500	4300	4700	4500	4400	4200	4100	4000
	60	5100	4500	4100	3900	3600	3400	4500	4100	3900	3600	3400	3200
140x65	20	3400	3000	2700	2400	2200	2100	2800	2500	2400	2200	2100	1900
	60	2900	2300	2000	1700	1600	1400	2500	2100	1800	1600	1500	1400
190x65	20	4400	4100	3800	3600	3400	3200	3800	3600	3400	3200	3100	2900
	60	4000	3500	3000	2700	2500	2300	3500	3100	2800	2500	2300	2200
240x65	20	5300	5000	4700	4500	4300	4100	4500	4400	4200	4100	3900	3800
	60	4900	4300	4000	3700	3400	3200	4300	4000	3700	3500	3200	3000
290x65	20	6100	5800	5500	5300	5100	4900	5200	5100	4900	4800	4600	4500
	60	5700	5100	4700	4400	4200	4000	5000	4700	4400	4200	4000	3800
330x65	20	6700	6400	6100	5900	5700	5500	5800	5600	5400	5300	5200	5000
	60	6300	5700	5300	5000	4700	4500	5500	5200	4900	4700	4500	4300
240x80	20	5500	5200	5000	4700	4500	4400	4800	4600	4400	4300	4200	4000
	60	5100	4600	4200	3900	3700	3500	4500	4200	3900	3700	3500	3300
290x80	20	6400	6100	5800	5600	5400	5200	5500	5300	5200	5000	4900	4800
	60	6000	5400	5000	4700	4400	4200	5300	4900	4600	4400	4200	4100
330x80	20	7000	6700	6400	6200	6000	5800	6100	5900	5700	5600	5400	5300
	60	6600	6100	5600	5300	5000	4800	5800	5500	5200	5000	4700	4600

Strutting/hanging beam AS 4055 classification C1, C2 & C3

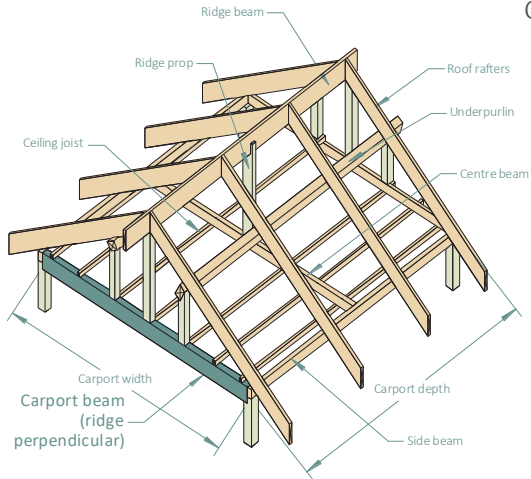
Ceiling load width (mm)		1800						3600					
Roof area supported (m ²)		2	4	6	8	10	12	2	4	6	8	10	12
Member size (DxB (mm))	Roof mass (kg/m ²)	Maximum recommended Strutting/Hanging beam span (mm)											
120X42	20	2100	1300	NS	NS	NS	NS	1400	1200	NS	NS	NS	NS
	60	1900	1100	NS	NS	NS	NS	1500	1200	NS	NS	NS	NS
140x42	20	2400	1700	1200	NS	NS	NS	1700	1700	1100	NS	NS	NS
	60	2400	1500	NS	NS	NS	NS	1700	1500	NS	NS	NS	NS
190x42	20	3300	3100	2200	1600	NS	NS	2300	2300	2100	1600	NS	NS
	60	3400	2800	1900	1200	NS	NS	2400	2400	1800	1200	NS	NS
240x42	20	4200	4200	3400	2600	2100	1400	2900	3000	3000	2500	2100	1300
	60	4200	3800	3000	2300	1600	1000	3000	3100	2900	2200	1600	1000
290x42	20	5000	5100	4800	3800	3100	2600	3500	3600	3600	3600	3000	2500
	60	5100	4500	4100	3300	2700	2000	3600	3700	3800	3200	2600	1900
140x65	20	3000	2400	1800	1400	1100	NS	2100	2100	1800	1300	1000	NS
	60	2900	2300	1600	1200	NS	NS	2200	2100	1500	1200	NS	NS
190x65	20	4100	3900	3200	2500	2100	1700	2900	2900	3000	2500	2000	1700
	60	4000	3500	2900	2200	1800	1400	2900	3000	2800	2200	1800	1400
240x65	20	5200	5000	4500	3900	3300	2700	3700	3700	3700	3800	3200	2700
	60	4900	4300	4000	3500	2900	2400	3700	3800	3700	3400	2800	2400
290x65	20	6100	5800	5500	5200	4700	4000	4400	4500	4500	4500	4500	3900
	60	5700	5100	4700	4400	4100	3500	4500	4600	4400	4200	4000	3400
330x65	20	6700	6400	6100	5900	5700	5100	5000	5100	5100	5100	5200	4900
	60	6300	5700	5300	5000	4700	4500	5100	5200	4900	4700	4500	4300
240x80	20	5500	5200	5000	4400	3900	3400	4100	4100	4100	4200	3800	3300
	60	5100	4600	4200	3900	3500	2900	4100	4200	3900	3700	3400	2900
290x80	20	6400	6100	5800	5600	5200	4800	4900	5000	5000	5000	4900	4700
	60	6000	5400	5000	4700	4400	4200	5000	4900	4600	4400	4200	4100
330x80	20	7000	6700	6400	6200	6000	5800	5600	5600	5700	5600	5400	5300
	60	6600	6100	5600	5300	5000	4800	5600	5500	5200	5000	4700	4600

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a maximum ceiling mass of 20 kg/m²
3. Minimum bearing length = 70 mm at end supports
4. Restraint value for slenderness calculations is 1500 mm
5. Not all sizes of SmartLam GL 19S in this table are stocked in each state. Please check with your supplier before ordering

Carport beam - Ridge perpendicular

Ceiling mass - 20 kg/m²



EXAMPLE:

wind speed = N3
sheet roof - 20 kg/m²
Carport side depth 5300 mm
Carport beam span 4800 mm

Enter span table at carport depth of 5400 mm, and read down to a span equal to or greater than 4800 mm for a 20 kg/m² roof

ADOPT:

SmartLam GL17S Merbau - 240 x 65

AS 4055 classification N1, N2, N3 and N4

AS 4055 classification C1, C2 and C3

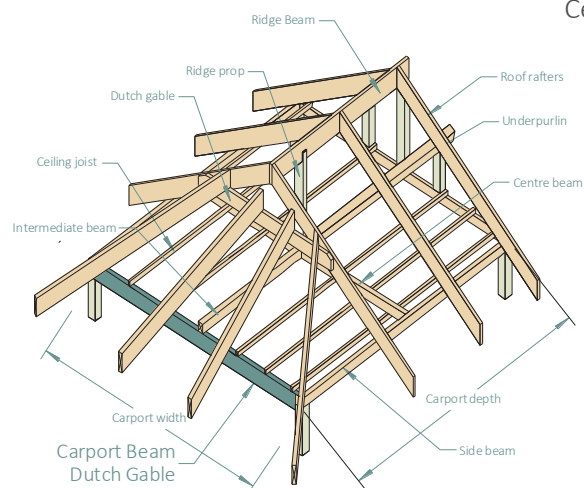
Member size DxB (mm)	Roof mass (kg/m ²)	Carport depth (side)					Member size DxB (mm)	Roof mass (kg/m ²)	Carport depth (side)				
		5200	5400	5600	5800	6000			5200	5400	5600	5800	6000
		Maximum recommended carport beam span (mm)							Maximum recommended carport beam span (mm)				
120x42	20	2900	2850	2800	2800	2750	120x42	20	2450	2400	2350	2300	2250
	70	2250	2200	2200	2150	2150		70	2250	2200	2200	2150	2150
140x42	20	3250	3250	3200	3150	3150	140x42	20	2850	2800	2750	2700	2650
	70	2600	2600	2550	2550	2500		70	2600	2600	2550	2550	2500
190x42	20	4100	4050	4000	4000	3950	190x42	20	3900	3800	3750	3650	3600
	70	3400	3350	3350	3300	3300		70	3400	3350	3350	3300	3300
240x42	20	4850	4800	4750	4750	4700	240x42	20	4850	4800	4750	4650	4550
	70	4050	4000	3950	3950	3900		70	4050	4000	3950	3950	3900
290x42	20	5550	5500	5450	5400	5400	290x42	20	5550	5500	5450	5400	5400
	70	4650	4600	4550	4550	4500		70	4650	4600	4550	4550	4500
140x65	20	3600	3600	3550	3500	3500	140x65	20	3550	3500	3450	3350	3300
	70	3000	3000	2950	2900	2900		70	3000	3000	2950	2900	2900
190x65	20	4500	4450	4450	4400	4350	190x65	20	4500	4450	4450	4400	4350
	70	3750	3750	3700	3700	3650		70	3750	3750	3700	3700	3650
240x65	20	5300	5300	5250	5200	5150	240x65	20	5300	5300	5250	5200	5150
	70	4450	4450	4400	4400	4350		70	4450	4450	4400	4400	4350
290x65	20	6100	6050	6000	5950	5900	290x65	20	6100	6050	6000	5950	5900
	70	5150	5100	5050	5050	5000		70	5150	5100	5050	5050	5000
330x65	20	6650	6650	6550	6550	6500	330x65	20	6650	6650	6550	6550	6500
	70	5650	5600	5550	5550	5450		70	5650	5600	5550	5550	5450
240x80	20	5550	5500	5500	5450	5400	240x80	20	5550	5500	5500	5450	5400
	70	4700	4650	4650	4600	4550		70	4700	4650	4650	4600	4550
290x80	20	6350	6300	6250	6200	6200	290x80	20	6350	6300	6250	6200	6200
	70	5400	5350	5300	5250	5250		70	5400	5350	5300	5250	5250
330x80	20	6950	6900	6850	6800	6750	330x80	20	6950	6900	6850	6800	6750
	70	5900	5900	5800	5800	5750		70	5900	5900	5800	5800	5750

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a maximum ceiling mass of 20 kg/m²
3. Minimum bearing length = 70 mm at end supports
4. Not all sizes of SmartLam GL 19S in this table are stocked in each state. Please check with your supplier before ordering

Carport beam - Hip and Dutch gable over opening

Ceiling mass - 20 kg/m²



EXAMPLE:

wind speed = N3
sheet roof - 20 kg/m²
Carport side depth 5300 mm
Carport beam span 4800 mm

Enter span table at carport depth of 5400 mm, and read down to a span equal to or greater than 4800 mm for a 20 kg/m² roof

ADOPT:

SmartLam GL17S Merbau - 240 x 65

AS 4055 classification N1, N2 & N3

AS 4055 classification C1, C2 and C3

Member size DxB (mm)	Roof mass (kg/m ²)	Carport depth (side)					Member size DxB (mm)	Roof mass (kg/m ²)	Carport depth (side)				
		5200	5400	5600	5800	6000			5200	5400	5600	5800	6000
		Maximum recommended carport beam span (mm)							Maximum recommended carport beam span (mm)				
120x42	20	3000	3000	2900	200	2900	120x42	20	2800	2800	2700	2700	2600
	70	2500	2400	2400	2400	2400		70	2500	2400	2400	2400	2400
140x42	20	3400	3300	3300	3300	3300	140x42	20	3300	3300	3200	3100	3100
	70	2900	2800	2800	2800	2800		70	2900	2800	2800	2800	2800
190x42	20	4200	4200	4200	4100	4100	190x42	20	4200	4200	4200	4100	4100
	70	3700	3600	3600	3600	3500		70	3700	3600	3600	3600	3500
240x42	20	5000	5000	4900	4900	4900	240x42	20	5000	5000	4900	4900	4900
	70	4400	4300	4300	4200	4200		70	4400	4300	4300	4200	4200
290x42	20	5700	5700	5700	5600	5600	290x42	20	5700	5700	5700	5600	5600
	70	5000	5000	4900	4900	4800		70	5000	5000	4900	4900	4800
140x65	20	3700	3700	3700	3600	3600	140x65	20	3700	3700	3700	3600	3600
	70	3200	3200	3200	3100	3100		70	3200	3200	3200	3100	3100
190x65	20	4700	4600	4600	4500	4500	190x65	20	4700	4600	4600	4500	4500
	70	4100	4000	4000	4000	3900		70	4100	4000	4000	4000	3900
240x65	20	5500	5500	5400	5400	5300	240x65	20	5500	5500	5400	5400	5300
	70	4800	4800	4700	4700	4700		70	4800	4800	4700	4700	4700
290x65	20	6300	6200	6200	6100	6100	290x65	20	6300	6200	6200	6100	6100
	70	5500	5500	5400	5400	5400		70	5500	5500	5400	5400	5400
330x65	20	6900	6800	6800	6700	6700	330x65	20	6900	6800	6800	6700	6700
	70	6100	6000	6000	5900	5900		70	6100	6000	6000	5900	5900
240x80	20	5700	5700	5600	5600	5600	240x80	20	5700	5700	5600	5600	5600
	70	5000	5000	5000	4900	4900		70	5000	5000	5000	4900	4900
290x80	20	6500	6500	6400	6400	6400	290x80	20	6500	6500	6400	6400	6400
	70	5800	5700	5700	5600	5600		70	5800	5700	5700	5600	5600
330x80	20	7100	7100	7000	7000	7000	330x80	20	7100	7100	7000	7000	7000
	70	6300	6300	6200	6200	6200		70	6300	6300	6200	6200	6200

NOTES:

1. D = member depth, B = member breadth, NS = not suitable.
2. The above table was based on a maximum ceiling mass of 20 kg/m²
3. Minimum bearing length = 70 mm at end supports
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SmartFrame Warranty

All SmartFrame Engineered Wood Products (EWP) are covered by our SmartFrame warranty against material and workmanship defects and are guaranteed to perform as specified when stored, installed, and finished in accordance with SmartFrame installation instructions.



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