BEAM 16

IBUILT™ Engineered Wood Products

DESIGN GUIDE

July 2025
Beam 16

HYNE TIMBER

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IBuilt provides a complete design and supply midfloor system 16

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SCOPE OF THIS DOCUMENT

All technical information and span tables in this guide are in accordance with the product specific design properties. This data may be used for specific engineering design in applications outside the scope of this document. Please refer to IBuilt for the 'Engineering Data'.

The information in this design guide has been checked and verified, however, it should only be used by designers who are suitably qualified.

IBuilt accepts no liability or responsibility if the information contained in this document is incorrectly interpreted, inappropriately applied, or used in a manner other than explicitly set out in this design guide.

Note: Other manufacturers' products may have different properties and therefore cannot be substituted or designed using information contained in this document.

Beam 16, a high-performance structural beam that's engineered to handle long spans and critical loads. As IBuilt's strongest pine beam, it has undergone rigorous quality testing and proudly boasts 'S' Mark certification, fully compliant with AS/NZS 1328.1:1998 standards.

Scope and limitations of use

For scope and limitations refer to Beam 16 Pass

https://nzwoodproducts.co.nz/products/details/beam-16/44/

SCOPE OF THIS DOCUMENT CONT.

Design

This design guide offers information for designing and installing IBuilt's Beam 16 as structural members in residential buildings designed within the scope of NZS 3604:2011.

For spans with floor and roof loads other than those noted in this guide please refer to 'Hyne Design' free online design software which can be accessed from IBuilt's website, www.ibuilt.co.nz. Alternatively contact the technical team on 0800 022 352.

The use of this guide is intended for suitably qualified designers to be able to select sizes and to provide installation information for common structural residential applications.

Compliance with New Zealand Building Code

B1 Structure:

The span tables and details contained in this document have been developed primarily for domestic/ residential applications.

This guide has been prepared and designed within the requirements of the following standards:

1. NZS3604:2011 'Timber Framed Buildings'
2. NZS3603:1993 'Timber Structures Standard'
3. AS/NZS1720.1:2022 'Timber Structures - Design Methods'

Loading data is taken from AS/NZS1170:2002 'Structural Design Actions' to satisfy the requirements of Section B1 of the New Zealand Building Code.

The requirements set out in the New Zealand Building Code will be achieved when Beam 16 is installed in accordance with this design guide.

B2 Durability:

Beam 16 is available treated to H3.1 (LOSP Azole) so it is suitable for use in all internal structural applications.

Buildings must remain weather tight and structural framing members must be protected from internal and external moisture exposure.

Beam 16 is not suitable in weather exposed applications. Light wetting during construction periods will not affect the performance of framing members, components must be left to dry before applying framing loads. Note: Damaged, warped or delaminating engineered timber products should not be installed into a building.

Please contact IBuilt if there are any product quality concerns prior to installation.

Hyne Timber

Hyne Timber is one of Australia's largest producers of structural timber products, a leader in preservative treatment and an iconic supplier to the construction industry for over 140 years.

Hyne Timber produce a range of glue-laminated timber products (GLT). GLT is produced by finger jointing and gluing shorter and small cross section timber together to make a larger cross section final product.

All Hyne glue-laminated products are produced at the Maryborough Glulam plant in Brisbane and are manufactured in accordance with AS/NZS 1328.1:1998.

Chain of Custody

Sustainability is integral to good design – Beam 16 holds PEFC (Programme for the Endorsement of Forest Certification) accreditation (PEFC/40-31-20), all timber feedstock is sourced from responsibly managed pine plantations.

Certification by S Mark

To provide customers with another level of assurance, Hyne Timber's Beam 16 has been independently certified by Bureau Veritas, a JAS-ANZ accredited third-party Certification Body, under their `S' Mark Product Certification Scheme.

The 'S' Mark is an Australasian stamp of assurance, that confirms Hyne Timber's Beam 16 is audited and certified to the applicable Standard AS/NZS 1328.1:1998, Glue Laminated Structural Timber'.

PROPERTIES

These Mechanical Properties have been determined in limit state form with a comprehensive testing and evaluation program carried out by Hyne Timber. The Modulus of Rigidity is calculated by using G = E/15. Density is a measured property and is determined as average Seasoned Density. However properties such as Bearing Strength (Perpendicular and Parallel to Grain), Shear Strength at Joint Details and Tension Strength (Perpendicular to Grain) are secondary properties dependent on the strength group of the material and are determined in accordance with AS1720.1-2010. Further Joint Group results are based on the material used, and the groups are defined based on species and density as per AS1720.1-2010.

Product	Stress grade	Bending strength (F_b)	Tension strength		Shear strength		Compression strength (F_c)
			Parallel (F_t)	Perpendicular (Ftp)	In beam (F_s)	At joint detail (F_{sj})	
Beam 16	GL16	38MPa	20MPa	0.5MPa	4.2MPa	4.2MPa	33MPa

Note for 130mm wide Beam 16 Bending Strength (Fb) is reduced to 36 MPa.

Product	Bearing strength		Modulus of elasticity (E)	Modulus of rigidity (G)	Strength group	Joint group	Density
	Parallel (Fl)	Perpendicular (Fp)					
Beam 16	30Mpa	10MPa	15,800MPa	980MPa	SD6	JD4	650KG / M^3

Capacity Factor

Values of capacity factor (F) for calculating the design capacity of (F Rd) of structural members. Note that in this context, 'area' should be taken as the plan area.

Structural member in houses for which failure would be UNLIKELY to affect an area greater than 25m2; or SECONDARY member in structures other than houses:

F = 0.95

Structural member in houses for which failure would be LIKELY to affect an area greater than 25m2; or PRIMARY structural member in structures other than houses:

F = 0.85

Primary structural member in structures intended to fulfill an essential service or post disaster function:

F = 0.75

Conductivity K

Where moisture content is below 25%, approximate thermal conductivity k across the grain can be calculated with a linear equation of the form:

k = Gx (B + Cx) + A

Where Gx is specific gravity based on oven dry mass and volume at moisture content x (%) and A, B, and C are constants.

For Gx > 0.3, temperatures around 24°C and x < 25% MC, the values of the constants are as follows:

A = 0.01864
B = 0.1941
C = 0.004064 (k in W m-1 K-1)

Gx = 0.65

PROPERTIES CONT.

Camber

Hyne Timber glue laminated (glulam) beams with a “C” designates a vertical camber radius of 600m.

Alignment tolerance of both straight and cambered beams shall be no more than 1mm per metre of beam length. Cambered beams are generally supplied with a marking stamped on the top edge of the beam. Unless specifically requested (such as for large cantilevers), cambered beams should not be installed with the camber arch facing downwards.

Beam length (m)	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4
Camber (mm)	1.2	1.5	1.9	2.3	2.7	3.2	3.7	4.2	4.8	5.4	6.1

Beam length (m)	5.7	6.0	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7
Camber (mm)	6.8	7.5	8.3	9.1	9.9	10.8	11.7	12.7	13.7	14.7	15.8

Beam length (m)	9.0	9.3	9.6	9.9	10.2	10.5	10.8	11.1	11.4	11.7	12.0
Camber (mm)	16.9	19.0	19.2	20.4	21.7	23.0	24.3	25.7	27.1	28.5	30.0

SPECIFICATION

Building designers

Beam 16 is now featured in the current versions of both Mitek Sapphire and Pryda Frame and Truss design suites, making specification simple and efficient for frame detailers.

For architects and designers, the tables in this guide provide a simple selection tool when beams are required that are outside the scope of NZS3604.

Hyne Design

When spans or floor loadings exceed those that are covered in this guide, the Hyne Design online software platform can used. Hyne Design is a powerful design program that can be used for the specific design of residential and commercial structural members. These include lintels, roof beams, floor beams, rafters, joists as well as load bearing members and point loaded beams.

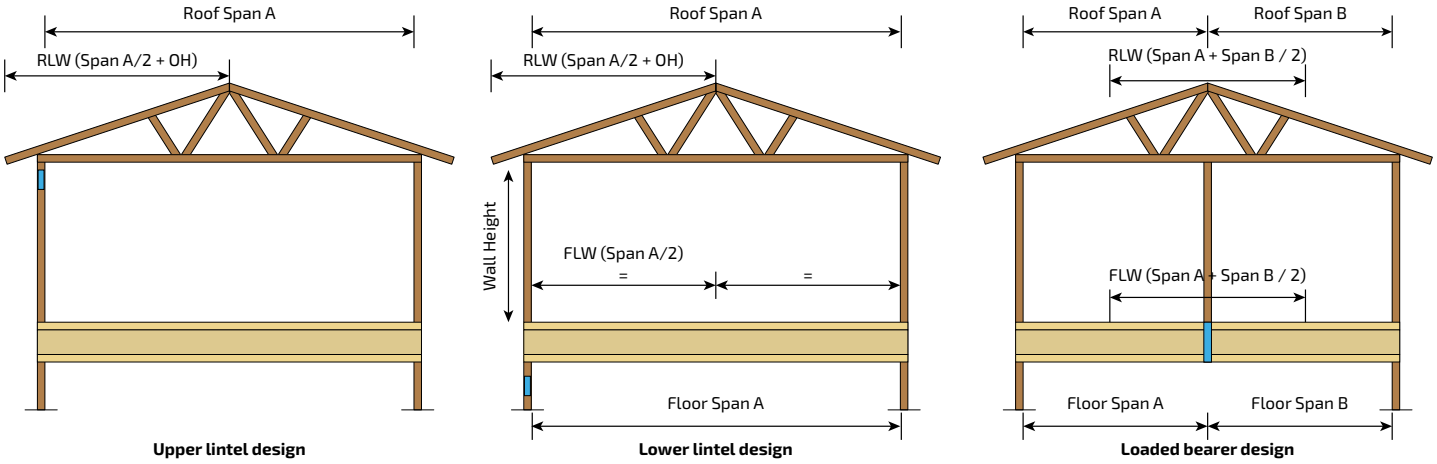
Hyne Design includes IBuilt's full range of engineered timber products which includes Beam 16 Glulam, Nelson Pine LVL11 and LVL13, JJ-IJoists and also SG8 timber for applications with smaller spans and loads.

hyne design

DEFINING LOAD WIDTHS

The terms 'Load Width', with respect to Roof Load Width (RLW) and Floor Load Width (FLW) are the same in principle to the 'Loaded Dimension' terminology used in NZS 3604:2011 Timber-framed buildings.

Defining Load Width (RLW and FLR)



General design information

The product loadings below are taken from Hyne Design software and are indicative of typical building products used in residential construction. Unless otherwise stated, the below masses have been used to create the span tables in this guide. For loads or products not listed please refer to the Hyne Design online software or contact IBuilt for assistance.

Load	Cladding type	Mass
Light roof	Long run iron, asphalt shingles or membranes + ceiling	32 kg/m2
Heavy roof	Concrete tiles on timber battens + ceiling	72 kg/m2
Light floor	Plywood or Strandfloor flooring + ceiling	42 kg/m2
Heavy floor	Ceramic floor tiles + underlay + ceiling	87 kg/m2
Light wall	Weatherboards or sheet cladding (timber/FC)	30 kg/m2

Design loads used in this guide:

Roof beams — Deflection Limits: Dead Load = Span/300 or 20mm

Lintels — Deflection Limits: Dead Load = Span/300 or 10mm

Floor beams: — Deflection Limits: Dead Load = Span/300 or 12mm, LL = Span/360 or 9mm

Span tables that have a floor loading applied use a live load of 1.5kPa/1.8kN for standard domestic housing. For heavier or commercial floor loads please refer to Hyne Design or contact the IBuilt technical team for design assistance.

Snow loads have not been taken into account in the preparation of these Span tables. For member designs that require snow loading, refer to the Hyne Design online tool or consult a structural engineer. Alternatively contact the IBuilt technical team for further advise.

The spans listed offer the maximum span that can be achieved for the loading parameters outlined in each table. However, to ensure members perform to expectations it is recommended that spans are restricted to 80% of the maximum length listed in the tables. All spans listed in these tables are based on single spans only.

BEAM
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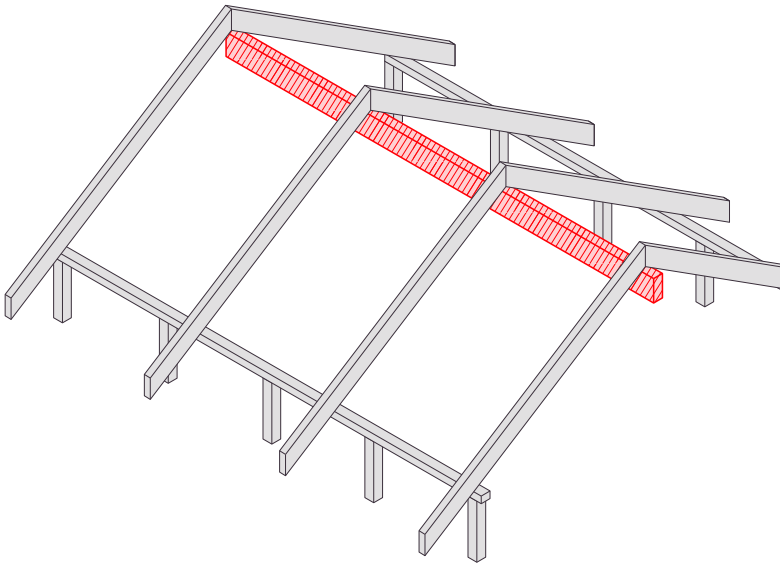

SPAN TABLES

Roof beams supporting light roof

Design parameters

Wind Zone: Up to and including Very High
Roof Pitch: Up to 35 deg
Roof Mass: 32kg/m2 (long run iron + 10mm plasterboard ceiling)

Beam 16 size	Roof load with (m)																	
	2.4			3.0			3.6			4.2			4.8			5.4		
	Roof pitch (degrees)																	
	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°
200x88	5.7	5.7	5.7	5.3	5.3	5.2	5.0	5.0	4.8	4.7	4.7	4.5	4.5	4.4	4.3	4.3	4.2	4.1
240x88	6.9	6.9	6.7	6.4	6.4	6.2	6.0	6.0	5.9	5.7	5.7	5.5	5.4	5.4	5.2	5.2	5.1	4.9
300x88	8.5	8.4	8.1	7.9	7.8	7.6	7.5	7.3	7.1	7.1	7.0	6.8	6.8	6.7	6.5	6.5	6.4	6.2
360x88	10.1	9.9	9.6	9.4	9.2	9.0	8.8	8.7	8.4	8.4	8.2	8.0	8.0	7.9	7.6	7.7	7.5	7.3
400x88	11.1	11.0	10.6	10.4	10.2	9.9	9.8	9.6	9.3	9.2	9.1	8.8	8.8	8.7	8.4	8.4	8.3	8.0

All members must have a minimum 45mm bearing at the 2 supports.

Roof beams supporting heavy roof

Design parameters

Wind Zone: Up to and including Very High
Roof Pitch: Up to 35 deg
Roof Mass: 72kg/m2 (Concrete tiles + 10mm plasterboard ceiling)

Beam 16 size	Roof load with (m)																	
	2.4			3.0			3.6			4.2			4.8			5.4		
	Roof pitch (degrees)																	
	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°
200x88	4.7	4.6	4.4	4.3	4.2	4.1	4.0	3.9	3.8	3.8	3.7	3.6	3.6	3.5	3.4	3.4	3.3	3.2
240x88	5.7	5.6	5.4	5.2	5.1	4.9	4.9	4.8	4.6	4.6	4.5	4.6	4.4	4.3	4.1	4.2	4.1	3.9
300x88	7.0	6.8	6.6	6.5	6.4	6.2	6.2	6.0	5.9	5.9	5.7	5.5	5.6	5.4	5.2	5.3	5.2	5.0
360x88	8.2	8.0	7.8	7.6	7.5	7.3	7.2	7.1	6.9	6.9	6.8	6.6	6.6	6.5	6.3	6.4	6.2	6.1
400x88	9.0	8.9	5.6	8.4	7.3	8.0	8.0	7.8	7.6	7.6	7.4	7.2	7.3	7.1	6.9	7.0	6.9	6.7

All members must have a minimum 45mm bearing at the 2 supports.

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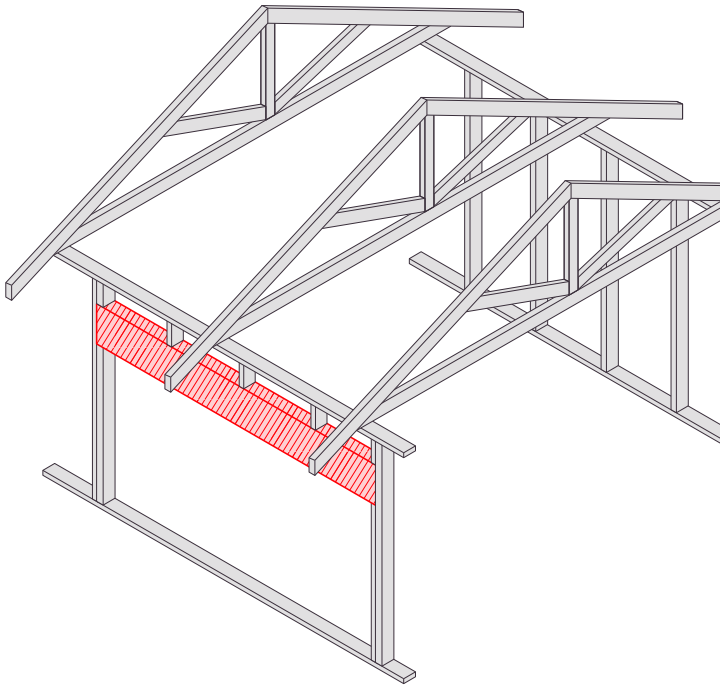
SPAN TABLES



Single or upper storey lintel supporting light roof

Design parameters

Wind Zone: Up to and including Very High
Roof Pitch: Up to 35 deg
Roof Mass: 32kg/m2 (long run iron + 10mm plasterboard ceiling)

Beam 16 size	Roof load with (m)																	
	2.4			3.0			3.6			4.2			4.8			5.4		
	Roof pitch (degrees)																	
	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°
200x88	5.2	4.2	4.9	4.8	3.9	4.6	4.5	3.7	4.3	4.3	3.5	4.1	4.1	3.4	3.9	3.9	3.3	3.8
240x88	6.1	4.8	5.8	5.7	4.6	5.4	5.3	4.3	5.1	5.1	4.1	4.8	4.8	3.9	4.6	4.6	3.8	4.4
300x88	7.6	6.0	7.2	7.0	5.6	6.7	6.6	5.2	6.3	6.2	5.0	5.9	5.9	4.8	5.7	5.7	4.6	5.4
360x88	9.1	7.1	8.6	8.4	6.6	8.0	7.9	6.2	7.5	7.4	5.9	7.1	7.1	5.6	6.7	6.8	5.4	6.4
400x88	10.1	7.9	9.6	9.4	7.3	8.9	8.8	6.9	8.3	8.3	6.5	7.8	7.9	6.2	7.5	7.5	6.0	7.1

All members must have a minimum 45mm bearing at the 2 supports.

Single or upper storey lintel supporting heavy roof

Design parameters

Wind Zone: Up to and including Very High
Roof Pitch: Up to 35 deg
Roof Mass: 72kg/m2 (Concrete tiles + 10mm plasterboard ceiling)

Beam 16 size	Roof load with (m)																	
	2.4			3.0			3.6			4.2			4.8			5.4		
	Roof pitch (degrees)																	
	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°	0-15°	16-25°	26-35°
200x88	4.2	4.2	4.0	4.0	3.9	3.8	3.7	3.7	3.6	3.6	3.5	3.4	3.4	3.4	3.3	3.3	3.3	3.2
240x88	5.0	4.9	4.7	4.6	4.6	4.4	4.4	4.3	4.2	4.2	4.1	4.0	4.0	3.9	3.8	3.9	3.8	3.7
300x88	6.1	6.0	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5.1	5.0	4.9	4.9	4.8	4.6	4.7	4.6	4.5
360x88	7.3	7.1	6.9	6.7	6.6	6.4	6.3	6.2	6.0	6.0	5.9	5.7	5.8	5.6	5.5	5.5	5.4	5.3
400x88	8.1	7.9	7.7	7.5	7.3	7.1	7.0	6.9	6.7	6.7	6.5	6.3	6.4	6.2	6.0	6.1	6.0	5.8

All members must have a minimum 45mm bearing at the 2 supports.

BEAM
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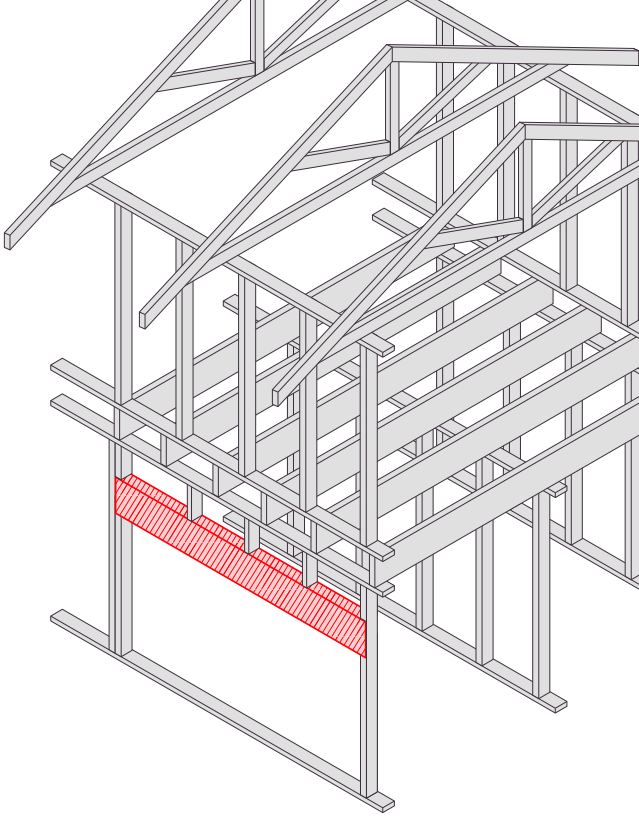

SPAN TABLES

Lower storey lintel supporting light roof, wall and floor

Design parameters

Wind Zone: Up to and including Very High
Roof Pitch: Up to 35 deg
Floor Mass: 42kg/m2 (19-20mm Plywood/Strandfloor + ceiling)
Wall mass: 30kg/m2 (timber weatherboards)
Roof Mass: 32kg/m2 (long run iron + 10ceiling)

Beam 16	Roof load width (m)																							
	2.4m				3.0m				3.6m				4.2m				4.8m				5.4m			
	Floor load width (m)																							
	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0
200x88	3.7	3.5	3.3	3.2	3.6	3.5	3.3	3.2	3.6	3.4	3.3	3.1	3.5	3.3	3.2	3.1	3.4	3.3	3.2	3.1	3.3	3.2	3.1	3.0
240x88	4.3	4.0	3.8	3.7	4.2	4.0	3.8	3.6	4.1	3.9	3.7	3.6	4.0	3.9	3.7	3.6	4.0	3.8	3.7	3.5	3.9	3.7	3.6	3.5
300x88	5.0	4.8	4.5	4.4	4.9	4.7	4.5	4.3	4.9	4.6	4.4	4.3	4.8	4.6	4.4	4.2	4.7	4.5	4.3	4.2	4.6	4.4	4.3	4.1
360x88	5.8	5.5	5.2	5.0	5.7	5.4	5.1	4.9	5.6	5.3	5.1	4.9	5.5	5.2	5.0	4.8	5.4	5.1	5.0	4.8	5.3	5.1	4.9	4.7
400x88	6.2	5.9	5.6	5.4	6.1	5.8	5.6	5.4	6.0	5.7	5.5	5.3	5.9	5.6	5.4	5.2	5.8	5.6	5.4	5.2	5.7	5.5	5.3	5.1

All members must have a minimum 45mm bearing at the 2 supports.

Lower storey lintel supporting heavy roof, wall and floor

Design parameters

Wind Zone: Up to and including Very High
Roof Pitch: Up to 35 deg
Floor Mass: 42kg/m2 (19-20mm Plywood/Strandfloor)
Wall mass: 30kg/m2 (timber weatherboards)
Roof Mass: 72kg/m2 (Concrete tiles + 10mm plasterboard ceiling)

Beam 16	Roof load width (m)																							
	2.4m				3.0m				3.6m				4.2m				4.8m				5.4m			
	Floor load width (m)																							
	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0
200x88	3.4	3.3	3.2	3.1	3.3	3.2	3.1	3.0	3.2	3.1	3.0	2.9	3.1	3.0	2.9	2.8	3.0	2.9	2.8	2.8	2.9	2.8	2.8	2.7
240x88	4.0	3.8	3.7	3.5	3.8	3.7	3.6	3.5	3.7	3.6	3.5	3.4	3.6	3.5	3.4	3.3	3.5	3.4	3.3	3.3	3.4	3.3	3.3	3.2
300x88	4.7	4.5	4.3	4.2	4.6	4.4	4.2	4.1	4.5	4.3	4.2	4.0	4.3	4.2	4.1	4.0	4.2	4.1	4.0	3.9	4.1	4.0	3.9	3.8
360x88	5.4	5.2	5.0	4.8	5.2	5.0	4.9	4.7	5.1	4.9	4.8	4.6	5.0	4.8	4.7	4.6	4.9	4.7	4.6	4.5	4.8	4.6	4.5	4.4
400x88	5.8	5.6	5.4	5.2	5.7	5.5	5.3	5.1	5.5	5.3	5.2	5.0	5.4	5.2	5.1	4.9	5.3	5.1	5.0	4.9	5.2	5.0	4.9	4.8

All members must have a minimum 45mm bearing at the 2 supports.

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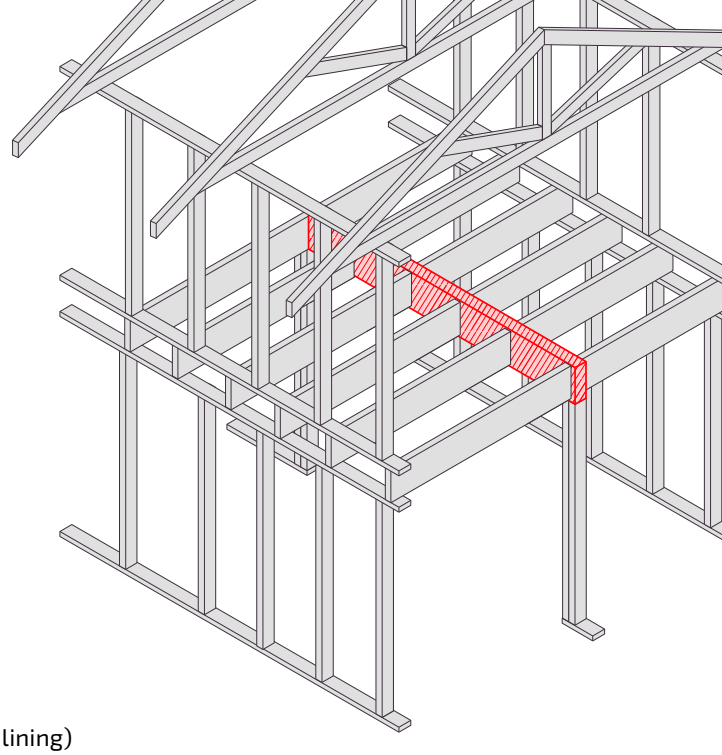


SPAN TABLES

Floor bearer supporting light floor load

Design parameters

Floor Mass: 42kg/m2 (19-20mm Plywood/Strandfloor + ceiling lining)

Beam 16 size	Floor load width (m)								
	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0
200x88	4.3	3.9	3.6	3..4	3.2	3.0	2.9	2.8	2.7
240x88	5.0	4.5	4.2	3.9	3.8	3.6	3.5	3.3	3.2
300x88	5.9	5.3	4.9	4.7	4.4	4.3	4.1	4.0	3.9*
360x88	6.7	6.1	5.7	5.3	5.1	4.9	4.7	4.6	4.5
400x88	7.3	6.6	6.1	5.8	5.5	5.3	5.1	5.0	4.9

**Denotes member must have a minimum 90mm bearing at the 2 supports. All other members min bearing 45mm.*

Floor bearer supporting heavy floor load

Design parameters

Floor Mass: 87kg/m2 (19-20mm Plywood/Strandfloor + Floor tiles & underlay)

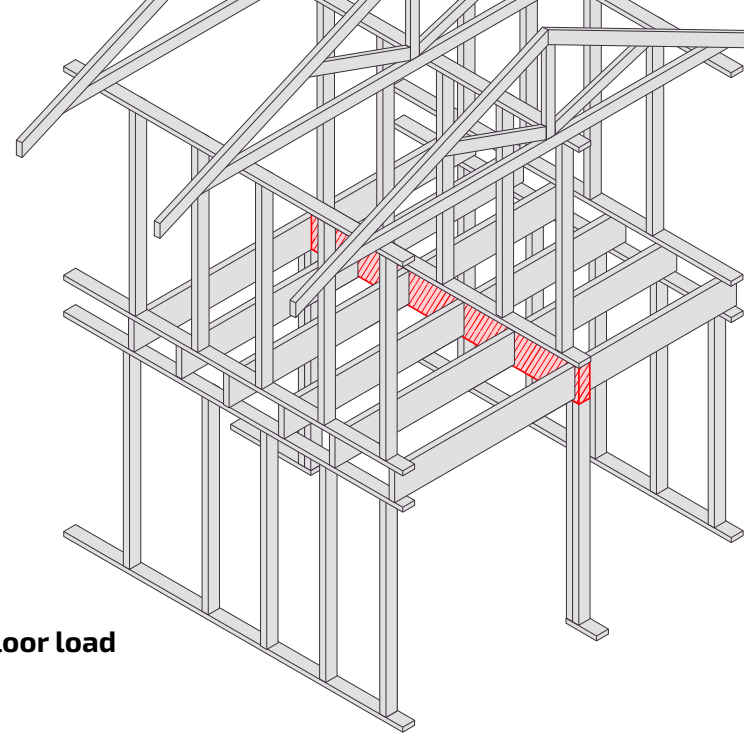
Beam 16 size	Floor load width (m)								
	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0
200x88	4.3	3.9	3.6	3.4	3.2	3.0	2.8	2.6	2.5
240x88	4.9	4.5	4.1	3.9	3.7	3.6	3.4	3.2	3.0*
300x88	5.8	5.3	4.9	4.6	4.4	4.2	4.1*	4.0*	3.8*
360x88	6.7	6.0	5.6	5.3	5.1	4.9	4.7*	4.6*	4.4*
400x88	7.2	6.5	6.1	5.8	5.5	5.3	5.1*	4.9*	4.8*

** Denotes member must have a minimum 90mm bearing at the 2 supports. All other members min bearing 45mm.*

Dead Load floor mass is assumed to consist of 19 or 21mm Plywood or 20mm Strand floor linings. For additional floor lining types (I.e. Fibre Cement underlays or Aerated Concrete systems please refer to the Hyne Design Software or contact IBuilt for more information).

The spans listed offer the maximum span that can be achieved for the loading parameters outlined in each table. However, to ensure members perform to expectations it is recommended that spans are restricted to 80% of the maximum length listed in the tables.

BEAM
16



SPAN TABLES

Floor Bearer supporting light roof, wall and light floor load

Design parameters

Wind Zone: Up to and including Very High
Roof Pitch: Up to 35 deg
Roof Mass: 32kg/m2 (long run iron + 10mm plasterboard ceiling)
Wall mass: 30kg/m2 (timber weatherboards)
Floor Mass: 42kg/m2 (19-20mm Plywood/Strandfloor)

Beam 16	Roof load width (m)																							
	2.4m				3.0m				3.6m				4.2m				4.8m				5.4m			
	Floor load width (m)																							
	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0
200x88	3.9	3.7	3.5	3.3	3.8	3.6	3.4	3.3	3.7	3.5	3.4	3.2	3.6	3.4	3.3	3.1	3.5	3.4	3.2	3.1	3.4	3.3	3.1	3.0
240x88	4.5	4.2	4.0	3.9	4.4	4.2	4.0	3.8	4.3	4.1	3.9	3.8	4.2	4.0	3.9	3.7	4.1	4.0	3.8	3.7	4.0	3.9	3.8	3.6
300x88	5.3	5.0	4.8	4.6	5.2	4.9	4.7	4.5	5.1	4.8	4.7	4.5	5.0	4.8	4.6	4.4	4.9	4.7	4.5	4.4	4.8	4.6	4.5	4.3
360x88	6.0	5.7	5.5	5.2	5.9	5.6	5.4	5.2	5.8	5.5	5.4	5.1	5.7	5.5	5.3	5.1	5.6	5.4	5.2	5.0	5.5	5.3	5.1	5.0
400x88	6.5	6.2	5.9	5.7	6.4	6.1	5.8	5.6	6.3	6.0	5.8	5.5	6.2	5.9	5.7	5.5	6.1	5.8	5.6	5.4	6.0	5.7	5.5	5.4

All members must have a minimum 45mm bearing at the 2 supports.

Floor bearer supporting heavy roof, wall and light floor load

Design parameters

Wind Zone: Up to and including Very High
Roof Pitch: Up to 35 deg
Roof Mass: 72kg/m2 (Concrete tiles + 10mm plasterboard ceiling)
Wall mass: 30kg/m2 (timber weatherboards)
Floor Mass: 87kg/m2 (19-20mm Plywood/Strandfloor + Floor tiles & underlay)

Beam 16	Roof load width (m)																							
	2.4m				3.0m				3.6m				4.2m				4.8m				5.4m			
	Floor load width (m)																							
	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0	1.2	1.8	2.4	3.0
200x88	3.6	3.4	3.2	3.1	3.4	3.2	3.1	3.0	3.3	3.1	3.0	2.9	3.1	3.0	2.9	2.8	3.0	2.9	2.8	2.8	2.9	2.8	2.8	2.7
240x88	4.1	4.0	3.8	3.7	4.0	3.9	3.7	3.6	3.9	3.7	3.6	3.5	3.8	3.6	3.6	3.4	3.7	3.6	3.4	3.3	3.6	3.5	3.4	3.3
300x88	4.9	4.7	4.5	4.4	4.8	4.6	4.4	4.3	4.8	4.5	4.4	4.2	4.5	4.4	4.3	4.2	4.4	4.3	4.2	4.1	4.3	4.2	4.1	4.0
360x88	5.6	5.4	5.2	5.0	5.5	5.3	5.1	4.9	5.3	5.2	5.0	4.9	5.2	5.4	4.9	4.8	5.1	5.0	4.8	4.7	5.0	4.9	4.7	4.6
400x88	6.1	5.8	5.6	5.4	5.9	5.7	5.5	5.3	5.8	5.6	5.4	5.3	5.7	5.5	5.3	5.2	5.5	5.4	5.2	5.1	5.4	5.3	5.1	5.0

All members must have a minimum 45mm bearing at the 2 supports.

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SUBSTITUTIONS

Beam 16 is a readily available structural beam which can be used in lieu of other beam products if required. The below comparison table offers a guide for substitutions against other regularly specified beam products.

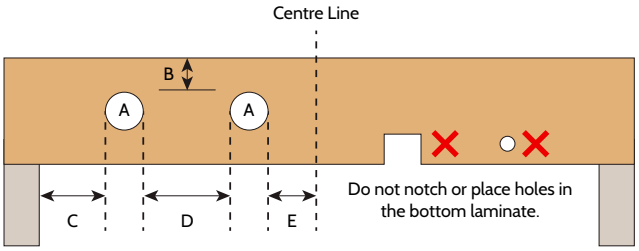
Engineering analysis of typical residential applications shows that a Beam 16 Glulam has less long-term deflection when under the same loading criteria compared to those in the table below.

When substituting Beam 16 Glulam in lieu of other products, the section size must be the same as the original specified beam.

In some cases, a reduction in beam size can be achieved by utilising Beam 16 in lieu of lower grades beams such as GL8-12 and LVL13. This should be confirmed by the engineer or designer. Alternatively contact the IBuilt technical team for advice.

Beams to be substituted			Beam 16
GL8-GL12	LVL13	HyOne	
200 x 90	2/200 x 45		200 x 88
240 x 90	2/240 x 45	240 x 90	240 x 88
300 x 90	2/300 x 45	300 x 90	300 x 88
360 x 90	2/360 x 45	360 x 90	360 x 88
400 x 90	2/400 x 45	400 x 90	400 x 88
460 x 90	2/460 x 45	460 x 90	460 x 88

INSTALLATION



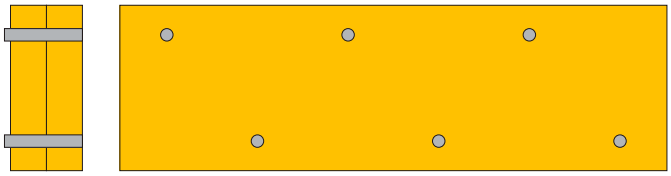
Service penetration allowances

The following table outlines the requirements and clearances for holes drilled through Beam 16.

	A	B	C	D	E	F
Beam 16 depth	Maximum hole diameter (mm)	Top and bottom edge distance (mm)	Minimum end distance from support face (mm)	Minimum hole spacing	Minimum distance from centre of span	Maximum number of holes in span
200	25	30	70	5 X diameter	None	3 Holes / halfspan
	40	55	290	5 X diameter	None	3 Holes / halfspan
	55	55	880	5 X diameter	440	2 Holes / halfspan
	75	55	1380	1300mm	650	1 Hole / halfspan
240	25	30	70	5 X diameter	None	3 Holes / halfspan
	50	70	360	5 X diameter	None	3 Holes / halfspan
	70	70	880	5 X diameter	520	2 Holes / halfspan
	95	70	1380	1600mm	800	1 Hole / halfspan
300 or larger	25	30	70	5 X diameter	None	3 Holes / halfspan
	60	85	440	5 X diameter	None	3 Holes / halfspan
	85	85	1200	5 X diameter	600	2 Holes / halfspan
	115	85	1720	1800mm	900	1 Hole / halfspan

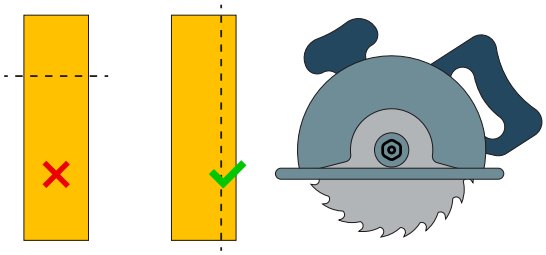
Note: Penetrations are not permitted directly under any concentrated loads

Laminating double members



When laminating 85mm sections together up to 300mm in depth, use minimum M12 bolts at 450mm centres in a staggered pattern or 14g bugle head screws. Beams must be precisely aligned to ensure loads are transferred to both beams. When doubled beams support another beam from the side, the bracket fixings must extend into the second member. Beams greater than 300mm required specific fixing design by an engineer.

Cross cutting Vs Rip sawing of Beam 16



Due to the layup order of laminates, cross cutting glulam to reduce beam depth is not permitted. Laminates of higher grade are located at the top and bottom of the beam to resist compression (top) and tension (bottom) forces. Removing the top or bottom laminates compromises the beams strength.

Rip sawing however to reduce a beams thickness retains the structural properties of the beam, however performance may be affected. Altering a beams width must be checked by an engineer.

Cantilever applications

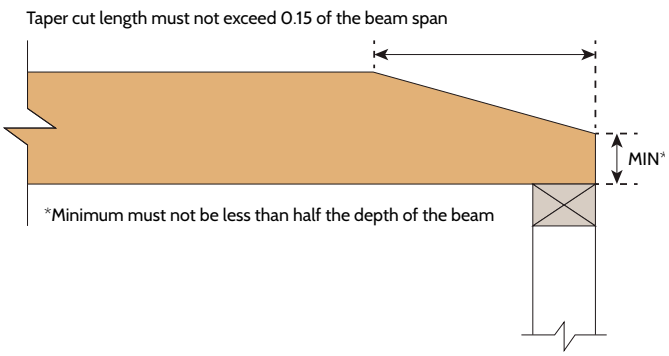
Due to the precamber of Beam 16, larger overhangs can lead to alignment concerns due to the downward curve of the cantilever. It is possible to install Beam 16 upside down to take advantage of the upward curve, however these applications should be specifically designed by an engineer.

Taper cuts

Roof beams can be taper cut to allow installation under the roof on outer walls, providing the below parameters are maintained

1. Length of taper cut does not exceed 0.15 of beam span.
2. Minimum depth heel depth = 0.5 of beam depth.

Taper cuts outside of these guidelines can be reinforced with nail plates, however must be specifically designed by an engineer.



ON SITE HANDLING AND PROTECTION REQUIREMENTS

Introduction

The following guidelines are for the safe handling and storage of Hyne Timber products on-site.

Personal safety

Refer to Hyne Timber Safety Data Sheets for personal safety for treated and untreated timber. Safety Data Sheet (SDS) contains information on the potential hazards (health, fire, reactivity and environmental) of a product or material, and how to work safely with it.

Handling

1. Hyne Timber Products shall not be dropped, jarred or dragged. Care shall be taken to prevent damage to the finished surfaces when handling, as such treatment may cause damage to the surfaces, edges and/or possibly structural integrity of the Hyne Timber Products.
2. When Lifting or securing Hyne Timber Products the use of certified, undamaged and clean synthetic fibre slings or 'soft' slings should always be used. Chains and wire slings shall not be used. Slings should be protected from sharp bends by corner pads or the like. Sling use must be performed by an appropriate qualified operator and in conjunction with Safe Work Method Statements (SWMS).
3. Hyne Timber Products shall be lifted on edge (wide face vertical) wherever possible and for long members, to eliminate the possibility of over-stressing the member, spreader bars of suitable length should be used.

On-site storage

1. Hyne Timber Product shall be supported on bearers (gluts) 150 mm from well drained and even ground. Bearers (gluts) should be spaced 600 mm apart for framing timbers and 450 mm apart for flooring, cladding, linings and other timber mouldings.
2. Hyne Timber Product shall be maintained in a dry condition on site and protected from direct exposure to the weather. If sheltered storage is not available, the members shall be covered with suitable impermeable covering or tarpaulins. The cover shall be placed to preclude moisture whilst maintaining good air circulation in and around the timber.
3. Packs of Hyne Timber Products supplied wrapped, shall be placed on the bearers (gluts) with the wrapping material edge or seal, face down. Refer to Diagram 1. Packs should be kept at least 450 mm apart.
4. If wrapping is damaged, make good with tape or remove and protect with impermeable covering or tarpaulins. Refer to Diagram 2.

Protection (fixed in position)

Once installed beams should be protected from extended periods of wetting with an impermeable covering.

DIAGRAM #1:

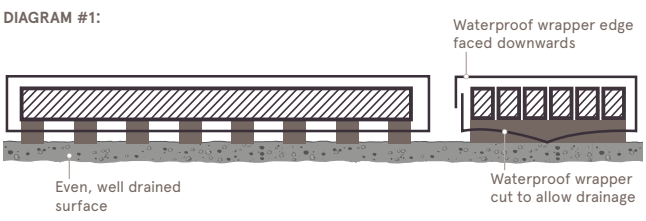
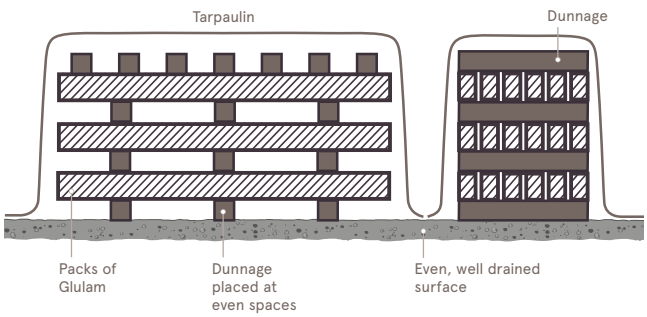


DIAGRAM #2:



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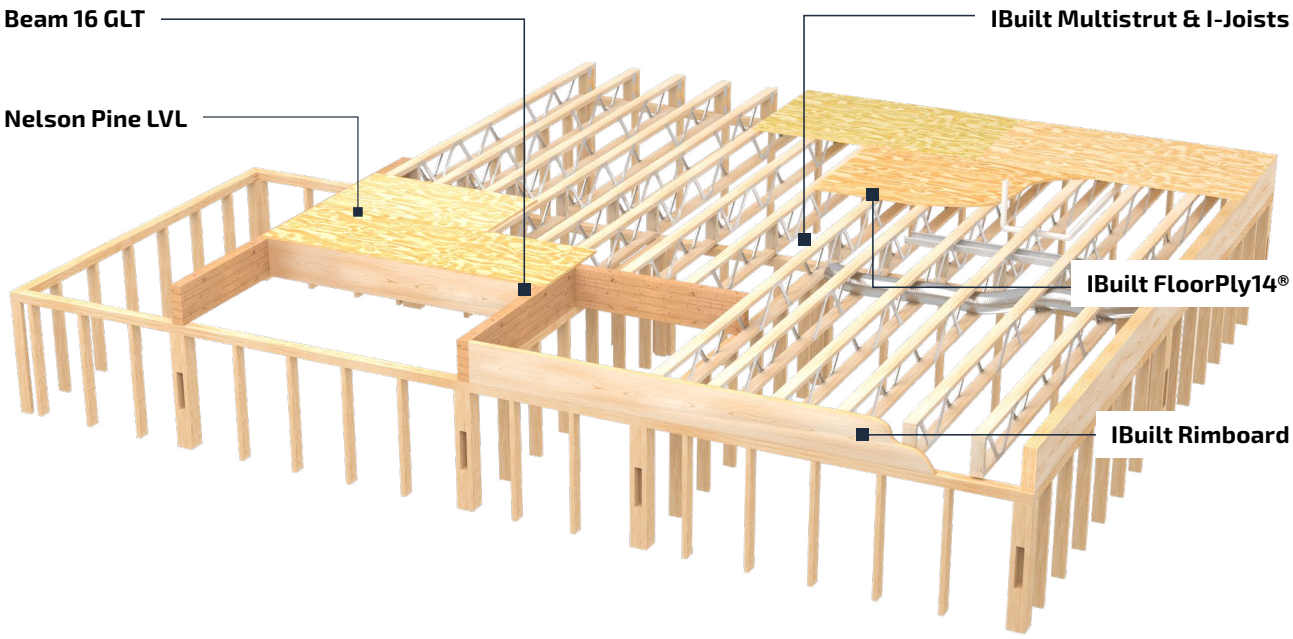

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For technical info scan the QR code.

149 Kerrs Rd, Wiri, Auckland

PO Box 76412, Manukau,
Auckland 2241, New Zealand

Phone: +64-9-268 6540
0800-022-352

sales@ibuilt.co.nz

www.ibuilt.co.nz

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