Job Number:	BWhite
Issue:	BWhite Consulting Ltd
PRODUCER STATEMENT-PS1-DESIGN	
ISSUED BY: BWhite Consulting Ltd (Design Engineer: Bevan White)	
TO BE SUPPLIED TO: A District Council IN RESPECT OF: Proposed NEW Farm Shed	
AT: xyz	
LEGAL DESCRIPTION	
We have been engaged by <b>Ezequote Pty Ltd</b> to provide <b>Specific Structural Engineering Design</b> services in respect of the requirement Building Code for part only (as specified in the attachment to this statement), of the proposed building work.	ents of Clause(s) <b>B1</b> of the
ALL Part only as specified: Purlins, Rafters, Girts, Poles, Columns, Pole embedment and all connections	
The design has been prepared in accordance with compliance documents to NZ Building Code issued by Ministry of Business, Inno $B1/VM1$ and $B1/VM4$	vation & Employment Clauses
The proposed building work covered by the producer statement is described on <b>Ezequote</b> drawings title <b>abc123</b> and numbered dated specification, and other documents set out in the schedule attached to this statement: <b>Design Featured Report Dated 7/7/2025</b> and respectively.	
On behalf of BWhite Consulting Ltd, and subject to:	
<ol> <li>Site verification of the following design assumptions: an Ultimate foundation bearing pressure of 300 kPa in accordance wit</li> <li>The building has a design life of 50 years and an Importance Level 1</li> <li>Unless specifically noted, compliance of the drawings to Non-Specific codes such as NZS3604 and NZS4229 have not been 6</li> <li>This Certificate does not cover any other building code clause including weather tightness</li> <li>Inspections of the building to be completed by A District Council. As BWhite Consulting Ltd are not undertaking inspection Statement-PS4- Construction Review.</li> <li>This Producer Statement- Design is valid for a building consent issued within 1 year from the date of issue</li> <li>All proprietary products meeting their performance specification requirements</li> </ol>	checked by this practice
I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other document attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the decompetency to do so. I also recommend the follow level of construction monitoring/observation:	•
CM1 CM2 CM3 CM4 CM5 or as per agreement with owner/developer (stated above)	
I, <b>Bevan White</b> am CPEng <b>108276</b> I am Member of Engineering New Zealand and hold the following qualification: <b>BECivil</b> and holds Indemnity Insurance no less than \$200,000	s a current policy of Professional
Signed by Bevan White on behalf of BWhite Consulting Ltd Dated: 7/7/2025	
Email: bwhitecpeng@gmail.com Phone: 0211-979786	
Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total mar from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise(including negl	

This form is to accompany Form 2 of the Building(Forms) Regulations 2004 for the application of a Building Consent

Date: 7/7/2025

BWhite

18B Jules Crescent,

Consulting Ltd

Bell Block New Plymouth 4312

New Zealand File No:

### DESIGN FEATURES SUMMARY FOR PROPOSED NEW FARM SHED XYZ

### Site Specific Loads

Roof Live Load	0.25 KPa	Roof Dead Load	0.25 KPa	Roof Live Point Load	1.1 Kn
Snow Zone	N0	Ground Snow Load	0 KPa	Roof Snow Load	0 KPa
Earthquake Zone	1	Subsoil Category	D	Exposure Zone	В
Importance Level	1	Ultimate wind & EQ ARI	0 Years	Max Height	1 m
Wind Region		Terrain Category		Design Wind Speed	2 m/s
Wind Pressure	0 KPa	Lee Zone	NO	Ultimate Snow ARI	50 Years

#### Timber

Sawn Timber to be graded to the properties of SG6 and SG8 or better as mentioned on plans, with moisture content of 18% or less for dry and 25% or less for wet.

The following standards have been used in the design of this structure

- NZS 3603:1993 Timber Structures Standard
- NZS 3604:2011 Timber Framed Buildings. Standards New Zealand, 2011
- NZS 3404:1997 Steel Structures
- AS/NZS 1170 2003 Structural Design Actions
- AS/NZS 1170.2 2021 Structural Design Actions-Wind Action
- Branz. "Engineering Basis of NZS 3604". April 2013

Yours Faithfully

# **BWhite CONSULTING LTD**

# Bevan White

Director | BE Civil . CMengNZ CPEng

 $Email: bwhitecpeng@gmail.com\,Contact:\,0211\,\,979\,\,786$ 

Date: 7/7/2025

Council: A Council

Consulting Ltd

# Subject: B2 compliance in respect of Proposed shed at xyz

A Council typically requests a Producer Statement/Other means of compliance for Design for Clause B2 of the Building Code-Durability

We are not able to provide a Producer Statement for durability because compliance needs to be shown on material-by-material basis using a variety of compliance methods, and not all materials used have a clear compliance path.

We can confirm that for the structural elements shown in our documentation under Clause B1:

#### Timber

Timber treatment has been selected to meet or exceed the requirements of table 1A of B2/AS1 and NZS3602

#### Steel fixing

Steel fixings are protected against weather as per table 4.1 and 4.2 of NZS3604-2011. Exposure Zone B

Yours Faithfully

BWhite CONSULTING LTD

#### **Bevan Whiite**

Director | BE Civil . CMengNZ CPEng

Email: bwhitecpeng@gmail.com

Contact: 0211 979 786

Note: This letter shall only be relied on by the Building Consent Authority named in Engineering New Zealand/ACE New Zealand Producer Statement PS1(B1) - Design in relation to the Building Work. Liability under this letter accrues to the Design Review Firm only. The total maximum amount of damages payable arising from this letter and all other statements provided to the Building Consent Authority in relation to this Building Work whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000

Job No.:abc123Address:xyzDate:7/7/2025Latitude:0Longitude:0Elevation:2 m

# **General Input**

Roof Live Load	0.25 KPa	Roof Dead Load	0.25 KPa	Roof Live Point Load	1.1 Kn
Snow Zone	N0	Ground Snow Load	0 KPa	Roof Snow Load	0 KPa
Earthquake Zone	1	Subsoil Category	D	Exposure Zone	В
Importance Level	1	Ultimate wind & Earthquake ARI	0 Years	Max Height	1 m
Wind Region		Terrain Category		Design Wind Speed	2 m/s
Wind Pressure	0 KPa	Lee Zone	NO	Ultimate Snow ARI	50 Years
Wind Category	Low	Earthquake ARI	100		

Note: Wind lateral loads are governing over Earthquake loads, So only wind loads are considered in calculations

### **Pressure Coefficients and Pressues**

Shed Type = Mono Enclosed

For roof Cp, i = 2

For roof CP,e from 1 m To 1 m Cpe = 1 pe = 1 KPa pnet = 1 KPa

For roof CP,e from 1 m To 1 m Cpe = 1 pe = 1 KPa pnet = 1 KPa

For wall Windward Cp, i = 1 side Wall Cp, i = 1

For wall Windward and Leeward CP,e from 1 m To 1 m Cpe = 1 pe = 1 KPa pnet = 1 KPa

For side wall CP,e from 1 m To 1 m Cpe = pe = 1 KPa pnet = 1 KPa

Maximum Upward pressure used in roof member Design = 1 KPa

Maximum Downward pressure used in roof member Design = 1 KPa

Maximum Wall pressure used in Design = 1 KPa

Maximum Racking pressure used in Design = 1 KPa

### **Design Summary**

# **Purlin Design**

Purlin Spacing = 1 mm Purlin Span = 1850 mm Try Purlin 150x50 SG8 Dry

Moisture Condition = Dry (Moisture in timber is less than 16% and does not remain in continuous wet condition after installation)

 $K1 \; Short \; term = 1 \qquad K1 \; Medium \; term = 0.8 \qquad K1 \; Long \; term = 0.6 \qquad K4 = 1 \qquad K5 = 1 \qquad K8 \; Downward = 1.00 \\$ 

K8 Upward = 0.95 S1 Downward = 9.63 S1 Upward = 13.62

Shear Capacity of timber = 3 MPa Bending Capacity of timber = 14 MPa NZS3603 Amt 4, table 2.3

# **Capacity Checks**

M <sub>1.35D</sub>	0 Kn-m	Capacity	1.26 Kn-m	Passing Percentage	Infinity %
M1.2D+1.5L 1.2D+Sn 1.2D+WnDn	0.76 Kn-m	Capacity	1.68 Kn-m	Passing Percentage	221.05 %
Mo.9D-WnUp	0 Kn-m	Capacity	-1.99 Kn-m	Passing Percentage	Infinity %

#### Pole Shed App Ver 01 2022 0.00 Kn Capacity 7.24 Kn Passing Percentage **Infinity %** $V_{1.35D}$ **Infinity %** 0.00 Kn Capacity 9.65 Kn Passing Percentage $V_{1.2D+1.5L\ 1.2D+Sn\ 1.2D+WnDn}$ -0.00 Kn Capacity -12.06 Kn Passing Percentage **Infinity %** $V_{0.9D\text{-W}nUp}$

#### **Deflections**

Modulus of Elasticity = 6700 MPa NZS3603 Amt 4, Table 2.3 considering at least 4 members acting together

k2 for Long Term Loads = 2

Deflection under Dead and Live Load = 1.42 mm

Limit by Woolcock et al, 1999 Span/240 = 7.50 mm

Deflection under Dead and Service Wind = 0.00 mm

Limit by Woolcock et al, 1999 Span/100 = 18.00 mm

#### Reactions

Maximum downward = 0.00 kn Maximum upward = -0.00 kn

Number of Blocking = 0 if 0 then no blocking required, if 1 then one midspan blocking required

# Rafter Design Internal

Internal Rafter Load Width = 2000 mm Internal Rafter Span = -150 mm Try Rafter 2x150x50 SG8 Dry

Moisture Condition = Dry (Moisture in timber is less than 16% and does not remain in continuous wet condition after installation)

K1 Short term = 1 K1 Medium term = 0.8 K1 Long term = 0.6 K4 = 1 K5 = 1 K8 Downward = 1.00

K8 Upward = 1.00 S1 Downward = 4.28 S1 Upward = 4.28

Shear Capacity of timber = 3 MPa Bending Capacity of timber = 14 MPa NZS3603 Amt 4, table 2.3

#### Capacity Checks

M1.35D	0.00 Kn-m	Capacity	2.52 Kn-m	Passing Percentage	Infinity %
M1.2D+1.5L 1.2D+Sn 1.2D+WnDn	0.01 Kn-m	Capacity	3.36 Kn-m	Passing Percentage	33600.00 %
$M_{0.9D\text{-W}nUp}$	-0.00 Kn-m	Capacity	-4.2 Kn-m	Passing Percentage	Infinity %
V <sub>1.35D</sub>	-0.05 Kn	Capacity	14.48 Kn	Passing Percentage	-28960.00 %
V1.2D+1.5L 1.2D+Sn 1.2D+WnDn	-0.20 Kn	Capacity	19.3 Kn	Passing Percentage	-9650.00 %
$ m V_{0.9D-WnUp}$	0.12 Kn	Capacity	-24.12 Kn	Passing Percentage	20100.00 %

#### Deflections

Modulus of Elasticity = 5400 MPa NZS3603 Amt 4, Table 2.3

k2 for Long Term Loads = 2

Deflection under Dead and Live Load = 0 mm Limit by Woolcock et al, 1999 Span/240 = 0.00 mm Deflection under Dead and Service Wind = 0 mm Limit by Woolcock et al, 1999 Span/100 = 0.00 mm

#### Reactions

Maximum downward = -0.20 kn Maximum upward = 0.12 kn

Rafter to Pole Connection check

Bolt Size = M12 Number of Bolts =

Calculations as per NZS 3603:1993 Amend 2005 clause 4.4

Joint Group for Rafters = J5 Joint Group for Pole = J5

Minimum Bolt edge, end and spacing for Load perpendicular to grains = 60 mm

Factor of Safety = 0.7

For Perpendicular to grain loading

K11 = 14.9 fpj = 12.9 Mpa for Rafter with effective thickness = 100 mm

For Parallel to grain loading

K11 = 2.0 fcj = 36.1 Mpa for Pole with effective thickness = 100 mm

Capacity under short term loads = 0.00 Kn > 0.12 Kn

### Rafter Design External

External Rafter Load Width = 1000 mm

External Rafter Span = -200 mm

Try Rafter 150x50 SG8 Dry

Moisture Condition = Dry (Moisture in timber is less than 16% and does not remain in continuous wet condition after installation)

K1 Short term = 1 K1 Medium term = 0.8 K1 Long term = 0.6 K4 = 1 K5 = 1 K8 Downward = 1.00

K8 Upward = 1.00 S1 Downward = 9.63 S1 Upward = 9.63

Shear Capacity of timber = 3 MPa Bending Capacity of timber = 14 MPa NZS3603 Amt 4, table 2.3

### **Capacity Checks**

M1.35D	0.00 Kn-m	Capacity	1.26 Kn-m	Passing Percentage	Infinity %
M1.2D+1.5L 1.2D+Sn 1.2D+WnDn	0.01 Kn-m	Capacity	1.68 Kn-m	Passing Percentage	16800.00 %
$M_{0.9D\text{-W}nUp}$	-0.00 Kn-m	Capacity	-2.10 Kn-m	Passing Percentage	Infinity %
V <sub>1.35D</sub>	-0.03 Kn	Capacity	7.24 Kn	Passing Percentage	-24133.33 %
$V_{1.2D+1.5L\ 1.2D+Sn\ 1.2D+WnDn}$	-0.13 Kn	Capacity	9.65 Kn	Passing Percentage	-7423.08 %
$ m V_{0.9D ext{-}WnUp}$	0.08 Kn	Capacity	-12.06 Kn	Passing Percentage	15075.00 %

#### **Deflections**

Modulus of Elasticity = 5400 MPa NZS3603 Amt 4, Table 2.3

k2 for Long Term Loads = 2

Deflection under Dead and Live Load = 0.00 mm

Deflection under Dead and Service Wind = 0.00 mm

Limit by Woolcock et al, 1999 Span/240= 0.00 mm Limit by Woolcock et al, 1999 Span/100 = 0.00 mm

#### Reactions

Maximum downward = -0.13 kn Maximum upward = 0.08 kn

Rafter to Pole Connection check

Bolt Size = M12 Number of Bolts =

Calculations as per NZS 3603:1993 Amend 2005 clause 4.4

Joint Group for Rafters =J5 Joint Group for Pole = J5

Factor of Safety = 0.7

For Perpendicular to grain loading

K11 = 14.9 fpj = 12.9 Mpa for Rafter with effective thickness = 50 mm

For Parallel to grain loading

K11 = 2.0 fcj = 36.1 Mpa for Pole with effective thickness = 100 mm

Eccentric Load check

 $V = phi \times k1 \times k4 \times k5 \times fs \times b \times ds \dots (Eq 4.12) = -9.45 \text{ kn} > 0.08 \text{ Kn}$ 

Single Shear Capacity under short term loads = -0.00 Kn > 0.08 Kn

# **Intermediate Design Front and Back**

Intermediate Spacing = 1000 mm Intermediate Span = 850 mm Try Intermediate 2xSG8 Dry

Moisture Condition = Wet (Moisture in timber is less than 18% and timber does not remain in continuous wet condition after installation)

K1 Short term = 1 K4 = 1 K5 = 1 K8 Downward = NaN

K8 Upward =NaN S1 Downward =NaN S1 Upward =NaN

Shear Capacity of timber = 3 MPa Bending Capacity of timber = 14 MPa NZS3603 Amt 4, table 2.3

### Capacity Checks

$M_{Wind+Snow}$	0.09 Kn-m	Capacity	NaN Kn-m	Passing Percentage	NaN %
$V_{0.9D\text{-W}n\text{Up}}$	0.42 Kn	Capacity	-0 Kn	Passing Percentage	0.00 %

#### Deflections

Modulus of Elasticity = 5400 MPa NZS3603 Amt 4, Table 2.3

Deflection under Snow and Service Wind = NaN mm Limit byWoolcock et al, 1999 Span/100 = 8.50 mm

#### Reactions

Maximum = 0.42 kn

# Girt Design Front and Back

Girt's Spacing = 0 mm Girt's Span = 1000 mm Try Girt SG8 Dry

Moisture Condition = Wet (Moisture in timber is less than 18% and timber does not remain in continuous wet condition after installation)

K1 Short term = 1 K4 = 1 K5 = 1 K8 Downward = NaN

K8 Upward =NaN S1 Downward =NaN S1 Upward =NaN

Shear Capacity of timber = 3 MPa Bending Capacity of timber = 14 MPa NZS3603 Amt 4, table 2.3

### Capacity Checks

$M_{Wind+Snow}$	0.00 Kn-m	Capacity	NaN Kn-m	Passing Percentage	NaN %
V <sub>0.9D-WnUp</sub>	0.00 Kn	Capacity	0.00 Kn	Passing Percentage	NaN %

## Deflections

Modulus of Elasticity = 6700 MPa NZS3603 Amt 4, Table 2.3

Deflection under Snow and Service Wind = NaN mm Limit by Woolcock et al, 1999 Span/100 = 10.00 mm

Sag during installation = NaN mm

Reactions

Maximum = 0.00 kn

Girt Design Sides

Girt's Spacing = 0 mm

Girt's Span = 0 mm

Try Girt SG8 Dry

Moisture Condition = Wet (Moisture in timber is less than 18% and timber does not remain in continuous wet condition after installation)

K1 Short term = 1 K4 = 1 K5 = 1 K8 Downward = NaN

K8 Upward = NaN S1 Downward = NaN S1 Upward = NaN

Shear Capacity of timber = 3 MPa Bending Capacity of timber = 14 MPa NZS3603 Amt 4, table 2.3

Capacity Checks

Mwind+Snow 0.00 Kn-m Capacity NaN Kn-m Passing Percentage NaN % V0.9D-WnUp 0.00 Kn Capacity 0.00 Kn Passing Percentage NaN %

Deflections

Modulus of Elasticity = 6700 MPa NZS3603 Amt 4, Table 2.3

Deflection under Snow and Service Wind = NaN mm

Limit by Woolcock et al. 1999 Span/100 = 0.00 mm

Sag during installation = NaN mm

Reactions

Maximum = 0.00 kn

# Middle Pole Design

Geometry

 150 SED H5 (Minimum 175 dia. at Floor Level)
 Dry Use
 Height mm

 Area
 20729 mm2
 As
 15546.6796875 mm2

Ix 34210793 mm4 Zx 421056 mm3 Iy 34210793 mm4 Zx 421056 mm3

Lateral Restraint mm c/c

Loads

Total Area over Pole = 0 m2

 $\begin{array}{cccc} \text{Dead} & 0.00 \; \text{Kn} & \text{Live} & 0.00 \; \text{Kn} \\ \text{Wind Down} & 0.00 \; \text{Kn} & \text{Snow} & 0.00 \; \text{Kn} \end{array}$ 

Moment wind

 Phi
 0.8
 K8
 1.00

 K1 snow
 0.8
 K1 Dead
 0.6

0.37 Kn-m

K1wind 1

Material

Peeling	Steaming	Normal	Dry Use
fb =	36.3 MPa	$f_S =$	2.96 MPa
fc =	18 MPa	fp =	7.2 MPa
ft =	22 MPa	E =	9257 MPa

Capacities

PhiNcx Wind	298.50 Kn	PhiMnx Wind	12.23 Kn-m	PhiVnx Wind	36.81 Kn
PhiNcx Dead	179.10 Kn	PhiMnx Dead	7.34 Kn-m	PhiVnx Dead	22.09 Kn

#### Checks

(Mx/PhiMnx)+(N/phiNcx) = 0.03 < 1 OK

 $(Mx/PhiMnx)^2+(N/phiNcx) = 0.00 < 1 OK$ 

Deflection at top under service lateral loads = 0.00 mm < 0.00 mm

# Drained Lateral Strength of Middle pile in cohesionless soils Free Head short pile

### Assumed Soil Properties

Gamma 18 Kn/m3 Friction angle 30 deg Cohesion 0 Kn/m3

 $K0 = \frac{(1-\sin(30)) / (1+\sin(30))}{Kp} = \frac{(1+\sin(30)) / (1-\sin(30))}{(1-\sin(30))}$ 

### Geometry For Middle Bay Pole

Ds = 0.6 mm Pile Diameter

L= mm Pile embedment length

f1 = 750 mm Distance at which the shear force is applied

f2 = 0 mm Distance of top soil at rest pressure

Loads

### **Pile Properties**

Safety Factory 0.55

Hu = 0.00 Kn Ultimate Lateral Strength of the Pile, Short pile

Mu = 0.00 Kn-m Ultimate Moment Capacity of Pile

Checks

Applied Forces/Capacities = Infinity < 1 OK

# **End Pole Design**

## **Geometry For End Bay Pole**

### Geometry

150 SED H5 (Minimum 175 dia. at Floor Level) Dry Use Height 850 mm

Area 20729 mm2 As 15546.6796875 mm2

9/11

Ix	34210793 mm4	Zx	421056 mm3
Iy	34210793 mm4	Zx	421056 mm3

Lateral Restraint mm c/c

## Loads

Total Area over Pole =  $0 \text{ m}^2$ 

 Dead
 0.00 Kn
 Live
 0.00 Kn

 Wind Down
 0.00 Kn
 Snow
 0.00 Kn

Moment Wind 0.19 Kn-m

 Phi
 0.8
 K8
 1.00

 K1 snow
 0.8
 K1 Dead
 0.6

K1wind 1

#### Material

Peeling	Steaming	Normal	Dry Use
fb =	36.3 MPa	$f_S =$	2.96 MPa
fc =	18 MPa	fp =	7.2 MPa
ft =	22 MPa	E =	9257 MPa

# Capacities

PhiNcx Wind	298.50 Kn	PhiMnx Wind	12.23 Kn-m	PhiVnx Wind	36.81 Kn
PhiNcx Dead	179.10 Kn	PhiMnx Dead	7.34 Kn-m	PhiVnx Dead	22.09 Kn

### Checks

(Mx/PhiMnx)+(N/phiNcx) = 0.02 < 1 OK

 $(Mx/PhiMnx)^2+(N/phiNcx) = 0.00 < 1 OK$ 

Deflection at top under service lateral loads = 0.08 mm < 9.97 mm

Ds = 0.6 mm Pile Diameter

L= mm Pile embedment length

f1 = 750 mm Distance at which the shear force is applied

f2 = 0 mm Distance of top soil at rest pressure

### Loads

Total Area over Pole = 0 m2

# **Pile Properties**

Safety Factory 0.55

Hu = 0.00 Kn Ultimate Lateral Strength of the Pile, Short pile

Mu = 0.00 Kn-m Ultimate Moment Capacity of Pile

## Checks

# Drained Lateral Strength of End pile in cohesionless soils Free Head short pile

#### Assumed Soil Properties

Gamma 18 Kn/m3 Friction angle 30 deg Cohesion 0 Kn/m3

 $K0 = \frac{(1-\sin(30)) / (1+\sin(30))}{Kp} = \frac{(1+\sin(30)) / (1-\sin(30))}{(1-\sin(30))}$ 

### **Geometry For End Bay Pole**

Ds = 0.6 mm Pile Diameter

L= mm Pile embedment length

f1 = 750 mm Distance at which the shear force is applied

f2 = 0 mm Distance of top soil at rest pressure

#### Loads

#### Pile Properties

Safety Factory 0.55

Hu = 0.00 Kn Ultimate Lateral Strength of the Pile, Short pile

Mu = 0.00 Kn-m Ultimate Moment Capacity of Pile

# Checks

Applied Forces/Capacities = Infinity < 1 OK

# **Uplift Check**

Density of Concrete = 24 Kn/m<sup>3</sup>

Density of Timber Pole = 5 Kn/m3

Due to cast in place pile, the surface interaction between soil and pile will be rough thus angle of friction between both is taken equal to soil angle of internal friction

Ks (Lateral Earth Pressure Coefficient) for cast into place concrete piles = 1.5

Formula to calculate Skin Friction = Safecty factor (0.55) x Density of Soil(18) x Height of Pile() x Ks(1.5) x 0.5 x tan(30) x Pi x Dia of Pile(0.6) x Height of Pile()

Skin Friction = 0.00 Kn

Weight of Pile + Pile Skin Friction = 0.00 Kn

Uplift on one Pile = 0.00 Kn

Uplift is ok