

# MultiProof compliance assessment report

## MULTIPROOF APPLICATION – COMPLIANCE ASSESSMENT REPORT

<b>Design name</b>	Luna 2-bed
<b>Design description</b>	2 bedroom single storey semi-detached with garage, floor area 139m <sup>2</sup> . Timber framed with zone, foundation, plan, cladding, window and heating options.
<b>Classified use</b>	Housing - Multi-unit dwelling (attached dwelling)
<b>Importance level</b>	Importance level 2

## GENERAL

<b>Wind zones</b>	Medium; High; Very high
<b>Earthquake zone</b>	Up to Zone 4
<b>Subsoil classification</b>	Up to Class E - Very soft soil types
<b>Live loads</b>	Up to 2 kPa
<b>Snow loads</b>	Up to 1.0 kPa
<b>Exposure zone</b>	Up to Zone D
<b>Climate zone</b>	Zones 1 to 6
<b>Specified intended life</b>	Not less than 50 years

## CLAUSE/ELEMENT/COMPONENT    HOW COMPLIES

### B1 Structure

#### Ground

Foundation option limited to good ground as defined in NZS 3604 – ultimate bearing capacity of 300kPa. Site specific foundation option permitted where bearing capacity is less than this.

#### Foundation option 1

Concrete complying with NZS 3604.  
20Mpa concrete complying with NZS 3104 for manufacture and NZS 3109 for construction  
Reinforcing complying with AS/NZS 4671. Bars shall be grade 300E.  
Mesh shall be grade 500N or 500E.  
1:10 details provided (sheet 8) for foundation edge details, to internal loadbearing walls, and bottom plate fixings. Details based on NZS 3604.

#### Foundation option 2

RibRaft – CodeMark – Certificate of Conformity CMA-CM40015 (Rev 2)  
Calculations, details and specifications, Producer Statement PS1 Design and Certificate of Design Work provided by LBP Rod Bridges CPEng 99999999.  
1:10 details provided (sheet 8a).

#### Framing

B1/AS1 specified as means of compliance.  
Timber complying with NZS 3602.  
Table on framing plan (sheet 3) specifies sizes and grades of all wall, roof and ceiling framing and sizes for Medium, High and Very high wind zones.  
Table in specification schedules all fixings.

**Wall framing**

Loadbearing and non-loadbearing walls defined on framing plan (sheet 3). All walls except intertenancy wall are 2.4m. 90 x 45 SG 8 used for all framing. Studs at 400mm centres for load bearing walls in Very high wind zones. 600mm centres for all other wind zones and non-loadbearing walls.

Trimming studs thickness 90mm from Table 8.5.

Intertenancy walls framed from 140 x 45 framing with centres reducing and studs doubled as wall increases up to maximum 4.2 height. Centres for different wind zones specified in framing table.

**Lintels**

Lintels shown on framing plan (sheet 3). Sizes to NZS 3604 Table 8.9 for light roof.

**Bracing**

Calculations provided for each wind zone. GIB EzyBrace 2011 Software used.

Bracing summary				
		Wind zones		
		Med	High	Very High
Wind	Demand across	x	xx	xxx
	Demand along	y	yy	yyy
	Achieved across	x+	xx+	xxx+
	Achieved along	y+	yy+	yyy+
Earthquake	Demand	z	z	z
	Achieved	z+	z++	z++

Bracing coded and dimensioned on framing plan.

Technical specifications for bracing elements included in the specification.

**Roof framing**

Verification Method B1/VM1 referenced for truss design.

Trusses calculations uses Eze-span NZ Ltd truss design program.

Calculations, layout, fixings, Producer Statement PS1, Design and Certificate of Design Work provided by LBP Rod Steel CPEng 888888.

All other members and fixings to NZS3604. Roof framing plan provided locating roof bracing, and ancillary framing members.

**Ceiling framing**

Sizes to NZS 3604 shown in table (sheet 3).

**B2 Durability****Foundation option 1**

20 Mpa concrete complying with NZS 3101 Concrete Structures Part 1 Section 3.  
Reinforcing cover dimensioned.

**Foundation option 2**

RibRaft – CodeMark – Certificate of Conformity CMA-CM40015 (Rev 2) covers compliance with B2.

**Walls**

NZS 3604 and B2/AS1 Table 1A referenced.  
H1.2 for all wall framing.  
H3.1 for cavity battens.  
H3.2 for weatherboard, external trim, window/door reveals.

**Roof**

B2/AS1 Table 1A referenced.  
 H1.2 for all trusses, roof framing, bracing and purlins.  
 Coated steel roofing specified. Two products nominated as alternatives.  
 uPVC gutters and downpipes specified. Technical specifications provided.

**Other**

Windows and flashings specified as prefinished anodised aluminium.  
 Anodising 25 micron thickness complying with NZ Specification WNZ SFA 3503-03:2005.

**Steel fixings and fastenings**

Specified as galvanised steel complying with NZS 3604 4.4.

**Compatibility of materials**

Compliance with tables 21 and 22 of E2/AS1 referenced in specification.

**C Protection from fire**

C/AS1 specified as means of compliance. Risk group SH.

**C2 Prevention of fire occurring**

Gas burning appliances specified as options for heating, hot water and cooking. C/AS1 referenced.

Recess downlights specified as complying with C/AS1.

**C3 Fire affecting areas beyond the fire source**

Intertenancy wall required to be 30/30/30 FRR.

2 layers of 10mm xxx standard plaster board specified. Products and installation specification nominated and provided. Sealants specified.

1:5 details provided at floor, ceiling, roof and external wall junctions.

Note on drawings – services penetrations not permitted.

C3.2 does not apply. Building height less than 10m.

C3.3 does not apply. Building eaves noted on plan as to be located not less than 1m from any boundary.

C3.4 does not apply within household units in multi-unit dwellings.

**C4 Movement to a place of safety**

Type 1 smoke alarm to F7/AS1 specified. Alarms located on the services plan.

Dead end open path of 12.5m (max) is less than the 25m allowed.

**C5 Access and safety for firefighting operations**

C5.3 - C5.8 do not apply within household units in multi-unit dwellings.

**C6 Structural stability**

Intertenancy wall required to be 30/30/30 FRR.

**D1 Access Routes**

D/AS1 specified as means of compliance.  
 Single 190 mm step dimension at entrance doors.  
 All other access is site specific.

**D2 Mechanical installations for access**

Does not apply.

**E1 Surface Water**

E1/AS1 specified as means of compliance.  
 Roof pitch, areas of roof, downpipe and gutter locations shown on the roof plan (sheet 5). uPVC gutter profile specified.  
 Nominal cross sectional area of gutter allows for a maximum of 45m<sup>2</sup> of roof at a roof pitch of 0-25° (from fig 15). Downpipe allows for up to 60m<sup>2</sup> at roof pitch of 0-25°.

Gutters and downpipes				
Roof section	Areas (m <sup>2</sup> )	Downpipes (65NB)	Min gutter size (mm <sup>2</sup> )	Proposed gutter (mm <sup>2</sup> )
A	23	1	4000	>5130
B	26	1	4000	>5130
C	35	1	4000	>5130
D	32	1	4000	>5130
E	44*	1	~5000	>5130
F	44*	1	~5000	>5130

\*Includes handed area of roof of the adjacent unit.

**E2 External Moisture**

E2/AS1 specified as means of compliance.

Risk matrix provided on sheet 7.

Risk factor	Low		Med		High		Very High		Subtotals
Wind zone (per NZS 3604)	0		0		1	1	2		1
No. of storeys	0		1	1	2		4		1
Roof/wall intersection design	0		1		3		5	5	5
Eaves width	0		1		2	2	5		2
Envelope complexity	0		1	1	3		6		1
Deck design	0		2	2	4		6		2
Total risk score:									12

Achieves a total risk score of less than 6 for Med, High and Very high wind zones.

**Floor**

DPM specified and installation detailed for foundation option 1. BRANZ appraisal provided for specified product.

**Walls**

Minimum height above ground specified.

Bevel-backed weatherboard direct fixed. 1:5 details (sheets 9-10) provided at base, internal and external corners, eaves and barges; sill, jambs and head of windows and doors; and services penetrations.

Detail also provided for optional deck fixing.

Details all based on E2/AS1. Flashings, underlay and weatherboard joints specified.

Flashings dimensioned.

BRANZ appraisals provided for specified wall underlay and flashing tapes.

**Windows/doors**

Window brand and range specified. Manufacturer required to be a member of WANZ and provide test results on request.

*NZS 4211: 2008 Specification for the Performance of Windows* referenced.

Specification requires windows the frames to be labelled, in accordance with NZS 4211, to show the brand, the standard, the wind zone or wind pressures and the air infiltration level.

*The WANZ Guide to Window Installation as described in E2/AS1 Amendment 5* referenced.



**Roof**

0.4mm corrugated roofing specified. Two products nominated. Roof pitch 15°. 1:5 details provided (sheet 11) for eaves, barge, ridge, and roof penetrations. Roofing, flashings, underlay, fixings, installation, and manufacturing standards specified.

Alternative solution for roof lights: design of flashings to roof lights, and roofing installation detailed to comply with NZ Metal Roofing Manufacturers Inc. code of practice *Metal Roofing Design and Installation Handbook*.

**E3 Internal moisture**

E3/AS1 specified as means of compliance.

**Floor**

Water splash areas identified.

Wet areas: Tile underlay, membrane and sealants specified. 1: 5 details (sheet 15) provided for edges, junctions and drainage outlets. BRANZ appraisal provided for membrane.

Vinyl and tile options provided to laundry. Minimum area defined.

Coving detailed. Overflow to tub and floor outlet specified (sheet 18).

**Walls**

Water splash areas identified. Paint finishes specified.

Wet areas: Tile underlay, membrane and sealants specified. 1: 5 details (sheet 15) provided for edges, junctions and penetrations. BRANZ appraisal provided for membrane.

**Thermal resistance**

R 2.6 fibreglass insulation specified to external walls and internal garage wall. R 7.0 fibreglass insulation specified to ceilings increasing to R 4.0 in Zone 3. R-value calculations provided.

R-values		
	Minimum	Achieved
Walls	1.5	Min 2.15
Ceiling	1.5	Min 6.6

Insulation detailed and brand options specified.

**F1 Hazardous agents on site**

Not applicable for MultiProof. Site specific.

**F2 Hazardous building materials**

F2/AS1 specified as means of compliance.

Safety glass specified to shower enclosure, window over bath, glazed doors, and barrier option.

NZS 4223 Part 3 is referenced.

**F3 Hazardous substances and process**

Not applicable.

**F4 Safety from falling**

Only applies to deck option where deck or steps are 1m or more above the ground.

F4/AS1 specified as means of compliance.

Glazed and timber options detailed.

Elevations and sections provided for 1m high deck barrier and 0.9m stair barrier.

**F5 Construction and demolition hazards (Building Consent consideration)**

Not applicable.

**F6 Visibility in escape routes**

Not applicable.

**F7 Warning systems**

F7/AS1 specified as means of compliance.

Type 1 Domestic smoke alarm system specified. Smoke alarms located on plan (sheet 16). Product standards nominated in specification.

**F8 Signs**

Not applicable.

**F9 Restricting access to residential pools**

Not applicable.

**G1 Personal hygiene**

G1/AS1 specified as means of compliance.  
 WC pan and cistern, basin, bath/shower options located and specified.  
 Manufacturing standards specified.  
 WC separated from kitchen by door. >200mm door clearance provided to pan.

**G2 Laundering**

G2/AS1 specified as means of compliance.  
 Laundry tub located and specified. Space and service connections specified for washing machine. Hot and cold water supplies specified.

**G3 Food preparation and prevention of contamination**

G3/AS1 specified as means of compliance.  
 Sink and sink bench material options specified. Layout options shown.  
 Each contain a sink, cooker, space for a fridge, storage under sink bench, and list options for additional storage, dishwasher and range hood.  
 Painted surfaces specified with glass and stainless steel options behind the cooking top.

**G4 Ventilation**

G4/AS1 specified as means of compliance.  
 Table below provides the room areas, the minimum opening size of window required for compliance and the area of ventilation achieved.  
 Ventilation areas shown on window/door schedule (sheet 11).

Natural ventilation to comply with G4/AS1				
	Room area (m <sup>2</sup> )	Min vent area (m <sup>2</sup> )	Window options	Achieved (m <sup>2</sup> )
Living/Kitchen	55	2.75	D2/D3/W1	5.4
			D2/D3/D3	5.94
Bed 1	18	0.9	W1 or D3	1.08-1.62
Bed 2	14	0.7	W1 or W3	1.08-1.62
Bathroom	8	0.4	W2	0.5
Garage/ Laundry	20/8	0/0.4	D4	0.4

Vents specified for gas cooker and heating options.

**G5 Interior environment**

G5.2.2 only applies. Heating appliance to be installed in accordance with the manufacturer's instructions.

**G6 Airborne and impact sound**

Not less than 55 STC required to fire rated intertenancy wall.

Alternative solution proposed to achieve 58 STC and 30/30/30. 2 layers of 10mm xxx standard plasterboard each side of double stud loadbearing wall with R1.8 fibreglass insulation. Manufacturer's technical specification (name) and BRANZ appraisal provided.

Framing and plasterboard at external wall based on G6/AS1 Detail D.

Framing and plasterboard extend up to underside of roofing material.

Note on drawings -services penetrations not permitted to intertenancy wall.

**G7 Natural light**

G7/AS1 specified as means of compliance.

Table below provides the room areas, the minimum areas of natural light required for compliance and the areas achieved.

Glazing areas shown on window/door schedule (sheet 11).

Natural light to comply with G7/AS1				
	Room area (m <sup>2</sup> )	Min glazed area (m <sup>2</sup> )	Window options	Achieved (m <sup>2</sup> )
Living/Kitchen	55	5.5	D2/D3/W1	11.16
			D2/D3/D3	12.6
Bed 1	18	18	W1 or D3	2.16-3.6
Bed 2	14	14	W1 or D3	2.16-3.6
Bathroom	8	0	W2	1
Garage/ Laundry	20/8	0/0	D4	2.4

**G8 Artificial light**

G8/AS1 specified as means of compliance.

20 lux minimum required to access routes. Minimum requirement shown on services plan. Table shows calculated W/m<sup>2</sup> .

**G9 Electricity**

Compliance with AS/NZS 3000 and NZECP 51 referenced. Products and options identified in the specification.  
Earthing and equipotential bonding requirements noted.

**G10 Piped services**

G10/AS1 specified as means of compliance. AS/NZS 5601.1 Gas Installations referenced. Specification provided.

**G11 Gas as an energy source**

G11/AS1 specified as means of compliance in the specification. AS/NZS 5601.1 Gas Installations referenced in the specification. Specification provided.

**G12 Water supplies**

G12/AS1 specified as means of compliance. Gas instantaneous water heater specified. Sizes, products and options identified in the specification.

**G13 Foul water**

G13/AS1 specified as means of compliance. AS/NZS 3500.2 referenced Specification provided. Fixture locations, pipe sizes and layout, traps, gradients and materials showing on plumbing plan.

**G14 Industrial liquid waste**

Not applicable.

**G15 Solid waste**

Not applicable.

**H1 Energy efficiency provisions**

H1/AS1 specified as means of compliance.  
Schedule method used (glazing is  $\leq 30\%$ ).  
R-value calculations provided for floor, walls and ceilings.  
R-values for glazing from H1/AS1.

Construction R-values				
	Zone 1-4	Achieved	Zone 5 + 6	Achieved
Roof	R 6.6	R 7	R 6.6	R 7
Wall	R 2	R 2.15	R 2.0	R 2.15
Floor slab	R 1.5	R 1.8	R 1.6 <sup>1</sup>	R 1.8
Windows & glazing	R 0.46	0.50	R 0.50	0.50
Skylights	R 0.46 <sup>2</sup>	R 0.65	R 0.62	R 0.65

<sup>1</sup> R-value achieved increases to 2.16 where studs at 600mm crs.

<sup>2</sup> R3.6 fibreglass changes to R4.0 for Zone 3.