13 August 2010

Sample Client
1 Buffalo Beach Rd
Whitianga
Coromandel Peninsula

Dear Client,

RE: Proposed Dwelling - H1 Thermal Compliance Calculation Report

The attached report has been developed following a thermal simulation of the proposed new house. The calculations were performed using the AccuRateNZ software version 1.3.1.

The data output from the building thermal simulation shows a pass for H1 compliance with the Energy Efficiency requirements of the New Zealand Building Code.

The proposed building passes with a Building Performance Index (BPI) of 0.51

H1 PASS√

The report highlights some key information, of particular value it shows room by room computation of heating appliance sizing on page 13 of the report, with total heating source output of only 4.4kW is recommended.

We see that annual predicted heating bill for this very efficient house is only $133 when using direct electric heating devices. This annual heating cost will reduce to only $44 if a heat pump is installed. In this case due to the installation cost of a heat pump at $2500.00 the payback will be 28 years, given a heat pump useful life of 12-15 years we do not recommend a heat pump is used in this case. Using direct electric heating devices an annual carbon footprint for space heating is 224kg.

The building has been analysed with the following selections:

Ceiling insulation:	R3.2 Fibreglass Batts.
Windows:	Aluminium frame double clear glazing 12mm air gap
Floor:	Concrete on grade, with 50mm Thick EPS polystyrene
Walls:	R1.8 Fibreglass Batts to all external timber framed walls.

The simulation is based on the current location and design drawings as received by email on the 8th April 2010 dated 16 September 2009.

Note we simulated the building with R2.6 wall insulation and found annual heating cost dropped by $17 per annum, given the cost increase of 9 bails as opposed to 5 bails an extra $400 will take 23 years to payback the insulation increase.

Calculations will change if the building is reduced in size, materials of construction are altered, a change in shape, aspect to the sun or physical address/location change.

Please do not hesitate to call to discuss this report where necessary.

Yours faithfully,

Craig Schipper
CPEng No. 184886

Encl: 13 Page Simulation Report
1 Temp Graph

Doc Ref: H1 Template

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AccuRate NZ V1.3.1.0

New Zealand Home Energy Rating Scheme

Project Details

Project Name: Starter Home - Nikau House

File Name: C:\Program Files\AccuRateNZ\Projects\Starter Home 1200 Dwangs R3.2 Ceiling R1.8 Wall.PRO

Place Name: Glen Innes (Auckland City) **Climate Zone:** AK

Design Option: Base Design

Description: Light timber framed building with thermal concrete slab.
Butterfly pitched roof with central internal gutter.
Half roof is skillion other half timber truss frame.

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Client Details

Client Name: Department of Building and Housing		
Phone:	**Fax:**	**Email:**
Postal Address:		
Site Address:		
Council submitted to (if known by assessor): Auckland City		

Assessor Details

Assessor Name: Craig Schipper			**Assessor No.** 90073
Phone: 09 4887733	**Fax:** 09 4887732	**Email:** craig@h1reports.co.nz	
Assessment Date: 13/08/2010			**Time:** 9:41:
Project Code: F08027			
Assessor Signature:			

CALCULATED ENERGY REQUIREMENTS*

Heating	Cooling (sensible)	Cooling (latent)	Total Energy	Units
24.0	4.6	6.1	34.7	MJ/m².annum

* These energy requirements have been calculated using a standard set of occupant behaviours and so do not necessarily represent the usage pattern or lifestyle of the intended occupants. They should be used solely for the purposes of rating the building. They should not be used to infer actual energy consumption or running costs. The settings used for the simulation are shown in the building data report.

AREA-ADJUSTED ENERGY REQUIREMENTS

Heating	Cooling (sensible)	Cooling (latent)	Total Energy	Units
23.3	4.5	5.9	33.8	MJ/m².annum
Total floor area (excluding zones of type Garage, Basement/Workshop/Storage, Roofspace and Sub-floor)				90.6 m²

Building Rating

★★★★★★★★ **8 STARS**

Area-adjusted star band score thresholds

1 Star	2 Stars	3 Stars	4 Stars	5 Stars	6 Stars	7 Stars	8 Stars	9 Stars	10 Stars
409	256	186	139	104	77	53	34	16	1

Building Performance Index (BPI) for New Zealand Building Code Compliance*

BPI	BPI target (maximum)	
0.51	1.55	**PASS**

* The current building design complies with the insulation requirements of Clause H1 of the NZBC because its Building Performance Index (BPI) does not exceed 1.55.

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Space Heating Details

Total Annual Space Heating CO_2 Emissions (kg)	224
Total Annual Space Heating Cost ($)	133
Total Annual Shortfall of Space Heating Energy (MJ)	2172

Description	Annual Energy Use (MJ)	Annual Heating Cost ($)	Annual CO_2 Emissions (Kg)	Max Output (kW)	COP	Fuel Type

	Total	Electricity	Natural Gas	LPG	Coal	Wood	Pellet	Oil	Shortfall
Annual Energy Use (MJ)		0	0	0	0	0	0	0	2172
Annual Heating Cost ($)	133	0	0	0	0	0	0	0	133
Annual CO_2 Emissions (Kg)	224	0	0	0	0	0	0	0	224
Peak Demand Shortfall(kW)									4.4

Room Heating Rating

★☆ **1 ½ STARS**

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Client Name: Department of Building and Housing		
Site Address:		
Design Option: Base Design		
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Construction details: External Walls

Description: Plywood Wall		
Total R (up) (m².K/W): 1.88	**Total U (up) (W/m².K):** 0.53	
Total R (down) (m².K/W): 1.88	**Total U (down) (W/m².K):** 0.53	
External colour: Medium	**Internal colour:** Medium	**Area:** 100.9 m²
External absorptance (%): 50	**Internal absorptance (%):** 50	

Layer	Material	Thickness (mm)
1	Timber (softwoods: e.g. pine @ 20% mc)	12
2	Bulk insulation: R1.8	58
3	Particleboard	8

Bridge material 1	Bridged layer	Stud depth (mm)	Stud width (mm)	Stud spacing (mm)	Flange width (mm)	Dwang depth (mm)	Dwang width (mm)	Dwang spacing (mm)	Flange width (mm)	Fraction 1
Timber (softwoods: e.g. pine @ 12% mc)	2									0.0923

Construction details: Windows

Description: WERS14A Al IGU clear		
System U-value (NFRC): 3.89	**SHGC (NFRC):** 0.69	**Area:** 27.2 m²
Frame type: Custom	**Frame colour:** Medium	
Frame fraction (%): 80	**Frame absorptance (%):** 50	

Layer	Material	Thickness (mm)
1	Glass	4
2	Glazing air gap (generic)	12
3	Glass	4

Construction details: Floor/Ceilings

Description: Concrete slab (suspended or on ground) / plain / 50mm EPS-S under slab		
Total R (up) (m².K/W): 1.57	**Total U (up) (W/m².K):** 0.64	
Total R (down) (m².K/W): 1.57	**Total U (down) (W/m².K):** 0.64	
Top colour: Not Specified	**Bottom colour:** Not Specified	**Area:** 90.6 m²
Top absorptance (%): Not Specified	**Bottom absorptance (%):** Not Specified	

Layer	Material	Thickness (mm)
1	Concrete structural	100
2	Polystyrene expanded class S (k = 0.041)	50
3	Sand (building - dry)	50

Description: Ceiling below attic / insulated between joists R3.2		
Total R (up) (m².K/W): 2.84	**Total U (up) (W/m².K):** 0.35	
Total R (down) (m².K/W): 2.84	**Total U (down) (W/m².K):** 0.35	
Top colour: Medium	**Bottom colour:** Medium	**Area:** 47.6 m²
Top absorptance (%): 50	**Bottom absorptance (%):** 50	

Layer	Material	Thickness (mm)
1	Bulk insulation: R3.2	102
2	Plasterboard (Gypsum)	10

Bridge material 1	Bridged layer	Joist depth (mm)	Joist width (mm)	Joist spacing (mm)	Flange width (mm)	Dwang depth (mm)	Dwang width (mm)	Dwang spacing (mm)	Flange width (mm)	Fraction 1
Timber (softwoods: e.g. pine @ 12% mc)	1									0.1097

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Construction details: Internal Walls

Description: Timber frame / uninsulated

Total R (up) (m².K/W): 0.43	**Total U (up) (W/m².K):** 2.31	
Total R (down) (m².K/W): 0.43	**Total U (down) (W/m².K):** 2.31	
First colour: Medium	**Last colour:** Medium	**Area:** 47.0 m²
First absorptance (%): 50	**Last absorptance (%):** 50	

Layer	Material	Thickness (mm)
1	Particleboard	8
2	Air gap vertical >66 mm (90 nominal) unventilated non-reflective (0.9/0.9; E = 0.82)	90
3	Particleboard	8

Bridge material 1	Bridged layer	Stud depth (mm)	Stud width (mm)	Stud spacing (mm)	Flange width (mm)	Dwang depth (mm)	Dwang width (mm)	Dwang spacing (mm)	Flange width (mm)	Fraction 1
Timber (softwoods: e.g. pine @ 12% mc)	2									0.0923

Construction details: Roofs

Description: Skillion roof / profiled metal / insulated R3.2

Total R (up) (m².K/W): 2.95	**Total U (up) (W/m².K):** 0.34	
Total R (down) (m².K/W): 2.97	**Total U (down) (W/m².K):** 0.34	
External colour: Not Specified	**Internal colour:** Not Specified	**Area:** 43.0 m²
External absorptance (%): Not Specified	**Internal absorptance (%):** Not Specified	

Layer	Material	Thickness (mm)
1	Metal cladding	2
2	Air gap 45° 17-30 mm (20 nominal) unventilated non-reflective (0.9/0.9; E = 0.82)	20
3	Bulk insulation: R3.2	102
4	Plasterboard (Gypsum)	10

Bridge material 1	Bridged layer	Rafter depth (mm)	Rafter width (mm)	Rafter spacing (mm)	Flange width (mm)	Dwang depth (mm)	Dwang width (mm)	Dwang spacing (mm)	Flange width (mm)	Fraction 1
Timber (softwoods: e.g. pine @ 12% mc)	3	140	45	600	0	140	45	900	0	0.1212

Description: Roof above attic / profiled metal

Total R (up) (m².K/W): 0.12	**Total U (up) (W/m².K):** 8.33	
Total R (down) (m².K/W): 0.12	**Total U (down) (W/m².K):** 8.33	
External colour: Medium	**Internal colour:** Medium	**Area:** 51.0 m²
External absorptance (%): 50	**Internal absorptance (%):** 50	

Layer	Material	Thickness (mm)
1	Metal cladding	2

Bridge material 1	Bridged layer	Rafter depth (mm)	Rafter width (mm)	Rafter spacing (mm)	Flange width (mm)	Dwang depth (mm)	Dwang width (mm)	Dwang spacing (mm)	Flange width (mm)	Fraction 1
Timber (softwoods: e.g. pine @ 12% mc)	1									0.075

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Design Option: Base Design		
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Habitable zones

Name	Type	Volume (m^3)	Floor height (m)	Ceiling height above floor (m)	Heated	Cooled
Living	Open-plan Living/Kitchen	114.0	0.2	2.9	Y	Y
Bed 1	Bedroom	34.0	0.2	2.4	Y	Y
Bed 2	Bedroom	15.3	0.2	2.4	Y	Y
Bed 3	Bedroom	31.9	0.2	2.4	Y	Y
Bathroom	Bathroom	12.8	0.2	2.4	Y	Y
Hall	Other (day & night usage)	20.4	0.2	2.4	Y	Y

Habitable zones (continued)

Name	Number of recessed downlights	Ceiling fans	Type
Living	0	0	-
Bed 1	0	0	-
Bed 2	0	0	-
Bed 3	0	0	-
Bathroom	0	0	-
Hall	0	0	-

Roofspace zones

Name	Volume (m^3)	Roof underlay	Roof surface	Openness
Attic	44.0	Present	Continuous	Standard

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Site Address:

Design Option: Base Design

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Living: External walls main data

Wall	Construction	Azi (deg.)	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Fixed shade	Opening (m²)	Opening Type
1	Plywood Wall	270	4.21	2.65	11.16	10.20	East,West 1	0.00	Controlled
2	Plywood Wall	0	10.22	2.95	30.15	10.90	North	0.00	Controlled
3	Plywood Wall	90	4.21	2.65	11.16	9.66	East,West 1	0.00	Controlled

Living: Windows in walls

Wall	Window Name	Type	Construction		Azi. (deg.)	H (m)	W (m)	Area (m²)
1	West Living Window	Awning	WERS14A	Al IGU clear	270	1.20	0.80	0.96
2	Sliding doors	Sliding	WERS14A	Al IGU clear	0	2.55	4.95	12.62
2	Living Openable	Awning	WERS14A	Al IGU clear	0	1.30	0.49	0.64
2	Kitchen Openable	Awning	WERS14A	Al IGU clear	0	1.30	0.49	0.64
2	Living Casement	Casement	WERS14A	Al IGU clear	0	2.06	1.30	2.68
2	Kitchen Casement	Casement	WERS14A	Al IGU clear	0	2.06	1.30	2.68
3	Kitchen Casement	Casement	WERS14A	Al IGU clear	90	0.50	3.00	1.50

Living: Windows in walls (continued)

Wall	Window Name	Indoor covering	Outdoor covering	Fixed shade	HH (m)	HO (m)	Opening (%)
1	West Living Window	Roller blinds	None		2.05	0.00	90
2	Sliding doors	Roller blinds	None		2.65	0.00	70
2	Living Openable	Roller blinds	None		2.65	0.00	60
2	Kitchen Openable	Roller blinds	None		2.65	0.00	60
2	Living Casement	Roller blinds	None		2.06	0.00	0
2	Kitchen Casement	Roller blinds	None		2.06	0.00	0
3	Kitchen Casement	None	None		2.65	0.00	90

Living: Internal walls

Wall	Construction	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Adjacent Zone	Opening (m²)	Opening Type
1	Timber frame / uninsulated	4.80	2.40	11.52	11.5	Bed 1	0.00	Controlled
2	Timber frame / uninsulated	2.80	2.40	6.72	6.7	Bed 3	0.00	Controlled

Living: Floors

Floor	Construction	Area (gross) (m²)	Area (net) (m²)	Under the floor	Edge Ins. Thick.	Edge Ins. Depth	Opening (m²)	Opening Type
1	Concrete slab (suspended or on ground) / plai	43.0	43.0	Ground	25 mm	0.3	0.00	Controlled

Living: Roofs

Roof	Construction	Area (gross) (m²)	Area (net) (m²)	Azi (deg.)	Pitch (deg.)	Exposure
1	Skillion roof / profiled metal / insulated R3.2	43.00	43.00	0	8	Normal

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Client Name: Department of Building and Housing

Site Address:

Design Option: Base Design

Date: 13/08/2010 **Time:** 9:41: **Page:** 7

Bed 1: External walls main data

Wall	Construction	Azi (deg.)	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Fixed shade	Opening (m²)	Opening Type
1	Plywood Wall	90	4.21	2.40	10.10	9.18	East,West,South 2	0.00	Controlled
2	Plywood Wall	180	0.93	2.40	2.24	2.24	Carport	0.00	Controlled
3	Plywood Wall	0	0.81	2.40	1.94	1.02	East,West 1	0.00	Controlled

Bed 1: Windows in walls

Wall	Window Name	Type	Construction		Azi. (deg.)	H (m)	W (m)	Area (m²)
1	Bed West	Awning	WERS14A	Al IGU clear	90	1.15	0.80	0.92
3	Bed North Casement	Awning	WERS14A	Al IGU clear	0	1.16	0.80	0.93

Bed 1: Windows in walls (continued)

Wall	Window Name	Indoor covering	Outdoor covering	Fixed shade	HH (m)	HO (m)	Opening (%)
1	Bed West	Roller blinds	None		2.05	0.00	90
3	Bed North Casement	Roller blinds	None		2.06	0.00	0

Bed 1: Internal walls

Wall	Construction	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Adjacent Zone	Opening (m²)	Opening Type
1	Timber frame / uninsulated	5.00	2.40	12.00	12.0	Bathroom	0.00	Controlled
2	Timber frame / uninsulated	4.80	2.40	11.52	11.5	Living	0.00	Controlled

Bed 1: Floors

Floor	Construction	Area (gross) (m²)	Area (net) (m²)	Under the floor	Edge Ins. Thick.	Edge Ins. Depth	Opening (m²)	Opening Type
1	Concrete slab (suspended or on ground) / plai	14.1	14.1	Ground	25 mm	0.2	0.00	Controlled

Bed 1: Ceilings

Ceiling	Construction	Area (gross) (m²)	Area (net) (m²)	Above the ceiling	Opening (m²)	Opening Type
1	Ceiling below attic / insulated between joist	14.1	14.1	Attic	0.00	Controlled

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Bed 2: External walls main data

Wall	Construction	Azi (deg.)	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Fixed shade	Opening (m²)	Opening Type
1	Plywood Wall	180	2.62	2.40	6.29	5.37	None	0.00	Controlled

Bed 2: Windows in walls

Wall	Window Name	Type	Construction	Azi. (deg.)	H (m)	W (m)	Area (m²)
1	South Awning Window	Awning	WERS14A Al IGU clear	180	1.15	0.80	0.92

Bed 2: Windows in walls (continued)

Wall	Window Name	Indoor covering	Outdoor covering	Fixed shade	HH (m)	HO (m)	Opening (%)
1	South Awning Window	None	None		2.06	0.00	90

Bed 2: Internal walls

Wall	Construction	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Adjacent Zone	Opening (m²)	Opening Type
1	Timber frame / uninsulated	1.94	2.40	4.66	2.7	Hall	2.00	Controlled
2	Timber frame / uninsulated	2.45	2.40	5.88	5.9	Bed 3	0.00	Controlled

Bed 2: Floors

Floor	Construction	Area (gross) (m²)	Area (net) (m²)	Under the floor	Edge Ins. Thick.	Edge Ins. Depth	Opening (m²)	Opening Type
1	Concrete slab (suspended or on ground) / plai	6.4	6.4	Ground	25 mm	0.3	0.00	Controlled

Bed 2: Ceilings

Ceiling	Construction	Area (gross) (m²)	Area (net) (m²)	Above the ceiling	Opening (m²)	Opening Type
1	Ceiling below attic / insulated between joist	6.4	6.4	Attic	0.00	Controlled

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New Zealand Home Energy Rating Scheme

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Bed 3: External walls main data

Wall	Construction	Azi (deg.)	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Fixed shade	Opening (m²)	Opening Type
1	Plywood Wall	180	2.93	2.40	7.03	7.03	None	0.00	Controlled
2	Plywood Wall	270	4.21	2.40	10.10	9.18	East,West,South 2	0.00	Controlled
3	Plywood Wall	0	0.81	2.40	1.94	1.02	East,West 1	0.00	Controlled

Bed 3: Windows in walls

Wall	Window Name	Type	Construction		Azi. (deg.)	H (m)	W (m)	Area (m²)
2	West Awning	Awning	WERS14A	Al IGU clear	270	1.15	0.80	0.92
3	North Awning	Awning	WERS14A	Al IGU clear	0	1.16	0.80	0.93

Bed 3: Windows in walls (continued)

Wall	Window Name	Indoor covering	Outdoor covering	Fixed shade	HH (m)	HO (m)	Opening (%)
2	West Awning	Roller blinds	None		2.05	0.00	90
3	North Awning	Roller blinds	None		2.06	0.00	0

Bed 3: Internal walls

Wall	Construction	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Adjacent Zone	Opening (m²)	Opening Type
1	Timber frame / uninsulated	2.80	2.40	6.72	6.7	Living	0.00	Controlled
2	Timber frame / uninsulated	2.45	2.40	5.88	5.9	Bed 2	0.00	Controlled

Bed 3: Floors

Floor	Construction	Area (gross) (m²)	Area (net) (m²)	Under the floor	Edge Ins. Thick.	Edge Ins. Depth	Opening (m²)	Opening Type
1	Concrete slab (suspended or on ground) / plai	13.3	13.3	Ground	25 mm	0.3	0.00	Controlled

Bed 3: Ceilings

Ceiling	Construction	Area (gross) (m²)	Area (net) (m²)	Above the ceiling	Opening (m²)	Opening Type
1	Ceiling below attic / insulated between joist	13.3	13.3	Attic	0.00	Controlled

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Bathroom: External walls main data

Wall	Construction	Azi (deg.)	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Fixed shade	Opening (m²)	Opening Type
1	Plywood Wall	180	1.71	2.40	4.10	3.18	Carport	0.00	Controlled
2	Plywood Wall	270	0.45	2.40	1.08	1.08	Carport	0.00	Controlled

Bathroom: Windows in walls

Wall	Window Name	Type	Construction	Azi. (deg.)	H (m)	W (m)	Area (m²)
1	South Awning	Awning	WERS14A Al IGU clear	180	1.15	0.80	0.92

Bathroom: Windows in walls (continued)

Wall	Window Name	Indoor covering	Outdoor covering	Fixed shade	HH (m)	HO (m)	Opening (%)
1	South Awning	None	None		2.06	0.00	90

Bathroom: Internal walls

Wall	Construction	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Adjacent Zone	Opening (m²)	Opening Type
1	Timber frame / uninsulated	5.00	2.40	12.00	12.0	Bed 1	0.00	Controlled
2	Timber frame / uninsulated	2.60	2.40	6.24	4.2	Hall	2.00	Controlled

Bathroom: Floors

Floor	Construction	Area (gross) (m²)	Area (net) (m²)	Under the floor	Edge Ins. Thick.	Edge Ins. Depth	Opening (m²)	Opening Type
1	Concrete slab (suspended or on ground) / plai	5.3	5.3	Ground	25 mm	0.3	0.00	Controlled

Bathroom: Ceilings

Ceiling	Construction	Area (gross) (m²)	Area (net) (m²)	Above the ceiling	Opening (m²)	Opening Type
1	Ceiling below attic / insulated between joist	5.3	5.3	Attic	0.00	Controlled

AccuRate NZ V1.3.1.0

New Zealand Home Energy Rating Scheme

Project Details

Project Name: Starter Home - Nikau House		
File Name: C:\Program Files\AccuRateNZ\Projects\Starter Home 1200		
Dwangs R3.2 Ceiling R1.8 Wall.PRO		
Place Name: Glen Innes (Auckland City)	**Climate Zone:** AK	
Client Name: Department of Building and Housing		
Site Address:		
Design Option: Base Design		
Date: 13/08/2010	**Time:** 9:41:	**Page:** 11

Hall: External walls main data

Wall	Construction	Azi (deg.)	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Fixed shade	Opening (m²)	Opening Type
1	Plywood Wall	180	1.50	2.40	3.60	1.60	Carport	2.00	Controlled

Hall: Internal walls

Wall	Construction	L (m)	H (m)	Area (gross) (m²)	Area (net) (m²)	Adjacent Zone	Opening (m²)	Opening Type
1	Timber frame / uninsulated	2.60	2.40	6.24	4.2	Bathroom	2.00	Controlled
2	Timber frame / uninsulated	1.94	2.40	4.66	2.7	Bed 2	2.00	Controlled

Hall: Floors

Floor	Construction	Area (gross) (m²)	Area (net) (m²)	Under the floor	Edge Ins. Thick.	Edge Ins. Depth	Opening (m²)	Opening Type
1	Concrete slab (suspended or on ground) / plai	8.5	8.5	Ground	25 mm	0.3	0.00	Controlled

Hall: Ceilings

Ceiling	Construction	Area (gross) (m²)	Area (net) (m²)	Above the ceiling	Opening (m²)	Opening Type
1	Ceiling below attic / insulated between joist	8.5	8.5	Attic	0.00	Controlled

AccuRate NZ V1.3.1.0

New Zealand Home Energy Rating Scheme

Project Details		
Project Name: Starter Home - Nikau House		
File Name: C:\Program Files\AccuRateNZ\Projects\Starter Home 1200 Dwangs R3.2 Ceiling R1.8 Wall.PRO		
Place Name: Glen Innes (Auckland City)	**Climate Zone:** AK	
Client Name: Department of Building and Housing		
Site Address:		
Design Option: Base Design		
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Attic: Floors

Floor	Construction	Area (gross) (m^2)	Area (net) (m^2)	Under the floor	Edge Ins. Thick.	Edge Ins. Depth	Opening (m^2)	Opening Type
1	Ceiling below attic / insulated between joist	14.1	14.1	Bed 1	None	0.0	0.00	Controlled
2	Ceiling below attic / insulated between joist	5.3	5.3	Bathroom	None	0.0	0.00	Controlled
3	Ceiling below attic / insulated between joist	6.4	6.4	Bed 2	None	0.0	0.00	Controlled
4	Ceiling below attic / insulated between joist	13.3	13.3	Bed 3	None	0.0	0.00	Controlled
5	Ceiling below attic / insulated between joist	8.5	8.5	Hall	None	0.0	0.00	Controlled

Attic: Roofs

Roof	Construction	Area (gross) (m^2)	Area (net) (m^2)	Azi (deg.)	Pitch (deg.)	Exposure
1	Roof above attic / profiled metal	51.00	51.00	0	22	Normal

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New Zealand Home Energy Rating Scheme

Project Details

Project Name: Starter Home - Nikau House

File Name: C:\Program Files\AccuRateNZ\Projects\Starter Home 1200 Dwangs R3.2 Ceiling R1.8 Wall.PRO

Place Name: Glen Innes (Auckland City) **Climate Zone:** AK

Client Name: Department of Building and Housing

Site Address:

Design Option: Base Design

Date: 13/08/2010 **Time:** 9:41: **Page:** 13

Shading Schemes

	Eaves		Other fixed shading		
Name	Projection (m)	Offset (m)	Projection (m)	Offset (m)	Monthly blocking factors (%)
North	1.90	0.10	0.00	0.00	100,100,100,100,100,100,100,100,100,100,100,100
East,West 1	1.00	0.00	0.00	0.00	100,100,100,100,100,100,100,100,100,100,100,100
East,West,South 2	0.10	0.00	0.00	0.00	100,100,100,100,100,100,100,100,100,100,100,100
Carport	0.00	0.00	5.50	0.00	100,100,100,100,100,100,100,100,100,100,100,100

Ventilation

Footprint: vertical dimension (m)	Footprint: horizontal dimension (m)	Azimuth of highlighted facade (degrees)	Insect screens
9.5	12.2	0	N

Infiltration

Description	Blower Door result ac/h@50Pa	Open fireplaces	Metal flues	Passive window vents	Specific leakage openings (m^2)	Fraction of old windows replaced	Site exposure
Post-1960, Simple design, <120 m^2, airtight window joinery	-	0	0	Yes	0.0000	-	Sheltered

Space Heating

Description	Annual Energy Use (MJ)	Annual Heating Cost ($)	Annual CO_2 Emissions (Kg)	Max Output (kW)	COP	Fuel Type

Description	Zones heated by this heater

	Total	Electricity	Natural Gas	LPG	Coal	Wood	Pellet	Oil	Shortfall
Annual Energy Use (MJ)		0	0	0	0	0	0	0	2172
Annual Heating Cost ($)	133	0	0	0	0	0	0	0	133
Annual CO_2 Emissions (Kg)	224	0	0	0	0	0	0	0	224
Peak Demand Shortfall(kW)									4.4

Heating Shortfall in Zones (due to undersized heaters)

Zones	Peak Shortfall (kW)	Annual Energy Consumption (MJ)[1]	Annual CO_2 Emissions (kg)[1]
Living	2.8	1555	160
Bed 1	0.4	7	1
Bed 2	0.2	5	1
Bed 3	0.5	39	4
Bathroom	0.4	482	50
Hall	0.2	84	9
Attic	0.0	0	0

[1] Assuming shortfall is met using electric resistive type heaters.

Living Room Temp and Outdoor Temp July