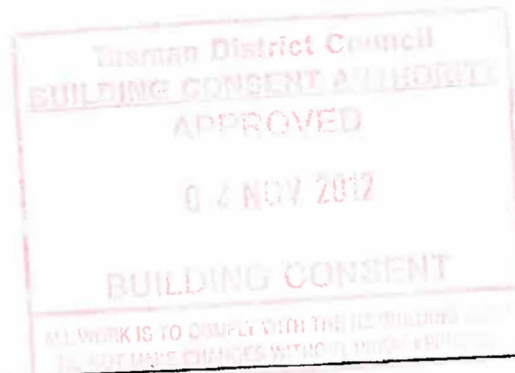


**VARIATION TO AGREEMENT FOR SALE AND
PURCHASE DATED 14 DECEMBER 2007 ("THE
AGREEMENT")**

between
Ngati Rarua Atiawa Iwi Trust Board
and
Whitgift Productions Limited or Nominee
and
Brown Acre Village Limited
and
Rangeview Villas Management Limited
and
John Clayton Welch



PITT & MOORE
NELSON

**VARIATION TO AGREEMENT FOR SALE AND PURCHASE DATED 14
DECEMBER 2007 ("the Agreement")**

Date:

3 December

2009

Parties

1. Ngati Rarua Atiawa Iwi Trust Board of Nelson ("the Vendor")
2. Whitgift Productions Limited or Nominee of Wellington ("the Purchaser")
3. Brown Acre Village Limited of Wellington ("the Purchaser's Nominee")
4. Rangeview Villas Management Limited at Wellington ("the First Guarantor")
5. John Clayton Welch of Wellington, Company Director ("the Second Guarantor")

Background

- A. The Vendor and Purchaser have entered into an Agreement for Sale and Purchase of Real Estate dated 14 December 2007 ("the Agreement").
- B. The parties have agreed to vary the terms of the Agreement.
- C. The Purchaser wishes to nominate the Purchaser's Nominee under the terms of the Agreement.
- D. The First and Second Guarantors have agreed to guarantee the obligations of the Purchaser and Nominee under the Agreement (as varied herein).

The terms of the Agreement are varied as follows:

Nomination

1. The Purchaser nominates the Purchaser's Nominee under the provisions of the Agreement and it is acknowledged that both the Purchaser and the Purchaser's Nominee shall be liable for all obligations on the part of the Purchaser under the Agreement (as varied herein).

Deposit

2. A deposit of \$130,000.00 is payable on or before five (5) working days after the date of this Variation.
3. For the purposes of this Agreement, the deposit paid will be apportioned and credited on the basis of \$100,000.00 towards the first settlement and \$15,000.00 per lot on the second settlement (as referred to in Clause 5 below).

Conditions

4. The provisions of Special Conditions 16, 17 and 18 of the Agreement are confirmed and it is recorded that the Agreement (as varied herein) is unconditional in all respects.

Settlement

5. Settlement of the purchase shall be undertaken in two parts as follows:



- a. The sale and transfer of Part Lot 10 DP 3266 CT 417538 and Lot 1 DP 6563 CT NL5C/209 shall be settled on the 13th of January 2010 in consideration for the sum of \$1,000,000.00 plus GST ("the first settlement") subject to Clause 8 below.
 - b. The sale and transfer of Lot 2 DP 6563 CT NL5C/204 and Lot 3 DP 6563 CT NL5C/205 shall be settled on or before the 13th of January 2011 in consideration for the sum of \$300,000.00 plus GST ("the second settlement") provided that the Purchaser shall be entitled to settle earlier on giving 10 working days prior written notice on either or both of the lots in which case the settlement sum will be apportioned as to \$150,000.00 plus GST per lot.
6. In the event of a default on settlement by the Purchaser under either the first settlement or the second settlement, the Vendor shall be entitled, at its sole discretion but without being obliged to do so, to treat the two transactions as separate and distinct and the obligations of the Purchaser under the first and second settlements as severable.
7. The interest rate for late settlement referred to in the Agreement is varied to 24% per annum so as to be consistent with the penalty interest rate referred to in Clause 8(a) below.

Vendor Finance

8. The sum of \$300,000.00 (being part of the consideration for the first settlement) will be satisfied by the Purchaser entering into a Term Loan Agreement as follows:
- a. Terms and Conditions:
 - Principal Sum: \$300,000.00
 - Term: 12 calendar months
 - Ordinary interest rate: 14% per annum
 - Penalty interest rate: 24% per annum
 - b. The principal sum will be paid on or before the 13th of January 2011.
 - c. Interest Payments: Interest will be paid by monthly payments of \$3,500.00 (being the ordinary interest rate) in arrears on the 13th day of each and every month during the term with the first payment being due on the 13th of February 2010.
 - d. The Purchaser will have the right to repay the principal sum by payments of \$10,000.00 or multiples of that amount on any of the dates fixed for payment of interest without prior notice and without penalty.
 - e. The term loan will otherwise contain the terms and conditions and be signed in the Auckland District Law Society Term Loan Agreement Ref 8009 Fixed Sum Form with such amendments as may reasonably be required by the Vendor to protect the Vendor's interests.
 - f. The obligations of the Purchaser under the Term Loan Agreement will be guaranteed by the First Guarantor and the Second Guarantor and will be secured by the Mortgage over the Secured Property as referred to below.

Security

9. The First Guarantor will grant a first priority mortgage in the ADLS All Obligations Form 2007/4238 ("the Mortgage") registered over the property situated at 7 Fuller Close, Levin contained in Certificate of Title 415750 (Wellington Registry) together with Supplementary Record Sheet 363399 ("the Property") for the purpose of securing all obligations of the

Purchaser and First Guarantor under the terms of the Agreement (as varied herein) and the Term Loan Agreement.

10. The Term Loan Agreement and Mortgage and any associated documents reasonably required by the Vendor or the Vendor's solicitors will be prepared by the Vendor's solicitor at the cost of the Purchaser and provided to the Purchaser and First and Second Guarantors for signature a reasonable time prior to the first settlement.

Outgoings and Possession

11. The Purchaser shall be responsible for the payment of rates, water rates and all other outgoings in respect of the properties from the date of possession.
12. Provided that the Purchaser and Guarantors have complied with all the obligations in relation to the first settlement, the Purchaser shall be entitled to possession of the property referred to in the second settlement for development purposes as from the 13th January 2010.

Guarantee

13. The First Guarantor and Second Guarantor, in consideration of the Vendor entering into this Agreement hereby jointly and severally:
 - a. Guarantee to the Vendor the due and punctual payment of the deposit, the purchase price and all other moneys and performance by the Purchaser of all the obligations to be performed by the Purchaser under the Agreement (as varied herein);
 - b. Indemnify the Vendor against all losses the Vendor may incur or suffer should the Purchaser default in the payment of the deposit, the purchase price or other moneys or the performance of any obligations to be performed by the Purchaser under this Agreement (as varied);
 - c. Agree that no release, delay or other indulgence given by the Vendor to the Purchaser or other alteration or variation in the terms of this Agreement, or any other thing whatsoever whereby the First Guarantor or Second Guarantor would have been so released had the First Guarantor or Second Guarantor been a surety only shall release, prejudice or affect the First Guarantor and Second Guarantor's liability as First Guarantor and Second Guarantor or indemnifier;
 - d. Agree that as between the First Guarantor or Second Guarantor and the Vendor, the First Guarantor or Second Guarantor may, for all purposes, be treated as Purchaser and the Vendor shall be under no obligations to take proceedings against the Purchaser before taking proceedings against either the First Guarantor or Second Guarantor.

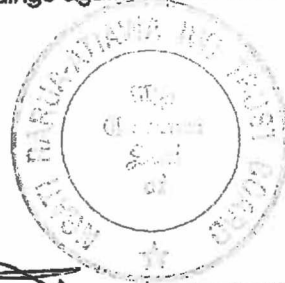
Signed by Ngati Rarua Atiawa Iwi Trust Board as the Vendor under Common Seal in the presence of:




 Authorised Signatory's signature

Rapata Taylor

 Authorised Signatory's full name





 Authorised Signatory's signature

R. J. Thomas

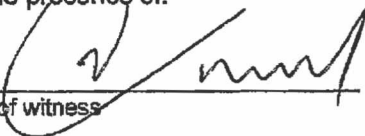
 Authorised Signatory's full name



Signed by **Whitgift Productions Limited**
as Purchaser by its Director John Clayton
Welch in the presence of:



John Clayton Welch - Director



Signature of witness

Name of witness **Mical Shane Jervis Treadwell**
Solicitor

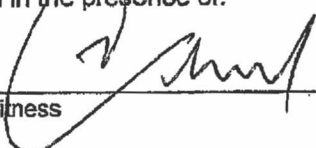
Occupation **WELLINGTON**

Address

Signed by **Brown Acre Village Limited**
as the Purchaser's Nominee by John
Clayton Welch in the presence of:



John Clayton Welch - Director



Signature of witness

Name of witness **Mical Shane Jervis Treadwell**
Solicitor

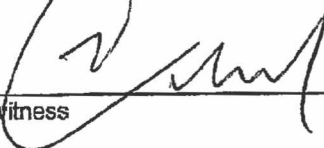
Occupation **WELLINGTON**

Address

Signed by **Rangeview Villas
Management Limited** as the First
Guarantor by its Director in the presence
of:



John Clayton Welch - Director



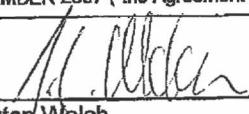
Signature of witness

Name of witness **Mical Shane Jervis Treadwell**
Solicitor

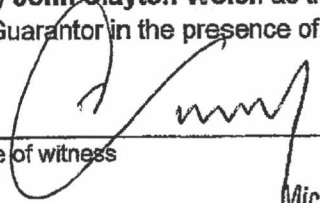
Occupation **WELLINGTON**

Address

Signed by **John Clayton Welch** as the
Second Guarantor in the presence of:



John Clayton Welch



Signature of witness

Name of witness

Mical Shane Jervis Treadwell
Solicitor
WELLINGTON

Occupation

Address

AGREEMENT FOR SALE AND PURCHASE OF REAL ESTATE

This form is approved by the Real Estate Institute of New Zealand Inc and by Auckland District Law Society.

DATE: 14 December 2007

VENDOR: Ngati Rarua Atiawa Iwi Trust Board

PURCHASER: Whitgift Productions Limited or nominee

PROPERTY
 Address: Corner of Wilkie Street and Parker Street, Motueka

Estate: ~~FEE SIMPLE~~ ~~LEASEHOLD~~ ~~CROSSLEASE (FEE SIMPLE)~~ ~~CROSSLEASE (LEASEHOLD)~~
~~STRATUM IN FREEHOLD~~ ~~STRATUM IN LEASEHOLD~~ (if none is deleted fee simple)

Legal Description
 Area (more or less): Lot/Flat/Unit: DP: Unique Identifier or CT:

NL5C/209 3252sqm Lot 1 Deposited Plan 6563
 NL5C/204 781sqm Lot 2 Deposited Plan 6563
 NL5C/205 781sqm Lot 3 Deposited Plan 6563
 Part NL2A/616 2.3424ha Part Lot 10 Deposited Plan 3266 (417538)

PAYMENT OF PURCHASE PRICE

Purchase price: \$ ~~1,230,000~~ 1,300,000 *Plus GST (if any) OR inclusive of GST (if any). If neither is deleted the purchase price includes GST (if any).*

One Million, Two Hundred and Thirty Thousand Dollars *THREE HUNDRED* **GST date (refer clause 12.0):**

Deposit (clause 2.0): \$ 10% of purchase price payable upon this agreement becoming unconditional.

Balance of purchase price to be paid or satisfied as follows:
 (1) By payment in cleared funds on the settlement date which is 1 May 2008
 OR
~~As otherwise described in the Further Terms of Sale.~~ **Interest rate for late settlement: 14.0 % p.a.**

POSSESSION
 Possession date (clause 3.0): 1 May 2008

CONDITIONS (clause 8.0)

Finance condition LIM required: ~~Yes~~/No

Lender: OIA Consent required: ~~Yes~~/No

Amount required: Land Act/OIA date:

Finance date:

TENANCIES (if any)

Name of tenant: Vacant Possession

Bond: Rent: Term: Right of renewal:

SALE BY:

Licensed Real Estate Agency

It is agreed that the vendor sells and the purchaser purchases the property, and the chattels listed in Schedule 1, on the terms set out above and in the General Terms of Sale and any Further Terms of Sale.

[Handwritten signatures]

FURTHER TERMS OF SALE

Refer to Further Terms of Sale attached



SCHEDULE 1

List all chattels included in the sale
(Strike out or add as applicable)

~~Stove~~ ~~Fixed floor coverings~~ ~~Blinds~~ ~~Curtains~~ ~~Drapes~~ ~~Light fittings~~

WARNING (This warning does not form part of this agreement)
This is a binding contract. Read the information set out on the back page before signing.

Signature of vendor(s)

Signature of purchaser(s)

.....
.....

.....
.....

FURTHER TERMS OF SALE – Parker St, Motueka

15.0 Due Diligence

15.1 This agreement is in all respects conditional upon the purchaser being satisfied that the property is suitable for the purchaser's requirements following the purchaser carrying out a due diligence verification of the property, including by way of example and without limitation:

- (a) the value and condition of the property;
- (b) the terms of all encumbrances, rights and interests registered against or in respect of the title;
- (c) the terms and implications of the zoning or permitted use related aspects of the property and any statutory protection notices or designations on the property;
- (d) compliance schedule requirements under the Building Act 1991;
- (e) the overall financial suitability of the purchaser's proposed investment in the property and their ability to obtain necessary finance to complete the purchase.

15.2 The vendor shall provide the purchaser upon request with copies of such information (except insofar as the vendor is legally bound to keep such information confidential) which the vendor has in respect of the property in order to assist the purchaser to fulfil this condition.

15.3 The parties acknowledge that the conditions in this clause are inserted for the sole benefit of the purchaser and at any time prior to this agreement being avoided may be waived by the purchaser giving written notice of waiver to the vendor.

15.4 Date for fulfilment: 20 working days calculated from the date of this agreement.

16.0 Conditional Upon Statutory Consents

16.1 This agreement is subject to and conditional upon the purchaser obtaining necessary planning consents from the Tasman District Council, for the establishment and construction of a unit titled lifestyle Community Village together with a residential subdivision, such consents to be entirely satisfactory to the purchaser. Should such consents not be granted by the date for fulfilment specified hereunder, an extension on a monthly basis shall be granted, to a maximum of six (6) months, the consideration for each additional month to be One Thousand Dollars (\$1,000.00) payable to the vendor immediately and to be non refundable. Planning Consent shall be applied for immediately upon satisfaction of Clause 15.0 herein. This Clause shall enure entirely for the benefit of the purchaser.

Date for fulfilment: 31 March 2008.

Handwritten signatures and initials in the bottom right corner of the page. There are two distinct signatures, one appearing to be a stylized 'R' and another more complex signature.

FURTHER TERMS OF SALE – Parker St, Motueka

17.0 Conditional Upon Separate Title

17.1 This agreement is also conditional until 31 March 2008 upon the vendor obtaining a separate title for the 2.3424 hectares being part lot 10 DP3266 on terms acceptable to it. The vendor undertakes to immediately commence the process for obtaining a separate title and will inform the purchaser of any reason it may become aware of that would prevent this condition being fulfilled.

18.0 Conditional Upon Vacant Possession

18.1 This agreement is also conditional until 31 March 2008 upon the vendor being satisfied it can give vacant possession on terms acceptable to it. The vendor undertakes to immediately commence the process for obtaining vacant possession and will inform the purchaser of any reason it may become aware of that would prevent this condition being fulfilled.

Handwritten signatures and initials at the bottom right of the page. There are three distinct marks: a large, stylized signature at the top, and two smaller, more legible initials or signatures below it.

BEFORE SIGNING THE AGREEMENT**AGREEMENT FOR SALE AND
PURCHASE OF REAL ESTATE**

© This form is copyright to the Real Estate Institute of New Zealand Inc and
Auckland District Law Society

- It is recommended both parties seek professional advice before signing. This is especially so if:
 - there are any doubts. Once signed, this will be a binding contract with only restricted rights of termination.
 - the property is sold as a going concern.
 - property such as a hotel or a farm is being sold. The agreement is designed primarily for the sale of residential and commercial property.
 - the property is vacant land in the process of being subdivided or there is a new cross lease or unit title to be issued. In these cases additional clauses may need to be inserted.
 - there is any doubt as to the position of the boundaries.
 - the purchaser wishes to check the weathertightness and soundness of construction of any dwellings or other buildings on the land.
- The purchaser should investigate the status of the property under the Council's District Plan. The property and those around it are affected by zoning and other planning provisions regulating their use and future development.
- The purchaser should investigate whether necessary permits, consents and code compliance certificates have been obtained from the Council where building works have been carried out by an earlier owner. This investigation can be assisted by obtaining a LIM from the Council.
- The purchaser should compare the title plans against the physical location of existing structures where the property is a cross lease or unit title. Structures or alterations to structures not shown on the plans may result in the title being defective.
- In the case of a unit title, the purchaser should inquire whether the body corporate holds funds for deferred maintenance of common property.
- The vendor should ensure the warranties and undertakings in clauses 6 and 7:
 - are able to be complied with; and if not
 - the applicable warranty is deleted from the agreement and any appropriate disclosure is made to the purchaser.
- Both parties should ensure the chattels list in Schedule 1 is accurate.
- If the property is sold as a "going concern", the vendor should ensure the purchase price is stated on the front page as "PLUS GST (if any)".

THE ABOVE NOTES ARE NOT PART OF THIS AGREEMENT AND ARE NOT A COMPLETE LIST OF MATTERS WHICH ARE IMPORTANT IN CONSIDERING THE LEGAL CONSEQUENCES OF THIS AGREEMENT.

PROFESSIONAL ADVICE SHOULD BE SOUGHT REGARDING THE EFFECT AND CONSEQUENCES OF ANY AGREEMENT ENTERED INTO BETWEEN THE PARTIES.

THE PURCHASER IS ENTITLED TO A COPY OF ANY SIGNED OFFER AT THE TIME IT IS MADE.

DATE:**VENDOR:**

Ngati Rarua Atiawa Iwi Trust Board

Contact Details:

P O Box 13
NELSON 7040
(03) 548 0770

VENDOR'S SOLICITORS:Firm: *MITT & MOORE*Individual Acting: *Graham Allan*

Contact Details:

P O Box 42
NELSON
P: (03) 548 8349
F: (03) 546 9853

PURCHASER:

Whitgift Productions Limited or nominee

Contact Details:

PURCHASER'S SOLICITORS:

Firm: Treadwells

Individual Acting: Mical Treadwell

Contact Details:

P O Box 859
WELLINGTON
Ph: 04 472 0929
Fax: 04 473 7106

REAL ESTATE AGENT:

Agency Name:

Manager:

Salesperson:

Contact Details:

Risk Matrix Calculation

to E2/AS1 Building Envelope Risk Matrix

for
R J Ker Contractors Ltd

Villa Type 2

R J KER CONTRACTORS LTD



Risk Matrix Calculation
to E2 / AS1 Building Envelope Risk Matrix

Villa Type 2

0

**Wind Zone
MEDIUM**

Face of Building	1,3,5,7,9,11,13,15	
Risk Factor	Severity	Score
Wind Zone	MEDIUM	0
Number of storeys	LOW	0
Roof/wall intersection design	LOW	0
Eaves width	MEDIUM	1
Envelope complexity	MEDIUM	1
Deck design	LOW	0
Total risk score		2

Face of Building	2,4	
Risk Factor	Severity	Score
Wind Zone	MEDIUM	0
Number of storeys	LOW	0
Roof/wall intersection design	LOW	0
Eaves width	HIGH	2
Envelope complexity	LOW	0
Deck design	MEDIUM	2
Total risk score		4

Face of Building	6,10,12,16	
Risk Factor	Severity	Score
Wind Zone	MEDIUM	0
Number of storeys	LOW	0
Roof/wall intersection design	LOW	0
Eaves width	LOW	0
Envelope complexity	MEDIUM	1
Deck design	LOW	0
Total risk score		1

Face of Building	8,14	
Risk Factor	Severity	Score
Wind Zone	MEDIUM	0
Number of storeys	LOW	0
Roof/wall intersection design	LOW	0
Eaves width	LOW	0
Envelope complexity	MEDIUM	1
Deck design	LOW	0
Total risk score		1

Face of Building		
Risk Factor	Severity	Score
Wind Zone	MEDIUM	0
Number of storeys	LOW	0
Roof/wall intersection design	LOW	0
Eaves width	LOW	0
Envelope complexity	LOW	0
Deck design	LOW	0
Total risk score		0

Face of Building	XXXX	
Risk Factor	Severity	Score
Wind Zone	MEDIUM	0
Number of storeys	LOW	0
Roof/wall intersection design	LOW	0
Eaves width	LOW	0
Envelope complexity	LOW	0
Deck design	LOW	0
Total risk score		0

Face of Building	XXXX	
Risk Factor	Severity	Score
Wind Zone	MEDIUM	0
Number of storeys	LOW	0
Roof/wall intersection design	LOW	0
Eaves width	LOW	0
Envelope complexity	LOW	0
Deck design	LOW	0
Total risk score		0

Face of Building	XXXX	
Risk Factor	Severity	Score
Wind Zone	MEDIUM	0
Number of storeys	LOW	0
Roof/wall intersection design	LOW	0
Eaves width	LOW	0
Envelope complexity	LOW	0
Deck design	LOW	0
Total risk score		0

SUITABLE CLADDINGS			
FACE	SCORE	CAVITY	CLADDING
1,3,5,7,9,11,13,15	2	Y	Brick veneer & Bevelback weatherboards
2,4	4	Y	Bevelback weatherboards
6,10,12,16	1	Y	Bevelback weatherboards
8,14	1	Y	Brick veneer
0	0	Y	
XXXX	0		
XXXX	0		
XXXX	0		

Table 3: Suitable wall claddings
Paragraphs 3.1.2, 3.4.1.1, 3.4.2.1, 3.4.2.2, 3.4.3.2, 9.1.1, 9.4.1.2, 9.4.1.3, 9.6, Figure 1

Risk Score

Suitable wall claddings⁽¹⁾

Direct fixed to framing

Over nominal 20 mm drained cavity

- 0 – 6**
- a) Timber weatherboards – all types
 - b) Fibre cement weatherboards
 - c) Vertical profiled metal ⁽²⁾ – corrugated and symmetrical
 - d) Fibre cement sheet ⁽³⁾
 - e) Plywood sheet
 - f) *EIFS*

- a) *Masonry veneer* ⁽⁴⁾
- b) *Stucco*
- c) Horizontal profiled metal ⁽²⁾ – corrugated and *trapezoidal* only

- 7 – 12**
- a) Bevel back timber weatherboards
 - b) Vertical timber board and batten
 - c) Vertical profiled metal ⁽²⁾ – corrugated only

- a) *Masonry veneer* ⁽⁴⁾
- b) *Stucco*
- c) Horizontal profiled metal – corrugated and *trapezoidal* only
- d) Rusticated weatherboards
- e) Fibre cement weatherboards
- f) Fibre cement sheet
- g) Plywood sheet
- h) *EIFS*

- 13 – 20**
- a) Vertical profiled metal ⁽²⁾ corrugated only

- a) *Masonry veneer* ⁽⁴⁾
- b) *Stucco*
- c) Horizontal profiled metal – corrugated and *trapezoidal* only
- d) Rusticated weatherboards
- e) Fibre cement weatherboards
- f) Fibre cement sheet
- g) Plywood sheet
- h) *EIFS*
- i) Bevel back weatherboards

- Over 20**
- a) Redesign the *building* to achieve a lower score, or
 - b) Specific design
 - The design may need changing to reduce the risk
 - The *building consent authority* may require more comprehensive details and documentation providing evidence of *weathertightness*
 - The *building consent authority*, designer or owner may require more inspections
 - A third party audit of the design may be required.

- NOTES:** (1) The wall claddings in this table are limited to those covered in this Acceptable Solution.
 (2) Traditional *masonry veneer* as per SNZ H8 4236, with minimum 40 mm cavity.
 (3) Refer Figure 39 for profiles.
 (4) Except *stucco* over a fibre cement backing.

Table 1:	Definitions of risk Paragraph 3.1.1, Figure 1	back to Risk Matrix
A: Wind zone	Low risk	Low wind zone as described by NZS 3604
	Medium risk	Medium wind zone as described by NZS 3604
	High risk	High wind zone as described by NZS 3604
	Very high risk	Very high wind zone as described by NZS 3604
B: Number of storeys	Low risk	One storey
	Medium risk	Two storeys in part
	High risk	Two storeys
	Very high risk	More than two storeys
C: Roof/wall intersection design	Low risk	Roof-to-wall intersection fully protected (e.g. hip and gable roof with eaves)
	Medium risk	Roof-to-wall intersection partly exposed (e.g. hip and gable roof with no eaves)
	High risk	Roof to wall intersection fully exposed (e.g. parapets, enclosed balustrades or eaves at greater than 90° to vertical with soffit lining)
	Very high risk	Roof elements finishing within the boundaries formed by the exterior walls (e.g. lower ends of aprons, chimneys, dormers etc)
D: Eaves width ⁽¹⁾⁽²⁾	Low risk	Greater than 600 mm for single storey
	Medium risk	451 – 600 mm for single storey, or over 600 mm for two storey
	High risk	101 – 450 mm for single storey, or 451 – 600 mm for two storey, or greater than 600 mm above two storey
	Very high risk	0 – 100 mm for single storey, or 0 – 450 mm for two storey, or less than 600 mm above two storey
E: Envelope complexity	Low risk	Simple rectangular, L, T or boomerang shape, with single cladding type
	Medium risk	Moderately complex, angular or curved shapes (e.g. Y or arrowhead) with no more than two cladding types
	High risk	Complex, angular or curved shapes (e.g. Y or arrowhead) with multiple cladding types
	Very high risk	As for High risk, but with junctions not covered in C or F of this table (e.g. box windows, pergolas, multi-storey re-entrant shapes etc)
F: Deck design ⁽³⁾	Low risk	None, timber slat deck or porch at ground floor level
	Medium risk	Fully covered in plan by roof, or timber slat deck attached at first or second floor level
	High risk	Enclosed deck exposed in plan or cantilevered at first floor level
	Very high risk	Enclosed deck exposed in plan or cantilevered at second floor level or above

NOTES:

- (1) Eaves width measured horizontally from external face of wall cladding to outer edge of overhang, including gutters and fascias.
- (2) Balustrades and parapets count as 0 mm eaves.
- (3) The term deck includes balconies, as described in the Definitions.

H1 Energy Analysis Calculation Method

for
R J Ker Contractors Ltd.

Villa Type 2

R J KER CONTRACTORS LTD



Reference Building - Non-Solid

Component	Description	Area (m ²)	R value	Heat Loss (Area/R-value)
Roof		165.90	3.3	50.3
Wall		125.87	2.0	62.9
Floor		165.90	1.3	127.6
Glazing (30%)		53.95	0.26	207.5
Glazing (>30%)		0.00	0.31	0.0
Skylights		0.00	0.31	0.0
			Total	448.3

NOTES:

Set wall area as either 70% of total wall area or actual wall area, whichever is lower.
 Set glazing area as either 30% of total wall area or actual window area, whichever is higher.
 Total area of glazing (including skylights) must be ≤50% of the total wall area.
 An R-value of 0.26 may be used for traditional leadlight glass if the total area is ≤2.6 m².
 Non-glazed areas of door openings greater than 3 m² are treated as wall.

Proposed Design

Component	Description	Area (m ²)	R value	Heat Loss (Area/R-value)
Roof Type 1	Metal tile, 90mm frame, 900crs, 3.6 batts	165.90	2.92	56.8
Roof Type 2	NOT USED	0.00		
Roof Type 3	NOT USED	0.00		
Wall Type 1	BRICK, cavity, 90mm frame, 400crs, 2.6 batts	79.60	2.09	38.1
Wall Type 2	WBD, cavity, 90mm frame, 400 crs, 2.6 batts	21.10	2.08	10.1
Wall Type 3	GIB-10 2 sides, 90mm frame, 600 crs, 2.6 batts	37.70	2.15	17.5
Wall Type 4	NOT USED	0.00		
Wall Type 5	NOT USED	0.00		
Floor Type 1	Plain slab - 90mm frame	165.90	1.29	128.6
Floor Type 2	NOT USED	0.00		
Floor Type 3	NOT USED	0.00		
Glazing Type 1	Alum Frame, Double glass, clear	41.42	0.26	159.3
Glazing Type 2	NOT USED	0.00		
Glazing Type 3	NOT USED	0.00		
Skylight Type 1	NOT USED	0.00	0.43	0.0
Skylight Type 2	NOT USED	0.00		
Skylight Type 3	NOT USED	0.00		
			Total	410.5

NOTES:

R-values must be no less than 50% of the R-value of the corresponding Schedule values
 Total area of glazing (including skylights) must be ≤40% of the total wall area
 Non-glazed areas of door openings totalling less than 6m² may be ignored.

FLOORS									
REVIT					MANUAL				
Type Mark	Type	Rvalue	Area (m)	Perim (mm)	Type Mark	Type	Length (mm)	Width (mm)	Area (m)
					1	Plain slab - 90mm frame			165.90
									0.00
									0.00
									0.00
									0.00
									0.00
									0.00
									0.00
	revit sub-totals		0.00	0.00		manual sub-totals	73.60		165.90
			Area	Perim			Perim		Area
	TOTALS		165.90	73.60					
REVIT	Floor Type 1		0.00	0.00	MAN'L	Floor Type 1	73.60		165.90
	Floor Type 2		0.00	0.00		Floor Type 2	0.00		0.00
	Floor Type 3		0.00	0.00		Floor Type 3	0.00		0.00
			Area	Perim			Perim		Area

TOTAL	Floor Type 1		165.90	73.60
	Floor Type 2		0.00	0.00
	Floor Type 3		0.00	0.00
			Area	Perim

area/perim ratio - type 1	2.25
area/perim ratio - type 2	#DIV/0!
area/perim ratio - type 3	#DIV/0!

WALLS									
REVIT					MANUAL				
	actual walls (- opg) revit			138.40			manual walls (+ opg)		0.00
	ACTUAL WALLS			138.40			actual walls (- opg) manual		0.00
	TOTAL WALLS			179.82			30% of total walls		53.95
	70% of TOTAL WALLS			125.87			higher of 30% ttl wall \ actual wdw		53.95
	lower of 70% \ actual			125.87					
REVIT	wall type	1		79.60	MANUAL	wall type	1		0.00
	wall type	2		21.10		wall type	2		0.00
	wall type	3		37.70		wall type	3		0.00
	wall type	4		0.00		wall type	4		0.00
	wall type	5		0.00		wall type	5		0.00
	wall type	6		0.00		wall type	6		0.00
	wall type	7		0.00		wall type	7		0.00
	wall type	8		0.00		wall type	8		0.00
	wall type	9		0.00		wall type	9		0.00
	wall type	10		0.00		wall type	10		0.00
TOTAL	wall type	1		79.60					
	wall type	2		21.10					
	wall type	3		37.70					
	wall type	4		0.00					
	wall type	5		0.00					
	wall type	6		0.00					
	wall type	7		0.00					
	wall type	8		0.00					
	wall type	9		0.00					
	wall type	10		0.00					

WINDOWS					
REVIT			MANUAL		
	revit wdws	41.42		manual wdws	0.00
	ACTUAL WINDOWS (rev+manl)	41.42			
	wdw area over 30%	0			
	actual wdws minus 30% walls	-12.53			
REVIT	glazing type 1	41.42	MAN'L	glazing type 1	0.00
	glazing type 2	0.00		glazing type 2	0.00
	glazing type 3	0.00		glazing type 3	0.00
			manual wdws per wall type	wall type 1	0
				wall type 2	0
				wall type 3	0
				wall type 4	0
				wall type 5	0
				wall type 6	0
				wall type 7	0
				wall type 8	0
				wall type 9	0
				wall type 10	0
TOTAL	glazing type 1	41.42			
	glazing type 2	0.00			
	glazing type 3	0.00			



Construction R-value Calculator

H1 compliance calculator,
now with BPI calculation.

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#).


Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

Floors

Walls

Roofs

Floor: Slab Floor

internal surface 0.09	
Insulation value of the slabfloor	
	
Slab floor area [m ²]:	<input type="text" value="165.9"/>
Perimeter length [m]:	<input type="text" value="73.6"/>
External wall thickness [mm]:	<input type="text" value="90"/>
Soil conductivity [W/m °C]:	<input type="text" value="1.2"/>
Underslab insulation:	<input type="text" value="none"/> Insulation:
Slab edge insulation:	<input type="text" value="none"/> Insulation:
<i>R-value: 1.2</i>	

Resulting R-value: m²K/W.

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction) 

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31



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Floors

Walls

Roofs

Wall: Veneer wall with timber framing, bulk insulation and building paper (vented)

external surface 0.03	
Veneer 70mm brick	
<i>R-value: 0.06</i>	
15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	
Timber Frame & Cavity 90mm, studs @ 400mm, dwangs @ 800mm	
<i>Frame Area: 18.7%</i>	<i>Cavity Area: 81.3%</i>
Timber Frame <i>R-value: 0.75</i>	Insulation 2.6
still Airgap 20-90mm airgap (non-reflective) <i>R-value: 0.16</i>	
Wall Lining Gypsum plasterboard 10mm	
<i>R-value: 0.04</i>	
internal surface 0.09	

Resulting R-value: **2.09** m²K/W.

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Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31



Construction R-value Calculator

H1 compliance calculator,
now with BPI calculation.

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

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Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors
- Walls
- Roofs

Wall: Timber frame (direct fixed cladding)

external surface 0.03	
Cladding Gypsum plasterboard 10mm into still air (garage, etc.) <i>R-value: 0.1</i>	
Timber Frame & Cavity 90mm, studs @ 600mm, dwangs @ 800mm	
Frame Area: 15.1%	Cavity Area: 84.9%
Timber Frame <i>R-value: 0.75</i>	Insulation 2.6
still Airgap	none <i>R-value: 0</i>
Wall Lining Gypsum plasterboard 10mm <i>R-value: 0.04</i>	
internal surface 0.09	

Resulting R-value: **2.15** m²K/W.

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Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction) [\[i\]](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31



Construction R-value Calculator

H1 compliance calculator,
now with BPI calculation.

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Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors
- Walls
- Roofs

Roof: Timber framed roof, flat ceiling

external surface 0.03	
Roofing	Metal tiles with building paper
R-value: 0.01	
Roof space (still air) 0.11	
Insulation	
Timber Frame & Cavity	
94mm rafters or joists @ 900mm, dwangs @ 900mm	
Frame Area: 10%	Cavity Area: 90%
Trusses and dwangs	Insulation
R-value: 0.78	3.6
Ceiling Lining	Gypsum plasterboard 10mm
R-value: 0.04	
internal surface 0.09	

Resulting R-value: **2.92** m²K/W.

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Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31



Construction R-value Calculator

H1 compliance calculator,
now with BPI calculation.

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

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Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors
- Walls
- Roofs

Wall: Timber frame with vented cavity

external surface 0.03	
Cladding Linea weatherboard	
<i>R-value: 0.04</i>	
15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	
Timber Frame & Cavity 90mm, studs @ 400mm, dwangs @ 800mm	
<i>Frame Area: 18.7%</i>	<i>Cavity Area: 81.3%</i>
Timber Frame <i>R-value: 0.75</i>	Insulation 2.6
	still Airgap 20-90mm airgap (non-reflective) <i>R-value: 0.16</i>
Wall Lining Gypsum plasterboard 10mm	
<i>R-value: 0.04</i>	
internal surface 0.09	

Resulting R-value: **2.08** m²K/W.

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Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction) [Link](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31