

25 January 2013

General Manager
Pittwater Council
PO Box 882
Mona Vale NSW 1660

Dear Sir/Madam,

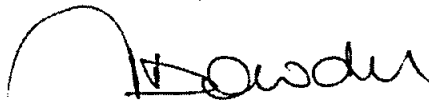
Development Application No. N0194/12
19 Sturdee Lane, Elvina Bay

For Council's information, please find enclosed Construction Certificate No. 2012/4962 issued alterations & additions at the above address, accompanied by:

- Copy of Construction Certificate application form
- Notice of Commencement of Work and Appointment of Principal Certifying Authority
- Home Warranty Insurance Certificate
- Cheque for \$36.00 being the prescribed fee to receive the above certificate.

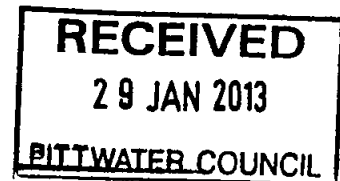
NB: Please forward receipt for the above fee to Insight Building Certifiers Pty Ltd, PO Box 326, Mona Vale 1660.

Yours faithfully



Tom Bowden
Insight Building Certifiers Pty Ltd

R-335749
\$36 PRVC
29 Jan 13

Construction Certificate Determination

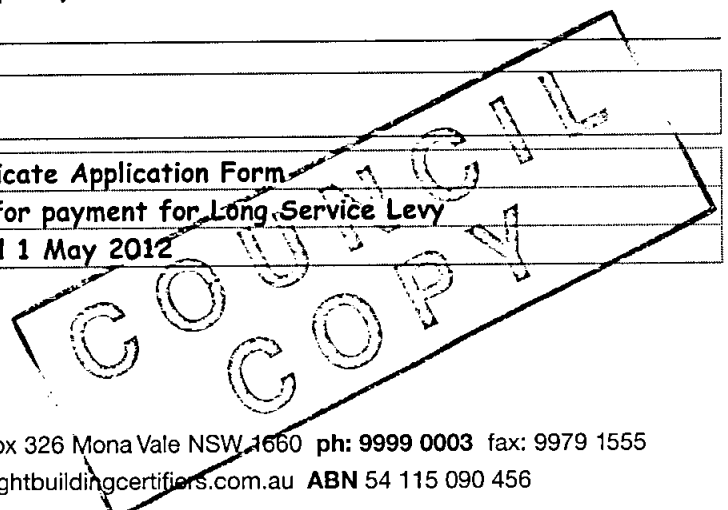
issued under the Environmental
Planning and Assessment Act 1979
Section 109C (1) (b), 81A (2) and 81A (4)

Certificate No. 2012/4962

Council	Pittwater
Determination Date of issue	Approved 23 January 2013
Subject land Address Lot No, DP No.	19 Sturdee Lane, Elvina Bay Lot 6 DP 8013
Applicant Name Address Contact No.	Mr Ian & Mrs Judith James PO Box 314, Church Point NSW 2105 9999 1617 / 0450 299 964
Owner Name Address Contact No.	Mr Ian & Mrs Judith James 19 Sturdee Lane, Elvina Bay NSW 2105 02 9999 1617 / 0450 299 964
Description of Development Type of Work	Alterations & Additions
Builder or Owner/Builder Name Contractor Licence No/Permit	R W Stidwill Constructions Pty Ltd 170304C
Value of Work Building	\$266,424.00

Attachments

- Copy of completed Construction Certificate Application Form
- Pittwater Council receipt no. 334243 for payment for Long Service Levy
- BASIX Certificate no. A137683 dated 1 May 2012



Plans & Specifications certified

The development is to be carried out in compliance with the following plans and documentation listed below and endorsed with *Insight Building Certifiers* stamp.

- Architectural Plans & Construction Specification reference no. NB, drawing no's. CC2-01, CC2-02 & CC2-03, prepared by Eastwood Design dated 17 December 2012
- Structural Details reference no. 27535, drawing no. S1 (Revision B) dated 6 November 2012 accompanied by a Design Compliance Statement dated 19 December 2012, all prepared & endorsed by Jack Hodgson Consultants Pty Ltd
- Completed Form 2 (Parts A & B) of Pittwater Council Geotechnical Risk Management Policy, endorsed by Jack Hodgson Consultants Pty Ltd dated 17 December 2012, respectively
- Schedule of External Finishes prepared by Eastwood Design dated December 2012

Certificate

I hereby certify that the above Plans, documents or Certificates, satisfy:

- The relevant provisions of the Building Code of Australia
- The relevant conditions of this Development Consent

and that work completed in accordance with the documentation accompanying the application for this Certificate (and any modifications as verified by me and shown on that documentation) will comply with the requirements of the Environmental Planning & Assessment Regulation referred to in Section 81A(5) of the Environmental Planning & Assessment Act, 1979.

Signed



Date of endorsement
Certificate No.

23 JAN 2013
2012/4962

Certifying Authority

Name of Accredited Certifier
Accreditation No.
Accreditation Authority
Contact No.
Address

Tom Bowden
BPB0042
Building Professionals Board
(02) 9999 0003
13/90 Mona Vale Road, Mona Vale NSW 2103

Development Consent

Development Application No.
Date of Determination

N0194/12
12 September 2012

BCA Classification

1a

18 DEC 2012

APPLICATION FOR A CONSTRUCTION CERTIFICATE

Environmental Planning and Assessment Act 1979 & Environmental Planning and Assessment Regulation 2000

Description of Building Work

ALTERATIONS & ADDITIONS

Estimated cost of work \$266,424.00

BCA Classification(s) /a

Development Consent Reference no.

N0194/12

Date of Issue

12 SEPT 2012

Modified Consent Reference no. (If applicable)

Date of Issue (If applicable)

Property Address

Unit/Street no.

Street name

19

STURDEE LANE

Suburb

ELVINA

BAY

Post code

2105

Lot no.

6

DP no.

80/3

Accompanying Documents

- Appropriate Architectural Plans and Specifications
- All information required by Part 3 of Schedule 1 Forms of the Regulation (see over)

I/We, the owner/s of the abovementioned property, hereby make application to Tom Bowden/Heath McNab of Insight Building Certifiers Pty Ltd (Insight) for a Construction Certificate for the building work described above and, in doing so, I/we also declare that the documents provided and asserted by me as a copy of a development consent and incorporated plans are a true copy of same as issued by the relevant consent authority or the Land and Environment Court.

Owner 1 Name:

JOATH JAMES

Owner 2 Name:

IAN JAMES

Owner's Signature:

[Signature]

Owner's Signature:

[Signature]

Date:

14/12/12

Date:

14/12/12

Owner's Address:

19 STURDEE LANE, ELVINA BAY

Daytime Telephone:

9999 1617

Mobile:

0450 299964

[Office Use Only]: Date received by Accredited Certifier

Environmental Planning & Assessment Regulations 2000

Schedule 1 – Part 3(6) – Documents to accompany application for Construction Certificates

- (1) An application for a construction certificate must be accompanied by the following documents:
 - (a) if the development involves building work (including work in relation to a dwelling-house or a building or structure that is ancillary to a dwelling-house):
 - (i) a detailed description of the development, and
 - (ii) appropriate building work plans and specifications,
 - (b) if the development involves building work (other than work in relation to a dwelling-house or a building or structure that is ancillary to a dwelling-house or work that relates only to fire link conversion):
 - (i) a list of any existing fire safety measures provided in relation to the land or any existing building on the land, and
 - (ii) a list of the proposed fire safety measures to be provided in relation to the land and any building on the land as a consequence of the building work,
 - (c) if the development involves subdivision work, appropriate subdivision work plans and specifications,
 - (d) in the case of development to which clause 6A applies, such other documents as any BASIX certificate for the development requires to accompany the application.
 - (2) A detailed description of the development referred to in subclause (1) (a) (i) must indicate the following matters:
 - (a) for each proposed new building:
 - (i) the number of storeys (including underground storeys) in the building,
 - (ii) the gross floor area of the building (in square metres),
 - (iii) the gross site area of the land on which the building is to be erected (in square metres),
 - (b) for each proposed new residential building:
 - (i) the number of existing dwellings on the land on which the new building is to be erected,
 - (ii) the number of those existing dwellings that are to be demolished in connection with the erection of the new building,
 - (iii) the number of dwellings to be included in the new building,
 - (iv) whether the new building is to be attached to any existing building,
 - (v) whether the new building is to be attached to any other new building,
 - (vi) whether the land contains a dual occupancy,
 - (vii) the materials to be used in the construction of the new building (using the abbreviations set out in clause 7 of this Schedule).
 - (3) Appropriate building work plans and specifications referred to in subclause (1) (a) (ii) include the following:
 - (a) detailed plans, drawn to a suitable scale and consisting of a block plan and a general plan, that show:
 - (i) a plan of each floor section, and
 - (ii) a plan of each elevation of the building, and
 - (iii) the levels of the lowest floor and of any yard or unbuilt on area belonging to that floor and the levels of the adjacent ground, and
 - (iv) the height, design, construction and provision for fire safety and fire resistance (if any),
 - (b) Specifications for the development:
 - (i) that describe the construction and materials of which the building is to be built and the method of drainage, sewerage and water supply, and
 - (ii) that state whether the materials to be used are new or second-hand and (in the case of second-hand materials) give particulars of the materials to be used,
 - (c) a statement as to how the performance requirements of the *Building Code of Australia* are to be complied with (if an alternative solution, to meet the performance requirements, is to be used),
 - (d) a description of any accredited building product or system sought to be relied on for the purposes of section 79C (4) of the Act,
 - (e) copies of any compliance certificate to be relied on,
 - (f) if the development involves building work to alter, expand or rebuild an existing building, a scaled plan of the existing building,
 - (g) in the case of development to which clause 6A applies, such other matters as any BASIX certificate for the development requires to be included in the plans and specifications.
 - (3A) An application for a construction certificate that relates only to fire link conversion need only be accompanied by a document that describes the design and construction, and mode of operation, of the new fire alarm communication link.
 - (4) Appropriate subdivision work plans and specifications referred to in subclause (1) (c) include the following:
 - (a) details of the existing and proposed subdivision pattern (including the number of lots and the location of roads),
 - (b) details as to which public authorities have been consulted with as to the provision of utility services to the land concerned,
 - (c) details engineering plans as to the following matters:
 - (i) earthworks,
 - (ii) roadworks,
 - (iii) road pavement,
 - (iv) road furnishings,
 - (v) stormwater drainage,
 - (vi) water supply works,
 - (vii) sewerage works,
 - (viii) landscaping works,
 - (ix) erosion control works,
 - (d) copies of any compliance certificates to be relied on.
- 6A BASIX certificate required for certain development**
- (1) This clause applies to:
 - (a) BASIX affected development, and
 - (b) BASIX optional development in relation to which a person made a development application that has been accompanied by a BASIX certificate or BASIX certificates (despite there being no obligation under clause 2A for it to be so accompanied).
 - (2) In addition to the documents required by clause 6, an application for a construction certificate for any development to which this clause applies must also be accompanied by a BASIX certificate or BASIX certificates for the development, being either the BASIX certificate applicable to the development when the relevant development consent was granted or some other BASIX certificate or BASIX certificates that has or have been issued no earlier than 3 months before the date on which the application is made.
 - (3) If the proposed development involves the alteration, enlargement or extension of a BASIX affected building that contains more than one dwelling, a separate BASIX certificate is required for each dwelling concerned.

Pittwater Council

Tax Invoice

Official Receipt

ABN: 61340837871

13/12/2012 Receipt No: 334243

To: JUDITH JAMES
PO BOX 314
CHURCH POINT 2105

Applic	Reference	Amount
GL Receipt		
QSL-Builders LSL		1932.00
1 X 19 STURGES LANE		
Transaction Total:		\$932.00
Includes GST of:		\$0.00

Amounts Tendered

Cash	\$0.00
Cheque	\$0.00
Db/Cr Card	\$932.00
Money Order	\$0.00
Agency	\$0.00
Total	\$932.00
Rounding	\$0.00
Change	\$0.00
Nett	\$932.00

Printed 13/12/2012 11:36:56AM

COUNCIL
COPY

BASIX[®] Certificate

Building Sustainability Index www.basix.nsw.gov.au

Alterations and Additions

Certificate number: A137683

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Alterations and Additions Definitions" dated 29/9/2006 published by Department of Planning. This document is available at www.basix.nsw.gov.au

Director-General

Date of issue: Tuesday, 01, May 2012

To be valid, this certificate must be lodged within 3 months of the date of issue.



Description of project

Project address	
Project name	J JAMES
Street address	19 STURDEE LANE Lane ELVINA BAY 2105
Local Government Area	Pittwater Council
Plan type and number	Deposited Plan DP8013
Lot number	6
Section number	0
Project type	
Dwelling type	Separate dwelling house
Type of alteration and addition	My renovation work is valued at \$50,000 or more, and does not include a pool (and/or spa).

This plan / document
forms part of
Construction Certificate
no. 2 0 1 2 / 4 9 6 2

Certificate Prepared by (please complete before submitting to Council or PCA)	
Name / Company Name: Eastwood Design	
ABN (if applicable): 74002668653	

COPY

Fixtures and systems	Show on DA Plans	Show on CCDO Plans & Specs	Builder check
Lighting			
The applicant must ensure a minimum of 40% of new or altered light fixtures are fitted with fluorescent, compact fluorescent, or light-emitting-diode (LED) lamps.		✓	✓
Fixtures			
The applicant must ensure new or altered showerheads have a flow rate no greater than 9 litres per minute or a 3 star water rating.		✓	✓
The applicant must ensure new or altered toilets have a flow rate no greater than 4 litres per average flush or a minimum 3 star water rating.		✓	✓
The applicant must ensure new or altered taps have a flow rate no greater than 9 litres per minute or minimum 3 star water rating.		✓	

Construction	Show on DA Plans	Show on CC/CDO Plans & Specs	Certifier check
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Insulation requirements

The applicant must construct the new or altered construction (floor(s), walls, and ceilings/roofs) in accordance with the specifications listed in the table below, except that a) additional insulation is not required where the area of new construction is less than 2m2, b) insulation specified is not required for parts of altered construction where insulation already exists.

Construction	Additional insulation required (R-value)	Other specifications	✓	✓	✓
concrete slab on ground floor.	nil				
suspended floor with open subfloor: framed (R0.7).	R0.8 (down) (or R1.50 including construction)				
external wall: framed (weatherboard, fibro, metal clad)	R1.30 (or R1.70 including construction)				

Glazing requirements						Show on DA Plans	Show on CC/ODC Plans & specs	Certifier Check
Windows and glazed doors								
The applicant must install the windows, glazed doors and shading devices, in accordance with the specifications listed in the table below. Relevant overshadowing specifications must be satisfied for each window and glazed door.								
The following requirements must also be satisfied in relation to each window and glazed door:								
Each window or glazed door with improved frames, or pyrolytic low-e glass, or clear/air gap/clear glazing, or toned/air gap/clear glazing must have a U-value and a Solar Heat Gain Coefficient (SHGC) no greater than that listed in the table below. Total system U-values and SHGCs must be calculated in accordance with National Fenestration Rating Council (NFRC) conditions. The description is provided for information only. Alternative systems with complying U-value and SHGC may be substituted.								
For projections described in millimetres, the leading edge of each eave, pergola, verandah, balcony or awning must be no more than 500 mm above the head of the window or glazed door and no more than 2400 mm above the sill.								
Pergolas with polycarbonate roof or similar translucent material must have a shading coefficient of less than 0.35.								
Pergolas with fixed battens must have battens parallel to the window or glazed door above which they are situated, unless the pergola also shades a perpendicular window. The spacing between battens must not be more than 50 mm.								
Overshadowing buildings or vegetation must be of the height and distance from the centre and the base of the window and glazed door, as specified in the 'overshadowing' column in the table below.								
Windows and glazed doors glazing requirements								
Window label	Orientation	Area of glass inc. frame (m2)	Area of Overhang		Shading device	Frame and glass type		
			Height (m)	Distance (m)				
W1	N	1.8	10	5	eave/verandah/pergola/balcony >=450 mm	improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75)		
W2	N	2.6	10	5	eave/verandah/pergola/balcony >=450 mm	improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75)		
W3	N	5.5	10	5	eave/verandah/pergola/balcony >=450 mm	improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75)		
W4	N	1.6	10	5	eave/verandah/pergola/balcony	improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75)		

Glazing requirements						Show on DA Plans	Show on CC/CDC Plans & specs	Partial Check
Window no.	Orientation	Area of glass inc. frame (m ²)	Overshadowing Height (m)	Distance (m)	Shading device	Frame and glass type		
W5	W	2.5	10	5	>=450 mm eave/verandah/pergola/balcony	6.44, SHGC: 0.75)		
W6	E	1.6	10	5	>=450 mm eave/verandah/pergola/balcony	Improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75)		
W7	E	1.6	10	5	>=450 mm eave/verandah/pergola/balcony	Improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75)		
W8	E	1.6	10	5	>=450 mm eave/verandah/pergola/balcony	Improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75)		
W9	E	2.5	10	5	>=450 mm eave/verandah/pergola/balcony	Improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75)		
Skylights								
The applicant must install the skylights in accordance with the specifications listed in the table below.						✓	✓	✓
The following requirements must also be satisfied in relation to each skylight:							✓	✓
Each skylight may either match the description, or, have a U-value and a Solar Heat Gain Coefficient (SHGC) no greater than that listed in the table below.							✓	✓
Skylights glazing requirements								
Skylight number	Area of glazing inc. frame (m ²)	Shading device	Frame and glass type					
S1	1	no shading	timber, double clear/air fill, (or U-value: 4.3, SHGC: 0.5)					

Legend
In these commitments, "applicant" means the person carrying out the development.
Commitments identified with a "✓" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
Commitments identified with a "✓" in the "Show on CC/CDC plans & specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
Commitments identified with a "✓" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate for the development may be issued.

SPECIFICATION OF BUILDING WORKS

This plan / document
forms part of
Construction Certificate
no. 2012 / 4962

BUILDING TYPE

SINGLE DWELLING	☐	VILLA OR TOWNHOUSE	☐	INDUSTRIAL BUILDING	☐
DUAL OCCUPANCY	☐	GARAGE	☐	OFFICE BUILDING	☐
MEDIUM DENSITY UNITS	☐	RETAIL BUILDING	☐	ADDITION	☐
FARM SHED	☐		☐		☐

CONSTRUCTION

CAVITY BRICK	☐	TIMBER FRAMED	☐	A.A.C.BLOCK/PANEL	☐
BRICK VENEER	☐	STEEL FRAMED	☐	MASONRY BLOCK	☐
SINGLE BRICK	☐	STEEL CLAD	☐	CONCRETE PANEL	☐

ADDENDUM

If any difference in requirements exists between this specification and the Building Code of Australia or relevant Standard that may apply to the construction of any building nominated in this specification, then requirements of the Building Code of Australia and/or the appropriate Standard shall take precedence over any nomination of construction in this specification.

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MALABAR NSW

Phone: (02) 80200767
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REVISION 20 –SEPTEMBER 2010
BCA 2010
BASIX (NSW only)

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ISSN 1838-1359

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SPECIFICATION

FOR THE ERECTION AND COMPLETION OF BUILDING AT: LOT No. 6 DP No. 8013
ADDRESS 19 Studee Lane
TOWN/AREA Lovett bay
MUNICIPALITY / SHIRE / CITY Pittwater POST CODE 2105
FOR Mr. Ian & Mrs. Judith Janga Hereinafter called the Proprietor or Owner.

The builder must ensure that relative drawings, plans and construction comply with the prescribed construction, the Local Government Act, the Building Code of Australia and that the work and services performed by the Builder are to the satisfaction of the Proprietor and Lending Authorities.

INSPECTION NOTICE

This is to apply only if inspections are required by the Lending Authority. The building is to be inspected by the Society or Bank Representative at the following stages of construction and the Builder is to give the Lending Authority and Owner at least (2) clear working days notice that inspections are required.

- 1. When trenches for footings have been prepared or rock surfaces scabbled and in the case of reinforced concrete footings, when reinforcement and depth pegs have been placed in position just prior to placing of concrete. Footings must not be commenced until the trenches have been inspected and approved by the Society Representative.
- 2. On completion of floor, wall and roof framing with noggin in position and veneer walling, but before flooring is cut down, roof covering is laid and wall linings and sheetings are secured.
- 3. When the internal wall coverings have been secured and fixing out commenced, apron mouldings must not be fixed until flashings have been inspected and approved.
- 4. ON COMPLETION OF BUILDING. The owner is cautioned that if works have advanced beyond these stages without the requisite notices being given, inspections made and unsatisfactory conditions are discovered later, the offer of a loan or the terms and conditions of a loan may be varied by the lending authority.

REGULATIONS AND NOTICES:

The builder is to comply with the Building Code of Australia as amended and as applicable to the particular State or Territory in which the building is being constructed and the requirements of legally constituted Authorities for local Government and/or Services. The Builder is to give all notices, obtain all permits and pay all fees required by such Authorities. If any difference in requirements exists between this specification and the Building Code of Australia or relevant Standard that may apply to the construction of any building nominated by this specification then the requirements of the Building Code of Australia and/or the appropriate Standard shall take precedence over this specification for any construction. Where materials, components, design factors and construction methods comply with the Performance Requirements of the B.C.A. these may be accepted by approval authorities as an alternative as per the Deemed to Satisfy Provisions.

INSURANCE:

Insurance of the works against fire will be effected as nominated in the Building Contract. The Builder shall at his own expense adequately insure against Public Risk and arrange indemnification in respect of his liability under the Workers' Compensation Act, Work Cover and/or other regulations as applicable.

VISIT THE SITE:

Builders tendering are to visit the site and satisfy themselves to the nature and extent of the work, the facilities available and the difficulties entailed in the execution of the said works. No amount above the accepted price will be allowed because of work arising due to neglect of this precaution, or assumptions made.

LABOUR AND MATERIALS:

The Builder is to provide all materials, labour, fittings and plant required to construct and complete the work. Materials shall be of the standard specified and workmanship in each trade shall be performed by tradesmen of that particular trade and in conformity with current good building practice.

SET OUT:

The Builder shall be responsible for the accuracy and clear delineation of the site boundaries and location of the buildings there on. The Builder is to set out and maintain the works in accordance with the drawings. Figured dimensions to be taken in preference to scale.

PLANS AND SPECIFICATIONS:

Any work indicated on the plans and not in the specification or vice versa, and any item not shown on either plans or specifications but which is obviously necessary as part of proper construction and/or finish, is to be considered as so shown or specified and is to be duly done as part of the contract. Any variations to plans or specifications are to be agreed and recorded by the proprietor and the builder/contractor.

ADDITIONAL BUILDING REQUIREMENTS: All instructions for extra work or additional requirements must be in writing. Dated and signed copies of instructions shall be retained by both the owner and the builder.

PLANS ON JOB:

The builder must at all times maintain on the job a legible copy of the plans and specifications, bearing the approval of the Municipal Authority concerned or Principal Certifying Authority.

STANDARDS

Where an Australian Standard (AS) or Australian New Zealand Standard (AS/NZS) is nominated in this specification then that nomination refers to the latest revision of that Standard unless the Building Code of Australia references a different revision.

EARTHWORKS AND EXCAVATIONS: BCA part 3.1

All earthworks shall be designed and constructed in accordance with the drawings and guidelines of AS3798 . Stormwater and other surface water drainage by underground piping or surface diversions shall be in accordance with AS/NZS3500.

All siteworks shall be in accordance with the Environmental Planning and Assessment Act and Regulations for siteworks for the erection of a building, safeguarding excavations, backfilling, preventing soil movement and supporting neighbouring buildings. Drainage requirements must be determined according to the soil classifications BCA part 3.1.1 and part 3.1.2.

FOOTINGS AND PIERS: BCA part 3.2.2

Excavate for all footings, piers, etc. to dimensions and minimum depth shown on plans or otherwise specified, or to depths necessary to secure solid bottoms and even bearing throughout similar strata. Bottoms of excavations to be level and stepped where necessary. Grade, fill and ram where necessary to receive concrete floors where shown on ground level.

At completion of foundations, all excavations to be filled, well rammed to ground level and surplus soil spread as directed. All seepage and soakage water to be effectively dealt with and diverted clear of the building. Excavate for and lay agricultural drains to back of walls retaining earth and to any other sections of foundations as may be necessary and/or directed.

ROCK EXCAVATIONS:

Should rock of any type be encountered in excavation of the works the cost of its removal is to be considered as an extra to the contract and charged for at a rate per cubic metre as indicated in the schedule of rates. The Proprietor is to be notified when rock is encountered in excavations.

CONCRETE - BCA part 3.2.3

All structural concrete shall be ready mixed and in compliance with AS3600, and unless otherwise specified on Engineers drawings, shall be of N20 grade.

The concrete shall be supplied by an approved firm and delivery dockets shall be kept on the job for inspection by the proprietor if he so desires. The concrete for minor works, where strength of concrete is not critical, such as paving on solid ground, may have a minimum compressive strength of 15MPa if unreinforced and 20 MPA if reinforced. Alternatively, such concrete may be mixed on site where the aggregate proportions and water/cement ratio can be controlled so that the required compressive strengths can be obtained.

All concrete work shall comply with the AS3600. Maximum slump shall be 80mm unless otherwise specified by Engineer.

Concrete shall be carefully handled and placed to avoid segregation and shall be adequately compacted. Reinforcing mesh fabric to AS/NZS4671 and all reinforcing bars mild steel grade unless otherwise specified.

FOOTINGS: BCA parts 3.2.3, 3.2.4 and 3.2.5

Where sites have soils or foundations of reactive nature or problem sites footings shall be approved by a practising structural engineer and in the case of known highly swelling soils or other unstable soils special precautions may have to be taken in the design and construction of concrete footings. In the case of concrete suspended floors to first floor it will be necessary for size of footings to be specified by a practising structural engineer. Footing sizes to be as per AS2870 part 1.

TERMITE PROTECTION: BCA part 3.1.3

Where the building is being erected in a prescribed termite area and protection is required by regulation of local government or state authority then protection against subterranean termites shall be installed in accordance with AS 3660. Details of method of protection to be used shall be submitted where required, prior to commencement of building works. Written certification, signed by the installer, that the method used and the manufacturers specification complies with the Australian Standard shall be provided to the relevant authority and owner where required. A durable notice must be permanently fixed in a prominent location in the building prior to its occupation indicating: 1. The method and date of installation of the system and the need to inspect and maintain the system on a regular basis. 2. Where a chemical barrier is used, the life expectancy as listed on the National Registration Authority label and recommended date of renewal. Note that AS3660 and BCA lists the minimum acceptable level of protection only. Owners and/or builders may specify and install additional protection if desired

PATHS: (see AS 3727 for guide to residential pavement construction)

Provide paths as indicated on plans. Concrete to be as previously specified and surfaced with wooden float. Excavate for and lay paths to even grades, true lines and curves. Car tracks to be a minimum of 100mm thick and paths a minimum of 75mm. Provide expansion joints in paths at a maximum spacing of 1200mm with bitumen impregnated felt joining strips the full thickness of concrete with tooled V-joints above same.

CROSS SECTION DIMENSIONS OF REINFORCED CONCRETE FOOTINGS: for buildings with timber framed floors. for sites classified a or s according to AS2870.

CONSTRUCTION OF WALL	Normal thickness of wall to be supported (not more than)	Size of Concrete (width x depth)	
		For stable soil foundations Class A	Other foundations not subject to significant movement Class S
Brick, single storey with wall height not exceeding 4200mm excluding any gable.	mm 270	mm 400x300	mm 400x400
Brick, two storey with external wall height not exceeding 7200mm excluding any gable internal wall height not exceeding 7200mm. <u>** use 11TM reinforcement Top and Bottom</u>	110 270	300x300 400x400	400x400** 400x500**
Brick veneer, single storey with wall height not exceeding 4200mm excluding any gable.	110	300x300	300x400
Brick veneer, two storey with external wall height not exceeding 7200mm excluding any gable.	110	300x300	300x400
Timber frame, single storey – foundation walling measured from the top of the strip footing.			
Up to 1500mm height	110	300x300	300x400
Exceeding 1500mm and up to 3000mm height	110	300x400	300x400

REINFORCEMENT FOR STRIP FOOTINGS	Width of Strip Footing	Minimum number of main wires per layer using 8TM or 11TM fabric	Minimum number of 10mm dia. bars per layer	Minimum number of 12mm dia. bars per layer
	300 400	3 4	3 4-	3 4-

Where wall thickness exceeds as specified above, increase footing width to maintain the offset and provide additional bar or bars so that bar centres do not exceed 200mm, or an additional width of trench mesh, maintaining in all cases the required concrete cover.

CONCRETE FLOORS: BCA parts 3.2.5

Provide concrete floors where indicated on plans. Where not specifically detailed, floors are to be a minimum of 100mm thick, reinforced with No. F72 hard drawn reinforcing fabric set 32mm below top of concrete. Floor slabs to be full thickness and free from grooves and ridges. Finish surface in one operation as required for tiling or otherwise to fine finish with float or steel trowel and sponge. Thickness of floors shall be maintained under tiling recesses in all cases.

Note that in Climate Zones 6,7 and 8 the edges and underneath some concrete slab construction may require thermal insulation.

INTEGRAL FLOOR SLABS AND SLAB ON GROUND: BCA part 3.2.5

Grade whole area occupied by floor to a minimum depth as required to remove top soil and grass roots etc. Determine level of top of floor to habitable rooms, a minimum of 150mm above highest point of adjacent proposed external ground level (adjust for fill or general excavation as required) or as otherwise required by Local Council. The external finished ground surface must be graded to drain water away from the building at a minimum slope away of 50mm over the first 1m as per BCA Part3.1.2.3

Excavate for perimeter and other main footings to minimum depths as shown on Engineers drawings or to depths necessary to obtain solid bottoms and even bearing throughout a similar strata. Allow for sufficient recess for brickwork if carried under main floorings so as to reduce the amount of concrete necessary, provided that the fill is retained from displacement under the footings (by a temporary earth bank or similar) and provided also that a minimum of 100mm depth of the same hardcore is provided under all footings in such case, roadbase or ungraded bluemetal is recommended as hardcore, coalwash is NOT to be used. Reinforce to Engineers detail and pour in one continuous operation in concrete Grade 20 unless otherwise nominated. Residential slabs and footings must be constructed in accordance with AS2870 as amended.

SUSPENDED REINFORCED CONCRETE SLABS:

All concrete slabs to separate areas within or adjoining a building generally of timber floor construction shall be suspended. Temporary formwork must be removed prior to final inspection. Permanent metal formwork approved by the lending authority may be used with slab sizes and reinforcement according to manufacturers recommendation.

Suspended floor slabs to have minimum of 100mm bearing on at least two opposite sides and spans are not to exceed 2100mm except where specifically detailed. Solid fill forming may be used under concrete floors (eg. laundry, garage) adjoining the building providing that the level of the top of the slab is not less than 50mm below antcap and/or dampcourse level of the main building. For spans exceeding 2100mm, slabs supporting walls, cantilever slab floors or where beams and columns are used to support the slab, a practising structural engineers details shall be submitted with the drawings and specifications.

PRE-STRESSED BEAM FLOORING:

Pre-stressed beams for areas to be constructed by this method shall be delivered to site and stacked for storage on timber packers to avoid damage and where stacked one above the other the timber packers shall be positioned in vertical lines.

Beams shall be purpose made by the manufacturer for this particular project, designed in accordance with AS3600. Beams shall be individually marked for their respective location on the job and positioned in the work to comply with manufacturers key drawing. Cutting or drilling into beams or modification in any way shall be done only with the express authority of the manufacturer or their site representative.

Spacing of beams and fibre cement infill panel placement shall be strictly to manufacturers detail. Topping slab concrete shall have a 28 day strength of not less than 20 MPA and thickness shall not exceed 50mm unless shown on the drawings. Reinforce with nominal F52 Mesh U.N.O.

Topping slabs shall be continuously cured for 7 days to prevent non structural cracking.

BRICK AND BLOCKWORK - (construction of masonry building shall be as per AS3700) BCA part 3.3

CLAY BRICKS:

To be sound, hard, of well burnt clay and shale and comply with specifications AS1225 'Burnt Clay and Shale Building Bricks'.

SAND LIME BRICKS: To Comply with AS1654 'Calcium Silicate Bricks' and have a transverse strength no less than as per Specification AS1640 'Clay Bricks'.

CONCRETE BLOCKS OR BRICKS: To comply with AS4455 Masonry Building Blocks/Pavers

SAND: To be clean, sharp and free from all impurities.

CEMENT MORTAR: To be one part fresh cement to 3 parts sand.

LIME MORTAR: BCA part 3.3.1.6

To be one part lime to 3 parts sand. Lime to be well slaked before use.

COMPO MORTAR: To be one part cement, one part lime and 6 parts sand. All bricks to be well wetted before use. This not to apply to textured bricks.

Footing courses to be grouted solid with cement mortar. All brickwork to be properly bonded. laid on full bed and all perpendis filled. All piers are to be built solid and each course grouted as work proceeds. Carry up all work true and plumb to even gauge and in level courses the full height and thickness required. The brickwork faces above damp course level to be finished with neatly ironed or raked joints. Beds and joints to be kept to a reasonable thickness. Finish all other exposed brickwork faces with neat struck joints.

BUILD THE FOLLOWING IN CEMENT MORTAR; BCA part 3.3.1 (see AS3700)

All brickwork to underside of floor bearers level. All 110mm thick brickwork. All copings, steps, brick balustrade walls, sills, piers, wing walls, retaining walls. Brick Fences on alignment and/or brickwork under timber fencing also concrete blocks or bricks. **Build compo mortar:** All other Brickwork, including concrete masonry. Mortar may be mixed by proportions as per BCA table 3.3.1.2

SLEEPER PIERS: BCA table 3.2.5.

230 x 230mm up to 1.5 high, footings are to be two courses of 350mm work. Where pier height exceeds 1.5m up to a maximum of 2.4m footings are to be two courses of 470 work and lower portion of pier to be 350 x 350. Concrete footings must be 500mm square and 200mm thick for an effective supported floor area of not more than 20m². All footings must have Engineers details for soil other than class A or S.

ENGAGED PIERS: BCA figure 3.3.1.2

To be minimum of 230 x 350 (including wall thickness) spaced at not more than 1.8m centres up to 2700 high to support floor bearers and at similar centres to stiffen walls supporting concrete slabs. All stack bonded piers to be anchored to walls with specified wall ties every fourth course. Areas with design wind speeds greater than N2 must be vertically reinforced with at least 1 off Y12 bar, tied to the footing.

VENEER WALLS: BCA 3.3

To be 110mm Brickwork built in Compo Mortar on foundation walls as previously specified. Internal faces to be 38mm from timber frames. Build in 3mm galvanised wall ties opposite each alternate stud, four courses above level of bottom plate, then every fourth course and spaced not more than 460mm horizontally and 610mm vertically or 610mm horizontally and 460mm vertically. Ties to be left open for attachment to studs. A cavity space of between 25mm and 50mm must be maintained throughout. Where thermal insulation is required to comply with Energy Efficiency requirements, clear cavity spaces must be maintained. Cavities and weep holes to be clean and clear at damp course level. All mortar droppings to be caught on paper or other material and removed before internal linings are fixed. Mortar joints on inside face walls to be flush with brickwork.

SPECIAL WALLS: (if shown on plans)

Walling not of timber. Veneer on-limber or masonry to be constructed as per Structural Engineers Detail and Certificate.

SINGLE LEAF MASONRY: (Garage Walls etc.)

Footings as per BCA part 3.2.5, engaged piers and reinforcing to be as per part 3.3.1.

ACCESS:

Adequate access in the external foundation wall must be provided with a weatherproof lockable door and crawl access is to be provided to all under floor areas.

VENTILATION: BCA part 3.4.1

Sub-floor areas shall be ventilated by means of evenly distributed openings with an unobstructed area of 7300mm² per lineal metre of external wall. Where particle board flooring is used the unobstructed area shall be increased to 7500mm² per lineal metre and evenly spaced. Ventilation of internal walls shall be a minimum of 22000mm²/m run of wall. Vents to be immediately below bearers and similarly provide vents under verandah floors and suspended floor slabs. Sufficient cross ventilation to be provided through all walls below floors. No section of the under-floor area should be so constructed that it will hold pockets of still air. Appropriate special provision to be made where a gas bath heater is installed. Ventilation may be varied by Local Council

BRICK REINFORCEMENT:

In full brick cavity walls at two courses above level of the highest opening built into each 110mm thickness one continuous strand of 64 wide galvanised metal reinforcement lapped 100mm at joints and full width of layer at intersections.

ANT CAPS:

To all brickwork and piers, at the level of underside of floorbearers, ant capping of 0.5mm gauge galvanised steel or other approved metal is to be set, projecting 38mm beyond the internal faces of all brickwork and turned down at a 45 degree angle, lapped 13mm and soldered or crimped at all joints and corners so as to provide a continuous and effective barrier against termites throughout the length of the material. Whole of house protection against subterranean termite attack shall be installed in accordance with AS 3660.

TIES: BCA PART 3.3.3

Wall ties complying with AS/NZS2699 shall be used for all tie requirements. Corrosion protection and installation of wall ties is to comply with AS3700.

STEPS:

If shown on plan in bricks to match other exposed brickwork. To be built in solid work or where side walls are provided in consolidated filling. Treads are to be brick on edge, or pre cast concrete units with a maximum of 355mm going and a maximum of 190mm and minimum of 115mm rises.

LINTELS: BCA PART 3.3.3.4

Galvanised lintels (of steel not less than grade 300MPa as per AS/NZS 4100) to comply with spans as shown in BCA figure 3.3.3.5 are to have :-

- (i) long legs vertical (ii) each angle or flat to carry a maximum 110mm wall thickness (iii) minimum bearing lengths shall be :- (a) clear spans up to 1 metre – 100mm min. (b) clear spans over 1 metre- 150mm min. (iv) there must be not less than 3 courses of brickwork over openings and (v) all loads must be uniformly distributed.

Note that corrosion protection for lintels and built in structural members must comply with BCA table 3.3.3.2

FIREPLACE CHIMNEY and FLUES: BCA part 3.2.5.5. and 3.7.3

Reinforced concrete footings 300mm wider all round than brick construction to be provided. Build 110mm brick wall and/or corbel courses to support hearth. Non combustible material to be used for upper surface of hearth with a minimum thickness of 155mm and shall extend not less than 300mm beyond the front of the fireplace opening and not less than 150mm beyond each side of the opening. Local council may vary this requirement. Provide fireplace and chimney in position as shown and to the dimensions on plan. Mild steel bars or angles of suitable sizes and with a 110mm bearing at each end to support work over openings. Up to the level of 300mm above the underside of the arch or lintel, the back and sides of the fireplace to be constructed in two separate sections of solid masonry minimum 190mm thick not including cavity. Concrete masonry not permitted in construction of inner section, balance of walling to be minimum of 90mm thick. Flue to be rendered minimum 12mm thick. Mix; 1 cement, 2 lime, 10 sand or L.C. approved material. Chimney stack is to be not less than the height of the main roof ridge and is to be built in compo mortar. The flue is to be 250 x 250mm or one tenth of the area of the fireplace opening, whichever is the greater, gathered over to break daylight and pargetted to the full height. An 0.6mm galvanised steel tray, in one piece, holed for flue is to be set at level of one course above roof covering on the high side of the roof. The internal edges are to be shaped to form a quadrant gutter 25mm wide, sweated at corners. The tray is to project a minimum of 25mm beyond the external faces of brickwork turned up and/or down as required. Where the tray is turned up, a clearance of at least 6mm is to be maintained between the brickwork and the tray. Provide weep holes by leaving open vertical joints in brickwork above tray. Rake joints in brickwork ready to receive flashing to be provided by Plumber. A loose brick must be left on the back of the chimney stack. This brick must not be set until after the tray has been cleared of all mortar droppings.

HEATING APPLIANCES: BCA part 3.3.4

Heating appliances installed in brick or blockwork surrounds shall be in conformance with AS 2918 as applicable

DAMPCOURSE AND WEATHERPROOFING OF MASONRY : BCA part 3.3.4

Provide a continuous run of L.C. Approved dampcourse material to full width of wall thickness on all brickwork at level not higher than bottom of floor bearers and engaged piers. Dampcourse material is to be run in long lengths, lapped minimum 100mm at joints and full width at all intersections. To wall surrounding concrete and/or solid floors an additional run of dampcourse is to be laid, one full course above floor level and stepped down to meet lower dampcourse where other walls abut walls of bathroom, shower recess or laundry. Damp proof courses and flashings shall be installed to give performance as specified in AS/NZS 2904.

VERMIN PROOFING:

13mm mesh galvanised bird wire to be built into brickwork and taken across cavity and secured to bottom plate.

FLASHING: BCA part 3.3.4

L.C. approved dampcourse material to be built in under all window sills 25mm at back of wood sill and 50mm at each end of same. Flashing to be bent down across cavity and built 25mm into veneer wall. L.C. approved dampcourse material to be built in over all exposed window and external door openings.

WEEP HOLES:

Perpend joints are to be left open in exterior brick walls spaced approx. 600mm in course immediately over flashings of all exposed openings and to brick retaining walls, fender walls etc. as required. See requirements of AS3959-2009 for protection of weep holes in bush fire areas.

RETAINING WALLS:

Retaining walls not specifically detailed, and foundation walling required to retain earth, are to be a minimum of 230mm thick, up to a height of 750mm of retained earth. Cavity walls used to retain earth are to have the leaf adjacent to the retained earth a minimum of 230mm thick, to a maximum of 900mm of retained earth height. All to be properly bonded (see 'Bonded Walls') and provide with a properly constructed agricultural drain to the earth side of retaining wall. For walls in excess of the above heights of retained earth, an Engineers detail will be required.

BONDED WALL:

Solid brick walls more than one brick width which are used to retain earth or are otherwise noted as 'Bonded Walls', shall be bonded throughout the thickness of the wall by either header bricks or equivalent tying. Where header bricks are used, every sixth course shall be a header course or there shall be at least one header or equivalent tie to every 0.13sq metres (every third course at 480mm centres). Walls 350mm or more in thickness shall have overlapping headers or ties to provide a continuous tie through the wall.

CAVITY WALLS:

Walls indicated as cavity walls to be constructed with two leaves 110mm thick spaced nominally at 60mm apart. Where thermal insulation is required to comply with Energy Efficiency requirements clear cavity spaces must be maintained. Connect the two leaves with wall ties as per AS2699 set nominally 600mm apart in every fifth course. Keep ties clean of mortar droppings and cavity clear as work proceeds.

STRAPS: BCA part 3.3.3 b

To full brick cavity walls, secure door and window frames with 1.6mm galvanised iron straps set in brickwork. Straps to be 25mm wide and at least 300mm long, where practicable and spaced at a maximum of five courses apart. Set 25mm x 1.6mm galvanised iron straps 1800 apart and 1200mm down cavity with ends turned 75mm into brickwork to secure wall top plates.

COMPLETION:

Clean all cavities. Wait upon and make good after other trades. Replace all damaged and defective bricks. Clean all exposed brickwork with diluted spirits of salts, or as otherwise recommended by brick manufacturers, wash down with clean water and leave free from cement and mortar stains.

CONCRETE BRICK BCA part 3.3. Mortar For normal conditions to consist of:

Above Dampcourse:	1 part cement 2 parts lime or lime putty 9 parts clean sand	Below Dampcourse: 1 part cement 1 part lime or lime putty 6 parts clean sand
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Mortar mixes must comply with A.S. 3700 and BCA part 3.3.1.6

The substitution of other plasticisers for lime is not recommended. Under no circumstances should the proportion of cement be increased.

JOINTS: BCA part 3.3.1.7 Finish all external brickwork and internal feature walls with raked joints. Finish all other brickwork with neat struck joints.

JOINT REINFORCEMENT AND ARTICULATION JOINTS: BCA part 3.3.1.8 in addition to reinforcement over openings as later specified provide joint reinforcement in bed joints at vertical spacings not exceeding 600mm. Control joints, providing a continuous vertical separation through the entire thickness of the wall, are to be provided where indicated on plans or where walls exceed 9m in length, as close as practical building will permit. Reinforcement not to extend across control joints.

AUTOCLAVED AERATED CONCRETE BLOCKS:

Lightweight blockwork shall be Autoclaved Aerated Concrete blocks consisting of sand, cement and lime and shall be installed to areas as indicated on drawings. Site provisions for storage of materials and for the mixing of adhesive shall be as recommended by the manufacturer.

WORKMANSHIP:

Fixings, fastenings, anchors, lugs and the like shall be of a type approved by the manufacturer and shall transmit the loads and stresses imposed and ensure the rigidity of the assembly. Block laying shall be in accordance with the manufacturers current published specifications.

TOLERANCES:

Maximum planar misalignment shall be 2mm along butt joints. The thickness and width of walls shall not vary by more than 5mm from design sizes. Deviation from plumb, level or dimensional angle must not exceed 5mm per 3.5m of length of member or 6mm in total run in any line.

INSTALLATIONS:

All lightweight blockwork shall be installed using thin bed adhesive mortar to all horizontals and perpend. The first course must be made true and level using a normal thick bed mortar with thin bed adhesive to fully seal the perpend. All thin bed adhesive shall be applied using a recommended notched trowel to obtain an even distribution of adhesive to achieve joint thickness of 2-3mm. All lightweight blockwork shall be laid in a format that the vertical joint of the lower course must be staggered at least 100mm relative to the vertical joint of the overlaying course. A slip/joint bond breaker must be installed between the first course and the foundations or slab on all internal and external walls to allow for differential movement between the blocks and the supporting structure. Build in as necessary all flashings, reinforcements, arch bars, lintels, frames, straps, bolts, lugs, wall ties, metalwork, precast units, sills, partitions, joists and the like. Carefully set out and leave openings for other trades to eliminate cutting.

COMPLETION:

On completion clean out all blocks, mortar, droppings, debris etc. and remove all scaffolding, make good all put-log holes and other blemishes and leave all work in perfect condition and protect until handover.

CONCRETE BLOCK AND REINFORCED MASONRY: AS 3700 - BCA part 3.3.2

All masonry units shall comply with AS1500 'Hollow Load Bearing Concrete Units'. Masonry shall be stacked on planks off the ground and in wet weather shall be covered with tarpaulins or otherwise kept dry. At the end of each days work the top of the wall shall be covered with tar paper, polyethylene sheets or by other means protected from becoming excessively wet. Masonry units shall not be dampened prior to laying, and shall be laid in dry state.

MORTAR: BCA PARTS 3.3.1.6

Mortar shall comply with AS 3700 except that mortar may be mixed in proportions as set out in BCA table 3.3.1.2. Plasticisers may be used when approved and where tests show the mortar with plasticisers meets the requirements of these specifications.

CONSTRUCTION BEDDING:

All face and end joints shall be fully filled with mortar and joints shall be squeezed tight. Slushing of mortar into joints shall not be permitted. The first course of blocks shall be laid in a full bed of mortar.

JOINTS BCA part 3.3.1.7:

Joints on all exposed surfaces shall be as specified. The joint shall be formed by striking the mortar flush and after it has partially set, tooling with the proper shaped tool to adequately compact the surface. The tool shall be of sufficient length to form a straight line free from waves. Internal joints shall be ironed. Where flush joints are left exposed, they shall be first compacted, then repointed and excess mortar removed. Joints shall be 10mm thick unless otherwise specified or directed.

ARTICULATION JOINTS:

Shall be located where shown and shall form a continuous vertical break from top to bottom of wall or from bond beam. Provision shall be made for adequate lateral stability. Joint shall be filled with mortar, raked back 16mm and pointed with a non-hardening plastic filler. No reinforcing shall be carried across control joint. Articulated joints over garage doors are prohibited unless brickwork is reinforced or lateral support is provided.

JOINT REINFORCEMENT:

Reinforce every 600mm in height and in the two courses immediately above and below window openings. Lap mesh at least 150mm at all joints and intersections except at articulation and expansion joints where a slip joint may be required.

BRACING DURING CONSTRUCTION:

Masonry walls constructed in locations where they may be exposed to high winds during erection shall not be built higher than ten times their thickness unless adequately braced, or unless provision is made for prompt installation of permanent bracing such as intermediate floor or roof structure. Back filling shall not be placed against foundation walls or retaining walls before mortar or grouting has sufficiently hardened, or before wall has been permanently braced to withstand horizontal pressure.

WEATHERPROOFING: BCA part 3.3.4

All concrete masonry walls exposed to the weather or below ground level shall be adequately water proofed, using an approved paint or other coating and applied in accordance with the directions of the manufacturer.

CLEANING:

During the progress of the work every effort shall be made to keep walls that are exposed clean. Mortar smears shall be allowed to dry for a short period and then be removed by trowel or suitable brush or both. Care shall be taken to avoid damage to the mortar joint when brushing. Mortar burrs shall be promptly removed. At the conclusion of the work, walls shall be cleaned, all scaffolding and debris removed and the wall left in a good clean condition.

BUSHFIRE PRONE AREAS-BCA 3.7.4

Site assessment and preparation, construction of and maintenance of Class 1 buildings and decks and Class 10a buildings in a Bushfire Prone Area are required to comply with the provisions of AS3959-2009 as applicable and BCA 3.7.4.

NSW VARIATIONS:

for Bushfire Prone Areas exclude Section 2 of that standard which is replaced by 'Planning for Bushfire Protection, appendix 3-Site Assessment for Bushfire Attack'.

OR Consultation with NSW Rural Fire Service under Section 79BA of the Environmental Planning and Assessment Act 1979

OR as modified by Development Consent Issued under Section 100B of the Rural Fire Act 1997.

Building applications in NSW require 'Statement of Environmental Effects (SEE)' and a 'Bushfire Assessment Report' to be submitted with any DA (Development Application) where Class 1 or 10 building construction is proposed in Bush Fire Prone Areas. Details of areas are available from Council 'Bushfire Prone Land Maps' ('Single dwelling Application Kits' to aid in submitting a Bushfire Assessment Report are available at www.rfs.nsw.gov.au) The current 'Planning for Bushfire Protection. Appendix 3 -Site Assessment for Bushfire Attack' is April 2010 edition.

VICTORIAN VARIATIONS:
under Victorian Planning Provisions, applicants requiring to construct a Class 1a building on Bushfire prone land are required to implement standard conditions as per the Country Fire Authority (CFA) publication 'Building in a Wildfire Management Overlay Applicants Kit 2007'. Other standard conditions may also apply where building work is to be constructed on a site in the same location on land where a Class 1a building was damaged or destroyed by bushfire that occurred after 1 January 2009
OR the allotment is in a WMD under the local planning scheme.

Standard conditions are:

- a static water tank is to be installed (not required if an alternative water supply either swimming pool, lake or a dam containing 10,000 litres is located within 60 metres of the proposed Class 1a building, and a fire brigade vehicle can get within 4 metres of the water supply).
- Access for emergency vehicles is to be supplied.
- The Bushfire Attack level (BAL) shall be maintained to that nominated in the application for the building permit.

The standard condition details are to be confirmed with schedules 1, 2 or 3 as nominated by the Relevant Building Surveyor (RBS).

TASMANIAN VARIATIONS:
BCA clauses 3.7.4.0 is amended by the addition of clauses BCA Tas 3.7.4.1.
Vehicle access to a class 1 building and the fire fighting water supply point must be provided by an access road that complies with requirements for a Modified 4C Access Road as listed in those clauses.
BCA Tas 3.7.4.2. A water supply to all the exterior elements of a Class 1 building in a designated bushfire prone area must be within 120m of a fire hydrant with a minimum flow rate of 600L per minute at a minimum pressure of 250 kPa
OR a water supply available at all times of a least 10,000L for each separate building. This supply can be a tank, swimming pool, lake or dam.

NOTE: Normal Australian Standards specify requirements for construction and if AS3959-2009 does not specify construction of a particular element for bushfire protection then the normal AS (Australian Standard) will apply for construction of those elements.
Where a building is to be constructed more than 100 metres away from a bushfire hazard the bushfire construction requirements of AS3959-2009 do not normally apply. Clarification of the site requirements should be obtained from the local authority.

BUSHFIRE ATTACK LEVEL (BAL): Where a building is to be constructed in a Bushfire Prone Area, the BAL index (eg BAL-19, BAL-29 etc) shall be determined for the site. If the building has different BAL hazard requirements for different facades, then the highest BAL construction requirements will be used to determine the appropriate construction. Other facade requirements may be reduced by one level of construction unless subject to the same bushfire attack level.

ENERGY EFFICIENCY – BCA part 3.12
Performance provisions of the BCA Part 2.6 requires that a building must have a level of thermal performance so that greenhouse gas emissions are reduced using energy efficiently. This level of thermal performance must facilitate the efficient use of energy for cooling and heating. This will be achieved by selection of materials and methods of construction of Building Fabric, External Glazing, Building sealing, Air movement and service as best suited to the particular Climatic Zone in which the building is sited. A building must have an energy rating of not less than 5 stars complying with the ABCB protocol for House Energy Rating (Note: in NSW, for Class 1 and 10 buildings subject to BASIX the Energy Efficiency Provisions of BCA 2009 as varied by the NSW Appendix apply). Map of Australian Climate Zones for Thermal Design can be viewed on the Australian Building Code Board website at: www.abcb.gov.au

R-Value is the Thermal Resistance of a component to heat and cold movement. Thermal movement is upwards or downwards through a roof or a combination of both.

THERMAL RESISTANCE: minimum TOTAL R-Value required for various climatic zones									
BUILDING COMPONENT	CLIMATE ZONE								
	1	2 - Altitude less than 300	2 - Altitude 300m or more	3	4	5	6	7	8
ROOFS & CEILINGS									
Direction of heat flow	Downwards			Downwards and upwards			Upwards		
Minimum Total R-Value required	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	6.3

Added insulation to achieve minimum R-Values for various climate zones can be: (a) Reflective Insulation or (b) Bulk insulation or a combination of both. Reflective Insulation must be installed with not less than 20mm air space between the more reflective side and a building lining or cladding (note: cavity clearances are not to be reduced) and closely fitted against any penetration and or door/window frame, be adequately supported and overlapped to adjoining sheet not less than 150mm. Bulk insulation must be installed so that it maintains its position by not slumping and forming voids and must about other installation or building members. Care should be taken that insulation does not interfere with the safety or performance of services or fittings. Insulation as manufactured must comply with AS/NZS4859.1.

R-VALUE OF INSULATION TO BE ADDED TO BUILDING COMPONENT TO MEET TOTAL R-VALUE REQUIRED									
ROOF TYPE	ROOFS	CLIMATE ZONE							
		1,2 Below 300m AHD altitude	1,2 at or over 300m AHD	3	4	5	6	7	8
Minimum required Total R-Value for roofs		5.1	5.1	5.1	5.1	5.1	5.1	5.1	6.3
FLAT ROOF, SKILLION ROOF AND CATHEDRAL CEILING – CEILING LINING UNDER RAFTERS - UNVENTILATED									
METAL	Total R-Value of roof materials	0.48 down 0.36 up	0.48 down 0.36 up	0.36 upwards					
	Minimum R-Value of insulation to add	4.62 down 4.72 up	4.62 down 4.72 up	4.72	4.72	4.72	4.72	4.72	5.94
FLAT ROOF, SKILLION ROOF AND CATHEDRAL CEILING – CEILING ON TOP OF EXPOSED RAFTERS-- UNVENTILATED									
TILED	Total R-Value of roof materials	0.44 down 0.38 up	0.44 down 0.38 up	0.38upwards					
	Minimum R-Value of insulation to add	4.66 down 4.72 up	4.72	4.72	4.72	4.72	4.72	4.72	5.92
FLAT CEILING WITH PITCHED ROOF – CAVITY ROOF SPACE --VENTILATED									
TILED	Total R-Value of roof materials	0.74 down 0.23 up	0.74 down 0.23 up	0.23 upwards					
	Minimum R-Value of insulation to add	4.36 down 4.87 up	4.36 down 4.87 up	4.87	4.87	4.87	4.87	4.87	6.07
FLAT CEILING WITH PITCHED ROOF-- CAVITY ROOF SPACE -- UNVENTILATED									
TILED	Total R-Value of roof materials	0.56 down 0.41	0.56 down 0.41up	0.41 upwards					
	Minimum R-Value of insulation to add	4.54 down 4.69 up	4.54 down 4.69 up	4.69	4.69	4.69	4.69	4.69	5.89
FLAT CEILING WITH PITCHED ROOF--CAVITY ROOF SPACE -- VENTILATED									
METAL	Total R-Value of roof materials	0.72 down 0.21 up	0.72 down 0.21 up	0.21 upwards					
	Minimum R-Value of insulation to add	4.38 down 4.89 up	4.38 down 4.89 up	4.89	4.89	4.89	4.89	4.89	6.09
FLAT CEILING WITH PITCHED ROOF – CAVITY ROOF SPACE -- UNVENTILATED									
METAL	Total R-Value of roof materials	0.54 down 0.39up	0.54 down 0.39up	0.39upwards					
	Minimum R-Value of insulation to add	4.56 down 4.71 up	4.56 down 4.71 up	4.71	4.71	4.71	4.71	4.71	5.91

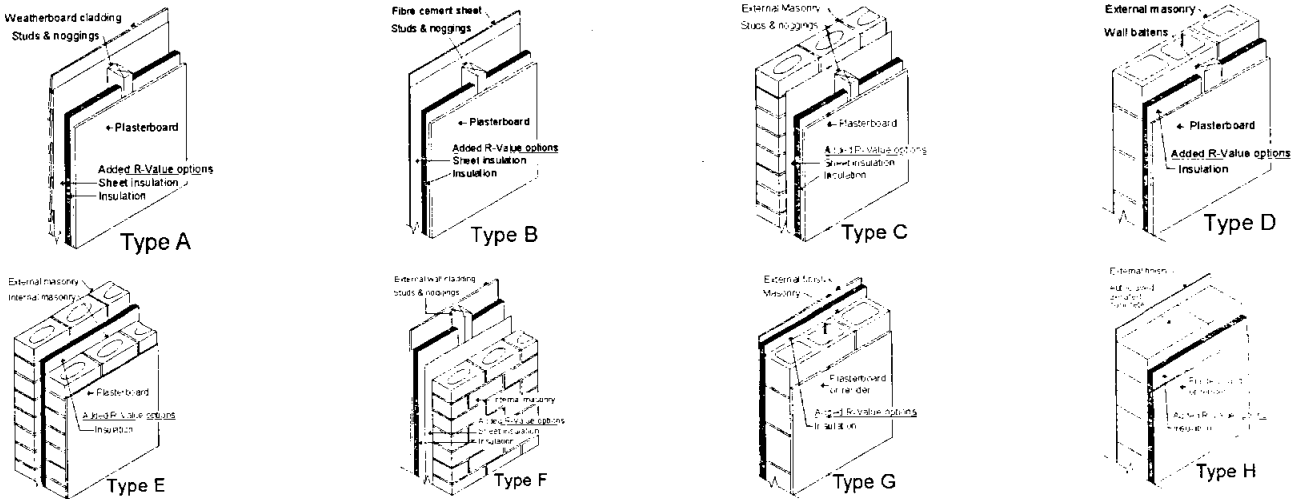
A roof must achieve the minimum Total R-Value specified. In Climate Zones 1,2,3 ,4 and 5 a pitched roof with a flat ceiling must have a Solar Absorbance value less than 0.55, RBM installed below the roof and the roof space ventilated by roof, gable, eaves or ridge vents that allow an unobstructed air flow with no dead air spaces, Vents must have a total fixed open area of not less than 1% of the ceiling area. **OR** not less than 2 wind driven ventilators in association with fixed vents subject to approval.

TYPICAL SOLAR ABSORPTANCE VALUES OF COLOURED ROOFS			
Slate (dark grey)	0.9	Light Grey	0.45
Red, Green	0.75	Zinc Aluminium (dull)	0.55
Yellow, Buff	0.6	Galvanised steel (dull)	0.55
		off white	0.35
		Light Cream	0.3

R-VALUE OF INSULATION TO BE ADDED TO BUILDING COMPONENT TO MEET TOTAL R-VALUE REQUIRED						
TYPICAL WALL CONSTRUCTION		R - VALUES	CLIMATE ZONE			
			1,2,3,4,5	6	7	8
Minimum required Total R – Value for Walls		2.8	2.8	2.8	3.8	
(A) Weatherboard: minimum 70mm Timber Frame	Total R-Value of Wall Materials	0.48				
	Minimum R-Value of insulation to add	2.36	2.36	2.36	3.32	
	Total R-Value of Wall Materials	0.42				
(B) Cement or Metal Sheet 70mm timber frame	Minimum R-Value of insulation to add	2.38	2.38	2.38	3.38	
	Total R-Value of Wall Materials	0.56				
	Minimum R-Value of insulation to add	2.24	2.24	2.24	3.24	
(C) Clay Masonry Veneer minimum 110mm Veneer	Total R-Value of Wall Materials	0.53				
	Minimum R-Value of insulation to add	2.27	2.27	2.27	3.27	
	Total R-Value of Wall Materials	0.69				
(D) Concrete Block Masonry minimum 140mm Masonry	Minimum R-Value of insulation to add	2.11	2.11	2.11	3.11	
	Total R-Value of Wall Materials	0.53				
	Minimum R-Value of insulation to add	2.27	2.27	2.27	2.3	
(E) Cavity Clay Masonry 110 ext. veneer, 90mm internal (min)	Total R-Value of Wall Materials	0.46				
	Minimum R-Value of insulation to add	2.34	2.34	2.34	3.34	
	Total R-Value of Wall Materials	2.42				
(F) External insulated Clay Masonry Minimum 110 mm masonry	Minimum R-Value of insulation to add	0.38	0.38	0.38	1.38	

EXTERNAL WALLS

An external wall must achieve the minimum Total R-Value for the relevant Climate Zone or in Climate Zones 1,2 and 3 can be shaded by a verandah, balcony, carport eaves and gutter or the like with a reduction of 0.4 to the minimum Total R Value required. The horizontal projection from the external face of the building must be not less than one quarter of the overall height of the wall measured from the internal floor vertically to the underside of the projection. This applies to all stories. **NOTE:** In Climate Zones 4,,5,6,7 and 8 all walls must achieve a surface density of not less than 220 Kg/m2 and in Climate Zone 6 be constructed on a flooring system that is in direct contact of ground i.e. concrete slab or in Climate Zones 6,7, and 8 incorporate insulation with an R-Value not less than 1.0 to the edges and underneath the slab. These requirements to not apply to South facing walls in Climate Zones 1,2 and 3 south of latitude 20° south



ENERGY EFFICIENT EXTERNAL GLAZING – BCA part 3.12.2

This part of the BCA applies to Class 1 buildings and class 10a buildings with a conditioned space.

Acceptable Construction Practice: The effective glazing area of a building must not exceed the percentages of the building area as per BCA Table 3.12.2.1. This table defines the maximum effective glazing area (Total glazed area of all windows in a storey) as a percentage of the total floor area of a storey. The glazing area limits listed provide only the minimal protection against overheating (heat flow into the building via the glazing) and heat loss (through the glazing) in cold conditions. The heat loss or gain can be controlled by siting of windows, shading, use of protective films, double glazing with air or gas fill in a sealed unit, and size of windows. Window manufacturers can supply windows to suit the requirements for the site Climate Zone and the window construction depends on shading of the glazed area by verandahs, balcony, fixed canopies etc. or a shading device. A shading device must restrict at least 80% of the solar radiation when in use and can be a shutter, blind, vertical or horizontal screen with blades, battens, slats etc. and be adjustable by the building occupants. Where necessary the nomination of glazing types, window locations, shading etc. should be carried out by an approved specialist.

NSW requirements to comply with BASIX Specifications are selectable in NatHERS 2.32A

CARPENTRY

All timber shall comply with the appropriate standard as listed below. Timber sizes shall be selected so that the building as constructed complies with AS1170.2 or AS4055 for serviceability and Design Wind Gust Velocities (permissible stress) of 33 M/s minimum. Substitution of some members may be required for higher Gust Wind Velocities and advice of local authorities Building Department or Structural Engineer should be sought as whether design to N3 or higher is required.

STRESS GRADES:

Visually Stress Graded Timber: Timbers whose species or place of growth is known may be visually graded for quality in accordance AS 2082.

Mechanically Stress Graded Timber of required stress grade according to AS/NZS 1748 may be used regardless of species.

Seasoned Timbers: All timber shall be regarded as seasoned only if its moisture content does not exceed 18 per cent.

FRAMING : BCA part 3.4.3.

Timber sizes in this specification are based on AS1684.4 Simplified Non-cyclonic areas with restrictions as follows: Maximum wind classification N2 (33m/s) - maximum roof pitch 30°- maximum building width 12.0m - maximum rafter overhang 750mm - maximum wall height at ext. walls, floor to ceiling 2400mm. The sizes are for information only and should not be used for construction. All design for a structure within these limits should be carried out to AS1684.4

NOTE: for wind classification N3 (W41N) and N4 (W50N) Non-cyclonic areas with building widths 12.0m and up to 16.0m and with roof slopes exceeding 30° and up to 35°, design according to AS1684.2 is required. For construction in Cyclonic Areas, wind classification C1 to C3 refer to AS 1684.3

CUTTING, ASSEMBLY AND ERECTION OF FRAMING ABOVE GROUND FLOOR LEVEL:

Where framing is cut, assembled and erected on site, particular care should be taken that member sizes and fixings are designed to comply with stress grades for the particular number of stories and roof loads according to AS1684.

FLOOR FRAMING:

Ground floor timbers shall be only of hardwood, cypress pine or pressure treated Radiata or Canada Pine below a height of 300mm above finished ground level and must not be built into brickwork. Subfloor ventilation shall conform to BCA part 3.4.1. In Bushfire Prone Areas special conditions apply. Where termite barriers need to be inspected, 400mm clearance is required between the underside of bearer and ground surface. BCA FIGURE 3.4.1

ANT CAPS:

To all brickwork and piers, at the level of underside of floorbearers, a capping of 0.5mm gauge galvanised steel or other approved metal is to be set, projecting 38mm beyond the internal faces of all brickwork and turned down at a 45 degree angle, lapped 13mm and soldered or crimped at all joints and corners so as to provide a continuous and effective barrier against termites throughout the length of the material. Whole of house protection against subterranean termite attack shall be installed in accordance with AS 3660.1

BEARERS:

Bearers should be laid in straight and normally parallel lines with top surfaces arranged to give level bedding for joists. Unless specifically noted as otherwise, bearers shall be located directly under all load-bearing walls, except where walls are located at right angles to line of bearers, in which case piers or other approved supports shall be provided for bearers at points where they cross under such walls. Bearers having minor excesses in depth shall be brought to required level by checking out underside over supports. Packing is to be avoided but where there is no alternative, corrosion resistant and incompressible sheet material over full area of contact may be permitted. Bearers having not more than permitted spring shall be placed so that they tend to straighten under loading. Joints in bearers, unless specifically detailed otherwise, shall be made only at points of support on which adequate bearing for both members can be provided and the joint shall be secured by means of bolting or spiking against displacement or separation.

JOISTS:

Joists shall be laid over bearers in straight and normally parallel lines with top surfaces set accurately to a common level to receive flooring. Underside of joists having minor excesses in depth are to be notched out over bearers to obtain required common level. Packing may be employed if unavoidable similar to that for bearers, such packing to be securely fixed. Joists having not more than the permitted amount of spring shall be laid so that they tend to straighten under loading. Joints, unless specifically detailed, shall be made only over bearers or other supports. Joints occurring in joists which are parallel and support wallplates shall be made at points of support which provide adequate bearing for both ends which shall be butted or scarfed to maintain a straight line. Posts shall be securely skew nailed; from both sides to bearers at all points of support. Where floor joists abut solid masonry or concrete walls, they shall be supported on timber wall plates or bearers carried on walling, off-sets or attached piers; where such method is not practicable and height of floor is more than 1800mm above ground the ends of joists or bearers may bear in pockets formed in the wall which allow at least 12mm clear air space at sides and ends of members and provide solid bearing at least 100mm in depth. Where the unsupported span of deep joists exceed 2700mm, 50mm x 50mm herringbone strutting or solid blocking of 25mm min thickness shall be provided in continuous rows between joists at not more than 1800mm centres..

EAVES BEAMS AND VERANDAH PLATES:

Eaves beams and verandah plates shall be provided to support rafters or trusses over full height openings or recesses in walls or over verandahs or porches covered by main roof structure. Any reduction in nominal size through mill dressing or scalloping shall be allowed for so that the minimum size listed is not reduced. The ends of eaves beams and verandah plates that are supported on stud wall shall be carried by studs or stud groups as for heads for equivalent spans. End fixing shall provide resistance to uplift or displacement. Verandah Posts to be not less than 100mm x 100mm in timber F11. If supporting roof loads they shall be as per AS1684.2.

EAVES:

Project rafters to give a soffit at eaves of directed width and fix 200 x 25mm timber fascia or colourbond steel as directed. Where eaves are boxed in, soffit bearers (sprockets) of 50 x 38mm shall be provided, spaced to suit eaves lining and attached directly to outer ends of rafters. In brick veneer buildings the inner ends of soffit bearers shall be fixed to the frame so as to be 20mm or more clear above top of brickwork at time of construction.

In solid masonry buildings the inner ends of soffit bearers shall be located by means of 50 x 25mm hangers from rafters or wall plates. In Bushfire Prone Areas fascias and eaves linings have special requirements.

ROOFING BATTENS: Supporting roofing only. (Note: roofing battens are not suitable for the safe support of workers prior to fixing roof cladding). Battens should be continuous over a minimum of two spans and their design to suit rafter/truss spacing and batten spacing must be in accordance with AS1684 for the allowable roof mass.

MANHOLE:

Trim as required between ceiling joists or trusses for manhole 600 x 400mm minimum size. Line the opening and provide a suitable cover.

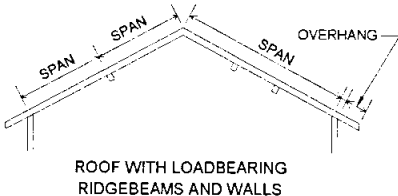
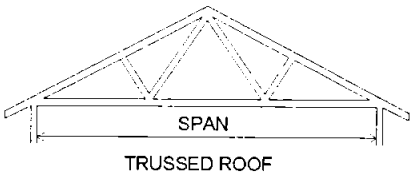
PREFABRICATED TIMBER WALL FRAMES AND TRUSSES – BCA part 3.4.3

Where prefabricated frames and/or trusses are used for construction of the building, the manufacturers certification of construction according to AS1684.2 or AS1684.4 for the building on the particular site must be obtained. Where certification is attached to truss or framing members the certification labels shall be left in place after erection for approval by the appropriate Building Surveyor, P.C.A, or Council Authority. Timber trusses purpose manufactured for this project and engineer designed according to AS1720.1 are to be spaced at centres as directed, erected and fixed in accordance with the manufacturers instructions as approved. Support only on ends or designed bearing points. Where spacing of trusses exceeds 600mm centres provide intermediate ceiling joists in 100mm x 38mm hardwood (in F7) or 100mm x 50mm (in F8) supported from hangers at maximum of 2100 centres. Hanging beams shall be supported not more than 600mm from bottom chord panel points unless hangers are provided to nearest top chord panel points.

MASSSES OF TYPICAL ROOF CONSTRUCTION

MASS OF ROOF	MATERIAL
10 kg/m2	Steel sheet roofing 0.50mm thick and battens
20 kg/m2	Metal sheet tiles or medium gauge steel sheet roofing , battens, 12mm softwood ceiling lining, sarking and lightweight insulation
30 kg/m2	Steel sheet roofing 0.775mm thick, 13mm plaster ceiling, roof and ceiling battens, sarking and lightweight insulation
40 kg/m2	Steel sheet roofing 0.75 thick, battens, graded purlins and high density fibreboard ceiling lining
60 kg/m2	Terracotta or concrete tiles and battens
75 kg/m2	Terracotta or concrete tiles, roofing and ceiling battens, 10mm plasterboard, sarking and insulation
90 kg/m2	Terracotta or concrete tiles, purlins, roofing and ceiling battens, 19mm hardwood ceiling lining, sarking and insulation

DEFINITIONS: Spacing - Where this term is used the measurement shall be the centre-to-centre distance between members.
Span - Where this term is used the measurement shall be the face-to-face distance between members.
Reference is made to effective roof spans in the tables - the span is an indicator of the mass of roof being carried by the outer wall members.



TABLES OF TIMBER SIZES

TABLES OF TIMBER SIZES		SINGLE STOREY TILED ROOF				SINGLE STOREY SHEET ROOF			
Framing Member Stud Height 2400	Span	Unseasoned	Seasoned			Unseasoned	Seasoned		
		F8	F5	MGP10	MGP12	F8	F5	MGP10	MGP12
BEARERS-									
Strutted roof – max. rafter span 3000 @ 1800 spacing continuous over two or more spans-load bearing.	1500	100 x 75	2/120 x 35	2/120 x 35	2/90 x 35	100 x 75	2/90 x 35	2/90 x 35	2/90 x 35
	1800	125 x 75	2/140 x 35	2/120 x 35	2/90 x 35	125 x 75	2/120 x 35	2/120 x 35	2/90 x 35
Trussed Roof 9.0 Span, External Wall 1800 spacing continuous over two or more spans-load bearing.	1500	175 x 75	2/170 x 35	2/140 x 35	2/140 x 35	125 x 75	2/120 x 35	2/120 x 35	2/90 x 35
	1800	150 x 75	2/190 x 35	2/190 x 35	2/140 x 35	200 x 75	2/190 x 35	2/190 x 35	2/170 x 35
JOISTS-									
450 spacing-continuous over two or more spans	1800	125 x 38	120 x 45	120 x 35	120 x 35	125 x 38	120 x 45	120 x 35	120 x 35
LINTELS*- Trussed Roof 9000 Span	900	100 x 75	2/90 x 35	90 x 45	90 x 35	100 x 50	2/90 x 35	90 x 45	90 x 35
	1200	125 x 75	2/120 x 35	120 x 45	2/90 x 45	125 x 50	140 x 45	2/90 x 45	2/90 x 35
	1500	175 x 75	2/140 x 45	2/120 x 45	2/120 x 45	150 x 50	2/120 x 35	2/140 x 35	2/80 x 45
	1800	200 x 75	2/170 x 45	2/170 x 35	2/140 x 35	150 x 75	2/140 x 35	2/120 x 35	2/120 x 35
	2100	225 x 75	2/240 x 35	2/170 x 45	2/170 x 35	175 x 75	2/170 x 35	170 x 45	2/120 x 45
	2400	275 x 75	2/240 x 35	2/240 x 35	2/190 x 45	200 x 75	2/170 x 45	2/170 x 35	2/140 x 45
	3000	-----	2/290 x 45	2/290 x 35	2/240 x 45	250 x 75	2/240 x 35	2/190 x 45	2/190 x 35
	3600	-----	-----	-----	2/290 x 45	-----	2/290 x 45	2/290 x 35	2/240 x 45

UNCOUPLED ROOF WITH LOADBEARING RIDGEBEAMS AND/OR WALLS
Rafters supporting roof and ceiling loads – non coupled cathedral roof single span

Rafter Span		Rafter Spacing	Unseasoned				Seasoned			
			F5	F7	F8	F11	F5	MGP10	MGP12	F17
Tiled Roof Ceiled										
3000	Overhang	600	200 x 38 750	200 x 50 750	175 x 50 750	175 x 50 750	175 x 45 750	140 x 45 750	140 x 45 750	140 x 35 750
		3600	250 x 50 750	225 x 50 750	225 x 50 750	200 x 50 750	240 x 35 750	170 x 45 750	170 x 45 750	170 x 35 750
4200	Overhang	600	275 x 50 750	275 x 50 750	250 x 50 750	250 x 50 750	240 x 45 750	240 x 35 750	190 x 45 750	190 x 45 750
		4800	275 x 75 750	275 x 75 750	300 x 50 750	275 x 50 750	290 x 35 750	240 x 45 750	240 x 35 750	240 x 35 750
5400	Overhang	600	----- 750	300 x 75 750	300 x 75 750	275 x 75 750	----- 750	290 x 35 750	290 x 35 750	240 x 45 750
Sheet Roof Ceiled										
3000	Overhang	900	175 x 50 750	175 x 50 750	175 x 50 750	150 x 50 750	140 x 45 750	140 x 35 750	120 x 45 750	120 x 45 750
		3600	225 x 50 750	200 x 50 750	200 x 50 750	200 x 50 750	170 x 45 750	170 x 35 750	140 x 45 750	140 x 45 750
4200	Overhang	900	250 x 50 750	250 x 50 750	225 x 50 750	225 x 50 750	240 x 35 750	190 x 45 750	170 x 45 750	170 x 45 750
		4800	300 x 50 750	275 x 50 750	275 x 50 750	250 x 50 750	240 x 45 750	240 x 35 750	190 x 45 750	190 x 45 750
5400	Overhang	900	300 x 75 750	275 x 75 750	300 x 50 750	275 x 50 750	290 x 35 750	240 x 45 750	240 x 35 750	240 x 35 750

- NOTE:
1. Allowable overhangs are based on a maximum birdsmouth depth of D/3. Where rafters are not birdsmouthed, the allowable overhang may be increased to 30% of the single span for that member, provided that the overhang does not exceed 50% of the actual backspan.
 2. Overhang limits are only applicable where rafter ends are supported by a structural fascia.

NOTE: Sizes shown in tables in this specification are intended only as a guide to the size and stress grade for a particular member of a building frame. All timber framing should be designed and constructed in accordance with AS1684.2 and/or AS1684.4
Sizes in this specification are based on AS1684.4 Simplified Non-cyclonic areas, with restrictions as follows:-
• Maximum wind classification N2 (33m/s) • Maximum Roof pitch 30° • Maximum building width 12.0m
Where a building exceeds the restrictions as listed above, design to comply with AS1684.2 will allow wind speeds up to N4 (50 m/s), roof slopes up to 35°and building widths up to 16.0m.

PERMANENT BRACING OF WALLS AS PER AS1684.2 Section 8 - BCA parts 3.4.3

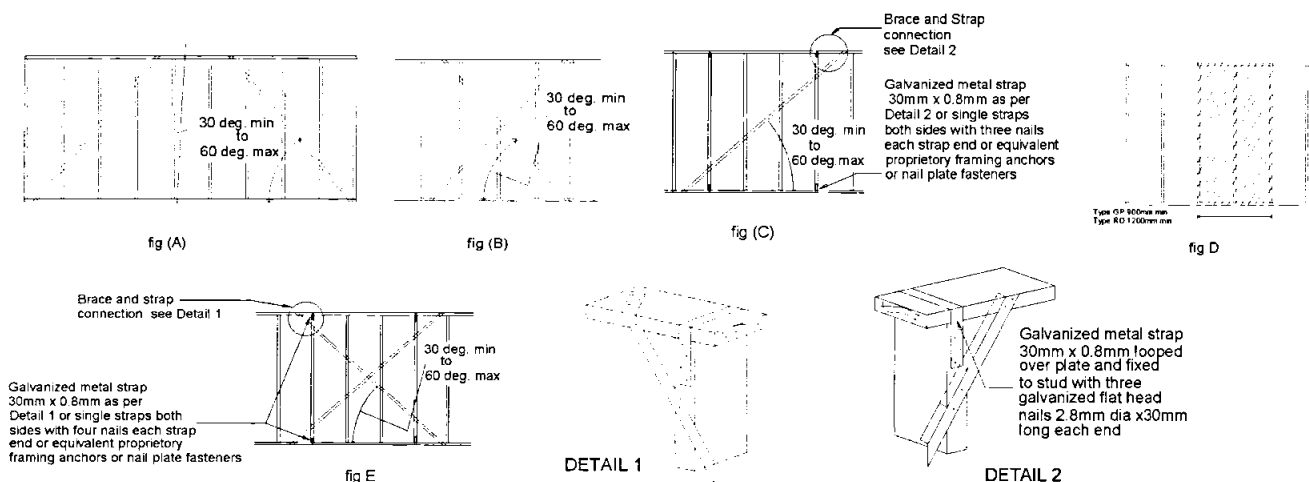
This section 'Permanent Bracing of walls as per AS1684 shows typical bracing applicable to timber frame construction as explanatory information only.
TYPE 'A' UNITS (Design racking resistance of 2kN). The following bracing units are deemed satisfactory type 'A' braces.

1. A pair of diagonal timber or metal section braces in opposite directions from each end of the wall as per fig (A) OR galvanised metal tensioned strap bracing as per fig. (B).
2. Single diagonal timber or metal section brace as per figure (C).
3. A 900mm minimum wide panel of structural plywood as per figure (D).

Type 'A' Bracing – Pair of diagonals from each end of wall		
Timber	Metal Section	Tensioned Straps
50mm x 19mm for studs up to 2.7m long 75mm x 19mm for studs over 2.7m long Fixing: galvanised flat head nail 2.8mm dia. x 50mm long to each plate and stud.	18mm x 16mm x 1.2mm min. galvanised angle brace fixed with one 2.8mm dia. x 30 long galvanised flat head nail to each plate and stud edge.	Flat galvanised straps 0.8mm thick x 20 wide. Fixings: one galvanised flat head nail 2.8mm dia. x 30mm long to each plate and stud edge. Tension straps.

Type 'A' Bracing – Single diagonal at end of wall.	
Timber	Metal Section
75mm x 19mm min. fixed with two 2.8mm dia x 50mm long flat head galvanised nails to each stud and plate.	Galvanised angle brace fixed with two 2.8mm dia x 30 long galvanised flat head nails to each plate and stud

- Type 'B' Units (design racking resistance of 4kN. The following bracing units are deemed to be satisfactory type 'B' braces
1. A pair of diagonal galvanised metal tension straps of minimum nominal dimension 30mm x 0.8mm in opposing directions on one side of timber frame. Ends of straps shall be bent over top and bottom faces of plates and fixed with four 3.15mm dia. x 30mm long galvanised flat head nails. Braces shall be fixed to stud edges with two similar nails to each crossing. End studs of braces section shall be strapped to top and bottom plates with 30mm x 0.8mm galvanised strap looped over plate and fixed to studs with four galvanised flat head nails 3.15mm dia x 30mm long each end of loop.
 2. A 900mm minimum wide panel of structural plywood as shown in figure (D). Fixed as follows:
Plywood stress grade F8 Stud spacing 450mm to be 7mm thick ply. Stud spacing 600mm to be 9mm thick ply.
Plywood stress grade F11 Stud spacing 450mm to be 6mm thick ply. Stud spacing 600mm to be 7mm thick ply.
Plywood stress grade F14 Stud spacing 450mm to be 4mm thick ply. Stud spacing 600mm to be 6mm thick ply.
Fixing: 2.8mm dia x 30mm long galvanised flat head nails at 50mm centres along top and bottom plates, 150mm centres along vertical edges and 300mm centres along intermediate studs.



Diagrams as shown and explanation of the various types of bracings are not intended to specify bracing requirements for any timber frame construction. All bracing requirements for a particular design in timber framing must be determined in accordance with Section 8 of AS1684.2 or AS1684.4 as applicable.

TIEDOWN REQUIREMENTS: BCA tables 3.4.3

Tie down requirements for timber frame construction can be determined from AS1684.4 Section 9 for maximum design gust wind speeds of 33m/sec. For wind speeds in excess of 33m/sec, design as per AS1684.2 is required.

Tie down fixings should be determined for the following connections:

- | | | |
|--|-----------------------------------|---|
| a) bearers to piers | d) studs to bottom and top plates | g) battens and/or purlins to rafters |
| b) floor joists to bearers | e) rafters to top plates | h) collar ties to rafters |
| c) Bottom plates to floor joists or concrete slabs | f) rafters to ceiling joists | i) verandah plates and eaves beams to posts |

NOTE: Special fastening requirements are required for type 'A' and 'B' wall bracing for connections (c) and (d) above.

CYCLONIC AND OTHER HIGH WIND AREAS: BCA part 3.10.1

Where buildings are to be constructed in regions B, C, and D as per AS/NZS1170.2 and AS1170.2 compliance with the AS1170.2 Minimum Design Loads on Structures or AS4055 Australian Wind Loads for Housing.

NOTE: High wind areas exist outside of cyclone regions B,C and D. Clarification of the category at the site should be sought from local authorities. Cyclonic Regions of Australia and Tasmania are shown on Map BCA fig. 3.10.1.4

STEEL FRAMING AND OR TRUSSES: BCA part 3.4.2

MATERIALS: All framing sections shall be manufactured from galvanised steel conforming to AS1397. Galvanised materials up to 3.2mm thick shall have minimum coating mass of 200 g/m2. Design, fabrication and fixing shall be as per recommendations of the component manufacturers design manual. Design for Residential and Low Rise Steel Framing may conform to NASH standard as alternative to AS3623.

FABRICATION AND ERECTION:

All structural components fabricated into frames and/or trusses and shall be cut accurately to length to fit firmly against abutting members and held so until fastened. Studs shall be seated squarely in bottom plates with webs at 90deg. to the face of the wall and accurately located, plumbed and securely fixed to top and bottom plates. Multiple studs shall be used as specified at concentrated load points. Plates shall be securely spliced to maintain continuity. Splices in studs are not permitted. Structurally adequate heads shall be fitted over openings in walls. All frames shall be adequately braced for transport and resist wind loads in service. Preferred fastening is by MIG welding. All welds shall be cleaned and painted with zinc rich paint. The bottom plate shall be securely fastened to sub floor at centres as recommended and all site connections shall be as specified in design manual. Holes for electrical wiring, other cables and plumbing services shall be max. 33mm dia. flanged holes. Service pipes shall be effectively separated from framing by lagging and be securely fixed in cavities. Permanent electrical earthing of a steel frame building shall be carried out in accordance with the requirements of the local electrical authority. Where power tools are used on site, temporary earthing to the frame shall be made during construction. On completion of framing all debris shall be removed from cavities and bottom plates. Domestic metal framing shall be designed to comply with the load combinations as per AS3623.

STRUCTURAL STEEL - BCA part 3.4.4

All steel work is to be fabricated to details as shown on engineers drawings all work to be in accordance with AS4100 Steel Structures.

Corrosion protection of built in structural members such as lintels, shelf angles, connectors etc., (other than wall ties) are to be in accordance with BCA Part 3.3.3.2

PURLINS AND GIRTS:

To roof and walls of building provide purlins and girts according to engineers details. Cover roof and walls of building in full length sheets complete with all necessary flashings cappings etc. Secure as recommended by manufacturer and provide panels of selected translucent sheeting as indicated or directed.

ROOFING - BCA part 3.5.1

TILE ROOFING: BCA part 3.5.1.2.

Provide all roofs with first quality roofing tiles. Where pitch of rafters is less than 1:2.75 terra cotta Marseilles pattern, 1:3.7 Swiss pattern, 1:3.3 concrete tiles are used the roof shall be sarked with either 2 ply bituminous felt or double faced aluminium foil covered reinforced fabric as per AS/NZS 4200. Between 1:3.7 and 1:4.5 slope, perimeter of roof shall be provided with an anti ponding board or device to ensure that all water will be discharged into eaves gutter, a clear space must be provided between edge of the device and the lowest side of the first batten so as to allow a free flow of water into the gutter. Where one section of the roof discharges into a lower section, the discharge is to be widely distributed, and the roof is to be fully sarked. Elsewhere, where a spreader is used the roof shall be sarked from the point of discharge to Eaves with a minimum width of 1800mm approved sarking. Cover all ridges and hips with capping, starters and apex caps necessary and bed all capping and verge tiles on lime mortar and point with coloured cement mortar.

TERRA COTTA TILES: To be glazed and manufactured in accordance with AS 2049. To be fixed to timber battens with copper wire ties every alternate tile, all fixed in accordance with AS2050.

CONCRETE TILES:

To conform to AS2049, AS4046 and AS2050 and to be produced by manufacturers who provide a comprehensive guarantee. Tiles are to have an end lap of not less than 75mm. Where wiring holes are provided, every alternate tile in each course is to be tied to battens with approved wire. Where holes are provided for nailing every tile in each third course is to be fixed with galvanised flat head nails at least 19mm into tile batten. Fixing to be as per AS2050.

CORRUGATED FIBRE CEMENT ROOFING:

To conform to and fixed in accordance with AS1562 Pt.2. Minimum pitch of roof is to be 1:8 for large corrugations and 1:11 where the rafter length can be covered with a single sheet. Where pitch of roof is less than 1:6 in the case of large corrugations and 1:4.5 in the case of small corrugation end laps shall be at least 225mm and sealed. Sheets to be fixed with galvanised round head screws and felt washers set in mastic to each run of battens with side and end laps or other approved method in accordance with manufacturers instructions. All necessary accessories are to be provided and the roof is to be adequately birdproofed.

PROFILED STEEL ROOF: BCA part 3.5.1.3:

To be material as nominated on drawings. All necessary accessories to be provided and fixed according to manufactures recommendations. Roof is to be bird proofed. Sheet fixings and spacings are to be strictly as per manufacturers recommendations for the design wind speed for the area. Design and installation shall be in accordance with AS/NZS 1562. Cover roof and walls of building in full length sheets complete with all necessary flashings and cappings etc. Secure as recommended by manufacturer and provide panels of selected translucent sheeting as indicated or directed.

SARKING:

Where sarking is specified or required by any authority the selection of and fixing shall be in accordance with the code of practice as specified in AS/NZS 4200 for pliable roof sarking or reflective foil laminates. All installations must comply with the requirements of BCA part 3.7.4. and AS3959-2009 in Bushfire prone areas.

FLOORING - BCA part 3.4.3

T & G STRIP FLOORING: BCA table 3.4.3.1:

Flooring shall be seasoned and stored in a way to preserve its delivery condition. Flooring boards shall be laid in straight and parallel lines with tongues fitted into grooves and cramped together with pressures suited to moisture content and seasonal conditions. End joints shall be made on a joist and joints in adjoining boards shall be staggered. Flooring shall be kept 12mm clear of walls or wall plates parallel with the direction of laying. Boards of normal width of 75mm and less shall be fixed with one nail at each joist and boards over 75mm shall be fixed with two nails at each joist. Nails in faces of boards are to be well punched to allow for subsequent sanding and stopping. Boards profiled for secret nailing are to be skew nailed through tongues at each joist with nail punched to permit the full entry of the tongue into the groove. Flooring is not to be cut in and fixed before roofing is complete, external walls sheeted or lined and all external openings covered.

SHEET FLOORING:

The minimum height of sheet flooring above ground level and under-floor ventilation shall be in accordance with manufacturers instructions or as required by Council or Lending Authority.

Where sheet flooring is used in platform construction and a decorative finish is required it shall be sealed with a water repellent at time of fixing.

a) Structural Plywood: shall be manufactured in accordance with AS2269 and sheets stamped on the face side with manufacturers name or trade mark. Sheets shall be fixed in accordance with manufacturers instructions as approved.

b) Particle Board: Approved board bonded with phenolic resin to achieve a type 'A' bond as defined in AS/NZS4785 for plywood may be used in platform construction or as fitted flooring. Boards shall be fixed in accordance with manufacturers instructions as approved. The perimeter of flooring should be fully supported by joists or noggins. Other approved particle board may be used providing it is a minimum of 2100mm above the ground.

c) Compressed Fibre Cement: Sheet flooring not less than 18mm thick with density of not less than 1.8g/cm³ may be used in lieu of suspended concrete floors. Sheets shall be fixed in accordance with manufacturers instructions adequately flashed and suitably finished.

ELECTRICAL INSTALLATIONS

Provide all labour and materials necessary for the proper installation of electrical services in accordance with the appropriate AS Rules and requirements of the Local Supply Authority. Arrange with the supply Authority for connection from supply main to meter board. Provide for the proper installation and connect electricity stove/s and hot water unit/s. Provide light and power points as indicated on drawings or as directed and in accordance with AS/NZS1680. Provide box to enclose meters in accordance with the requirements of the Authority concerned. Arrange for inbuilt wiring for telephone, television, computer and security installation as required. AS/NZS 3000 specifies the minimum requirements including safety provisions.

LIGHTING; BCA 3.8.4 Natural lighting must be provided to all habitable rooms of a class 1 building by windows or roof lights or a proportional combination of both, or by light 'borrowed' from an adjoining room. Windows must have a clear aggregate light transmitting area of not less than 10% of the room floor area, and face a court or open verandah/carport. If facing the boundary of an adjoining allotment, must be 900mm min. from that boundary. Roof lights must have a clear aggregate area of not less than 3% of the floor area of the room and face the sky. 'Borrowed' light can be supplied by a clear glazed panel or opening that is not less than 10% of the floor area of a room supplying the light if that room complies with the natural light requirements. Artificial lighting of one lightfitting per 16 sq. metres of floor area must be provided to sanitary compartments, bathrooms, airlocks, showers etc. if natural lighting cannot be supplied.

SMOKE DETECTORS / ALARMS : BCA part 3.7.2

Fire/smoke detectors selected by the owner and complying with the requirements of the Local Government Act and/or state or territory regulations must be fitted in the locations required and approved by the regulatory authority and shall be installed in accordance with AS3786.

LIGHTNING PROTECTION:

Where lightning protection is specified by the proprietor or required under regulatory provisions it shall be installed in accordance with AS1768.

EXTERNAL WALL CLADDING - BCA part 3.5.3

WEATHERBOARDS OR PROFILE SHEETING:

as approved by the leading authority shall be fixed and flashed in accordance with manufacturers instructions and to the satisfaction of the lending authority. Weatherboards with laps as specified by the relevant AS shall be hardwood, pressure treated radiata pine or slash pine, cypress pine, baltic pine or western red cedar. The boards shall have a maximum moisture content of 15% be in long lengths with staggered end joints, securely nailed and fitted with angle stops. Western red cedar used externally shall be fixed with galvanised or cadmium plated fasteners. Boards exceeding 100mm in width shall be double fastened at all bearings. All boards shall be primed or sealed all around including rebates and ends before fixing. Where vertical boarding is used it shall be fixed to battens at not more than 600mm centres and sarking acceptable to the lending authority placed behind the battens to provide air space and fixed to the frame work with adequate provision for discharge of moisture. External boarding shall be in one length or have joints specially designed for external use.

FIBRE CEMENT:

a) Flat Sheeting: Fibre cement sheeting shall be not less than 4.5mm thick and close jointed to full height of walling or above sill level where weatherboard dadoes are specified. Horizontal joints shall be flashed with 0.42mm galvanised steel turned up 13mm against stud faces and down 12mm over sheet faces, lapped 25mm at joints. Internal angles of walls shall be flashed with 38mm x 38mm x 0.42mm minimum base thickness galvanised steel angles or bitumen coated metal flashing to full height of studs and lapped 50mm at joints. All vertical and horizontal joints and angles shall be covered with timber, fibre cement mouldings as approved by the lending authority. Trimmers of not less than 75mm x 38mm timber shall be provided between ends of floor bearers to support lower edge of sheeting.

b) Profiled sheeting and Weatherboard: As approved by the lending authority shall be fixed and flashed in accordance with the manufacturers instructions and to the satisfaction of the lending authority.

INTERNAL LININGS

Line all internal walls not specified as otherwise with Gypsum plaster board fixed horizontally in full length sheets, or with staggered end joints to ceiling height. Sheets to have recessed edges and of thickness as recommended by the manufacturer for the stud, batten or support spacing. Fixing is to be with galvanised clouts, manufacturer approved screws and/or approved adhesive and be strictly in accordance with manufacturers instructions. Set all internal angles. Note: Where below 1200mm in laundry, bathroom and V.C. and at back of kitchen sink unit and below 1800mm in shower recess, only approved water repellent sheet shall be used. Note: Adhesives must not be used to fix sheets in tiled areas.

FIBREBOARD:

Sheets shall not be less than 4.5mm thick except where tiled. Sheets to be tiled shall not be less than 6mm thick. Where flush jointing is required fibreboard sheets shall be used, fixed and jointed in accordance with manufacturers instructions.

CEILING LININGS

Provide Gypsum plaster board to all internal ceilings unless otherwise specified. Sheets to have recessed edges and to be 10mm thick when fixed to ceiling battens/joists spaced at not more than 450mm and 13mm thick for 600mm spacings. Fixing is to be with galvanised clouts and/or approved adhesive and is to be in accordance with manufacturers recommendations as approved. Provide selected cornices, neatly mitred, properly fixed and scrimmed and set at all joints in full wall lengths where practicable. Gypsum plaster board for ceilings and walls shall be as per AS2589. Sheets of different thickness may be used at other spacings where their manufacture and installation complies with the Deemed to Satisfy Provisions.

PLASTER AND RENDER

To all brick walls not specified as feature brickwork or otherwise (with exception of garage) apply render to minimum thickness of 12mm. Render to consist of one part fresh cement to 3 parts clean sand with 10 per cent hydrated lime added. Use only whilst fresh. All brickwork to be well wetted before plastering is commenced. Point up all flashings externally with cement mortar and make good as required after other trades.

JOINERY

Joinery timber is to be of species seasoned and free from those defects that might effect its appearance and/or durability. All to be D A R accurately cut and fitted, properly mitred and scribed as required and securely fixed. All surfaces to be left free of mill marks or other defects, filled where necessary and ready for painting or staining. Where wood plugging is required it shall be a suitable species properly seasoned.

DOOR FRAMES – BRICK BUILDINGS:

Shall be at least 100mm x 50mm solid rebated properly dowelled to thresholds. Mullions shall be 75mm thick and double rebated.

JAMB LININGS – INTERIOR DOORS ALL BUILDINGS, EXTERIOR DOORS TIMBER FRAMED AND BRICK VENEER:

Linings shall be a minimum of 38mm thick solid rebated to all door openings. Where return plaster reveals occur linings shall be 75mm x 50mm rebated. Alternatively for internal doorways 25mm linings may be used with 12mm planted stops. In brick veneer and timber framed construction 12mm clearance shall be provided over jamb linings to external openings. Linings to openings not having doors or to have swing doors are to be 25mm thick timber securely fixed. Other proprietary linings may be approved by the owner.

DOORS: Fit accurately to door frame. Hang external doors with three 88mm steel butts and internal doors unless otherwise specified with two 88mm steel butts. External doors shall not be less than 2040mm x 820mm x 40mm thick. Where sheeted with plywood, waterproof plywood only shall be used. All framed glazed doors (external or internal) shall be minimum of 40mm thick. Internal doors shall be minimum of 35mm thick and free of warping.

WINDOWS AND FRAMES: In brick veneer construction 10mm clear space shall be left between underside of sill and brickwork. In two storey construction with hardwood timber framing the clearance shall be increased to 20mm.

INSTALLATION:

All windows shall be installed in accordance with the requirements of AS2047-48 for Aluminium windows and AS2047 for timber windows.

STAIRS, HANDRAILS AND BALUSTRADES: BCA 3.9.1 and 3.9.2

Stairways shall be constructed to the layout as shown on plans with treads of equal dimensions except where shown or where winders are required. All risers in any flight shall be of equal height. All flights shall have a minimum of 2 and not more than 18 risers. Relationship of riser to going shall be between 1:2 and 1:1.35 unless otherwise directed or as permitted in AS1657. Balustrades shall be provided to all landings, decks roofs other elevated platforms where the vertical distance from that level is more than 1 metre above the adjoining floor or finished ground level. Height of the balustrade must be a minimum of 1 metre above landings etc. and not less than 865mm above the nosings of any stair treads or floor of a ramp. Openings in balustrades (decorative or otherwise) and space between treads, eg. riser opening must not allow a 125 mm dia sphere to pass through. Resistance to loading forces of a balustrade must be in accordance with A.S. 1170. Materials and finish of handrails, newel posts and balustrading shall be as directed or agreed by owner. Where balustrades are constructed of tensioned wires provision shall be made to maintain tension applied.

ACCESS AND MOBILITY

Where access and mobility requirements are to be addressed in the construction of a new building, AS1428. General Requirements for Access – New Building Work contains the minimum design requirements to enable access for people with disabilities. Revision of the BCA in order to address requirements of the Disability Discrimination Act (DDA) as applies to the construction of buildings with public areas will require that the latest revision of AS1428 should be used.

PLUMBING AND DRAINING: BCA part 3.5.2**EAVES GUTTERS VALLEY GUTTERS AND DOWNPIPES:**

Eaves gutters and downpipes of material and finish as nominated on drawings shall be installed as per manufacturers specification to all eaves as required with falls to downpipes in positions shown and to comply with AS/NZS 2179. Valley gutters of material compatible roof covering to comply with BCA 3.5.2.4

FLASHINGS:

Flash around chimney stacks, exhaust flues and wherever else required with approved flashings dressed well down onto roof slopes and taken vertically at least 75mm. Wedge step flashing into brickwork joints and point up with cement mortar. Eaves gutters, valleys and roof flashings shall be selected from materials compatible with each other and the roof covering to prevent bi-metallic corrosion. (See BHP publications TB8, TB15). Use of lead for flashings, gutters, downpipes and roofing is prohibited if the roof will collect potable water.

WATER SERVICES:

Where a reticulated water supply is available all work shall be carried out by a licensed water plumber. All water supply installations shall be carried out in accordance with AS3500 'National Plumbing and Drainage Code'.

RETICULATED RECYCLED WATER:

Where a utility supplied reticulated recycled water supply is connected as a dual reticulation it is important that no cross connection between the potable and recycled water can occur. There must be at least one external tap for each system and the recycled water system must have lilac coloured components. Identification markings and signage shall be installed as per AS1319 and AS1345. Recycled water cannot be used for human consumption or contact, household cleaning, personal washing or irrigation where fruit and crops are eaten raw or unprocessed.

WET ROOM FLASHINGS: BCA 3.8.1

Waterproofing of wet areas shall be designed and installed in accordance with requirements and construction techniques as per AS3740 and appendix for wall/floor combinations. All waterproofing installations are to be inspected and approved prior to covering. Where waterproof membranes are used in the construction of wet area membranes shall comply with AS/NZS4858

HOT WATER SERVICE:

All installations must comply with AS3500.4 Provide from H/water unit with selected tubing to points necessary. Terminate with taps selected. Provide inlet stop cock to hot water unit. Storage water heaters selection and installation to be as per AS1056.

GAS SERVICE:

The whole of the work is to be carried out as per requirements of the Local Supply Authority. The plumber is to be responsible for the gas service from boundary alignment, including fixing of the meter and cover for same. Installations for bottled gas supply shall comply with the relevant standard.

HEATING APPLIANCES BCA 3.7.3: Domestic type Oil, Gas and Solid Fuel heater installations shall comply with AS/NZS2918'Domestic solid fuel burning appliances – Installation'. Installation of gas fired appliances shall be carried out by a licensed gas plumber

SEWERED AREAS:

Provide a drainage system from pedestal pan and from wastes of all fittings unless a grey water system is to be installed and connect to the sewer main, where shown on site plan all to be in accordance with the rules and requirements of the Authority for Water Supply and Sewerage. Provide at least one gully outside the building. The Authority Certificate to be produced at Completion of the Work.

UNSEWERED AREAS:

Provide a drainage system from all fittings and from grease trap in accordance with the requirements of the Local Authority concerned. Excavate for drains to provide even falls throughout and a minimum cover of 300mm. Lay 100mm socketed vitrified clay, P V C or HDPA pipes to take discharge from wastes of washtubs, bath, shower, washbasin and grease trap. All pipes to be completely jointed with rubber rings or solvent cement as approved. All drain lines to be laid so that water is discharged into an absorption trench provided in position shown on plan. Provide an approved grease trap with lid in position shown to take the water from kitchen sink. Top of trap to be 75mm above finished ground or nearby concrete paving level. All drainage work from fittings to the drainage line outside the building to be in accordance with the rules and requirements of the Water Supply and Sewerage Authority for sewerage areas. That Authority 'Special Inspection' Certificate of the work to be produced by the builder. All plumbing and drainage shall be in accordance with the Code of Practice for state or territory and regulating local government area.

GREYWATER REUSE SYSTEMS:

Where a greywater reuse system is proposed the installation shall comply with the following Australian Standards and Codes: AS1546 parts 1 and 3: AS1547: NSW Health 1998 AWTS guideline: NSW Health 2000 Domestic greywater treatment guidelines and sewerage single domestic premises. An on site greywater reuse system is not permitted in Reticulated Recycled water areas. Domestic Greywater Treatment Systems (DGTS) and Aerated Wastewater Treatment Systems (AWTS) require a certificate of accreditation from NSW Health

SEPTIC SYSTEM:

In position shown on site plan provide and install septic system as nominated by the proprietor together with a holding tank and length of absorption trench installed in accordance with the manufacturers instructions and the requirements of the Local Authority. Installations shall comply with AS1546 part 1

STORM WATER TREATMENT METHODS::

Provide roof water drains from downpipes and from grates in paving where shown on site plan. Drains to be 100mm socketed vitrified clay pipes or PVC laid to an even and regular fall so as to have a minimum cover of 150mm. Drains to discharge into street gutter where possible. Where outlets are shown within the site they are to discharge at least 3000mm clear of the building into rubble packing 600mm diameter and 600mm deep. Acceptable solutions for stormwater drainage to be as per AS/NZS3500 part 3. Stormwater treatment systems should satisfy the following performance requirements:-

1. Conserve Water
2. Prevent Increases In Flooding/Erosion
3. Maintain water balance
4. Control Stormwater Pollution.

Systems suitable for detached dwellings are:- Roof/rainwater tanks; Detention devices; Infiltration devices and Filter strips. These are also suitable for multi-dwelling developments in addition to Stormwater tanks and Bio retention devices.

RAIN WATER TANKS:

Install rainwater tanks of selected material on slab or support as nominated by tank manufacturer. Rainwater tanks may be trickle topped up (max. 2litres/minute) from a potable water supply main and internally reticulated. A dual supply system should have no direct or indirect connection between the mains potable supply and the rainwater tank supply. Inground concrete tanks may be installed as an option with a suitable pressure pump and a testable backflow prevention device as per AS/NZS2845.1 Where an above ground tank is connected to internal reticulation, a meter with a dual check valve is to be installed and a visible air gap between the mains supply and the rainwater tank as per AS3500 and AS2845.2.1. (See NSW Health circular: Use of rainwater tanks where a reticulated mains water supply is available).

NOTE: Drain pipes must not be taken through the footings of the building. All seepage and soakage water is to be effectively dealt with and diverted clear of the buildings as shown on site plan. Trenches for drains, where running parallel to the building must not be within 600mm of the footings of the building.

WALL AND FLOOR TILES

For guidance on installation of ceramic tiles see recommendations as set out in AS3958 parts 1 and 2.

WALLS:

Cover the following wall faces with selected glazed tiles:

To bathroom generally to a height of 135mm.

To bath recess: to a height of 1350mm.

To shower recess to a height of 1800mm.

To enclosing of bath and hobs

To WC to height of one row of tiles or as directed

Above kitchen sink/s and cooking area/s allow for four rows tiles. Finish at top and salient angles with round edge tiles. Provide vent tiles and selected recess fittings. Tiles to be fixed to a backing of Fibre Cement with approved adhesive. Areas for tiles can be increased by proprietors direction or as noted on plans.

FLOORS: Cover floors of bathroom, shower recess, WC and ES with selected ceramic tiles, set in cement mortar or approved adhesive and graded to give an even and adequate fall to floor waste.

PAINTING

All paints, stains, varnishes and water colours are to be of approved brands as selected. Materials used for priming and undercoating are to be the same brand as the finishing paints or as recommended by the manufacturers of the finishes used. All finishing colours are to be selected by the proprietor. Do all necessary stopping after the priming has been applied. Rub down all surfaces to a smooth finish prior the application of each successive coat of paint. External joinery or other exposed woodwork to have a clear plastic finish is to be treated with a priming oil containing wood preservative and a water repellent.

EXTERNALLY: All external woodwork to be given one coat of primer, one coat of oil based undercoat and one coat of gloss finish enamel or to be given one coat of clear primer, one coat of flat clear plastic and one coat of clear plastic.

PRIMING WEATHERBOARDS: Any pine is to be primed all round as well as on the ends. Before fixing; hardwood, cypress pine, radiata pine and oregon are to be primed on external faces including rebates. Pressure treated Canada pine is to be primed at ends before fixing.

IRONWORK:

Eaves, gutters, downpipes, exposed service pipes and wrought iron etc. to be cleaned and primed and give one coat of gloss paint all round.

FIBRE CEMENT: Clean and prepare all external fibre cement surfaces and finish with two coats of water based paint.

INTERNALLY: All exposed woodwork in kitchen, bathroom, laundry WC EC to be prepared primed and then given one undercoat and finished with one coat of full gloss paint or to be stained and finished with two coats of clear liquid plastic as selected.

CEILINGS: To be given one coat of sealer and two coats of paint. The finishing coat of bathroom, laundry, and kitchen ceilings to be semi gloss (unless directed otherwise).

WALLS: All rooms except bathroom, laundry and kitchen to be given one coat of sealer and two coats of water based paint. To bathroom, kitchen, WC EC and laundry where no tiled or pre surfaced material is required, walls are to be given one coat of sealer, one coat of undercoat and one coat of gloss oil paint system.

GLAZING: BCA part 3.6

All sashes, doors, fixed lights and other glass in building shall be selected and installed by procedures as set out in AS1288 and/or AS2047 for type, thickness and area of glass according to wind loading, human impact and other considerations for glazing in frames of timber, steel, stainless steel, aluminium and bronze according to type of frame, height of building and glazing compound and for design and glazing of unframed toughened glass assemblies. Specific attention should be made to the selection of frame materials, glazing, location in walls and orientation to the path of the sun for various climate zone. Where windows are not shaded by roof, eaves or other building projections, advice by an approved specialist or manufacturer should be sought to ensure that all installations comply with the Energy Efficiency requirements of the BCA..

FENCING

Provide paling fence 1500mm height to side and rear boundaries. Posts to be 125 x 50mm in sawn approved durable hardwood, morticed for two rails and sunk into ground 600mm at maximum of 2700 mm. Posts at angles in fencing to be 125mm square. Well ram around posts. Where rock is encountered posts are to be set in concrete. Fit two rows of 75 x 50mm hardwood rails into mortises. Cover framing with hardwood palings. Double nail to rails at top and bottom. Cut line at top and lop corners. All timber in ground or concrete to be well tarred or treated with an approved preservative. Allow for repairing any existing recommendations of the manufacturer.

FRONT FENCING: Provide front fencing as directed.

ALPINE AREAS:

For buildings to be constructed in an alpine area, compliance with the requirements of BCA part 3.7.5. is required. Alpine areas are areas above Australian Height Datum (AHD) as follows:- NSW, VIC, ACT above 1,200 metres AHD. TASMANIA, above 900 metres AHD. For sub alpine areas where significant snow loads may occur see BCA fig. 3.7.5.2. Where snow loads may be applied to a building design according to AS1170.3 is required. (see BCA 3.11.3)

CLIMATE ZONES; Climate Zones classification for various localities are shown in BCA2010 Table1.1.2. Thermal design requirements for climate zones should be as per BCA 2010 Fig. 1.1.4.

EARTHQUAKE:

Earthquake probability shall be determined to BCA3.11.3 and loading requirements designed to comply with AS1170.4

LANDSCAPING:

The area to be landscaped shall comply with the landscape plan and requirements of the Local Council Authorities. Appropriate landscape design will reduce water usage in lawns and gardens by up to 50%. Selection of native (indigenous plants suited to the local micro climate along with exotic species from California, South Africa and the Mediterranean will normally require minimal maintenance and water use. (BASIX website: see table D.2.1 for indigenous plants in various local government areas).

CAR PARKING: All car parking and loading bays to be kerbed, guttered, sealed, drained, line marked and landscaped. Drainage of surface water into neighbouring properties is NOT permitted except where an easement is obtained. All car parks shall comply with the provision of Local Council Authorities.

COMPLETION:

The building shall be completed in every trade. Sashes, doors, locks and all other equipment shall be checked and left in a satisfactory operating condition. Timber floors shall be at least rough sanded. Where fine sanding is specified see CA39: Code of practice for sanding interior wooden floors. All plant, surplus materials and rubbish is to be removed from site. Gutters and drains shall be cleared and the building generally to be left clean and fit for occupation.

The Builder is to furnish the Owner with:

- | | |
|---|---|
| 1 Notification of Completion | 4 Certificate from Sewerage Authority re-sanitary drainage. |
| 2 All Keys for all doors. | 5 Invoices for all PC items required. |
| 3 Certificate of termite protection treatment | |

It is the responsibility of the builder to arrange any inspections necessary by Local Council, Waterboard or Lending Authorities and/or Principal Certifying Authority.

It is the responsibility of the Owner to apply to Local Supply Authorities for connection of Electricity from mains to meter box.

APPROVAL TO OCCUPY MUST BE OBTAINED

BASIX: The Building Sustainability Index. – NSW (only)

For Class1 and 10 buildings subject to BASIX the BCA energy provisions of Part 2.6 and Part 3.12 of BCA 2009 as varied by the NSW Appendix are applicable.

Sustainability indicies are assessed for Energy, Water Usage and Thermal Comfort. The policy also factors in Stormwater reuse and Landscaping but does not score these.

NSW Government targets of a reduction in mains potable water consumption and reduction in Greenhouse Gas emissions can be achieved by dwelling design and sustainability features. These features may include design elements such as recycled water, rainwater tanks, 3 star min. rated shower heads, taps and toilets, heat pump or solar water heaters, gas space heaters, eaves, awnings and insulation of walls, ceilings and roofs.

A BASIX Certificate must be submitted with a Development Application, Complying Development Certificate and Construction Certificate Application for all of NSW for new homes and for some alterations and additions.

Data required to Complete a BASIX Assessment is described in the BASIX Data Input checklist and this should be used in conjunction with the BASIX Assessment Tool.

Extracts from BASIX are reproduced by courtesy of DIPNR.

SUGGESTED ENERGY SAVING METHODS CAN BE:

Use of gas for heating hot water and cooking. Both indoor and outdoor clothes drying lines. Installing energy saving Light bulbs. To improve the efficiency of the refrigerator by ensuring there is adequate air passing over the refrigerant coils.

- The refrigerator should be completely freestanding; or at least one side or the top of the refrigeration space is completely open.

GREYWATER

- Ensure that public health and the environment are not adversely affected.
- Minimise the adverse impact on the amenity of the premises and provide for the reuse of resources.

GREYWATER DIVERSION DEVICES (GDD)

A greywater diversion device must be in accordance with the NSW Health's Greywater requirements.

DOMESTIC GREYWATER TREATMENT SYSTEMS (DGTS) must be:

- Greywater treatment system device that is accredited by NSW Health in accordance with the DTGS Accreditation Guideline,; or
- An aerated wastewater treatment system (AWTS) accredited by NSW Health or
- A facility that is purpose designed for a particular premises and has Local Government (Approvals) as per Regulation 1999,

THERMAL COMFORT

PERFORMANCE REQUIREMENTS : CAN BE ASSESSED BY THREE DIFFERENT METHODS:

Option 1: **RAPID:** Meet conditions listed in 10 questions within the BASIX Data Input checklist.

NOTE: only for simple, single storey homes (usually) brick veneer dwellings

Option 2 : **DO IT YOURSELF (D.I.Y):** tick box questions on:- Construction type, details of floors, walls, ceilings, roof, windows and skylights cross ventilation.

Option 3 : **SIMULATION METHOD:** Assessments of the thermal performance of the dwelling undertaken through the 'Simulation' method. Assessments are to be conducted by an accredited assessor using approved software.

PRECONDITIONS: The total area of all skylights must not occupy more than 2% of the gross floor area

CONSTRUCTION

(a) Walls Wall types: See wall type diagrams in Specification section insulation R-Value

CROSS VENTILATION

(a) Living area cross ventilation

1. The total area of ventilation openings in all living areas must be greater than 12.5% of the floor area of all living areas.
2. Openings must be provided on opposite or adjacent walls of every living area.

(b) Bedroom cross ventilation

1. The bedroom must contain at least two windows or a window and a skylight, which can be opened

GLAZING AND SKYLIGHTS

(a) Orientation Windows facing different directions have varying requirements to comply with BASIX Thermal Comfort requirements.

(b) Glazing and skylight types

1. Must have the characteristics nominated in Appendix1 Glazing and skylight characteristics. (Available on BASIX website)

SHADING

- (a) Eaves and projections
 - 1. May be an eave, horizontal opaque projection, awning or pergola and shall be made of a durable material suitable for external use.
 - 2. The projection is measured horizontally from the face of the wall/building.
 - 3. The eave/projection must be located no greater than 2400mm vertically above the sill of the glazing system.
- (b) Vertical adjustable external shading
 - 1. An adjustable shading device may comprise of shutters, louvers or panels.
- (c) Vertical fixed external shading
 - 1. A fixed shading device may comprise of shutters, louvers or panels. An adjacent building over 5 m in height and less than 3.1 m from glazing sill is equivalent to fixed vertical shading.
- (d) Controlling solar gain
 - 1. BLOCKING SOLAR GAIN: A shading device must restrict at least 80% of solar radiation at the summer solstice
 - 2. PERMITTING SOLAR GAIN: An adjustable shading device may be allowed.
- (e) Concessions to shading requirements may be allowed.

REQUIRED INSULATION AND ROOF COLOURS: Lighter coloured roofing has more resistance to Solar gain (see table C2.8 in BASIX website)
(a) Insulation: Technical and installation requirements for thermal insulation are to be in accordance with the B C A NSW Appendix
ROOF VENTILATION Can be increased by Wind driven Ventilators and Gable End vents.

INDIGENOUS PLANT SPECIES

Promote the planting of indigenous plant species to preserve the character of the local environment and promote a balanced ecosystem.
Ensure that the species selected are adapted to the natural rainfall patterns of the locality.

PERFORMANCE REQUIREMENTS

- (a) The indigenous plants for each local government area are set out in Table D.2.1. of the full BASIX Specification on www.basix.nsw.gov.au
- (b) In addition, a plant species is considered to be indigenous to a local government area for the purposes of BASIX commitment, if the local council for that area states in writing that the species is indigenous to that local government area.

Generation of a BASIX Certificate can only be made in the NSW Department of Infrastructure, Planning and Natural Resources BASIX Website: www.basix.nsw.gov.au

ADDITIONAL BUILDING REQUIREMENTS:All instructions for extra work to that shown on the plans or any additional requirements must be in writing. Verbal instructions must be confirmed in writing and dated and signed copies of all instructions are to be retained by both the owner and the builder.

This is the specification referred to in the contract between(OWNERS)

and(BUILDERS)

Dated// 20

Signed(owner) Signed.....(builder)

BUILDER'S LICENCE No.....

MASONRY CONSTRUCTION	Clay Bricks	☐	Face	☐	Commons	☐	Stone	☐
	Concrete Bricks	☐	Concrete Blocks	☐	AAC Blocks	☐	AAC Panels	☐
	Rendered	☐	Bagged	☐	Painted	☐		
MORTAR JOINTS	Colour.....		Ironed	☐	Flush	☐	Raked	☐
SILLS	Brick	☐	Quarry Tiles	☐				
EXTERNAL WALL SHEETING	Timber Cladding	☐	Fibre Cement Cladding	☐	Metal Cladding	☐	PVC/Vinyl	☐
	Type.....		Type.....		Type.....		Type.....	
FLOOR CONSTRUCTION	Timber	☐	Concrete	☐	Pre.Str. Beam Floor	☐	Steel	☐
FLOORING	T & G	☐	Species.....		Compressed FC Sheet	☐	Structural Plywood	☐
	Particle Board	☐	Tiles: Ceramic	☐	Terra Cotta	☐	Quarry	☐
DECKING	Treated Pine	☐	Other.....					
WALL FRAMES	Timber	☐	Hardwood	☐	Pine	☐	H.S.Galv. Steel	☐
	Structural Steel	☐	Off site prefabricated	☐	Onsite cut/assembled	☐		
ROOF CONSTRUCTION	Pitched Roof	☐	Exposed Rafters	☐	Oregon	☐	Hardwood	☐
	Roof Trusses	☐	Raked Ceiling	☐	Pine	☐	Steel Framing	☐
	Flat/Skillion	☐						
ROOF COVER	Concrete Tiles	☐	Terra Cotta Tiles	☐	Shingles/Slate	☐	Corrugated FC	☐
	Zincalume	☐	Colorbond	☐	Polycarbonate	☐	Profile.....	
THERMAL INSULATION	Roof/ceiling	☐	Reflective Insulation Rating R.....		Bulk Insulation Rating R.....			
	Walls	☐	Reflective Insulation Rating R.....		Bulk Insulation Rating R.....			
	Floors	☐	Reflective Insulation Rating R.....		Bulk Insulation Rating R.....			
INTERNAL WALL LININGS	Gypsum Plasterboard	☐	FC Sheeting	☐	Timber Panelling	☐	Cement Render	☐
	Face Brick	☐	Other.....					
WET AREA LININGS	WR Gyp. Plasterboard	☐	Villaboard	☐	Timber Panelling	☐	Laminated Panel	☐
CEILINGS	Gypsum Plasterboard	☐	Timber Panelling	☐	FC Sheeting	☐		
CORNICE	Type.....		Size.....mm					
DOOR JAMBS	Timber	☐	Galvanised Steel	☐		☐		
WINDOWS	Timber	☐	Aluminium	☐	Type/Manufacturer.....			
FLYSCREENS	Timber	☐	Aluminium	☐	Other	☐		
JOINERY	Timber	☐	Species.....		Stained/Polished	☐	Other.....	
	Architrave Size.....mm		Skirting Size.....mm		Material.....			
	Kitchen Cupboards.....				Stained	☐	Painted	☐
	Front Door Type.....				Stained	☐	Painted	☐
	Other External Doors Type.....				Stained	☐	Painted	☐
	Internal Doors Type.....				Stained	☐	Painted	☐
	Garage Door Type.....				Size.....mm		Colour.....	
EXTERNAL STAIRS	Timber	☐	Steel	☐	Concrete	☐	Brick	☐
INTERNAL STAIRS	Timber	☐	Steel	☐	Concrete	☐	Brick	☐
	as manufactured by.....				Balustrade type			
ELECTRICIAN	Provide:		Light Points.....		Single Switches.....		Two way switches.....	
			Power Outlets.....		Single.....		Double.....	
			Light fittings.....		Smoke Detectors.....		Exhaust Fans.....	
ROOF PLUMBER	Quad Gutters (size.....)	☐	Box Gutters	☐	Sheerline Gutters	☐		☐
GUTTERS/DOWNPINES	Downpipes 100 x 50	☐	100 x 75	☐	100 x 100	☐	Round.....dia	
	Colorbond	☐	PVC	☐	Copper	☐	Zincalume	☐
	Aluminium	☐	Galvanised	☐				
WATER SERVICE	Copper pipe	☐	PVC Pipe	☐	Flex. pipe system	☐		
RETICULATED RECYCLED WATER	All Reticulation Systems for Recycled Water must have Lilac Coloured components and markings.							
RAINWATER STORAGE TANKS	Type.....		Size.....(kl)		Nos.		Pressure Pump	☐
STORMWATER STORAGE TANKS	Type.....		Size.....(kl)					
HOT WATER SERVICE	Electric	☐	Gas	☐	Solar	☐		
	Mains Pressure	☐	Gravity Fed	☐	Cylinder capacity.....litres			
INTERNAL SEWER SERVICE	Copper	☐	PVC	☐				
DRAINER	Sewer connection	☐	Septic System	☐	Aerated System	☐	Greywater diversion	☐
	PVC pipes	☐	Vitrified clay pipes	☐	Copper pipes	☐		
FENCING	Brick	☐	Paling	☐	Rail	☐	Brushwood	☐
	Front Boundary	☐	Side Boundary	☐	Rear Boundary	☐	Colorbond	☐
	As manufactured by				Type			
POOL	Type.....		Inground	☐	Above Ground	☐	Pool Cover	☐

This Schedule is to be fully completed. Items applicable should be marked - items with blank spaces will NOT be included in the works

PROPRIETOR..... BUILDER..... DATE/...../.....

SCHEDULE OF RATES / P.C. ALLOWANCES AND MATERIALS

ITEMS	MODEL OR TYPE	PRIME COST
1. CONCRETE PIERS TO FOOTINGS		\$
2. ROCK EXCAVATION: per cubic metre		\$
3. AGRICULTURAL DRAINS: per lin. metre		\$
4. STORMWATER		\$
5. SEWER CONNECTIONS.....		\$
6. CERAMIC TILES WALL \$.....PER M2 S/O		\$
S/O=SUPPLY ONLY FLOOR \$.....PER M2 S/O		\$
QUARRY \$.....PER M2 S/O		\$
7. SEPTIC INSTALLATIONS		\$
8. GREYWATER TREATMENT INSTALLATION		\$
9. BATHROOM VANITY & CABINET		\$
10. EN-SUITE VANITY & CABINET		\$
11. BASIN		\$
12. BATH		\$
13. TOWEL RAILS.....		\$
14. SOAP HOLDERS.....		\$
15. MIRRORS		\$
16. TOILET SUITES.....		\$
17. SHOWER SCREENS.....		\$
18. LAUNDRY TUB.....		\$
19. STAINLESS STEEL SINK.....		\$
20. KITCHEN CUPBOARDS.....		\$
21. OVEN.....		\$
22. HOT PLATES.....		\$
23. STOVE.....		\$
24. DISHWASHER.....		\$
25. EXHAUST FANS.....		\$
26. RANGE HOOD.....		\$
27. HOT WATER UNIT		\$
28. SMOKE/FIRE DETECTORS		\$
29. PHONE WIRING/FAX WIRING		\$
30. T.V. WIRING/COMPUTER WIRING.....		\$
31. INTERCOM WIRING.....		\$
32. SECURITY INSTALLATION.....		\$
33. AIR CONDITIONING, SINGLE UNIT.....		\$
34. INTERNAL VACUUM SYSTEM		\$
35. FRONT GATE.....		\$
36. FRONT FENCE.....		\$
37. CLOTHES HOIST		\$
38. CONCRETE PATHS per lin. metre		\$
39. GARAGE DOORS (remote controlled)		\$
40. LANDSCAPING (As per Design Supplied).....		\$
41. UNIT PAVING.....		\$
42. RAINWATER TANKS		\$
43. RETICULATED RECYCLED WATER SYSTEM...		\$
44.		\$
45.		\$
46.		\$

Where there are additional items or different types of the same item a duplicate list should be added and agreed on by the proprietor and builder.

NOTE: The builder is to allow Prime Costs amounts of items set out in this Schedule above. All items to be selected by Owner. The Builders tender is to include the provision of all items, including the cost of cartage, freight, fixing and fitting as part of his contract. Adjustment for substituted fittings will be made on the basis of the prevailing retail price.

PROPRIETOR..... DATE/...../.....

BUILDER..... DATE...../...../.....

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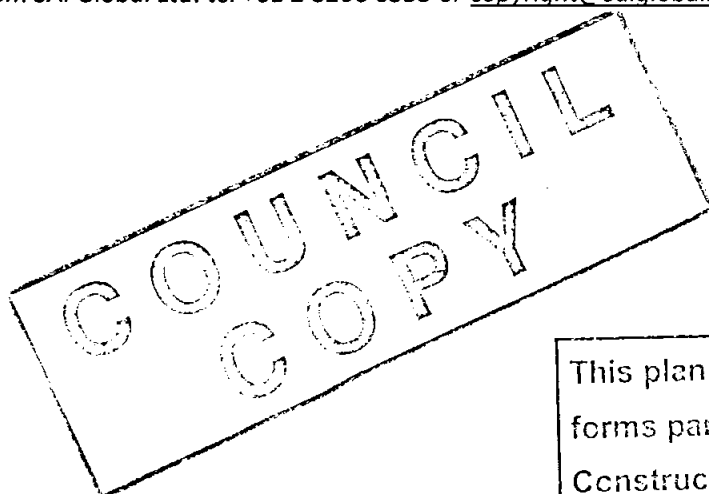
Bushfire Construction

Specification

BAL 12.5

(as modified by Planning for Bushfire Protection)

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forms part of
Construction Certificate
no. 2012 / 4962

SECTION 5 CONSTRUCTION FOR BUSHFIRE ATTACK LEVEL 12.5 (BAL—12.5)

5.1 GENERAL

A building assessed in Section 2 as being BAL—12.5 shall comply with Section 3 and Clauses 5.2 to 5.8.

NOTE: There are a number of Standards that specify requirements for construction; however, where this Standard does not provide construction requirements for a particular element, the other Standards apply.

Any element of construction or system that satisfies the test criteria of AS 1530.8.1 may be used in lieu of the applicable requirements contained in Clauses 5.2 to 5.8 (see Clause 3.8).

NOTE: BAL—12.5 is primarily concerned with protection from ember attack and radiant heat up to and including 12.5 kW/m² where the site is less than 100 m from the source of bushfire attack.

SARKING

Any sarking used for BAL-12.5, BAL-19, BAL-29 or BAL-40 shall be:

- a) Non-combustible; or
- b) Breather-type sarking complying with AS/NZS 4200.1 and with a flammability index of not more than 5 (see AS1530.2) and sarked on the outside of the frame; or
- c) An insulation material conforming to the appropriate Australian Standard for that material.

5.2 SUBFLOOR SUPPORTS

This Standard does not provide construction requirements for subfloor supports where the subfloor space is enclosed with—

- a) a wall that complies with Clause 7.4; or
- b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel, bronze or aluminium; or
- c) a combination of Items (a) and (b) above.

- d) Where the subfloor space is unenclosed, the support posts, columns, stumps, piers and poles shall be—
- (i) of non-combustible material; or
 - (ii) of bushfire-resisting timber (see Appendix F); or
 - (iii) a combination of Items (i) and (ii) above.

NOTE: This requirement applies to the principal building only and not to verandas, decks, steps, ramps and landings (see Clause 7.7).

5.3 FLOORS

5.3.1 Concrete slabs on ground

This Standard does not provide construction requirements for concrete slabs on the ground.

5.3.2 Elevated floors

This Standard does not provide construction requirements for elevated floors, including bearers, joists and flooring.

5.4 EXTERNAL WALLS

5.4.1 Walls

That part of an external wall surface that is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the wall (see Figure D3, Appendix D) shall be of—

- (a) non-combustible material; or
- (b) fibre-cement external cladding, a minimum of 6 mm in thickness; or
- (c) bushfire-resisting timber (see Appendix F); or
- (d) a timber species as specified in Paragraph E1, Appendix E; or
- (e) a combination of any of Items (a), (b), (c) or (d) above.

There are no requirements for external wall surfaces 400 mm or more from the ground or for external wall surfaces 400 mm or more above decks, carport roofs, awnings and

similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the wall (see Figure D3, Appendix D).

5.4.2 Joints

All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed to prevent gaps greater than 3 mm.

Alternatively, sarking-type material may be applied over the outer face of the frame prior to fixing any external cladding.

5.4.3 Vents and weepholes

Vents and weepholes in external walls shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium, except where the vents and weepholes are less than 3 mm (see Clause 3.6), or are located in an external wall of a subfloor space.

5.5 EXTERNAL GLAZED ELEMENTS AND ASSEMBLIES AND EXTERNAL DOORS

5.5.1 Bushfire shutters

Where fitted, bushfire shutters shall comply with Clause 3.7 and be made from—

- (a) Non-combustible material; or
- (b) A timber species as specified in Paragraph E1, Appendix E; or
- (b) bushfire-resisting timber (see Appendix F); or
- (c) A combination of any of Items (a), (b) or (c) above

5.5.1A Screens for windows and doors

Where fitted, screens for windows and doors shall have a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.

Gaps between the perimeter of the screen assembly and the building element to which it is fitted shall not exceed 3 mm.

The frame supporting the mesh or perforated sheet shall be made from—

- a) (d) Metal; or

- b) (e) bushfire-resisting timber (see Appendix F); or
- c) a timber species as specified in Paragraph E2, Appendix E.

5.5.2 Windows

Window assemblies shall comply with one of the following:

- a) They shall be completely protected by a bushfire shutter that complies with Clause 5.5.1. Or
- b) They shall be completely protected externally by screens that comply with Clause 5.5.1A. Or
- c) They shall comply with the following:
 - (i) For window assemblies less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame (see Figure D3, Appendix D), window frames and window joinery shall be made from one of the following:
 - (A) Bushfire-resisting timber (see Appendix F). or
 - (B) A timber species as specified in Paragraph E2, Appendix E. or
 - (C) Metal. or
 - (D) Metal-reinforced PVC-U.
 - The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the frame and sash shall satisfy the design load, performance and structural strength of the member.
 - (ii) Externally fitted hardware that supports the sash in its functions of opening and closing shall be metal.
 - (iii) Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame (see Figure D3, Appendix D), the glazing shall be Grade A safety glass minimum 4 mm, or glass blocks with no restriction on glazing methods.

NOTE: Where double glazed units are used the above requirements apply to the external

face of the window assembly only.

(iv) Where glazing is other than that specified in Item (iii) above, annealed glass may be used.

(v) The openable portions of windows shall be screened internally or externally with screens that comply with Clause 5.5.1A.

5.5.3 Doors—Side-hung external doors (including French doors, panel fold and bi-fold doors)

Side-hung external doors, including French doors, panel fold and bi-fold doors, shall comply with one of the following:

- a) They shall be protected by a bushfire shutter that complies with Clause 5.5.1. or
- b) They shall be completely protected externally by screens that comply with Clause 5.5.1A. or
- c) They shall comply with the following:

(i) Doors shall be—

- (A) Non-combustible; or
- (B) a solid timber door, having a minimum thickness of 35 mm for the first 400 mm above the threshold; or
- (C) a door, including a hollow core door, with a non-combustible kickplate on the outside for the first 400 mm above the threshold; or
- (D) a fully framed glazed door, where the framing is made from materials required for bushfire shutters (see Clause 5.5.1), or from a timber species as specified in Paragraph E2, Appendix E.

(ii) Where doors incorporate glazing, the glazing shall comply with the glazing requirements for windows.

(iii) Doors shall be tight-fitting to the door frame and to an abutting door, if applicable.

(iv) Where any part of the door frame is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the door (see Figure D3, Appendix D), that part of the door frame shall be made from one of the following:

- (A) Bushfire-resisting timber (see Appendix F). or
 - (B) A timber species as specified in Paragraph E2, Appendix E. or
 - (C) Metal. or
 - (D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the door assembly shall satisfy the design load, performance and structural strength of the member.
- (v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

5.5.4 Doors—Sliding doors

Sliding doors shall comply with one of the following:

- a) They shall be protected by a bushfire shutter that complies with Clause 5.5.1. or
 - b) They shall be completely protected externally by screens that comply with Clause 5.5.1A. or
 - c) They shall comply with the following:
 - (i) Any glazing incorporated in sliding doors shall be Grade A safety glass complying with AS 1288.
 - (ii) Both the door frame supporting the sliding door and the framing surrounding any glazing shall be made from one of the following:
 - (A) Bushfire-resisting timber (see Appendix F). or
 - (B) A timber species as specified in Paragraph E2, Appendix E. Or
 - (C) Metal. or
 - (D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the frame and the sash shall satisfy the design load, performance and structural strength of the member.
 - (iii) There is no requirement to screen the openable part of the sliding door.
- However, if screened, the screens shall comply with Clause 5.5.1A.

NOTE: The construction of manufactured sliding doors should prevent the entry of embers when the door is closed. There is no requirement to provide screens to the

openable part of these doors as it is assumed that a sliding door will be closed if occupants are not present during a bushfire event. Screens of materials other than those specified may not resist ember attack.

(iv) Sliding doors shall be tight-fitting in the frames.

5.5.5 Doors—Vehicle access doors (garage doors)

The following apply to vehicle access doors:

- a) The lower portion of a vehicle access door that is within 400 mm of the ground when the door is closed (see Figure D4, Appendix D) shall be made from—
 - Non-combustible material; or
 - bushfire-resisting timber (see Appendix F); or
 - fibre-cement sheet, a minimum of 6 mm in thickness; or
 - a timber species as specified in Paragraph E1, Appendix E; or
 - a combination of any of Items (i), (ii), (iii) or (iv) above.
- b) Panel lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3 mm.
- c) Roller doors shall have guide tracks with a maximum gap no greater than 3 mm and shall be fitted with a nylon brush that is in contact with the door (see Figure D4, Appendix D).
- d) Vehicle access doors shall not include ventilation slots.

5.6 ROOFS (INCLUDING VERANDA AND ATTACHED CARPORT ROOFS, PENETRATIONS, EAVES, FASCIAS, GABLES, GUTTERS AND DOWNPIPES)

5.6.1 General

The following apply to all types of roofs and roofing systems:

- a) Roof tiles, roof sheets and roof-covering accessories shall be non-combustible.
- b) The roof/wall junction shall be sealed, to prevent openings greater than 3 mm, either by the use of fascia and eaves linings or by sealing between the top of the wall and the underside of the roof and between the rafters at the line of the wall.

- c) Roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.

5.6.2 Tiled roofs

Tiled roofs shall be fully sarked. The sarking shall—

- a) Have a flammability index of not more than 5;
- b) Be located directly below the roof battens;
- c) Cover the entire roof area including the ridge; and
- d) Be installed so that there are no gaps that would allow the entry of embers where the sarking meets fascias, gutters, valleys and the like.

5.6.3 Sheet roofs

Sheet roofs shall—

- a) Be fully sarked in accordance with Clause 5.6.2, except that foil-backed insulation blankets may be installed over the battens; or
- b) Have any gaps greater than 3 mm, under corrugations or ribs of sheet roofing and between roof components, sealed at the fascia or wall line and at valleys, hips and ridges by—
 - (i) A mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or
 - (ii) Mineral wool; or
 - (iii) Other non-combustible material; or
 - (iv) A combination of any of Items (i), (ii) or (iii) above.

5.6.4 Veranda, carport and awning roofs

The following apply to veranda, carport and awning roofs:

- (a) A veranda, carport or awning roof forming part of the main roof space [see Figure D1(a), Appendix D] shall meet all the requirements for the main roof, as specified in Clauses 5.6.1, 5.6.2, 5.6.3, 5.6.5 and 5.6.6.

(b) A veranda, carport or awning roof separated from the main roof space by an external wall [see Figures D1(b) and D1(c), Appendix D] complying with Clause 5.4 shall have a non-combustible roof covering.

NOTE: There is no requirement to line the underside of a veranda, carport or awning roof that is separated from the main roof space.

5.6.5 Roof penetrations

The following apply to roof penetrations:

- (a) Roof penetrations, including roof lights, roof ventilators, roof-mounted evaporative cooling units, aerials, vent pipes and supports for solar collectors, shall be adequately sealed at the roof to prevent gaps greater than 3 mm. The material used to seal the penetration shall be non-combustible.
- (b) Openings in vented roof lights, roof ventilators or vent pipes shall be fitted with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.
- (c) All overhead glazing shall be Grade A safety glass complying with AS 1288.
- (d) Glazed elements in roof lights and skylights may be of polymer provided a Grade A safety glass diffuser, complying with AS 1288, is installed under the glazing. Where glazing is an insulating glazing unit (IGU), Grade A toughened safety glass minimum 4 mm, shall be used in the outer pane of the IGU.
- (e) Flashing elements of tubular skylights may be of a fire-retardant material, provided the roof integrity is maintained by an under-flashing of a material having a flammability index no greater than 5.
- (f) Evaporative cooling units shall be fitted with butterfly closers at or near the ceiling level or, the unit shall be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.
- (g) Vent pipes made from PVC are permitted.

5.6.6 Eaves linings, fascias and gables

The following apply to eaves linings, fascias and gables:

- (a) Gables shall comply with Clause 5.4.
 - (b) Eaves penetrations shall be protected the same as for roof penetrations, as specified in Clause 5.6.5.
 - (c) Eaves ventilation openings greater than 3 mm shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.
- Joints in eaves linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.
- This Standard does not provide construction requirements for fascias, bargeboards and eaves linings.

5.6.7 Gutters and downpipes

This Standard does not provide material requirements for—

- (a) Gutters, with the exception of box gutters; and
- (b) Downpipes.

If installed, gutter and valley leaf guards shall be non-combustible.

Box gutters shall be non-combustible and flashed at the junction with the roof with noncombustible material.

5.7 VERANDAS, DECKS, STEPS, RAMPS AND LANDINGS

5.7.1 General

The following specifications have been varied to include the requirements of the NSW RFS variation to the Australian Standard as outlined in the Addendum to Appendix 3 of Planning for Bushfire Protection 2006

Decking may be spaced.

There is no requirement to enclose the subfloor spaces of verandas, decks, steps, ramps or landings.

C5.7.1 Spaced decking is nominally spaced at 3 mm (in accordance with standard
--

industry

practice); however, due to the nature of timber decking with seasonal changes in moisture content, that spacing may range from 0–5 mm during service. The preferred dimension for gaps is 3 mm (which is in line with other ‘permissible gaps’) in other parts of this Standard.

It should be noted that recent research studies have shown that gaps at 5 mm spacing afford opportunity for embers to become lodged in between timbers, which may contribute to a fire. Larger gap spacing of 10 mm may preclude this from happening but such a spacing regime may not be practical for a timber deck.

5.7.2 Enclosed subfloor spaces of verandas, decks, steps, ramps and landings

5.7.2.1 Materials to enclose a subfloor space

The subfloor spaces of verandas, decks, steps, ramps and landings are considered to be ‘enclosed’ when—

a) the material used to enclose the subfloor space complies with Clause 7.4; and all openings greater than 3 mm are screened with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.

5.7.2.2 Supports

This Standard does not provide construction requirements for support posts, columns, stumps, stringers, piers and poles.

5.7.2.3 Framing

This Standard does not provide construction requirements for the framing of verandas, decks, ramps or landings (i.e., bearers and joists).

5.7.2.4 Decking, stair treads and the trafficable surfaces of ramps and landings

Decking, stair treads and the trafficable surfaces of ramps and landings shall be—

- a) of non-combustible material; or
- b) of bushfire-resisting timber (see Appendix F); or
- a combination of Items (a) and (b) above.

5.7.3 Unenclosed subfloor spaces of verandas, decks, steps, ramps and landings

5.7.3.1 Supports

Support posts, columns, stumps, stringers, piers and poles shall be—

- a) of non-combustible material; or
- b) of bushfire-resisting timber (see Appendix F); or
- c) a combination of Items (a) and (b) above.

5.7.3.2 Framing

Framing of verandas, decks, ramps or landings (i.e., bearers and joists) shall be—

- a) of non-combustible material; or
- b) of bushfire-resisting timber (see Appendix F); or
- c) a combination of Items (a) and (b) above.

5.7.3.3 Decking, stair treads and the trafficable surfaces of ramps and landings

Decking, stair treads and the trafficable surfaces of ramps and landings shall be—

- a) of non-combustible material; or
- b) of bushfire-resisting timber (see Appendix F); or
- c) a combination of Items (a) and (b) above.

5.7.4 Balustrades, handrails or other barriers

Those parts of the handrails and balustrades less than 125 mm from any glazing or any combustible wall shall be—

- a) of non-combustible material; or
- b) bushfire-resisting timber (see Appendix F); or
- c) a combination of Items (i) and (ii) above.

Those parts of the handrails and balustrades that are 125 mm or more from the building have no requirements.

5.8 WATER AND GAS SUPPLY PIPES

Above-ground, exposed water and gas supply pipes shall be metal.

Appendix E list of Timbers AS3959, 2009

Standard trade name Botanical name	Corymbia citriodora
Ash, alpine Eucalyptus delegatensis	Gum, sugar Eucalyptus cladocalyx
Ash, Crow's Flindersia australis	Hardwood, Johnstone River Backhousia bancroftii
Ash, mountain Eucalyptus regnans	Ironbark, grey Eucalyptus paniculata
Ash, silvertop Eucalyptus sieberi	Ironbark, red Eucalyptus sideroxylon
Balau (selangan batu) Shorea spp.	Jarrah Eucalyptus marginata
Bangkirai Shorea laevifolia	Kapur Dryobalanops spp.
Beech, myrtle Nothofagus cunninghamii	Karri Eucalyptus diversicolor
Belian Eusideroxylon zwageri	Kempas Koopassia malaccensis
Blackbutt Eucalyptus pilularis	Keruing Dipterocarpus spp.
Blackbutt, New England Eucalyptus andrewsii	Kwila (Merbau) Intsia bijuga
Eucalyptus campanulata	Mahogany, Philippine red, dark Shorea spp.
Blackwood Acacia melanoxylon	Mahogany red Eucalyptus resinifera
Box, brush Lophostemon confertus	Mahogany, southern Eucalyptus botryoides
Box, grey Eucalyptus microcarpa	Mahogany, white Eucalyptus acmenoides
Box, grey, coast Eucalyptus bosistoana	Messmate Eucalyptus obliqua
Box, white-topped Eucalyptus quadrangulata	Messmate, Gympie Eucalyptus cloeziana
Box, yellow Eucalyptus melliodora	Northern Box (Pelawan) Tristaniopsis spp.
Brownbarrel Eucalyptus fastigata	Oak , American Quercus spp.
Candlebark Eucalyptus rubida	Peppermint, narrow-leaved Eucalyptus australiana
Cypress Callitris glaucophylla	Pine, celery-top Phyllocladus asplenifolius
Gum, blue, southern Eucalyptus globulus	Pine, slash Pinus elliottii
Gum, blue, Sydney Eucalyptus saligna	Ramin Gonystylus spp.
Gum, grey Eucalyptus propinqua	Rosewood, New Guinea Pterocarpus indicus
Gum, grey, mountain Eucalyptus cypellocarpa	Satinay Syncarpia hillii
Gum, Maiden's Eucalyptus maidenii	Stringybark, Blackdown Eucalyptus sphaerocarpa
Gum, manna Eucalyptus viminalis	Stringybark, blue-leaved Eucalyptus agglomerata
Gum, mountain Eucalyptus dalrympleana	Stringybark, brown Eucalyptus baxteri
Gum, red, forest Eucalyptus tereticornis	Stringybark, silvertop Eucalyptus laevopinea
Gum, red, river Eucalyptus camaldulensis	Stringybark, white Eucalyptus eugeniioides
Gum, rose Eucalyptus grandis	Stringybark, yellow Eucalyptus muelleriana
Gum, shinning Eucalyptus nitens	Tallowwood Eucalyptus microcorys
Corymbia maculata	Taun Pometia pinnata
Corymbia henryi	Turpentine Syncarpia glomulifera
Gum, spotted	Vitex, New Guinea Vitex cofassus
	Woollybutt Eucalyptus longifolia

Appendix F list of Timbers AS3959, 2009

- Black-butt - Eucalyptus pilularis
- Turpentine - Syncarpia glomulifera
- Silver Top Ash - Eucalyptus sieberi
- Spotted Gum - Corymbia maculate - Corymbia henryi - Corymbia citriodora
- Red Iron Bark - Eucalyptus sideroxylon
- Kwila[Merbau] - Intsia bijuga
- Red River Gum - Eucalyptus camaldulensis

POST FOOTINGS TO DETAIL

REPLACE EXISTING DOOR WITH LOUVER WINDOW

RETAIN / MODIFY EXISTING STONE STEPS

DEMOLISH EXISTING STAIR

DEMOLISH EXISTING DECK /STAIR

NEW 1ST FLOOR OVER

NEW 1ST FLOOR OVER

NEW CONCRETE SLAB & LANDING / BATTENED T & G FLOORING

WALLS TO BE SUPPORTED ON HW STINGERS. WALL SHEETING TO COVER STRINGERS TO TREADS STORE

WALLS TO BE SUPPORTED ON HW STINGERS. WALL SHEETING TO COVER STRINGERS TO TREADS STORE

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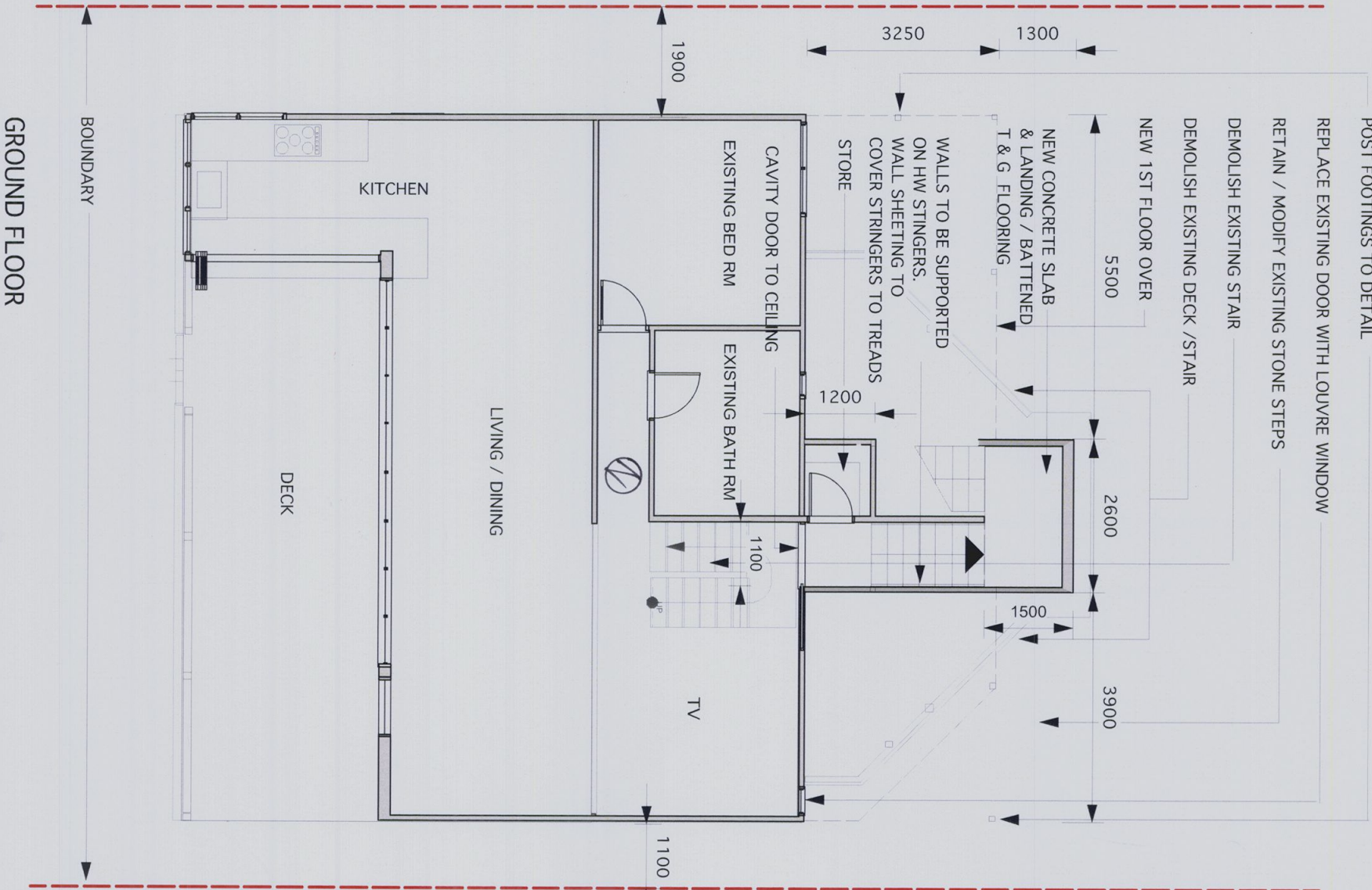
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WALLS TO BE SUPPORTED ON HW STINGERS. WALL SHEETING TO COVER STRINGERS TO TREADS STORE

BOUNDARY



GROUND FLOOR

- Building to incorporate BASIX commitments to comply with the attached BASIX Certificate No. A137683 dated 1 May 2012
- Smoke Alarms to be installed in accordance with AS 3786-1993 'Smoke alarms'
- Termite Management to comply with AS 3660 – 2000 'Termite Management – New Building Work'
- Glazing to comply with AS 1288 – 2006 'Glass in Buildings – Selection & Installation' and AS 2047 – 1999 'Windows in Buildings – Selection & Installation'
- Waterproofing of wet areas to comply with AS 3740 – 2004 'Waterproofing of Wet Areas in Residential Buildings'
- Doors to fully enclosed sanitary compartments to comply with Part 3.8.3 'Facilities' of the Building Code of Australia
- External Glazing & Cladding being of minimal reflectance (maximum of 20%)
- External Finishes being in natural, recessive, non-reflective colours and textures
- Balustrades construction to comply with Part 3.9.2.3 – 'Balustrades' of the Building Code of Australia
- Damp-proof membrane must be 'high impact', 0.2mm thick polyethylene film

DEMOLISH EXISTING REAR DECK

NEW T & G FLOOR OVER HW JOISTS

ROOF LINE ALL EAVES TO BE 450MM MINIMUM

ROOF LINE ALL EAVES TO BE 450MM MINIMUM

ROOF LINE ALL EAVES TO BE 450MM MINIMUM

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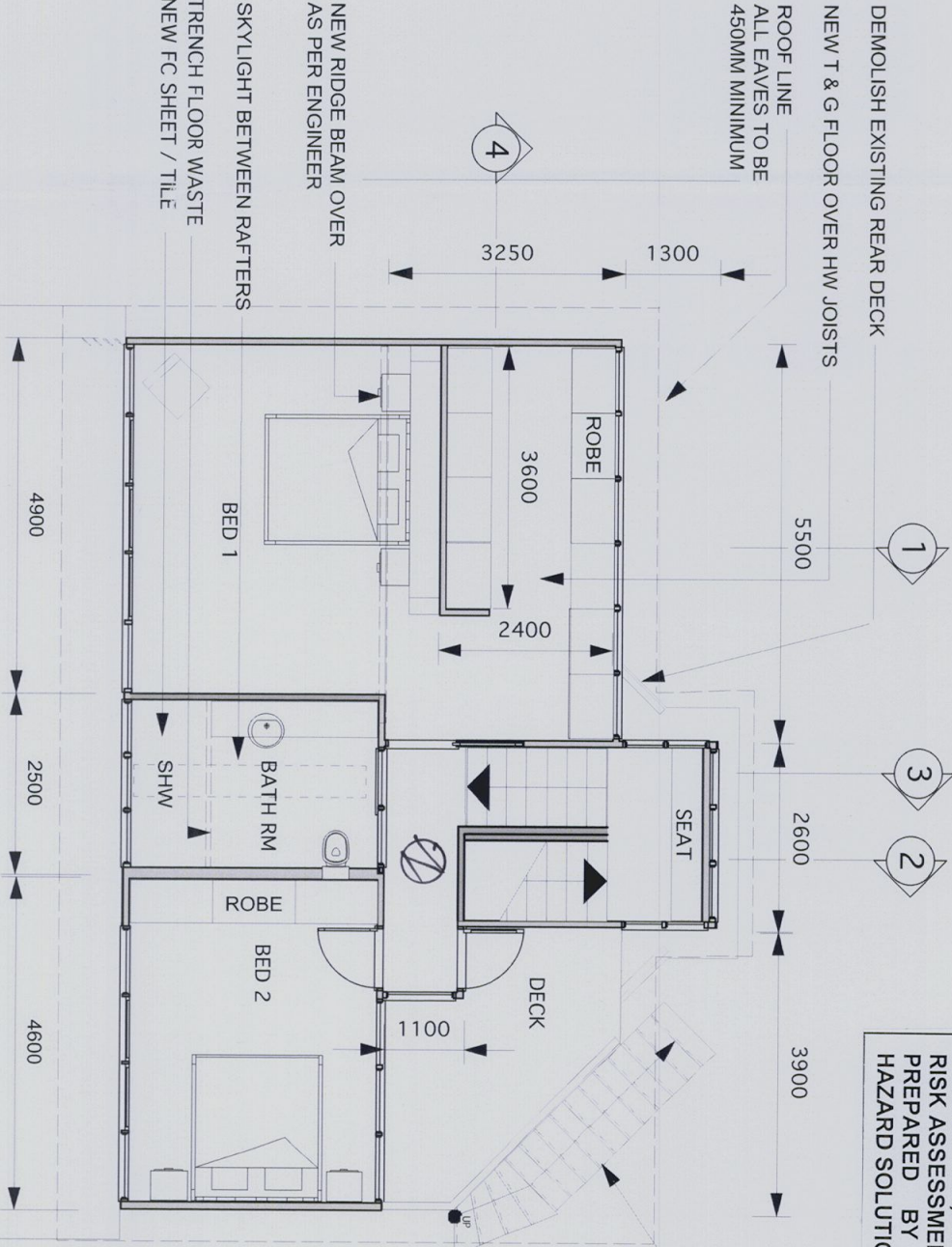
ROOF LINE ALL EAVES TO BE 450MM MINIMUM

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ROOF LINE ALL EAVES TO BE 450MM MINIMUM



FIRST FLOOR

WARNING

- The stamping of this plan by Insight Building Certifiers Pty Ltd does not relieve:
- The applicant's responsibility to obtain approval from Sydney Water of other utilities.
 - The Structural Engineer of their responsibility to ensure the structural adequacy of this project.
 - The Applicant, Structural Engineer or other Professional of their responsibility to ensure these stamped details are consistent with the issued Construction Certificate Architectural Details.

NOTE: ALL NEW WORKS ARE TO BE CONSTRUCTED TO SATISFY THE REQUIREMENTS OF BUSHFIRE ATTACK LEVEL (BAL) 12.5 OF AS3959-2009 & PLANNING FOR BUSHFIRE PROTECTION 2006 (AS AMENDED BY NSW PLANNING FOR BUSHFIRE PROTECTION) & IN ACCORDANCE WITH BUSHFIRE RISK ASSESSMENT REPORT REFERENCE NO. 120989 PREPARED BY BUILDING CODE & BUSHFIRE HAZARD SOLUTIONS DATED 2 JULY 2012

GND & FIRST FL PLANS

ALTERATIONS AND ADDITIONS

Lot 6 19 Sturdee Lane, Elvina Bay

Judy and Ian James

ALL WORKS TO COMPLY WITH BUILDING CODE OF AUSTRALIA
ALL WORKS TO COMPLY WITH BAL 12.5, SECTIONS 3 & 5 OF AS 3959 - 2009
CONSTRUCTION IN BUSHFIRE PRONE AREAS
ALL WORKS TO COMPLY WITH BASIX CERTIFICATE A 137683

insight building certifiers pty ltd

CONSTRUCTION CERT. NO. 2012 / 4962

CONSTRUCTION CERTIFICATE PLANS

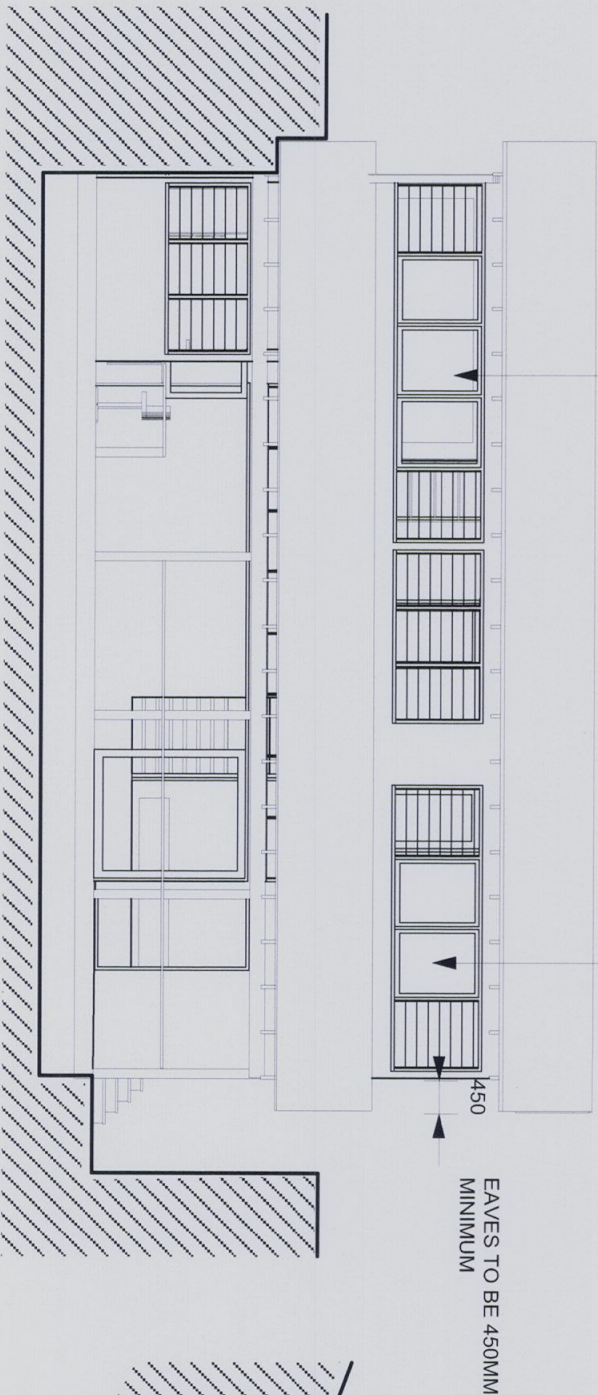
I certify that the work completed in accordance with these plans & specifications will comply with the regulations referred to in Section 81A(5) of the Environmental Planning & Assessment Act 1979

T. Bowden 23 JAN 2013

T. Bowden Accreditation No. BPB0042

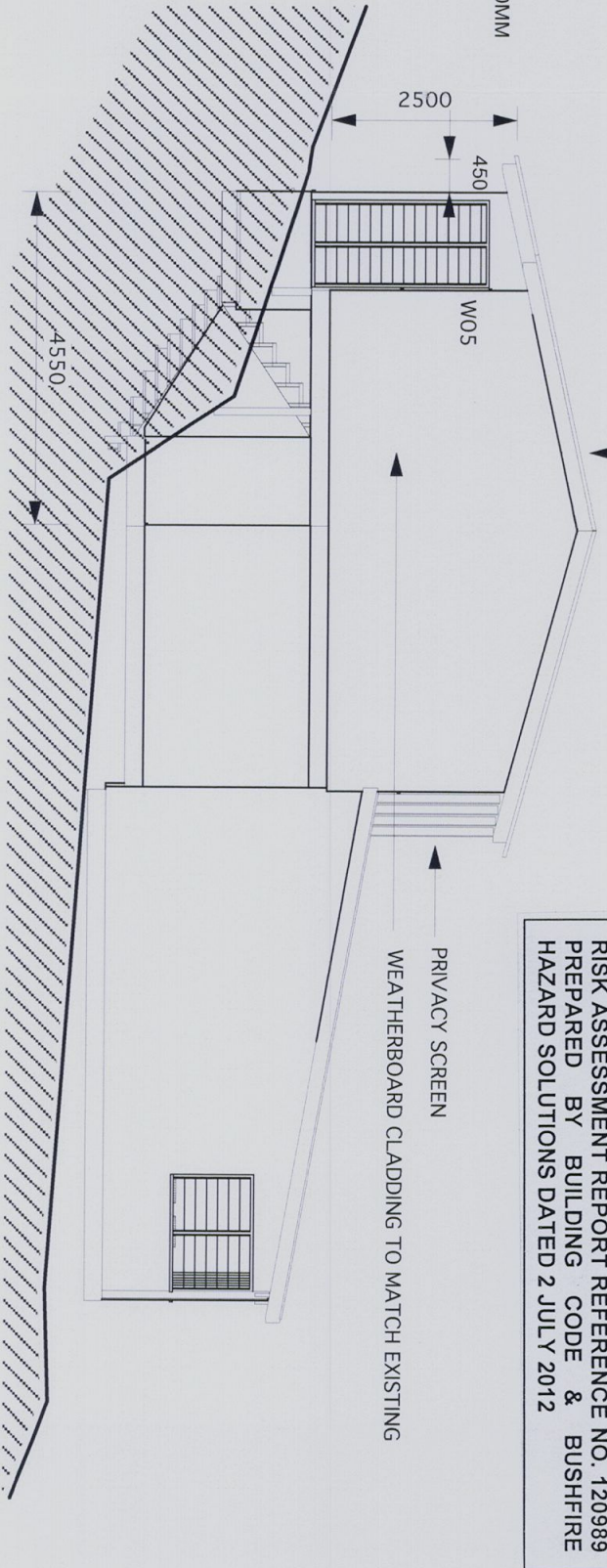
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Checked By	77	Print Date	17/12/12
CAD File Name	Judy James CC2		
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Drawing No.		Rev #	
CC2 01			

NEW LOUVRE / HOPPER WINDOWS
TO REPLACE EXISTING



SOUTH ELEVATION

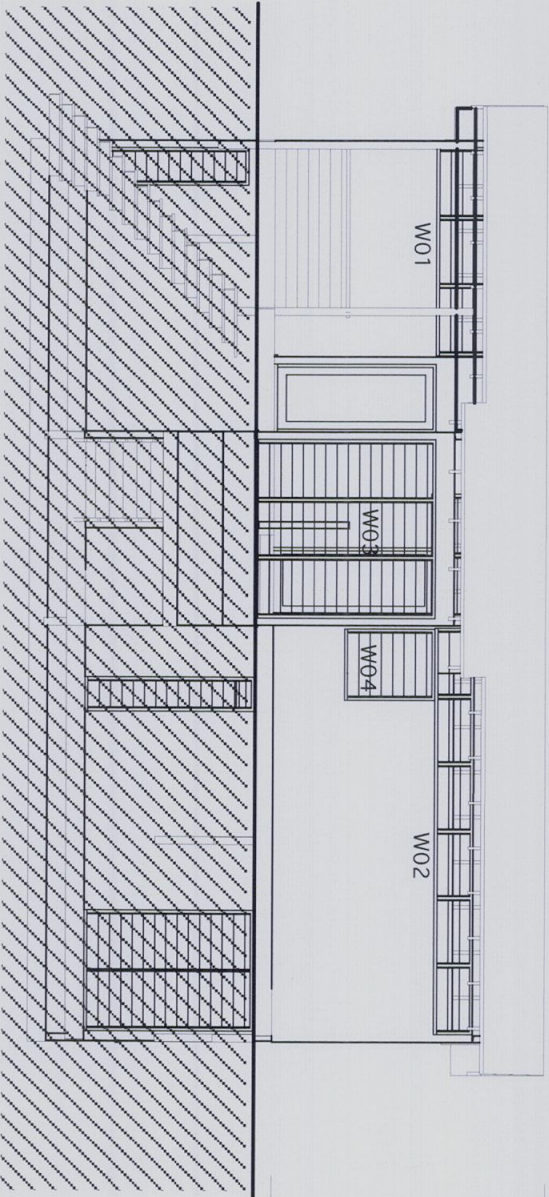
1:2 DEG PITCH TO ROOF
ROOF TO MATCH EXISTING



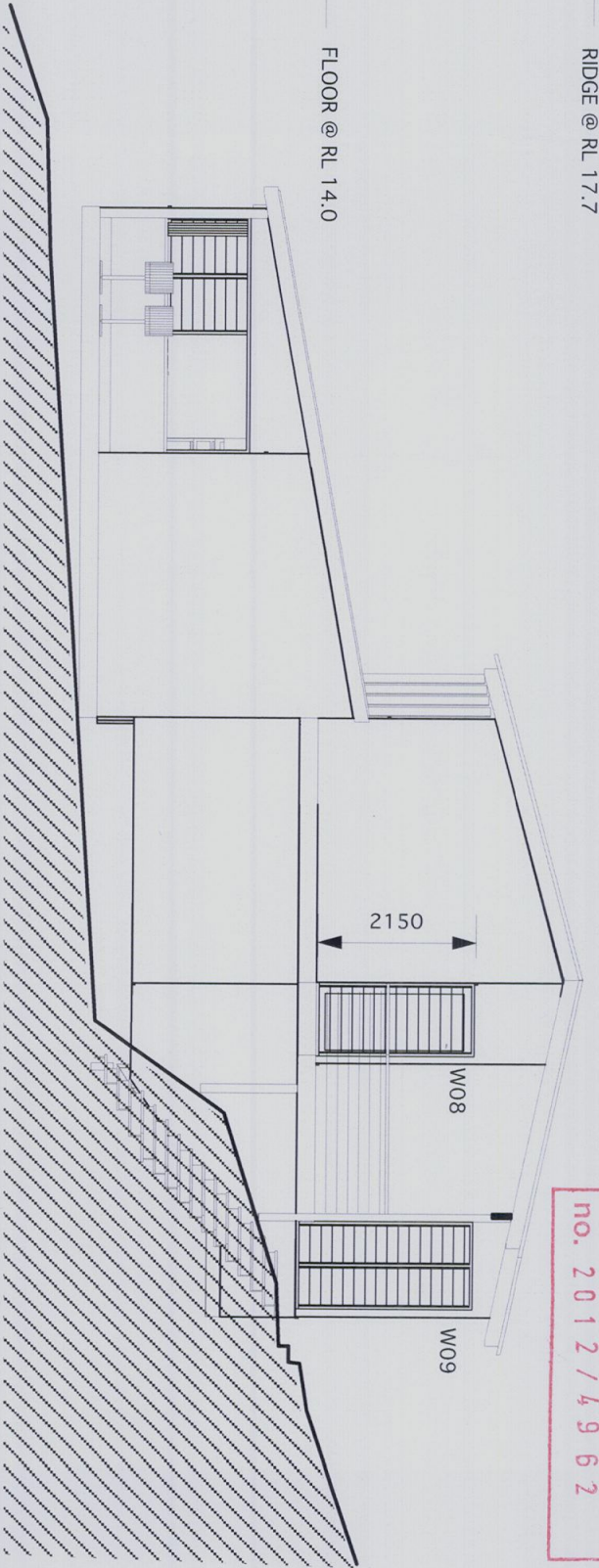
WEST ELEVATION

NOTE: ALL NEW WORKS ARE TO BE CONSTRUCTED TO SATISFY THE REQUIREMENTS OF BUSHFIRE ATTACK LEVEL (BAL) 12.5 OF AS3959-2009 & PLANNING FOR BUSHFIRE PROTECTION 2006 (AS AMENDED BY NSW PLANNING FOR BUSHFIRE PROTECTION) & IN ACCORDANCE WITH BUSHFIRE RISK ASSESSMENT REPORT REFERENCE NO.120989 PREPARED BY BUILDING CODE & BUSHFIRE HAZARD SOLUTIONS DATED 2 JULY 2012

This plan / document
forms part of
Construction Certificate
no. 2 0 1 2 / 4 9 6 2



NORTH ELEVATION



EAST ELEVATION

BASIX SCHEDULE		ALL WORK TO BE IN ACCORDANCE WITH BASIX CERTIFICATE A137683, DATED 1 MAY 2012
Lights	40%	of new or altered light fixtures to be fluorescent or Compact fluorescent or Light Emitting Diode (LED)
Water	All	new or altered fixtures to be not less than 3 star rating
Insulation	concrete slab on ground floor suspended floor with open subfloor: framed (R0.7)	R0.8 (down) (or R1.50 including construction)
Windows	External wall: framed (weatherboard, fibro, metal clad) W1 – W9	R1.30 (down) (or R1.70 including construction)
Skylight/s	S1	to be improved aluminium, single clear, (U-value: 6.44, SHGC: 0.75) Timber, double clear/air fill, (or U-value: 4.3, SHGC: 0.5)

Elevations

ALTERATIONS AND ADDITIONS
Lot 6 Sturdee Lane, Elvina Bay
Judy and Ian James

ALLWORKS TO COMPLY WITH BUILDING CODE OF AUSTRALIA
ALL WORKS TO COMPLY WITH BAL 12.5, SECTIONS 3 & 5 OF AS 3959 - 2009
CONSTRUCTION IN BUSHFIRE PRONE AREAS
ALL WORKS TO COMPLY WITH BASIX CERTIFICATE A 137683

E A S T W O O D D E S I G N

32 BONA CRESCENT TOWLERS BAY NSW 2105

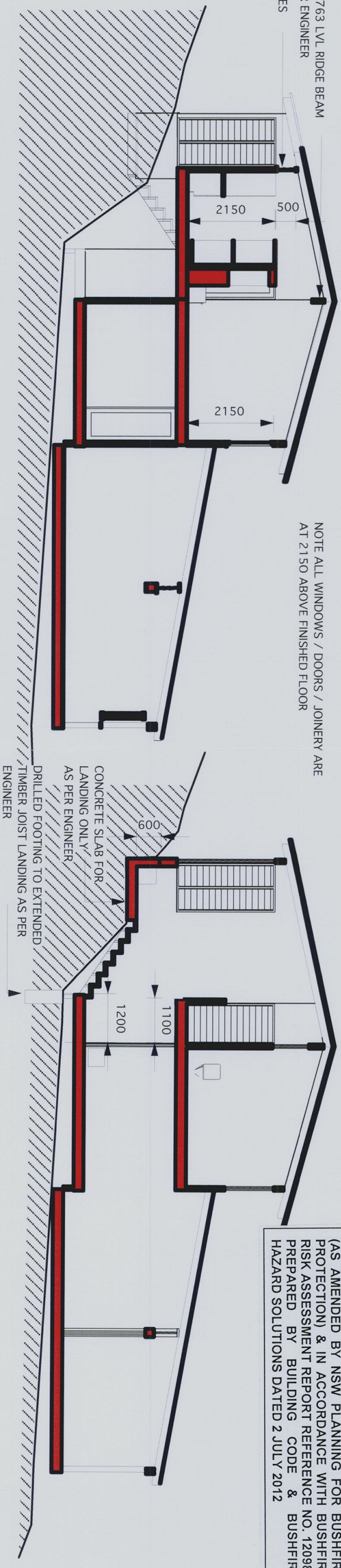
T: 612 9979 5026 F: 612 9979 1245 E: larry@eastwooddesign.com.au

W: www.eastwooddesign.com.au

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CC		NB
ORIGINAL DRAWING AT A3 SIZE	AA RESOLUTION: 300% Drawn By: Checked By: CAD File Name:	March 2012 17/10/12 Judy James CCC CC2 02

360 X 763 LVL RIDGE BEAM
AS PER ENGINEER
LOUVRES

NOTE ALL WINDOWS / DOORS / JOINERY ARE
AT 2150 ABOVE FINISHED FLOOR



NOTE: ALL NEW WORKS ARE TO BE CONSTRUCTED TO SATISFY THE REQUIREMENTS OF BUSHFIRE ATTACK LEVEL (BAL) 12.5 OF AS3569-2009 & PLANNING FOR BUSHFIRE PROTECTION 2006 (AS AMENDED BY NSW PLANNING FOR BUSHFIRE PROTECTION) & IN ACCORDANCE WITH BUSHFIRE RISK ASSESSMENT REPORT REFERENCE NO. 120989 PREPARED BY BUILDING CODE & BUSHFIRE HAZARD SOLUTIONS DATED 2 JULY 2012

SECTION

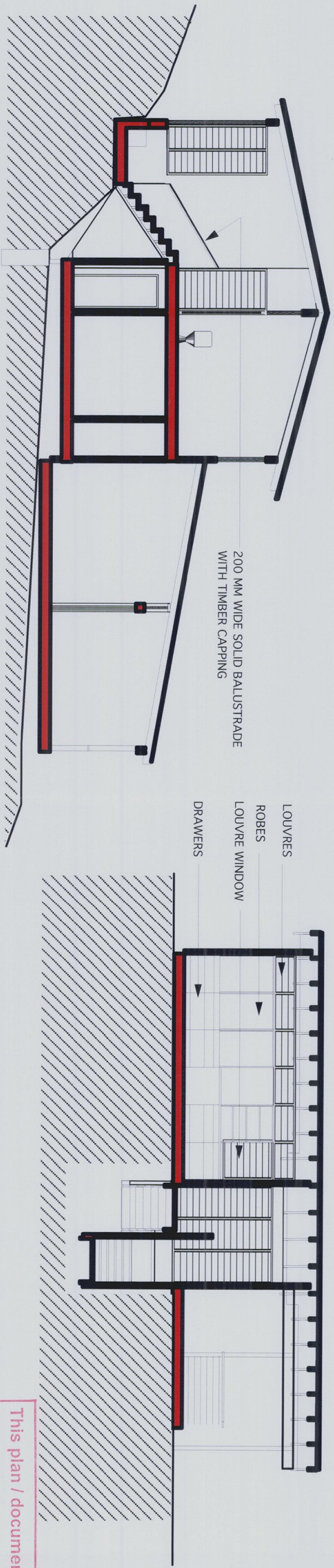
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SECTION

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SECTION

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forms part of
Construction Certificate
no. 2012 / 4962

ALL WORKS TO COMPLY WITH BUILDING CODE OF AUSTRALIA
ALL WORKS TO COMPLY WITH BAL 12.5, SECTIONS 3 & 5 OF AS 3959 - 2009
CONSTRUCTION IN BUSHFIRE PRONE AREAS
ALL WORKS TO COMPLY WITH BASIC CERTIFICATE A 137683

SECTIONS

ALTERATIONS AND ADDITIONS

Lot 6 Sturdee Lane. Elvina Bay

Judy and Ian James

Status		Project No.	
CC		NB	
SECTIONS			
ALTERATIONS AND ADDITIONS			
Lot 6 Sturdee Lane, Elvina Bay			
Judy and Ian James			
SCALE		Drawing No.	
ORIGINAL DRAWING AT A1 SIZE		Rev #	
A4 REDUCTION 33.33%			
Drawn By	LE	Dwg Date	Oct 2012
Checked By	??	Prod Date	17/12/12
CUO File Name	L&J James CC2 10013.wex		
Date	REVISION	By	No.
		Date	ISSUE



Jack Hodgson Consultants Pty Limited

CONSULTING CIVIL, GEOTECHNICAL AND STRUCTURAL ENGINEERS

ABN: 94 053 405 011

MM 27535.

19th of December, 2012.

Page 1.

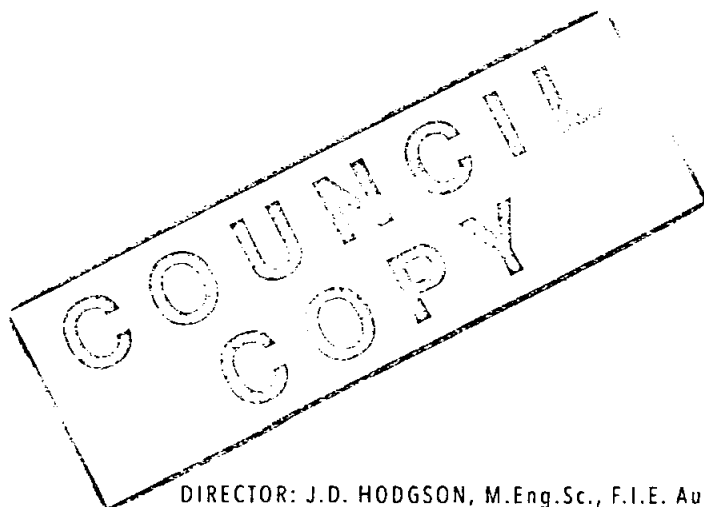
Insight Building Certifiers Pty Ltd
Suite 13/90 Mona Vale Rd
Mona Vale NSW 2103

Dear Sir,

19 STURDEE LN, ELVINA BAY

On behalf of Jack Hodgson Consultants, I confirm that structural design and structural drawing 27535-S1 Rev B for the subject address are in compliance with the conditions of the development consent, the provisions of the Building Code of Australia, AS1163, AS1170, AS1170.1, AS1170.2, AS1684, AS2870.1, AS3600, AS3700 and AS4100

JACK HODGSON CONSULTANTS PTY. LIMITED.



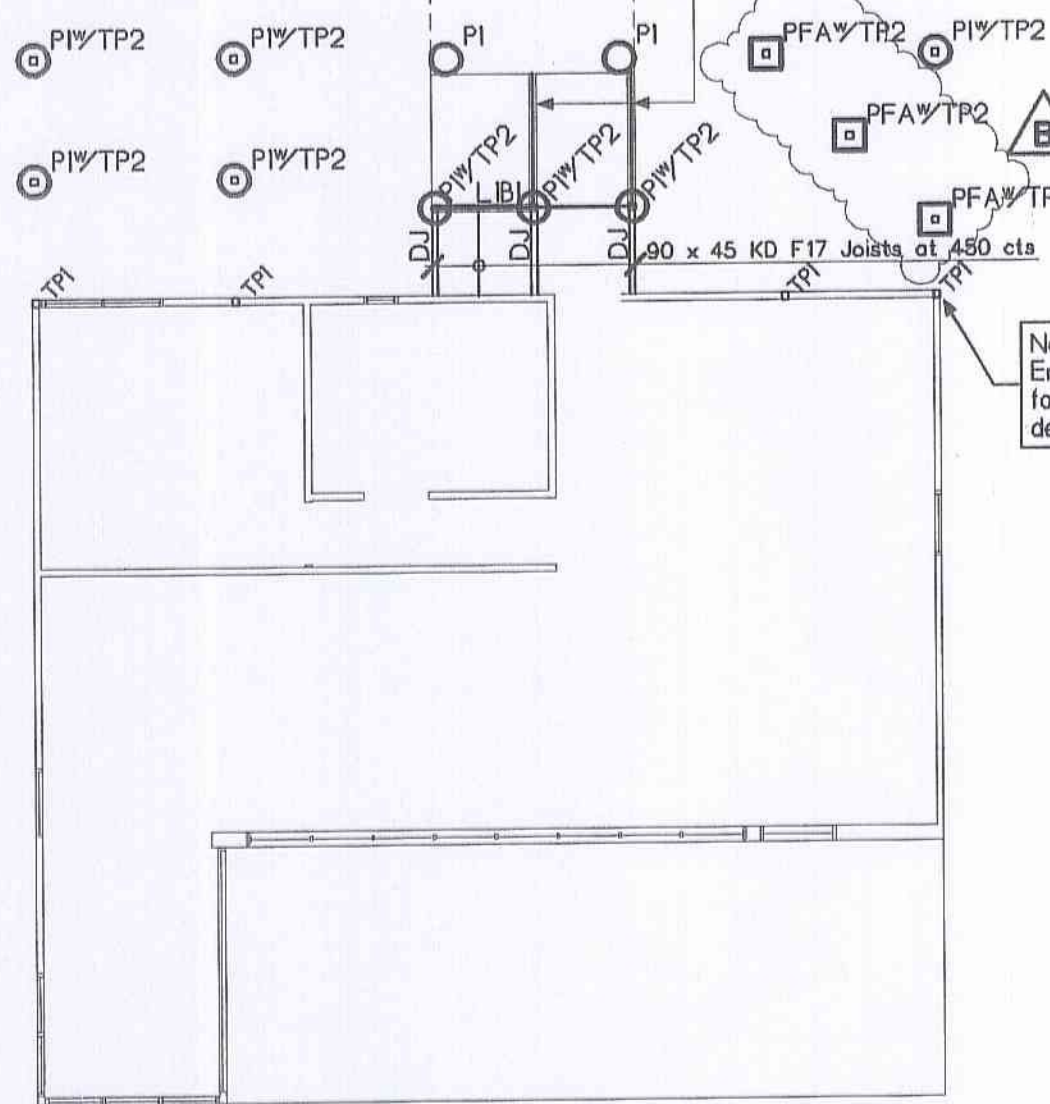
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no. 2012 / 4962

DIRECTOR: J.D. HODGSON, M.Eng.Sc., F.I.E. Aust., Nper3 Struc. Civil 149788

67 Darley Street, Mona Vale NSW 2103

PO Box 389 Mona Vale NSW 1660

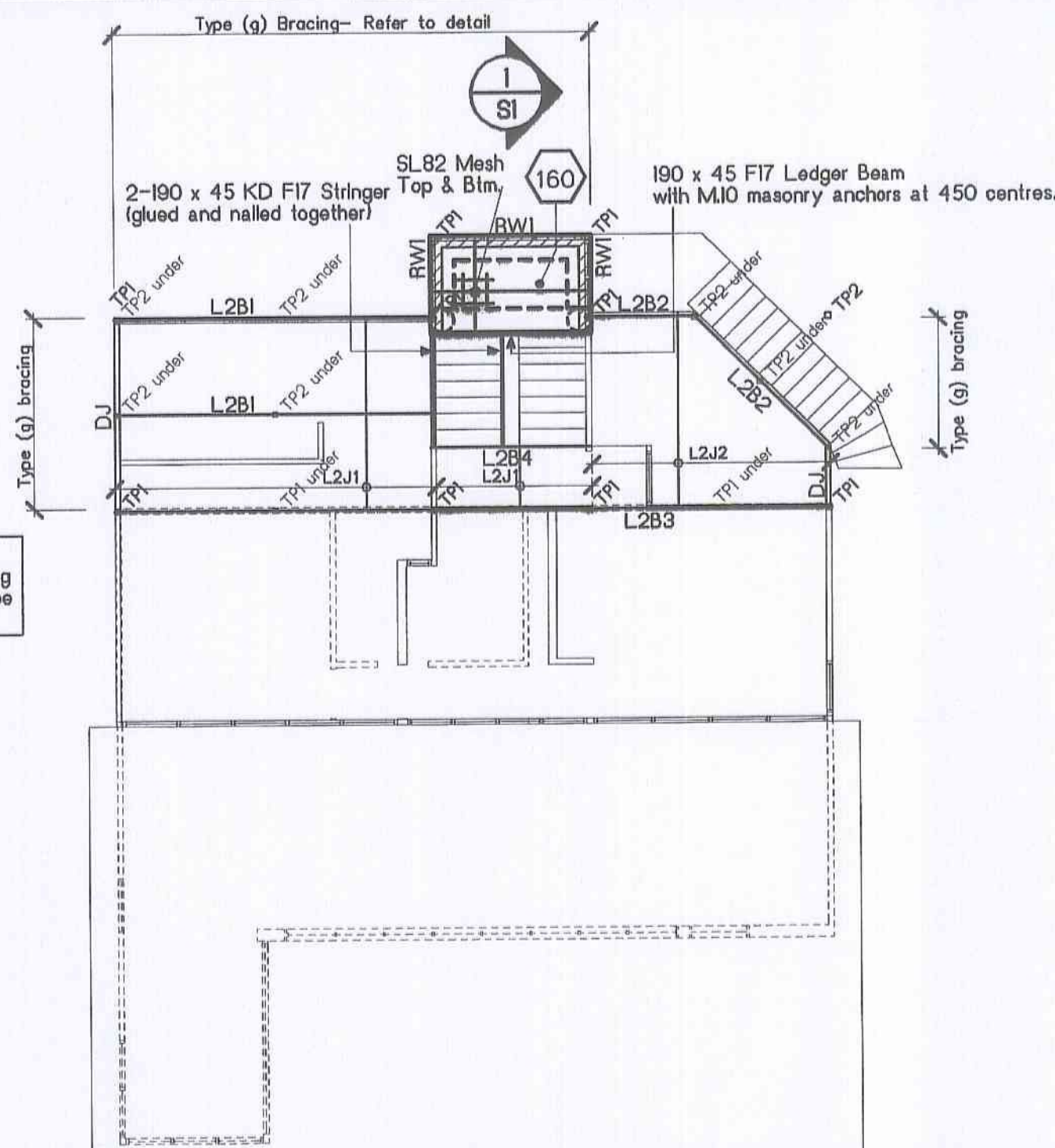
Telephone: 9979 6733 Facsimile: 9979 6926



FOOTING & GROUND FLOOR SLAB PLAN
Scale 1:100

TP1 90 x 90 Treated F7
TP2 112 x 112 Treated F7 (minimum grade)
LBI 2-90 x 45 KD F17 Bearer (glued & nailed together)

NOTE:
ALL EXPOSED TIMBER TO BE IN COMPLIANCE WITH AS 3959-2009
MUST BE A SPECIES OF TIMBER LISTED IN APPENDIX H1 OR TO BE
CLAD WITH A NON-COMBUSTIBLE MATERIAL.



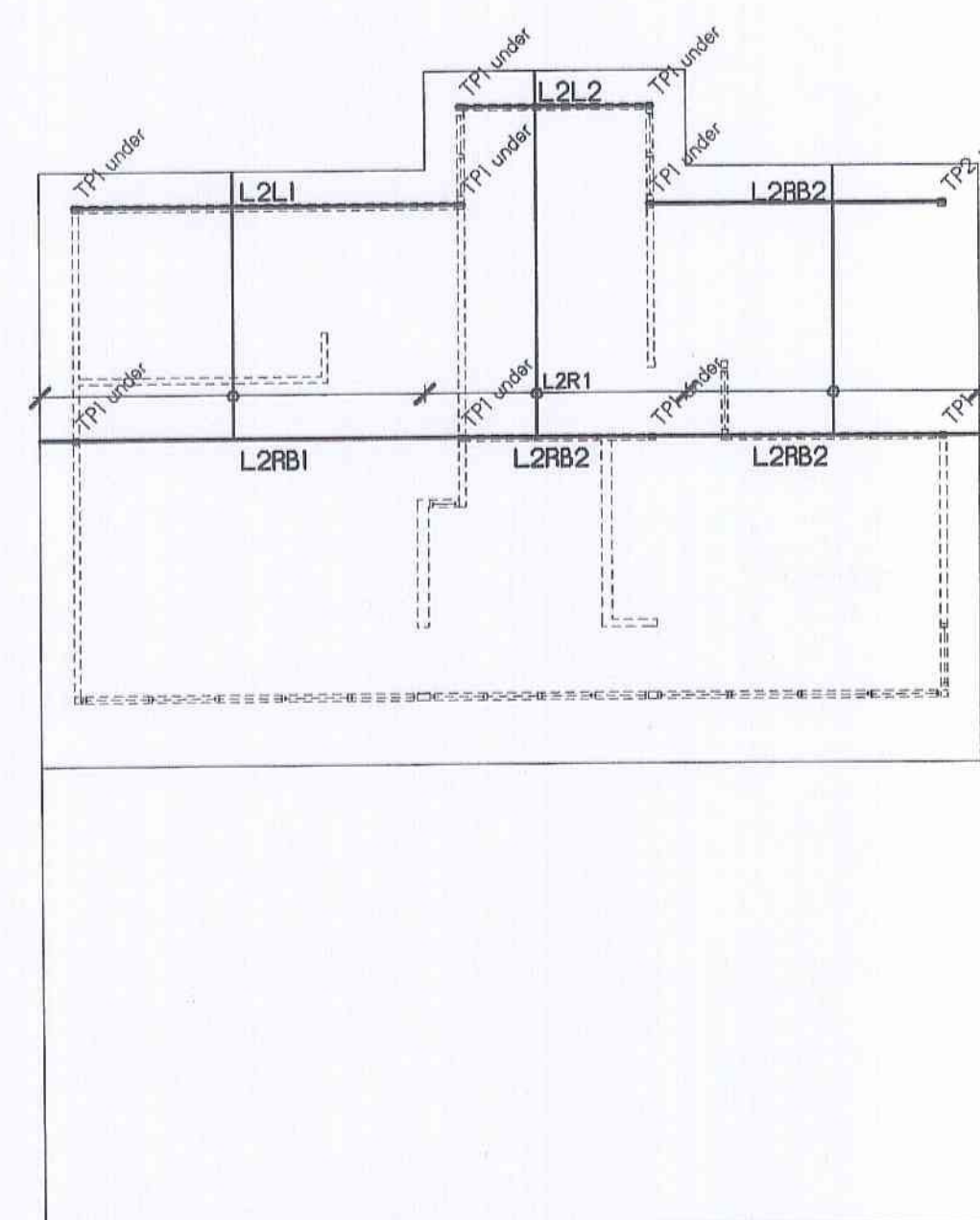
FIRST FLOOR SLAB & MARKING PLAN
Scale 1:100

LEVEL 2 - MEMBER SIZES

Location Code	Member	Length (m)	Units	Weight Kg.
L2B1	2-190 x 35 F17			
L2B2	190 x 45 HW F17 or 2-140 x 35 F17			
L2B3	240 x 70 HW F17 o.s.s			
L2B4	140 x 70 HW F17			
L2J1	90 x 45 F17 Joists at 450 cts			
L2J2	190 x 45 F17 Joists at 450 cts			
DJ	Double Joist			
TP1	90 x 90 Treated F7			
TP2	112 x 112 Treated F17 (minimum grade)			

* Denotes beams to be suitably glued and nailed together.
Adequacy of existing beam to be determined where L2B3 has been shown. If inadequate, L2B3 is to be installed.

TOTAL WEIGHT



ROOF MARKING PLAN
Scale 1:100

LEVEL 2 ROOF - MEMBER SIZES

Location Code	Member	Length (m)	Units	Weight Kg.
L2L1	2-300 x 45 LVL			
L2L2	2-150 x 45 LVL			
L2R1	240 x 45 LVL Rafter at 600 cts or 240 x 45 F17 Rafter at 600 cts			
L2R2	2-240 x 35 F17			
TP1	90 x 90 Treated F7			
TP2	112 x 112 Treated F17 (minimum grade)			

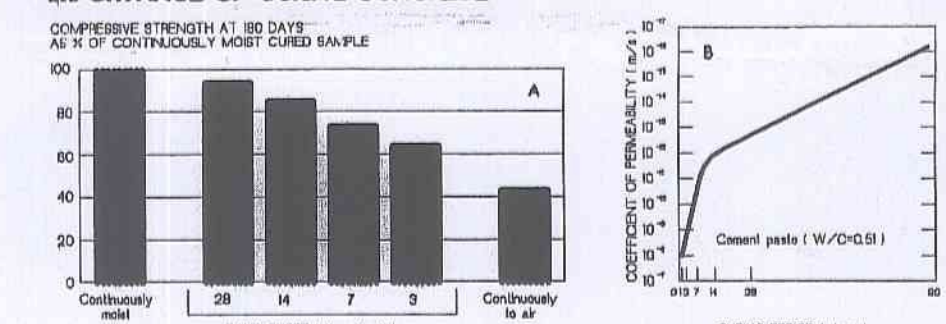
* Denotes beams to be suitably glued and nailed together

TOTAL WEIGHT

- STEELWORK NOTES**
1. Fabricate and erect all structural steelwork in accordance with AS 3601, AS 4100, AS 1554 and the Specification.
 2. Do not obtain dimensions by scaling the structural elements.
 3. Chip all welds free of slag.
 4. All steelwork to be Hot Dipped Galvanised. Unless otherwise noted.
 5. Unless otherwise noted use:
 - a) 6mm continuous fillet weld
 - b) 10mm thick gusset, fin and end plates, weld all round.
 - c) 10mm dia. 4.8/8 bolts
 6. Minimum end bearing 150mm.
- TIMBER NOTES :**
1. All work (including bracing, wind bracing & tie down) shall be carried out in accordance with AS 3601, AS 1684.2, AS 1723.1 and the specification.
 2. Refer to the Architects Drawings and the specification for all timber sizes not shown on these drawings.
 3. All timber shall be free of Gum vena, pockets, knots holes or splits within 255mm of any connection.
 4. Refer to specification for preservatives and finishes to timbers.
 5. All bolts, nuts, washers and timber connectors shall be hot dip galvanised unless noted otherwise.
 6. All F5 timber shown are nominal sizes only.
- CONCRETE & BLOCK NOTES**
1. All concrete work to be in accordance with AS 3600.
 2. Fc Refer to table.
 3. Maximum aggregate size = 20 for footings, slabs & beams. = 10 for block filling.
 4. Slump = 80.
 5. All concrete, including block filling, to be vibrated.
 6. Slabs to be kept damp for at least 14 days after placing.
 7. All blockwork to be in accordance with SAA Masonry Code AS 3700.
 8. All cavities of block work to be thoroughly cleaned out, using knock out blocks or other suitable means, before filling with grout or concrete.
 9. 200 & 300 blocks to be hollow retaining wall blocks with a characteristic strength of 15 MPa.
 10. Reinforcing Steel to comply with AS/NZS 4671:2001, and to be D500N unless noted otherwise. (where 500 = strength grade in megapascals & N = Normal ductility class).
 11. Steel Reinforcement to be cut & bent in accordance with AS 3600.
 12. Bar Chairs to be no more than 800mm centre to centre spacings.
 13. Reinforcement to be tied at every other intersection minimum.
 14. Metal roofing being used as formwork for concrete or similar. Depth of Slab must be taken from the Top of the Roof Rib. Specified bottom cover must be taken from the Top of the Roofing Rib or be protected by an approved curing membrane.
 15. Moisture Vapour Membrane to be 200 Microns thick, U.V. Resistant and to be in accordance with AS 2870-1996. Acceptable manufacturers and processors of steel reinforcement must hold a valid certificate of approval, issued by the Australian Certification Authority for Reinforcing Steel Ltd (ACRS), or to an equivalent certification system as may be approved in writing by the specifier. Evidence of compliance with this clause must be obtained when the contract bids are received.

Element	Cover (mm)	Fc at 28 days
Piers	85	25 MPa
Footings	90	25 MPa
Block Filling	refer to detail	25 MPa
Slab on Ground		32 MPa
- Top	30	45
- Bottom		
Beams	50	40 MPa
Columns	30	45
Slabs	30	45
Walls	30	45

IMPORTANCE OF CURING CONCRETE



Effect of curing duration on: (A) compressive strength and (B) concrete permeability.

Adapted from: Diagrams based on Fig 12 of Guide to Concrete Repair & Protection (SAA/ASB41990)

B	General Amendments	LS	08/11/2
A	General Amendments	LS	31/01/2
No.	Amendment	Drawn	Date

PLAN OR DOCUMENT CERTIFICATION

I am a qualified...CIVIL, GEOTECHNICAL & STRUCTURAL ENGINEER...
I hold the following qualifications or licence No. MEngSc...
Further I am appropriately qualified to certify this component of the project.
I hereby state that these plans or details comply with the conditions of development consent, the provisions of the Building Code of Australia, AS 1170.1, AS 1170.2, AS 1684.1, AS 2870.1, AS 3500, AS 3600, AS 3700, AS 4100 & AS 1683. On behalf of Jack Hodgson Consultants

Name _____ Date _____ Signature _____

FOOTING & GROUND FLOOR SLAB, FIRST FLOOR SLAB & MARKING AND ROOF MARKING PLANS AND DETAILS

PROPOSED ALTERATIONS AND ADDITIONS

19 STURDEE LANE
ELVINA BAY

J & J JAMES

Our design and drawings are based upon and derived from information (including levels, surveys, etc) provided by the owner/architect/designer/ builder. EASTWOOD DESIGN Dwg No. DA20F04 Plot Date: 7/6/12. Should the information provided to us be found to be deficient, unreliable, incorrect or inaccurate then our design/drawings may require modification. We take no responsibility for verifying the accuracy of the information that forms the basis of our brief and it is your obligation to verify it prior to the commencement of building operations.

The Structural Details shown on this Drawing are NOT to change under any circumstance.

NO Certificate will be issued for work NOT in accordance with the Drawing.

JACK HODGSON CONSULTANTS PTY. LIMITED.

Consulting Civil, Geotechnical, and Structural Engineers.

87 Dairley Street, MOWA VALE 2833 P.O. Box 389, Post Code 1860.

Telephone (02) 9979 6733 Facsimile (02) 9979 6926

Email info@jackhodgson.com.au web www.jackhodgson.com.au ACN 053 405 011

Designed J.L.H. Drawn LS Job No. Drawing No.

Design Check G.H. Drawing Check G.H.

Date 24 AUGUST 2012

27535-S1 /B

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Scale 0 5m 10m 15m 20m 25m

Scale 1:100 0 1m 2m 3m 4m 5m

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 2 – PART A - To be submitted with detailed design for Construction Certificate

Development Application for _____	Name of Applicant _____
Address of site _____	

PART – A: Declaration made by Structural or Civil Engineer in relation to the incorporation of the Geotechnical issues into the project design

I, PETER THOMPSON on behalf of JACK HODGSON CONSULTANTS
(insert name) (trading or company name)

on this the 17TH DECEMBER, 2012
(date)

certify that I am a Structural or Civil Engineer as defined by the Geotechnical Risk Management Policy for Pittwater - 2009. I am authorised by the above organization/company to issue this document and to certify that the organization/company has a current professional indemnity policy of at least \$2million. I also certify that I have prepared the below listed structural documents in accordance with the recommendations given in the Geotechnical Report for the above development and that

Please mark appropriate box

- ☒ the structural design meets the recommendations as set out in the Geotechnical Report or any revision thereto
☒ the structural design has considered the requirements set out in the Geotechnical Report for Excavation and Landfill for both the Excavation/construction phase and the final installation in accordance with Clause 3.2 (b)(iv) of the Geotechnical Risk Management Policy

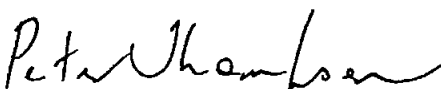
Geotechnical Report Details :

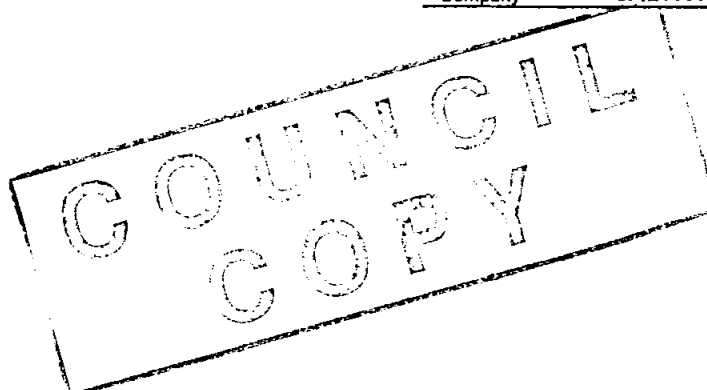
Report Title: RISK ANALYSIS & MANAGEMENT FOR PORPOSED UPHILL ADDITIONA AT 19 STURDEE LANE, ELVINA BAY MM 27535
Report Date: 30 TH MAY, 2012
Author : BEN WHITE
Author's Company/Organisation: JACK HODGSON CONSULTANTS PTY LTD

Structural Documents list:

DRAWING NO 27535-S1B

I am also aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified.

Signature	
Name	PETER THOMPSON
Chartered Professional Status	MIE Aust CPEng
Membership No.	146800
Company	JACK HODGSON CONSULTANTS



This plan / document forms part of Construction Certificate no. 2012 / 4962
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GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 2 – PART B - To be submitted with detailed design for construction certificate

PART B Declaration made by Geotechnical Engineer or Engineering Geologist and/or Coastal Engineer (where applicable) in relation to the incorporation of the Geotechnical issues into the project design

I, Ben White on behalf of Jack Hodgson Consultants Pty Ltd
(insert name) (trading or company name)

on this the 17TH DECEMBER, 2012
(date)

certify that I am a Geotechnical Engineer or Engineering Geologist and/or Coastal Engineer as defined by the Geotechnical Risk Management Policy for Pittwater – 2009 and I am authorised by the above organization/company to issue this document and to certify that the organization/company has a current professional indemnity policy of at least \$2million. I also certify that I have reviewed the design plans and structural design plans in accordance for the Construction Certificate Stage and that I am satisfied that:

Please mark appropriate box

- ☒ the structural design meets the recommendations as set out in the Geotechnical Report or any revision thereto
☒ the structural design has considered the requirements set out in the Geotechnical Report for Excavation and Landfill both for the excavation/construction phase and the final installation in accordance with Clause 3.2 (b)(iv) of the Geotechnical Risk Management Policy

Geotechnical Report Details :

Report Title: RISK ANALYSIS & MANAGEMENT FOR PROPOSED UPHILL ADDITIONS AT 19 STRUDEE LANE, LOVETT BAY MM 27535

Report Date: 30TH MAY, 2012

Author: BEN WHITE

Documentation which relates to or is relied upon in report preparation:

ARCHITECTURAL PLANS PREPARED BY EASTWOOD DESIGN NUMBERED DA2-01 TO DA2-04 DTAED MARCH 2012

STRUCTURAL PLANS PREPARED BY JACK HODGSON CONSULTANTS NUMBERED 27535-S1B

I am also aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified.

Ben White

(name)



(signature)

I am also aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk

Signature



Name Ben White

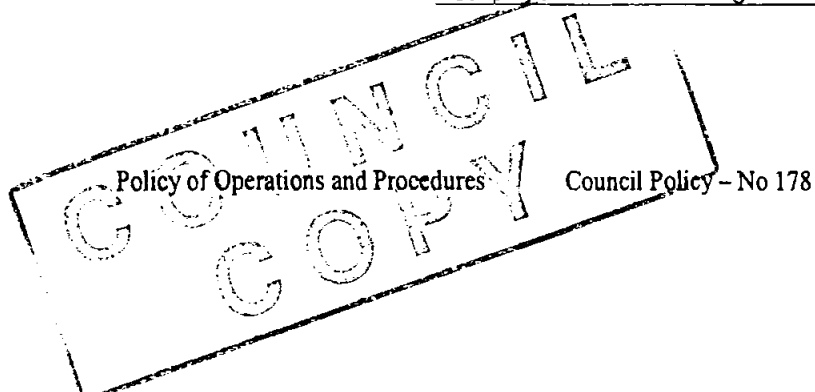
Chartered Professional Status

M.Sc.Geol AusIMM CP
GEOL.

Membership No. 222757

Company

Jack Hodgson Consultants Pty Ltd



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SCHEDULE OF FINISHES FOR 19 STURDEE LANE, ELVINA BAY

Eastwood Design Pty Ltd
P.O. Box 118,
Church Point,
NSW 2106
T 02 9379 5026
F 02 9379 1245
M 0217 244406
E larry@eastwooddesign.com.au
W www.eastwooddesign.com.au
ABN 74 000 068 653

ADDITIONS

Structural posts and beams - HW painted grey to match existing

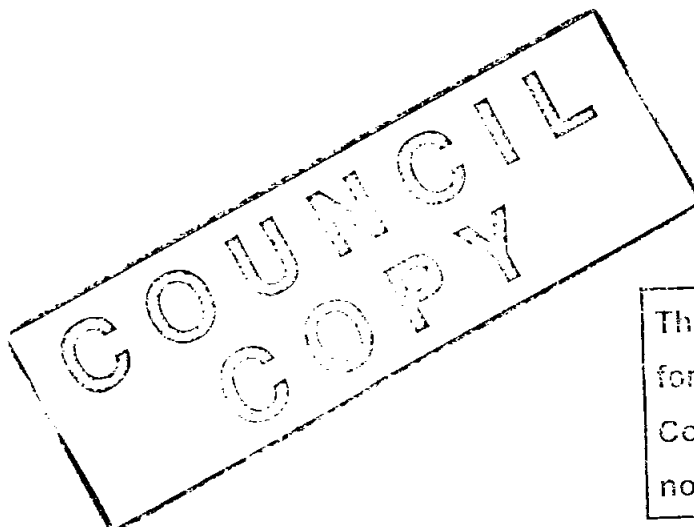
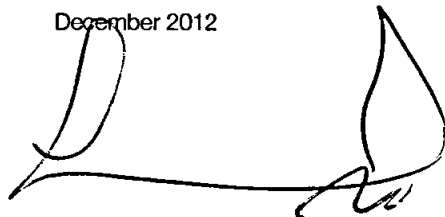
Windows / Doors- HW / Aluminum, powder coat black

Cladding - Hardy Primeline Weatherboard, paint grey to match existing

Roof - Custom Orb, Woodland Grey to match existing.

LAURENCE EASTWOOD

December 2012



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