

Construction Certificate Determination

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

Certificate No. 2008/2658

Council	Pittwater
Determination date of issue	Approved 25 March 2008
Subject land Address Lot No DP No	11 Plateau Road, Avalon Lot 150 DP 16902
Applicant Name Address Contact No (phone)	Mrs E Levy 11 Plateau Road Avalon NSW 2107 9918 9121
Owner Name Address Contact No (phone)	Mr Ian & Mrs Evelyn Levy 11 Plateau Road, Avalon NSW 2107 9918 9121
Description of Development Type of Work	Alterations & Additions to an Existing Dwelling
Builder or Owner/Builder Name Contractor Licence No/Permit	C T & R A & D C Elliott 54265C
Value of Work Building	\$350 000 00

Attachments

- Copy of completed Construction Certificate Application Form
- Pittwater Council receipt nos 228923 & 235909 for payment of Long Service Levy
- BASIX Certificate No A12193, dated 18 June 2007

R# 236185
\$30

Suite 13/90 Mona Vale Road Mona Vale NSW 2103 PO Box 326 Mona Vale NSW 1660 ph 9999 0003 fax 9979 1555

MP

26 03 08

email info@insightcert.com.au ABN 54 115 090 456

**COUNCIL
COPY**

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 Specifications reference no 607 drawing nos 1 to 4 (inclusive), Revision C prepared by Shimdesign, dated 22 February 2008
- Structural Details, reference no CMSC-1286A, prepared and endorsed by Tihanyi Consulting Engineers Pty Ltd dated 5 March 2008
- Completed Form 2 of the Geotechnical Risk Management Policy for Pittwater, dated 4 November 2007
- Certificate of Structural Adequacy reference no CMSC1286LevyLetter doc, prepared by Tihanyi Consulting Engineers, dated 26 November 2007
- Sediment & Erosion Control Plan, reference no 24585-E1, prepared by Jack Hodgson Consultants Pty Ltd, dated 21 November 2007

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

25 MAR 2008
2008/2658

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

N0377/07
23 October 2007

BCA Classification

1a

APPLICATION FOR A CONSTRUCTION BY CERTIFICATE

1. Applicant's details

It is important that we are able to contact you if we need more information. Please give us as much details as possible

Mr ☐ Mrs ☒ Ms ☐ Dr ☐ Other

Given Names (or ACN)

EVELYN CHRISTINE

Family Name (or Company)

LEVY

Postal Address (we will post all mail to this address)

11 PLATEAU RD,

AVALON, NSW

Post Code 2107

Daytime telephone

02 9918 9121

Alternate no.

Mobile no.

041 918 9007

2. Owner's consent

Every owner of the land must sign this form. If the owner is a company the form must be signed by an authorized director and the common seal must be stamped on this form. If the property is a unit under the strata title or a lot in a community title, then in addition to the owner's signature, the common seal of the body corporate must be stamped on this form over the signature of the owner and signed by the Chairman or Secretary of the Body Corporate or the appointed managing agent.

Owner(s)

EVELYN x IAN LEVY

Address

11 PLATEAU RD

AVALON, NSW, 2107

As owner(s) of the land to which this application relates, I/We consent to this application. I/We also consent for the Principal Certifying Authority and/or Accredited Certifier to enter the land to carry out inspections relating to this application.

Signature(s)

E C Levy *I Levy*

Without the owner's consent we will not accept the application. This is a very strict requirement for all applications. If you are signing on the owner's behalf as the owner's legal representative, you must state the nature of your legal authority and attach documentary evidence (eg, power of attorney, executor, trustee, company director, etc).

3. Location of property

Unit/Street no.

11

Street name

PLATEAU RD

Suburb

AVALON, NSW.

Post code

2107

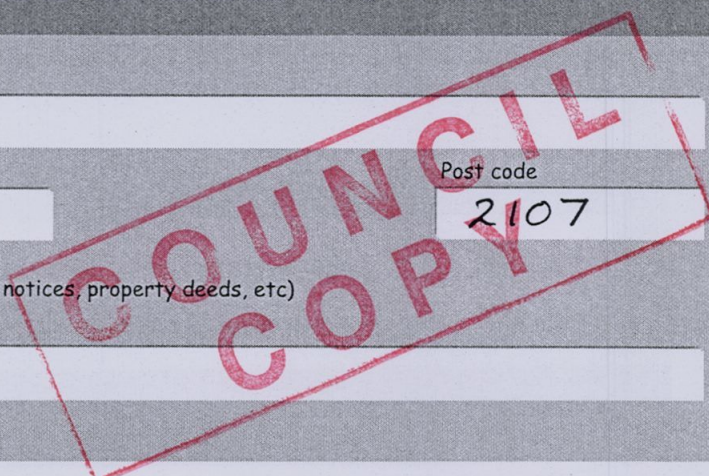
Legal Property Description (these details are shown on your rate notices, property deeds, etc)

Lot no.

150

DP no.

16902



4. Description of work

What type of work do you propose to carry out?

Please describe briefly everything that you want approved.

1. Glazed conservatory to be replaced by a new room with tiled roof.
2. Above ground pool to be replaced with a timber entertaining deck.
3. A small room addition to be built above existing garage.
4. Replacing of tiled roof over front patio with a first floor balcony.
5. Main roof to be re-tiled and wooden windows/doors replaced with aluminium.

5. Estimated cost of work

The estimated cost of the development or contract price may be subject to review

Estimated cost of work \$ 350,000.00

6. Development Consent

Council Consent no. N0377/07

Date of Determination 23/10/07

7. Building Code of Australia classification

This can be found on the development consent

BCA Classification 1a

8. Builder's details

If known, to be completed in the case of residential building work

Name CT & RA & DC ELLIOTT

License no. 54265c

Owner/builder permit no. —

9. Applicant's declaration

I apply for a Construction Certificate to carry out building works as described in this application. I declare that all the information in this application and checklist is, to the best of my knowledge, true and correct.

Signature

EC Levy

Date

17th March 2008

SUBMISSION REQUIREMENTS

A GENERAL

Are the plans submitted with the Construction Certificate Application in accordance with the Development Consent?

Yes [X] No []

Have all the conditions of Development Consent relating to the issue of the Construction Certificate been fully complied with?

Yes [X] No []

If you have answered NO to either of the above questions, then you will need to speak with the Accredited Certifier BEFORE LODGING YOUR APPLICATION

B ALL PROPOSALS (has the following required information been submitted?)

Yes	No	Not Applicable	In the case of an application for a Construction Certificate for building work
[X]	[]	[]	Three (3) copies of detailed architectural plans and specifications
[X]	[]	[]	The plan for the building must consist of a general plan drawn to a scale not less than 1 100 and a site plan drawn to a scale not less than 1 200 The general plan of the building is to a) show a plan of each floor section b) show a plan of each elevation of the building c) show 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 d) indicate the height design and full construction details e) indicate the provision for fire safety and fire resistance (if any)
[X]	[]	[]	Where the proposed building work involves any alteration or addition to or rebuilding of an existing building all copies of the general plan are to be coloured or otherwise marked to the satisfaction of the Council to adequately distinguish the proposed alteration addition or rebuilding with a separate letter listing the proposed changes being submitted
[X]	[]	[]	3 copies of a specification a) to describe the construction and materials of which the building is to be built and the method of drainage sewerage and water supply b) state whether the materials proposed to be used are new or second hand and give particular
[]	[]	[X]	Where the proposed building work involves a modification to previously approved plans and specifications the general plans must be coloured or otherwise marked to the satisfaction of the Accredited Certifier to adequately distinguish the modification
[]	[]	[X]	If the proposed building work involves a modification to previously approved plans and specification which were subject of a Development Consent has the original Development Consent been modified by Council?
[]	[]	[X]	Except in the case of an application for or in respect of domestic building work a) a list of any fire safety measures that are proposed to be implemented in the building or on the land on which the building is situated and b) if the application relates to a proposal to carry out any alteration or rebuilding of or addition to an existing building a separate list of such of those measures as are currently implemented in the building or on the land on which the building is situated This list must specify the standard of design of each of those fire safety measures to which they were originally installed c) This list must describe the extent capability and basis of design of each of the measures concerned
[X]	[]	[]	Copy of BASIX Certificate & Report
[X]	[]	[]	All other documentation to satisfy conditions of Development Consent

HOME BUILDING ACT 1989 (as amended) OWNER/BUILDER REQUIREMENTS

Applicants for work at a residential property with a value of work over \$12 000 require insurance as specified in the Home Building Act 1989

Owner Builders require Property Owner Builder s Permit issued by the Department of Fair Trading for all projects over \$5 000 In addition to this permit all projects valued in excess of \$12 000 may also require a contract of insurance under the provisions of the Home Building At 1989 as amended This requirement will take effect should the property owner offer the property for sale in the ensuing period of 7 years

Enquiries on any matters relevant to this section should be taken up with the Department of Fair Trading at Level 21 Astra House 227 Elizabeth Street Sydney (ph 133220)

LONG SERVICE LEVY (applies to all classes of buildings)

A Long Service Levy at 0.35% of the cost of works is payable on projects valued \$25 000 or more. This sum can be paid directly to the Long Service Payments Corporation or to Council acting as an agent to the Corporation. Partial exemption from the levy may be granted to non profit organizations, churches and to owner/builders. The levy may also be paid in instalments. Application forms for these exemptions are available from Council but all enquiries in this regard should be addressed to the Long Service Payments Corporation.

THE CONSTRUCTION CERTIFICATION CANNOT BE ISSUED UNLESS THE LONG SERVICE LEVY AND HOME BUILDING ACT 1989 INSURANCE (APPLICABLE TO RESIDENTIAL PROPERTIES) HAVE BEEN PAID OR EVIDENCE OF THE EXEMPTION PROVIDED TO COUNCIL.

PARTICULARS OF THE PROPOSAL

What is the area of the land (m ²)? 696 8 m²	Gross floor area of building (m ²) as proposed 190 675 m²
What are the current uses of all or parts of the building(s)/land? RESIDENTIAL	Location 11 PLATEAU RD, AVALON, 2107 Use RESIDENTIAL
Does the site contain a dual occupancy? NO	What is the gross floor area of the proposed addition or new building (sq metres)? 8.775 sqm NO CHANGE IN FOOTPRINT
What are the proposed uses of all parts of the building(s) land? RESIDENTIAL	Number of pre-existing dwellings 1
Number of dwellings to be demolished NIL	How many dwellings proposed? 1
How many storeys will the building consist of? 2	Will the new building be attached to the existing building? YES Will the new building be attached to any new building? N/A

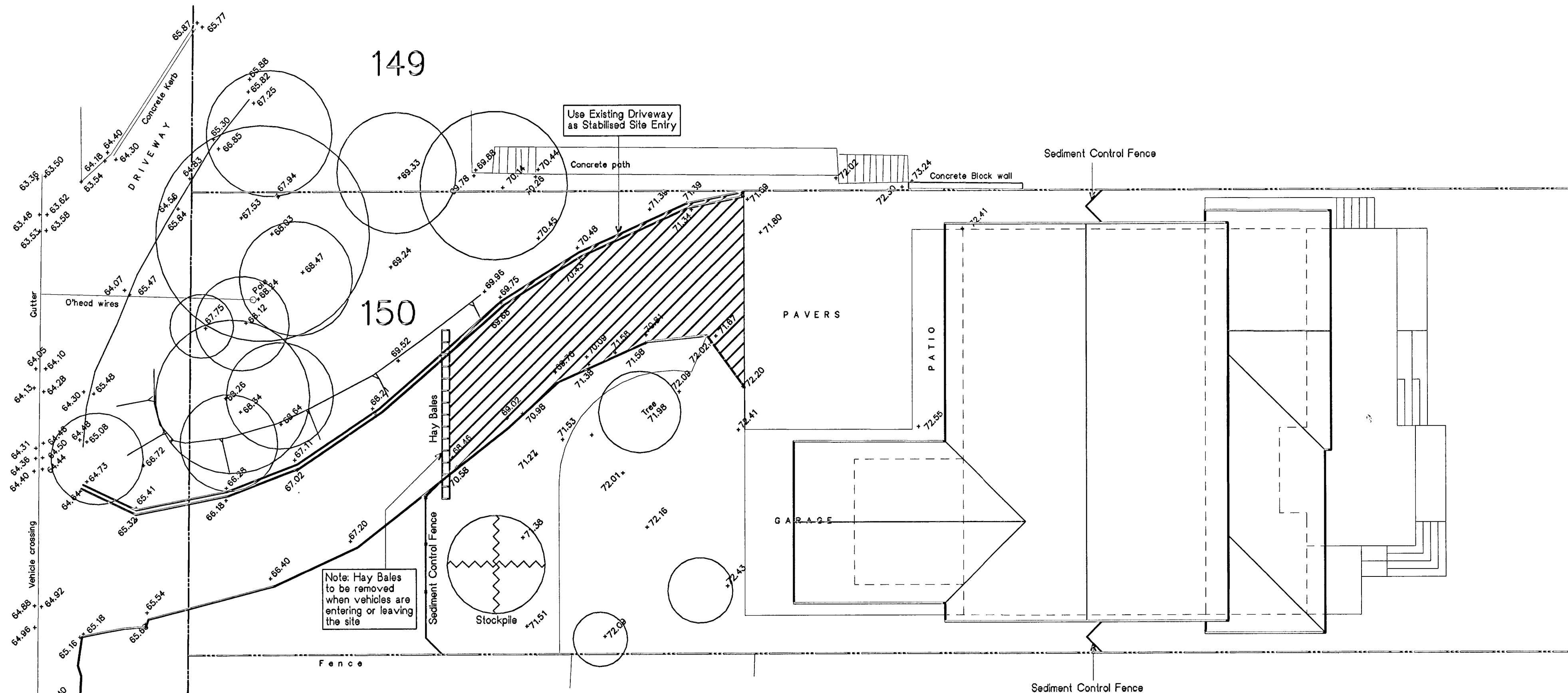
MATERIALS TO BE USED

The following information must be supplied for the Australian Bureau of Statistics

Place a tick (✓) in the box which best describes the materials the new work will be constructed of

WALLS		FLOOR		ROOF		FRAME	
Brick veneer	<input checked="" type="checkbox"/>	Concrete	<input checked="" type="checkbox"/>	Aluminium	<input type="checkbox"/>	Timber	<input type="checkbox"/>
Full brick	<input type="checkbox"/>	Timber	<input type="checkbox"/>	Concrete		Steel	<input checked="" type="checkbox"/>
Single brick	<input type="checkbox"/>	Other	<input type="checkbox"/>	Concrete tile	<input type="checkbox"/>	Other	<input type="checkbox"/>
Concrete block	<input type="checkbox"/>	Unknown	<input type="checkbox"/>	Fibrous cement	<input type="checkbox"/>	Unknown	<input type="checkbox"/>
Concrete/masonry	<input type="checkbox"/>			Fibreglass	<input type="checkbox"/>		
Concrete	<input type="checkbox"/>			Masonry/terracotta shingle	<input type="checkbox"/>		
Steel	<input type="checkbox"/>			Tiles	<input checked="" type="checkbox"/>		
Fibrous cement	<input type="checkbox"/>			Slate	<input type="checkbox"/>		
Hardiplank	<input type="checkbox"/>			Steel	<input type="checkbox"/>		
Timber/weatherboard	<input type="checkbox"/>			Terracotta tile	<input type="checkbox"/>		
Cladding-aluminium	<input type="checkbox"/>			Other	<input type="checkbox"/>		
Curtain glass	<input type="checkbox"/>			Unknown	<input type="checkbox"/>		
Other	<input checked="" type="checkbox"/> glass						
Unknown	<input type="checkbox"/>						

PLATEAU ROAD



Erosion & Sediment Control Plan (ESCP)
This drawing is in accordance with the requirements of the NSW Department of Land and Water Conservation's 'Urban Erosion and Sediment Control' manual.
Any vehicle leaving the site must be washed down on the 'Stabilised Site Entry' to remove any clay that may have become attached to the vehicle.
The road around the entry/exit site is to be swept at regular intervals to prevent sediment build up at the entry/exit point of the site.
1. Site works will not start until the erosion and sediment control works outlined in clauses 2 to 5, below, are installed and functional.
2. Entry and exit to the site will be confirmed to one stabilised location. Fencing will be used to restrict all vehicular movements to stabilised entrance. Stabilisation achieved by either:
a. Constructing a concrete driveway to the street.
b. Constructing a stabilised site access, according to the Stabilised Site Access Detail drawing.
3. Sediment control (see Typical Sediment Fence Plan, and Sediment Fence Section Detail) and barrier fences will be installed as shown on the ESCP with low flow channel bank (see Stabilised Site Entry).
4. Mesh and gravel sausage protection will be provided to protect gutter inlets near the allotment.
5. Topsoil will be stripped and stockpiled for later use in landscaping the site.
6. All stockpiles will be placed in the location shown on the ESCP and at least 2 metres clear of all areas of concentrated water flow and the driveway protected by site works.
7. Lands to the rear and sides of the allotment and on the footpath will not be disturbed during works except where essential e.g. drainage works across the footpath. Where work is necessary, they will be undertaken in such a way to leave the lands in a condition of high erosion hazards for as short a period as practicable. They will be rehabilitated as soon as possible. Stockpiles will not be placed on these lands and they will not be used as vehicle parking areas.
8. Approved bins for concrete and mortar slurries, paints, acid washings and litter will be provided and arrangements made for collection and disposal.
9. Guttering will be connected to the stormwater system as soon as practicable.
10. Topsoil will be respread and all disturbed areas will be rehabilitated within 20 working days of the completion of works.
11. All erosion and sediment controls will be checked at least weekly and after rain to ensure they are maintained in a fully functional condition.

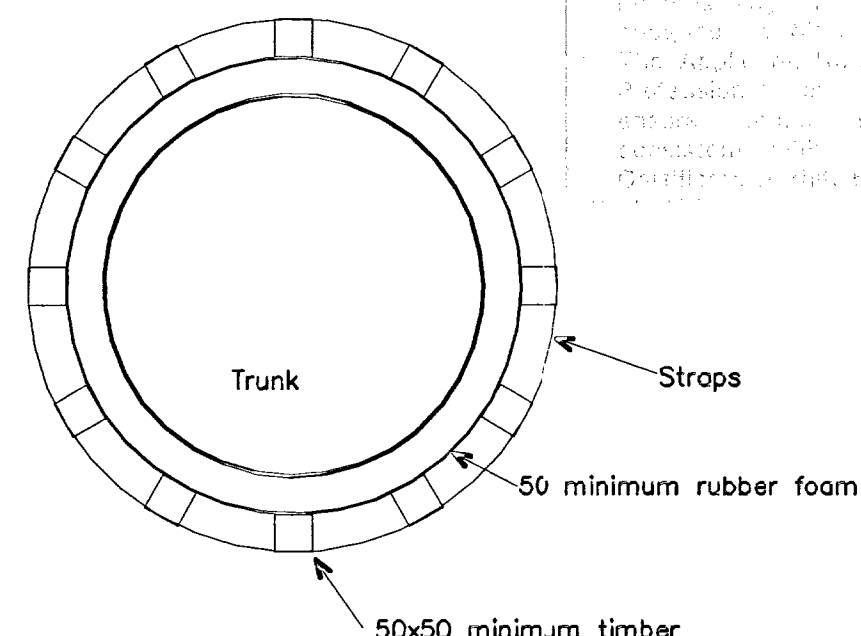
Gutter Protection
Provide protection to down hill Gutter inlets near the allotment by means of Sand bags or blue metal wrapped in geotextile fabric. When soil or sand builds up around this sediment barrier, the material should be relocated to the site for disposal.

Dust Control
Where excavating into rock, keep the surface moist to minimise dust. Erect dust screens around perimeter of the property. Prevent dust by covering stockpiles.

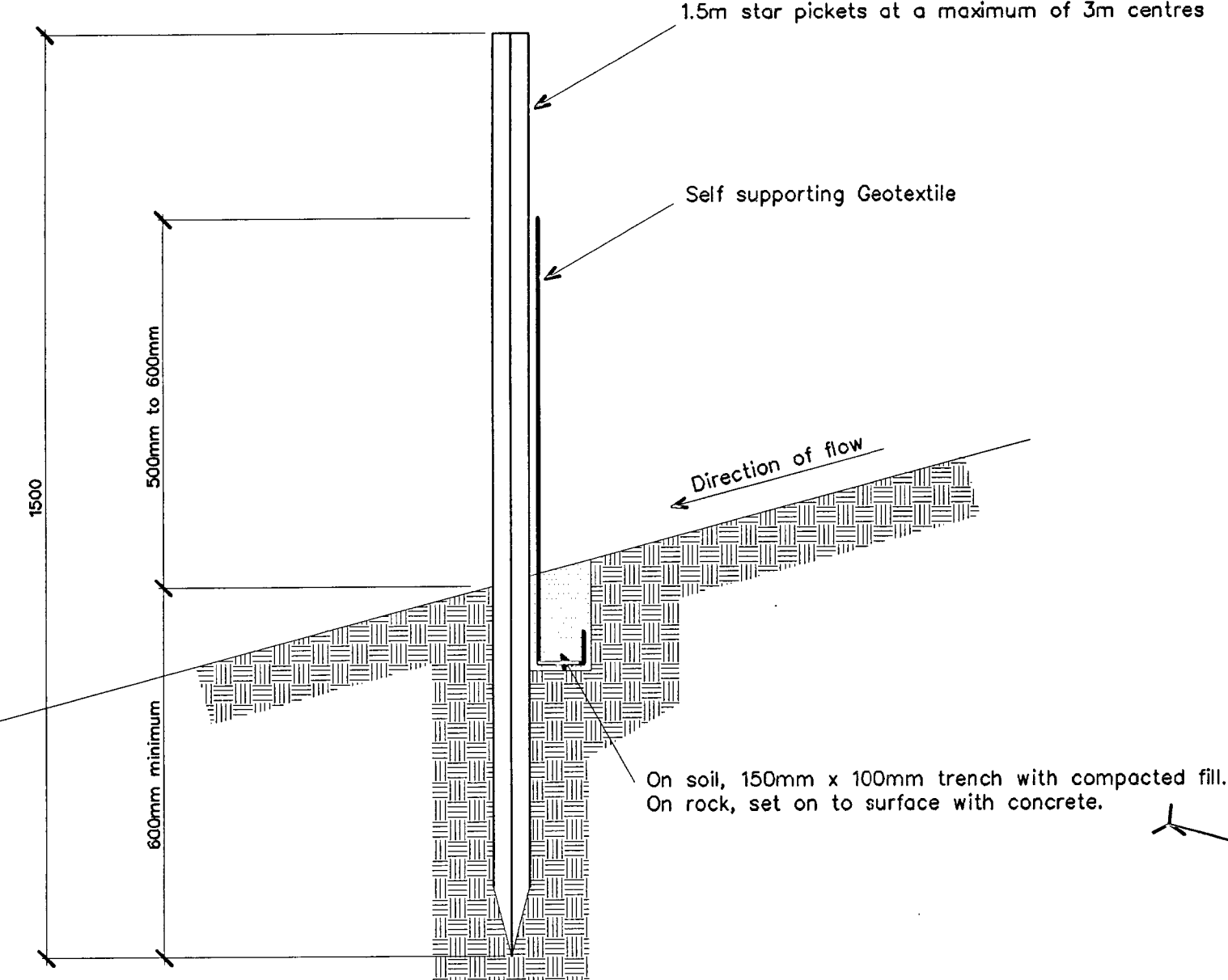
Site Access
Vehicular access to the site must be via a single entry point that is stabilised to prevent the tracking of sediment onto the roads and footpath. Soil, earth, mud, clay, concrete washing, paint or similar materials must be removed from the roadway, by means other than washing, on a daily basis. All clay or similar to be brushed or washed from vehicles before leaving site.

Stockpiles
All stockpiles are to be kept on-site where possible. Any materials placed on the footpaths or nature strips require council's permission. All stockpiles are to be placed away from the drainage line and street gutters. It is best to locate these on the highest part of the site if possible. Place waterproof covering over stockpiles. If required provide diversion drain & bank around stockpiles.

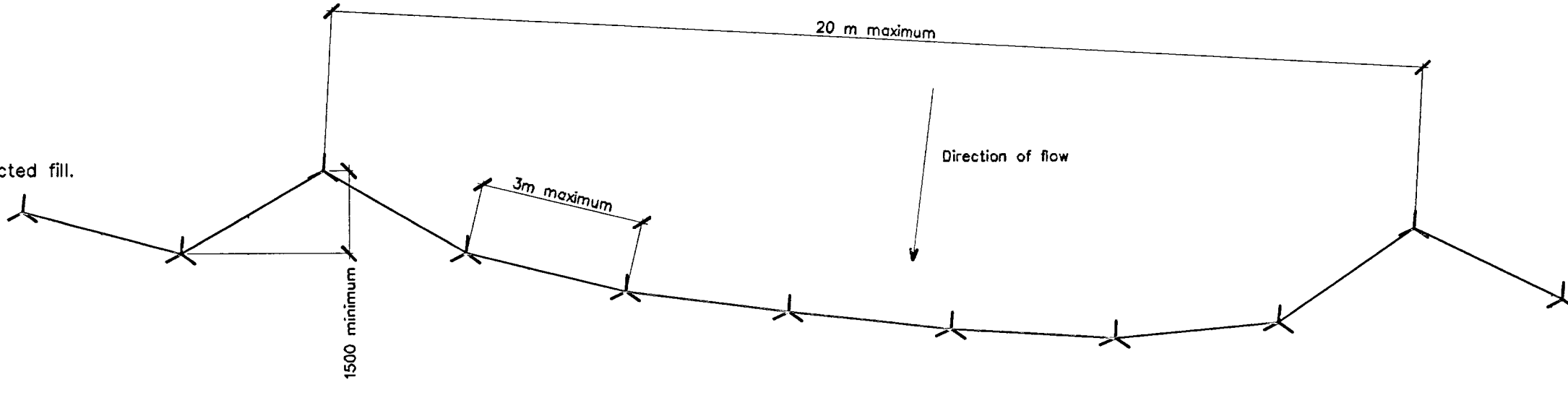
WARNING
This drawing is for information only. It is not to be used for construction purposes. The user must ensure that the design is suitable for the site conditions and that the materials and construction methods are appropriate for the site conditions. The user must also ensure that the design is in accordance with the relevant standards and codes of practice.



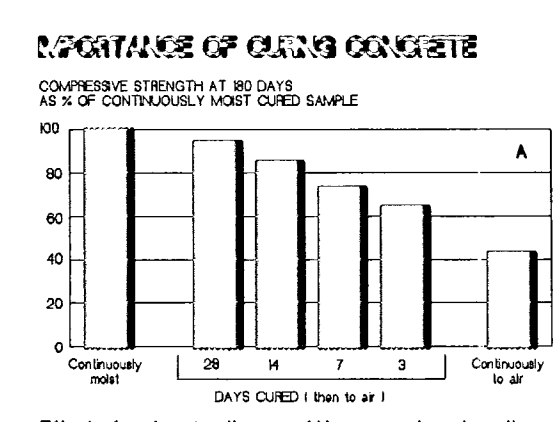
- Construction Notes:-
- Construct sediment fence as close as possible to parallel to the contours of the site.
 - Drive 1.5 m long star pickets into ground, 3m apart maximum.
 - Dig a 150mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
 - Backfill trench over base of fabric.
 - Fix self supporting geotextile to upslope side of post with wire ties or as recommended by geotextile manufacturer.
 - Join sections of fabric at a support post with a 150mm overlap.



SEDIMENT FENCE SECTION DETAIL
Scale 1:10



TYPICAL SEDIMENT FENCE PLAN
Scale 1:100



Pittwater Council

RECEIVED

OFFICIAL RECEIPT

22/11/2007 Receipt No 228925

To I W & E C LEVY

Appln- Reference	Amount
OLSL-Build	\$604
GL Rece	
1 X N°777/07	

Total	\$604 0
Amounts Tendered	
Cash	\$0 0
Cheque	\$604 0
Db/Cr Card	\$0 0
Money Orde	\$0 0
Agency Fee	\$0 0
Total	\$604 0
Founding	\$0 0
Change	\$0 0
Nett	\$604 0

Printed 18/03/2008 12 40 25
Cashier SBroune

Pittwater Council

OFFICIAL RECEIPT

18/03/2008 Receipt No 235907

To I W & E C Levy

11 plateau road
avalon nsw 2107

Applic Reference	Amount
GL Re OLSL-Buil	\$621 00
1 X N°777/07	

Total	\$621 00
Amounts Tendered	
Cash	\$0 00
Cheque	\$621 00
Db/Cr C-rd	\$0 00
Money Order	\$0 00
Agency Fee	\$0 00
Total	\$621 00
Founding	\$0 00
Change	\$0 00
Nett	\$621 00

Printed 18/03/2008 12 42 56
Cashier CLunna

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

Alterations and Additions

Certificate number A12193

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 Monday 18 June 2007

NSW GOVERNMENT
Department of Planning

Project address	
Project name	LEVY
Street address	11 PLATEAU Road AVALON 2107
Local Government Area	Pittwater Council
Plan type and number	Deposited Plan 16902
Lot number	150
Section number	0
Project type	
Dwelling type	Separate dwelling house
Type of alteration and addition	My renovation work is valued at \$100 000 or more but I am not installing a new pool (and/or spa)

A large, tilted rectangular stamp with a thick black border. Inside the border, the words "COUNCIL" and "COPY" are printed in a bold, sans-serif, uppercase font, stacked vertically. The stamp is tilted at an angle, matching the orientation of the document's text.

Fixtures and systems	Show on DA Plans	Show on CC/CDC Plans & specs	Certifier 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			

Construction	Show on DA Plans	Show on CC/CDC 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 above garage concrete (R0.6)	nil	
external wall framed (weatherboard, fibro, metal clad)	R1.30 (or R1.70 including construction)	
flat ceiling pitched roof	ceiling R2.50 (up), roof foil/sarking	dark (solar absorptance > 0.70)

Glazing requirements					Show on DA Plans	Show on CC/CDC 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 standard aluminium or timber frames and single clear or toned glass 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 Total system U values and SHGCs must be calculated in accordance with National Fenestration Rating Council (NFRC) conditions							✓
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						✓	✓
External louvres and blinds must fully shade the window or glazed door beside which they are situated when fully drawn or closed						✓	✓
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 no.	Orientation	Area of glass inc. frame (m2)	Overshadowing		Shading device	Frame and glass type	
			Height (m)	Distance (m)			
W1	E	1.92	0	0	external louvre/blind (adjustable)	standard aluminium single clear (or U value 7.63 SHGC 0.75)	
W2	E	1.92	0	0	external louvre/blind (adjustable)	standard aluminium single clear (or	

Glazing requirements						Show on DA Plans	Show on CC/CDC Plans & specs	Certifier Check
Window / door no.	Orientation	Area of glass inc. frame (m2)	Overshadowing		Shading device	Frame and glass type		
			Height (m)	Distance (m)				
W3	N	7.8	0	0	eave/verandah/ pergola/balcony >=900 mm	U value 7.63 SHGC 0.75) standard aluminium single clear (or U value 7.63 SHGC 0.75)		
W4	W	1.92	2.5	2.3	eave/verandah/ pergola/balcony >=600 mm	standard aluminium single clear (or U value 7.63 SHGC 0.75)		
W5	W	1.92	2.5	2.3	eave/verandah/ pergola/balcony >=600 mm	standard aluminium single clear (or U value 7.63 SHGC 0.75)		
W6	W	1.6	0	0	eave/verandah/ pergola/balcony >=600 mm	timber or uPVC single pyrolytic low e (U value 3.99 SHGC 0.4)		
W7	S	5.4	0	0	eave/verandah/ pergola/balcony >=900 mm	standard aluminium single clear (or U value 7.63 SHGC 0.75)		
W8	W	1.6	2.5	2.8	eave/verandah/ pergola/balcony >=900 mm	standard aluminium single clear (or U value 7.63 SHGC 0.75)		
W9	S	15.7	0	0	eave/verandah/ pergola/balcony >=900 mm	standard aluminium single clear (or U value 7.63 SHGC 0.75)		
W10	E	6.2	0	0	eave/verandah/ pergola/balcony >=600 mm	standard aluminium single pyrolytic low e (U value 5.7 SHGC 0.47)		

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

ET/mt
26 November 2007

Our Ref CMSC1286LevyLetter doc
Job No CMSC-1286

Mr & Mrs Ian & Evelyn Levy
11 Plateau Road
AVALON NSW 2107

Dear Sir / Madam

Re 11 Plateau Rd Avalon – Alterations and Additions

At your request we made a visit to the above to assess it structurally in the light of your proposal to extend the living/dining areas on the lower floor and installing a new study and terrace on the upper floor over the existing garage

We have conducted a visual inspection which covered only the structural elements involved in carrying the proposed extra loads from the additions. Investigation of other building elements or structures of the residence and the property was not requested and is not subject of this letter

On the basis of our inspection, we have formed the view that the existing walls and their foundations were structurally adequate to support loads from the proposed addition containing timber stud walls and steel/timber framed floor structure, as it was shown on the drawings prepared by Shimdesign Architectural Designers, dated July 2007, provided it is constructed in accordance with the structural drawing CMSC-1286 prepared by this office

The new works may cause some opening of existing cracks and formation of fine new cracks. In the event of such cracks occurring, we are of the opinion that they will not be structurally significant.

The Builder shall be responsible at all times for maintaining the refurbished building and the neighbouring structures in a stable and safe condition. Nothing shown or called for on the structural engineering drawing relieves the builder of his responsibilities in this regard

Yours faithfully
Tihanyi Consulting Engineers


Eva Tihanyi
BE MIEAust MACEAust CPEng

**COUNCIL
COPY**



GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO 2 – To be submitted with detailed design for construction certificate

Development Application for	<u>MR & MRS I & E LEVY</u>
Name of Applicant	
Address of site	<u>11 PLATEAU RD, AVALON</u>

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

I EVA TIHANYI on behalf of TIHANYI CONSULTING ENGINEERS P/L
(insert name) (trading or company name)

on this the 04 NOV 2007
(date)

certify that I am a Structural or Civil Engineer as defined by the Geotechnical Risk Management Policy for Pittwater. 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.

Geotechnical Report Details

Report Title	<u>RISK ANALYSIS FOR 11 PLATEAU RD AVALON</u>
Report Date	<u>13 JULY 2007 VS 24585</u>
Author	<u>J D HODSON</u>

Structural Documents list

<u>STRUCTURAL DETAILS CMSC-1286</u>

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.

EVA TIHANYI
(name)

E Tihanyi
(signature)

Declaration made by Geotechnical Engineer or Engineering Geologist in relation to Structural Drawings

I prepared and/or technically verified the abovementioned Geotechnical Report as per Form 1 dated 10/7/07 and now certify that I have viewed the above listed structural documents prepared for the same development. I am satisfied that the recommendations given in the Geotechnical Report have been appropriately taken into account by the structural engineer in the preparation of these structural documents. I am 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

Chartered Professional Status

Membership No

J D Hodson
JACK HODGSON
MENSCFIE AUST
149 788

**COUNCIL
COPY**

SPECIFICATION

of works for the erection of

Alterations & Additions to an

Existing Dwelling

for

Mrs E Levy

at

lot no *150* D.P.no *16902*

11 Plateau Rd, Avalon

SPECIFICATION

Revision 18

COUNCIL
COPY

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 ☐
- F/C SHEET ☐

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 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.

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BASIX as amended (NSW only)

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SPECIFICATION

FOR THE ERECTION AND COMPLETION OF BUILDING AT LOT No 150

ADDRESS 11 Plateau Rd
MUNICIPALITY / SHIRE / CITY Pittwater

FOR Mrs E Levy

DP No 16902

TOWN/AREA Avalon

POST CODE 2107

Hereinafter called the Proprietor

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 are performed by the Builder 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 manufacturers 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 extra amount above the accepted price will be allowed because of work arising due to neglect of this precaution or assumptions made in respect of levels or ground slopes

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 to be agreed and recorded by the proprietor and the builder/contractor

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

EXCAVATOR - BCA part 3 1

EARTHWORKS AND EXCAVATIONS

All earthworks shall be designed and constructed in accordance with the 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 0 and part 3 2. Drainage in reactive soil areas must comply with the requirements of the clauses

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

CONCRETER - 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 by means of mechanical vibrators or rodding and spading to ensure maximum compaction. Reinforcing mesh fabric to AS 1304 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

At completion of footing excavations fill to the underside of floor slab with approved hardcore so as to provide a minimum depth of 100mm. Such hardcore may be carried under minor interior footings if required. Cover areas as noted on drawings with waterproof membrane allowing sufficient at perimeters to extend membrane up face of footing to terminate under external brickwork

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

FORMWORK All formwork for concrete shall be in accordance with AS 3610

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 270 110	mm 400x300 300x300	mm 400X400 400x400
Brick two storey with external wall height not exceeding 7200mm excluding any gable internal wall height not exceeding 7200mm use 11TM reinforcement Top and Bottom	270	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 3

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 antipac 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

PRESTRESSED BEAM FLOORING

Prestressed 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

Seating for beams shall be true to line and level before positioning beams commences to ensure even uniform bearing and such seatings shall be not less in length than shown on the drawing or as follows

Brickwork bearing not less than 100m	A A C lightweight concrete
Steel bearing not less than 70mm	external walls bearing not less than 140mm
Concrete bearing not less than 75mm	Internal walls full bearing across width of wall

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

BRICKLAYER - (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 perpends 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 6

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

SLEEPER PIERS BCA table 3 2 5 2

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

To be minimum of 230 x 110 spaced at not more than 1 8m centres up to 1200 high to support floor bearers and at similar centres to stiffen walls supporting concrete slabs Piers over 1200 high to be 230 x 230 All engaged piers to be anchored to walls with specified wall ties

VENEER WALLS BCA 3 3 1 2

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 timber 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 1 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 22000mm 2/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 1

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 AND 3 3 5

Provide galvanised mild steel angle iron or bars of the following sizes over openings to each 110mm thickness (or part thereof) of brickwork all having a minimum of 110 bearing each end All lintel angles to be placed with the longer leg vertical

UPPER STOREY	EXTERNAL WALLS	INTERNAL WALLS
Up to 1210mm span	One 76mmx10mm bar	One 76mmx10mm bar
Up to 1570mm span	One 76x51x10 angle	One 76x51x10 angle
Up to 2410mm span	One 127x76x10 angle	One 127x51x10 angle
Up to 3010mm span	One 152x89x10 angle	One 152x89x10 angle

LOWER STOREY OR BASEMENT	EXTERNAL WALLS	INTERNAL WALLS
Up to 910mm span	One 76x76x10 angle	One 76x76x10 angle
Up to 1210mm span	One 102x76x10 angle	One 127x76x10 angle
Up to 1810mm span	One 152x76x10 angle	One 152x89x10 angle
Up to 2410mm span	One 152x102x10 angle	One 152x102x10 angle

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 Upper surface of hearth not to slope away from grate 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

Heating appliances installed in brick or blockwork surrounds shall be in conformance with AS 1691 or AS 2918 as applicable

DAMPCOURSE 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

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 Bushfire Clauses 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 Ties to be embedded a minimum of 50mm in each leaf Keep ties clean of mortar droppings and cavity clear as work proceeds

STRAPS

BCA part 3 3 3 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

BRICKLAYER (Concrete brick) A S 1346 - BCA part 3 3 1

MORTAR For normal conditions mortar 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 3400 (BCA parts 3 3 1 6 and 3 3 1 7) The substitution of other plasticisers for lime is not recommended Under no circumstances should the proportion of cement be increased

GENERALLY

Bricks are to be dry when laid in wall When delivered on site bricks should be stacked openly and off wet ground and where practicable to be covered in wet weather Footing courses to be grouted solid All brickwork to be properly bonded laid on full bed and all perpends filled

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 U N O

JOINT REINFORCEMENT AND CONTROL JOINTS BCA part 3 3 1 8 and 3 3 1 9

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

GENERALLY

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 perpends The first course must be made true and level using a normal thick bed mortar with thin bed adhesive to fully seal the perpends 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

CONTROL JOINTS BCA part 3 3 1 8

Control joints should be built into walls at no greater than 8m centres and at locations in accordance with the recommendations of the manufacturer Masonry expansion ties shall be installed across the joint every third course

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

GENERALLY 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 weak Masonry units shall not be dampened prior to laying but shall be laid in dry state

MORTAR BCA PARTS 3 3 1 6 AND 3 3 1 7

Mortar shall comply with AS123 in all respects 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

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

PATTERNS AND BOND

All walls shall be built plumb true and level to the thickness shown on the plans and with the pattern indicated or running bond U N O

CONTROL 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

JOINT REINFORCEMENT BCA part 3 3 2 3

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 control and expansion joints where a slip joint must be provided

BRACING DURING CONSTRUCTION

Masonry walls constructed in locations where they may be exposed to highwinds 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 to be left exposed clean Mortar smears shall be allowed to dry for a short period and shall then be promptly removed by trowel or wire 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 down all scaffolding and debris removed and the wall left in good clean condition

BUSHFIRE PRONE AREAS – BCA 3 7 4

Performance requirements are satisfied for a class 1 building located in a designated bushfire prone area if constructed in accordance with AS3959

- N S W Variation
- | | |
|----|--|
| | (a) AS3959 – Construction of buildings in bushfire prone areas excluding section 2 of that standard which is replaced by Planning for Bushfire Protection appendix 3 – Site Assessment for Bushfire Attack |
| OR | (b) subclause (a) as modified by development consent following consultation with NSW Rural Fire Service under sec 79B of the Environmental Planning and Assessment Act 1979 |
| OR | (c) subclause (a) as modified for development consent with a bushfire authority issued under section 100B of the Rural Fires Act 1997 |

CONSTRUCTION OF CLASS 1 BUILDINGS as per acceptable methods in BCA clause 3 7 4 1 (for information only)

BUILDING COMPONENT	BUSH FIRE ATTACK CATEGORY		
	MEDIUM	HIGH	EXTREME
Flooring system	(a) Concrete slab on ground (b) Suspended concrete floor (c) Framed floor with all joists and bearers above 600mm above ground (d) Framed floor where timbers are less than 600mm above ground (i) All timbers fire retardant OR (ii) subfloor space fully enclosed as per the wall above OR (iii) fully enclosed with non combustible material or 6mm thick F R cement sheets	As per medium requirements	As per medium requirements except that where bearers and joists are greater than 600mm above ground and not enclosed all timbers must be fire retardant treated or sheeted underneath with non combustible material
Supporting posts piers stumps poles (except where enclosed as per flooring systems)	(a) Non combustible material (b) Fire retardant treated timber to 400mm above ground (c) Timber mounted on 75mm high stirrups	As per medium requirements	As per medium requirements except that all timber is to be fire retardant treated
External Walls	(a) Masonry concrete or earthwall (b) Framed wall with (i) sarking having a flammability index not more than 5 OR (ii) an insulation material of that standard (c) Timber logs with all joints between the logs planed and sealed (d) Combustible sheet cladding if cladding within 400mm of ground is covered by non combustible sheet material	As per medium requirements except that (a) P V C cladding must not be used and (b) Timber wall cladding must be fire retardant treated	As per high attack category
Windows	The openable part of a window must be screened with aluminium steel or bronze corrosion resistant mesh with 1 8mm max aperture size	As per medium requirements except that (a) timber must be fire retardant treated except if enclosed by non combustible shutters (b) Leadlight windows must be protected with non combustible material or toughened glass (c) Window screens must not be aluminium	As per high requirements except that windows not protected by non combustible shutters shall be glazed with toughened glass
External doors	External doors must be fitted with (a) weather strips or draught excluders to prevent build up of burning debris and (b) tight fitting screen doors with corrosion resistant mesh as per windows	As per medium requirements except that (i) aluminium mesh must not be used and (ii) leadlight panels must be protected by non combustible shutters or panels	As per high bushfire requirements except that (a) Timber doors must be fire retardant treated OR (b) Protected by non combustible shutters OR (c) Solidcore doors min 35mm
Vents and weepholes	Vents and weepholes must be protected by spark guards of corrosion resistant 1 8mm max mesh size aluminium steel or bronze	As per medium category except that aluminium mesh must not be used	As per high category requirements
Roof covering eaves and fascias	(a) Timber shakes or shingles are not allowed (b) Sheet roofing must be metal or fibre reinforced cement (c) Seal gaps under corrugations at wall or eaves line by (i) fully sarking roof OR (ii) corrosion resistant mesh as per weepholes or profiled metal sheet or mineral wool (d) Hip and ridge capping must be preformed with no gaps or gaps sealed as per (c) (e) Roof wall junctions must be sealed by (i) fascia and eaves lining OR (ii) sealing to u/side of roofing at wall line with non combustible material (f) Tiled roofs must be fully sarked (including ridge) with sarking directly under tiling battens All sarking must have Flammability Index less than 5	As per medium requirements except that (a) all roof sheeting must be non combustible and sarked and (b) Timber eaves lining and/or trimming strips must be of fire retardant treated timber and (c) Fascias must be non combustible or fire retardant treated	As per high category requirements except that (a) Fibre reinforced cement or aluminium sheet must not be used for roof sheeting or fascias and (b) Aluminium must not be used for eaves linings
Roof lights	(a) rooflight penetrations and shafts must be sealed with non combustible sleeve and linings (b) A rooflight may be of metal framed thermoplastic provided that the diffuser at ceiling level is wired or toughened glass in a metal frame (c) Vents in rooflights must have a steel or bronze mesh screens with 1 8mm max aperture size	As per medium requirements except that (a) roof light glazing must be wired glass (Thermo plastic or toughened glass must not be used)	As per the requirements for high category attack
Roof Ventilators	All components of roof ventilators including rotary ventilators must be of non combustible materials and ventilation openings must be protected by 1 8mm max aperture size non corrosive steel or bronze screens		
Gutters and downpipes	Must be constructed of non combustible materials including materials or devices to stop leaves collecting or clogging		
Verandah and decks	Supporting posts columns and piers and external walls must comply with previous requirements as per this table for all categories If sheeted or tongue and grooved solid flooring is used the flooring system must comply with previous requirements for flooring systems		
	(a) spaced timber deck flooring (i) gaps in deck strips must not be less than 5mm (ii) the perimeter of the deck must not be enclosed (iii) The deck flooring must be separated from main building so fire will not spread	(a) spaced timber deck flooring must be fire retardant treated	(a) as per high category except that all timber (including balustrades) must be fire retardant treated or all materials must be non combustible

- NOTES**
- Fire retardant timber must comply with requirements of AS/NZS3837 Some timber varieties naturally meet the Ignition and Heat Radiance Parameters when tested to ASTM D2898 Method B without having to be fire retardant treated
 - External timbers in a verandah patio deck or the like are regarded as protected also if they are under a roof or similar structure that projects to a line at an angle of 30° off the vertical from the base of the wall
 - Where roofing systems are fully sarked mesh protected vents may be necessary to reduce condensation in some areas
 - Where sub floor areas are enclosed termite protection must not be compromised

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 services 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 BCA part 2 6 does not apply in N S W) Map of Australian Climate Zones for Thermal Design can be viewed on the Australian Building Code Boards 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 downward through a roof or a combination of both

THERMAL RESISTANCE minimum TOTAL R Value required for various climatic zones											
BUILDING COMPONENT	CLIMATE ZONE										
ROOFS	1	2	Altitude less than 300	2	Altitude 300m or more	3	4	5	6	7	8
Direction of heat flow	Downwards			Downwards and upwards			Upwards				
Minimum Total R Value required	2.2	2.2		2.5		2.2	3.0	2.7	3.2	3.8	4.3

BUILDING COMPONENT	CLIMATE ZONE							
WALLS	1	2	3	4	5	6	7	8
Minimum Total R – Value required	14			17	14	17	19	28
QLD Variation minimum Total R Value	10			n a	14		n a	

Special Condition apply to two storey houses

FLOORS	CLIMATE ZONES	6	7	8	Enclosed perimeters and heated slab floors have special requirements Consult authorities
Suspended floors without heating and unenclosed around perimeter		1 0	1 0	2 5	

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 abut 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		2 2	2 5	2 2	3 0	2 7	3 2	3 8	4 3		
FLAT ROOF SKILLION ROOF AND CATHEDRAL CEILING – CEILING LINING UNDER RAFTERS											
TILED	Total R Value of roof materials	0 4 downwards	0 4 down and up	0 40 upwards							
	Minimum R Value of insulation to add	1 8	2 1	1 8	2 59	2 29	2 79	3 39	3 89		
FLAT ROOF SKILLION ROOF AND CATHEDRAL CEILING – CEILING ON TOP OF EXPOSED RAFTERS											
TILED	Total R Value of roof materials	0 4 downwards	0 41 down and up	0 41 upwards							
	Minimum R Value of insulation to add	1 79	2 09	1 79	2 59	2 29	2 79	3 39	3 89		
FLAT CEILING WITH PITCHED ROOF – CAVITY ROOF SPACE											
TILED	Total R Value of roof materials	0 7 downwards	0 35 down and up	0 35 upwards							
	Minimum R Value of insulation to add	1 5	2 15	1 85	2 65	2 35	2 85	3 4	3 95		
FLAT ROOF SKILLION ROOF AND CATHEDRAL CEILING – CEILING LINING UNDER RAFTERS											
METAL	Total R Value of roof materials	0 38 downwards	0 35 down and up	0 39 upwards							
	Minimum R Value of insulation to add	1 82	2 12	1 82	2 61	2 31	2 81	3 41	3 91		
FLAT ROOF SKILLION ROOF AND CATHEDRAL CEILING – CEILING LINING OF TOP OF EXPOSED RAFTERS											
METAL	Total R Value of roof materials	0 37 downwards	0 37 down and up	0 39 upwards							
	Minimum R Value of insulation to add	1 83	2 13	1 83	2 61	2 31	2 81	3 41	3 91		
FLAT CEILING WITH PITCHED ROOF – CAVITY ROOF SPACE											
METAL	Total R Value of roof materials	0 5 downwards	0 4 down and up	0 4 upwards							
	Minimum R Value of insulation to add	1 7	2 1	1 8	2 6	2 3	2 8	3 4	3 9		

A roof must achieve the minimum Total R Value specified In Climate Zones 1 2 and 3 pitched roof material 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

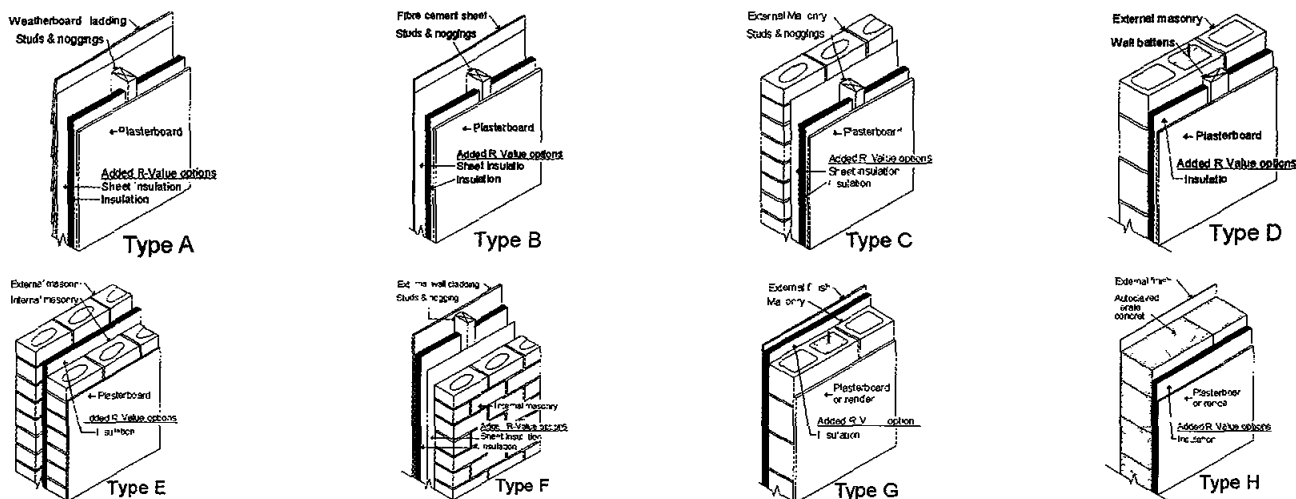
Slate (dark grey)	0 9			Light Grey	0 45
Red Green	0 75	Zinc Aluminium (dull)	0 55	off white	0 35
Yellow Buff	0 6	Galvanised steel (dull)	0 55	Light Cream	0 3

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 to be shaded by a verandah balcony carport eaves and gutter or the like 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

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 3,5	4 6	7	8
	Minimum required Total R – Value for Walls	1 4	1 7	1 9	2 8
(A) Weatherboard minimum 70mm Timber Frame	Total R Value of Wall Materials	0 47			
	Minimum R Value of insulation to add	0 93	1 23	1 43	2 33
	Total R Value of Wall Materials	0 4			
(B) Cement or Metal Sheet 70mm timber frame	Minimum R Value of insulation to add	1 0	1 3	1 5	2 4
	Total R Value of Wall Materials	0 54			
	Minimum R Value of insulation to add	0 86	1 16	1 36	2 26
(C) Clay Masonry Veneer minimum 110mm Veneer	Total R Value of Wall Materials	0 52			
	Minimum R Value of insulation to add	0 88	1 18	1 38	2 28
	Total R Value of Wall Materials	0 67			
(D) Concrete Block Masonry minimum 140mm Masonry	Minimum R Value of insulation to add	0 73	See note above		
	Total R Value of Wall Materials	0 5			
	Minimum R Value of insulation to add	0 9	1 2	1 4	2 3
(E) External insulated Clay Masonry Minimum 110 mm masonry	Total R Value of Wall Materials	0 48			
	Minimum R Value of insulation to add	0 92	1 22	1 42	2 32
	Total R Value of Wall Materials	1 73			
(G) External insulated Corner Masonry minimum 140mm thick	Minimum R Value of insulation to add	Nil	Nil	Nil	1 07

SEE NEXT PAGE FOR DIAGRAMS OF THE ABOVE WALL TYPES



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

CARPENTER

GENERALLY

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 by reference 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.

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.

ANT CAPS

To all brickwork and piers, at the level of underside of floorbearers, and 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 loadbearing 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.

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.

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.

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	2/90 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	200 x 38	200 x 50	175 x 50	175 x 50	175 x 45	140 x 45	140 x 45	140 x 35
	Overhang	750	750	750	750	750	750	750	750
3600	600	250 x 50	225 x 50	225 x 50	200 x 50	240 x 35	170 x 45	170 x 45	170 x 35
	Overhang	750	750	750	750	750	750	750	750
4200	600	275 x 50	275 x 50	250 x 50	250 x 50	240 x 45	240 x 35	190 x 45	190 x 45
	Overhang	750	750	750	750	750	750	750	750
4800	600	275 x 75	275 x 75	300 x 50	275 x 50	290 x 35	240 x 45	240 x 35	240 x 35
	Overhang	750	750	750	750	750	750	750	750
5400	600	--	300 x 75	300 x 75	275 x 75	----	290 x 35	290 x 35	240 x 45
	Overhang	--	750	750	750	--	750	750	750
Sheet Roof Ceiled									
3000	900	175 x 50	175 x 50	175 x 50	150 x 50	140 x 45	140 x 35	120 x 45	120 x 45
	Overhang	750	750	750	750	750	750	750	750
3600	900	225 x 50	200 x 50	200 x 50	200 x 50	170 x 45	170 x 35	140 x 45	140 x 45
	Overhang	750	750	750	750	750	750	750	750
4200	900	250 x 50	250 x 50	225 x 50	225 x 50	240 x 35	190 x 45	170 x 45	170 x 45
	Overhang	750	750	750	750	750	750	750	750
4800	900	300 x 50	275 x 50	275 x 50	250 x 50	240 x 45	240 x 35	190 x 45	190 x 45
	Overhang	750	750	750	750	750	750	750	750
5400	900	300 x 75	275 x 75	300 x 50	275 x 50	290 x 35	240 x 45	240 x 35	240 x 35
	Overhang	750	750	750	750	750	750	750	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 8, 3 4 3 11, 3 4 3 19, 3 4 3 20 and 3 4 3 21

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 A single diagonal timber or metal section brace as per figure (C).
- 3 A 900mm minimum wide panel of structural plywood as per figure (D).

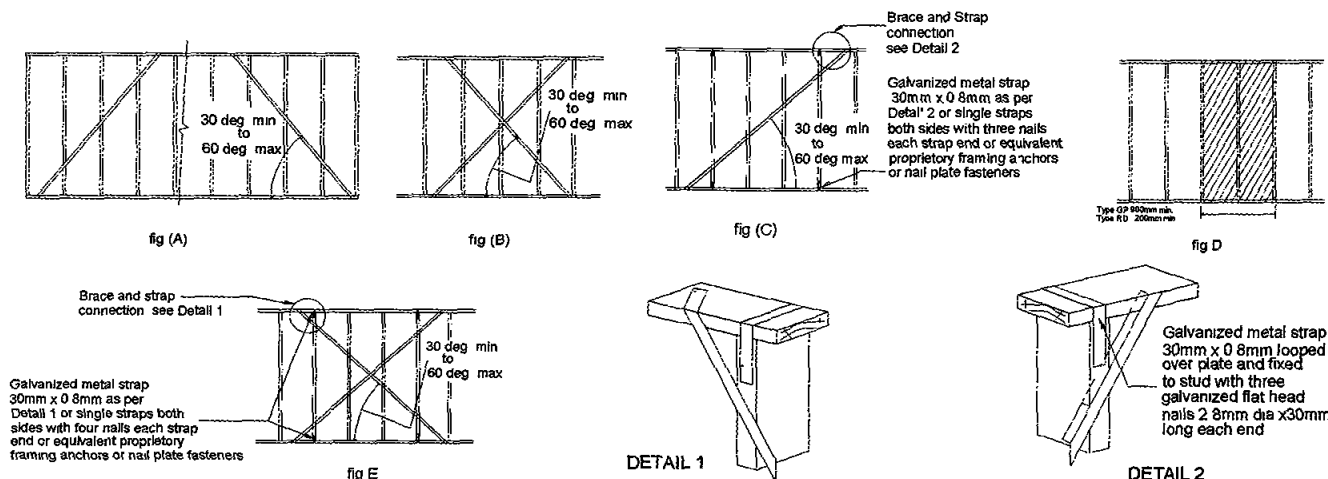
Type A Bracing – Pair of diagonals from each end of wall		
Timber	Metal Section	Tensioned Straps
50mm x 19mm for studs up to 2.7m long 75mm x 19mm for studs over 2.7m long Fixing: galvanised flat head nail 2.8mm dia x 50mm long to each plate and stud	18mm x 16mm x 1.2mm min galvanised angle brace fixed 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 8, 3 4 3 9 and 3 4 3 18

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 may be fabricated into frames and/or trusses in the shop or on site 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. Other fastening such as carbon arc welding, self tapping bolts and screws or blind rivets of adequate strength may be used. 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 33 dia flanged holes in studs and nogginns where required. 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.

STEEL WORKER - BCA part 3 4 4

GENERALLY

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

PURLINS AND GIRTS

To roof and walls of building provide purlins and girts according to engineers details

ROOFER AND SHEETER

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

ROOFER 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 AS1736. 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 AS1757 and AS1758 and to be produced by manufacturers who provide a comprehensive guarantee and fix in accordance with AS1787. 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 AS1611 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 manufacturers 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.

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 AS1736 for pliable roof sarking and/or AS1903.04 for reflective foil laminates. All installations must comply with the requirements of BCA part 3.7.4 in bushfire prone areas.

FLOORING - BCA part 3 4 3 4

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 BCA tables 3 4 3 2 and 3 4 3 3

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 AS1860 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, well ventilated and the building completely weatherproof prior to fixing of the floor.

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.

ELECTRICIAN

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.

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 lending 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 dados 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 or other 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 WALL 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 W.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 FIXER

CEILINGS 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/joints 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.

PLASTERER

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.

GENERALLY Point up all flashings externally with cement mortar and make good as required after other trades.

JOINER

GENERALLY

Joinery timber is to be of durable species seasoned and free from those defects which 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.

JAMB LININGS AND DOORS

1 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.

2 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 AS2146 47 for timber windows.

STAIRS AND HANDRAILS 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. Vertical clearances above stairs shall be 2000mm min. to soffit of floor or structure above when measured vertically above nose of tread. 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 125mm 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 1 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.

PLUMBER AND DRAINER

EAVES 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.

VALLEYS

To be 0.6mm thickness galvanised steel 450mm wide and fixed to valley boards with edge beaded well lapped and soldered or silicone jointed.

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.

BATHROOM FLOOR

Provide a 50mm grating to overflow outlet in bathroom floor. Connect waste to system or install dry waste if approved.

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 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.

GAS SERVICE

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

HEATING APPLIANCES Domestic type Oil, Gas and Solid Fuel heater installations shall comply with AS2918. Domestic solid fuel burning appliances – Installation or AS1691. Rules for installation of domestic Oil Fired appliances as applicable. 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 pipes or P.V.C. 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 sewered 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 sewered 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 tank, Detention device, Infiltration device 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.

TILELAYER

GENERALLY

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 shower recess to a height of 1800mm
To bath recess to a height of 1350mm	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.

PAINTER

GENERALLY

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 before fixing, 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.

GLAZIER 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

Where a building is 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 5 7 2. Where snow loads may be applied to a building design according to AS1170 3 is required (see BCA 3 11 3).

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)

This is a planning tool that measures the performance of a new dwelling (residential) by comparing its potential to consume less mains water supply and energy than an existing average home.

Sustainability Indices 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 an average of 36% reduction in Greenhouse Gas emissions can be achieved by dwelling design and sustainability features incorporated. These features may include design elements such as recycled water, rainwater tanks, ***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 Development Application. Complying Development Certificate and Construction Certificate applications for all of NSW for new homes and from 1 October 2006 for some alterations and additions.

Alterations and additions costing less than \$100,000 will be exempt from BASIX requirements till 1 July 2007, from then additions/alterations costing more than \$50,000 will be required to comply with BASIX for the additions/alterations only. Large swimming pools will not be exempt.

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.

From 1 July 2006 the BASIX energy target will vary depending on the location and type of home being built.

Energy zones across NSW have the following targets: Zone 1 – 40, Zone 2 – 35, Zone 3 – 25 as shown on the map in the BASIX Website.

Extracts from BASIX are reproduced by courtesy of DIPNR.

Information shown in this specification is intended as a guide only to the requirements of BASIX. Applicants for DACC and CDC must submit a BASIX Certificate that can be generated in the Department of Planning website www.basix.nsw.gov.au

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.

A refrigerator space is well ventilated if:

- The refrigerator would 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 by the installation of a greywater re-use system.
- Minimise the adverse impact on the amenity of the premises and surrounding land.
- Provide for the reuse of resources.

GREYWATER DIVERSION DEVICES (GDD)

A greywater diversion device must be installed in accordance with the most recent edition of NSW Health's Greywater reuse in sewered single domestic premises.

DOMESTIC GREYWATER TREATMENT SYSTEMS (DGTS)

- A domestic greywater treatment system that collects, stores, treats and may disinfect all or any of the sources of greywater must be either:
- A greywater treatment system device that is accredited by NSW Health in accordance with the DTGS Accreditation Guideline as amended from time to time, or
- An aerated wastewater treatment system (AWTS) accredited by NSW Health in accordance with the NSW Health's AWTS Guidelines as amended from time to time, or
- A facility that is purposely designed for a particular premises and approved in accordance with the Local Government (Approvals) Regulation 1999 as amended from time to time.

GREYWATER RE USE STANDARDS

Greywater must meet the requirements outlined in the most recent edition of NSW Health's Greywater reuse in sewered single domestic premises.

THERMAL COMFORT

INFORMATION FROM THE DATA INPUT CHECK LIST CAN BE ACCESSED ON BASIX WEBSITE. What's New BASIX KNOWLEDGE BASE

OBJECTIVES

- To maintain consistency between the assumptions made within the BASIX tool and the built outcome.
- To ensure an adequate level of thermal performance for the building fabric.
- To provide applicants, local government, principal certifying authorities and accredited certifiers with the technical requirements relating to commitments made in BASIX.

PERFORMANCE REQUIREMENTS

CAN BE ASSESSED BY THREE DIFFERENT METHODS

Option 1 **RAPID** compliance can be tested by meeting conditions listed in 10 questions within the BASIX Data Input checklist

NOTE RAPID method is only for simple single storey homes (usually) brick veneer dwellings common in regional NSW and parts of Sydney

Option 2 **DO IT YOURSELF (D I Y)** Series of tick box answers questions on Construction type details of floors walls ceilings roof windows and skylights cross ventilation (See data input checklist for single dwellings)

Option 3 **SIMULATION METHOD** Assessments of the thermal performance of the dwelling undertaken through the Simulation method within BASIX tool are to be in accordance with the BASIX Thermal Comfort Protocols Assessments are to be conducted by an accredited assessor using approved software

PRECONDITIONS

(a) The total area of all skylights must not occupy more than 2% of the gross floor area

CONSTRUCTION

(a) Walls

- 1 Wall types When a wall type is selected the properties of the materials must be such that the required minimum R value of the total system is achieved as stated in the Required Insulation and Roof Colours section of the BASIX Do It Yourself option
- 2 Wall areas The wall area is measured from the internal face of the external wall It excludes the area of walls adjacent to garages enclosed sub floor zones but includes walls of storerooms laundries and party walls

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

- 1 For the purposes of the BASIX Thermal Comfort D I Y method the orientations of glazed areas are defined as the following compass sectors NORTH NORTH EAST EAST SOUTH EAST - SOUTH SOUTH WEST WEST NORTH WEST

(b) Glazing and skylight types

- 1 Glazing types selected within the BASIX Do It Yourself method or on an assessor certificate if using the BASIX Simulation method must have the characteristics nominated in Appendix 1 Glazing and skylight characteristics (Available on BASIX website)

SHADING

(a) Eaves and projections

- 1 May include an eave horizontal opaque projection awning or pergola that will block solar gain for the length of the required projection
- 2 Materials/construction The device shall be made of a durable material suitable for external use
- 3 The projection is measured horizontally from the face of the wall/building The measurement may include fascias and/or gutters which are fixed and provide shading to the glazing
- 4 The eave/projection must be located such that the outside edge of the projection is no greater than 2400mm vertically above the sill of the glazing system or a proportionally equivalent projection

(b) Vertical adjustable external shading

- 1 An adjustable shading device may comprise of shutters louvers or panels
- 2 Materials/construction The device should be made of a durable material suitable for external use and must be able to be readily operated either manually mechanically or electronically by the building occupants
- 3 An adjustable shading device must comply with (d)(1) and (d)(2)

(c) Vertical fixed external shading

- 1 A fixed shading device may comprise of shutters louvers or panels
- 2 Materials/Construction They should be made of a durable material suitable for external use
- 3 A fixed shading device must comply with (d)(1)
- 4 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 IF Adjustable when the shading device is fully closed or lowered OR – Fixed at 9.00 am for glazing in the east sector 12.00 pm noon for glazing in the north sector or 3.00 pm for glazing in the west sector
- 2 **PERMITTING SOLAR GAIN** An adjustable shading device must permit at least 70% of solar radiation when fully opened at 12.00pm noon at the winter solstice if required to protect glazing in the north sector

(e) Concessions to shading requirements

The following glazing concessions apply and are not required to comply with (a) (b) (c) or (d) above

- 1 Five percent of the maximum glazing area may be unshaded
- 2 Twenty percent of the north sector glazing may have eave/projection greater than the maximum eave/projection (i.e. 1100 mm) or vertical fixed shading as defined by C2.7(c)

REQUIRED INSULATION AND ROOF COLOURS

(a) Roof colour Roof colour is defined by the solar absorptance set out in Table C 2.8

TABLE C 2.8 SOLAR ABSORPTANCE VALUES

LIGHT <0.475 MEDIUM 0.475 – 0.70 DARK >0.70

(b) Insulation

- 1 The technical and installation requirements for thermal insulation are in accordance with the Building Code of Australia Volume 1 or 2 NSW Appendix
- 2 If a foil backed blanket is used under the roof then the R value of the ceiling insulation may be reduced by R 0.5
- 3 External garage walls do not require insulation to be added to the wall

ROOF VENTILATION

(a) Roof ventilation is required to meet the following criteria

- 1 **WIND DRIVEN VENTILATOR** Not less than two wind driven roof ventilators having an aggregate opening area of not less than 0.14 m² in conjunction with eave vents roof vents or the like having an aggregate fixed open area of not less than 0.2% of the ceiling area
- 2 **GABLE END VENTS** Not less than two gable end vents having an aggregate opening area of not less than 0.8m²

INDIGENOUS PLANT SPECIES

Promote the planting of indigenous plant species to preserve the character of the local environment and promote a balanced ecosystem
To ensure that the species selected are adapted to the natural rainfall patterns of the locality and hence require minimal additional water consumption to remain healthy

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 Planning
BASIX Website www.basix.nsw.gov.au

ADDITIONAL BUILDING REQUIREMENTS (All instructions for extra work or additional requirements must be in writing Dated and signed copies of instructions should be retained by the owner and builder)

This is the specification referred to in the Contract dated / /

Date for Completion / /

PROPRIETOR / /

BUILDER / /

MASONRY CONSTRUCTION	Clay Bricks	<input type="checkbox"/>	Face	<input type="checkbox"/>	Commons	<input type="checkbox"/>	Stone	<input type="checkbox"/>
	Concrete Bricks	<input type="checkbox"/>	Concrete Blocks	<input type="checkbox"/>	AAC Blocks	<input type="checkbox"/>	AAC Panels	<input type="checkbox"/>
	Rendered	<input type="checkbox"/>	Bagged	<input type="checkbox"/>	Painted	<input type="checkbox"/>		<input type="checkbox"/>
MORTAR JOINTS	Colour		Ironed	<input type="checkbox"/>	Flush	<input type="checkbox"/>	Raked	<input type="checkbox"/>
SILLS	Brick	<input type="checkbox"/>	Quarry Tiles	<input type="checkbox"/>		<input type="checkbox"/>		
EXTERNAL WALL SHEETING	Timber Cladding	<input type="checkbox"/>	Fibre Cement Cladding	<input type="checkbox"/>	Metal Cladding	<input type="checkbox"/>	PVC/Vinyl	<input type="checkbox"/>
	Type		Type		Type		Type	
FLOOR CONSTRUCTION	Timber	<input type="checkbox"/>	Concrete	<input type="checkbox"/>	Pre Str Beam Floor	<input type="checkbox"/>	Steel	<input type="checkbox"/>
FLOORING	T & G	<input type="checkbox"/>	Species		Compressed FC Sheet	<input type="checkbox"/>	Structural Plywood	<input type="checkbox"/>
	Particle Board	<input type="checkbox"/>	Tiles Ceramic	<input type="checkbox"/>	Terra Cotta	<input type="checkbox"/>	Quarry	<input type="checkbox"/>
DECKING	Treated Pine	<input type="checkbox"/>	Other					
WALL FRAMES	Timber	<input type="checkbox"/>	Hardwood	<input type="checkbox"/>	Pine	<input type="checkbox"/>	H S Galv Steel	<input type="checkbox"/>
	Structural Steel	<input type="checkbox"/>	Off site prefabricated	<input type="checkbox"/>	Onsite cut/assembled	<input type="checkbox"/>		
ROOF CONSTRUCTION	Pitched Roof	<input type="checkbox"/>	Exposed Rafters	<input type="checkbox"/>	Oregon	<input type="checkbox"/>	Hardwood	<input type="checkbox"/>
	Roof Trusses	<input type="checkbox"/>	Raked Ceiling	<input type="checkbox"/>	Pine	<input type="checkbox"/>	Steel Framing	<input type="checkbox"/>
	Flat/Skillion	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		
ROOF COVER	Concrete Tiles	<input type="checkbox"/>	Terra Cotta Tiles	<input type="checkbox"/>	Shingles/Slate	<input type="checkbox"/>	Corrugated FC	<input type="checkbox"/>
	Zincalume	<input type="checkbox"/>	Colorbond	<input type="checkbox"/>	Polycarbonate	<input type="checkbox"/>	Profile	
THERMAL INSULATION	Roof/ceiling	<input type="checkbox"/>	Reflective Insulation Rating R		Bulk Insulation Rating R			
	Walls	<input type="checkbox"/>	Reflective Insulation Rating R		Bulk Insulation Rating R			
	Floors	<input type="checkbox"/>	Reflective Insulation Rating R		Bulk Insulation Rating R			
INTERNAL WALL LININGS	Gypsum Plasterboard	<input type="checkbox"/>	FC Sheeting	<input type="checkbox"/>	Timber Panelling	<input type="checkbox"/>	Cement Render	<input type="checkbox"/>
	Face Brick	<input type="checkbox"/>	Other					
WET AREA LININGS	WR Gyp Plasterboard	<input type="checkbox"/>	Villaboard	<input type="checkbox"/>	Timber Panelling	<input type="checkbox"/>	Laminated Panel	<input type="checkbox"/>
CEILINGS	Gypsum Plasterboard	<input type="checkbox"/>	Timber Panelling	<input type="checkbox"/>	FC Sheeting	<input type="checkbox"/>		<input type="checkbox"/>
CORNICE	Type		Size	mm				
DOOR JAMBS	Timber	<input type="checkbox"/>	Galvanised Steel	<input type="checkbox"/>		<input type="checkbox"/>		
WINDOWS	Timber	<input type="checkbox"/>	Aluminium	<input type="checkbox"/>	Type/Manufacturer			
FLYSCREENS	Timber	<input type="checkbox"/>	Aluminium	<input type="checkbox"/>	Other	<input type="checkbox"/>		
JOINERY	Timber	<input type="checkbox"/>	Species		Stained/Polished	<input type="checkbox"/>	Other	<input type="checkbox"/>
	Architrave Size	mm	Skirting Size	mm	Material			
	Kitchen Cupboards				Stained	<input type="checkbox"/>	Painted	<input type="checkbox"/>
	Front Door Type				Stained	<input type="checkbox"/>	Painted	<input type="checkbox"/>
	Other External Doors Type				Stained	<input type="checkbox"/>	Painted	<input type="checkbox"/>
	Internal Doors Type				Stained	<input type="checkbox"/>	Painted	<input type="checkbox"/>
	Garage Door Type				Size	mm	Colour	
EXTERNAL STAIRS	Timber	<input type="checkbox"/>	Steel	<input type="checkbox"/>	Concrete	<input type="checkbox"/>	Brick	
INTERNAL STAIRS	Timber	<input type="checkbox"/>	Steel	<input type="checkbox"/>	Concrete	<input type="checkbox"/>	Brick	
	as manufactured by				Balustrade type			
ELECTRICIAN	Provide		Light Points		Single Switches		Two way switches	
			Power Outlets		Double			
Light Fittings			Smoke Detectors		Exhaust Fans			
ROOF PLUMBER	Quad Gutters (size)	<input type="checkbox"/>	Box Gutters	<input type="checkbox"/>	Sheerline Gutters	<input type="checkbox"/>		<input type="checkbox"/>
GUTTERS/DOWNSPIPES	Downpipes 100 x 50	<input type="checkbox"/>	100 x 75	<input type="checkbox"/>	100 x 100	<input type="checkbox"/>	Round	dia <input type="checkbox"/>
	Colorbond	<input type="checkbox"/>	PVC	<input type="checkbox"/>	Copper	<input type="checkbox"/>	Zincalume	<input type="checkbox"/>
	Aluminium	<input type="checkbox"/>	Galvanised	<input type="checkbox"/>				
WATER SERVICE	Copper pipe	<input type="checkbox"/>	PVC Pipe	<input type="checkbox"/>	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	<input type="checkbox"/>
STORMWATER STORAGE TANKS	Type		Size	(kl)				
HOT WATER SERVICE	Electric	<input type="checkbox"/>	Gas	<input type="checkbox"/>	Solar	<input type="checkbox"/>		
	Mains Pressure	<input type="checkbox"/>	Gravity Fed	<input type="checkbox"/>	Cylinder capacity	litres		
INTERNAL SEWER SERVICE	Copper	<input type="checkbox"/>	PVC	<input type="checkbox"/>				
DRAINER	Sewer connection	<input type="checkbox"/>	Septic System	<input type="checkbox"/>	Aerated System	<input type="checkbox"/>	Greywater diversion	
	PVC pipes	<input type="checkbox"/>	Vitrified clay pipes	<input type="checkbox"/>	Copper pipes	<input type="checkbox"/>		
FENCING	Brick	<input type="checkbox"/>	Paling	<input type="checkbox"/>	Rail	<input type="checkbox"/>	Brushwood	<input type="checkbox"/>
	Front Boundary	<input type="checkbox"/>	Side Boundary	<input type="checkbox"/>	Rear Boundary	<input type="checkbox"/>	Colorbond	<input type="checkbox"/>
	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
 /
 200

SCHEDULE OF RATE / 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 DOOR REMOTE CONTROL	\$
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.

This is the specification referred to in the Contract dated:/...../.....

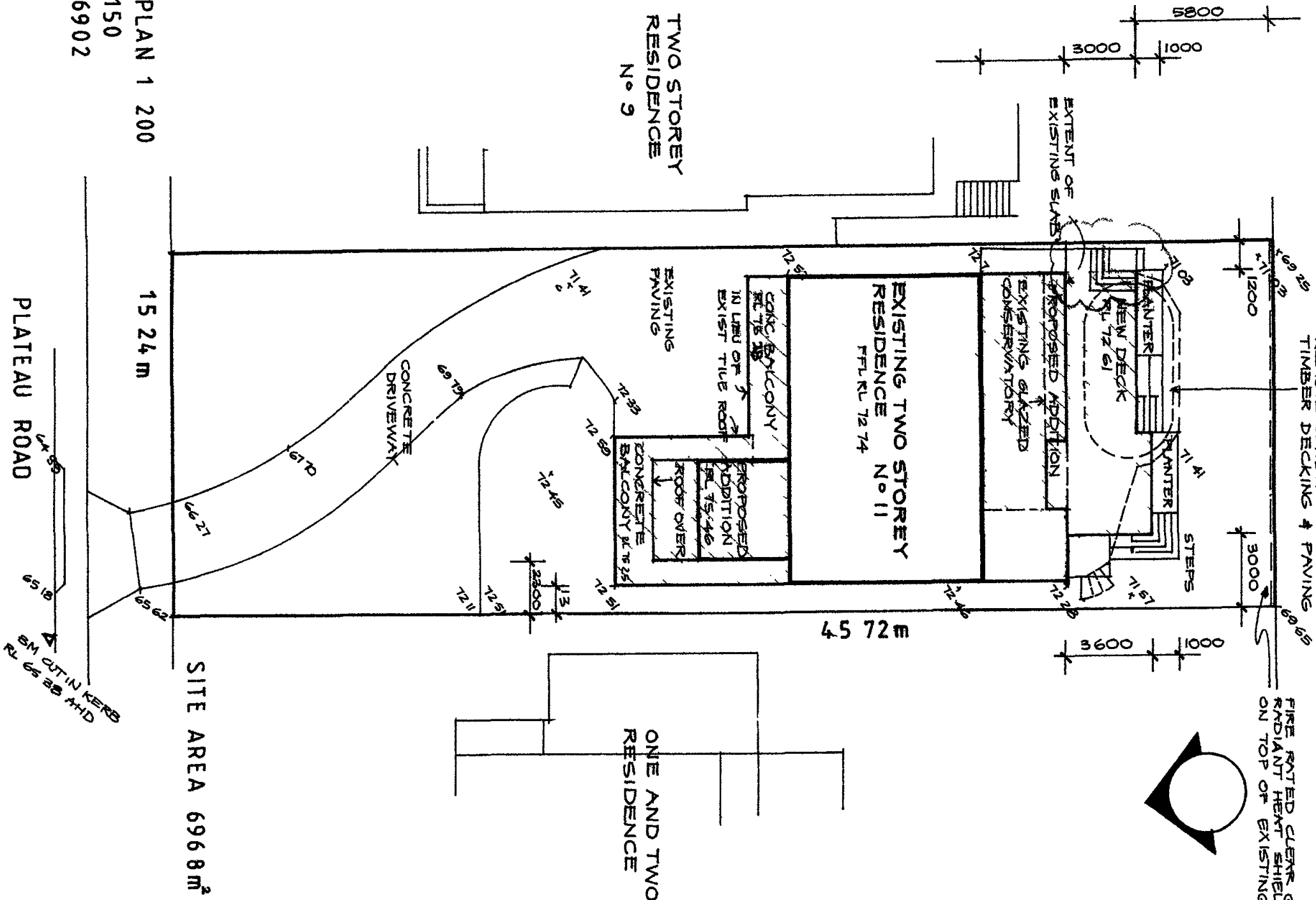
Date for Completion:/...../.....

..... PROPRIETOR / /

..... BUILDER / /

- Building to incorporate BASIX commitments to comply with the attached BASIX Certificate No A12193 dated 18/6/07
- 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

REMOVE EXISTING SWIM POOL
TIMBER DECKING & PAVING
FIRE RATED CLEAR GLAZED
RADIANT HEAT SHIELD 900MM HIGH
ON TOP OF EXISTING BLOCK WALL



SITE CALCULATIONS

SETBACKS FRONT 18.25M (EXISTING)
REAR EXISTING / PROPOSED 8.7M
REAR EXISTING TO POOL DECK 3.9M
PROPOSED TO DECK 5.15M (GREATER THAN EXISTING)
EAST AS EXISTING 1.2M
WEST AS EXISTING 1.3M (2.3M TO STUDY)

SITE COVERAGE MAX 40% OR 278.72M²
EXISTING HOUSE / GARAGE 190.675M²
DRIVE / HARDSTAND / PATHS 151.51M²
POOL SURFACE AND SURROUND 43.58M²
TOTAL EXISTING 385.77M²
PROPOSED HOUSE AND GARAGE 199.45M²
DRIVE / HARDSTAND / PATHS 140.79M²
DECKING 15.609 34.92M²
TOTAL PROPOSED 375.16M² ∴ 10.61M² LESS THAN EXISTING OR 53.8%

LANDSCAPED SPACE 60% REQ OR 418M²
FRONT 253.46M²
REAR 88.07M²
PLUS 6% OPEN DECKING 25.08M²
TOTAL ALLOWABLE 341.53M² OR 49%

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 or 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

insight

building certifiers pty ltd

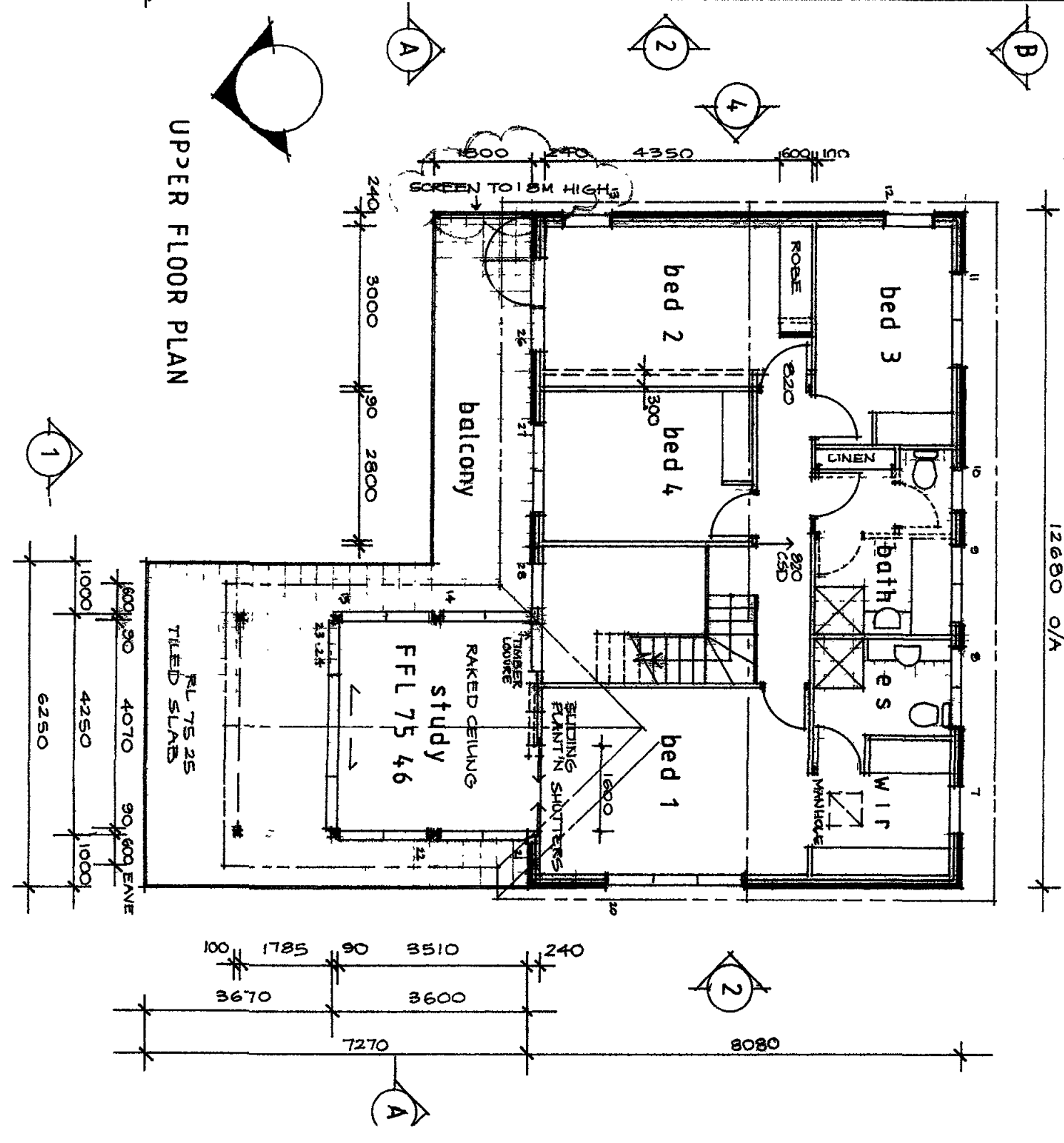
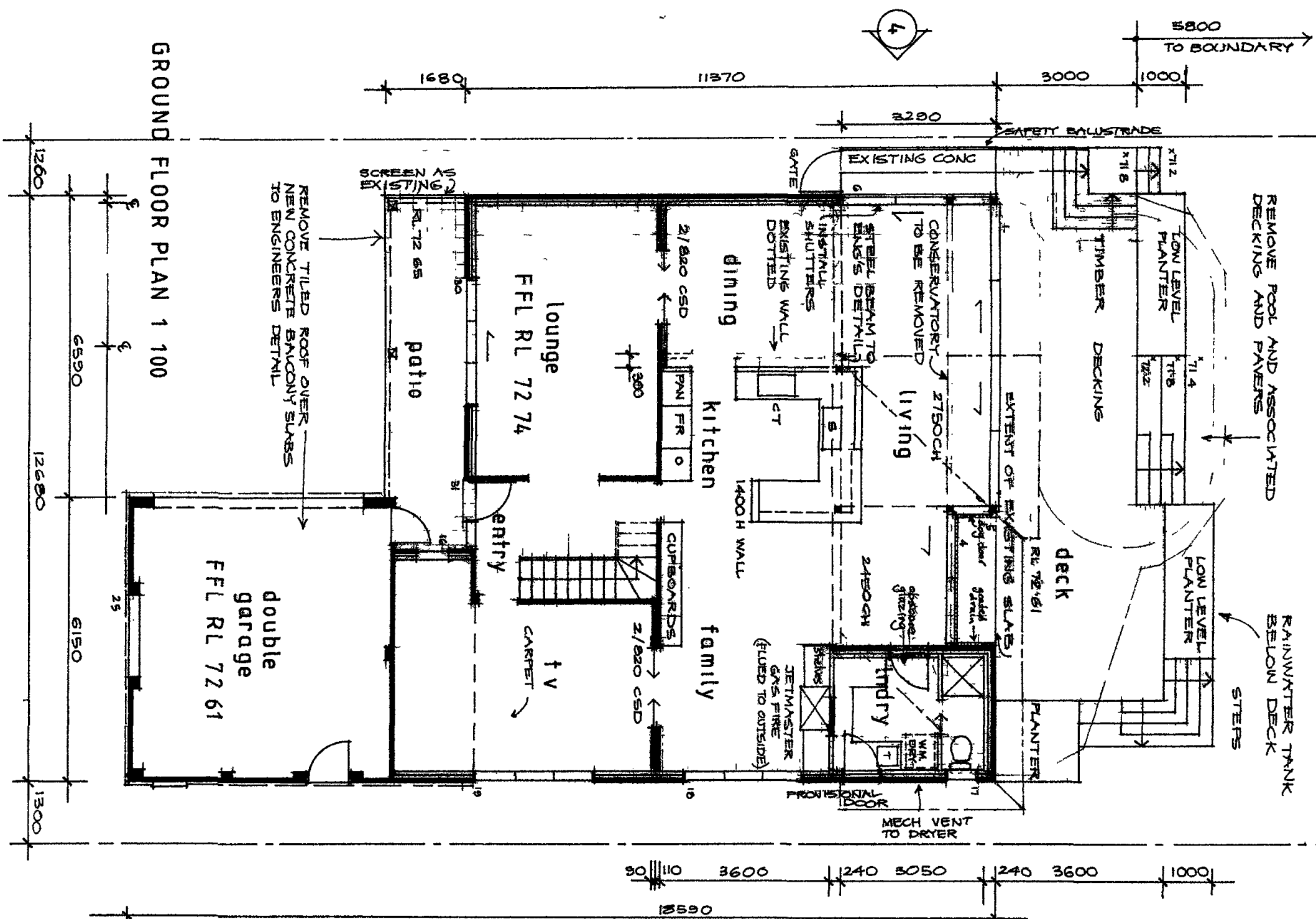
CONSENT NO N0377/07 DATE 23/10/07
CONSTRUCTION CERT NO 2008/2658

CERTIFICATE PLANS

T Bowden Accreditation No BPB0042
25 MAR 2008

SITE PLAN 1 200
LOT 150
DP 16902

24/10/07 ISSUE FOR COUNCIL
19.2.08 WINDOW VLGES
22.2.08 FINAL
PROPOSED ALTERATIONS AND ADDITIONS
11 PLATEAU ROAD ALBION FOR MR & MRS LEVY
SHIMDESIGN architectural design and drafting June 2007 dwg 607
51 Corbel head road Albion ph 0400 898 744 sheet 1/5



PROPOSED ALTERATIONS AND ADDITIONS
11 PLATEAU ROAD AVALON FOR MR & MRS LEVY

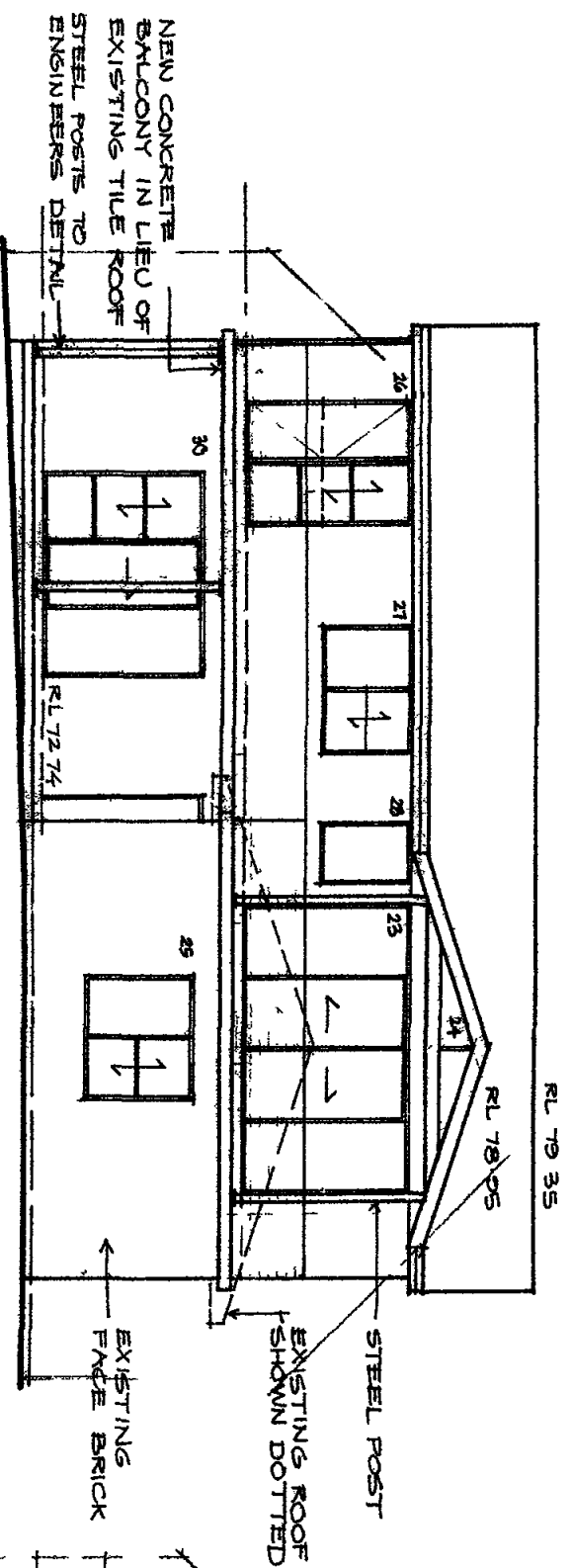
SHIMDESIGN architectural design and drafting June 2007 dwg 607
51 corner head road ovalton ph 0400 898 744 sheet 2/5

CONSTRUCTION TO AS 3959-1999 LEVEL 3 CONSTRUCTION OF BUILDINGS IN bushfire prone areas to sth. east & west elevation

1 TERRACOTTA TILES TO HAVE FOIL SARKING
• MINIMUM R2.5 INSULATION TO CEILING
• EXTERNAL WALLS TO HAVE MIN R1.3 INSULATION (R17 INC CONSTRUCTION)
• MINIMUM 40% NEW / ALTERED LIGHTS
• FITTED WITH FLUORO / COMPACT FLUORO OR LED LAMPS
GLAZING TO STH ELEVATION TO BE TOUGHENED GLASS TO LEVEL 3 RATING

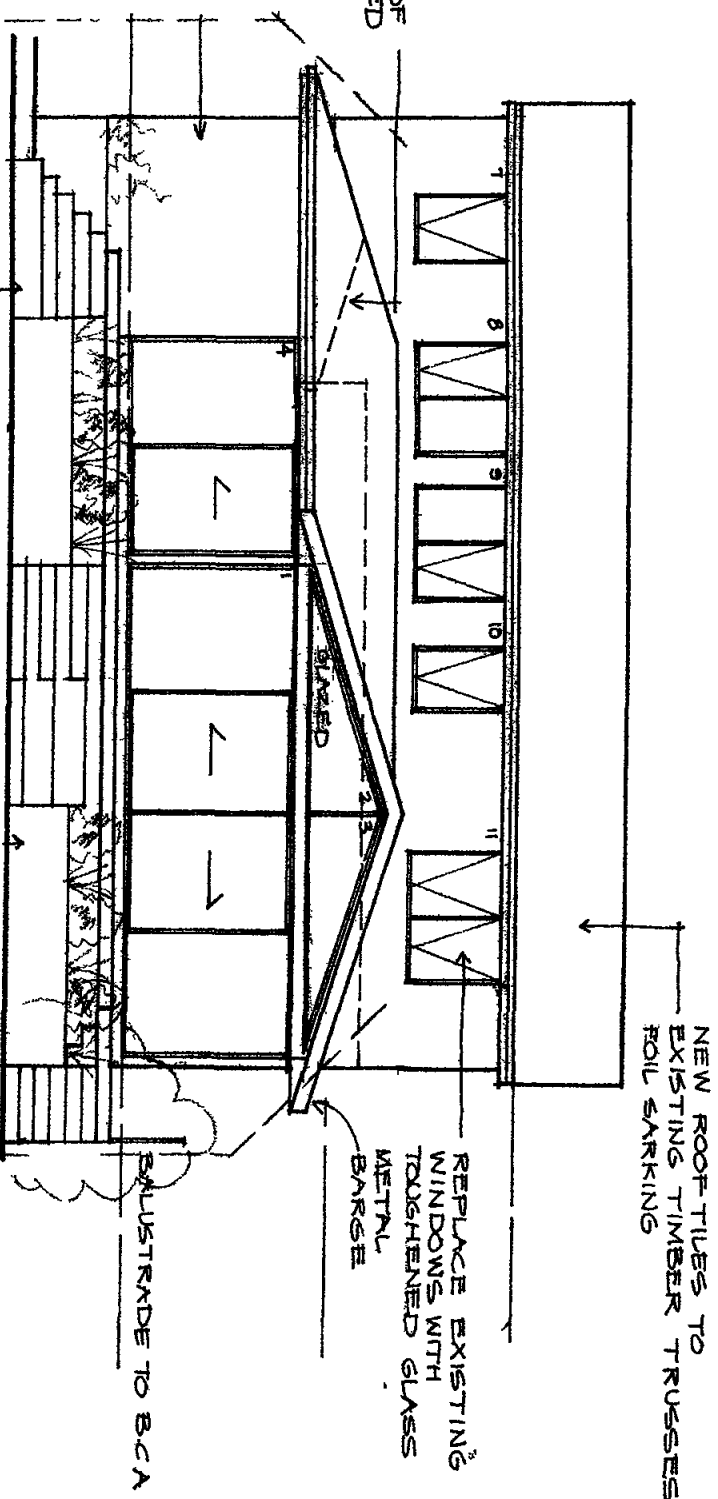
2 2410 07 ISSUE FOR C.C. STAIR TO REAR SCREEN TO FRONT BALCONY BLINDS TO CONSERVATORY FOR C.C.

3 19 2 08 WINDOW NOTES
22 2 08 FINAL NOTES



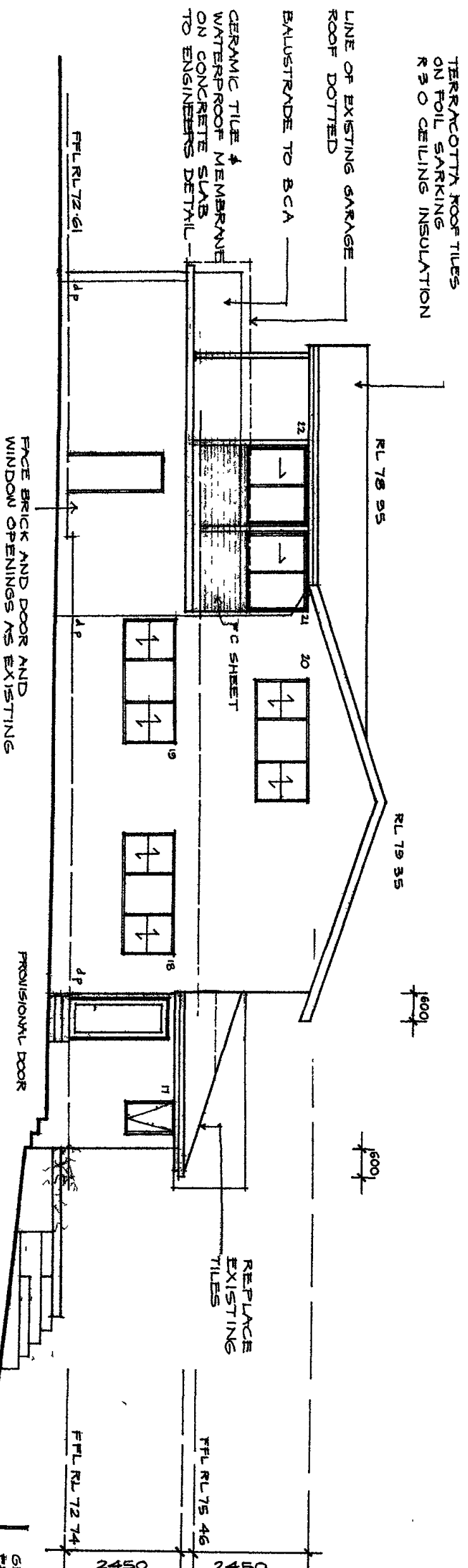
NORTH ELEVATION 1

NOTE THE USE OF ANY WIRE AS A BALUSTRADE MATERIAL MUST SATISFY THE TENSION, DEFLECTION AND SPACING REQUIREMENTS AS SPECIFIED UNDER CLAUSE 3 9 2 3 OF THE BUILDING CODE OF AUSTRALIA VOL 2 - HOUSING PROVISIONS



SOUTH ELEVATION 3

* TOUGHENED GLASS FOR LEVEL 3 CONSTRUCTION



WEST ELEVATION 2

22 2 08 FINAL NOTES
19 2 08 WINDOW NOTES
24 10 07 AMENDED RENC STAIR/DECK
ISSUE FOR C.C.

PROPOSED ALTERATIONS AND ADDITIONS
11 PLATEAU ROAD AVALON FOR MR & MRS LEVY
SHIMDESIGN architectural design and drafting June 2007 dwg 607
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RL 70-35

RL 78 95

900

RL 7546

RL 72 74

RL 72 61

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RE PAINT EXISTING

STEEL POSTS AND CONCRETE
BALCONY SLABS TO ENGINEERS
DETAIL
EXISTING TILED ROOF TO BE
REMOVED (SHOWN DOTTED)

EAST ELEVATION 45

EAST, WEST AND SOUTH
WALLS TO COMPLY WITH LEVEL
3 CONSTRUCTION IN BUSH FIRE ZONE

FOIL SARKING TO U/S
TERRACOTTA TILES

507 78 L

TO TIMOTHY HARRIS

COLORBOND GUTTER
PAINTED TIMBER FASCIA
ADJUSTABLE LOUVERS TO
FRAMED INTERNAL OPENING
BALUSTRADE TO BCA
CERAMIC TILE FINISH
CONCRETE SUPPORT BEAM AND
SLAB TO ENGINEERS DETAIL

STEP DN 90MM

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EXISTING
BRICK WALLS

- REMOVE PAVERS
- NEW CERAMIC TILING
- TO EXISTING CONCRETE SLAB

44-2,08 FINAL NOTES
19 2 00 WINDOW NOTES

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1

REPIITCH LAUNDRY ROOF
CUT LEAD FLASHING INTO
BRICKWORK

STEEL BEAMS AND POSTS TO
SUPPORT EXISTING BRICKWORK
PLASTERBOARDED LINING TO
RAKED CEILING & BULKHEAD

laundry

Living

2450
340

SECTION A

REINFORCED CONCRETE
SLAB AS EXISTING

SECTION B

EXISTING
BRICK WALLS

- REMOVE PAVERS
- NEW CERAMIC TILING
- TO EXISTING CONCRETE SLAB

44-2,08 FINAL NOTES
19 2 00 WINDOW NOTES

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**PROPOSED ALTERATIONS AND ADDITIONS
11 PATEAU ROAD AVALON FOR MR & MRS LEVY**

22.2.08 FINAL NOTES

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51 careel head road ovalon ph 0400 898 744
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design and drafting
ph 0400 898 744

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