Peter J Boyce & Associates

Level 2/41 Rawson Street Epping 2121
Ph 0412 928 500 P.O. Box 375. Strathfield 2135 Ph 9868 2855
Building Surveyor Acc. No BPB0043 Fax 9868 2655

5th July 2007

The General Manager

Dear Sir,

Re: Submission of Construction Certificate
22 Quarter Sessions Road Church Point

Please find enclosed:

1. Letter & cheque for registration of CC
2. Completed Application Form
3. Construction Certificate
4. Council receipts etc as required by D/A conditions.
5. Statement from Applicant that the CC plans are generally in accordance with the DA.
6. Finishes Schedule
7. Stormwater Certificate
8. NSW Rural Fire Service Certificate
9. Geo-Technical Risk Management Policy for Pittwater
10. Ecological Sustainability Plan
11. Tree Report & Assessment
12. Bushfire Risk Assessment Report
13. Architectural plans
14. Structural Engineers plans
15. Specifications

Should any of the above documents not be received please advise me immediately.

Many thanks.

Peter Boyce

Peter J Boyce & Associates

Ph 0412 928 500 P.O. Box 375. Strathfield 2135 Ph 9868 2855
Level 2, 41 Rawson Street, Epping 2121
Building Surveyor Acc. No BPB0043 Fax 9868 2655

Your ref D/A NO371/06 – NO371/06(M)

4th July 2007

The General Manager
Pittwater Council
PO Box 882
MONA VALE NSW 1660

Dear Sir,

Re: Copy of Construction Certificate
22 Quarter Sessions Road Church Point

Please find enclosed copy of Construction Certificate issued for the above property under D/A NO371/06 – NO371/06(M).

Please find cheque enclosed for $30.00 for registration of Construction Certificate.

Yours faithfully

R|218672
9|7|07

Peter Boyce

Application for Construction Certificate

Issued under the Environmental Planning and Assessment Act 1997 Part 3 - Schedule 1

Local Council Area PITTWATER COUNCIL
City, Council or Shire

Applicant
Name NICHOLAS DUNN + ASSOCIATES
Address 10/180 PACIFIC HIGHWAY, NORTH SYDNEY 2060
Phone 02. 9956.5454

Owner
Name ROD MANDER + SUSIE McCARTHY
Address 22 QUARTER SESSIONS ROAD, CHURCH POINT. 2105
Phone 9999. 2765

Consent of all owner(s)
I/we consent to this application
Signature .....

Subject Land with lot & deposited plan number
Address 22 QUARTER SESSIONS ROAD, CHURCH POINT. 2105
LOT 2 IN D.P. 618481

Brief description of development
Type of Development i.e. Dwelling, Addition: ALTERATIONS + ADDITIONS TO EXISTING DWELLING + NEW GAZEBO & BASEMENT LEVEL

Building code of Australia
Building Classification. Class 1a.

Development Consent
Development consent number: NO 371/06
Date of Determination: DATE OF CONSENT - 10.11.06
MODIFIED - 13.03.07.

Builder/Owner Builder Name or Permit number: N.A.
Address
Telephone No Fax No Mobile

Value of Work $ 212,000.00

Required attachments --- Copy of D/A approval with Conditions
Three copies of the plans & Specification.
Plan Nos.
List of supporting documents

Schedule --- The building schedule must be completed as part of this application for the Australian Bureau of Statistics

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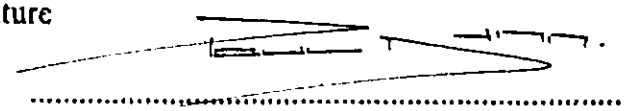
Applicants Signature 

.....

Australian Bureau of Statistics

Particulars of Proposal ---What is the area of land (m^2) ....5235 m^2

Gross Floor area of existing building (m^2).....392·25 m^2

What are the current use of all or part of the building(s)/land

(If vacant state vacant) .....RESIDENTIAL.....

Location	Use
22 QUARTER SESSIONS ROAD CHURCH POINT	RESIDENTIAL

Does the site contain a dual occupancy?.....NO

What is the gross floor area of the proposal (m^2).....541·0 m^2.

What are the proposed uses of the building?

Location	Use
22 QUARTER SESSIONS ROAD CHURCH POINT	RESIDENTIAL.

How many stories will the building consist of ? 1 m part /2 m part 3 m part.

Materials to be used

Place a tick in the box which best describes the material

Walls	code		Roof	code	
Brick veneer	12		Aluminium	70	
full brick	11		concrete	20	
single brick	11		concrete tiles	10	
concrete block	11		fibrous cement	30	
			fibreglass	80	
concrete/masonry	20		masonary/terracotta shingle		
concrete	20		tiles	10	
steel	60		slate	20	
fibrous cement	30		steel	60	✓
hardiplank	30		terracotta tile	10	
timber/weatherboard	40	✓	other	80	
cladding aluminium	70		unknown	90	
curtain glass	50				
other	80				
unknown	90				

Floor			Frame		
concrete	20		timber	40	✓
timber	10	✓	steel	60	
other	80		other	80	
unknown	90		unknown	90	

Construction Certificate

Cert No. BP7210

Peter J. Boyce & Associates
Planning NSW Blding Surveyor No BPB0043
P.O. Box 375. Strathfield 2135
Mob.Ph 0412 928 500
Ph 9868 2855/ Fax 9868 2655

Issued:

To **Mr. Robert Mander & Ms. Susie McCarthy**
c/- Nicholas Dunn & Associates
10/180 Pacific Highway
NORTH SYDNEY NSW 2060

Subject land

Lot 2 DP 618481 H/N 22 Quarter Sessions Road Church Point

Description of Development

Alterations and additions to the existing dwelling including new gazebo and basement level.

Development Consent

Development consent number: D/A NO371/06 – NO371/06
Date of Determination: 10th November 2006 – 13th March 2007(M)

Building Code of Australia

Building classification 1a

Determination

Pursuant to Section 109C (1) (b), 81A (2) and 81A (4) 0f the Environmental Planning & Assessment Act, 1979 the construction certificate has been determined by approval in accordance with the stamped plans and specifications.

Plans and supporting documents

List Plans – Architect – Nicholas Dunn & Associates – Drawing Nos. 01 to 13
Arboricultural Environmental & Horticultural Consultants – Drawing Nos. 1 to 6
Engineer – Lee Jing Consulting Pty Ltd – Drawing Nos. P1 to P4

Date of determination:

Note:
Prior to commencement of work, Section 81A (2) (b) and/or 81A (4) (b) and (c) 0f the Environmental Planning & Assessment Act, 1979 must be satisfied (see form 7 of the Regulation) i.e. name of the Principal Certifying Authority.

Certifying Authority

Peter Boyce
Planning NSW Acc Blding Surveyor No **BPB0043**
P.O. Box 375. Strathfield 2135
Mob. Ph 0412 928 500
Ph 9868 2855

Certificate

I certify that the work if completed in accordance with the documents, plans and specifications accompanying the application will comply with the requirements of this regulation as are referred to in Section 81A (5) of the Environmental Planning & Assessment Act 1979

Accredited Certifier

Peter Boyce
Planning NSW Accreditation No BPB0043

Pittwater Council

OFFICIAL RECEIPT

27/06/2007 Receipt No 218159

To ROBERT MANDER & SUSIE MCCARTHY

22 QUARTER SESSIONS ROAD
CHURCH POINT

Applic	Reference	Amount
GL Re	QLSL-Buil 1 X N0371/06	$742.00

Total:	$742.00
Amounts Tendered	
Cash	$0.00
Cheque	$742.00
Db/Cr Card	$0.00
Money Order	$0.00
Agency Rec	$0.00
Total	$742.00
Rounding	$0.00
Change	$0.00
Nett	$742.00

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Cashier KWay

TO WHOM IT MAY CONCERN

RE: 22 QUARTER VERSION ROAD
CHURCH POINT
N.S.W. 2105

I hereby certify that the Architectural Plans submitted with the Construction Certificate application are generally in accordance with the Development Approved plans approved by Council.

.....

B. SC.
B. ARCH. HONS. 1

NICHOLAS DUNN
+ ASSOCIATES
△

22 Quarter Sessions Road - Church Point

FINISHES SCHEDULE - EXTERNAL

	Location	Material	Colour	Manufacturer	Code
Building: Existing + New	Walls	Timber	'Portland Stone'	Dulux	16YY 49/163
	Columns	Galvanised Steel	'Portland Stone'	Dulux	16YY 49/163
	Windows + Doors	Timber + Metal	'Regency White'	Dulux	22YY 65/124
	Barge Board	Timber	As Above	Dulux	
	Soffit	Timber	To Match Existing	Dulux	
	Roofing	Colorbond	Jasper	BHP Steel	----------
	Gutter	Colorbond	Jasper	BHP Steel	----------
	Paving	Sandstone	'Sydney Sand'	----------	----------
	Handrails	Toughened glass	Clear	Pilkington	----------

PRIMARA PTY LTD TRADING
AS NICHOLAS DUNN
ASSOCIATES ABN 96 002 133 082
1/188 PACIFIC HIGHWAY
NTH SYDNEY NSW 2060
TEL 02 9956 5454
FAX 02 9956 8280
MOB 0416 058 825
NOMINATED ARCHITECT
PAUL S. DUNN
4440

LEE JING CONSULTING PTY LTD
ACN: 107 539 328 ABN: 66 107 539 328
23 Fitzsimmons Avenue, Lane Cove, NSW 2066 Tel: (02)9420 1186 Fax: (02)9420 1187 Email: leejing@bigpond.com

5-Apr-07

To the Principal Certifier

Dear Sir,

Re: 22 QUARTER SESSIONS ROAD, CHURCH POINT

This letter is to confirm that I inspected the existing stormwater system and it performed satisfactorily at the inspection.

However, I suggest that:

1. The leaking and broken gutters and downpipes shall be checked and replaced regularly.
2. An effective leaf guard with resistance to bush fire shall be installed to all new and existing gutters to reduce blockage of the stormwater drainage system.
3. Refer to "Recommended Maintenance and Inspection Program" from the GEOTECHNICAL REPORT by Douglas Partners, dated May 2006, for the stormwater drainage system.

Yours faithfully,
LEE JING CONSULTING PTY LTD

Li Xin
B.E., M.Eng.Sc., MIE(Aust.), CPEng.

All communications to be addressed to:

Warringah / Pittwater FCC
NSW Rural Fire Service
PO Box 111
Terrey Hills NSW 2084

Telephone: 9450 3000
e-mail: warringah.fcc@rfs.nsw.gov.au

Warringah / Pittwater FCC
NSW Rural Fire Service
Thompson Dr Off Kamber Rd
Terrey Hills NSW 2084

Facsimile: 9450 1028

The General Manager
Pittwater Council
PO Box 882
Mona Vale NSW 1660

Your Ref: N0371/06
Our Ref: DA06081132773 SF

Attention: Steve Guy

Date: 24-Aug-2006

Dear Sir/Madam,

RE: Land Use Application for 2//618481, 22 QUARTER SESSIONS RD, CHURCH POINT NSW 2105

I refer to your letter dated 11-Aug-2006 seeking our advice in accordance with section S.79BA of the Environmental Planning & Assessment Act 1979 for the above property.

Based upon an assessment of the plans and documentation received for the proposal, the NSW Rural Fire Service, in respect to bush fire matters, provides the advice that the development should have the following conditions:

1. Construction shall comply with AS3959 - 1999 level 2 'Construction of Buildings in bushfire prone areas'.

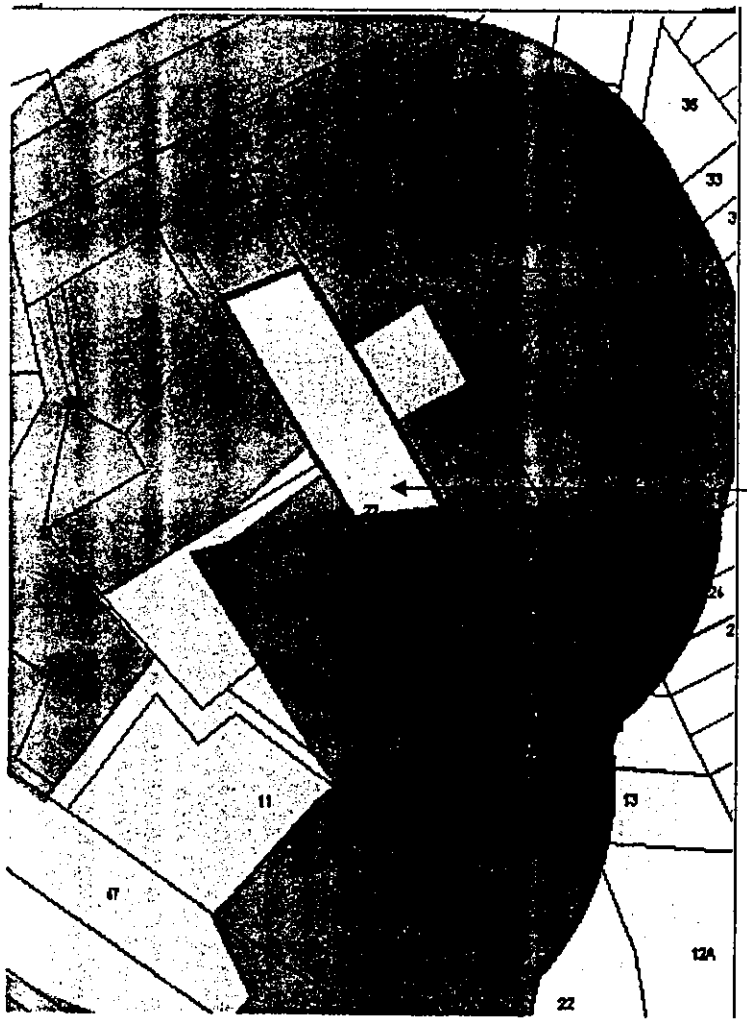
2. Roofing shall be gutterless or have leafless guttering and valleys are to be screened to prevent the build up of flammable material.

3. The property from the North/West of the dwelling for a distance of 30 metres and from the North/East, to the boundary shall be maintained as an 'Inner Protection Area' (IPA) as outlined within section 4.2.2 in Planning for Bushfire Protection 2001.

For any enquiries regarding this correspondence please contact Stephen Fisher.

Yours faithfully,

Craig Geddes
Fire Control Officer



LEGEND

Bush Fire Prone Land
Vegetation Category

1
2

Bush Fire Prone Land
Vegetation Buffer

Bush Fire Prone Land
Partly within vegetation or buffer area

22 Quarter Sessions Rd

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

Development Application for Nicholas Dunn + Associates
Name of Applicant

Address of site 22 Quarter Sessions Rd, Church point

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

I, Li Xin (insert name) on behalf of Lee Jing Consulting P/L (trading or company name)

on this the 5-Apr-07 (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: Report on Geotechnical Assessment
Report Date: May 2006
Author: Douglas partners

Structural Documents list:

Drawing No. P1–P4, Job No. 07/023
from Lee Jing consulting P/L, Dated 5-Apr-07

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.

Mr Li Xin (name) (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 5/5/06 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 appropriate 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 ..... G.R. WILSON
Chartered Professional Status ..... RPGEO
Membership No. 10007

Tree report & assessment of the impact of proposed development

at 22 Quarter Sessions Road, Church Point, DA: N0371/06

31st October 2006

prepared by

Melanie Howden - Ass. Dip. Hort. (Haw. Ag. C.), SoA. Arb. MAIH, MNAAA, MIAC

Footprint Green Pty Ltd
Arboricultural, Environmental & Horticultural Consultants
5 Watkins Road, Avalon Beach, NSW 2107
Email: mail@footprintgreen.com.au
Ph: (02) 99188877
Fax: (02) 99188876
ABN 34 097 138 617

Contents

Footprint Green Pty Ltd
Arboricultural, Environmental & Horticultural Consultants
5 Watkins Road, Avalon Beach, NSW 2107
Email: mail@footprintgreen.com.au
Ph: (02) 99188877
Fax: (02) 99188878
ABN 34 097 138 817

1. Introduction

1.1 Background

This report has been prepared to assess the condition and significance of a number of trees on a portion of the property known as 22 Quarter Sessions Road, Church Point and assess the potential impact of the proposed development on the identified trees.

Development Application DA N0371/06 was submitted to Pittwater Council and a preliminary assessment was carried out. In correspondence dated 05/09/06 from Pittwater Council, the Council considered that additional information was required to allow the assessment process to progress. Included in this request for additional information was the need to present an arborist report.

This arboricultural report has been commissioned by Mr Mander & Ms McCarthy and site instructions have been provided by Nicholas Dunn & Associates and Rolling Stone Landscapes. Subsequent site inspections and field work were conducted on the 5th October 2006. For the purposes of this report the property known as 22 Quarter Sessions Road, Church Point will be referred to as the site.

1.2 Existing & proposed development

The site is on the north western side of Quarter Sessions Road and is sloping and falls away to the north west. The site is currently developed and contains a one and 2 storey timber dwelling with 2 detached garages towards the road frontage and a swimming pool and cabana at the rear of the dwelling.

The proposed development involves alterations and additions to the existing dwelling and cabana, refurbishment of the swimming pool and construction of a spa (Dunn 2006) and associated landscaping (Rolling Stone Landscapes 2006). Beyond the swimming pool in the lower north western portions of the site no additional works are proposed.

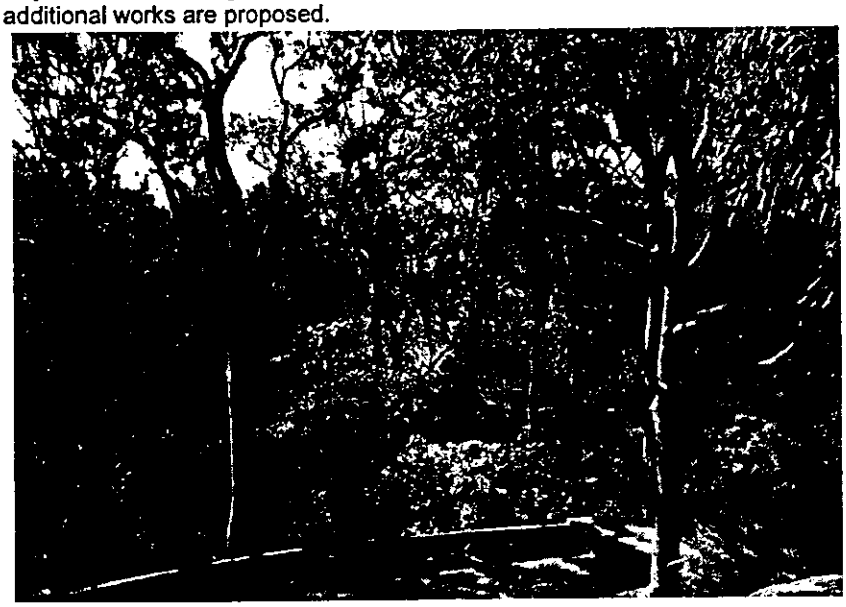


Figure 1.1 Rear portion of the site showing the existing swimming pool.

2. The site

2.1 Existing trees

Beyond the existing swimming pool to the north west there are no proposed works and in this lower, rear section of the site the vegetation is to remain as endemic bushland.

On the north eastern side of the existing dwelling the vegetation is predominately endemic species and several rock boulder outcrops occur on the sloping topography.

There are over 100 trees identified on the site, 17 of which are in close proximity to the proposed alterations and additions and these 17 trees have been considered in this report.

2.2 Tree locations & reference numbers

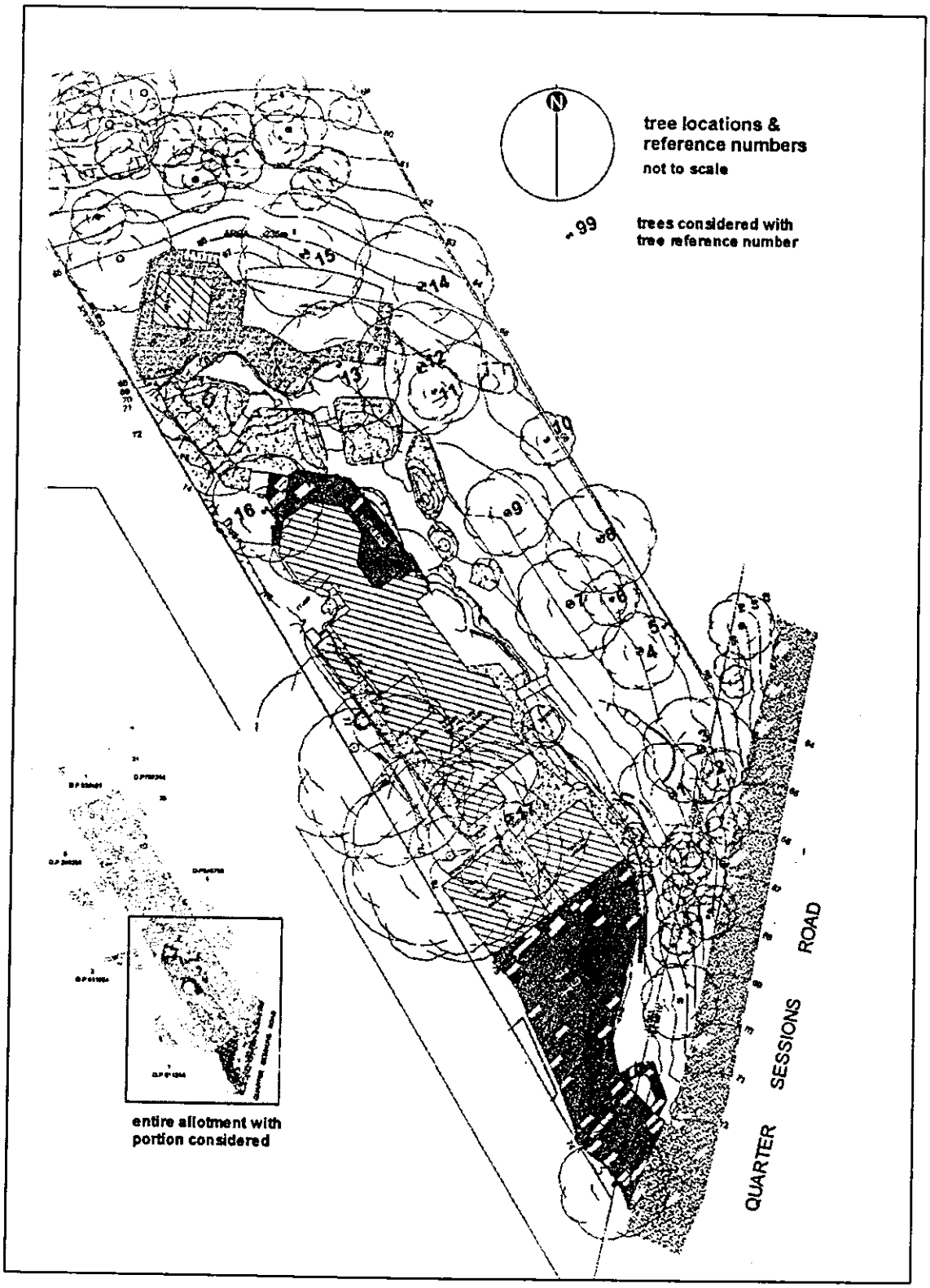
The following plan (refer 2.3) is based upon the survey (Keen, 2002) and identifies the locations of the trees and their reference number and the tree canopies on the following plan are indicative only.

One (1) trees not identified on the survey has also been considered in this report and has been added to the following plan. This tree has been included as it is of a size / dimension that is covered by the Council's Tree Preservation Order and is numbered Tree No. 5.

Specific details of each tree are listed in tables 2.3 and 3.3 which provide information of the tree's:

- Location & Reference number; (refer following figure 2.3)
- Landscape or Environmental Significance (refer 3.3) ; and
- Health & Condition (refer 4.3).

2.3 Existing site plan showing tree locations & reference numbers



3. Tree significance

3.1 Significance in the environment

Trees need to be considered in the overall environment and are subject to specific legislation such as:

- Threatened Species Conservation Act (NSW) 1995, and
- Noxious Weeds Act (NSW) 1993.

3.1.1 Threatened Species Conservation Act (NSW) 1995

The Threatened Species Conservation Act lists in its schedules a number of species, populations or ecological communities that are either endangered or vulnerable. The Act requires the preparation of a species impact statement if an activity or development is going to have a significant effect on species, populations or endangered ecological communities listed in the schedules of the Act. Where identified on or adjacent the site, threatened tree species are considered in this report, however no attempt is made to identify threatened understorey and ground cover flora species, fauna species, ecological communities or populations.

3.1.2 Noxious Weeds Act (NSW) 1993

The Noxious Weeds Act provides the Minister with the powers to issue an Order declaring a plant noxious and these plants can be either agricultural or significant environmental pest species. The Minister's declaration may specify a plant to be noxious in part or all of the State and the Minister also may specify the level of noxious weed control required for that species.

3.1.3 Environmental Pest Species

There are a number of environmental pest species that commonly cause problems in developed urban areas or readily spread into natural bushland areas. In urban areas these species can have aggressive root systems and cause damage to built structures or services. Alternatively some species can be problematic in natural bushland areas degrading habitats and reducing natural biodiversity.

Many of these are not considered noxious but are recognised by Councils as pest species and are exempt from protection under Council's Tree Preservation Order.

3.2 Significance in the landscape

Assessment of a tree's significance in the landscape takes into account its prominence from a broad landscape perspective, neighbour hood perspective, local perspective and a site perspective. The landscape significance is generally categorised as either:

- Significant in the Landscape;
- of High Landscape Significance;
- of Moderate Landscape Significance, or
- of Low Landscape Significance.

3.3 Tree significance table

Tree No.	Genus Species	Common Name	Height (m)	Canopy Spread (m)	DBH (mm)	Description of Tree Specimen	Environmental/Landscape Significance
1	*Corymbia maculata*	Spotted Gum	20	12	550	Mature single trunk tree with an upright forest form; an upright trunk/s and majority of canopy and branch development is towards the north, east & west. No evidence of significant branch pruning.	High L/scape Sig.
2	*Glochidion ferdinandi*	Cheese Tree	9	7	1*200, 1*250	Mature twin trunk tree with an upright elliptical form; an upright trunk/s and balanced canopy and branch development. No evidence of significant branch pruning.	Moderate L/scape Sig.
3	*Corymbia gummifera*	Red Bloodwood	16	10	2*400, 1*300	Mature multi trunk tree with an upright elliptical form; an upright trunk/s and balanced canopy and branch development. Lower limbs of the tree have been pruned to 8m on the western side.	High L/scape Sig.
4	*Corymbia gummifera*	Red Bloodwood	14	8	450	Mature twin trunk (at 10m) tree with an upright forest form; an upright trunk/s and majority of canopy and branch development is towards the north. Lower limbs of the tree have been pruned to 8m on the western side.	High L/scape Sig.
5	*Angophora costata*	Sydney Red Gum	11	6	300	Semi-mature single trunk tree with an upright forest form; an upright trunk/s and majority of canopy and branch development is towards the east. No evidence of significant branch pruning.	Moderate L/scape Sig.
6	*Corymbia gummifera*	Red Bloodwood	18	6	350	Mature single trunk tree with an upright forest form; an upright trunk/s and balanced canopy and branch development. No evidence of significant branch pruning.	High L/scape Sig.
7	*Corymbia gummifera*	Red Bloodwood	20	13	650	Mature single trunk tree with a tall forest form; an upright trunk/s and balanced canopy and branch development. No evidence of significant branch pruning.	Significant L/scape Sig.
8	*Corymbia gummifera*	Red Bloodwood	20	16	600	Mature single trunk tree with a tall spreading form; an upright trunk/s and balanced canopy and branch development. No evidence of significant branch pruning.	Significant L/scape Sig.
9	*Allocasuarina torulosa*	Forest Oak	13	9	450	Mature single trunk tree with an upright form; an upright trunk/s and majority of canopy and branch development is towards the north west. Lower limbs of the tree have been pruned to 8m.	Moderate L/scape Sig.
10	*Allocasuarina torulosa*	Forest Oak	11	6	220	Semi-mature single trunk tree with an upright elliptical form; an upright trunk/s and balanced canopy and branch development. Appears that a leader has failed/ been removed at 3m.	Moderate L/scape Sig.
11	*Angophora costata*	Sydney Red Gum	8	6	300	Semi-mature twin trunk (at 1.8m) tree with an upright forest form; a slight trunk lean to the east and majority of canopy and branch development is towards the north east. No evidence of significant branch pruning.	Low L/scape Sig.
12	*Eucalyptus sp.*	Unidentified eucalypt species	17	12	900	Mature single trunk tree with an upright forest form; an upright trunk/s and majority of canopy and branch development is towards the north. Lower limbs of the tree have been pruned to 8m.	Significant L/scape Sig.
13	*Corymbia maculata*	Spotted Gum	14	12	500	Mature single trunk tree with an upright forest form; an upright trunk/s and balanced canopy and branch development. No evidence of significant branch pruning.	High L/scape Sig.
14	*Corymbia maculata*	Spotted Gum	20	15	700	Mature twin trunk (at 9m) tree with a tall forest form; an upright trunk/s and balanced canopy and branch development. Lower limbs of the tree have been pruned to 10m.	Significant L/scape Sig.
15	*Corymbia maculata*	Spotted Gum	20	16	850	Mature single trunk tree with a tall forest form; an upright trunk/s and balanced canopy and branch development. Lower limbs of the tree have been pruned to 10m.	Significant L/scape Sig.
16	*Angophora costata*	Sydney Red Gum	11	11	450	Semi-mature twin trunk (at 4m) tree with a broad spreading form; an upright trunk/s and balanced canopy and branch development. No evidence of significant branch pruning.	Moderate L/scape Sig.
17	*Eucalyptus paniculata*	Grey Ironbark	20	15	750	Mature single trunk tree with a tall forest form; an upright trunk/s and balanced canopy and branch development. No evidence of significant branch pruning.	High L/scape Sig.

4. Tree condition & life expectancy

4.1 Condition

The assessment of the trees condition is undertaken by visual inspection of the trees themselves, surrounding vegetation and the site conditions.

An assessment of each tree is undertaken taking into account the condition of the tree's roots, trunk, branches, foliage, previous pruning works, pests and disease, nesting hollows, fauna scratchings and the surrounding environment that may influence the condition of the tree.

4.2 Safe Useful Life Expectancy (SULE)

The condition information is used to determine the Safe Useful Life Expectancy (SULE) of each tree and takes into account the age of the tree, the life span of the species, local environment conditions, estimated life expectancy, the location of the tree and safety aspects.

The SULE method takes into account whether a tree can be retained with an acceptable level of risk based on the information available at the time of inspection. A SULE assessment is not static as it relates to the tree's health and the surrounding conditions. Whilst it is recognised that changes to the tree's condition will effect the assessment, changes to the surrounding environment may result in changes to the SULE assessment.

Table 1 Safe Useful Life Expectancy (SULE), (Barrell, 2001)

Category	Description
1	Long, Life span greater than 40 years
2	Medium, Life span from 15 to 40 years
3	Short, Life span from 5 to 15 years
4	Remove, Should be removed within 5 years
5	Small, Young or Regularly Pruned, Trees that can readily be moved or replaced.
In addition to the categories listed above, trees that show signs of imminent structural failure are listed as 'Unstable'.	
Unstable	Unstable in the ground or have significant trunk damage rendering them structurally hazardous.

4.3 Tree condition table

Tree No	Genus Species	Height (m)	Canopy Spread (m)	DBH (mm)	Foliage Condition	Health & Stability	% Canopy Dead Wood	Evidence of Pests, Disease, Cavity, Bracket Fungi	SULE
1	*Corymbia maculata*	20	12	550	Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	5%	None evident	1
2	*Glochidion ferdinandi*	9	7	1*200, 1*250	Good	The tree appears stable and its branch attachment appears fair. The tree is considered to be in good health and displays good vigour.	5%	None evident	2
3	*Corymbia gummifera*	16	10	2*400, 1*300	Good	The tree appears stable and its branch attachment appears fair. The tree is considered to be in good health and displays good vigour.	10%	None evident	1
4	*Corymbia gummifera*	14	8	450	Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	5%	There is a wound at the base on the south eastern side where it appears that a secondary leader has failed or been removed.	2
5	*Angophora costata*	11	6	300	Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in moderate health and displays fair vigour.	5%	None evident	1
6	*Corymbia gummifera*	18	6	350	Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	5%	None evident	1
7	*Corymbia gummifera*	20	13	650	Very Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	10%	Evidence of a trunk wound at 4-7m with minor amounts of Kino	1
8	*Corymbia gummifera*	20	16	600	Very Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	<5%	None evident	1
9	*Allocasuarina torulosa*	13	9	450	Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	5%	An old branch stub and hollow is evident on the eastern side of the tree at 3m	2
10	*Allocasuarina torulosa*	11	6	220	Very Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	5%	Epicormic growth has developed throughout the tree canopy.	2
11	*Angophora costata*	8	6	300	Fair	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays fair vigour.	10%	Minor amounts of Kino evident	1

Tree No	Botanical and Common Name	Height (m)	Canopy Spread (m)	DBH (mm)	Foliage Condition	Health & Stability	% Canopy Dead Wood	Evidence of Pests, Disease, Cavity, Bracket Fungi	SULE
12	*Eucalyptus sp.*	17	12	900	Good	The tree is considered to be unstable and its branch attachment appears fair. The tree is considered to be in moderate health and displays fair vigour.	10%	Small bracket fungi evident on the western side at 5m above an old trunk scar and vertical crack approx. 2.5m in length. Evidence of termite damage and treatment in an extensive hollow wound visible in the basal area extending to 1.5m in height.	Unstable
13	*Corymbia maculata*	14	12	500	Very Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	<5%	None evident	1
14	*Corymbia maculata*	20	15	700	Very Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	5%	None evident	1
15	*Corymbia maculata*	20	16	850	Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	<5%	Some epicormic growth evident in response to pruning	1
16	*Angophora costata*	11	11	450	Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	<5%	Minor amounts of Kino evident on the eastern side adjacent a growth split. Currently a timber deck surrounds the tree.	1
17	*Eucalyptus paniculata*	20	15	750	Good	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	5%	Ficus pumila covering the lower portions of the tree.	1

5. General impacts on trees

5.1 Development planning - identifying trees to be retained

The retention priorities should be used as a guide when determining the development footprints and it is recognised that other factors such as development design, solar access and topographic constraints, may need to be taken into account when determining the optimal location and size of the proposed development.

If compromises are to be made to the tree priorities, other factors such as maximising tree retention together with tree replenishment should be considered along with the tree priorities listed here.

5.2 Tree protection setbacks

Where trees are intended to be retained, development footprints should be located away from trees so as to provide adequate clearances for a tree protection zone. The tree protection zone generally extends to the width of the tree canopy and in this area where both feeder and anchoring roots extent to.

Disturbance in this area can be detrimental to the tree's root system and in turn affect the stability, health and condition of the tree. In many cases damage to the root systems is the major cause of tree decline in urban areas.

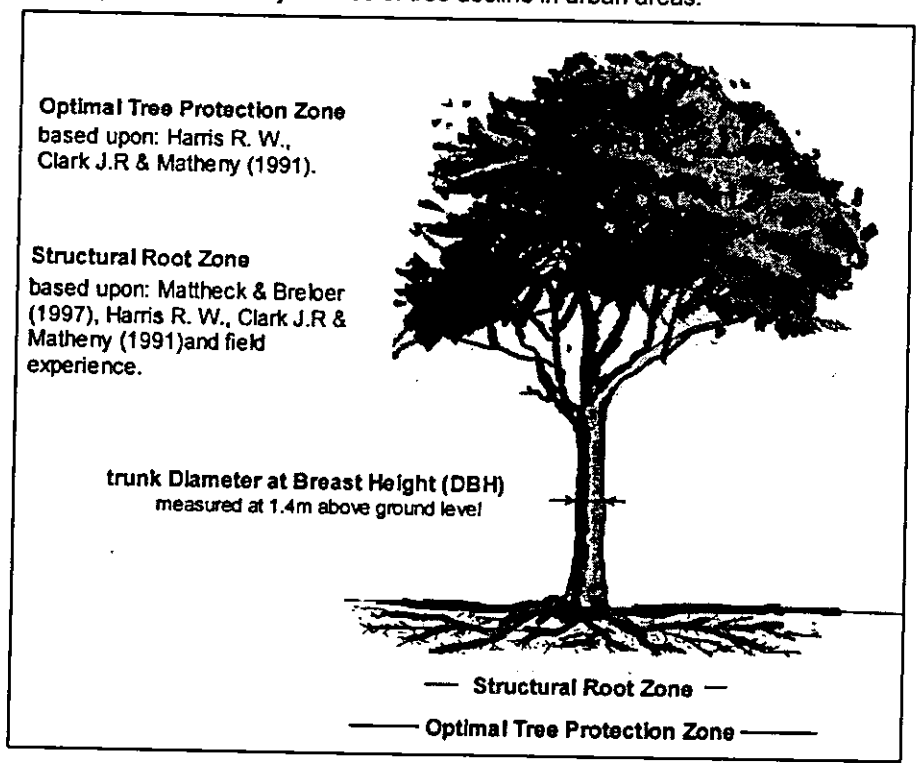


Figure 5.1 Typical diagram of Optimal Tree Protection Zone & Structural Root Zone of a tree.

Where trees are multi-trunk specimens an individual assessment needs to be made based upon the number of trunks, the trunk diameters and the canopy spread of the tree.

Tree protection zones have been described by many authors British Standards 5837(1991), Mattheck & Breloer (1997), Harris *et al* (1999) and each method has considered various criteria to produce guidelines.

For the purposes of this report the method outlined in Harris *et al* (1999) coupled with experience is used to identify tree protections zones.

5.3 Designed tree protection for trees to be retained

Depending upon the tree's age, condition, species and immediate environment together with the scale and duration of impacts, encroachments can occur into the area beneath the canopies of trees, provided that soil and root disturbance is minimised. In many cases suspended slabs on pier and beam footings can minimise soil disturbance beneath the canopy of trees identified for retention.

Where this is not possible, trees identified for retention should have an adequate undisturbed area beneath their canopy. This area is set aside for the tree's root zone and it is essential for the stability and longevity of the tree. Root zones do vary depending upon the species of tree, its condition, its physical size and immediate environment. Unless a specific assessment states otherwise, this undisturbed area is to be at least 80% of the total Optimal Tree Protection Zone and must maintain 100% of the Structural Root Zone of the tree.

5.4 Developments within the tree's Structural Root Zone

Developments that encroach into the Structural Root Zone of a tree must be elevated above the ground and allow rain water infiltration to the soil. The existing ground levels should remain undisturbed no excavation of fill /or should occur. Where elevated developments are to occur within this zone a detailed assessment and specific tree protection measures are required depending upon the tree (species, condition etc.).

5.5 Developments within the Optimal Tree Protection Zone

Developments in the vicinity of trees that require excavation or fill can occur in the Optimal Tree Protection Zone provided that the entire Structural Root Zone is undisturbed and 80% of the total area of the Optimal Tree Protection Zone remains undisturbed.

6. Proposed development impact on trees

6.1 Tree retention & removal and proposed works

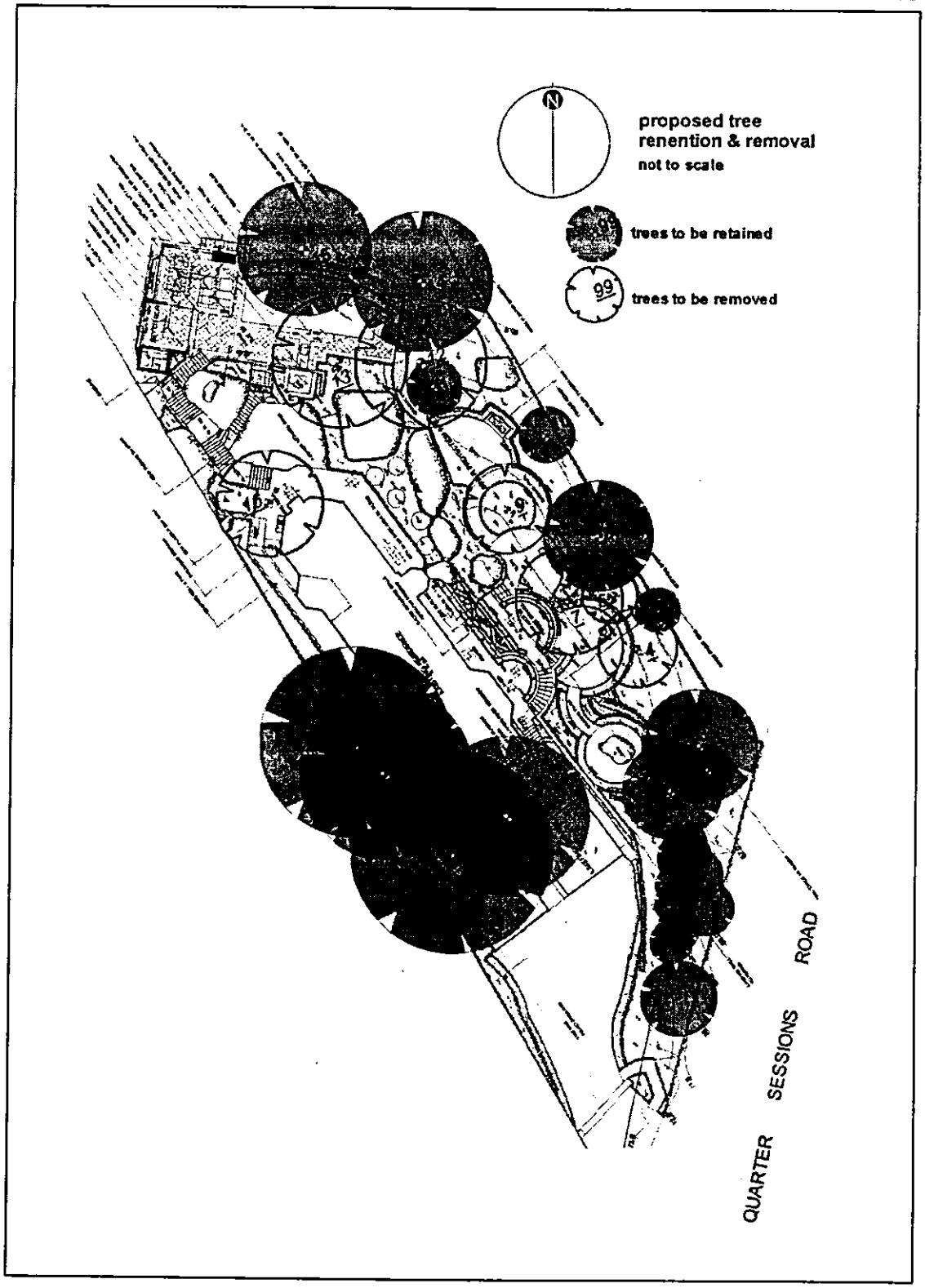
Based upon the proposed landscape plan (Rolling Stone Landscapes, 2006) and the architectural plans (Dunn, 2006) the following table indicates the assessment process identifying trees that are to be retained and those that are to be removed.

Tree No	Genus Species	Common Name	DBH (mm)	Environment / Landscape Significance	SULE	Optimal Tree Protect Zone (radius m)	Structural Root Zone (radius m)	Adjacent Works	Influence on Tree	On – Off site	Plan Status
1	*Corymbia maculata*	Spotted Gum	550	High L/scape Sig.	1	6	3.5	The existing stone walls are to remain within 1.2m (north west) and 2.5m (south west) of the tree. The proposed landscaping plantings are within 2.8m (west) of the tree and turf is to be laid within 3.5m (west) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures
2	*Glochidion ferdinandi*	Cheese Tree	1*200, 1*250	Moderate L/scape Sig.	2	4	2	The existing stone walls are to remain within 3.2m (west) The proposed landscaping plantings are within 4.8m (west) of the tree and turf is to be laid within 5.5m (west) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures
3	*Corymbia gummifera*	Red Bloodwood	2*400, 1*300	High L/scape Sig.	1	5	3	The existing stone walls are to remain within 2.5m (west). The proposed landscaping plantings are within 4.2m (west) of the tree and turf is to be laid within 5.0m (west) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures
4	*Corymbia gummifera*	Red Bloodwood	450	High L/scape Sig.	2	5	3	The proposed landscaping plantings are within 0.5m (west) of the tree and the proposed turf area is to raise existing levels by approximately 1m within 1.5m (west) of the tree.	Changes to soil levels involve fill material covering a substantial portion of the tree's root system which is likely to result in the demise of the tree in the medium term.	On site	To be Removed

Tree No	Genus Species	Common Name	DBH (mm)	Environmental / Landscape Significance	SULE	Optimal Tree Protection Zone (radius m)	Structural Root Zone (radius m)	Adjacent Works	Influence on Tree	On – Off site	Plan Status
5	*Angophora costata*	Sydney Red Gum	300	Moderate L/scape Sig.	1	4	2	The proposed landscaping plantings are within 2.6m (west) of the tree and the turf area is to be raised by approximately by 1m within 3.6m (west) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures
6	*Corymbia gummifera*	Red Bloodwood	350	High L/scape Sig.	1	5	3	The proposed landscaping plantings are within 0.6m (south) of the tree and the proposed turf area is to raise existing levels by approximately 1m within 1.6m (south) of the tree.	Changes to soil levels involve fill material covering substantial portion of the tree's root system which is likely to result in the demise of the tree in the medium term.	On site	To be Removed
7	*Corymbia gummifera*	Red Bloodwood	650	Significant L/scape Sig.	1	6	3	The proposed terrace retaining wall is within 0.7m (west) of the tree. The proposed landscaping plantings are within 0.1m (surrounding the tree) and the proposed turf area within 0.8m (south east) and within 1.5m (north west) of the tree is to raise existing levels over much of the trees root zone.	Changes to soil levels are likely to involve fill and or excavation affecting a substantial portion of the tree's root system. Excavation is expected to sever significant structural roots and fill material.	On site	To be Removed
8	*Corymbia gummifera*	Red Bloodwood	600	Significant L/scape Sig.	1	6	3	The proposed landscaping plantings are within 2.6m (west) and the proposed turf area is to raise existing levels by approximately 1m within 3.8m (west) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures
9	*Allocasuarina torulosa*	Forest Oak	450	Moderate L/scape Sig.	2	5	2.5	The proposed granite path is within 2.5m (on all sides of the tree) and the proposed turf area is to raise existing levels within 4.0m (north west) and 2.0m (south east) of the tree.	Changes to soil levels involve fill material covering substantial portion of the tree's root system which is likely to result in the demise of the tree in the medium term.	On site	To be Removed
10	*Allocasuarina torulosa*	Forest Oak	220	Moderate L/scape Sig.	2	4	2	The proposed landscaping plantings are within 3.2m (west) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures

Tree No	Genus Species	Common Name	DBH (mm)	Environment / Landscape Significance	SULE	Optimal Tree Protection Zone (radius m)	Structural Root Zone (radius m)	Advice/Works	Influence on Tree	On – Off site	Plan Status
11	*Angophora costata*	Sydney Red Gum	300	Low L/scape Sig.	1	4	2.5	The proposed granite path is within 2.2m (south west) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures
12	*Eucalyptus sp.*	Unidentified eucalypt species	900	Significant L/scape Sig.	Unstable	9	4.5	The proposed granite path is within 1.3m (south west) of the tree and the existing swimming pool is to be retained within 2.6m (west) of the tree.	No significant impact with appropriate tree protection measures however the tree is considered to be unstable.	On site	To be Removed
13	*Corymbia maculata*	Spotted Gum	500	High L/scape Sig.	1	6	3	The proposed spa, swimming pool alterations and landscaping is within 1.7m (south west) and 2.0m (west) of the tree.	Changes to soil levels are likely to involve fill and or excavation affecting a substantial portion of the tree's root system.	On site	To be Removed
14	*Corymbia maculata*	Spotted Gum	700	Significant L/scape Sig.	1	8	4	The existing swimming pool is to be retained within 2.3m (south west) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures
15	*Corymbia maculata*	Spotted Gum	850	Significant L/scape Sig.	1	8	4	The existing swimming pool is to be retained within 1.0m (south) of the tree.	No significant impact with appropriate tree protection measures.	On site	Retained with General Tree protection measures
16	*Angophora costata*	Sydney Red Gum	450	Moderate L/scape Sig.	1	5	3	The proposed BBQ, firewood storage and ramp requires excavation within 2m (south) of the tree, the proposed fire place chimney and footings are within 1.5m (east) of the tree and the area surrounding the tree is to be paved.	Excavation is likely to involve severance of significant tree roots resulting in the decline of the tree and/or rendering it unstable and a substantial area of the root zone is to be paved.	On site	To be Removed
17	*Eucalyptus paniculata*	Grey Ironbark	750	High L/scape Sig.	1	8	4	The existing landscape and built structures are to predominately be retained with minor works such as paving.	No significant impact with appropriate tree protection measures.	On site	Retained with Specific Tree Protection measures

6.2 Development footprint



7. Tree protection

7.1 Specific tree protection measures

7.1.1 Tree No. 17 and adjacent paving

The existing landscape and built structures are to predominately be retained with minor paving work adjacent the tree.

To minimise disturbance to the tree's root zone and achieve the design levels proposed paving design levels, the existing pavement material is to be removed using hand operated equipment and tree roots greater then 30mm diameter shall not be severed.

In the event that tree roots greater than 30mm diameter are encountered they shall remain intact and finished levels adjusted to accommodate retention of the tree roots.

7.2 General tree protection measures during construction

Prior to demolition or earthworks, the removal of the identified trees should be undertaken with particular attention given to ensure that no damage occurs to the canopy foliage and branch structure of the trees to be retained.

Prior to demolition or earthworks, secure protective fencing is to be erected around individual trees or groups of trees identified as being retained and should be located no closer than the Optimal Tree Protect Zone (refer Table 6.1). Where this is not possible protective fencing must be aligned no further than 0.5m away than 0.5m from the structure to be demolished.

The purpose of the fencing is to protect the tree roots and trunk and branches and minimise detrimental impacts on the trees during demolition and construction. Fencing shall be 1.8m high chain mesh material securely fixed to steel supporting posts with top and bottom strainer top or steel pipe rails.

Prior to construction and earth works, where the protective fencing encroached into the footprint of the proposed development the protective fencing can be realigned to be no further than 0.5m away from the proposed structure to be built.

The building contractor shall ensure that at all times during site works no activities, stock piles, storage or disposal of materials shall take place within the fenced off areas and that all Protective Fences remain secure throughout the development work period.

Specific excavation for services that require critical fall (eg. sewer, stormwater) may be undertaken within the fenced off areas provided that trenching is dug using hand tools or thrust boring and tree roots are not severed unless they spatially conflict with the service pipes. This work within the tree protection fencing must be carried out under the instructions of an experienced and qualified arborist.

Protective fencing shall remain in functional condition for the duration of building works and can be removed to allow for works identified in the landscape plan.

Landscape works in the vicinity of the trees must be sympathetic to tree retention and existing ground levels must remain unchanged over a minimum of 80% of the area within the tree's optimal tree protection zone (refer Table 6.1).

Any tree damage that occurs to trees or tree roots during site works is to be treated by an experienced and qualified arborist. Where branch pruning works are required, all pruning works including the removal of deadwood are to be undertaken in accordance with Australian Standard AS 4373-1996 Pruning of Amenity Trees and the work is to be undertaken by an experienced and qualified arborist.

8. Summary

8.1 Considerations

This report has been prepared to assess the condition and significance of a number of trees within the property at 22 Quarter Sessions Road, Church Point and assess the potential impact of the proposed development on the identified trees.

The site is currently developed and contains a timber dwelling with associated garages, swimming pool and cabana. The proposed development involves alterations and additions to the existing dwelling and cabana and construction of a spa and landscape works (Dunn, 2006) (Rolling Stone Landscapes, 2006).

Whilst the site contains over 100 trees 17 trees adjacent the proposed works have been considered in this report. Of the 17 trees considered, based upon the development plans and this assessment:

- 7 trees are required to be removed;
- 10 trees are to be retained

Of the 7 trees required to be removed:

- **1** tree is considered to be unstable (Tree No's 12);
- **2** trees are considered to be in good condition and of moderate landscape significance (Tree No's 9 & 16);
- **3** trees are considered to be in good condition and are of high landscape significance (Tree No's 4, 6 & 13);
- **1** tree is considered to be significantly prominent from a broader landscape perspective (Tree No. 7);

Of the 10 trees identified as being retained:

- **1** tree required Specific Tree Protection Measures (refer section 7.1
- **7** trees require General Tree Protection Measures (refer section 7.2).

Provided that the Tree Protection measures (refer section 7) are implemented the proposed development will not have a significant impact on the long-term health of the trees identified as being retained.

References

Barrell, J. (1995) Pre-development Tree Assessment in: Trees and Building Sites, *Proceedings of an International Workshop on Trees and Buildings.* (ed. Watson, G. and Neely, D). International Society of Arboriculture, Illinios, 132-142.

Barrell, J. (2001) SULE II – Presentation of Data, *Management of Mature Trees, Proceedings of the 4th NAAA Tree Management Seminar.* National Arborists Association of Australia.

British Standards (1991) *Guide for Trees in Relation to Construction (BS 5837),* British Standards Institution, London.

Dunn (2006) *Renovations & Additions to 22 Quarter Sessions Road, Church Point,* Dwg. No's 1c, 3c, 4c, 6c, 8c, 11a, 12 & 13c, Nicholas Dunn & Associates, North Sydney, NSW.

Harris, R.W., Clark, J.R. & Matheny, NP (1999) *Arboriculture - Integrated Management of Landscape Trees, Shrubs & Vines* (Third Edition), Prentice Hall, New Jersey, USA.

Mattheck C. & Breloer H. (1997) *The Body Language of Trees – A Handbook for Failure Analysis,* Department of the Environment, Third Impression, London.

Rolling Stone Landscapes (2006) *Proposed Landscape Plan,* Dwg. No. D4, 29/06/06, Rolling Stone Landscapes, Baulkham Hills, NSW

Primara

From: "Footprint Green Pty Ltd" <mail@footprintgreen.com.au>
To: "'Nicholas Dunn + Associates'" <primara@netspace.net.au>
Cc: "'Dean Herald'" <dean@rollingstonelandscapes.com>
Sent: Thursday, 12 October 2006 9:33 AM
Attach: 11-10-06 Impact of Proposed Development on Trees - 22 Quarter Sessions Road - Mander-McCarthy, Dunn-Herald.pdf
Subject: RE: 22 Quarter Sessions Road, Church Point

Nicholas / Dean

Please find attached a copy of our draft report.

I am concerned about the changes to the levels and disturbance within the root zones of many of the trees.

Should the landscape and architectural plans be modified to accommodate retention of the trees, as a general rule;

- 80% of the area of the Optimal Tree Protection Zone should remain undisturbed and existing levels should remain unchanged and
- the Structural Root Zone of each tree should also remain without excavation or fill.

(refer report table 6.1 for the sizes of these zones)

I am happy to discuss the contents of the report and I will wait to hear from you before finalizing the report.

Regards
Melanie Howden

Footprint Green Pty Limited
Arboricultural, Environmental, Horticultural Consultants
Phone: (02) 9918 8877
Fax: (02) 9918 8876
Email: mail@footprintgreen.com.au
Web: http://www.footprintgreen.com.au
Post: 5 Watkins Road, Avalon Beach, NSW, 2107

From: Nicholas Dunn + Associates [mailto:primara@netspace.net.au]
Sent: Tuesday, 10 October 2006 9:44 AM
To: mail@footprintgreen.com.au
Subject: Re: 22 Quarter Sessions Road, Church Point

Re: 22 Quarter Sessions Road, Church Point

Melanie,

Please find enclosed drawings as requested.

Regards

PAUL DUNN

FlameZone
BUSHFIRE CONSULTING

Bushfire Risk Assessment Report

for

22 Quarter Sessions Rd, Church Point, NSW, 2105

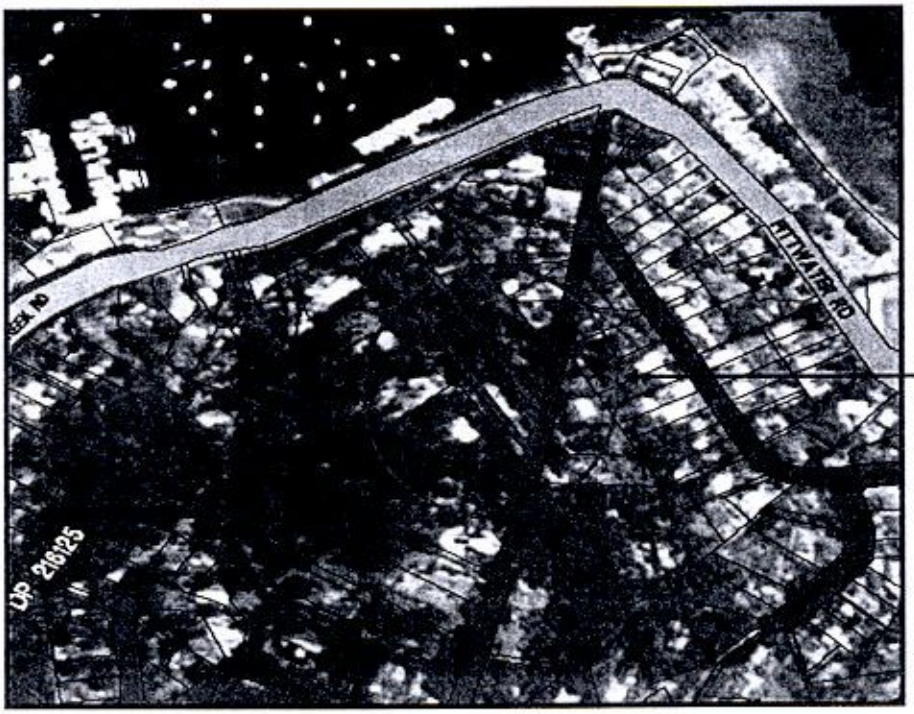
(Lot 2, DP 618481)

Prepared for

Nicholas Dunn and Associates

On behalf of Bob Manders and Susie McCarthy

March 2006



Review area from building envelope

FPA AUSTRALIA
Code of Practice Compliant

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Contents

1 CONSENT AUTHORITY SUMMARY

1.1 Purpose of report

The purpose of this assessment is to provide information about bushfire related matters affecting the proposed development to assist the consent authority in the determination of the proposal, in accordance with s79BA of the *EP&A Act*. In addition, the report will provide advice on how the development can be made to conform to the performance requirements of *the Building Code of Australia, Australian Standard AS 3959-1999 Construction of buildings in bushfire-prone areas* and *Planning for Bushfire Protection 2001*.

For an in-depth analysis, see the attached **Detailed Site Report** which outlines the hazard assessment, makes recommendations to minimise and mitigate the risk and assesses the likely impact of a wildfire on the proposed development.

1.2 Property summary

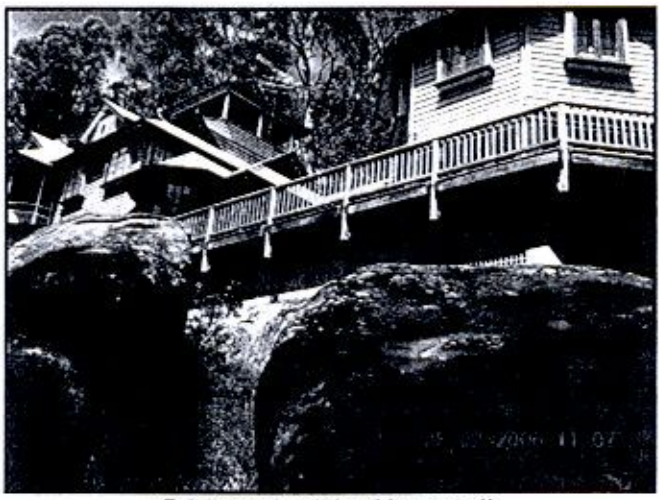
This report relates to the construction of alterations and additions to a private dwelling on an existing allotment.

Property address:	22 Quarter Sessions Rd, Church Point, NSW, 2105
Title reference:	Lot 2, DP 618481
Council zoning:	2 (a) residential
Classification of proposed structure/s:	1 (a)

Pittwater Council's Bushfire Prone Land Map identifies this property as being within the bushfire-prone Group 1 and Buffer Zone vegetation area. The proposed Development Application will need to take into account the bushfire provisions of *Planning for Bushfire Protection 2001, the BCA* and *AS 3959-1999*.

1.3 Description of development proposal

The existing building lies on 4 levels, is constructed of timber with metal roof and has a large hardwood verandah along the north eastern elevation. It is proposed to alter the rear of the main living level to increase its size (within the existing dimensions of the deck) and to replace the existing wooden verandah with a steel frame and ceramic deck.



Existing deck looking south

1.4 Bushfire risk assessment

The following table outlines the maximum risk for all directions out to 100 metres **from the building envelope**:

	North/West	North/East	South/East	South/West
Vegetation:				
Classification	**Tall open woodland**	**Tall open woodland**	Tall open woodland	Woodland/managed gardens
Structure	**1,6,8**	**1,6,8**	1,6,8	1,6,8
Group	**2**	**2**	2	2
Slope of maximum hazard within 100m	**Downslope 20°**	**Downslope 20°**	Downslope 5 °-10°	Upslope 5 °-10°
Distance of Maximum hazard from asset	**30m**	**15m**	30m	10m ([1])
Required APZ (IPA+OPA)	**60 (50+10)**	**60 (50+10)**	40 (30+10)	20 IPA
Achievable APZ	**30 m**	**15m**	30 m([3])	10 m
Category of bushfire risk	**Flamezone**	**Flamezone**	High	N/A([2])
Construction level required by AS 3959	**3**	**3**	2	N/A
Additional construction protection measures required	**Yes**	**Yes**	Yes	Yes

Explanatory Notes:
[1] Infill space and driveway
[2] Neighbouring garden and residence
[3] To south eastern neighbour across carriageway

For the category of risk shown above (flamezone - PfBP), design and construction should conform to **Level 3** of **AS 3959-1999** (see Appendix A) with additional protection measures (as the flamezone risk is outide the scope of AS 3959-1999).

1.5 Key recommendations

- All new building works to be to **Level 3 AS 3959-1999.**
- The new decking to be of non combustible material.
- All glazing to the north west and north east elevations opening on to the verandah to use fire rated or toughened glass and be covered in a security type screen (see detail in recommendations). This combination designed to withstand a radiant heat flux of 40 kwm^2 for a minimum of 3 minutes.
- The wooden steps to the rear garden from the deck to be replaced with non combustible materials and the under deck area to be kept clear or completely filled in so that embers cannot gather.
- Gutters to the roofing surrounding the deck area to be leafless or metal leaf guard to be fitted.
- Increased household fire protection with the provision of a self powered fire pump with hoses using the swimming pool (SWS) as the water source.
- The area between the rebuilt deck and the north east neighbour to be maintained as an Inner Protection Area. (See Chapter 4 'Planning for Bush Fire Protection' sec 4.2, attached).

1.6 Conclusion

The bushfire risk on the site will be **flamezone**. Therefore construction will need to be to **Level 3** of *AS 3959-1999* and take into account the measures contained in *Planning for Bushfire Protection 2001*. These measures are outlined in the Key Recommendations with supporting information under Recommendations in the detailed report.

The building and site works as proposed, incorporating the Key Recommendations outlined above, could be considered to have achieved the performance standards required by AS 3959-1999.

We recommend approval of this application, providing the consent conditions include the recommendations outlined in this report.

Neil Falconer
Bush Fire Risk Consultant

FlameZone Consulting
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fireshield@aquafire.com.au

2 DETAILED SITE REPORT

2.1 Introduction

Bushfire Legislation in NSW

The ***Environmental Planning and Assessment Act 1979*** and the ***Rural Fires Act 1997*** were amended recently via the ***Rural Fires and Assessment Legislation Amendment Act 2002.***

With regard to the ***Environment Planning and Assessment Act 1979,*** the amendments.

a) Require local government councils to record on maps land identified by the commissioner of the NSW Rural Fire Service as bushfire prone land; and

b) Prevent development consent being granted for the carrying out of development for certain purposes on bushfire prone land unless the consent authority is satisfied that the development conforms to certain documented bushfire protection specifications and requirements (***Planning for Bushfire Protection*** and A***S 3959 - Construction of Buildings in Bushfire-prone areas***) or has consulted with the Commissioner; and

Planning for Bushfire Protection, defines bushfire prone areas as an area that can support a bushfire or is likely to be subjected to bushfire attack. In general, a bushfire prone area is an area containing a high, medium, or low bushfire hazard, or any area within 100 m of a high or medium bushfire hazard or within 30 m of a low bushfire hazard. Bushfire hazard areas do not include existing urban areas or water bodies (other than wetland vegetation), and are identified by bushfire hazard mapping produced under an approved Bushfire Risk Management Plan, or other such map certified by the Commissioner of the NSW Rural Fire Service for this purpose.

Any application for development within designated bushfire-prone land (that is not considered 'Special Fire Protection Purpose') falls under the provisions of Section 79BA of the *Environmental Planning & Assessment Act.* This requires conformity with *Planning for Bushfire Protection, 2001,* or for the Consent Authority to consult with the Rural Fire Service about bushfire safety measures to be undertaken.

This report details observations and assessments made during one or more site visits and an analysis of planning instruments and local government information.

2.2 Property details

Property address:	22 Quarter Sessions Rd, Church Point, NSW, 215
Title reference:	Lot 2, DP 618481
Class of proposed structure:	1(a)
Consent authority:	Pittwater Council
Council zoning:	2 (a) residential
Property owner:	Bon Manders and Susie McCarthy
Date of inspection:	28/02/06

2.3 Vegetation

The vegetation **on the site** consists of tall open woodland where the canopy cover is around 30-40% with mixed understorey of grasses, shrubs and non mature species. The significant trees are spotted gums, angophoras and casuarinas. This on site vegetation represents the major bush fire hazard for this site.

Hazard vegetation to north west

Hazard vegetation to north west below pool (SWS)

The Vegetation **off-site** continues the theme, although it carries a lower fuel load being part of the urban built environment, albeit the blocks are larger than normal metropolitan sites. The neighbours to all sides have sought to maintain the 'bushland' feel of the area.

The western facing block is subject to north westerly winds during the summer. The lower section of the subject block carries the major bushfire hazard. By consulting 'Planning for Bushfire Protection 2001' together with on site evaluations, the fuel load is estimated at around 25 tonnes per hectare and the slope (20°) would indicate a rapid rate of spread uphill. The nature of the slope, position of the pool between the hazard and the dwelling and the size of the trees and this type of understorey would limit the length of the flame. The area between this lower portion of the block and the McCarrs Creek body of water is urban built environment and McCarrs Creek carriageway. The potential hazard is seen to be radiant heat, embers and smoke.

Hazard vegetation – north east

Typical hazard vegetation – north west

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2.4 Directional exposure matrix

The following table outlines the **maximum risk** for all directions out to 100 metres **from the building envelope**:

	North/West	North/East	South/East	South/West
Vegetation:				
Classification	**Tall open woodland**	**Tall open woodland**	Tall open woodland	Woodland/managed gardens
Structure	**1,6,8**	**1,6,8**	1,6,8	1,6,8
Group	**2**	**2**	2	2
Slope of maximum hazard within 100m	**Downslope 20°**	**Downslope 20°**	Downslope 5 °-10°	Upslope 5 °-10°
Distance of Maximum hazard from asset	**30m**	**15m**	30m	10m ([1])
Required APZ (IPA+OPA)	**60 (50+10)**	**60 (50+10)**	40 (30+10)	20 IPA
Achievable APZ	**30 m**	**15m**	30 m([3])	10 m
Category of bushfire risk	**Flamezone**	**Flamezone**	High	N/A([2])
Construction level required by AS 3959	**3**	**3**	2	N/A
Additional construction protection measures required	**Yes**	**Yes**	Yes	Yes

Explanatory Notes:
[1] Infill space and driveway
[2] Neighbouring garden and residence
[3] To south eastern neighbour across carriageway

2.5 Slope

The effective slopes that would most significantly affect fire behaviour are to the north west and north east being 20° downslope. To the north west the hazard vegetation is on site, whereas to the north east the hazard vegetation is off site.

2.6 Vicinity and adjoining development

The subject block is on a sloping block facing west towards McCarrs Creek and Pittwater. All neighbours are on sloping blocks. Neighbouring residences are either masonry and tile or wooden structures. Most of the development in this area date from the late 1980's to early 1990's.

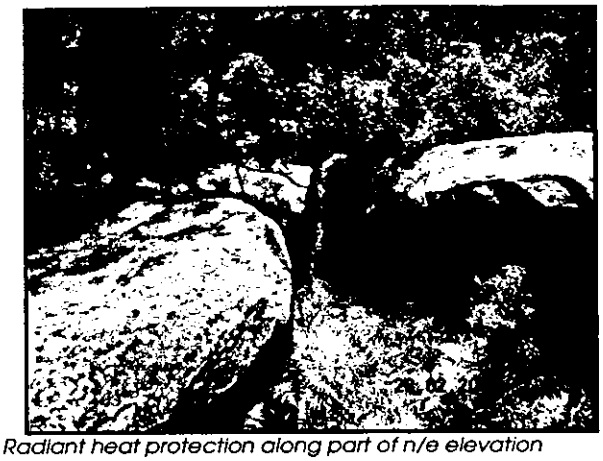
2.7 Asset protection zones

Asset Protection Zones (APZ) are created around a development to help preserve human life and high value assets, and are an essential element of any development.

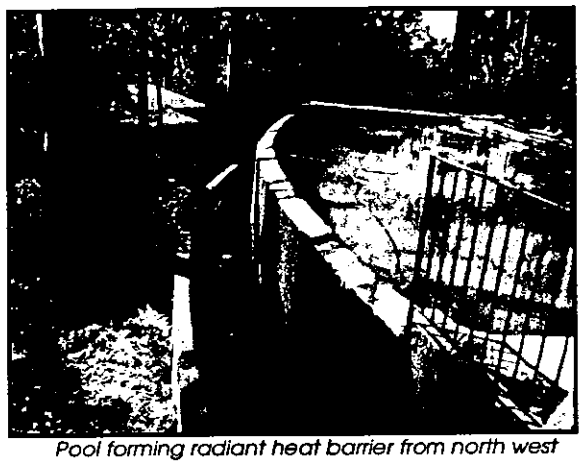
An APZ is formed in two parts the Inner Protection Area (IPA) and the Outer Protection Area (OPA). The IPA is designed with minimal fuel loads and can include areas with no fuel loads such as driveways/ tennis courts, etc. The OPA is an area where fuel loads are maintained so that the intensity of any approaching wildfire is greatly reduced.

Asset Protection zones exist, or can be created, to the longitude of the block (north west to south east). To the north west the space between the deck and the far side of the pool represents 30 metres and includes 2 types of radiant heat barriers, namely the pool itself and several large rocks featured between the pool and the deck structure. In the other direction the garage, brick driveway and Quarter Sessions Road carriageway provide suitable APZ.

To the side elevations the APZ's are insufficient, being an infill development. Whilst any vegetation can offer a fire threat, the managed gardens to each side do not represent a significant bushfire threat.



Radiant heat protection along part of n/e elevation



Pool forming radiant heat barrier from north west

2.8 Access

Access in and out of the area is via Pittwater Road and Eastview Road.

Access to the property is by the steep ascent of Quarter Sessions Road, a sealed carriageway.

Access for fire services (Category 1 tanker) is by Quarter Sessions Road and a wide level driveway.

Quarter Sessions Road facing south

Quarter Sessions Road facing north

2.9 Water supplies

The reticulated supply is outside the adjacent property. This position will allow visiting NSW Fire Brigade vehicles to operate at the subject site , well within the maximum operating distance of 70 metres (from vehicle).

2.10 Fire response services

Rural Fire Services are based at Terrey Hills

The nearest NSW Fire Brigades is at Mona Vale some 4 kilometres away.

2.11 Prevailing winds

Anecdotal reports describe prevailing winds from the north east although being to the lee of the hill the winds can vary in direction.

2.12 Fire history

According to anecdotal evidence, this area can be subjected to wildfire events.

The Rural Fire Services may conduct hazard reductions from time to time.

2.13 Threatened species

The owner is unaware of any threatened species, populations or endangered ecological communities identified under the *Threatened Species Conservation Act 1995* occurring on the property.

2.14 Aboriginal relics

The owner is unaware of Aboriginal relic or place as defined by the *National Parks and Wildlife Act 1974* occurring on the property.

3 BUSHFIRE RISK ANALYSIS

An analysis of vegetation and slope in and around the subject property determines that the level of fire risk is **flamezone**.

4 RECOMMENDATIONS

It is proposed to alter the walls and windows fronting the deck. This deck is to be replaced with a deck of steel construction with a ceramic floor. The windows and door openings will be altered.

The following recommendations address these alterations and take into account additional fire protection measures for the site as required by the amendments to the *Rural Fires Act 1997and EP&A Act 1979* for development in flamezone areas. Recently amended by *Rural Fires and Environmental Assessment Legislation Amendment Act 2002.*

4.1 Site and Access

The area immediately surrounding the existing building between the pool to the north west and the neighbour to the north east to be maintained as an Inner Protection Area. No trees should be closer to the building than 5 metres and any canopy should in any case not overlay the roof. In this regard the major rocks adjacent to the deck represent excellent radiant heat barriers,

The proposed driveway is suitable to allow for fire service vehicles to be able to access the hazard area.

4.2 Asset protection zones

Great care should be taken to reduce the hazards surrounding the existing building. The area to the north west and north east should be developed on Inner Protection Area standards between the eastern neighbour and between the house and the pool. The passageway to the south western elevation should be cleared of cut fuel (fire logs) and the brushwood fence should be replaced with non combustible materials.

4.3 Landscaping

Any garden beds in contact with combustible fencing or buildings should be not covered with combustible mulch, bark or chips (bare earth or pebbles should be considered).

Plantings should use fire-resistant plants and ground covers.

4.4 Building and construction

To ensure that the development is able to resist the passage of a wildfire, consent conditions, if granted for this development, will need to include some or all of the following: additional fire protection measures; measures that relate to access and egress; Asset Protection Zones; water supplies; and design, construction techniques and materials that are superior to the minimums called up in AS 39599.

The assessed risk level requires construction to **Level 3** of ***AS 3959-1999*** and as the site is 'flamezone' (PfBP- 2001) additional elements are to be considered.

Key elements of *AS 3959-1999* are highlighted as they apply to this development. The Australian Standard should be referred to for a complete list of requirements.[1]

Windows

Glazing on the north west and north eastern elevations should be constructed of fire-resistant materials, including fire-resistant glass (such as Toughened; Fire-rated; or Pilkington's FrontLine or equivalent - Trend Xtreme), AND be fitted with non-combustible shutters OR high-performance mesh (stainless steel*) with good impact resistance. This combination must be capable of withstanding in excess of 40 kW/m2 radiant heat exposure for 3 minutes. Shutters or mesh screens should cover the complete window not just the opening portion.

*CrimSafe Style high performance mesh or similar (see attached). As can be seen from the performance graph (Fig. 2) and Results (Table 1) a 40 kw/m² radiant heat flux resulted in a transmitted heat flux of less than 25 kw/m² after 35 minutes of exposure. (It is worth noting that after 90 minutes of exposure the figures were 56 kw/m² received and 33 kw/m² transmitted). This style of mesh meets or exceeds all other performance requirements for structural integrity and impact resistance required for Flame Zone use.

An alternative would be to use non combustible shutters.

External doors

Doors should be treated in the same way as windows and should be fitted with draught excluders.

Roofs

All roofing must be of non-combustible material and shall be sarked with a sarking with a flammability index of not more than 5. Rib caps and ridge caps are to be sealed using materials outlined in AS 3959-1999.

Eaves

Must be enclosed with fire resistant materials.

Gutters and downpipes

Where guttering is used, it should be of metal construction and fitted with metal leaf guards or should be leafless metal gutters.

Verandahs and decks

Be constructed of non-combustible materials No exposed timber to be used on the replaced deck.

4.5 Water

A self-powered petrol/diesel water pump to be installed to access the SWS and should be fitted with a 25mm x 30 metre fire protection hose. This back up system is necessary if the main water supply is unavailable in the event of a fire.

4.6 Gas tanks and power

Gas tanks, if used, should be sited so that the relief valve faces away from the building.

[1] Refer to Appendix 4 "Building Requirements for Bush Fire Protection" of NSW RFS "Guidelines for Single Dwelling Development Applications" for a useful summary of the requirements

5 CONCLUSION

The bushfire risk on the site will be **flamezone**. Therefore construction will need to be to **Level 3** of *AS 3959-1999* and take into account the measures contained in *Planning for Bushfire Protection 2001*. These measures are outlined in the Key Recommendations.

The BCA requires that Class 1, 2, and 3 structures built in a designated bushfire-prone area must be designed and constructed to reduce the risk of ignition from a bushfire, while the fire front passes. Section 79BA of the *EP&A Act 1979*, requires that any development must conform to the requirements of the *PfBP*.

The building and site works as proposed, incorporating the Key Recommendations outlined above, could be considered to have achieved the performance standards required by AS 3959-1999.

We recommend approval of this application, providing the consent conditions include the recommendations outlined in this report.

Neil Falconer
Bush Fire Consultant

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Methodology

FlameZone Bushfire Consulting used the following methodology to determine the bushfire risk for the subject property:

- Conducted a site visit and observed the property and surrounding areas.
- Measured the property to establish slope and distance to significant vegetation to calculate Asset Protection Zones.
- Sought input from the owner/applicant for information and declarations
- Sought input where appropriate from Rural Fire Service, Local Council and Department of Meteorology for historical and prevailing conditions (if available)
- Applied the hazard evaluation methods detailed in *Planning for Bushfire Protection 2001*, with reference to Appendix 2 and Appendix 3.
- Obtained plans, aerial photographs and significant photographs of the site to demonstrate and validate observations and conclusions

Referenced documents

Pittwater Council Bushfire Prone Land Map
Pittwater Council Local Environmental Plan
Environmental Planning & Assessment Act, 1979 (NSW), s79 and 80A (*EP&A Act*)
Building Code of Australia, Sections 2.3.4 and 3.7.4 (as amended) (*BCA*)
Australian Standard AS 39599-1999 Construction of buildings in bushfire-prone areas (*AS 3959*)
Planning for Bushfire Protection 2001, Rural Fire Service (*PfBP*)
Rural Fires Act 1997 (NSW) (*Rural Fires Act*)
NSW RFS "Guidelines for Single Dwelling Development Applications"
Development Note 001 "Use of Fire-retardant-treated Timber", 2 September 2004
Site plans
Building plans
Site photographs dated 28/02 2006
Aerial photograph printed 28/02 2006

Acknowledgements

Pittwater Council
Planning NSW GeoSpatial Portal
Planning NSW iPlan, Plan Connect

Disclaimer

Please note that all due care is exercised in the preparation of this document and is produced in good faith. However, no warranty, express or implied, is intended as far as adoption of these recommendations impacts on the survivability of the property that is the subject of this report.

The impact of bushfire is unpredictable due to the vagaries of conditions on the day; the level of fuel build up on and near the site; property and building maintenance; and the presence or absence of active fire suppression by fire services or owners before, during and after the fire event.

Appropriate construction techniques, siting, landscaping and maintenance all have a role to play. Adoption of these measures should improve survivability, but not guarantee it.

"NOTE: Although the Standard is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion" ***Section 1.3 AS 39599 Construction of Buildings in Bushfire Prone Area***

"Notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, always remains." ***Section 1.1.4 Limitations – Planning for Bush Fire Protection, 2001, NSW Rural Fire Service***

6 COMPANY PROFILE

Who is Aqua Fire Protection Pty Limited?

Aqua Fire Protection was formed in 2000 and has quickly grown to become an independently recognised and highly regarded fire protection company.

We work in conjunction with commercial, industrial and residential property owners and managers to ensure the planned and systematic installation, inspection, testing and rectification of Fire and Life Safety Essential Services.

Due to the diversity and complexity of this area, we have structured our business to enable us to confidently provide a reliable service. Aqua Fire Protection supplies highly experienced, qualified technicians and tradesmen, computerised record documentation, and certification in accordance with relevant Australian Standards, the Building Code of Australia, State Regulations, and industry best practice where no standards exist (as in residential external water sprinkler systems).

We offer comprehensive, reliable and cost-effective solutions. Our goal is to work with our clients to ensure protection, compliance, efficiency, value for money and peace of mind.

Who is FlameZone Consulting?

FlameZone Consulting was established as a separate division in response to a growing need for bushfire assessment and management services as a result of legislative changes in 2002.

We offer the following services:

- Bushfire risk assessments for Development Applications
- Bushfire mitigation strategies
- Hazard reduction and maintenance programs
- Bushfire evacuation planning
- Training in pump and hose operation
- Liaison with council and fire services regarding bushfire issues for Development Applications and generally

FlameZone Consulting has Associates operating across most of New South Wales, all of whom have significant Rural Fire Service bushfire-fighting experience at senior levels. All our consultants have completed the UTS/RFS training course and FlameZone Consulting is included on the RFS web site list of Bushfire Management Consultants.

Who is Aqua FireShield?

Aqua FireShield, was also established as a separate division of Aqua Fire Protection to research, design and install residential external bushfire sprinkler systems capable of affording the highest possible protection to properties in bushfire-prone areas.

In addition, we supply and advise on a range of bushfire protection products and services to meet the requirements of AS 3959.

Contact us

FREE CALL ANY TIME - 1800 001 008

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Mailing Address	PO Box W6 Warringah Mall NSW 2100
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Email:	fireshield@aquafire.com.au
Visit us on:	www.flamezone.com.au

7 APPENDICES

Appendix A. Table A3.3, Determination of Category of Bushfire Attack for a Site, *Planning for Bushfire Protection 2001*

Distance from vegetation	Less than 20m	From 20m but not greater than 30m			Greater than 30m but not greater than 50m			Greater than 50m but not greater than 80m			Greater than 80m but not greater than 100m		
Slope	All slopes	Greater than 15°	Greater than 5° but not greater than 15°	0 to 5°	Greater than 15°	Greater than 5° but not greater than 15°	0 to 5°	Greater than 15°	Greater than 5° but not greater than 15°	0 to 5°	Greater than 15°	Greater than 5° but not greater than 15°	0 to 5°
Vegetation	Category of Bushfire Attack												
Forest	FZ	FZ	FZ	Ext	FZ	Ext	High	Ext	Ext	Med	Ext	High	Low
Woodland	FZ	FZ	Ext	Med	Ext	High	Low	Ext	Low	Low	Med	Low	Low
Shrub/Heath	FZ	FZ	FZ	Ext	FZ	Ext	High	Ext	High	Med	High	High	Low
Mallee/Mulga	FZ	Med	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Rainforest	FZ	High	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Grassland	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Non-vegetated	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low

Bushfire attack categories:

Low = Low Medium = Med High = High Extreme = Ext Flame Zone = FZ

NOTES:

1. Categories of Bushfire Attack are based upon a Fire Danger Index (FDI) of 80 and fuel loads for NSW vegetation. The Table has been provided by NSW Rural Fire Service. The fire behaviour models are described in Appendix E to AS3959. Forest includes pine plantations but does not include rainforest.

2. The expected fire behaviour for each category is:

Low	insignificant ember attack, radiation no greater than 14.5 kWm^{-2} or is greater than 100 metres from all woody vegetation.
Medium	significant ember attack, radiation heat greater than 14.5 kWm^{-2} and no greater than 16 kWm^{-2}. (**Level 1** AS3959 – 1999)
High	significant ember attack, possible flame contact, radiation heat greater than 16 kWm^{-2} and no greater than 21 kWm^{-2}. (**Level 2** AS3959 – 1999)
Extreme	significant ember attack, possible flame contact, radiation heat greater than 21 kWm^{-2} and no greater than 31 kWm^{-2}. (**Level 3** AS3959 – 1999)
Flame Zone	within the Flame Zone and/or greater than 31 kWm^{-2}, therefore construction outside the scope of AS3959 – 1999.

Appendix B. **Table 4.1 Minimum Specifications for Asset Protection Zones (APZ) for Residential Purposes in Bushfire-prone Areas, *Planning for* Bushfire *Protection 2001***

Table 4.1

Minimum Specifications for Asset Protection Zones (APZ) for Residential Purposes in Bushfire-prone Areas

Forests
(Grp 1 see Fig.A2.2)

Slope		APZ = IPA + OPA
>5°	Upslope	20 = 20 + 0
5–0°		30 = 20 + 10
>0–5°	Downslope	40 = 30 + 10
>5–10°		50 = 40 + 10
>10–15°		60 = 50 + 10
>15–18°		70 = 60 + 10

Woodlands,heaths, open scrub
(Grp 2 see Fig.A2.2)

Slope		APZ = IPA + OPA
>5°	Upslope	20 = 20 + 0
5–0°		30 = 20 + 10
>0–5°	Downslope	35 = 25 + 10
>5–10°		40 = 30 + 10
>10–15°		50 = 40 + 10
>15–18°		60 = 50 + 10

Rainforests, grasslands, open woodlands, mallee
(Grp3 see Fig.A2.2)

Minimum separation distance of 20m (cleared/managed vegetation) required regardless of construction level for all slopes. Fire trail recommended.

Distance in metres. See Appendix 2 to interpret table.

IPA – Inner Protection Area

OPA – Outer Protection Area

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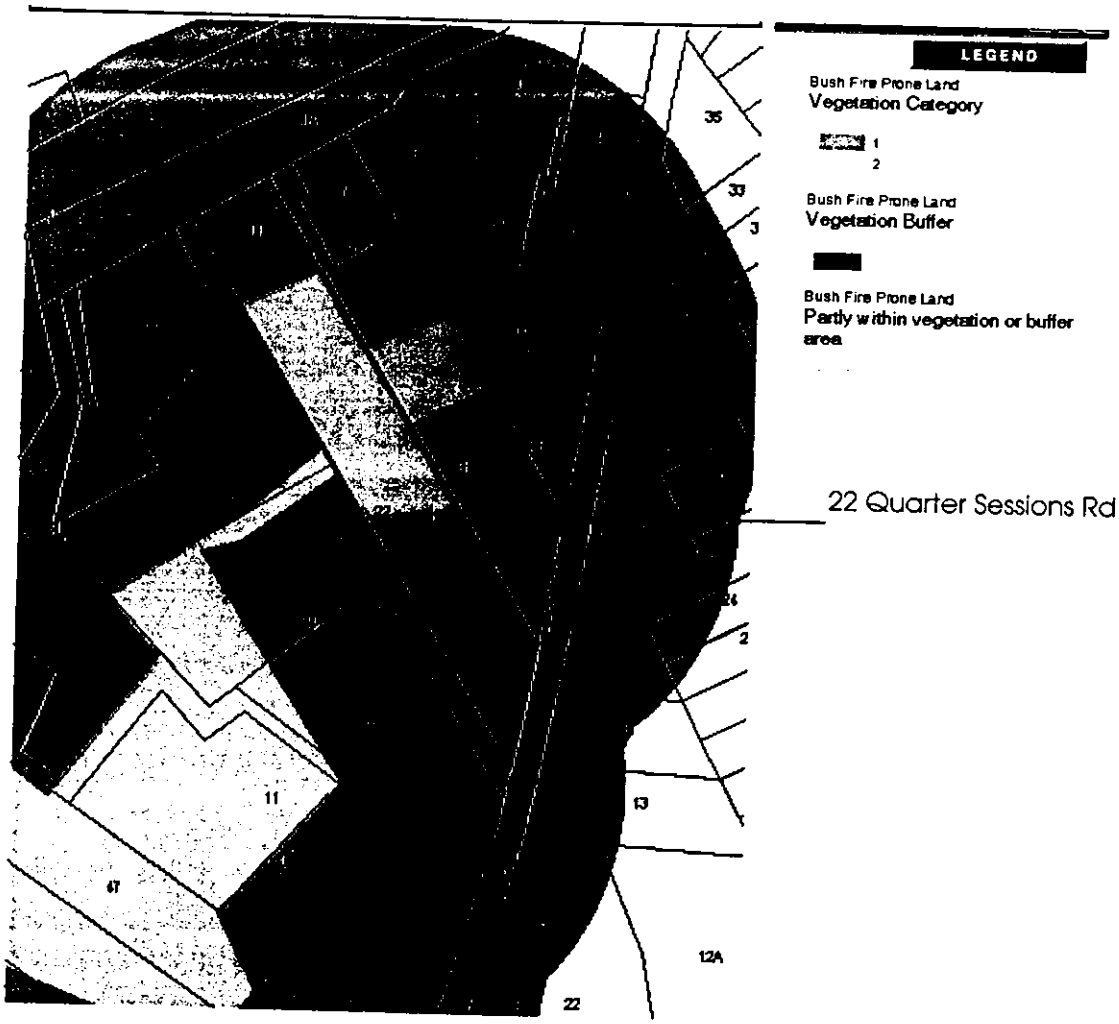
Appendix C. Bushfire Prone Land Map



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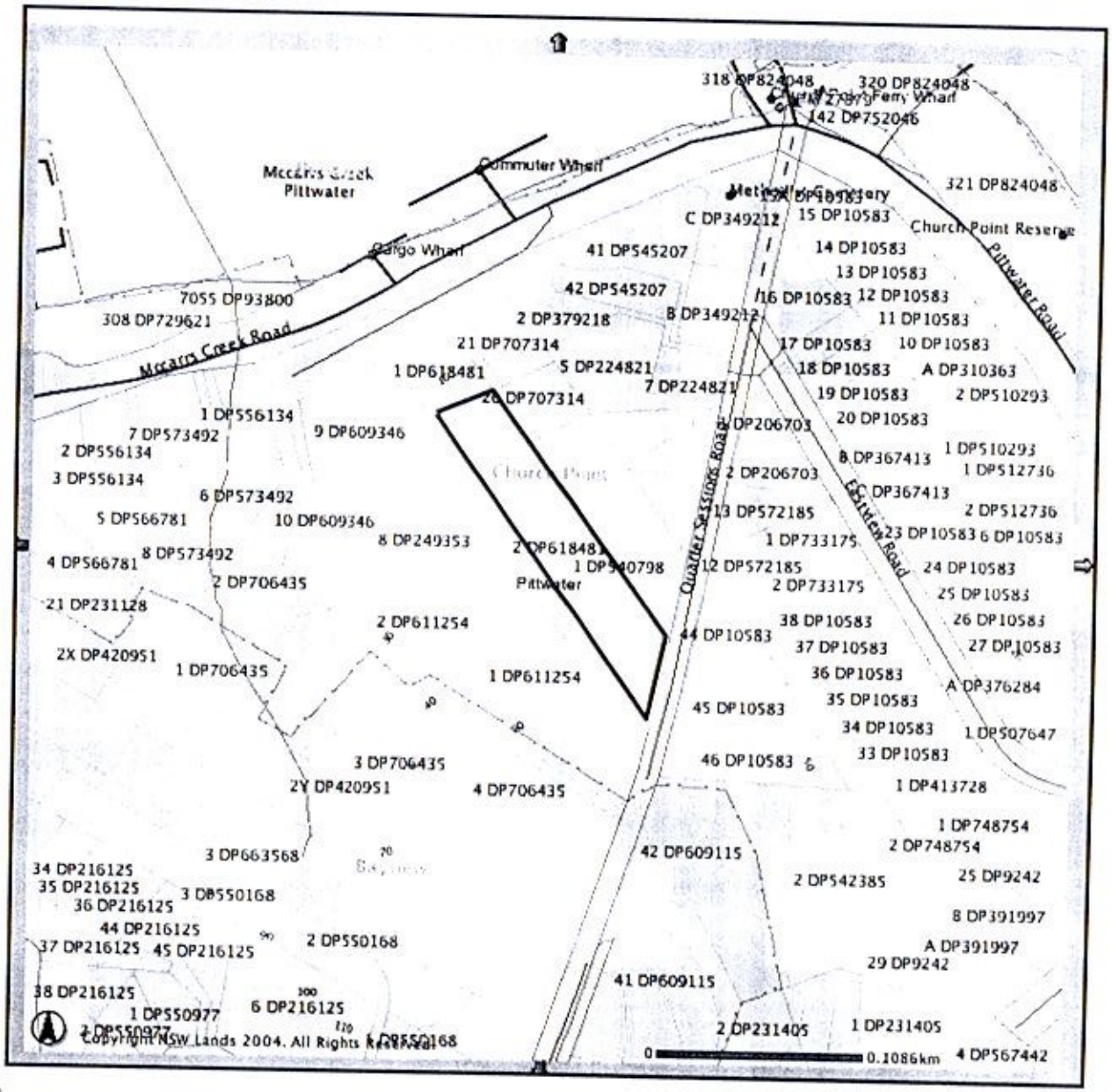
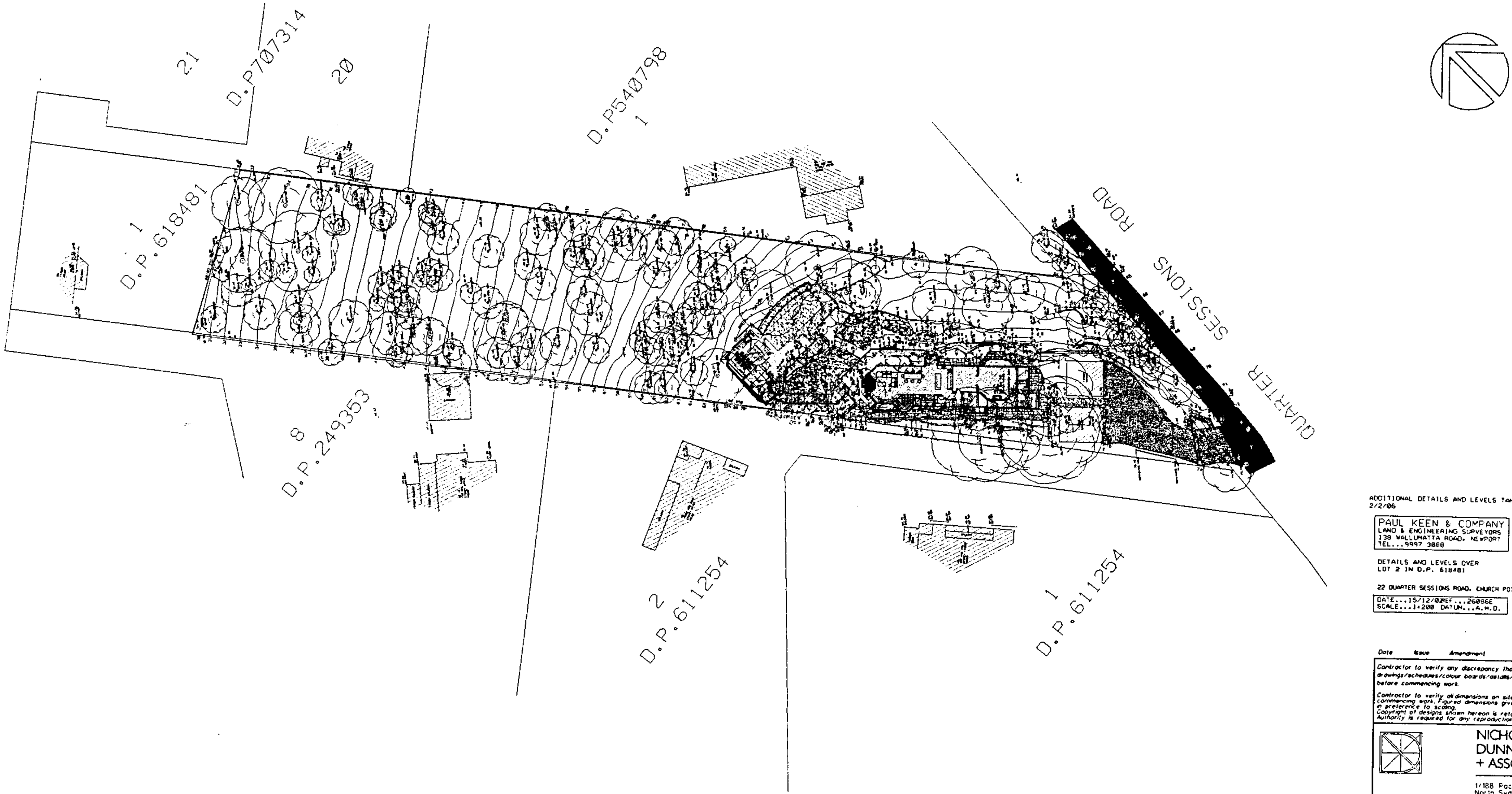
Appendix D. Planning NSW Aerial Photo

22 Quarter Sessions Rd.doc

Appendix E. Lands GeoSpatial map





ADDITIONAL DETAILS AND LEVELS TAKEN
2/2/06

PAUL KEEN & COMPANY
LAND & ENGINEERING SURVEYORS
138 WALLUMATTA ROAD, NEWPORT
TEL...9997 3888

DETAILS AND LEVELS OVER
LOT 2 IN D.P. 618481

22 QUARTER SESSIONS ROAD, CHURCH POINT

DATE...15/12/02 REF...26086E
SCALE...1:200 DATUM...A.H.D.

Date	Issue	Amendment

Contractor to verify any discrepancy that may exist between drawings/schedules/colour boards/details/instructions,etc before commencing work.

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DUNN
+ ASSOCIATES

1/188 Pacific Highway
North Sydney 2060
Australia
Telephone 9956 5454
Facsimile 9956 8280

CLIENT
BOB MANDER & SUSIE Mc CARTHY

PROJECT
RENOVATIONS AND ADDITIONS TO
22 QUARTER SESSIONS ROAD
CHURCH POINT

DRAWING
PLAN - SITE

LOT 2 IN D.P. 618481
15/12/02

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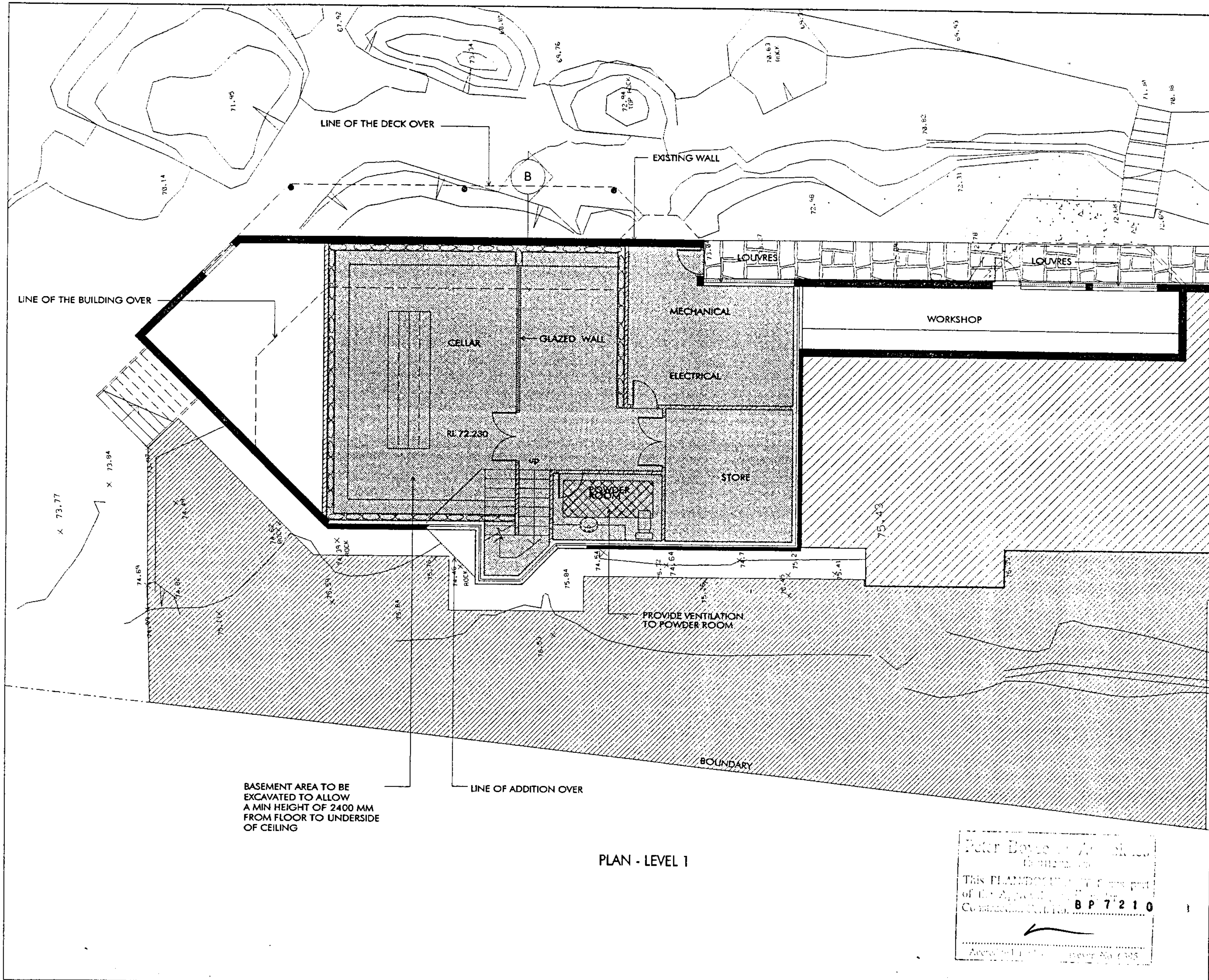
Date	JAN 2006	Drawing Number	Issue
Drawn By	PZ	01	C
Chd By	PD		



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PROJECT
RENOVATIONS AND ADDITIONS TO
22 QUARTER SESSIONS ROAD
CHURCH POINT

DRAWING
PLAN - LEVEL 1
CELLAR
EXISTING + PROPOSED

Scale	1/100	Job	
Date	JAN 2006	Drawing Number	Issue
Drawn By	PZ	02	C
Ckd By	PD		

ADDITIONAL AREA SHOWN SHADED

LINE OF EXISTING BALCONY

LINE OF ROOF OVER

NEW DECKING TO BE OF NON-COMBUSTIBLE MATERIALS

ALL GLAZING TO THE NORTHEAST & NORTHWEST ELEVATIONS OPENING ONTO THE BALCONY TO BE IN TOUGHENED GLASS AND TO INCORPORATE NON-COMBUSTIBLE SHUTTERS

GLAZED BALUSTRADE

B

A

INCREASE IN BALCONY WIDTH

GLAZED BALUSTRADE

COVERED BALCONY
RL 74.940

LINE OF EXISTING BUILDING

ADDITIONAL AREA SHOWN SHADED

FAMILY
RL 74.940

FIREPLACE

BREAKFAST

KITCHEN
RL 74.940

DINING
RL 74.940

LOUNGE
RL 74.940

STUDY

74.00

GUEST TOILET

up

STAIR LANDING
RL 75.300

GALLERY

ENTRY
RL 75.300

PORCH

PLASMA TV

VOID

RAMP

EXISTING TREE

PANTRY

L'DRY

CELLAR

STORAGE

REMOVE WINDOWS & MAKE GOOD

ADDITIONAL AREA SHOWN SHADED

LINE OF EXISTING BUILDING

BOUNDARY

EXISTING FENCE

NOTE:

1. PLUMBING FIXTURES & FITTINGS:
   - AAA RATED TO BE USED
2. NEW HOT WATER SERVICE:
   - 3.5 STAR ENERGY EFFICIENCY MINIMUM
3. ALL PLUMBING & DRAINAGE FIXTURES ARE TO BE CONCEALED & NOT TO BE EXPOSED TO PUBLIC VIEW
4. ALL EXTENAL GLAZING TO HAVE A ~~MINIMUM~~ MAXIMUM REFLECTIVITY INDEX OF 25%
5. ALL NEW ELECTRICAL CONNECTIONS ARE TO BE CARRIED OUT USING UNDERGROUND CABLING
6. TIMBER LOG RETAINING WALLS ARE NOT PERMITTED TO BE USED IN THIS DEVELOPMENT

PLAN - LEVEL 2

THIS PLAN FORMS PART OF THE APPROVED CONSTRUCTION CERTIFICATE
SP 7210

Date | Issue | Amendment

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CLIENT
BOB MANDER & SUSIE Mc CARTHY

PROJECT
RENOVATIONS AND ADDITIONS TO
22 QUARTER SESSIONS ROAD
CHURCH POINT

DRAWING
PLAN - LEVEL 2
GROUND FLOOR
EXISTING + PROPOSED

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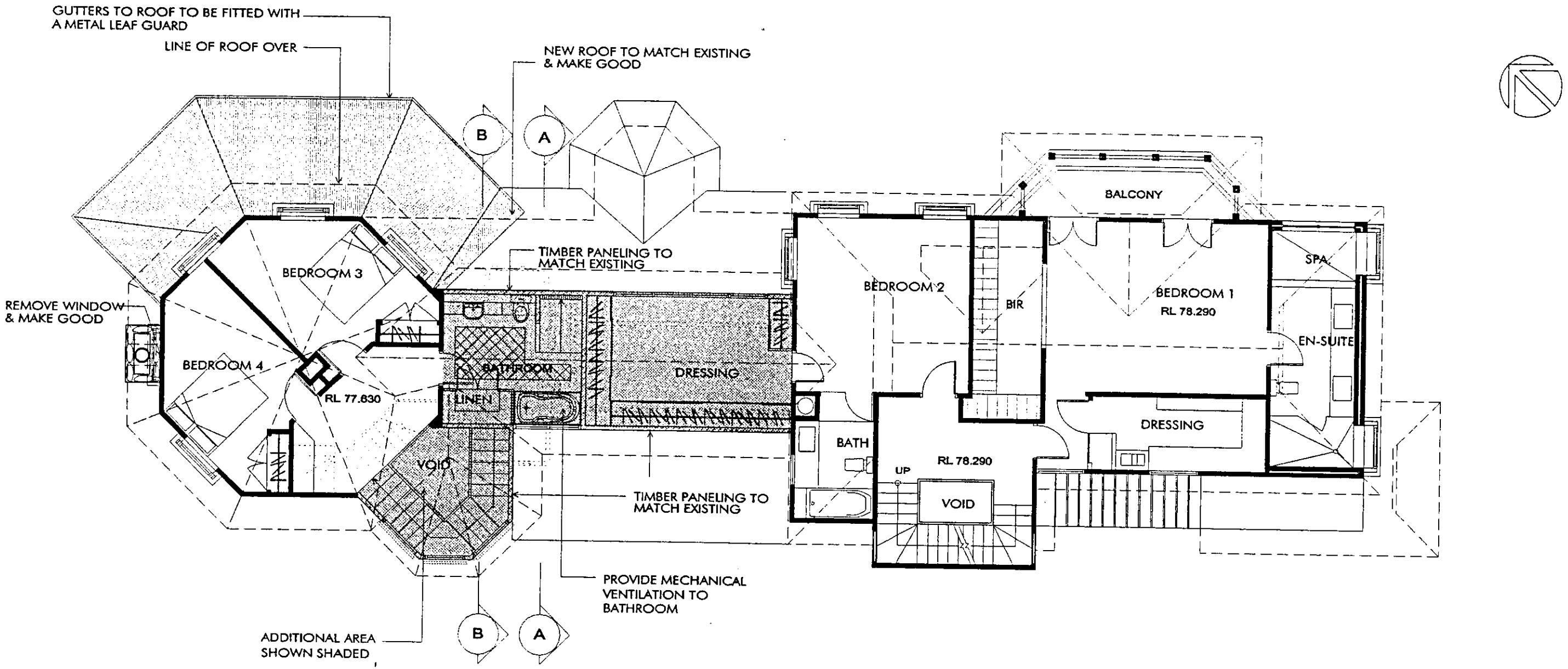
Date	JAN 2006	Drawing Number	Issue
Drawn By	PZ	03	D
Chd By	PD		



PLAN - LEVEL 3

BP 7210

Date	Issue	Amendment

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CLIENT
BOB MANDER & SUSIE Mc CARTHY

PROJECT
RENOVATIONS AND ADDITIONS TO
22 QUARTER SESSIONS ROAD
CHURCH POINT

DRAWING
PLAN - PLAN LEVEL 3
UPPER FLOOR
EXISTING + PROPOSED

Scale	1/100	Job	
Date	JAN 2006	Drawing Number	Issue
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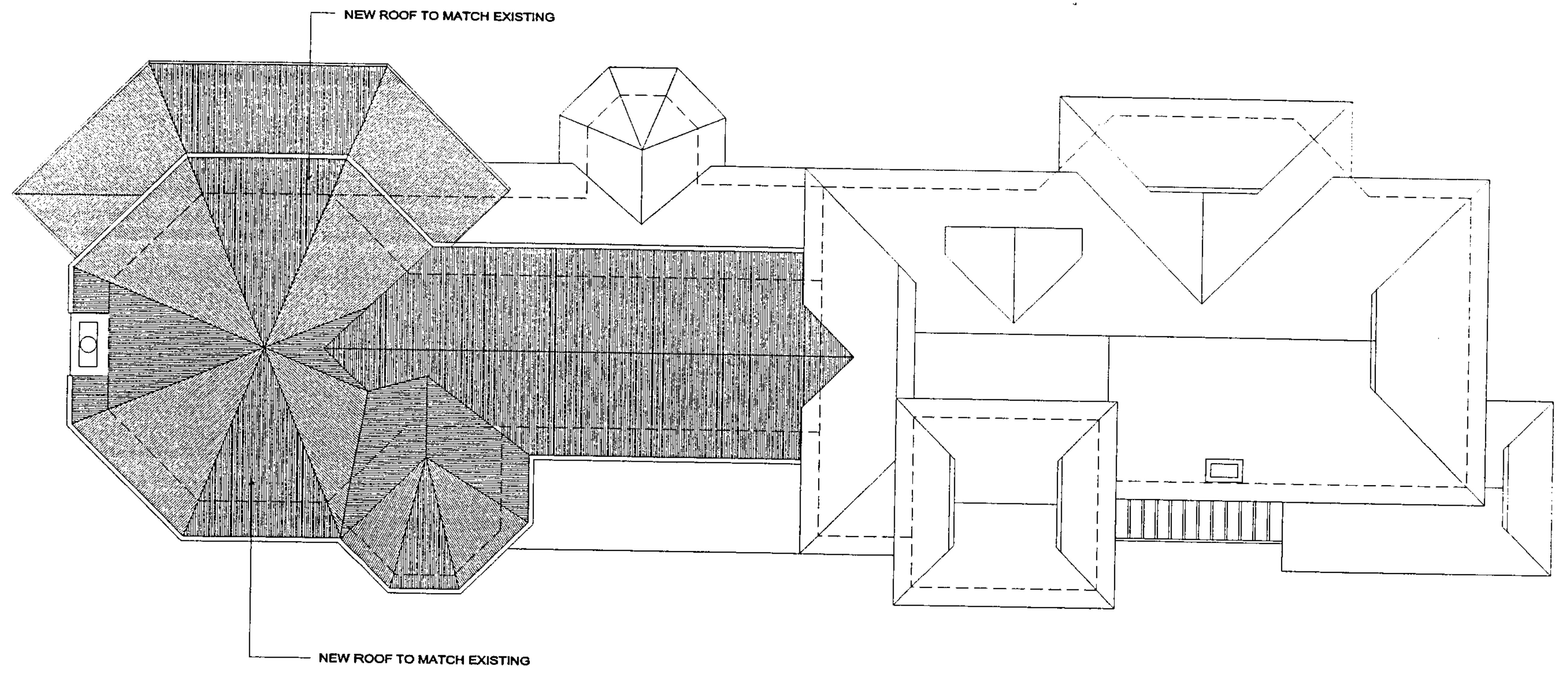
Ckd By	PD		



PLAN - ROOF

This PLAN/DOCUMENT forms part of the Approval ... Construction Cert. No. BP 7210

Date	Issue / Amendment
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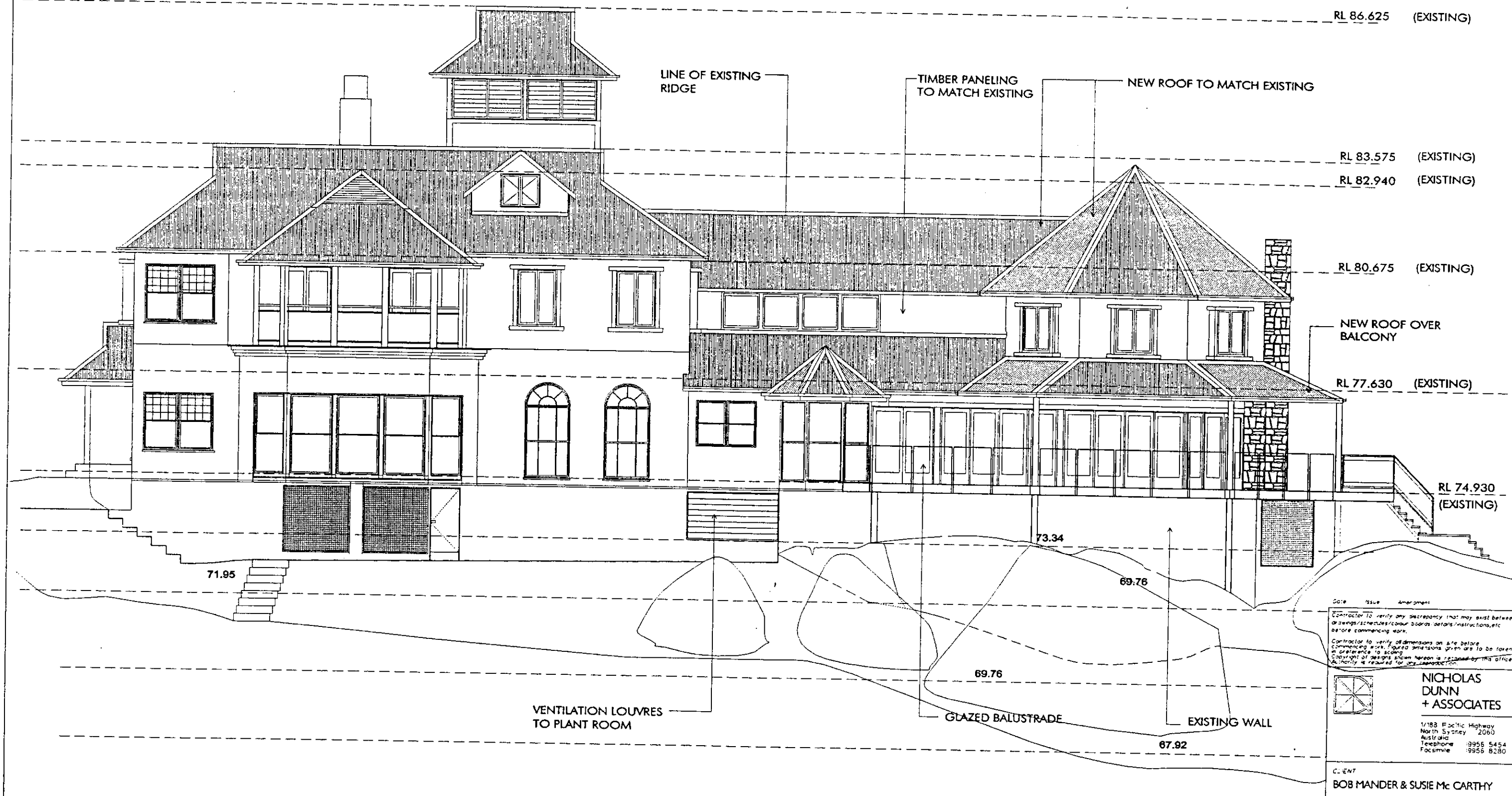
CLIENT	BOB MANDER & SUSIE Mc CARTHY
PROJECT	RENOVATIONS AND ADDITIONS TO 22 QUARTER SESSIONS ROAD CHURCH POINT
DRAWING	PLAN - ROOF EXISTING + PROPOSED
Scale	1/100
Job	
Date	JAN 2006
Drawn By	PZ
Ckd By	PD
Drawing number	05
Issue	C



NORTH EAST ELEVATION

BP 7210

Date Issue Amendment

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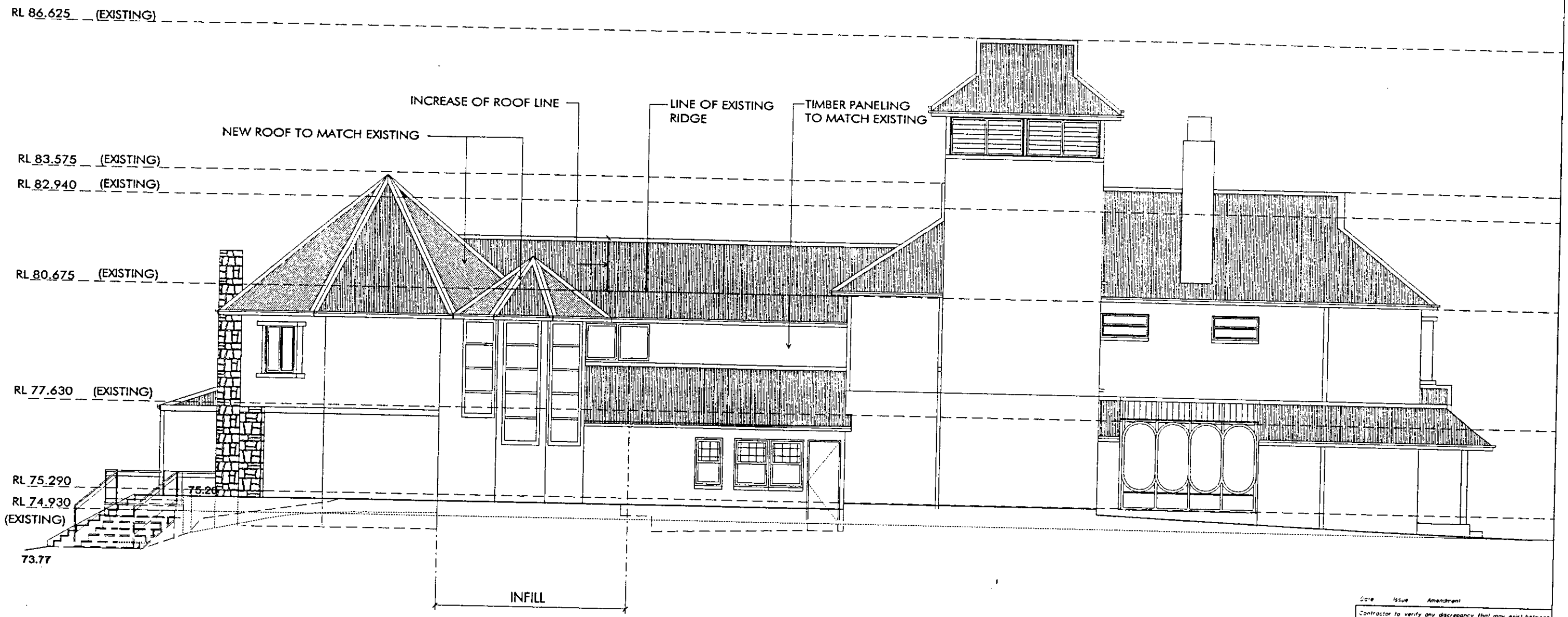
CLIENT
BOB MANDER & SUSIE Mc CARTHY

PROJECT
RENOVATIONS AND ADDITIONS TO
22 QUARTER SESSIONS ROAD
CHURCH POINT

DRAWING
ELEVATION NORTH EAST
EXISTING + PROPOSED

Scale	1/100	Job	
Date	JAN 2006	Drawing Number	Issue
Drawn By	PZ	06	C
Chk By	PD		



SOUTH WEST ELEVATION

BP 7210

Date Issue Amendment

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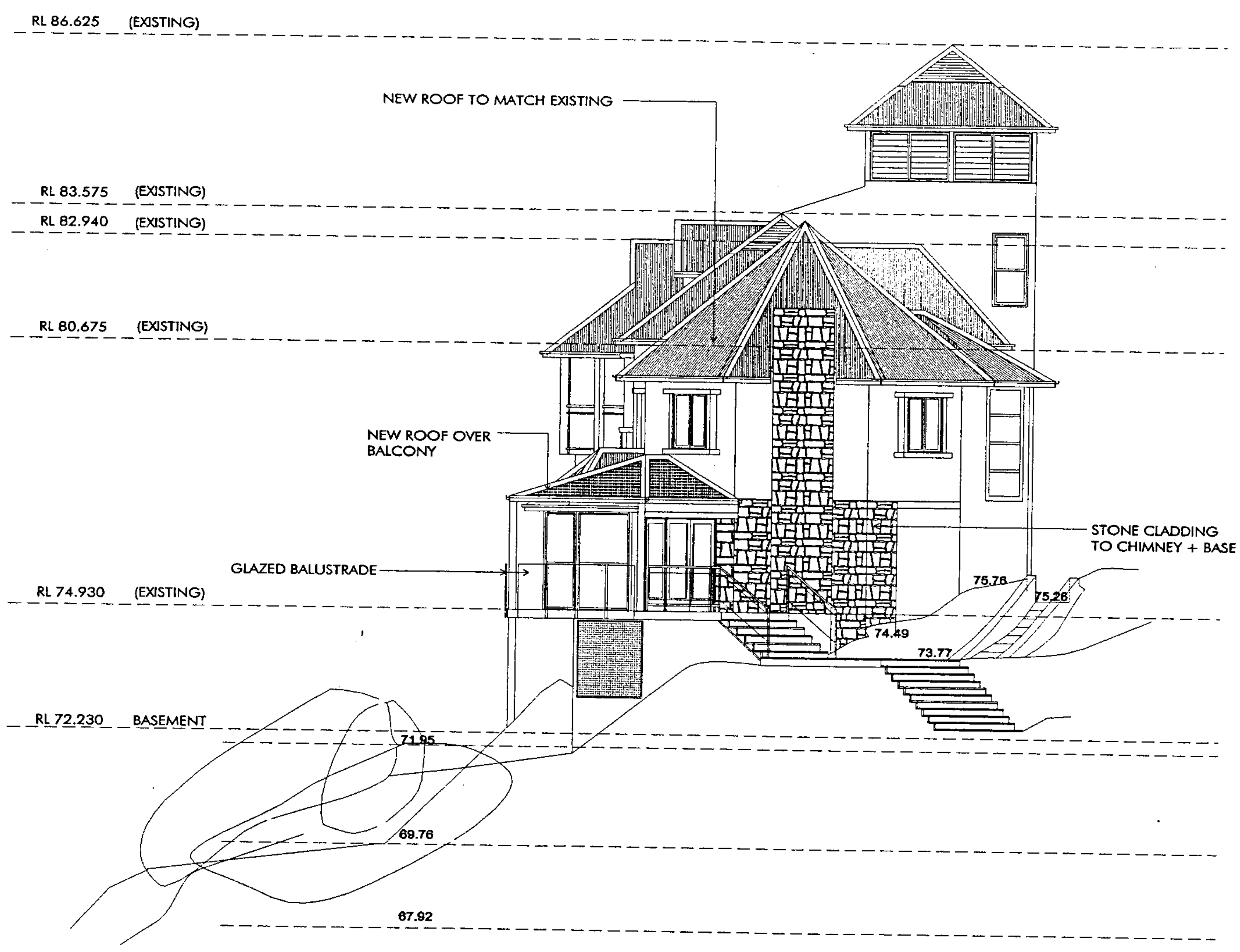
RENOVATIONS AND ADDITIONS TO
22 QUARTER SESSIONS ROAD
CHURCH POINT

DRAWING
ELEVATION SOUTH WEST
EXISTING + PROPOSED

Scale	1/100	Job	
Date	JAN 2006	Drawing Number	Issue
Drawn By	PZ	07	C
Cad By	PD		



NORTH WEST ELEVATION

8 P 7 2 1 .0

Date Issue Amendment

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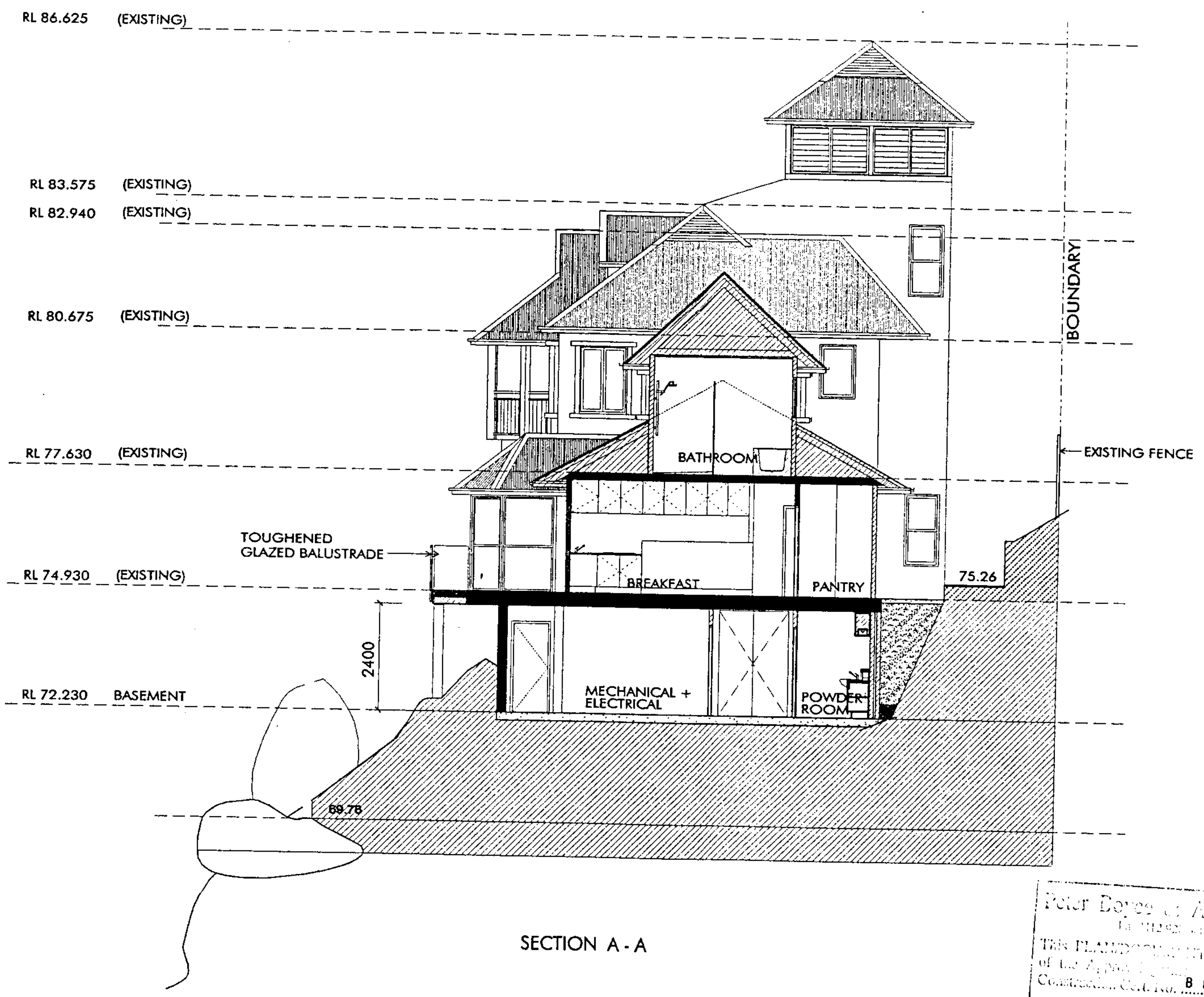
RENOVATIONS AND ADDITIONS TO 22 QUARTER SESSIONS ROAD CHURCH POINT

DRAWING
ELEVATION NORTH WEST EXISTING + PROPOSED

Scale	1/100	Job	
Date	JAN 2006	Drawing Number	Issue
Drawn By	PZ	08	C
Ckd By	PD		



SECTION A - A

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CLIENT
BOB MANDER & SUSIE Mc CARTHY

PROJECT
RENOVATIONS AND ADDITIONS TO
22 QUARTER SESSIONS ROAD
CHURCH POINT

DRAWING
SECTION A - A
EXISTING + PROPOSED

Scale	1/100	Job	
Date	JAN 2006	Drawing Number	Issue
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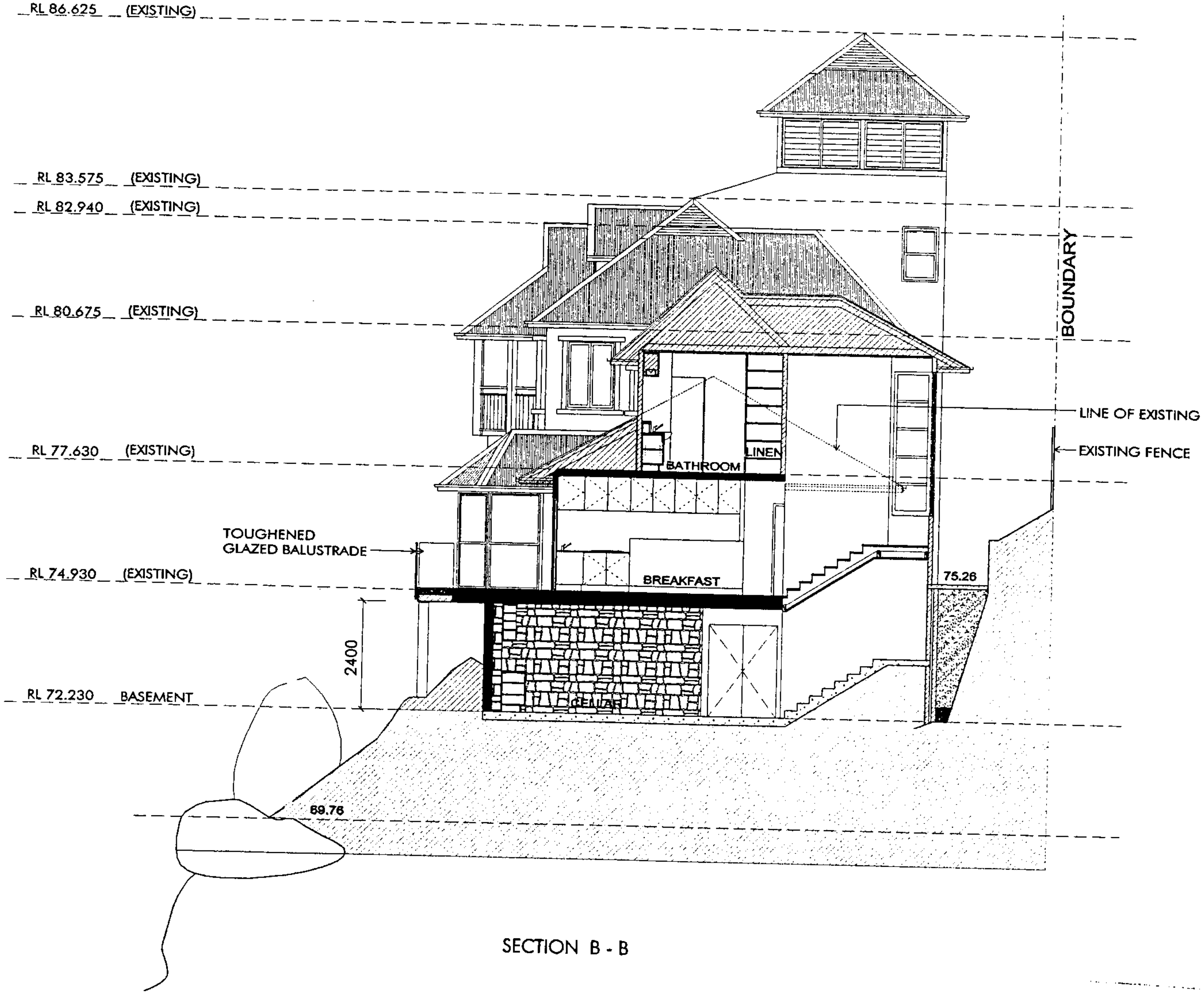

SECTION B - B

Peter Boyce
This PLAN forms part of the Approved Construction Cert. No. BP 7210

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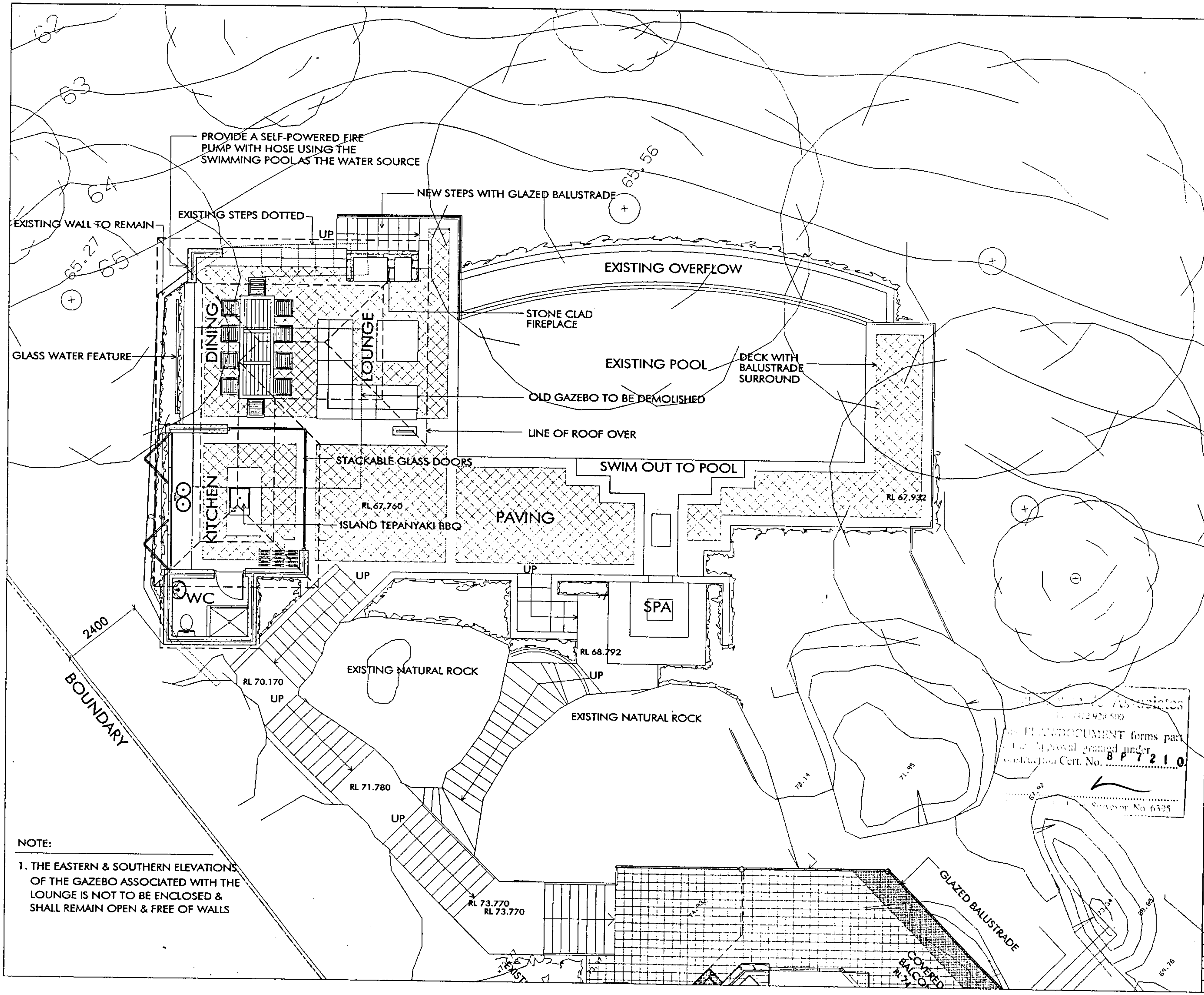
CLIENT
BOB MANDER & SUSIE Mc CARTHY

PROJECT
RENOVATIONS AND ADDITIONS TO 22 QUARTER SESSIONS ROAD CHURCH POINT

DRAWING
SECTION B-B
EXISTING + PROPOSED

Scale	1/100	Job	
Date	JAN 2006	Drawing Number	Issue
Drawn By	PZ	10	C
Chk By	PD		



NOTE:

ALL EXISTING TREES TO REMAIN

NOTE:

1. THE EASTERN & SOUTHERN ELEVATIONS OF THE GAZEBO ASSOCIATED WITH THE LOUNGE IS NOT TO BE ENCLOSED & SHALL REMAIN OPEN & FREE OF WALLS

... Associates
This PLAN/DOCUMENT forms part of the approval granted under Construction Cert. No. BP 7210
... Surveyor No. 6395

Date	Issue	Amendment

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CLIENT
BOB MANDER & SUSIE Mc CARTHY

PROJECT
RENOVATIONS AND ADDITIONS TO 22 QUARTER SESSIONS ROAD CHURCH POINT

DRAWING
LOCATION PLAN - GAZEBO

Scale	1/100	Job	
Date	MAY 2006	Drawing Number	Issue
Drawn By	PZ	11	A
Chk By	PD		

N

62

63

64

65.27

65.56

800

A

6700

UP

5400

SELECTED METAL ROOFING TO MATCH MAIN HOUSE

POOL

11600

4200

EXISTING GAZEBO TO BE DEMOLISHED

UP

UP

2000

2700

1500

A

Date Issue / Amendment

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NICHOLAS DUNN + ASSOCIATES

Date Issue Amendment

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CLIENT

BOB MANDER & SUSIE Mc CARTHY

PROJECT

RENOVATIONS AND ADDITIONS TO
22 QUARTER SESSIONS ROAD
CHURCH POINT

DRAWING

ROOF PLAN - GAZEBO

Scale 1/100 Job

Date MAY 2006

Drawn By PZ

Cad By PD

Drawing number 12

Issue

...f Boyce & Associates
Ph 9412 926 500

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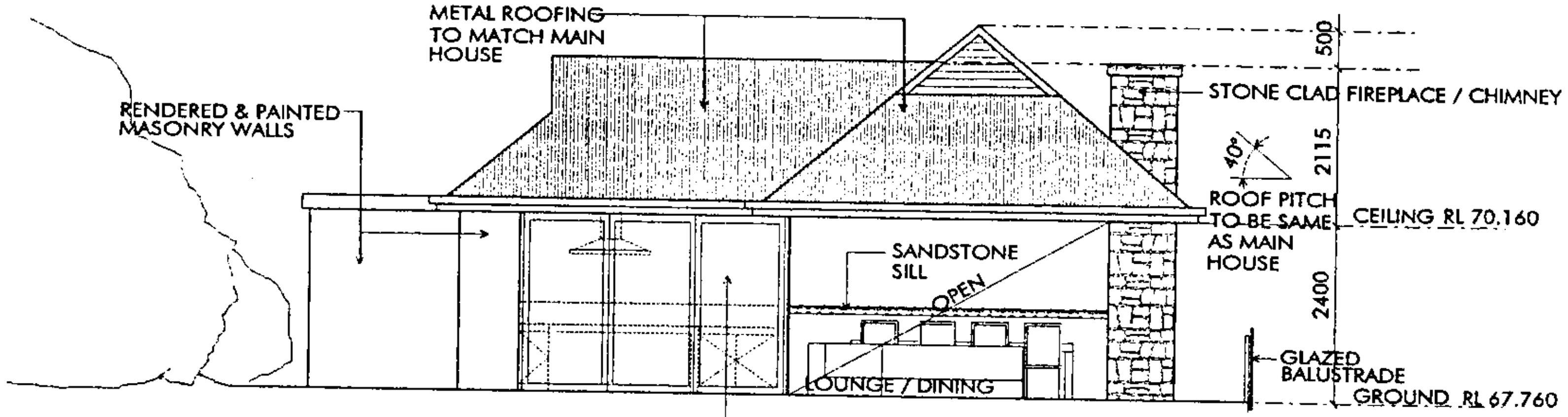
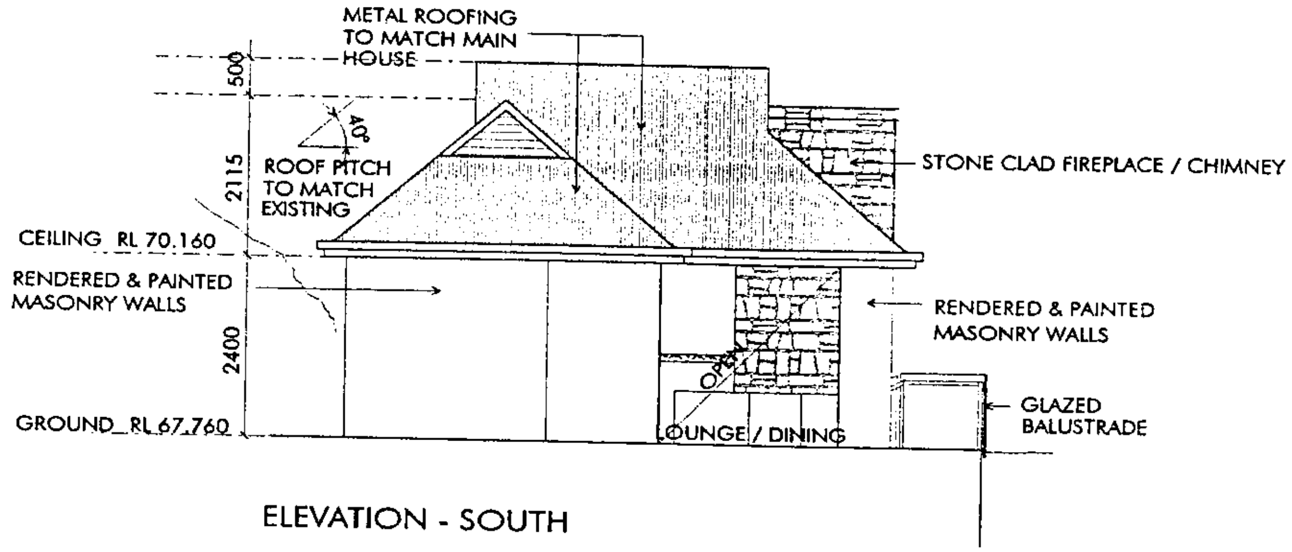
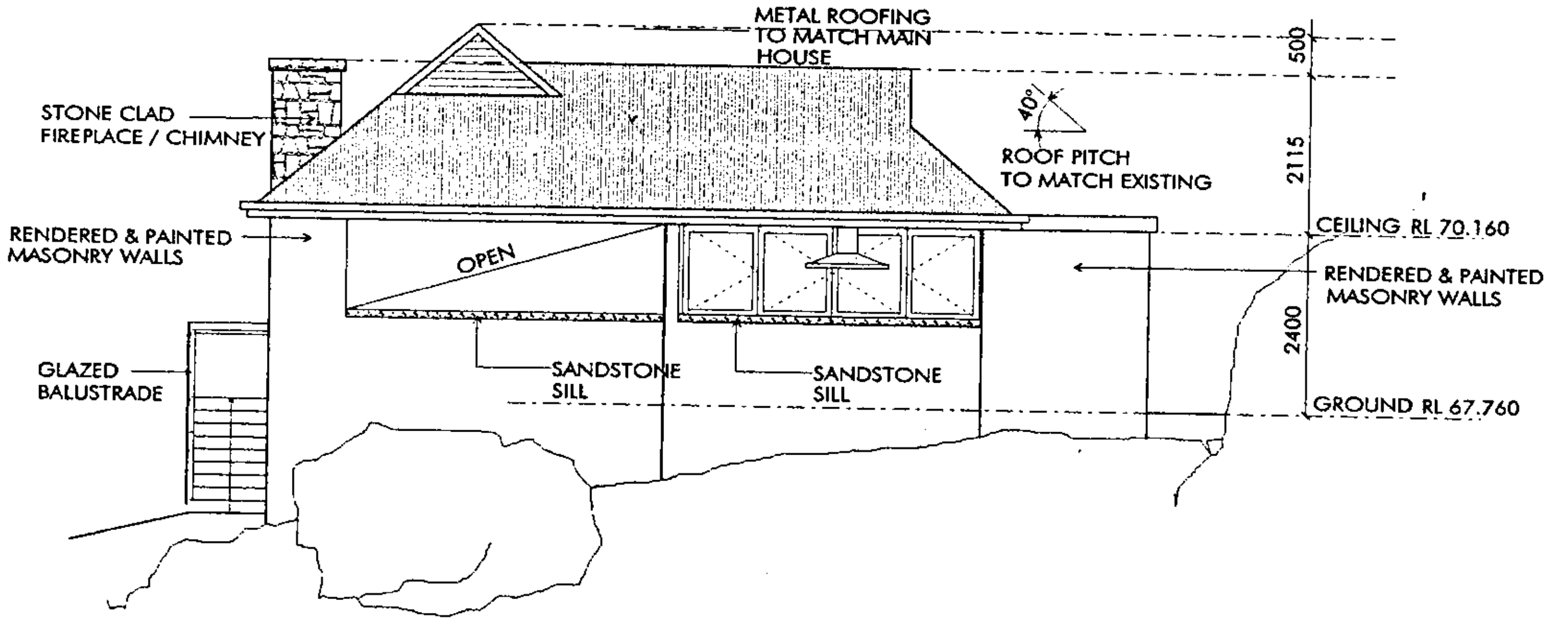
... Registered Surveyor No. 6325



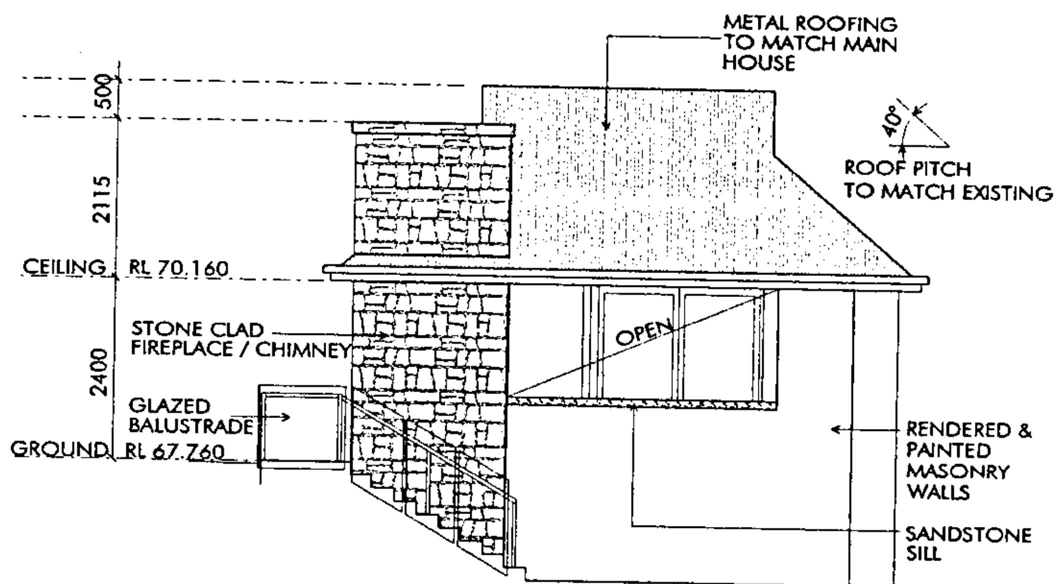
ELEVATION - EAST



ELEVATION - SOUTH



ELEVATION - WEST



ELEVATION - NORTH

...er Boyce & Associates
Ph 0412 928 500
This PLAN/DOCUMENT forms part of the Approval granted under Construction Cert. No. BP7210
...credited Building Surveyor No 6395

Date	Issue	Amendment

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PROJECT
RENOVATIONS AND ADDITIONS TO 22 QUARTER SESSIONS ROAD CHURCH POINT

DRAWING
ELEVATIONS - GAZEBO

Scale	1/100	Job	
Date	MAY 2006	Drawing Number	Issue
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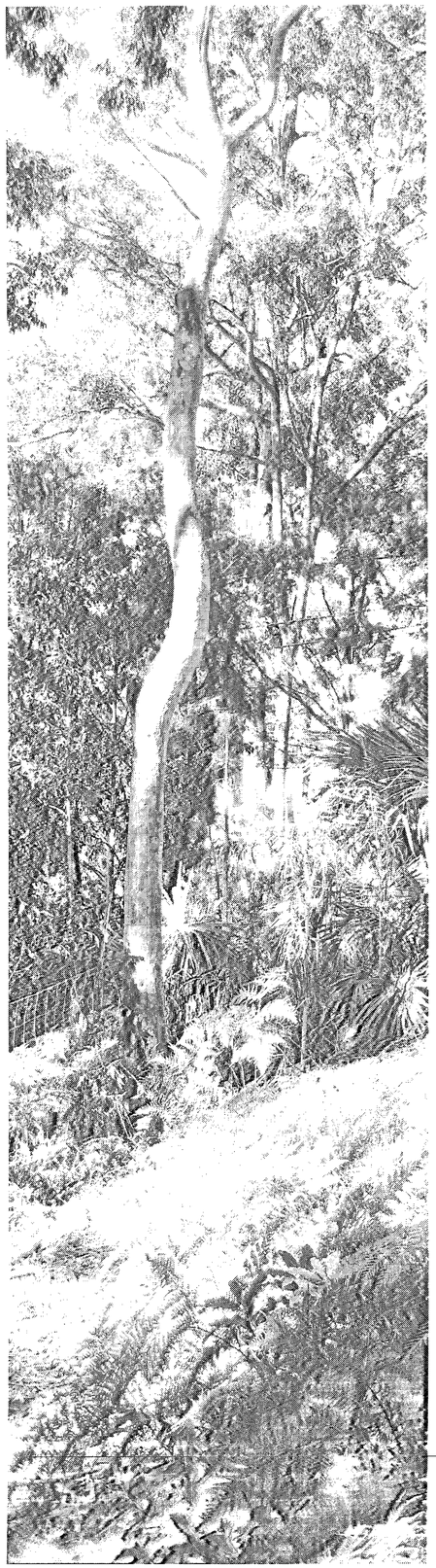
Chd By	PD		



ecological sustainability plan/report, 22 quarter sessions road, church point

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Email: mail@footprintgreen.com.au
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ABN 34 097 138 817

13 June 2007

prepared by
Mark Couston CPESC. - Ass. Dip. Env. Ctrl. (CSU), Grad. Dip. Env. Mgmt. (CSU), Cert. Soil & Water Mgmt. (UWS), MESA, MECA.
DEC - Scientific Licence No. S11031, DA - Animal Research Authority 04-4786

Background
Development approval was granted for DA No: NO371/06 by Pittwater Council on 10th November 2006 for alterations and additions to the existing dwelling including a new gazebo and basement level at 22 Quarter Sessions Road at Church Point.

As part of the development consent a number of conditions were issued including Condition 10 which requires:

10. An Ecological Sustainability Plan complying with Council's ESP templates (Forms 3a/3b) is to be submitted to Council for certification by Council's Natural Environment Assessor prior to the release of the Construction Certificate. The Ecological Sustainability Plan is to identify how the Rural Fire Services requirements for the establishment and maintenance of the Inner Protection Areas can be effected in a manner that minimises the impacts on the habitat values of the site.

Where necessary, this plan should be read in conjunction with the Landscape Plan (Rolling Stone 2006), the arboricultural assessment (Footprint Green Pty Ltd, 2006), correspondence from the Rural Fire Service (2006) and plans and reports prepared as part of the development application.

Contents of this Report
This report consists of:

ENVIRONMENTAL SUSTAINABILITY POLICY FOR PITTWATER
FORM NO. 3A REQUIREMENTS FOR ECOLOGICAL SUSTAINABILITY PLAN
To be attached to Map

Development Application for Nicholas Dunn & Associates (Name of Applicant)

Address of site 22 Quarter Sessions Road, Church Point

Declaration made by environmental consultant as part of the Ecological Sustainability Plan or Ecological Sustainability Concept Plan

I Mark Couston (Insert Name) of Footprint Green Pty Ltd (Trading or Company Name)

on this the 13th June 2007 (Date)

certify that I have completed the following as marked

M.B. Couston

Site Plan

The following check sheet is to be completed and attached to the Map for the Ecological Sustainability Plan or Ecological Sustainability Concept Plan

Annotated plan showing the following	✓ or n/a
All areas of native vegetation	✓
Native trees include species, size, condition (e.g. SULE rating)	refer arborist report
Accurate survey and describe native trees within 5m of proposed works	
Trees to be retained and those to be modified/removed	✓
Areas with medium to high regeneration potential	✓
Areas of native vegetation to be retained	✓
Areas of vegetation proposed to be removed	✓
Areas of Noxious and Environmental Weeds	✓
Areas of habitat features, bushrock (over 2m), caves, termite mounds etc	✓
Footprint of house and associated works (fuel reduced zones, waste water etc)	✓
Areas for exclusion fencing during development/establishment phase	✓
Areas appropriate for storage of materials during construction	✓
Recommended access ways during construction	✓
Areas for bush regeneration	✓
Areas for planting trees (if appropriate)	✓
Areas for planting low and or mid strata	✓
Areas for landscaping	✓
Fuel reduced zone	✓
Fuel free zone	✓
Waste water disposal zone	n/a
Recommended Environmental Protection Zone (EPZ) *if appropriate*	✓
Areas for managing domestic animals (see requirements of Pittwater Council Control Documents *Pittwater 21*)	✓
Wildlife Corridors and Core/Fragmented Bushland (as per Pittwater Council Maps)	✓

ENVIRONMENTAL SUSTAINABILITY POLICY FOR PITTWATER
FORM NO. 3B ECOLOGICAL SUSTAINABILITY PLAN (REPORT)
To be attached to inside front cover of ESP Report

Development Application for Nicholas Dunn & Associates (Name of Applicant)

Address of site 22 Quarter Sessions Road, Church Point

Declaration made by environmental consultant as part of the Ecological Sustainability Plan

I Mark Couston (Insert Name) of Footprint Green Pty Ltd (Trading or Company Name)

on this the 13th June 2007 (Date) certify that I have completed the following as marked

The following is to be completed and attached to the inside front cover of the Ecological Sustainability Plan

Report covering	✓ or n/a
Site Preparation	
Description of	
• Tree, vegetation and habitat protection	✓
• Sediment and erosion control for natural features.	
• Weed control	
• Surface treatment and stabilisation (mulch etc), top soil/ litter layer treatment.	
• Site drainage with respect to natural features.	
Weed Removal and Regeneration	✓
• List of Noxious and Environmental Weeds	
• Timeline for removing Noxious Weeds and controlling/removing Environmental Weeds *(for updated weeds list see Dept of Agriculture web page)* Timeline to include the area / number of weed species acceptable as a background level. Cross reference location with Map	✓
Description of Planting (if planting)	refer Lscape Plan
• Planting aims, e.g. supplementary planting in a regeneration area or a native vegetation area or planting in a landscape area	
• Species list recommended for planting- as appropriate (if the ESP is replacing a Landscaping Plan give details of species to be planted and size range / species). Local native species to be used (for at least 70% of plantings. 80% in Endangered Ecol. Comm.). Identify source of local native, plant stock	✓
• Description of areas for bush regeneration, trees to be retained, trees to be planted (and what size), etc	✓
• A schedule of materials–including elements such as weed matting, mulch, edging, walling, paving and fencing	n/a
• Description of works meeting minimum requirements of Landscaping Policy (i.e. 50% of development screened in 3 yrs).	n/a
Long-term Management	
• Management of habitat, inc. protection during construction and for the life of development. Provision of nesting boxes etc. Maintenance for 12 to 24 months after Issue of Occupation Certificate–maintenance can be by land occupier.	✓
• Indicate areas that are to be kept as bushland for the life of the development	✓
• Description of exclusion areas for domestic animals *as relevant*	n/a
• Reference to other documents if relevant (e.g. frequency and type of fuel reduction carry for on-site water disposal system)	n/a
Check-sheets listing activities to be completed on an on-going basis.	
• List of Noxious Weeds & Environmental Weeds to be managed/removed	✓
• Area of native vegetation and trees to be retained	✓
• Area from which domestic animals are not permitted	n/a

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general site information

site area	- 5,235m2
aspect	- north - north east
general slope	- 36% (20 deg) approx.
catchment	- pittwater inlet / hawkesbury river
geology	- hawkesbury sandstone / narrabeen geological group
soil landscape	- watagan soil landscape
vegetation structure	- open forest / landscaped areas
vegetation association	- spotted gum forest
landslip hazard (Pittwater Council)	- B3.2 landslip area
bushfire prone land (Pittwater Council)	- B3.3 bushfire hazard, vegetation category 1 & vegetation buffer
natural environment controls (Pittwater Council)	- B4.2 flora and fauna habitat enhancement category 2 land B4.4 wildlife corridors B4.5 protection of native wildlife B4.6 Pittwater Spotted Gum Forest endangered ecological community

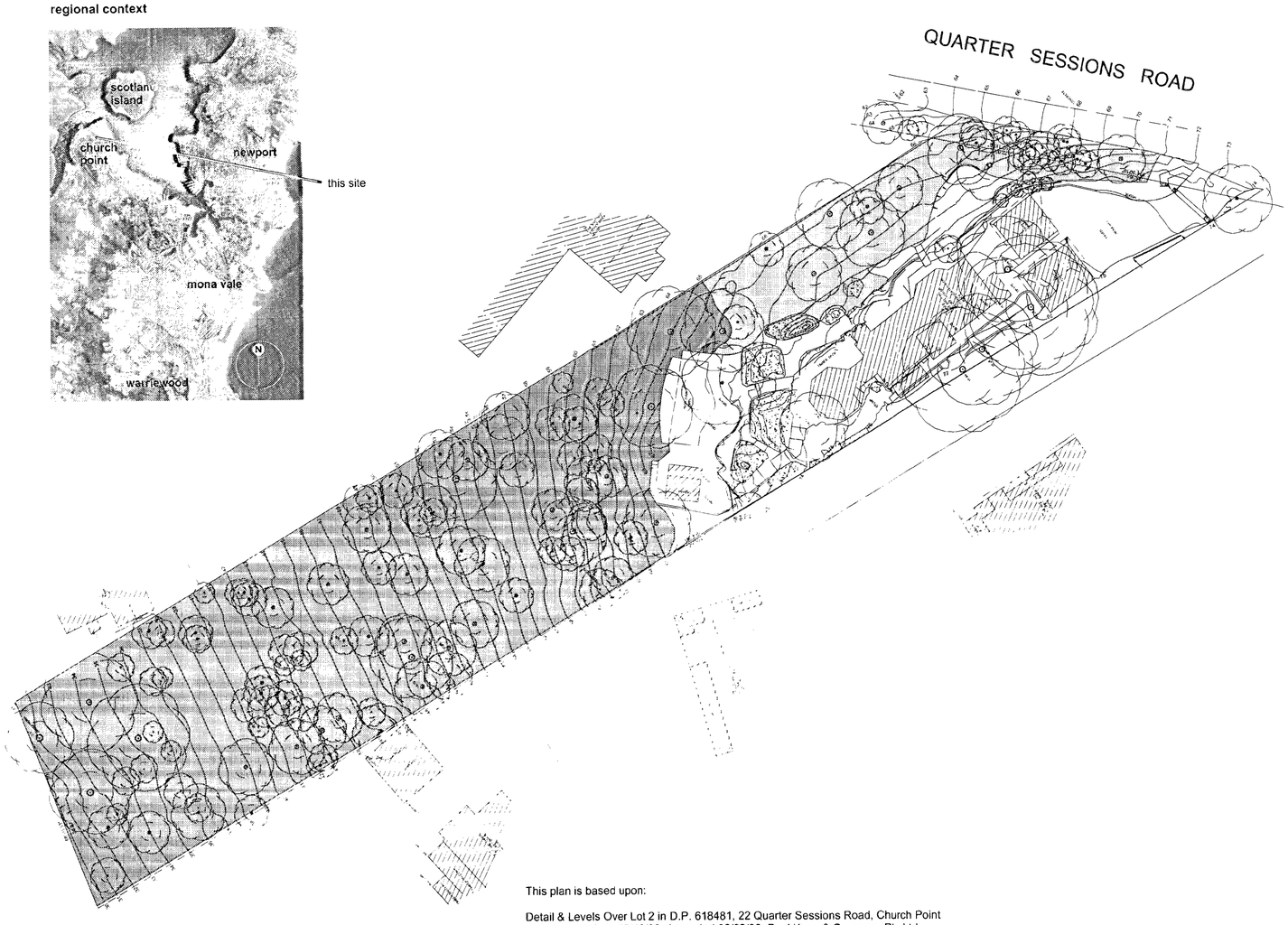
existing vegetation units

landscaped areas — 80 sq m

bushland - nth eastern slopes — 637 sq m

bushland - nth western slopes — 3169 sq m

regional context



This plan is based upon:

Detail & Levels Over Lot 2 in D.P. 618481, 22 Quarter Sessions Road, Church Point Ref 26086E, Date 15/12/02, Amended 22/02/06, Paul Keen & Company Pty Ltd, Wallumatta Road, Newport.

site habitats

The site is a residential allotment that contains a 2 storey dwelling, detached garages and a swimming pool. The development on the site is located towards the south eastern portion of the allotment fronting the Quarter Sessions Road Reserve. On the north east side of the dwelling the natural habitats are retained along with the indigenous vegetation. To the north west of the dwelling a substantial areas of the site remains in a natural state although there are areas where environmental weeds have colonised the site.

The natural vegetation within these undisturbed areas is characterised by the Spotted Gum (Corymbia maculata)) and is described as the Endangered Pittwater Spotted Gum Ecological Community and listed in the schedules of the Threatened Species Conservation Act, 1995 (NSW).

local & regional habitat context

The site is situated in a residential landscape with a local topography that includes moderate and steep slopes. The steeper slopes on both private and public land retain the endemic tree canopy and pockets and bands of understorey vegetation in undisturbed habitats.

From a local perspective the site is within 1 kilometre of several small natural area reserves, Kennedy Park (0.85 ha), East McCarrs Creek Reserve (2.57ha), McCarrs Creek Road Reserve 1 (0.38ha), Quarter Sessions Road Reserve (0.006ha), McCarrs Creek Foreshore Reserve (0.46ha), Elizabeth Park - Scotland Island (6.8ha) and Leah vera Reserve - Scotland Island (0.58ha).

From a broader perspective the site is within 1 km, from Ku-ring-gai Chase National Park, to the west, however it is isolated by the lower parts of McCarrs Creek. To the south, the site is just over 1 km from the Cicada Glen annex of Ku-ring-gai Chase National Park.

Despite this isolation there is a noticeable tree canopy cover through the developed urban areas particularly towards the upper Bayview ridge and western side of the ridge. On the eastern side of the Bayview ridge, the moderately steep slopes also retain some tree canopy cover through developed properties. This tree canopy provides a sub-optimal habitat and linkages for many bird and arboreal mammal species.

Being isolated from the larger bushland areas and national parks, the site is not considered to be breeding or foraging habitat for many sensitive species such as New Holland Honeyeater (Phylidonyris novaehollandiae) and White-eared Honeyeater (Lichenostomus leucotis), however with a substantial tree cover and the likelihood of tree hollows in the local area, species such as Galah (Cacatua roseicapilla) and Sulphur-crested Cockatoo (Cacatua galerita) and Australian King-Parrot (Alisterus scapularis) are expected to reside locally.

The local habitats and pockets of vegetation can also provide foraging and core habitat for a range of native fauna species such as, Eastern Blue-tongue (Tiliqua scincoids), Swamp Wallaby (Wallabia bicolour), Australian Brush-turkey (Alectura lathami) many of which are not found in areas with more intense development.

Remnant trees and pockets of vegetation in urban areas can typically provide core refuge habitat for small mammals such as Long-nosed Bandicoot (Perameles nasuta) and Ringtail Possum (Pseudocheirus peregrinus). Whilst these may be considered common species they are often the prey of threatened species such as Powerful Owl (Ninox strenua).

The fauna on the site is also influenced by more typical urban native fauna including aggressive species such as Pied Currawong (Strepera graculina) and Noisy Miner (Manorina melanocephala) or resilient, adaptable species such as Grass/Delicate Skink (Lampropholis delicata) and Common Brushtail Possum (Trichosurus vulpecular).

Fauna that do not reside locally and have broader foraging ranges can frequent the site. Some of these species such as the Grey-headed Flying-fox (Pteropus poliocephalus) and Glossy Black-Cockatoo (Calyptorhynchus lathami) are listed in the schedules of the Threatened Species Conservation Act (NSW) 1995.

BP 7210

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ABN 34 097 138 817

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mark couston	1: 500	13/06/07	espe22.01	0.2	2 6

project: ecological sustainability plan - 22 quarter sessions road, church point

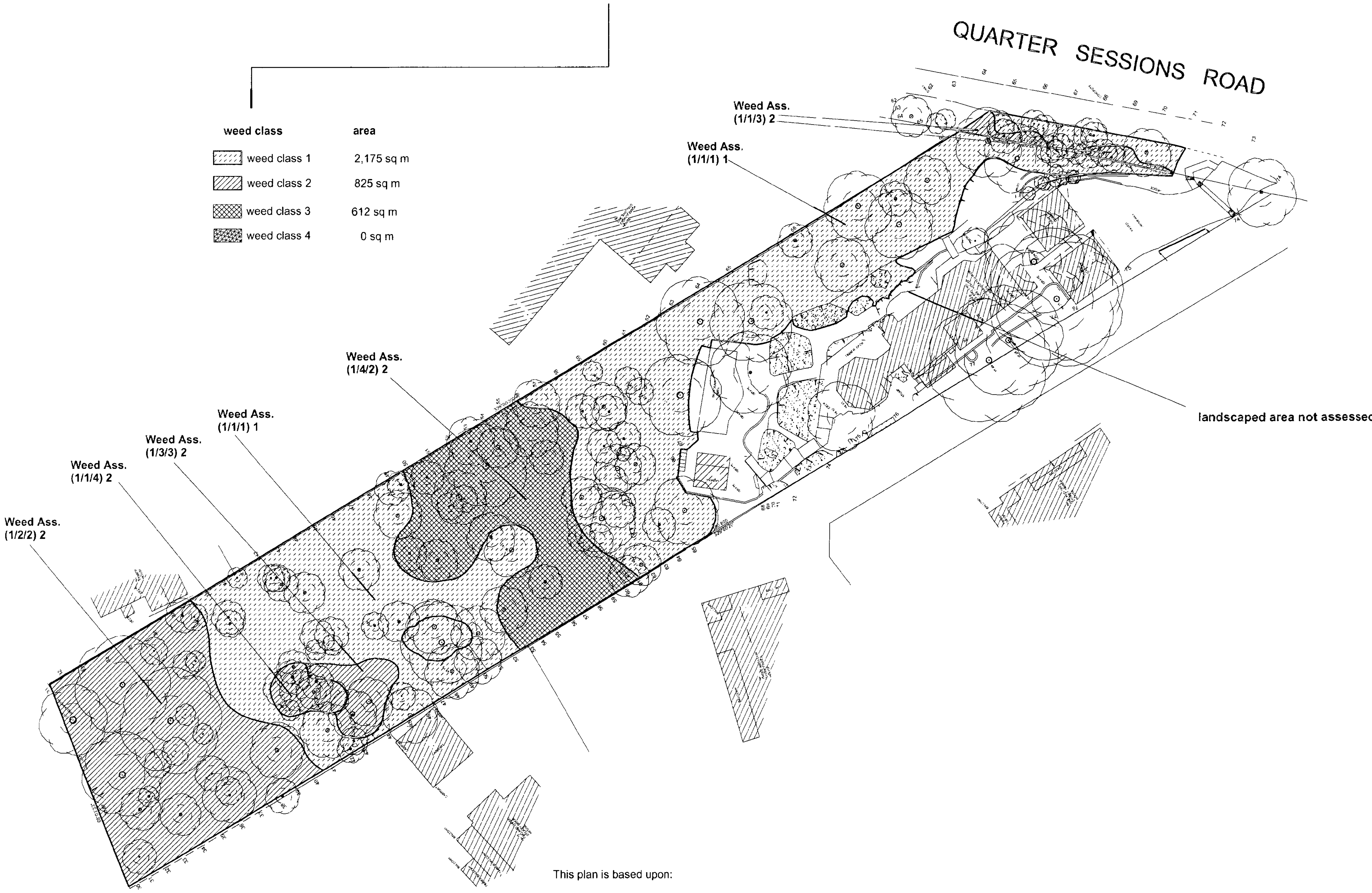
drawing title: existing site habitats

weed assessment method

Vegetation Structure	Exotic Biomass %	Weed Scale	Calculated Weed Class
canopy	< 10%	1	weed scale x 0.5 = **
	10% - 30%	2	
	31% - 60%	3	
	> 60%	4	
understorey	< 10%	1	weed scale x 0.2 = **
	10% - 30%	2	
	31% - 60%	3	
	> 60%	4	
ground cover	< 10%	1	weed scale x 0.3 = **
	10% - 30%	2	
	31% - 60%	3	
	> 60%	4	
			Weed Class: sum of ** (above)

Reporting (* / * / *) **

weed class	area
weed class 1	2,175 sq m
weed class 2	825 sq m
weed class 3	612 sq m
weed class 4	0 sq m



This plan is based upon:

Detail & Levels Over Lot 2 in D.P. 618481, 22 Quarter Sessions Road, Church Point
Ref 26086E, Date 15/12/02, Amended 22/02/06, Paul Keen & Company Pty Ltd,
Wallumatta Road, Newport.

characteristic indigenous species

Genus species	Common Name
Acacia implexa	Hickory Wattle
Acacia longissima	Narrow-leaved Wattle
Acacia ulicifolia	Prickly Moses Wattle
Acmena smithii	Lilly Pilly
Adiantum aethiopicum	Common Maidenhair Fern
Allocasuarina littoralis	Black She-oak
Allocasuarina torulosa	Forest Oak
Angophora costata	Sydney Red/Rusty Gum
Angophora floribunda	Rough-barked Apple
Calochlaena dubia	Common Ground Fern
Cayratia clematidea	Slender Grape
Cissus antarctica	Water Vine
Commelina cyanea	Scurvy Weed / Native Wandering Jew
Corymbia gummifera	Red Bloodwood
Corymbia maculata	Spotted Gum
Culcita dubia	Soft Bracken
Cyathochaeta diandra	-
Desmodium rhytidophyllum	Desmodium
Dianella caerulea	Blue Flax Lily
Digitaria parviflora	Small-flowered Finger Grass
Elaeocarpus reticulatus	Blueberry Ash
Entolasia stricta	Wiry Panic
Eucalyptus paniculata	Grey Ironbark
Eucalyptus punctata	Grey Gum
Eucalyptus umbra	Broad-leaved White Mahogany
Eustrephus latifolius	Wombat Berry
Ficus coronata	Creek Sandpaper Fig
Geitonoplesium cymosum	Scrambling Lilly
Glochidion ferdinandi	Cheese Tree
Imperata cylindrica	Blady Grass
Indigofera australis	Native Indigo
Livistona australis	Cabbage Palm / Fan Palm
Lomandra confertifolia	-
Lomandra longifolia	Spiny-headed Mat-rush
Lomandra multiflora	Many-flowered Mat-rush
Lomandra obliqua	Twisted mat-rush
Macrozamia communis	Burrawang
Microlaena stipoides	Weeping Grass
Notelaea longifolia	Large Mock-olive
Oplismenus imbecillis	Basket Grass
Pandorea pandorana	Wonga Wonga Vine
Persoonia linearis	Narrow-Leaved Geebung
Pittosporum revolutum	Yellow / Rough Fruit Pittosporum
Pittosporum undulatum	Native Daphnie
Pteridium esculentum	Bracken Common
Smilax australis	Sarsaparilla
Smilax glyciphylla	Sweet Sarsaparilla
Syncarpia glomulifera	Turpentine
Themeda australis	Kangaroo Grass
Xanthorrhoea arborea	Broad-leaf Grass-tree

characteristic exotic & environmental weed species

Genus species	Common Name
Acetosa sagittata	Turkey Rhubarb / Rambling Dock
Agapanthus sp	Agapanthus
Anredera cordifolia	Maderia Vine
Asparagus densiflorus	Asparagus Fern
Brachychiton acerifolius	Illawarra Flame Tree
Chrysanthemoides monilifera subsp. monilifera	Boneseed
Cinnamomum camphora	Camphor Laurel
Conyza sp.	Fleabane
Dietes bicolour	Dietes
Ehrharta sp.	Veldtgrass
Erigeron karvinskianus	Bony-tip Fleabane
Grevillea sp.	Horticultural species
Ipomoea cairica	Coastal Morning Glory
Ipomoea indica	Blue Morning Glory
Jacaranda mimosifolia	Jacaranda
Lantana camara	Lantana
Ligustrum lucidum	Large Leaf Privet
Ligustrum sinense	Small Leaf Privet
Monstera deliciosa	Fruit-salad Plant
Nandina domestica	Sacred Bamboo
Nephrolepis cordifolia	Fishbone Fern
Ochna serrulata	Ochna
Passiflora edulis	Common Passionfruit
Schefflera actinophylla	Umbrella Tree
Senna pendula	Cassia
Solanum mauritianum	Wild Tobacco Tree
Tradescantia fluminensis	Wandering Jew
Vinca major	Periwinkle

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prepared by	scale	date	dwg no.	rev.	sheet of	project	drawing title
mark couston	1: 500	13/06/07	espf22.01	0.1	3 6	ecological sustainability plan - 22 quarter sessions road, church point	existing site floristics & weed densities

tree legend

trees to be retained

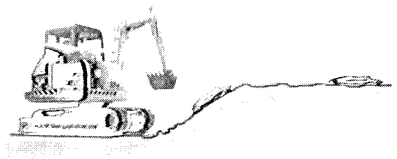
trees to be removed

environmental protection zone
- bushland 3,641 m sq

site management performance criteria
- no physical disturbance to soil profiles, existing endemic vegetation and habitats.
- conditions retained that encourage the natural regeneration of endemic flora species.
- the area is to be maintained periodically so as to achieve less than 5% exotic flora & weed biomass at all times.
- all trees identified for retention shall be maintained so as to display good health & vigour.
- protective fencing shall remain in a secure functional state.
- there must be no signs of active erosion & sediment deposition at all times.

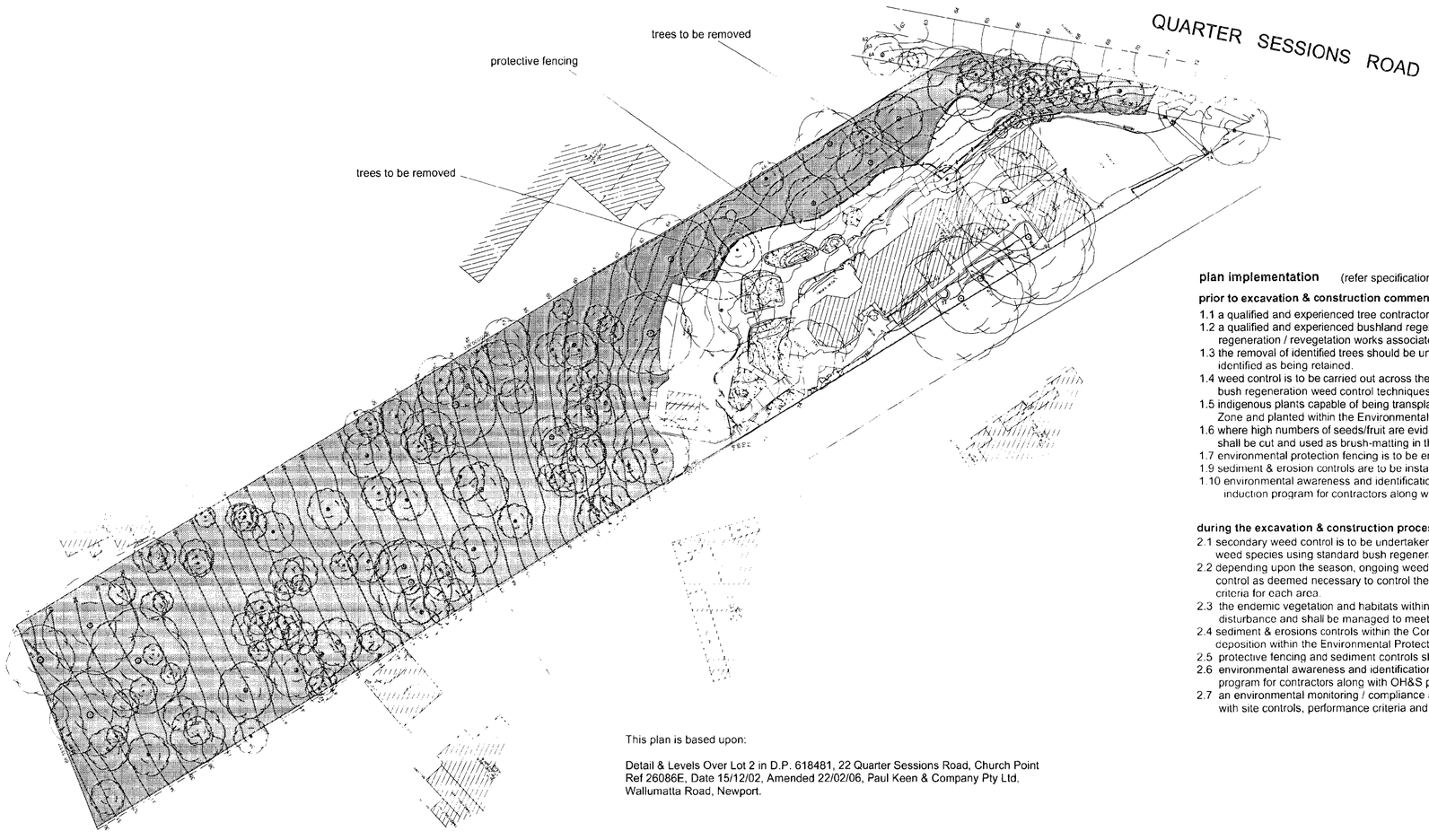
environmental protection zone
- landscaped areas 280 m sq

site management performance criteria
- no physical disturbance to soil profiles, existing vegetation
- conditions retained that encourage the growth of existing plants.
- the area is to be maintained periodically so as to achieve less than 5% weed biomass at all times.
- all trees identified for retention shall be maintained so as to display good health & vigour.
- protective fencing shall remain in a secure functional state.
- there must be no signs of active erosion & sediment deposition at all times.



site construction zone 1,280 m sq

site management performance criteria
- the area is to be maintained periodically so as to achieve less than 5% weed biomass at all times.
- environmental protection fencing shall remain in a secure functional state.
- there must be no signs of active erosion at all times.



This plan is based upon:

Detail & Levels Over Lot 2 in D.P. 618481, 22 Quarter Sessions Road, Church Point Ref 26086E, Date 15/12/02, Amended 22/02/06, Paul Keen & Company Pty Ltd, Wallumatta Road, Newport.

plan implementation (refer specifications sheet 6)

prior to excavation & construction commencing

1.1 a qualified and experienced tree contractor is to be engaged to undertake tree removal works associated with this plan.
1.2 a qualified and experienced bushland regeneration contractor shall be engaged to undertake the weed control, regeneration / revegetation works associated with this plan.
1.3 the removal of identified trees should be undertaken ensuring no damage occurs to branches and foliage of the trees identified as being retained.
1.4 weed control is to be carried out across the entire site to remove all noxious & environmental weed species using standard bush regeneration weed control techniques (refer specifications).
1.5 indigenous plants capable of being transplanted such as Common Ground Fern shall be removed from the Construction Zone and planted within the Environmental Protection Zone.
1.6 where high numbers of seeds/fruit are evident on indigenous trees identified for removal, branches containing seeds/fruit shall be cut and used as brush-matting in the Environmental Protection Zone.
1.7 environmental protection fencing is to be erected as shown on this plan.
1.9 sediment & erosion controls are to be installed.
1.10 environmental awareness and identification of environmental protection zones is to be incorporated as part of the site induction program for contractors along with OH&S practices.

during the excavation & construction process

2.1 secondary weed control is to be undertaken across the entire site with particular effort to remove seed from regenerating weed species using standard bush regeneration weed control techniques (refer specifications).
2.2 depending upon the season, ongoing weeding is to be undertaken at a minimum of 2 monthly intervals with additional weed control as deemed necessary to control the establishment of noxious and environmental weeds and meet the performance criteria for each area.
2.3 the endemic vegetation and habitats within the Environmental Protection Zones are to be retained, shall not be subject to further disturbance and shall be managed to meet the performance criteria on this plan.
2.4 sediment & erosions controls within the Construction Area are to be maintained to minimise the risk of erosion and sediment deposition within the Environmental Protection Zone and off site.
2.5 protective fencing and sediment controls shall be maintained in a functional condition throughout the construction process.
2.6 environmental awareness and identification of environmental protection zones is to be conducted as part of the site induction program for contractors along with OH&S practices
2.7 an environmental monitoring / compliance auditing program is to be implemented by the project manager to ensure compliance with site controls, performance criteria and conditions of development consent.

BP 7210

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prepared by	scale	date	dwg no.	rev.	sheet	of
mark couston	1: 500	13/06/07	espp22.01	0.1	4	6

project
ecological sustainability plan -
22 quarter sessions road, church point

drawing title
preliminary works prior to & during construction

land management units

bushland regeneration area 2,703 sq m

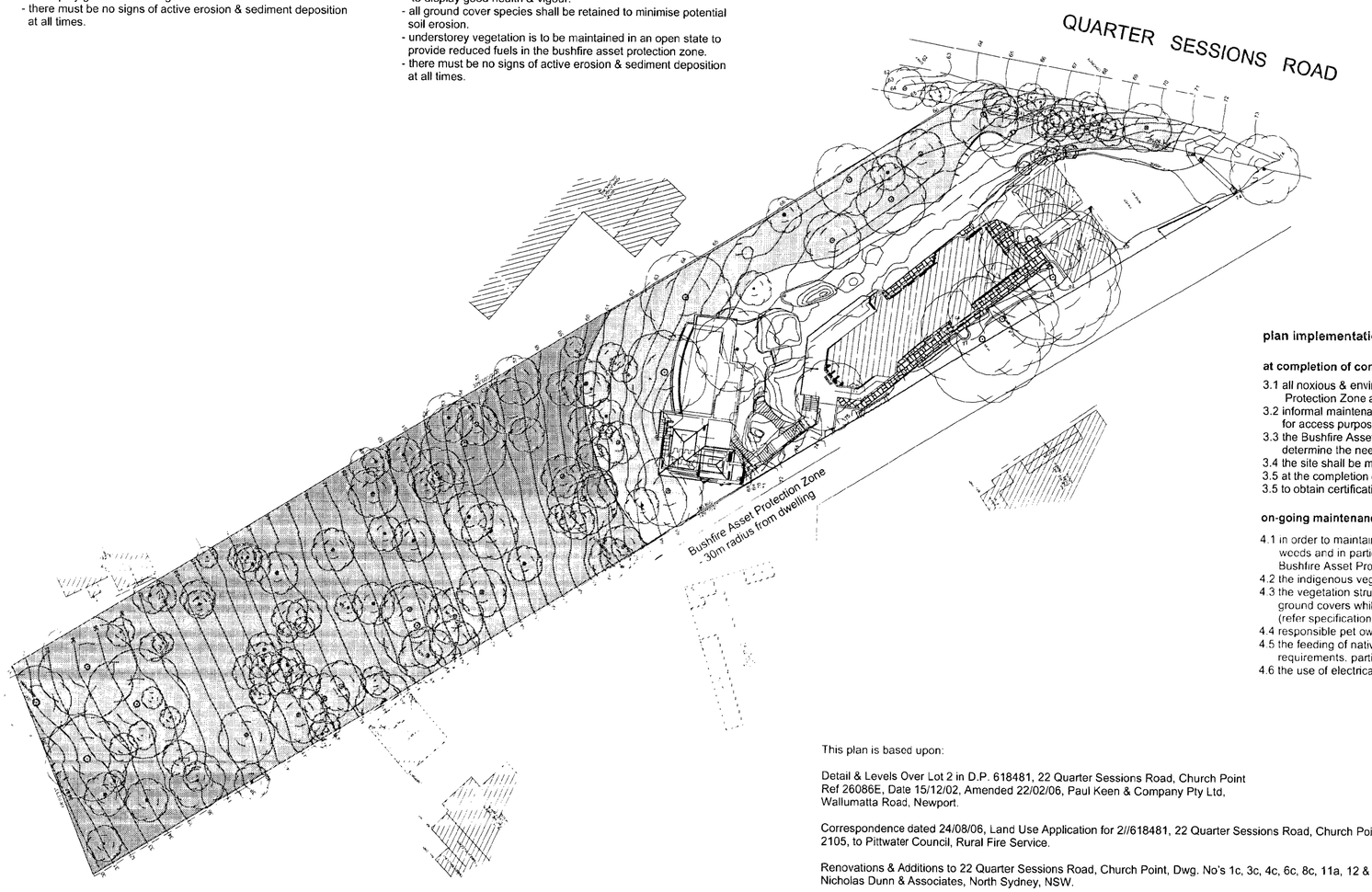
site management performance criteria
- no physical disturbance to soil profiles, existing endemic vegetation and habitats.
- conditions retained that encourage the natural regeneration of endemic flora species.
- the area is to be maintained periodically so as to achieve less than 5% exotic flora & weed biomass at all times.
- all trees identified for retention shall be maintained so as to display good health & vigour.
- there must be no signs of active erosion & sediment deposition at all times.

bushfire asset protection zone 927 sq m

site management performance criteria
- no physical disturbance to soil profiles and habitats.
- no additional planting is to occur within this zone.
- conditions retained that encourage the natural regeneration of endemic flora species.
- the area is to be maintained periodically so as to achieve less than 5% exotic flora & weed biomass at all times.
- all trees identified for retention shall be maintained so as to display good health & vigour.
- all ground cover species shall be retained to minimise potential soil erosion.
- understorey vegetation is to be maintained in an open state to provide reduced fuels in the bushfire asset protection zone.
- there must be no signs of active erosion & sediment deposition at all times.

landscaped areas 711 m sq

site management performance criteria
- the area is to be maintained periodically so as to achieve less than 5% environmental weed biomass.
- trees identified as being retained remain in a healthy and stable condition.
- all plantings and landscaping is to be completed in accordance with the Landscape Plan.
- there must be no signs of active erosion.



plan implementation (refer specifications sheet 6)

at completion of construction works

3.1 all noxious & environmental weed species are to be eradicated from Bushland Regeneration Area, The Bushfire Asset Protection Zone and the Landscaped Areas using standard bush regeneration weed control techniques (refer specifications).
3.2 informal maintenance tracks can be established within the Bush Regeneration Area and the Bushfire Asset Protection Zone for access purposes using organic or crushed sandstone mulch surface (refer specifications).
3.3 the Bushfire Asset Protection Zone shall be inspected by an ecologist and a bushfire consultant to determine the need, if any, of understorey vegetation thinning for the purposed of hazard reduction.
3.4 the site shall be managed to meet the performance criteria for each zone /area as indicated on this plan.
3.5 at the completion of construction works the temporary protective fencing and erosion controls can be removed.
3.5 to obtain certification the performance criteria listed for each area is to be achieved.

on-going maintenance and further considerations

4.1 in order to maintain the integrity of the site, on-going weed maintenance will be necessary to remove any regenerating weeds and in particular to remove those species spread in bird droppings within the Bushland Regeneration Area and Bushfire Asset Protection Zone.
4.2 the indigenous vegetation and rock boulder habitats within the Bushland Area are to be maintained as habitat for fauna.
4.3 the vegetation structure within the Bushfire Asset Protection Zone is to be maintained retaining the indigenous trees and ground covers whilst periodic removal of any regenerating indigenous understorey shrubs will be necessary (refer specifications).
4.4 responsible pet ownership is also required primarily at night to allow small mammals to forage on the site.
4.5 the feeding of native fauna is to be discouraged as it typically provides artificial foraging behaviour and often poor dietary requirements, particularly for native birds.
4.6 the use of electrical killing devices should not be used outside as they can attract and kill micro-bats foraging on insects.

This plan is based upon:

Detail & Levels Over Lot 2 in D.P. 618481, 22 Quarter Sessions Road, Church Point Ref 26086E, Date 15/12/02, Amended 22/02/06, Paul Keen & Company Pty Ltd, Wallumatta Road, Newport.

Correspondence dated 24/08/06, Land Use Application for 2//618481, 22 Quarter Sessions Road, Church Point NSW 2105, to Pittwater Council, Rural Fire Service.

Renovations & Additions to 22 Quarter Sessions Road, Church Point, Dwg. No's 1c, 3c, 4c, 6c, 8c, 11a, 12 & 13c, Nicholas Dunn & Associates, North Sydney, NSW.

Rolling Stone Landscapes (2006) Proposed Landscape Plan, Dwg. No. D5, 24/10/06, Rolling Stone Landscapes, Baulkham Hills, NSW

BP7210

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mark couston	1: 500	13/06/07	espr22.01	0.1	5 6

project
ecological sustainability plan - 22 quarter sessions road, church point

drawing title
proposed development & site rehabilitation

specifications

Bush regeneration

Bushland Regeneration is the activities carried out to provide conditions that facilitate the natural recruitment or germination of endemic flora species. It primarily involves the progressive control of weed species in a systematic manner of primary weed control, follow-up weed control (often several follow –up sessions) and maintenance over an identified works area. Typically work areas progress from areas of little weeds and expand to adjacent works areas. It is recommended that these activities are undertaken by specialised and experienced bush regeneration contractors.

Crushed sandstone mulch

Crushed sandstone mulch is to be comprised of clean crushed sandstone, free of clay, weed propagules, road base and other foreign matter and should comprise <5%fines and rocks with a maximum diameter of 100mm. Crushed sandstone mulch shall be laid to a depth of 75mm.

Erosion & sediment controls

All erosion and sediment controls such as berms, sediment fences, rumble zones sediment basins and site drainage flow paths must be designed and constructed in accordance with Managing Urban Stormwater: Soils and Construction. 4th Edition (Landcom, 2004), New South Wales Government.

Herbicide usage

Glyphosate based herbicides can be used in conjunction with weed control techniques and is to be used in accordance with the product label and registration. Herbicide usage must be undertaken in a manner or method that does not cause harm to endemic species or new plantings and there is no contamination of surface or ground waters.

Weed control

Weed control is to be undertaken using standard bush regeneration techniques such as hand weeding or with the use of Glyphosate based herbicides when necessary (eg. cut & paint, stem scrape, spot spraying).

Weed material disposal and temporary storage on site.

Weed material containing seed or weed material capable of spreading vegetatively shall be removed from site and disposed of at an appropriate location where it will not cause further environmental damage.

Temporary storage of weed material prior to disposal can occur on site where it is stored, outside drainage lines, on an impervious surface and it is covered with a material that adequately contains the weed debris.

local indigenous species to be considered in plantings

There are not requirements for planting in this plan within the Bushland Regeneration Area or the Bushfire Asset Protection Zone. In these areas the focus of this plan is to rely upon the natural regeneration of species from the diverse and ample seed sources on site.

Should planting be desirable in the future on any part of the site, the following list of indigenous species are preferable.

ground covers

Adiantum aethiopicum (Common Maidenhair Fern)
Adiantum hispidulum (Rough Maidenhair Fern)
Calochlaena dubia (Common Ground Fern)
Cayratia clematidea (Slender Grape)
Cissus hypoglauca (Giant Water Vine)
Dianella caerulea (Blue Flax Lily)
Doodia aspera (Prickly Rasp-fern)
Eustrephus latifolius (Wombat Berry)
Geitonoplesium cymosum (Scrambling Lilly)
Hibbertia dentata (Twining Guinea Flower)
Hypolepis muelleri (Harsh Ground Fern)
Lepidosperma laterale (Variable Sword-sedge)
Lomandra fluviatilis (-)
Lomandra multiflora (Many-flowered Mat-rush)
Oplismenus imbecillis (-)
Pratia purpurascens (Whiteroot)
Smilax australis (Sarsaparilla)
Smilax glyciphylla (Sweet Sarsaparilla)

understorey plants

Acacia longissima (-)
Austromyrtus tenuifolia (-)
Billardiera scandens (Appleberry/Snotberry)
Breynia oblongifolia (Coffee Bush Shrub)
Clerodendrum tomentosum (Hairy Clerodendrum)
Dicksonia Antarctica (Soft Tree Fern)
Eupomatia laurina (Bolwarra Shrub)
Indigofera australis (Native Indigo)
Macrozamia communis (Burrawang)
Pittosporum revolutum (Yellow Pittosporum)
Polyscias sambucifolia (Elderberry Panax)
Synoum glandulosum (Scentless Rosewood)
Wilkiea huegeliana (Veiny Wilkiea)

trees

Corymbia maculata (Spotted Gum)
Eucalyptus botryoides (Bangalay, Southern Mahogany)
Eucalyptus paniculata (Grey Ironbark)
Eucalyptus punctata (Grey Gum)
Livistona australis (Cabbage Palm / Fan Palm)
Syncarpia glomulifera (Turpentine)

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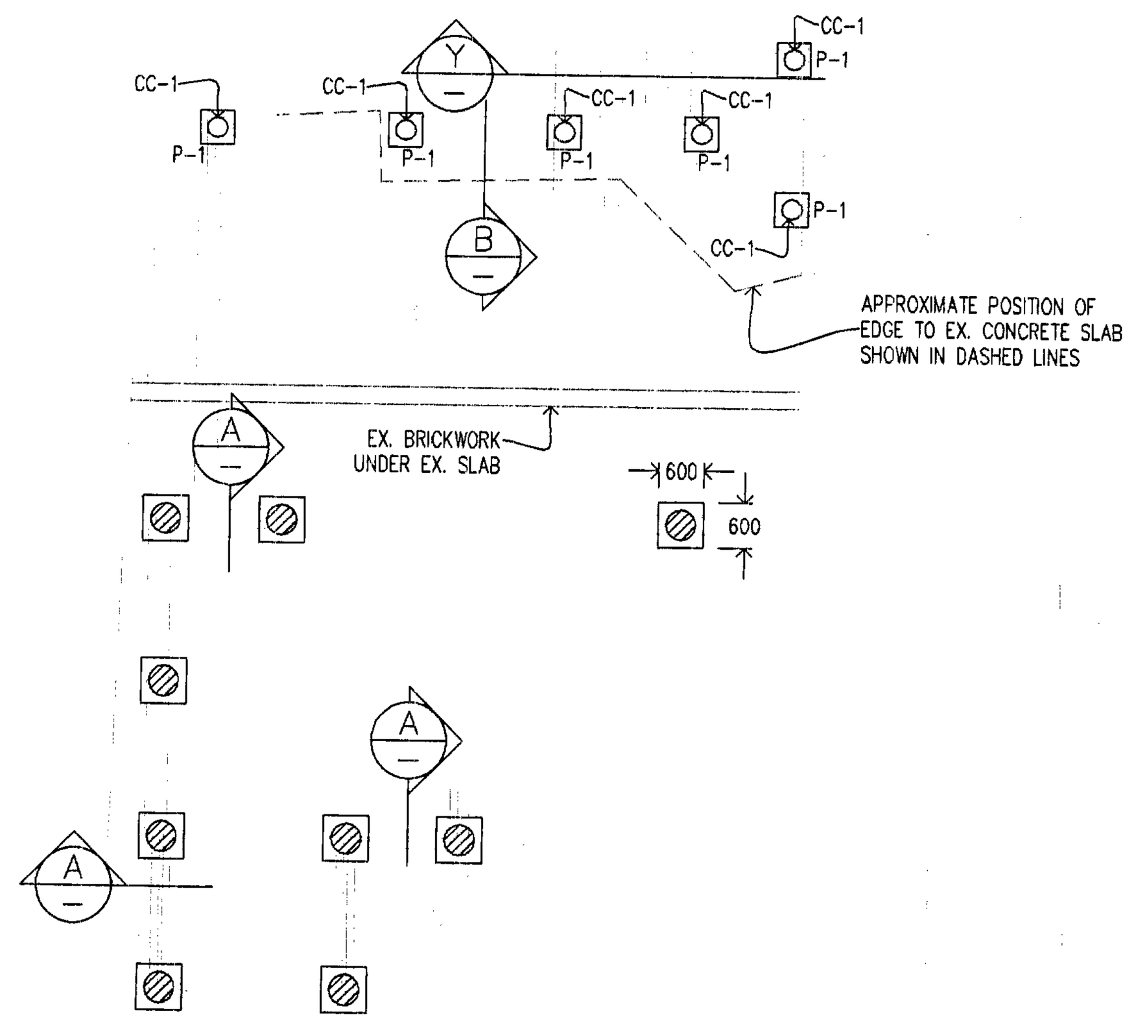
mark couston	nts	13/06/07	esps22.01	0.1	6	6	ecological sustainability plan - 22 quarter sessions road, church point	specifications & species planting options

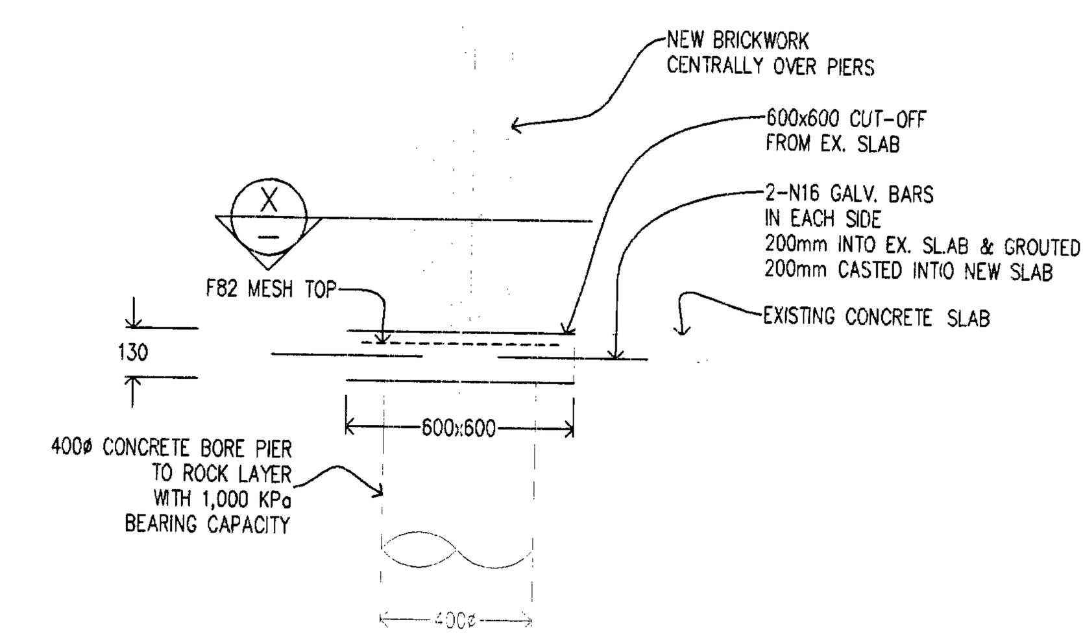


CABANA FOOTING & COLUMN PLAN 1:100

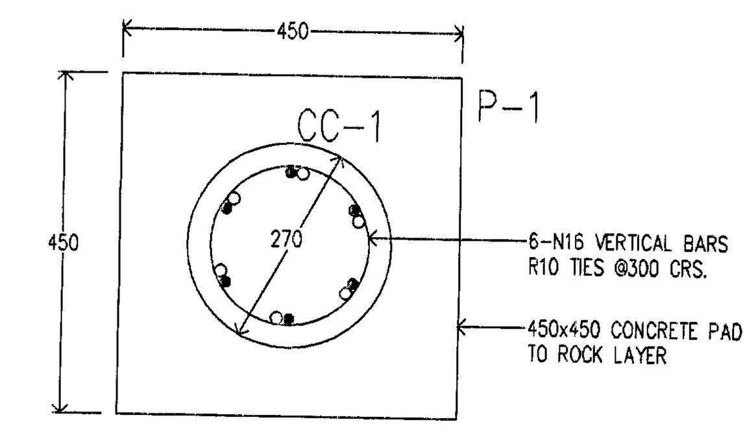
DENOTES A EXISTING CONCRETE COLUMN

○ DENOTES A #270 NEW CONCRETE COLUMN

⊘ DENOTES A #400 CONCRETE PIER UNDER STRIP FOOTING



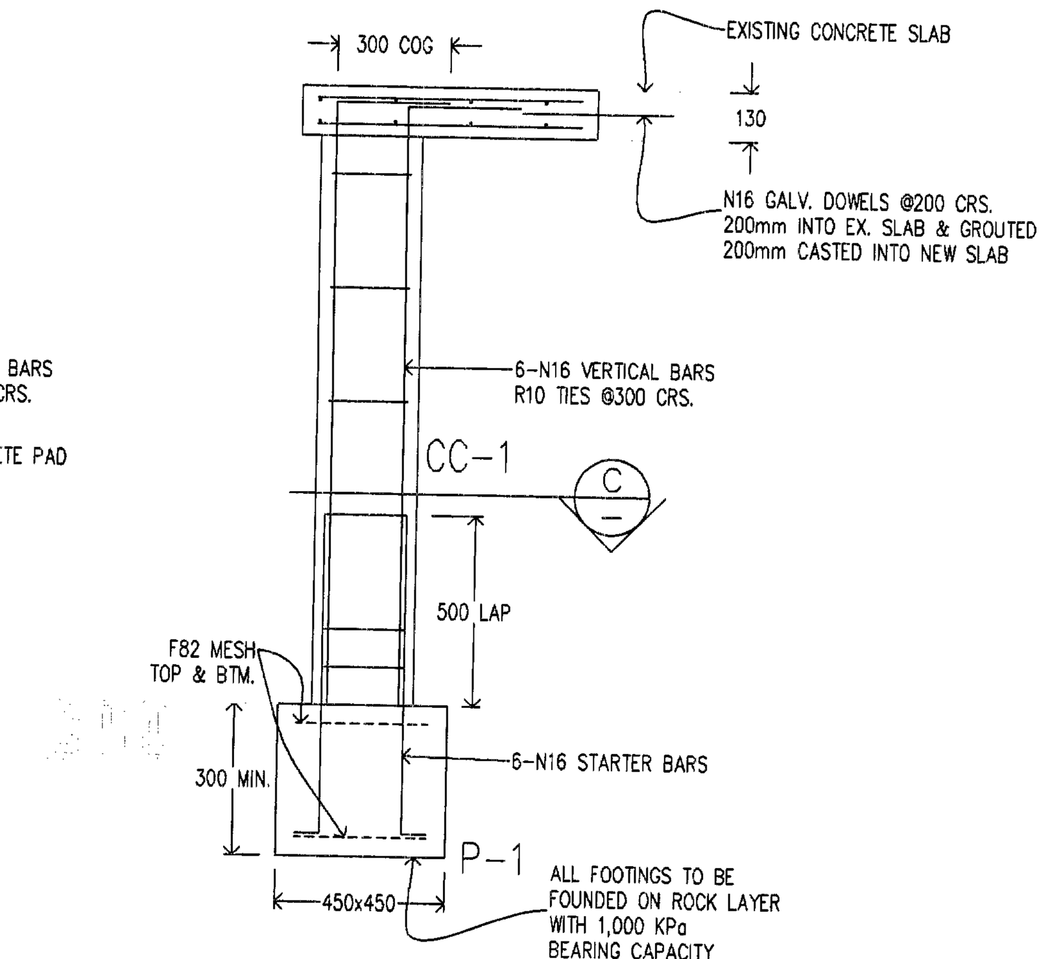
A–A SECTION 1:20



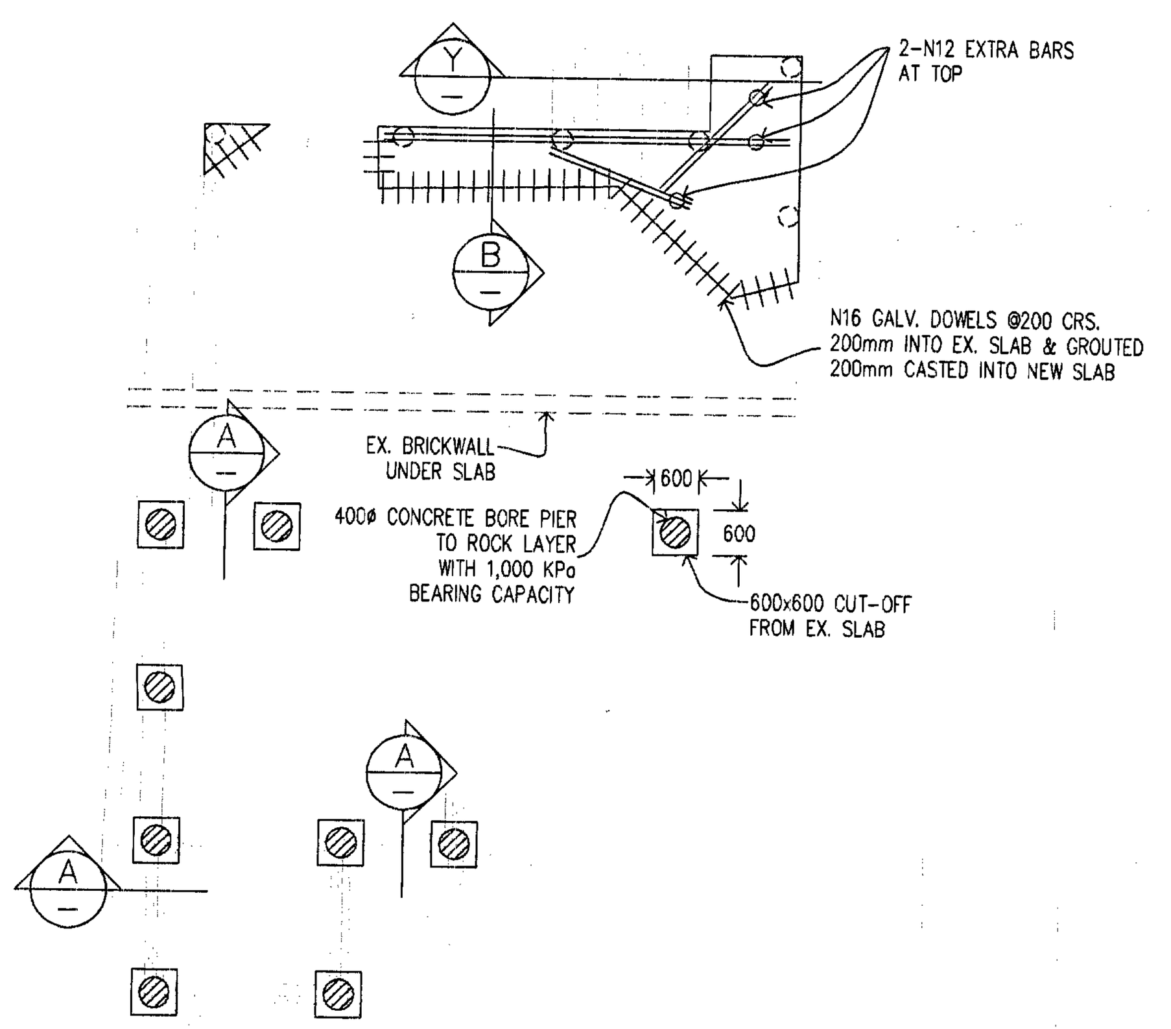
C–C SECTION 1:10

● DENOTES A N16 VERTICAL BAR

○ DENOTES A N16 START BAR



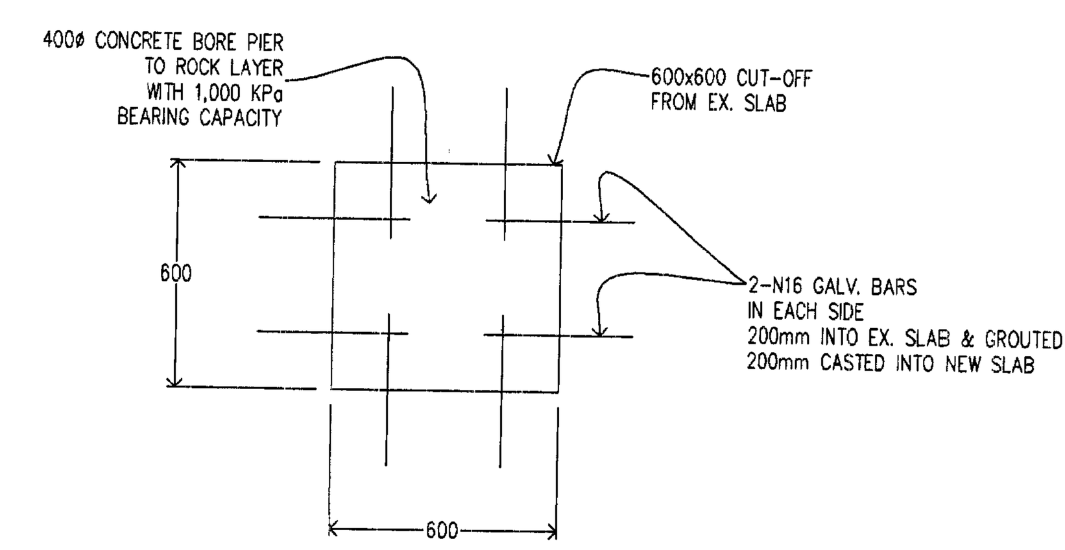
B–B SECTION 1:20



CABANA SLAB PLAN 1:100

DENOTES 2-N12 EXTRA TOP TRIMS 2000 LONG. 75 C/C & 75 FROM SLAB/SUPPORT EDGE

ALL NEW CONCRETE SLAB TO BE 130mm THICK
N12 @200 CRS. TOP & BTM, IN EACH WAY



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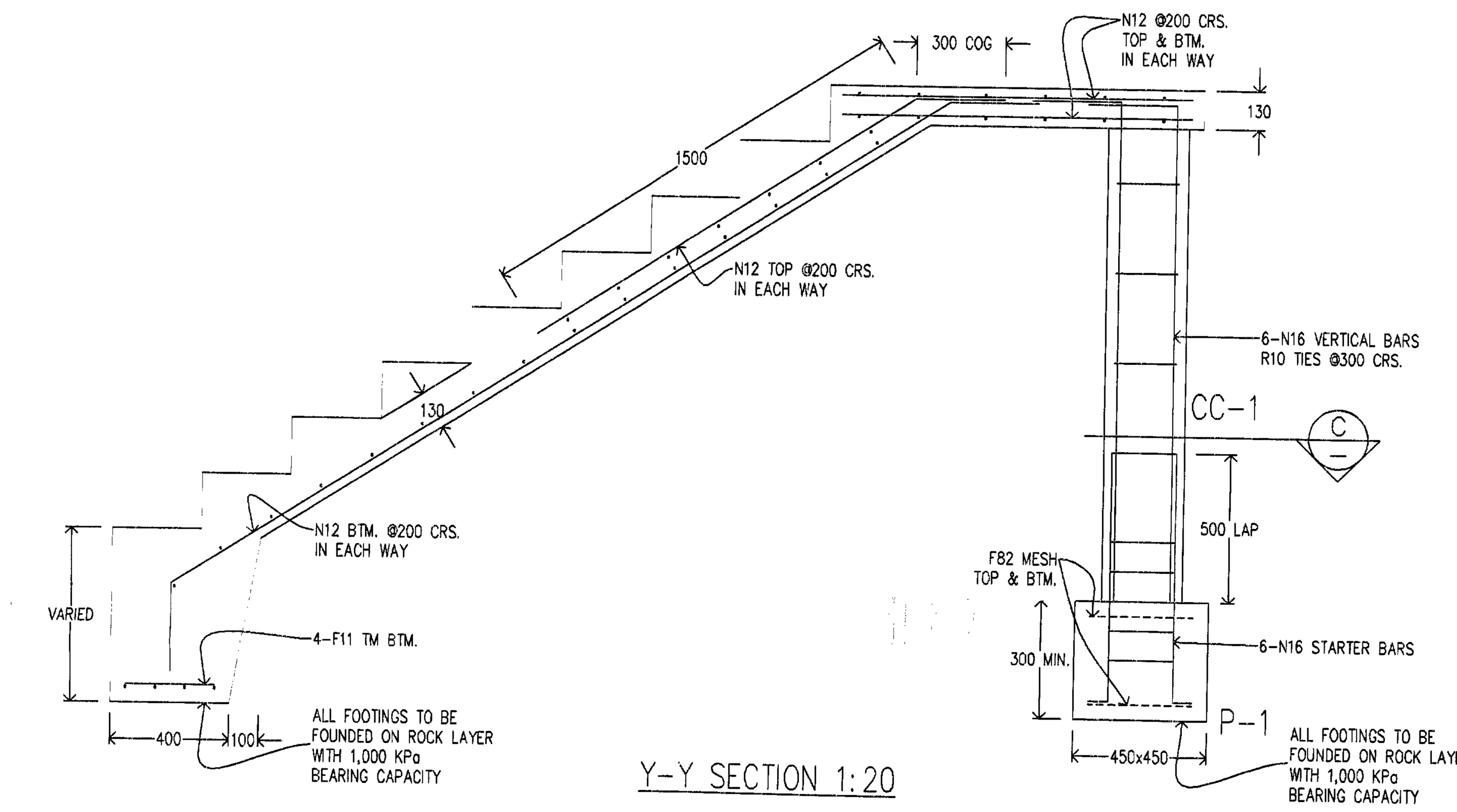
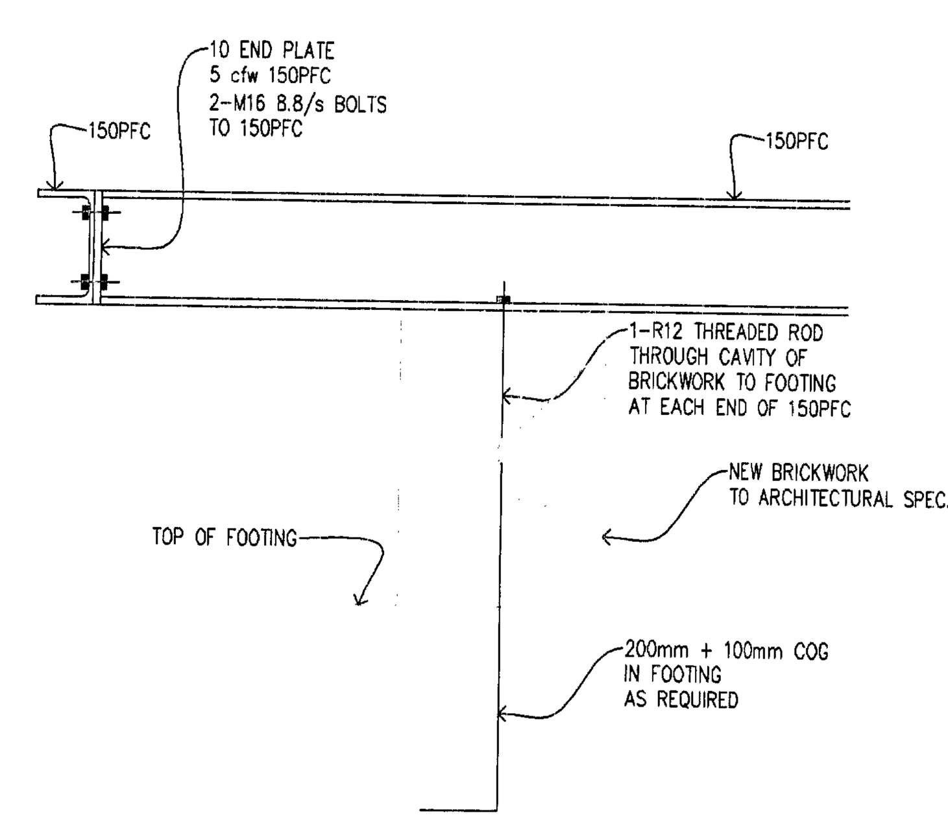
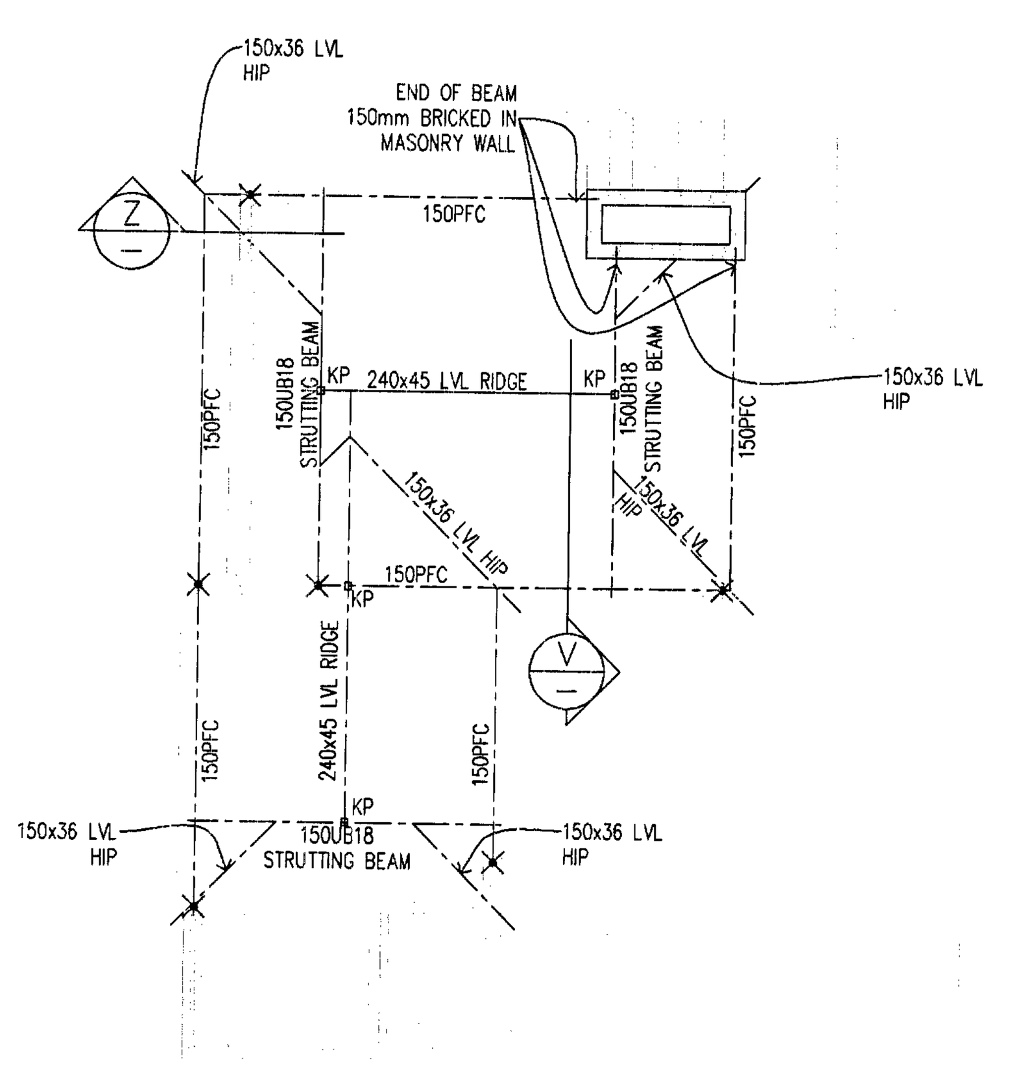


Y–Y SECTION 1:20



Z–Z SECTION 1:10

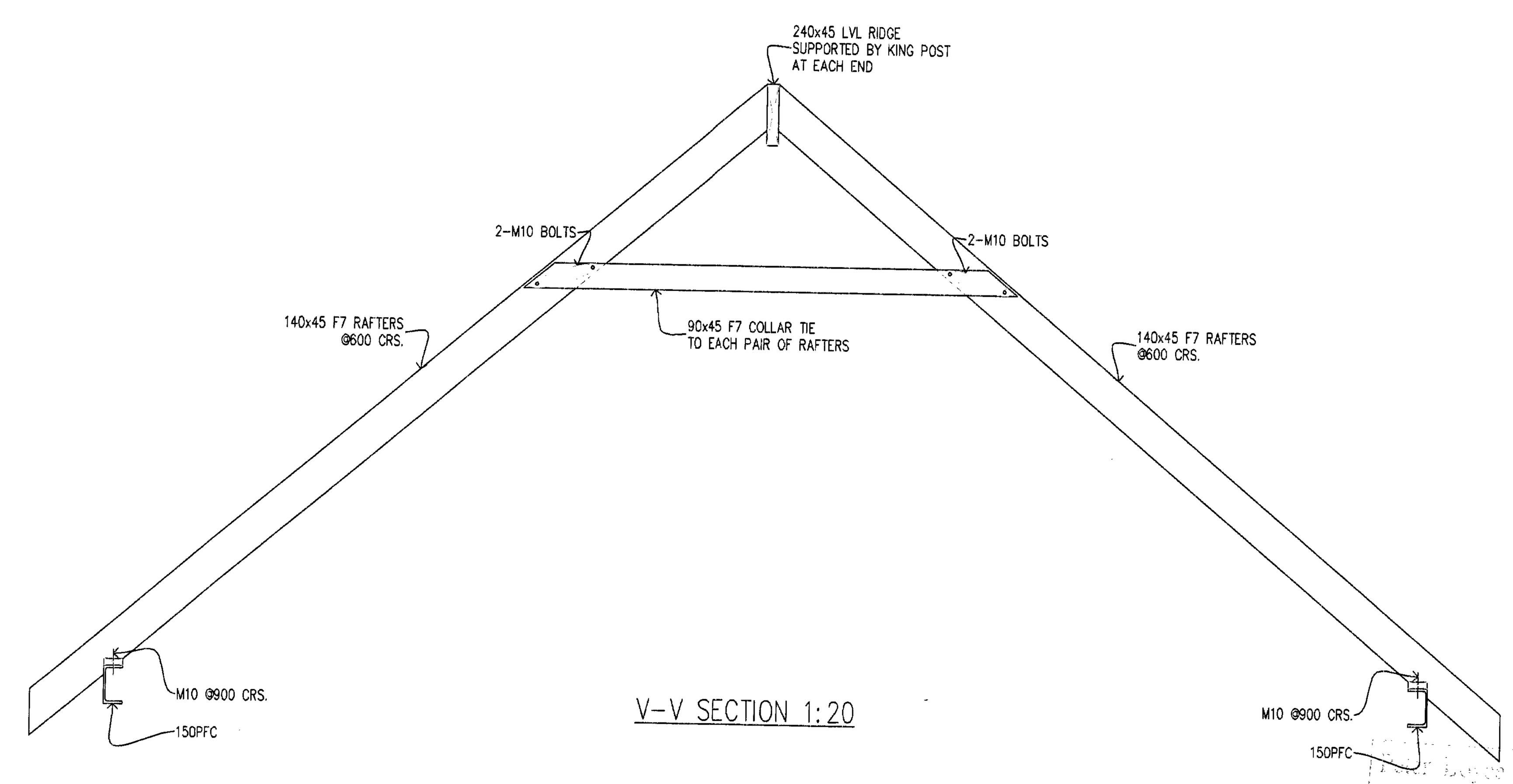


CABANA ROOF BEAM MARKING PLAN 1:100

X DENOTES A R12 THREADED ROD TO FOOTING AS REQUIRED

○ KP DENOTES A 70x70 F7 KING POST OVER A STRUTTING BEAM TO SUPPORT A RIDGE AS REQUIRED

ALL RAFTERS TO BE 140x45 F7 @600 CRS. & COMPLIES WITH AS1684



V–V SECTION 1:20

AMDT	REVISIONS	DATE	BY

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DESIGNER: NICHOLAS DUNN + ASSOCIATES
10/180 Pacific Highway, North Sydney, NSW 2060 Tel: 02 9956 5454 Fax: 02 9956 8280

PROJECT & ADDRESS: PROPOSED ADDITIONS & RENOVATIONS TO 22 QUARTER SESSIONS ROAD, CHURCH POINT

DRAWING: STRUCTURAL PLANS & DETAILS – 1

LEE JING CONSULTING PTY LTD
23 Fitzsimmons Avenue, Lane Cove, NSW 2066 TEL: (02)9420 1186 FAX: (02)9420 1187

APPROVED BY: LI XIN BE, MEngSc, MIEAust, CPEng, NPER(Reg: 654434)

SIGNATURE: Li Xin

DATE: 3-Apr-07

DESIGNED BY: J.D.

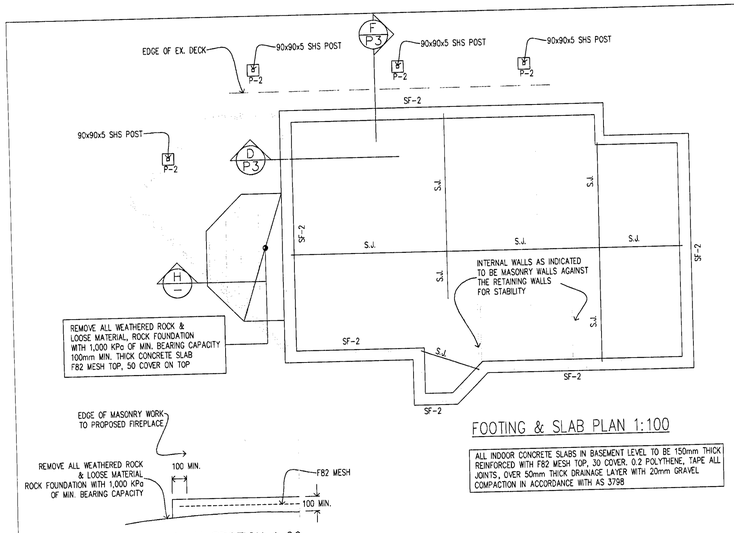
DRAWN BY: J.D.

SCALE: 1:100, 1:20, 1:10

DRAWING SIZE: A1

JOB NO. 07/023

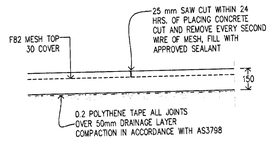
DRAWING NO. P1



FOOTING & SLAB PLAN 1:100

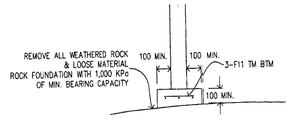
ALL INDOOR CONCRETE SLABS IN BASEMENT LEVEL TO BE 150mm THICK REINFORCED WITH F82 MESH TOP, 30 COVER. 0.2 POLYTHENE, TAPE ALL JOINTS, OVER 50mm THICK DRAINAGE LAYER WITH 20mm GRAVEL COMPACTION IN ACCORDANCE WITH AS 3798

H–H SECTION 1:20

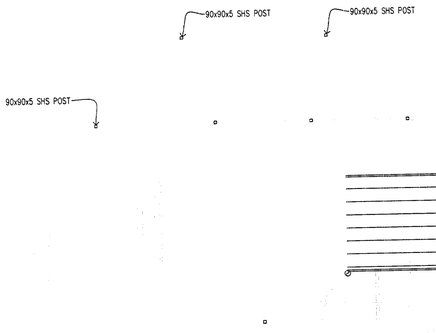


TYPITAL SAWN JOINT DETAILS

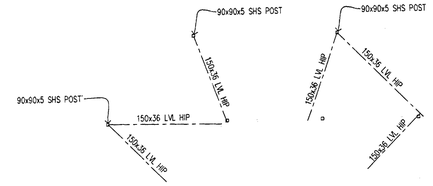
MARKED 'S.J.' ON PLAN



CONCRETE LEVELLING DETAILS FOR INTERNAL WALL 1:20

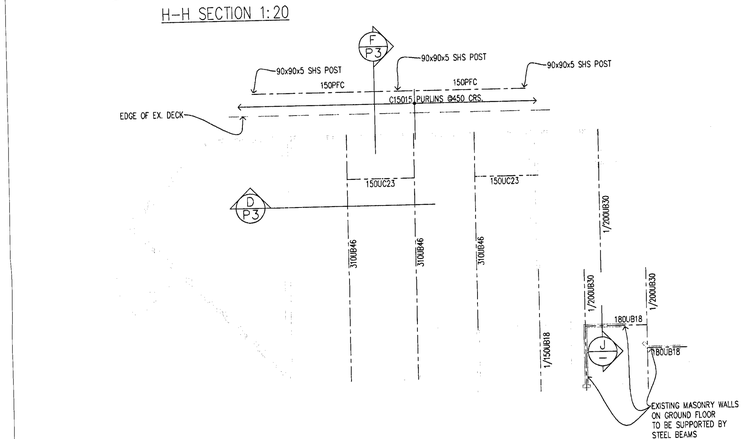


FIRST FLOOR JOIST PLAN 1:100

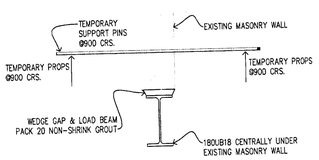


VERANDAH ROOF FRAMING 1:100

VERANDAH ROOF RAFTERS TO BE 140x45 F7 @600 CRS. & IN ACCORDANCE WITH AS1684



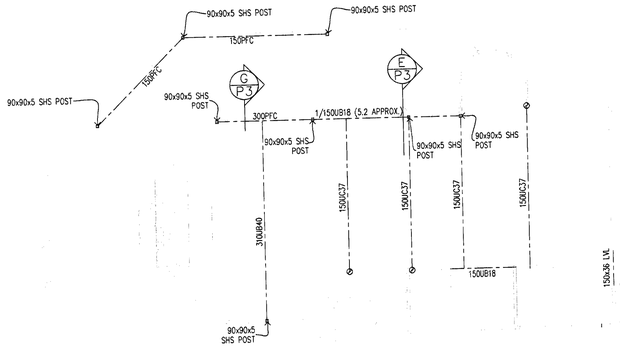
GROUND FLOOR BEAM & DECK FRAMING PLAN 1:100



J–J SECTION 1:10

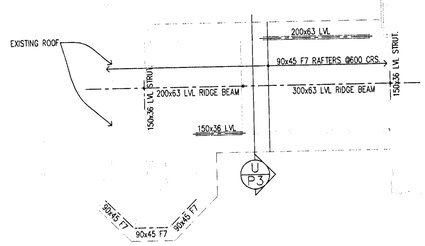
PROCEDURE OF INSTALLING A STEEL BEAM UNDER EXISTING MASONRY WALL:

1. PIN & PROP EXISTING MASONRY WALL @900mm CRS.
2. DEMOLISH FOOTING/WALL AT SUB-FLOOR LEVEL.
3. PLACE NEW BEAM AS SHOWN ON THE PLAN.
4. WEDGE GAP BETWEEN TOP OF BEAM & BOTTOM OF EXISTING WALL TO LOAD BEAM.
5. PACK 20mm WITH NON-SHRINK GROUT & ALLOW A MINIMUM CURING TIME OF 48 HOURS.
6. REMOVE TEMPORARY PROPS & PINS.
7. CHECKED & CERTIFIED BY ENGINEER PRIOR TO INSTALLATION OF CLADDING.



FIRST FLOOR BEAM PLAN 1:100

⊘ DENOTES DOUBLE WALL STUDS UNDER



TOP FLOOR ROOF FRAMING PLAN 1:100

TOP FLOOR ROOF RAFTERS TO BE 90x45 F7 @600 CRS. & IN ACCORDANCE WITH AS1684

BP721.0

AMDT	REVISIONS	DATE	BY

CLIENT: BOB MANDER & SUSIE Mc CARTHY

DESIGNER: NICHOLAS DUNN + ASSOCIATES
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PROJECT & ADDRESS: PROPOSED ADDITIONS & RENOVATIONS TO 22 QUARTER SESSIONS ROAD, CHURCH POINT

DRAWING: STRUCTURAL PLANS & DETAILS – 2

LEE JING CONSULTING PTY LTD
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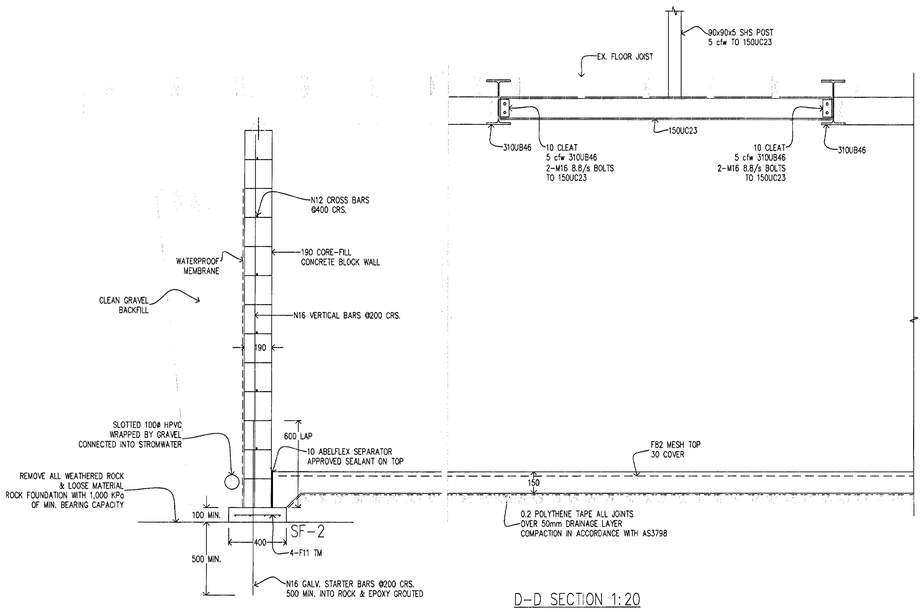
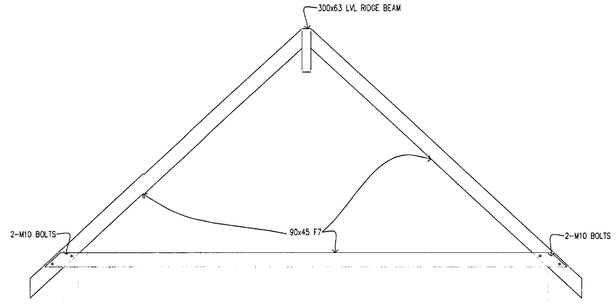
APPROVED BY: LI XIN BE, MEngSc, MIEAust, CPEng. NPER(Reg: 654434)

SIGNATURE: Li Xin DATE: 3–Apr–07

DESIGNED BY	JOB NO.
J.D.	07/023
DRAWN BY: J.D.	
SCALE: 1:100, 1:20, 1:10	DRAWING NO. P2
DRAWING SIZE: A1	



D-D SECTION 1:20



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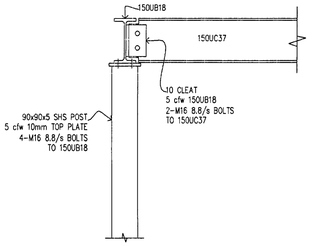
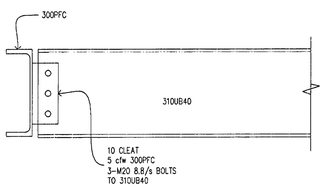
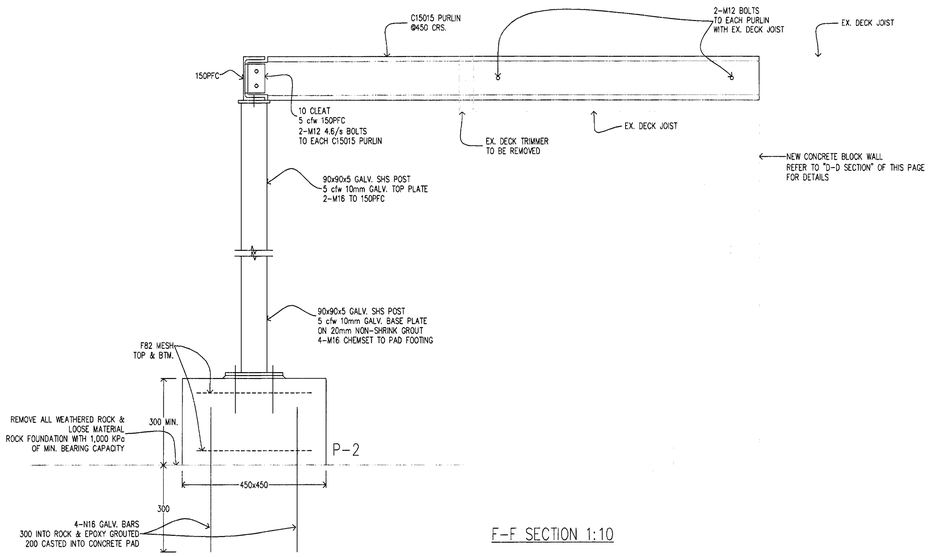


E-E SECTION 1:10



G-G SECTION 1:10



F-F SECTION 1:10

GENERAL

G1 The structural drawings shall be read in conjunction with the architectural drawings. All discrepancies shall be referred to the Engineer before proceeding with the work concerned.

G2 All dimensitions shall be verified from the architectural drawings or on site. The structural drawings shall not be scaled.

G3 The structural drawings do not necessarily show details of all fixtures, inserts, sleeves, plates, openings, plinths, recesses, etc. required for various trades. All such details shall be approved by the Engineer before proceeding with the relevant construction.

G4 All variations to the details shown on the structural drawings shall be approved by the Engineer prior to carrying out the relevant work.

G5 All structural materials and workmanship shall be in accordance with relevant current Australian Standards and the Building Code of Australia.

G6 The Builder shall give 24 hour notice to the Engineer for all intended inspection requirements.

CONCRETE

C1 All concrete work and its testing shall comply with the current AS 3600 - S.A.A. Concrete Structures Code.

C2 All concrete shall be ready mixed, dense weight concrete in accordance with AS 1379 with continuously graded aggregate of 20 mm nominal maximum size, minimum cement content = 300 kgm/cu.m., slump = 75 mm and maximum shrinkage strain at 56 days of 650 micro strain.
Concrete compression strength grade at 28 days to be:
All Footings.....25 MPa.
All columns & slabs.....40 MPa.

C3 Reinforcement splices shall be in accordance with AS 3600
N bars.....40 dia., 500 minimum.
R bars.....50 dia., 500 minimum.
Fabric.....250 minimum.
Otherwise, approved by Engineer.
Fabric reinforcement shall be in one piece in direction of span. The location and type of all reinforcement splices shall be approved by the Engineer.

C4 The Builder shall supply and install all necessary bar chairs, supports and spacer bars to position all reinforcement correctly within permissible tolerances. Bar chairs shall be spaced at 900 maximum centres both ways.

C5 Horizontal reinforcement in beams shall be continuous around corners and intersections.

C6 Clear concrete cover to reinforcement (including fitments) shall be as follows:
Footings.....50
Columns & Slab.....30

FOOTING

F1 Footings & slab are based on Classification "A" and recommendations of AS 2870 "Residential Slab and Footings". This Classification shall be confirmed by an investigation from a geotechnical engineer. Builder to verify on site and Engineer to be notified immediately if site conditions vary from the above.

F2 All concrete footings shall be founded on rock layer with a minimum safe bearing capacity of 1,000 KPa.

F3 Footing dimensions shown on the drawings are for tender purposes only and may need to be varied on site. All final founding levels shall be approved by the Engineer.

F4 All excavations shall have all water and deteriorative materials removed before concreting commences.

F5 All footing over-excavations shall be backfilled with concrete.

F6 All footing excavations shall be inspected by the Engineer before proceeding with any further work.

STRUCTURAL STEEL

S1 All steelwork shall be in accordance with AS 4100 (SAA Steel Structures Code).

S2 All welding shall be in accordance with AS 1554. All welding shall be 6mm continuous fillet type, unless noted.

S3 All steelwork, including accessories, surface treatment shall be hot dip galvanised after welding & fabrication.

S4 All bolts, including masonry bolts, shall be hot dip galvanised, unless noted.

S5 All plates shall be 10mm thick, unless noted.

STRUCTURAL TIMBERWORK

T1 All timberwork shall be in accordance with AS 1720 (SAA Timber Structures Code) and AS 1684 (SAA Timber Framing Code).

T2 All steel plates, washers, bolts and nuts for timber fixings shall comply with AS 1250.

T3 The Builder shall retighten all exposed bolts to timberwork just prior to practical completion. Inaccessible bolts shall be retightened just prior to installation of claddings & finishes.

BP 7210

AMDT	REVISIONS	DATE	BY

CLIENT
DESIGNER BOB MANDER & SUSIE Mc CARTHY

NICHOLAS DUNN + ASSOCIATES
10/180 Pacific Highway, North Sydney, NSW 2060 Tel: 02 9956 5454 Fax: 02 9956 8280

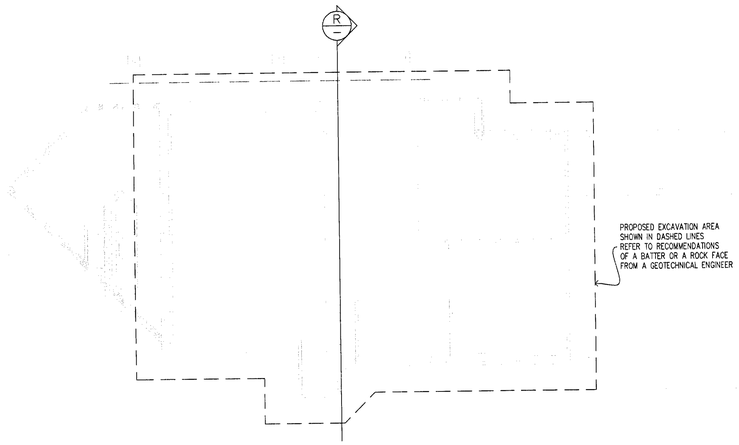
PROJECT & ADDRESS
PROPOSED ADDITIONS & RENOVATIONS
TO 22 QUARTER SESSIONS ROAD, CHURCH POINT

DRAWING
STRUCTURAL PLANS & DETAILS - 3

LEE JING CONSULTING PTY LTD
23 Fitzsimmons Avenue, Lane Cove, NSW 2066 TEL: (02)9420 1186 FAX: (02)9420 1187

APPROVED BY LI XIN BE, MEngSc, MIEAust, CPEng, NPER(Reg: 654434)
SIGNATURE Li Xin DATE 3-Apr-07

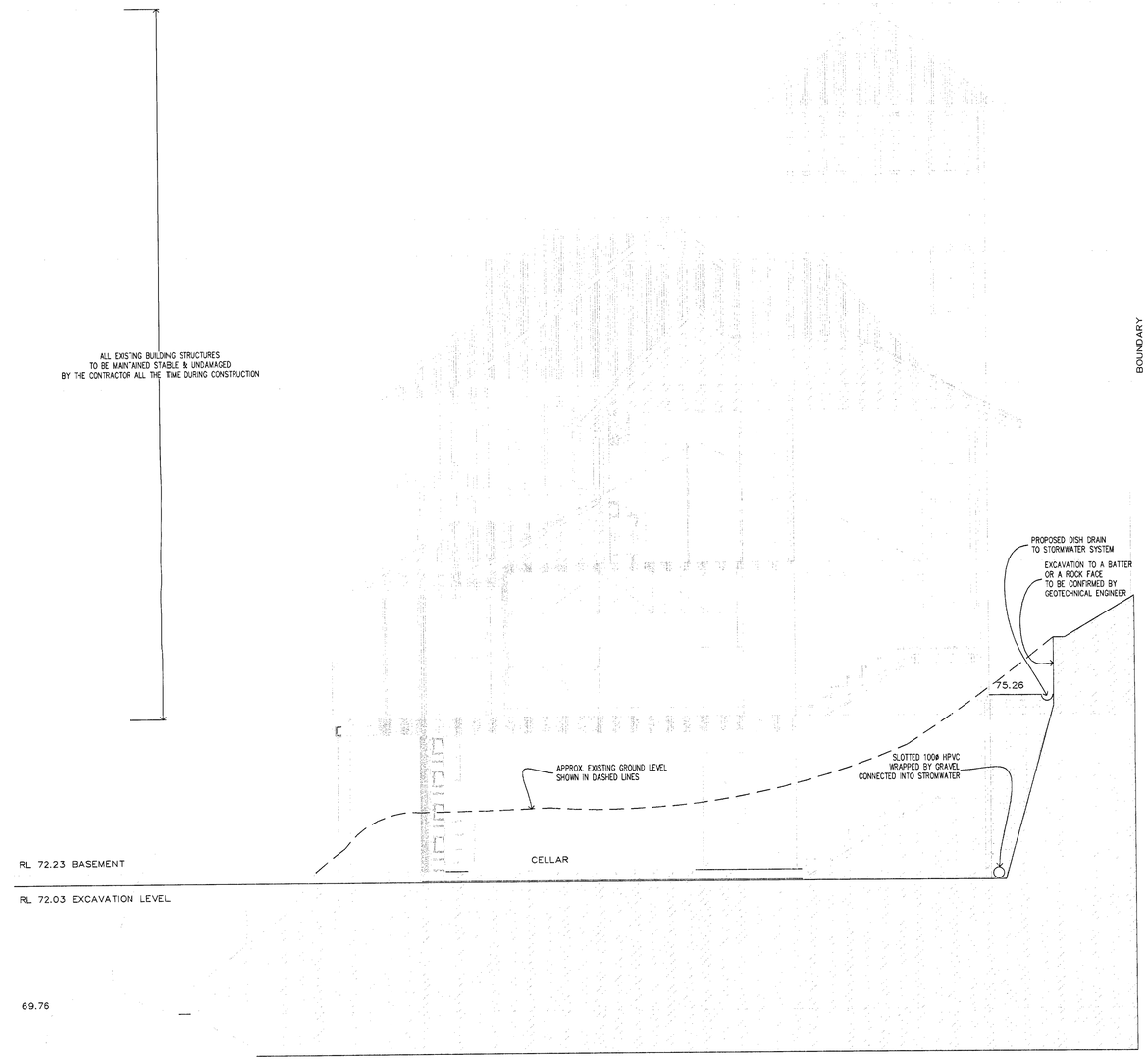
DESIGNED BY J.D.
DRAWN BY J.D.
SCALE 1:20, 1:10
DRAWING SIZE A1
JOB NO. 07/023
DRAWING NO. P3



EXCAVATION PLAN 1:100

NOTES for EXCAVATION

E1	All excavation, including vibration control and excavation procedures, shall comply with the requirements of the Geotechnical Engineer, REPORT ON GEOTECHNICAL ASSESSMENT (DOUGLAS PARTNERS, May 2006).
E2	The Contractor shall be responsible of maintaining all all existing building structures stable and undamaged all the time during construction. The Engineer is to be consulted if required.
E3	All demolition work shall be in accordance with AS2601 and must be executed safely with appropriate professional standards.
E4	The Builder shall give 24 hour notice to the Engineer for all intended inspection requirements.



R-R SECTION 1:50

BP721

AMDT	REVISIONS	DATE	BY

CLIENT: BOB MANDER & SUSIE Mc CARTHY

DESIGNER: NICHOLAS DUNN + ASSOCIATES
10/180 Pacific Highway, North Sydney, NSW 2060 Tel: 02 9956 5454 Fax: 02 9956 8280

PROJECT & ADDRESS: PROPOSED ADDITIONS & RENOVATIONS TO 22 QUARTER SESSIONS ROAD, CHURCH POINT

DRAWING: EXCAVATION PLAN & DETAILS

LEE JING CONSULTING PTY LTD
23 Fitzsimmons Avenue, Lane Cove, NSW 2066 TEL: (02)9420 1186 FAX: (02)9420 1187

APPROVED BY: LI XIN BE, MEngSc, MIEAust, CPEng, NPER(Reg: 654434)
SIGNATURE: Li Xin DATE: 3-Apr-07

DESIGNED BY	J.D.
DRAWN BY	J.D.
SCALE	1:100, 1:50
DRAWING SIZE	A1
JOB NO.	07/023
DRAWING NO.	P4

SPECIFICATION

OF WORK TO BE DONE AND
MATERIAL TO BE USED IN THE
ALTERATIONS & ADDITIONS
TO EXISTING DWELLINGS

AT: 22 QUARTER SESSIONS ROAD
CHURCH POINT
N.S.W.

FOR: BOB MANDER +
SUSIE McCARTHY

NICHOLAS DUNN
& ASSOCIATES
ARCHITECTS

DATE: MARCH 2007

I N D E X

1.00 PRELIMINARIES

1.01 All work to be carried out in accordance with the Ordinances, By-Laws and Regulations of the local Council.

1.02 All work to be supervised and executed in accordance with the drawings and specification.

1.03 Use figured dimensions only, do not scale off drawing.

1.04 Provide all necessary insurances to cover the owner in occupation including Public Risk Liability and Builders Licensing Board requirements.

1.05 The builder shall perform the operations and supply and fix the materials and components mentioned herein and/or shown on the drawings, and shall provide therefore all necessary labour, equipment and incidentals unless the responsibility is expressly stated to be that of others.

1.06 The words 'supply', 'provide', and the like shall be deemed to mean supply and fix unless otherwise stated.

1.07 Current editions of SAA specifications and codes shall apply to materials and workmanship where not in conflict with the provisions of the specification.

1.08 Set Out
The builder is to set out and maintain the works in accordance with the drawing with figured dimensions to be taken in preference to scale.

1.09 Plans and Specifications
Any work indicated on the plan but not in the specification or vice versa, and any item not shown in either plan or specification but which is obviously necessary as part of the proper construction and/or finish is to be considered as so shown or specified and is to be done as part of the contract. Variations to plans and/or specifications may not be made without the written consent of the owner.

1.10 Plans on Job
A legible copy of the plans and specifications bearing the approval of the Municipal Authority concerned, must be maintained by the Builder at all times.

1.11 Check all dimensions and levels on site prior to the commencement of work.

2.00 SCOPE OF WORK

2.01 The works comprise the supply of all materials and labour and the performance of every operation necessary for the completion of all works shown on the accompanying drawings, this specification and such details, instructions and directions given during the works under the supervision and to the entire satisfaction of the Architect.

2.02 The work comprises:
a. Demolition an removal of work shown on architectural drawings.
b. Construction of the building works - as shown on the architectural drawings.

3.00 EXCAVATOR

3.01 Excavation to levels as indicated on drawings.

3.02 Prepare site by cutting and filling to the levels indicated on drawings.

3.03 Excavate to the depth and width as required for concrete strip footings/slabs.

3.04 Wheel in approved earth filling, not clay, or approved hardcore of 50mm maximum gauge where required.

3.05 where appropriate fill in layers not exceeding 250,, thick, well ram, water and consolidate to underside of floor level. Finish off with 50mm sand blinding.

4.00 DEMOLISHER

4.01 All demolition shall be carried out in a careful and systematic manner. Masonry shall be demolished in small sections.

4.02 Blasting will not be permitted.

4.03 The builder shall obtain approval for the proposed sequence of demolition to be carried out under this trade from the Architect at least 48 hours prior to proposed commencement.

4.04 Demolition shall be carried out in normal working hours only. At other times approval of the Architect must be obtained.

4.05 No demolished materials shall be burnt on the site.

4.06 All demolished material shall become the property of the builder and shall be removed from the site without delay, except if otherwise specified.

4.07 Re-use bricks where approved by the Architect and Structural Engineer.

4.08 Service lines, including water, gas, sewerage, telephone, electrical conduits and stormwater drains which are no longer required shall be disconnected and sealed off.

4.09 Arrange a joint inspection with the Architect and the owners and occupants of adjoining properties prior to and on completion of demolition.

4.10 At the initial inspection, make detailed records of conditions existing within the adjoining properties, especially structural defects and other damage or defacement. Arrange for not less than two copies of each record, including drawings, written descriptions and photographs, to be endorsed by the owners and occupants or their representatives, as evidence of conditions existing before demolition commenced.

4.11 Provide one endorsed copy of each record to the Architect.

4.12 Give no less than 3 working days notice of intention to commence demolition to owners and/oroccupants of adjoining property and make all necessary arrangements with them.

4.13 All necessary approvals shall be obtained by the Builder.

5.00 CONCRETOR

5.01 Concrete work shall generally be in accordance with the relevant Australian Standards and Code, in particular with AS1480, and to Engineer's details.

5.02 Slump test on each sample shall be made in accordance with the necessary code. Slump shall not exceed 75mm.

5.03 Concrete shall be made with Portland Cement, Course Aggregate, Fine Aggregate, Water and admixtures specified.

5.04 The builder is wholly responsible for producing concrete as specified unless otherwise specified, concrete shall be of the following densities:-

Normal reinforced work	-	20MPa
Unreinforced and minor work	-	15MPa

5.05 Concrete placing shall be carried out continuously between construction joints and in such a manner that a wet edge is maintained.

5.06 Where construction joints are shown on drawings they shall neither be eliminated nor relocated without approval of the engineer.

5.07 Before fresh concrete is placed against hardened concrete the joint surfaces of the hardened concrete shall be thoroughly roughened and cleaned to remove loose and soft materials.

5.08 Curing: Cover for two days with sand and keep moist.

5.09 Provide minimum 50mm cover to reinforcement.

5.10 All new concrete stairs and r.c. slab, including edge beams etc., to be carried out in accordance with the structural engineers drawings and specification.

6.00 BRICKWORK

6.01 Mortars for masonry shall comply with ASA123.

6.02 All bricks/blocks to be well wetted before laying. All brickwork/blockwork to be properly bonded, laid on full bed and all perpends fitted. Carry up all work true and plumb to even gauge and in level courses - the full height and thickness required.

6.03 Build in as necessary all flashing, D.P.C.'s reinforcements arch bars, lintels, frames, straps, bolts, lugs, wall ties, metalwork, sills and the like.

6.04 Fill foundation cavities to external walls from the top of the footings to ground elvel or two courses below D.P.C., whichever os lower. Use 10MPa concrete. Finish top surface smooth with 25mm minimum cross fall to outside.

6.05 Form weepholes in each third perpend of outer skin immediately above filling and each D.P course.

6.06 Build into all brick veneer and cavity walls 4mm galvaised wall ties to conform with as INT 324. Space 900mm maximum horizontally, not more than 400mm verticaly.

6.07 At all abutments of brickwork with timber frames generally provide 25 x 1.6mm galvanised steel straps 400mm long overall, cimped and focked, with 75mm turnup.

6.08 Build in M.S. angle bars to new openings minimum 100mm bearing each side. lintels to external openings to be hot dipped galvanised.

Spans up to 900 - 75 x 10 flat bar
Spans up to 1800 - 100 x 75 x 10 angles
Spans up to 2400 - 125 x 75 x 10 angles
Spans up to 3000 - 150 x 75 x 12 angles

All angles and bars in external walls to be painted with red lead or priming paint before fixing. When exposed to sea air they must be galvanised.

6.09 Joint reinforcement for crack control shall be woven wire mesh conforming to AS INT 325. Lap mesh 300mm at joints and make ot contunous around corners. Do not extend across control joints. Lay reinforcement contunuously in bed joints as follows:-

in first two courses below sills
and first two coursesabove arch bars,
extending 300mm past reveals on both sides.

6.10 Keep cavities free of mortar droppings.

6.11 Damp proof course to be aluminium core conforming with SAA INT 326 or approved super grade. D.P.C. to be full width of all brick walls and piers.

6.12 Waterproof membrane below floors to carry across thickness of inner skin.

6.13 Aluminium flashings to conform with SAA INT326 cover flashings shall be 0.6mm galvanised sheet / 1.4mm lead / 0.7 aluminium bitumen where in contact with mortar.

6.14 Build flashings and D.P.C.'s into brickwork/blockwork wherever necessary for weather proofing including over exposed openings, lintels, beams and roofs abuting brickwork/blcokwork and under sills and soffits. Make flashing minimum 450mm longer than openings.

7.00 STRUCTURAL STEEL

7.01 The supervision, workmanship and tolerances of fabrication of all structural steelwork shall be in accordance with the requirements of ASA1250 unless otherwise stated.

7.02 All steel shall be free from excessive rust, pitting, laminations or other defects.

7.03 All welding shall conform with the requirements of AS1554.

7.04 Steelwork shall be in accordance with structural engineers drawings and specifications.

8.00 METALWORK

8.01 Provide and fix all required arch bars and angles to brickwork.

8.02 Metal columns: Provide and fix all required circular metal columns, to Engineering drawings.

8.03 Handrails: Provide and fix all handrails as detailed.

8.04 Provide and fix metal stair as detailed by Structural Engineer's drawings.

9.00 CARPENTRY

9.01 Timber shall be of the species and grades specified. If the grade is not specified, it shall be that normally used for good quality work in such cases.

9.02 Names of timbers shall generally be deemed to be the standard trade common names given, as AS02 and AS1148, all timber work to comply with "SAA TIMBER FRAMING CODE".

9.03 Hardwoods shall be in accordance with AS082 or AS083.

9.04 Milled timbers shall conform to the relevant standards AS1702 to 1709.

9.05 Australian grown softwoods shall be in accordance with AS0107 and 1781 to 1785. Non-visible timbers shall conform with AS0107. Visible timbers for clear finishes and joinery work shall conform with AS1781.

9.06 Pitch of roof is to be as shown on plan.

9.07 Trim as required between ceiling joists for manhole. Line opening and provide suitable cover or as detailed and in location shown on drawings.

9.08 All plates, bearers and joists are to be treated before fixing with an approved pest resisting and wood preserving compound on all faces and ends.

9.09 Wall Framing: Bottom plates to be checked out to be depth of 10mm recess studs. Each wall section shall be diagonally braced. Studs to be checked out to receive brace. Brace to finish flush with studs.

Studs to be 50mm thick to each side of opening up to 1800mm wide, and 75mm thick to openings over 1800mm. Provide three studs at all wall angles and intersections, well blocked and securely fastended together.

Studs to external and internal walls of single storey or upper storey of two storey dwelling to be 75 x 50mm at 450 centres, stress grade F5, Studs to external and internal walls to lower storey of two storey dwellings to be 100 x 50 at 450 centres, stress grade F5.

All heads to be checked or housed into studs. Diagonal bracing to be 50 x 20mm to each panel. Nogging to be width of studs and 38mm thick and are to be chair rail and door head height.

9.10 Pitch of roof is to be as shown on plan.

9.11 Trim as required between ceiling joists for manhole. Line opening and provide suitable cover or as detailed and in location shown on drawings.

9.12 Provide 22mm structural particleboard flooring (Red Tongue) to level 2.

9.13 Provide new floor joists sizes and species in accordance with table below:-

Spans up to 2400 - 125x50mm @ 600mm c.c's grade F8
Spans up to 3600 - 200x50mm @ 600mm c/c's grade F8
Spans up to 5400 - 300x50mm @ 450mm c/c's grade F8.

Bearers at 1800mm centres, sheet roof and tile roof 125x75mm, oregon or pine.

Spans exceeding 2700mm shall have 50 x 50mm herringbone strutting or solid blocking at 1800mm c/c's.

9.14 Heads over openings to be checked into studs at least 12mm for opening up to 3600mm wide.

Where the opening exceeds 3600mm wide the head shall be carried through to the adjoining stud.

Heads shall be a stress grade of F8 or better and shall be placed on edge, sizes in accordance with Table overleaf unless superceeded by engineers requirements.

Where supporting conventional roof constructions the following applies:-

SPAN	TILED ROOF	SHEET ROOF
1.2m	75 x 75 or 100 x 38mm	50 x 75mm
1.5m	125 x 50 or 100 x 100mm	100 x 38mm
1.8m	175 x 50 or 150 x 75mm	125 x 50mm or 100 x 100mm
2.1m	200 x 50 or 175 x 75mm	150 x 50mm or 125 x 100mm
2.4m	225 x 50 or 200 x 75mm	175 x 50mm or 150 x 75mm
2.7m	250 x 50 or 225 x 75mm	200 x 50mm or 175 x 75mm
3.0m	250 x 75 or 300 x 50mm	225 x 50mm or 200 x 75mm

9.15 PITCHED ROOF

RAFTERS:

Tile roof @ 450 centres 100 x 50mm F8

BATTENS:

Tile roof 38 x 25mm F5

RIDGES, HIPS:

Tile or slate - 150 x 25mm F8

VALLEYS:

Tile or slate - 150 x 38mm F8

PURLINS:

Tile roof @ 2100mm c/c's 100 x 75mm F8

STRUTS:

Up to 00 long - @ 2100 c/c's 75 x 75mm F8

COLLARS TILES:

Up to 4200 - alternate rafters - 100 x 50mm F8
Over 4200 - alternate rafters - 125 x 50mm F8

STRUTTING BEAMS:

Up to 3000 - 200 x 75mm F8
3000 to 3600 - 225 x 75mm F8
3600 to 4200 - 250 x 75mm F8
4200 to 4800 - 275 x 75mm F8

CUTTER/VALLEY BOARD:

15mm thick

CEILING JOISTS:

Up to 2100 @ 450mm c/c's - 100 x 50mm F8
Up to 2700 @ 450mm c/c's - 125 x 38mm F8
Up to 3300 @ 450mm c/c's - 125 x 50mm F8
Up to 3900 @ 450mm c/c's - 150 x 50mm F8
Up to 4500 @ 450mm c/c's - 175 x 38mm F8
Up to 5100 @ 450mm c/c's -·175 x 50mm F8

HANGERS:

2100 - 3000 - 200 x 38mm F8
3000 - 3600 - 225 x 38mm F8
3600 - 4200 - 250 x 38mm F8
4200 - 800 - 275 x 38mm F8
4800 - 5400 - 300 x 38mm F8

9.16 Flat Roof

Rafters -

Up	to 2400	@ 600 c/c's	- 150 x	50mm F8
2400	to 3000	@ 600 c/c's	- 150 x	50mm F8
3000	to 3600	@ 600 c/c's	- 175 x	50mm F8
3600	to 4200	@ 600 c/c's	- 225 x	50mm F8
4200	to 4800	@ 600 c/c's	- 250 x	50mm F8
4800	to 5400	@ 600 c/c's	- 275 x	50mm F8
5400	to 6000	@ 600 c/c's	- 300 x	50mm F8
Battens	-		75 x	38mm F8

9.17 Joiner

Timber to be best of respective kind, seasoned and free from defects which may effect its appearance and desirability.

9.18 To all door openings provide solid and rebated jamb linings out of 38mm timber by the thickness of the finished wall.

9.19 Provide all flashings as before described in "BRICKWORK".

9.20 The contractor shall supply and fix all hardware complete with necessary fittings, fixtures, screws etc. Fix all hardware in accordance with the manufactures' recommendations.

9.21 Internal doors to be 2040x 820mm construction with moulded panelled design both faces.
see door / window schedule for external doors & windows.

10.00 GLAZING

10.01 Scope

The work in this section comprises all glass necessary to complete the works.

10.02 Standards

The following codes shall apply:

AS 1770 Part 2 - SAA Loading Code - Wind Forces.
AS 1288 - Instllation of Glass in Buildings.

10.03 Materials and Workmanship

All materials shall be new, free from flaws, air bubbles and shall be full weight of thickness specified. Glazing compounds shall be approved brands of types recommended by the markers for the particular application. Damaged or unsuitable materials will be rejected. Care shall be taken to ensure that all adjoining surfaces are kept free from damage.

Allow for protection of glass after fixing and leave clean and free from defects on completion.

Glass shall be cut accurately to the sizes required and shall be finished with smooth and regular edges free of any chips or blemishes and with surfficient clearance to allow for expansion and contraction.

11.00 PAVING AND TILING

11.01 Scope

The Work of this section comprises all marble and ceramic tiling, paving, paving accessories and related items, to floors and walls necessary to complete the work indicated on the Contract Drawing and as further specified.

11.02 Standards

The following standards and cost shall apply where not on conflict with this specification:

AS A123 Mortar for Masonry Construction
AS 1317 Blended Cements (metric units)

11.03 Workmanship - Generally

The Builder shall be responsible for ensuring proper adhesion of finishes to structure and for protection of finishes upon completion, notwithstanding any Architect's instruction or specification of methods to be used. Any loose or damaged work shall be replaced without extra charge. Replacement may be extended at the Architect's discretion to include the whole of the room or area affected.

Where specified finishes are laid by Sub-Contractors, the Builder shall be responsible for ensuring that the Sub-Contractor has approved the sub-base before commencing work. Defects due to faulty sub-base shall be made good.

Cleaning all finishes thoroughly on completion. Generally use whatever method is appropriate to the case. Follow manufacturer's recommendation where applicable.

11.04 Ordering Lead-Times

Certain items specified herein may need to be ordered from interstate. Allow sufficient time for ordering and importation prior to use.

11.05 Fix wall tiles generally before floor tiles.

11.06 Extent, type of colour of tiles and all finishes - refer to finishes schedule

12.00 PLASTER AND RENDER

12.01 Scope

The Work included in this section comprises the fixing and finishing of plasterboard ceilings, rendered and set walls, rendered walls for tiling and set-coat ceilings.

12.02 Standards

The following standards and codes shall apply where not in conflict with this Specification:

AS A43 Gypsum Plaster for Building Purposes
AS A44 Fibrous Plaster Products
AS 1315 Specification and Methods of Test for Portland Cement (metric units)
AS 1672 Specification and Methods of Test for Building Limes

CA 20 Code of Recommended Practice for the Erection and fixing of Fibrous Plaster Products
CA 27 Internal Plastering on Solid Backgrounds.

12.03 Materials

All materials shall not be new and the best quality of their respective kinds.

Proprietary brands shall be used in accordance with the manufacturer's printed instructions.

Materials shall be stored in a dry place and in a manner to prevent damage mixture of the materials or intrustion of foreign matter.

Materials prone to deterioration shall be used in order of delivery.

A. Water: Water shall be fresh, clean, free from harmful impurities and as would be fit for human consumption.

B. Sand: Sand shall conform generally to Ca 27, Section 2 Clause 3(G), and shall be graded to conform to the appropriate table in the Appendix of CA 27.

Sand shall be sharp, coarse, well washed before using, free from loam, clay, salt, vegetable matter and other harmful impurities.

C. Lime: Lime shall be fresh hydrated lime complying with AS A4, or wqual approved.

D. Cement: Cement shall be Portand cement complying with AS 1315 Type A, used fresh and stored in weatherproof enclosures with elevated timber floors.

Gypsum plasterboard sheets for ceiling lining shall be approved type, covered on both sides and edges with smooth faced wood pulpboard 10 mm or 13 mm thick, recessed or squared edges.

12.04 Workmaship - Plaster and Render

All work shall be executed by experienced tradesmen to a first-class standard.

Prior to commencement of work, inspect all wall and ceiling surfaces to ensure their adequacy and readiness to receive finishes.

Care shall be taken to ensure that all fittings and adjoining wall, floor and ceiling surfa ces, etc, are kept free from all damage, splashing, etc.. Any fitting or surfaces scratched or otherwise damaged shall be replaced or repaired to original appearance and finish, at the Contractor's expense.

Proportioning and mixing of plaster and render shall be as described in CA 27.

Mixes containing cement shall be used within two hours, and mixes containing gypsum plaster within 30 minutes, after the addition of water or of ingredients containing water. Beyond these times the mix shall be discared. It shall not be retempered.

Where render is to be applied across a change in background material, allow for a full-length "V" control joint.

12.05 Workmanship - Plasterboard Linings

Fixers shall be approved by the manufacturer.

Nails: 2.6 mm dia. galvanised flat head (2.2 mm dia, in mouldings). Length to give 20mm penetration in hardwood, 25 mm in softwood, 40 mm in plugs.

Sheet fixing: Apply sheets horizontally to walls, across joists or rafters to ceilings. Nail direct to framing.

Drive nailheads just below surfaces without damages to face and core of sheet, and fill with jointing cement.

Joints: Apply reinforcing tape and fill flush with gypsum-based jointing cement in not less than two coats.

Wall Angles: Crease reinforcing paper or cottom gauze tape along centreline and fit over or into external or internal angles, then finish as for joints. In addition reinforce external angles with metal beads AES.

12.06 Cement Render

Render shall be approriately finished to take finish of tiles or set plaster as specified and scheduled.

Adequately protect all surfaces by means of drop sheets, covers, etc..

Roughen wall surfaces by hacking and raking out joints. Clean brickwork by wire brushing to remove dust and dirt. Slightly dampen surfaces to reduce suction prior to application of render.

Apply render to walls and slab soffits as scheduled. Soak hydrated lime in water. Mix in proportions of 1:1:6 cement:lime:dry sand. Finish walls etc. by applying render to a damp surface 12 mm average thickness in one floating coat. Finish off a steel trowel. Alternatives to Architect's approval.

13.00 ROOFING

13.01 Provide the whole of the building with a full weathertight and birdproof roofing system of the type noted complete with all necessary accessories trim and plumbing generally, including flashing and means of conveying roof water away from the building.

13.02 The new roof shall be sarked with double faced aluminium foil covered reinforced fabric. All sarking is to be fixed so as to ensure the discharge of the penetrating water, without ponding, into the box gutter.

13.03 Insulate the whole of the new roof area nominated on drawings. Fix 75,, thick mineral wool foil backed, to underside of roofing sheets over purlins prior to laying of metal deck roof or return curling joists for tile roof.

13.04 Provide all necessary gutters, downpipes, flashing etc., as indicated on drawings to complete the roof system.

13.05 Flashing around vent pipes passing through the roof shall be zinc or aluminium extending not less tham 300mm beyond the pipe each side, lying on the roof dressed to the surface of the roof covering and carried up the slope of lap under the roof covering at the next lap.

13.06 New roof covering to be fixed in accordance with manufacturers' recommendations.

14.00 PLUMBER AND DRAINER

14.01 Provide plumbing to and drainage from all sanitary fixtures including vanities and floor wastes of all fittings and cunnnect to exisiting systems, in accordance with local authority rules and requirements.

14.02 The Authorities Certificate shall be produced at the completion of the work.

14.03 Excavate for drains to provide even falls throughout and a minimum cover of 300mm. Lay 100mm socketed stoneware pipes to take soilwater from wastes, washtubs, baths, showers wash basins etc. All pipes to be competely jointed wiht rubber rings.

14.04 Fix baths, wash basins, kitchen sinks, wash tubs, pedestal pans and floor wastes in positions as shown on plans.

14.05 Waste stacks to be of required strength and diameter of local authority complete with all bends, branches and effects and with cleaning eye as required.

14.06 Soil stacks to be sizes required by local authority complete with bends, junctions and inspection openings.

14.07 Soil and waste stacks to be carried up as vent pipes through roof of the same diameter and materials as the stock, carried up to regulation height above roof and flashed as before described. Back vents where required to be 50mm G.W.I. or C.P copper where exposed.

14.08 Recess pipework where possible, where not, exposed pipework to be chromium plated.

14.09 Provide box gu tter and 150mm diameter downpipes in positions indicated on drawings. Connect to storwater drains in accordance with local authority standards.

14.10 Drain pipes must not pass through footings. Trenches for drains must not be within 600mm of footings of building where running parallel to same.

15.00 ELECTRICIAN

14.01 The work is to be carried out in accordance with current S.A.A. Wiring Rules and with local authority requirements.

15.02 The electrician is to make all arrangements with local supply authorities for connection of supply and is to attend to the service of all notices, required by such authorities and/or by law, together with the payment of all fees, charges, levies and deposits.

15.03 Carry out the complete electric light and power supply services including all accessories, cabling, switchboard, light and power outlets connection to supply etc.

15.04 Set out, at the earliest opportunity the positions and sizes of all holes, recesses, chases etc., necessary for the accommodation of the work included in this Contract, and shall arrange with other trades concerned to cut away for, and make good after, such work.

15.05 Positions of ceiling light points and G.P.O.'s to be in accordance with drawings or clients selection.

16.00 PAINT FINISHES

16.01 Scope

This specification shall cover the painting, polishing and surfaces finishing generally througout the buildng on metal, plaster, render or other surfaces not necessarily specified in detail but as required to fully complete the work of this contract.

All colours shall be selected by the Architects.

16.02 Materials

All materials used for painting shall be first quality products brought on to the site in the manufacturer's original containers complete and unopened, as supplied by paint manufacturer's to be nominated by the Architects. All coats of each type of finish shall be of the same brand.

16.03 Preparation

All surfaces to be treated will be properly prepared for painting or other finishing unless requires to be otherwise for the application of a particular finish.

All surfaces shall be clean, dry and smooth for painting or other finishing unless requires to be otherwise for the appication of a particular finish.

Metal surfaces shall be cleaned with steel wire brushes, steel scrapers or hammers to remove loose rust or mill scale and washed with mineral turpentine or steam cleaned to remove any foreign matter or oily deposit before priming cost or rust inhibiting compound is applied.

The Contractor shall be responsible for establishing the dryness of these surfaces prior to painting.

The Contractor shall make a careful examination of all surfaces upon which or against which work will be applied and shall ensure that all defects are corrected before the painting of any section

16.04 Workmanship

Painting or surface finishing generally shall not be carried out during unfavourable weather conditions or under dusty or otherwise unfavourable conditions caused by building work.

Adequately protect all surfaces by means of drop sheets, covers, masking, etc. Any spattering or adjacent surfaces shall be promptly and quickly removed.

The number of coats specified for any surface are minimum requirements. Recoat as necessary to produce the required finish. Allow cement render to "age" as long as possible before coating.

Each coat of paint shall be allowed suffucient drying for the particular product used and when thoroughly dry shall be rubbed down to a perfectly smooth surface free of irregularities and other imperfections before the application of any further coat, unless otherwise required for the application of particular finishes.

Painting shall be evenly spread and brushed in; finished surface shall be uniform in gloss, finish and colour and free from brush or other marks.

16.05 Priming

All surfaces shall be primed with materials as specified for various surfaces treatments. All exterior new galvanised surfaces shall be treated with a mordant solution.

All metalwork, including structural steelwork, etc., specified to be primed prior to delivery to the site or building in shall be shop primed and where exposed to the weather for more than three months, shall be painted by the Contractor a further oil paint undercoat and one coat of flat oil paint upon delivery to the job.

16.06 Making good

On completion of work by all other trades, all surfaces are to be properly finished by stopping and touching up to the satisfaction of the Architects.

The finish of touched up area shall be equivalent quality to original finished work and shall conform to the specification in every way.

The Contractor shall replace and make good any of the finished surfaces which discolour,corrode, tarnish, peel or exessively fade or chalk or otherwise deteriorate or become defective within a period of three years from the date of termination of the Defects Liability Period.