DK BUILDING CERTIFIERS

PTY LTD
BUILDING REGULATIONS & FIRE SAFETY CONSULTANTS

SUITE 4, 470 SYDNEY ROAD, BALGOWLAH NSW 2093
PO BOX 929 BALGOWLAH NSW 2093
TEL: 9400 2335 FAX: 9400 2405
email: info@dkbuilding.com.au
ABN: 96 097 502 700

R/80125

Our ref: 05062-1/dos

7th November 2005

The General Manager
Pittwater Council
P O Box 882
MONA VALE NSW 1660

Dear Sir

Re: 81 MYOLA ROAD, NEWPORT – NEW DWELLING + STUDIO + POOL
CONSTRUCTION CERTIFICATE DETERMINATION No 05062-CC
DA No N0872/04

Please find attached our determination of the Construction Certificate together with a cheque for $30.00 being the lodgement fee for the above mentioned premises including all relevant details for your records.

If you require any further information or explanation, please do not hesitate to contact me.

Yours faithfully
DK Building Certifiers Pty Ltd

Damian O'Shannassy - maibs
Executive Director

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Form 11

Construction Certificate Determination

Determination	Approved (New Dwelling, Pool & Garage)
date of determination	7th November, 2005
Subject land	
Address	81 Myola Road, Newport NSW 2106
lot no., DP/MPS, etc. volume/folio	Lot No 2, DP 538888
Estimated Cost	$1,110,037.50

Attachments

- Copy of receipt for payment of long service levy of $2018.95,
- Home Owners Warranty Insurance Certificate No 369833 issued 9th August 2005
- Builders Details - Peter Barnett Constructions Pty Limited - Lic No 97841C
- Builders Quotation details
- Document Transmittal from Peter Burford dated 25th October 2005 regarding compliance with DA conditions
- Rainwater Harvesting Addendum prepared by Tier Consulting Group Pty Limited dated 23rd September 2005
- Geotechnical Report from Douglas Partners Pty Limited dated 12th November 2004
- Thermal Performance Specification - Basix Commitments
- Assessor Certificate
- Basix Certificate
- Sydney Water approval stamps dated 20th October 2005
- Landscape Certificate from Andrew Lane of CAL Design dated 27th October 2005
- CC application form

Plans and specifications approved
list plan no.(s) and specifications reference

Architectural Design Documentation as prepared by Peter Burford, Architect, Drawing No C050970 sheet A1 undated, drawing no C040102 sheet no A2, C040103 sheet no A3, C040104 sheet no A4, C040105 sheet no A5, C40106 sheet no 6, C040107 sheet no 7 dated 19th October 2005, drawing no 040107/1 sheet no A7 dated 30th May 2005

Window Schedules dated 19th September 2005, drawing no C050601 W1, C050602 W2, C050603 W3, C050604 W4, C050605 W5, C050606 W6, C050607 W7, C050608 W8.

Structural Engineering Design Documentation as prepared by Bruce Delprado, Structural Consulting Engineer, dated October 2005,Job No 04/46, Sheet Nos S1 A to S8 A.

Structural Engineering Design Documentation for swimming pool as prepared by Structural Building Design Pty Limited, dated October 2005, drawing no SY050174-S01, issue A, Stormwater Management Plan dated October 2005, drawing No SY050174-SW01 issue A

Landscape Design Documentation as prepared by CAL Design, dated September 2005, Drawing Nos LP-00 to LP-13, rev 01

Specification as prepared by Peter Burford Architect.

Applicant

Name	Robert Allo
Address	2137 Pittwater Road, Bayview NSW 2104
Contact no. (telephone/fax)	Ph: (02) 9901 8126 Mobile: 0411 473 173

Owner

Name	Robert & Elaine Allo
Address	2137 Pittwater Road, Bayview NSW 2104
Contact no. (telephone/fax)	Ph: (02) 9979 6562 Mobile: 0411 473 173

Certificate

Certificate

I certify that the work, if completed in accordance with these plans and specifications, will comply with the requirements of Section 81A (5) of the *Environmental Planning and Assessment Act, 1979* & Clause 147(1)(e) of the *Environmental planning and Assessment Regulation 2000.*

Signature
date of endorsement
Certificate no.

7th November 2005
05062-CC

Certifying authority

Name of certifying authority
if accredited certifier:
Accreditation no.
Contact no.
address

Damian O'Shannassy
Accreditation Number 6175 'Dept of Planning - NSW'
Ph: (02) 9400 2335 Fax: (02) 9400 2335
Suite 4, 470 Sydney Road
Balgowlah NSW 2093

Development consent

Number and date of determination

Development Application Number: N0872/04
Date of Determination: 11th April 2005

BCA Classification

Class 1a, 10a & 10b

Pittwater Council

OFFICIAL RECEIPT

25/10/2005 Receipt No 179219

To R N & E M ALLO CLASSIC PLUS
ACCOUNT

31 MYALA ROAD
NEWPORT NSW 2106

Applic Reference		Amount
GL Re	GL Level	$2,018.25
	DA N0872/04 31 MYALA	

Total	$2,018.25
Amounts Tendered	
Cash	$0.00
Cheque	$2,018.25
Db/C Card	$0.00
Money Order	$0.00
Agency Rec	$0.00
Total	$2,018.25
Rounding	$0.00
Change	$0.00
Nett	$2,018.75

Printed 25/10/2005 10:02:56
Cashier KRobin

Home Warranty

certificate of insurance

HIA INSURANCE SERVICES P/L
ABN 84 076 460 967
An associated company of
Aon Risk Services Australia Ltd
PO Box 883
North Ryde BC 1670
Telephone (02) 9808 7222
Facsimile (02) 9808 7233
CLAIMS ENQUIRY LINE
1800 554 255

Peter Barnett Constructions Pty Ltd
24 Wollstonecraft Avenue
AVALON NSW 2107

Certificate No: 369833
Builder's Copy
Issue Date 09/08/2005

FORM 1

HOME BUILDING ACT 1989

Section 92

Certificate in respect of insurance

CONTRACT WORK

A contract of insurance complying with Section 92 of the Home Building Act 1989 has been issued by: Vero Insurance Limited ABN 48 005 297 807

Aon Risk Services Australia Ltd ABN 17 000 434 720 act as Broker for the Builder. A Tax Invoice has been issued by HIA Insurance Services Pty Ltd ABN 84 076 460 967, as authorised representative of Aon Risk Services.

In Respect Of: Single Dwelling

At: Lot No: Unit No: House No: 81
Myola Rd
NEWPORT NSW 2106

Carried Out By: Peter Barnett Constructions Pty Ltd
Licence No: 97841C
ABN: 69 002 703 380

Subject to the Act and the Home Building Regulation 1997 and the conditions of the insurance contract, cover will be provided to a beneficiary described in the contract and successors in title to the beneficiary.

TAX INVOICE

Premium:	$2,011.54
GST:	$201.15
Stamp Duty:	$110.63
Admin Chg:	$123.35
Chg GST:	$12.33
Total:	$2,459.00

The insurer pays the broker a commission of $201.15 on the above premium.

Issued by Vero Insurance Limited:

Insurer:

- Vero Insurance Limited
ABN 48 005 297 807

HIA Insurance services
YOUR INSURANCE PARTNER

AON

vero

Peter Burford

From: "peter barnett" <pbarnett@bigpond.net.au>
To: <peter.burford@bigpond.com>
Sent: Friday, 21 October 2005 3:01 PM
Attach: header.htm
Subject: Peter Barnett Constructions - Allo Quote

CONSTRUCTIONS PTY LTD

ABN 69 002 703 380

Incorporating All Span Beams & Floors

24 Wollstonecraft Ave
AVALON NSW 2107

Phone (02) 9918 9483
Fax (02) 9918 0911
Mobile 0416 225 280
Email:pbarnett@bigpond.net.au

21 March 2005

Mr Peter Burford
Chartered Architect
166 Denison Street
NEWTOWN NSW 2042

New Residence for Mr & Mrs Allo at 81 Myola Road, Newport.

We have pleasure submitting a budget for the construction of a new residential property at 81 Myola Road, Newport, based on drawings No 040101 to 040107 dated 15 March 2004.

The drawings are at the preliminary stage but we have endeavoured to provide as much information as possible. The estimates are based on current market rates combined with our experience with work of this quality. The studio is priced separately.

Preliminaries: Sediment controls, safety fences, portable toilet, survey expenses, traffic control, equipment or hire, O.H.&S. documentation, site facilities, signage, etc..... $18,000.00

Demolition:
Dismantling and recycling of all materials. Estimate only..... $25,000.00

Concreting:
Ground floor slab and first floor slab..... $80,000.00

Plumbing:
Labour and materials to provide hot, cold and waste services to project. (No P.C. items) Estimate only..... $28,000.00

Electrical:
Wiring and labour costs to typical standards. (No light fittings, but all switches and powerpoints)..... $25,000.00

Roofing and Stormwater:
As per drawings..... $29,000.00

Water Tanks:
Allowance only..... $4,000.00

Swimming Pool:
Typical..... $30,000.00

Carpentry:
All labour for the setting out, construction and detailing of the building. Approximately 32 weeks duration..... $148,000.00

Pest Treatment:
Does not include monitoring..... $3,000.00

Under-floor Heating:
Estimate..... $3,000.00

Window & Door Joinery:
Estimate..... $70,000.00

Gyprocking:
To two levels..... $21,000.00

Studio & Garage:
Priced as a separate item; if the work was done in conjunction with the house there may be cost savings..... $90,000.00

Kitchen Joinery and Appliances:
Allow..... $25,000.00

Wardrobes, Laundry Joinery, Walk-in Robes, Entertainment unit, etc:
Allow..... $20,000.00

Steel, Structural:
Estimate..... $20,000.00

Insulation:
Allowance..... $10,000.00

Landscaping:
(We would not normally be involved in this activity). Allowance..... $40,000.00

Painting:
Estimate..... $25,000.00

Waterproof Membranes:
Courtyard and two bathrooms..... $5,500.00

Timber Stairs:..... $5,000.00

Pergola:
Steel frame and stainless wires..... $8,000.00

Garage door with two senders:..... $3,000.00

Brickwork to all lower level walls:..... $27,000.00

Stainless Steel Handrails:
Estimate..... $20,000.00

Bathroom:
Assessed as items, includes tiles and tiling, P.C. items, accessories, etc. Four bathrooms..... $32,000.00

Miscellaneous Building Materials:
Timber framing, bracing, floor joists, roof framing, flashings, lintels, adhesives, bolts, nails and screws..... $34,000.00

Rendering:
Allowance for possible coatings to lower level..... $10,000.00

Supervision:
On site supervision by Peter Barnett for the project duration, approximately 32 weeks..... $19,000.00

Sub-total..... $877,500.00

Plus 15% to cover builder's staff, office overheads, fulfilling Taxation requirements, phones and vehicles, tools and plant, Workers Compensation Insurances, Contract Works Insurance etc..... $131,625.00

Quotation..... $1,009,125.00

Plus GST..... $100,912.50

Total..... $1,110,037.50

We have no inclusion for Engineering or Architectural fees, unknown environmental levies, photovoltaic cells, carpets or floor coverings, solar heating to pool, or Home Owners Warranty Insurance (typically $2,000.00 to $3,000.00).

DOCUMENT TRANSMITTAL

From *Peter Burford Architect*
153 Australia Street Camperdown NSW 2050
Ph (02) 95197398 Mobile 0425 310 088

To *Damian O Shannassy at D K Certifiers*
Date 25.10.05

Allo Residence - 81 Myola Road Newport

Enclosed are the following:

- Construction Certificate Form
- Original of stamped approved DA
- Copy of stamped Sydney Water plans
- Copy of builder's quote (
- 4 Sets of architectural drawings
- 4 sets of specifications (architectural spec and rainwater harvesting addendum)
- Survey Drawing
- 4 sets structural engineering drawings –house and studio
- 4 copies structural engineering drawing – pool
- Builders contact details are on the quote
- Home Owners Warranty insurance certificate copy including builder's license number (97841C)
- B19 – 4 sets stormwater details including statement that On Site Detention is NOT required
- 4 sets Landscaping Drawings
- 4 copies of the Geotechnical Report

NOTES

B.28 – Street levels are not required in this instance as the access to the property is not directly off a street but rather via a right of access through another block. Once on the property there is hardly any grade at all to the garage.

B60a and B64 – A copy of the engineering documentation for the House and Studio, and the Pool is being forwarded to the Geotechnical Engineer today, and endorsement will be forwarded to you with the next few days.

Long Service Levy Payment - the owner is paying the Long Service levy payment at Council and will fax you a copy of the receipt today

Compliance with DA Conditions D11,D15,D16,D38,D85,D208,D220 – are contained in the General Requirements section of the Specification

Smoke Alarms – are located on the plans

Balustrade – We are using a proprietary balustrade system, System 316 from Fencing Fabrications.

FACSIMILE MESSAGE

From *Peter Burford Architect*
Fax (02) 9550 3241
153 Australia Street Camperdown NSW 2050
Ph (02) 95197398 Mobile 0425 310 088

To *Damian O Shannessy*
DK Certifiers Pty Ltd
Fax (02) 9400 2405
Date 08.11.05
Pages 11

Allo Residence - 81 Myola Road Newport

Hello Damian

Following are the following :

- - Thermal Performance Specification – Basix Commitments
- - Assessor Certificate pages 1 and 2
- - Basi Certificate – 7 pages

Thanks

Peter

Assessor # 20069 Certificate # 4203622 Issued: 04-Nov-05

Thermal Performance Specifications - BASIX Commitments

These are the Specifications upon which the Certified Assessment is based. If they vary from drawings or other written specifications, these Specifications shall take precedence. If only one specification is detailed for a building element, that specification applies to all instances of that element. If alternate specifications are detailed for a building element, the location and extent of alternate specifications must be detailed below and / or clearly indicated on referenced documents.

Fixed shading (eaves, pergolas, verandahs, awnings)

Eaves: Width: 500 Offset: 0

Other:

External walls

Material: AAC Block 100mm, Mineral timber cladding

Insulation: R2.0

Colour: Medium

Internal walls

Material: Plasterboard on Studs

Windows

Area (m2): 135

Glazing: Gnd floor:Double 'low E'. Dble: Uw=3.31, SHGC=0.733, 1st floor: Single 'Low-e'. Sngl: Uw=4.8, SHGC=0.602

Frame: Aluminium

Int. cover: Holland blinds

Ext. cover: Louvres as per detail on plans

Skylights

Area (m2): 0

Type:

Roof

Material: Metal Deck

Insulation: Foil (Sisalation)

Colour: Dark

Ceilings

Material: Plasterboard

Insulation: R4.0

Floors

Covering: Parquetry 10mm, Carpet, Ceramic Tile.

Material: Concrete

Insulation:

Orientation, Exposure, Ventilation and Infiltration

Nominal / true north offset:	28	Terrain category	Suburban	Roof ventilation:	Standard
Subfloor ventilation	None	Cross ventilation:	Yes	Living area open to entry:	No
Living areas sep. by doors:	No	Stair open to heated areas:	Yes	Seals to windows, doors:	Yes
Exhaust fans no dampers:	No	Ventilated skylights:	No	Open fireplace no damper:	No
Vented downlights:	No	Wall and ceiling vents:	No		

ABSA
Assr# 20069 Cert# 4203622
Sign
Date 4/11/05

NEWPORT NSW 2106

d By
Architect
treet
NSW 2050
398 fax (02) 9550 3241

Drawing Title

CONSTRUCTION DRAWINGS COVER SHEET AND DRAWING SCHEDULE

Drawing No C050970

Sheet No A1

Assessor Certificate

Single Dwelling (BCA Class 1)

Certificate Version 5.0. Prior versions not valid after 19 July 2004

Issued in accordance with the requirements of BASIX
THERMAL COMFORT - Simulation Method

ABSA

Assessor

Name: Paul Brennan **Company:** The House Energy Rating Company of Au **Assr #:** 20069
Address: 18 Garden Street , KINGSFORD 2032
Phone: (02) 9345 0219 **Fax:** (02) 9349 6912 **Email:** info@house-energyratings.com.au
Declaration of Interest: The Assessor has provided design advice to the Applicant

Client

Name: Mr & Mrs Allo **Company:** None Specified
Address:
Phone: **Fax:** **Email:**

Project

Address: # 81 Myola Road NEWPORT NSW 2106
Applicant: as above **LGA:** Pittwater Council

Assessment

Date: 4/11/05 **Job ID:** PIT1624 **Filename:** PIT1624
Software: NatHERS **Version:** 2.32 **Climate Zone:** 17 **Run #:** 5
Proxies for materials:

Referenced documents **Proxy ref #:**

All details, upon which this Assessment has been based, are included in the project documentation which has been stamped and signed by the Assessor issuing this Certificate, as detailed below:

Thermal Performance Specification / Commitments attached and affixed to drawings, page: A1

Drawings: A1 - A7, W1, W2.

Specifications: Only specifications, detailed on Drawings identified above, have been referenced

ABSA Assessor Certificate Assessor # 20069 Certificate # 42031622 Issued: 04-Nov-05

THERMAL COMFORT - Simulation Method

The details must be entered into your BASIX Assessment

Area calculations (M2)

External walls, windows and doors	315
Net Conditioned Floor Area:	264

Concessions

Eligible Concessions: None

Predicted annual energy loads (MJ/M2/year)

Heating: 75

Cooling: 50
(sensible + latent)

Total: 125

ABSA Assessor

ABSA

Assr # 20069 Cert # 42031622

Sign

Date 4/11/05

ABSA Assessor Certificate	Assessor # 20069	Certificate # 42031622	Issued: 04-Nov-05

Thermal Performance Specifications - BASIX Commitments

THERMAL COMFORT - Simulation Method

These are the Specifications upon which the Certified Assessment is based, as required by BASIX - Thermal Comfort Simulation Method. If details included in these Specifications vary from other drawings or written specifications, these Specifications shall take precedence.

If only one specification option is detailed for a building element, that specification must apply to all instances of that element for the whole project. If alternate specifications are detailed for a building element, the location and extent of alternate specifications must be detailed below and / or clearly indicated on referenced documents.

Fixed shading (eaves, pergolas, verandahs, awnings)

The location, dimensions and opacity of all shading structures must be specified on plans

Eaves: Width: 500 Offset (eave to window head): 0

Other:

External walls

Material: AAC Block 100mm, with ext. timber cladding

Insulation: R2.0

Colour: Medium

Internal walls

Material: Plasterboard on Studs

Windows

All window and glazed door types, dimensions, location and shading must be indicated on plans.

Area (m2): 135

Glazing: Gnd floor:Double 'low E', Dble: Uw=3.31, SHGC=0.733, 1st floor: Single 'Low-e'. Sngl: Uw=4.6, SHGC=0.602

Frame: Aluminium

Int. cover: Holland blinds

Ext. cover: Louvres as per detail on plans

Skylights

All skylight types, dimensions, location and shading must be indicated on plans.

Area (m2): 0

Type:

Roof

Material: Metal Deck

Insulation: Foil (Sisalation)

Colour: Dark

Ceilings

Material: Plasterboard

Insulation: R4.0

Floors

Covering: Parquetry 10mm, Carpet, Ceramic Tile.

Material: Concrete

Insulation:

Orientation, Exposure, Ventilation and Infiltration

Orientation - nominal / true north offset	28	Terrain category	Suburban
Roof ventilation:	Standard	Subfloor ventilation	None
Cross ventilation:	Yes		
Living area open to entry:	No		
Living areas separated by doors:	No		
Stair open to heated areas:	Yes		
Weather seals to windows and doors:	Yes		
Exhaust fans without dampers:	No		
Ventilated skylights:	No		
Open fireplace without damper:	No		
Vented downlights:	No		
Wall and ceiling vents:	No		

ABSA Assessor stamp

ABSA

Assr # 20069 Cert # 42031622

Sign

Date 4/11/05

ABSA Inc. Level 2 Sydney Building Information Centre 525 Elizabeth St Surry Hills NSW 2010
phone: (02) 8303 0565 fax: (02) 8303 0566 email: admin@absa.net.au www.absa.net.au

BASIX Certificate

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

Certificate number: 37458S

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 30/06/2005, published by the Department of Planning. This document is available at www.basix.nsw.gov.au

Director-General
Date of issue: Friday, 04 November 2005

NSW GOVERNMENT
Department of Planning

Project name	Myola Rd
Street address	81 Myola Road
Suburb	Newport
Postcode	2106
Local Government Area	Pittwater Council
Project type	
Project type	separate dwelling house
No. of bedrooms	4
Site details	
Site area (m²)	2017
Roof area (m²)	285
Conditioned floor area (m2)	264
Unconditioned floor area (m2)	23
Total area of garden and lawn (m2)	1050
Assessor details and thermal loads	
Assessor number	20069
Certificate number	42031622
Cooling load (MJ/m².year)	50
Heating load (MJ/m².year)	75
Water	
Groundwater Licence/Water Supply Works Approval number	n/a

Score

- ✓ Water: 46 (Target 40)
- ✓ Thermal comfort: pass (Target pass)
- ✓ Energy: 35 (Target 25)

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

Landscape			
The applicant must plant indigenous or low water use species of vegetation throughout 300 square metres of the site.	✓	✓	
Fixtures			
The applicant must install showerheads with a minimum rating of 3A in all showers in the development.		✓	✓
The applicant must install a toilet flushing system with a minimum rating of 3A in each toilet in the development.		✓	✓
The applicant must install taps with a minimum rating of 3A in the kitchen in the development.		✓	
The applicant must install basin taps with a minimum rating of 3A in each bathroom in the development.		✓	
Alternative water			
Rainwater tank			
The applicant must install a rainwater tank with a capacity of at least 17000 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.	✓	✓	✓
The applicant must configure the rainwater tank to collect rain runoff from at least 285 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam).		✓	✓
The applicant must connect the rainwater tank to:			
• all toilets in the development		✓	✓
• the cold water tap that supplies each clothes washer in the development		✓	✓
• at least one outdoor tap in the development (Note: NSWHealth does not recommend that rainwater be used for human consumption in areas with potable water supply.)		✓	✓
Greywater diversion system			
The applicant must install a greywater diversion system on the site. This system must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.		✓	✓

Water Commitments			
The applicant must configure the greywater diversion system so that greywater for diversion is collected from:			
• the laundry		✓	✓
• each bathroom (but not the toilets)		✓	✓
The applicant must connect the greywater diversion system to:		✓	✓
• a sub-surface irrigation system (Note: NSWHealth does not recommend that greywater be used to irrigate edible plants which are consumed raw.)		✓	✓
Swimming pool			
The swimming pool must not have a volume greater than 40.5 kilolitres.	✓	✓	
The swimming pool must have a pool cover.		✓	

Simulation Method

The applicant must attach the certificate referred to under "Assessor Details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for an occupation certificate for the proposed development.

The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.

The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX certificate, including the Cooling and Heating loads shown on the front page of this certificate.

The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Assessor Certificate requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor to certify that this is the case. The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.

The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.

Energy Commitments

Hot water

The applicant must install the following hot water system in the development, or a system with a higher energy rating: solar (gas boosted) ✓ ✓ ✓

Cooling system

The living areas must not incorporate any cooling system, or any ducting which is designed to accommodate a cooling system. ✓ ✓

The bedrooms must not incorporate any cooling system, or any ducting which is designed to accommodate a cooling system. ✓ ✓

Heating system

The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: gas fixed flued heater; Energy rating: 3 Star ✓ ✓

The bedrooms must not incorporate any heating system, or any ducting which is designed to accommodate a heating system. ✓ ✓

Ventilation

The applicant must install the following exhaust systems in the development:

At least 1 Bathroom: no mechanical ventilation (ie. natural); Operation control: n/a

Kitchen: individual fan, ducted to façade or roof; Operation control: manual switch on/off ✓ ✓

Laundry: natural ventilation only, or no laundry; Operation control: n/a ✓ ✓

Natural lighting

The applicant must install a window and/or skylight in the kitchen of the dwelling for natural lighting. ✓ ✓ ✓

The applicant must install a window and/or skylight in 3 bathroom(s)/toilet(s) in the development for natural lighting. ✓ ✓ ✓

Swimming pool

The applicant must install the following heating system for the swimming pool in the development (or alternatively must not install any heating system for the swimming pool): solar only ✓

The applicant must install a timer for the swimming pool pump in the development. ✓

Other

The applicant must install a gas cooktop & electric oven in the kitchen of the dwelling.

The applicant must construct each refrigerator space in the development so that it is "well ventilated", as defined in the BASIX definitions.

The applicant must install a fixed outdoor clothes drying line as part of the development.

In these commitments, "applicant" means the person carrying out the development.

Commitments identified with a ✓ in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).

Commitments identified with a ✓ in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.

Commitments identified with a ✓ in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate(either interim or final) for the development may be issued.

SYDNEY WATER
APPROVED

Position of structure ... relation to ... & ... assets is satisfactory.
Connections to Sydney Water ... services may only be made ... of a permit to a licensed plumber ...
It is the owner's responsibility to ... that all proposed fittings will drain to Sydney Water's sewer.
Any Plumbing and/or Drainage Work to be carried out in accordance with the Sydney Water Act 1994, AS 3500 and the NSW Code of Practice.
Gullies, Inspection Shafts and Boundary ... shall not be placed under any ... Floor or other cover unless ... approved by Sydney Water.

3436690

Reece, Rockdale
Quick Check Agent on behalf of
SYDNEY WATER

Reece 20,10,05

SYDNEY WATER

... OF SWIMMING POOLS

... supply to the pool must be drawn from a ... service and any tap or hose used to fill the ... be at least 150mm above the highest water level of the pool.

...ING OF SWIMMING POOLS

...ying into Sydney Water's Sewer must:

Discharge into a gully through a ...
Discharge only in dry weather, and ... prior approval from Sydney Water's Customer Centre.

IT IS PROHIBITED TO DISCHARGE POOL WATER INTO ANY OF SYDNEY WATER'S VACUUM SYSTEM SEWERS.

Reece, Rockdale
Quick Check Agent on behalf of
SYDNEY WATER

Reece 20,10,05

SWIM
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CAL
DESIGN

CAL DESIGN ABN 36 914 198 392
35 Ellalong Road Turramurra NSW 2074
cal.design@optusnet.com.au
Tel: (02) 9983 9365 **Fax:** (02) 8080 8186

October 27, 2005

Damian O'Shannessy
D K Certifiers Pty Ltd
Fax No. 9400 2405

RE: 1 MYOLA RAOD, NEWPORT – LANDSCAPE PLANS CERTIFICATION

We hereby confirm that the author of the landscape plans issued for construction certificate, being dwg. no.s LP-00 through LP-13 issue B revision 01 inclusive, is Andrew Lane, who is a qualified landscape architect (BLarch UNSW 1993) and an associate of the Australian Institute of Landscape Architects (corporate member).

We also confirm that the plans comply with the intent of Pittwater Council's development control plan no. 23 as required under item 45 of the consent conditions and have addressed and are in accordance with the issues specified under item 45a of the consent conditions.

If you have any queries in relation to the documents or this statement please do not hesitate to contact the undersigned.

Yours faithfully

Andrew Lane AAILA
Partner

DK BUILDING CERTIFIERS

PTY LTD

BUILDING REGULATIONS & FIRE SAFETY CONSULTANTS

SUITE 4, 470 SYDNEY ROAD, BALGOWLAH NSW 2093
PO BOX 929 BALGOWLAH NSW 2093
TEL: 9400 2335 FAX: 9400 2405
email: info@dkbuilding.com.au
ABN: 96 097 502 700

Application for a Construction Certificate

1. Details of the applicant

Mr ☑ Ms ☐ Mrs ☐ Dr ☐ Other -

First name: ROBERT
Family name: ALLO

Flat/street no.: 2137
Street name: PITTWATER ROAD

Suburb or town: BAYVIEW
State: NSW
Postcode: 2104

Daytime telephone: 9901 8126
Fax: -
Mobile: 0411 473 173

Email: boballo@ozemail.com.au

2. Identify the land

Flat/street no.: 81
Street name: MYOLA ROAD

Suburb or town: NEWPORT
Postcode: 2106

Lot no.: 2
Section:

DP/MPS no.: DP 53 8888
Volume/folio:

You can find the lot no., section, DP/MPS no. and volume/folio details on a map of the land or on the title documents for the land. If you need additional room, please attach a schedule and/or a map with these details.

3. Estimated cost of the development

$ 1,110,037.50 including GST

4. Describe the development

What type of work do you propose to carry out?

Building work ☑

Subdivision work ☐

Describe the work

ERECTION OF NEW RESIDENCE, STUDIO AND POOL.
DEMOLITION OF EXISTING RESIDENCE AND CARPORT.

For building work, what is the class of the building under the Building Code of Australia?

ONE & (1a, 10a & 10b)

This can be found on the development consent

Has development consent been granted for the development?

No ☐

Yes ☑ What is the development application no.?

N0872/04

What date was development consent granted?

11. 4. 05

5. Signatures

The owner(s) of the land must sign this application if:

- at the time the owner signed the development application, the owner did not give consent to the applicant to lodge a construction certificate, or
- the owner of the land has changed since the owner signed the development application.

As the owner(s) of the above property, I/we consent to this application:

Signature

Name

ROBERT ALLO

Date

21. 10. 05

Signature

Name

ELAINE ALLO

Date

21. 10 05

The applicant, or the applicant's agent, must sign the application.

Signature

P Burford

Name, if you are not the applicant

PETER BURFORD

Date

25.10.05

In what capacity are you signing if you are not the applicant?

ARCHITECT.

Date received: 25/10/05 at DK Building Certifiers Pty Limited

OWNERS AUTHORISATION
AND
APPOINTMENT OF PRINCIPAL CERTIFYING AUTHORITY

~~I~~/We ROBERT & ELAINE ALLO of

Address: 2137 PITTWATER ROAD

BAYVIEW 2104

Telephone: (h) 9979 6562 (w) 9901 8126 (Mobile) 0411 473 173

Fax: - email: boballo@optusnet.com.au

hereby authorise PETER BURFORD to, (cross out if not applicable)

lodge a Construction Certificate application with DK Building Certifiers Pty Ltd for the proposed works being:-

at: 81 MYOLA ROAD, NEWPORT, NSW 2106

Council: PITTWATER DA No: N0872/04

and appoint Damian O'Shannassy, Accredited Certifier No 6175 (Planning NSW) of Suite 4, 470 Sydney Road, Balgowlah NSW 2093, Ph: (02) 9400 2335, Fax: (02) 9400 2405 or 0402 029963 as the Principal Certifying Authority.

Signed: _____ _____

Date: 21. 10 05

NB: The original of this form must be returned together with the Construction Certificate application.

NEW RESIDENCE, STUDIO AND POOL

At

81 Myola Road Newport NSW 2106

For

Mr and Mrs Allo

Rainwater Harvesting Addendum

Prepared by

Tier Consulting Group Pty Ltd

09/23/2005

RAINWATER HARVESTING ADDENDUM

Addendum to General Specification for Plumbing and Drainage Works.

RAINWATER HARVESTING AND ASSOCIATED WORKS:
PREAMBLE:

A. **Rainwater Recycling**
Architectural, and Landscape Plans and Specifications and Stormwater Schematics include harvesting and overflow details of aboveground Round Corrugated Aquaplate Tanks and underground Tanks to be specified. Rainwater supply for external shower, all toilets, washing machine, landscape irrigation and general exterior use is to be pumped from these storage tanks as specified. Rainwater is to be harvested from roof downpipes into storage systems - one above ground near studio and another below-ground on the batter-slope to the north west, below the master bedroom.

B. **Mains Supply**
Rainwater supply to be 'backed up' with mains through a Rain to Mains diverter (rainwater prioritised).

C. **Greywater Recycling (dual waste-water system)**
Waste water from showers, basins and baths is to be separated from all other waste-water and run parallel until below the crest of Pan-handle. See Grey-water Schematic.

D. **Stormwater**
Overflow from all rainwater tanks are detailed in Stormwater Schematics, Landscape Drawings and Architectural Plans and Specification which together specify the intent of the stormwater works.

NOTE:
Any discrepancy between documents should be clarified with Architect prior to construction commencement or installation.

RAINWATER HARVESTING ADDENDUM

1. GENERAL SPECIFICATION:

1.1. Compliance:

The installation of rainwater tanks and associated works are to be carried out in accordance with the ***Building Code of Australia*** and all relevant ***Australian Standards.***

1.2. Regulation:

All work should be completed in accordance with the ***NSW Code of Practice Plumbing and Drainage*** with specific regard for the requirements for rainwater tank plumbing as detailed in the ***Guidelines for the Installation of Rainwater Tanks on Residential Properties: Part 1 Plumbing Requirements.***

1.3. Materials:

Materials used are to comply with ***AS/NZS 3500 -Part 1 - Water Supply Section 2 - Materials and Products.***

1.4. Statutory Requirements:

Sydney Water and Local Government procedures re ***Notifications***, ***Permits*** and ***Inspections*** are to be followed. A ***Certificate of Compliance*** is to be submitted to Sydney Water and the customer on completion of the works.

2. SOLAR HOTWATER

2.1. Supply and install Solahart - Split Solar/Gas (Instantaneous - Rheem Integrity) with three collector/exchanger panels and 430 L on-ground storage tank as indicated on Architectural dwgs.

2.2. Supply and install separate small instantaneous (Rheem Integrity 18's) for Kitchen and studio 'Balinese' shower (gravity fed system).

3. TANKS:

3.1. Above-ground:

Supply and install (above-ground) 2050 L tank (***Round***

Corrugated Aquaplate - painted) 1170d x 1850h equal to / or better than Bluescope Tanks with 20 years material warranty located as indicated on architectural plans.

Installation is to be in accordance with the manufacturers requirements/recommendations. Studio tank to be installed on elevated steel stand (see architectural elevations) and fitted with a mains top-up system. Rainwater to be harvested from studio roof guttering fitted with leaf-guard equal to or better than 'Gutta Arma' and feeding tank overhead via 90mm PVC pipework with leafeater and water diverter - First Flush device.

Tank is to be fitted with a standard strainer, 90 mm overflow, 2" (50 mm) sludge drain/fire take-off with ball valve on bottom (1st) corrugation and 1" (25 mm) take-off with ball valve on 2nd corrugation.

3.2. Underground:

Supply and install 3 X 4,550 lt. underground tanks (***Lightweight Polyethelene to AS/NZS 1546.1*** to meet Australian Standards AS 4020 - products contact with drinking water and AS 2070 - products contact with food) as indicated on architectural plans.

Tank manufacturers ***Warranty*** to be min 15 years - equal to 'Action Tanks' (see manufacturers specifications).

Follow ***Installation Instructions*** on Action Tanks (see below).

Rainwater to be harvested from dwelling roof guttering fitted with leaf-guard equal to or better than 'Gutta Arma' and feeding underground tanks via 100mm UPVC pipework as specified below.

4. VALVES:

4.1. 2" Sludge, 1" Take-off and ½" Isolation valves to be DZR Brass *Water Ball Valves* (WaterMarked Licence W110) - equal to or better than Zetco.

5. *PUMPS and CONTROL:*

5.1. Supply and install pump, for Action Tanks, capable of simultaneous supply 6 taps and suitable for large double story family house equivalent to / or better than Davey M6051.

5.2. Pump (if constructed concrete tank):
Supply and install Davey M6051 (M Series Horizontal Multistage Pressure System) with Supercell 105C Pressure Tank with footvalve at bottom of 1¼" hard-plumbed HP PVC suction line.

5.3. Supply and Install Rain to Main Diverter (refer consultant), Float-switch, Dual Check-valves, Ball Valves, 15amp dual ext GPO etc as consistent with and appropriate for switch-over manual control of water source per intent of attached schematics. Mains water diversion from meter to tank location and back to house riser to be ¾" copper.

5.4. Control Housing:
Install all control mechanisms / valves located on outside of garage wall (as per Architectural Plans and attached Schematic) on level concrete slab in purpose built rainproof housing. All components to be installed accessibly, with stop-cocks, unions etc, in order to facilitate any maintenance as may be necessary from time to time.

6. *PIPEWORK:*

6.1. Harvest Lines:
Use 90 mm EH UPVC for suspended pipe-work connecting gutter down-pipes to tanks (100 mm UPVC for all underground pipe-work). Follow best concealed route for gravity feed to tank filler. Charged lines are to be fitted with accessible clean-

out's/inspection-eyes at lowest points. First Flush (Diverter) to be supplied and fitted either to each downpipe or to (combined) system prior to tank filler. First flush capacity to be minimum of 10 L.

6.2. Suction Lines:

Use 1" High Pressure PVC from tanks and 1" flexible hose immediately adjoining pump. Fit isolation valves and unions as appropriate to enable maintenance of all serviceable units.

6.3. Supply Lines:

Use ½" copper to all subsequent points from pump. Fit isolation valves and unions as appropriate to enable maintenance of all serviceable units.

6.4. Mains Feed:

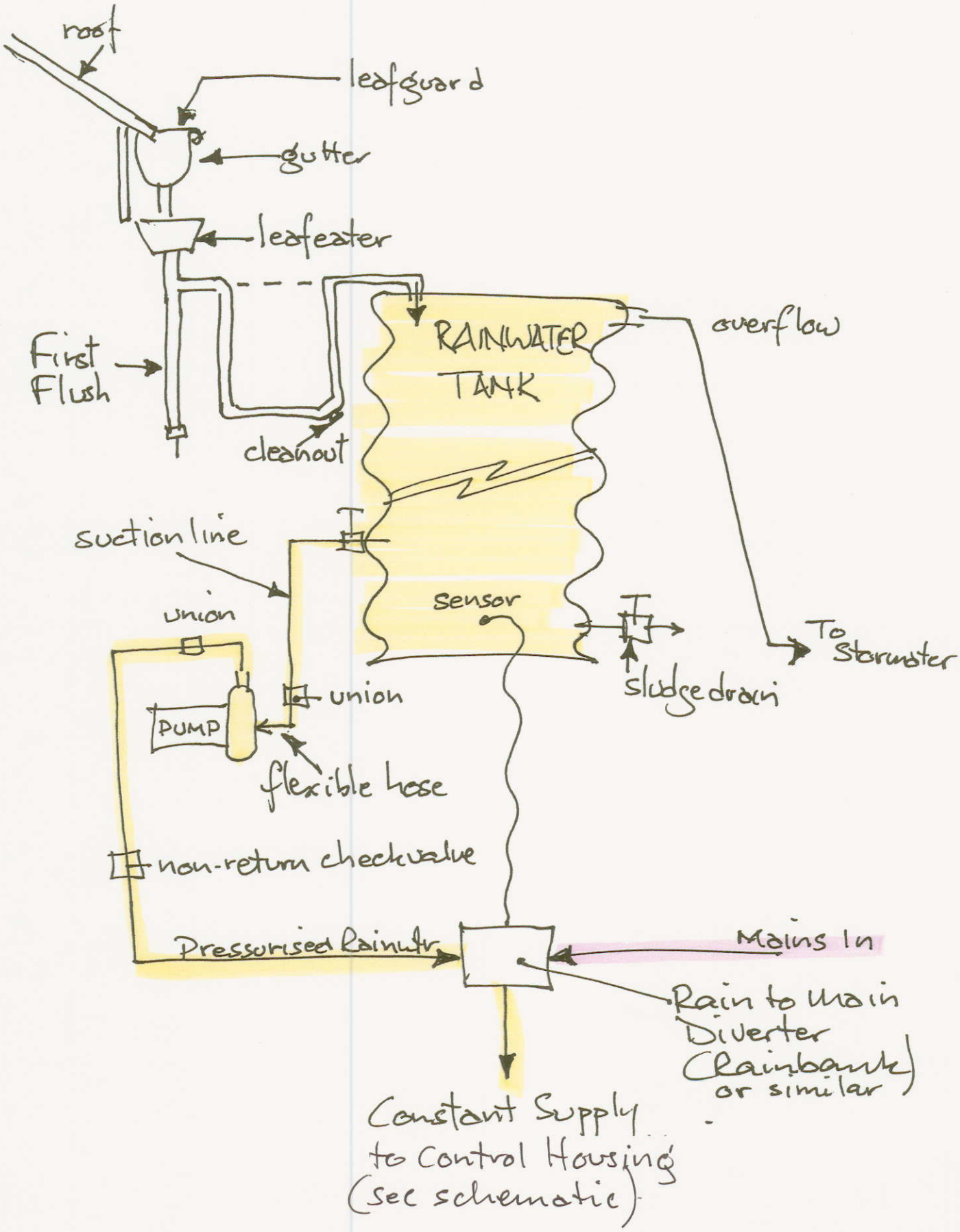
Source Mains Water supply from nearest point to tanks.

6.5. Overflow Line:

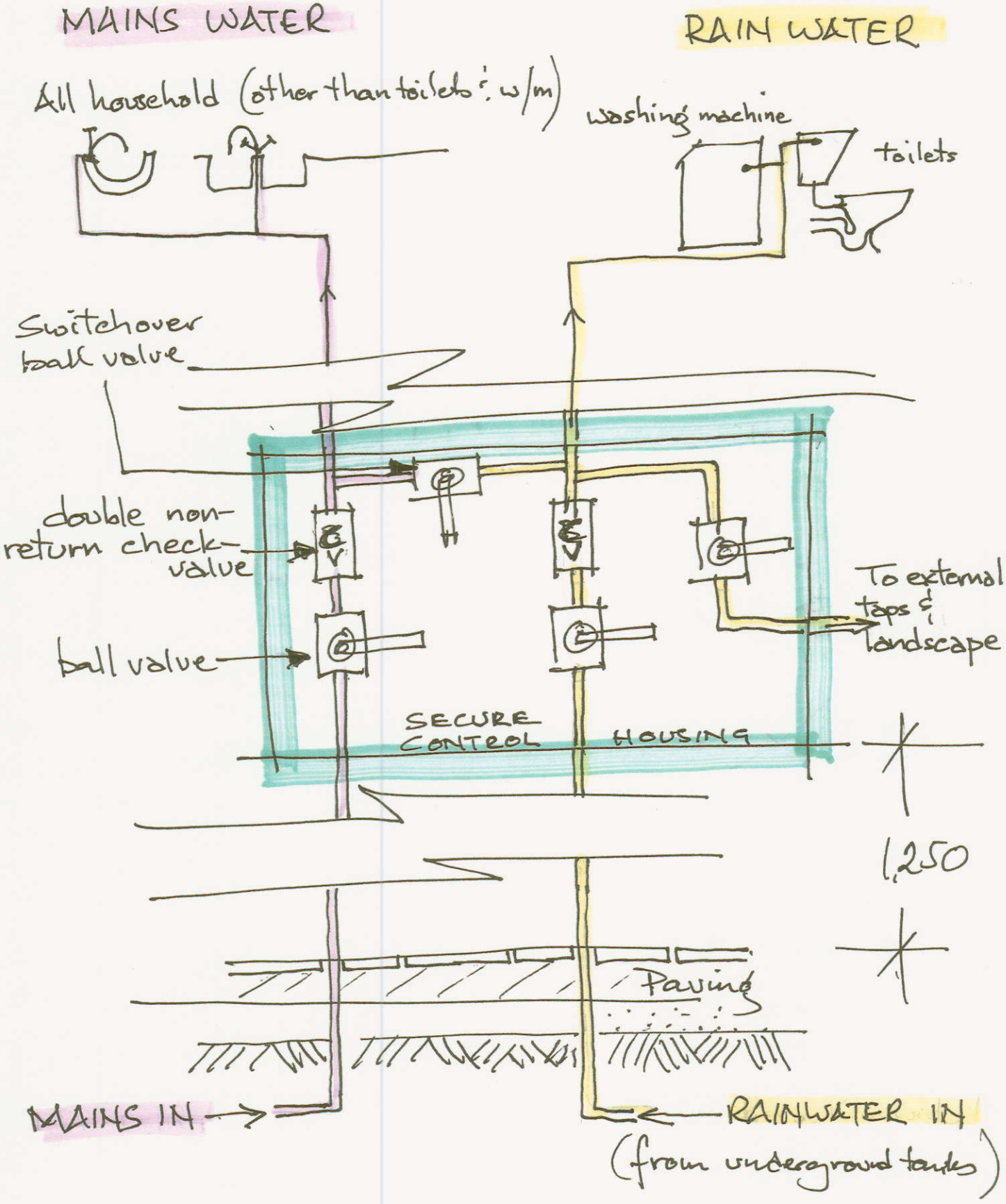
Install overflow pipework from tank in 100 mm PVC as suggested and let into stormwater pit as detailed in Hydraulic Documentation.

GENERAL HARVESTING SCHEMATIC (TYP.)

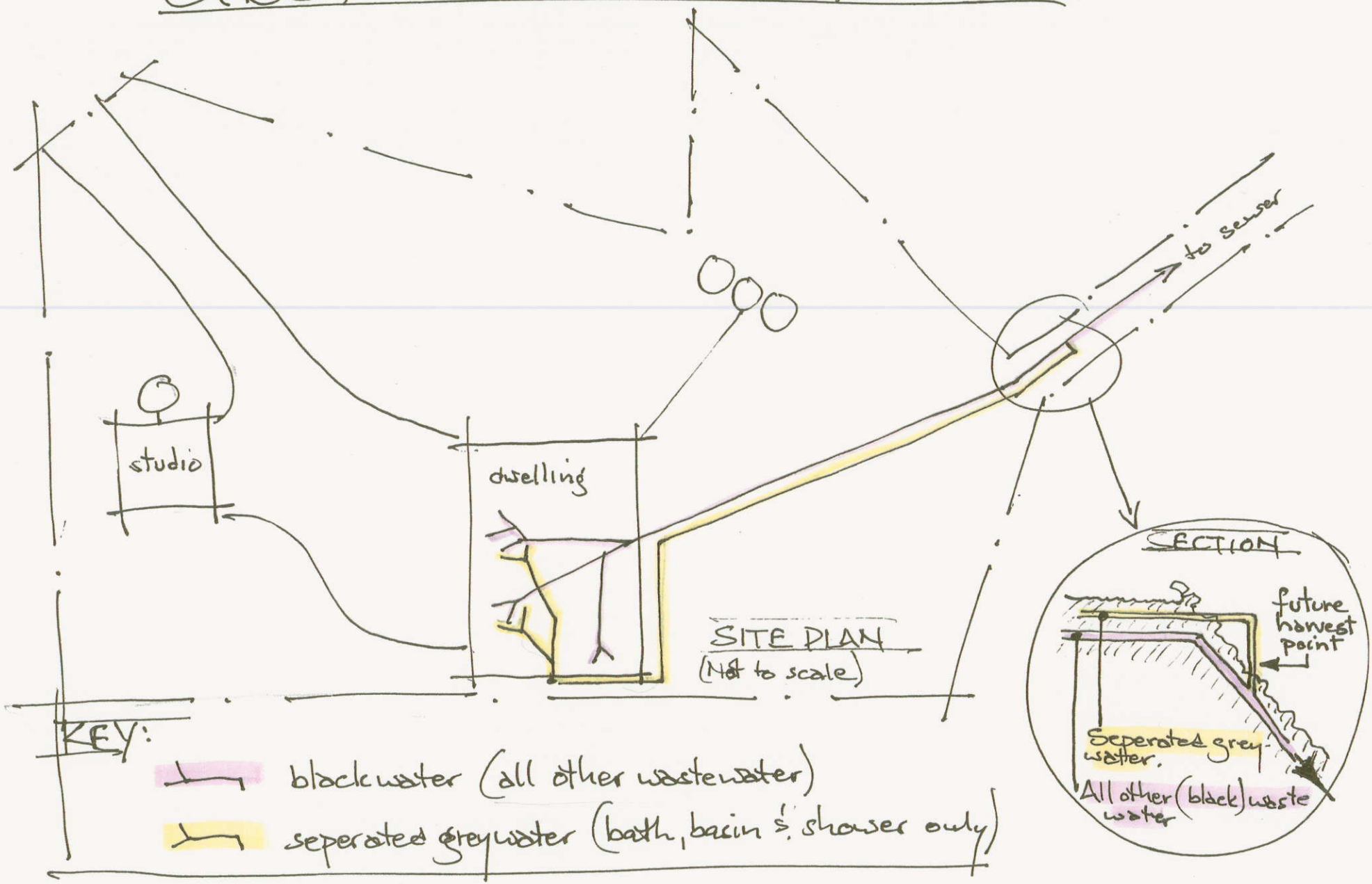
(for underground tanks see www.actiontank.com.au



CONTROL HOUSING SCHEMATIC.



GREYWATER SCHEMATIC



Pressure Switch Operated

Hydrascan Controlled

DAVEY M SERIES HORIZONTAL MULTISTAGE PRESSURE SYSTEMS

Model	Motor kW (P_2)	Nominal Operating Pressure kPa/psi	Suction lift in **metres**/feet			Pressure Settings/Range	Connection Size BSP inlet/outlet
			0 0	3 9.8	5 16.4		
			Output in **litres/minute**, gallons/hour				
M3041 Average sized homes with modern appliances and double storeys	0.55	**250** 36	**58** 767	**51** 674	**N/R**	200 - 400 kPa	1"F/1"M
M3051 Average sized homes with modern appliances and double storeys	0.75	**300** 43	**61** 806	**55** 727	**N/R**	250 - 500 kPa	1"F/1"M
M3061 Multi level homes with modern appliances and long runs of piping	1.10	**400** 58	**60** 793	**56** 740	**N/R**	300 - 600 kPa	1"F/1"M
M6041 Large multi storey dwellings, livestock, irrigation and commercial use	0.75	**200** 29	**108** 1427	**98** 1295	**90** 1189	150 - 275 kPa	1¼"F/1"M
M6051 Large two storey dwellings and garden water supply	1.10	**300** 43	**108** 1427	**101** 1335	**97** 1282	250 - 500 kPa	1¼"F/1"M
M6061 Large multi storey dwellings, livestock, irrigation and commercial use	1.50	**350** 51	**108** 1427	**101** 1335	**98** 1295	300 - 550 kPa	1¼"F/1"M
M8041 Farm & garden water supply, irrigation, commercial premises	1.50	**300** 43	**175** 2313	**160** 2115	**148** 1956	200 - 425 kPa	1½"F/1"M

Davey M Series Horizontal Multistage Pressure Systems

For larger systems requiring higher flow or pressure, or where the preference is for all stainless steel pump components, inside and outside, Davey M Series pressure systems are the answer. Control systems include a choice between Hydrascan and Presscontrol for anti-cycling operation and protection against dry running as well as standard pressure switch and tank operation. M Series can also be packaged with our Davey Monsoon 3C with up to 3 pumps operating (refer Packaged Pump Sets pg 39).

PRESSURE TANKS

5 YEAR
GUARANTEE

Supercell Pressure Tanks

NOMINAL DRAW OFF CAPACITY IN LITRES

Tank Model	Tank Capacity (litres)	Max Pressure Rating (kPa)	Pressure Switch Range kPa (psi)							**DIMENSIONS**			
			50-250 (22-36)	50-300 (22-44)	200-400 (29-58)	250-400 (36-58)	250-500 (36-73)	300-600 (44-88)	500-1000 (73-145)	Diameter (mm)	Height (mm)	Inlet Size (BSP male)	Inlet Position
Supercell 8C	8	700	2.2	3.0	3.2	2.4	3.3	3.4	N/A	200	300	¾"	Bottom
Supercell 18C	18	700	5.0	6.7	7.2	5.4	7.4	7.6	N/A	274	360	1"	Bottom
Supercell 35C	35	700	10.0	13.3	14.0	10.5	14.6	14.7	N/A	380	400	1"	Bottom
Supercell 50C	50	700	14.3	18.8	20.0	15.0	20.8	21.0	N/A	380	570	1"	Side
Supercell 105C	105	700	30.0	39.4	42.0	31.5	43.7	44.1	N/A	500	680	1¼"	Side
Supercell HP24C	24	1050	6.7	9.0	9.6	7.2	10.0	10.3	10.9	300	445	1"	Bottom
Supercell HP105C	105	1050	30.0	39.4	42.0	31.5	43.7	44.1	47.7	500	680	1¼"	Side

SUPERCELL PRESSURE TANKS

For the best performance from your pressure system Davey recommend you check the air pressure in the tank every six months. For further details see your Installation and Operating Instructions or consult your Davey dealer.

£1650

Davey Supercell Pressure Tanks are designed to provide many years of reliable service. These robust, hydro-pneumatic water pressure vessels are manufactured from the highest quality materials in compliance with the strict requirements of ISO 9002 quality standards.

All models are of the captive diaphragm design, with heavy duty butyl diaphragms that comply with international standards for potable water applications.

Not only do they look good from the outside but, inside, the tank shell is protected from corrosion by a safe potable grade epoxy coating. For added peace of mind, each tank is individually tested to guarantee its reliability.

These dependable tanks are available in a variety of sizes and in two pressure ratings. They can be used for a variety of accumulator functions, such as:

- Household, farm or industrial pressure systems
- Hydronic heating system expansion tanks

HOME PRESSURE SYSTEMS

XP500H

XP350P8C

Dynaflo HS with Hydrascan and Tank

Household Pressure Systems & Mains Boosting

Davey Home Pressure Systems represent the benchmark that others try to reach. For decades Davey Home Pressure Systems have provided reliable water supply to homes around the world.

The Davey range of household pressure systems is capable of supplying 25 lpm to a maximum of 150 lpm of water at pressures up to 67m.

Davey offers you the choice of controls for your pressure system. Choose from a Pressure Switch, Presscontrol or Davey's own Hydrascan® with anticycling action and protection against dry running.

You can also choose between the simplicity of jet assisted centrifugal pumps like the XJ Ultra, or the higher efficiency and whisper-quiet operation of multistage centrifugal pumps like the XP500H, or one of Davey's Dynaflo® HS models.

	Model	Motor kW Input (P_1)	Motor kW Output (P_2)	Pump Type	Control Type	Maximum Flow (lpm)	Typical Operating Range Metres/psi	Connection Sizes Inlet/Outlet
Small Homes	Aquamate	0.54 (0.72)	0.33 (0.44)	J	PS	25	14-29 (20-40)	1" x 1"
	XP350P8C	0.62 (0.83)	0.45 (0.60)	J	PS	35	14-29 (20-40)	1" x 1"
	XP350H	0.62 (0.83)	0.45 (0.60)	J	H	35	14-32 (20-45)	1" x 1"
	XJ350PC	0.62 (0.83)	0.45 (0.60)	J	PC	35	15-34 (21-48)	1" x 1"
Standard Homes	XP500H	0.80 (1.1)	0.53 (0.71)	M	H	53	14-29 (20-40)	1" x 1"
	XJ50PC	0.84 (1.1)	0.56 (0.75)	J	PC	45	15-46 (21-65)	1" x 1"
	XJ Ultra	0.84 (1.1)	0.56 (0.75	J	PS	45	18-40 (26-57)	1" x 1"
	Dynajet X50	0.84 (1.1)	0.56 (0.75)	J	PS	45	18-40 (26-57)	1" x 1"
	HS50-05	0.74 (0.99)	0.53 (0.71)	M	H or PC	60	21-35 (20-40)	1¼" x 1"
	M3041H	0.82 (1.1)	0.55 (0.74)	M	H	50	25-43 (35-61)	1¼" x 1"
	HS50-06	0.89 (1.1)	0.53 (0.75)	M	H or PC	60	29-48 (42-70)	1¼" x 1"
Medium Homes	XP700H	0.84 (1.1)	0.58 (0.78)	M	H	70	17-29 (21-41)	1¼" x 1"
	XJ70PC	1.15 (1.5)	.80 (1.1)	J	PC	66	15-46 (30-60)	1" x 1"
	XJ70P	1.15 (1.5)	0.80 (1.1)	J	PS	66	21-43 (30-60)	1" x 1"
	Dynajet X70	1.15 (1.5)	0.80 (1.1)	J	PS	66	21-43 (30-60)	1¼" x 1"
	HS60-06	0.82 (1.1)	0.57 (0.76)	M	H or PC	60	21-35 (30-50)	1¼" x 1"
	M3051H	1.0 (1.34)	0.75 (1.01)	M	H	70	25-57 (35-81)	1" x 1"
	HS60-08	1.10 (1.5)	0.76 (1.0)	M	H or PC	80	29-48 (42-70)	1¼" x 1"
Large Homes	XP900H	1.15 (1.5)	0.80 (1.1)	M	H	94	21-32 (30-44)	1¼" x 1"
	XJ90P	1.40 (1.9)	1.10 (1.3)	J	PS	92	21-36 (30-50)	1¼" x 1"
	Dynajet X90	1.40 (1.9)	1.10 (1.3)	J	PS	92	21-36 (30-50)	1¼" x 1"
	M6051H	1.50 (2.0)	1.10 (1.5)	M	H	115	25-67 (35-95)	1¼" x 1"
	M6061H	2.20 (3.0)	1.50 (2.0)	M	H	125	25-57 (35-81)	1¼" x 1"
	M8041H	2.20 (3.0)	1.50 (2.0	M	H	150	25-48 (35-68)	1½" x 1"

ACTION TANK INSTALLATION INSTRUCTIONS:

Underground Rainwater Management System

Correct installation of this Action Tank by a licensed plumber, as part of the Action Rain Water Management System, is mandatory for warranty and the quality of water stored.

All Action Tank's must be installed by a qualified tradesman licensed in the state and local authority in which it is being installed.

NOTE: Refer to www.actiontanks.com.au for current/latest version of instructions.

Step 1 Excavation

- 4550 litre Action Tank - minimum size of excavation approx. 2.2m x 2.2m sq by the depth of 2.2m from finished ground surface level(discuss with your builder to determine final ground level). To create a mound of approximately 100mm around the top of the tank (which prevents water ponding around pump box), backfill excavation with min. 100mm of backfill material before placement of tank. (refer 'Under Base' below)
- 3000 litre Action Tank - minimum size of excavation approx. 2.2m x 2.2m sq by the depth of 1.7m from finished ground surface level(again discuss with your builder to determine final ground level). To create a mound of approximately 100mm around the top of the tank (which prevents water ponding around pump box), backfill excavation with min. 100mm of backfill material before placement of tank. (refer 'Under Base' below)
- water must not pond around the top of the tank and the base of the pump box. (you can mound higher if required for landscaping)

Step 2 Under & Around Base

Action Tank must be placed on a level base of a minimum of 100mm of 5 to 7 mm Crushed Blue Metal free of rocks. Half fill the tank with water then a pour 200mm min. thick ring of Concrete around the base of the tank. As the tank itself is 2.2m in height underground, this 100mm base will provide the required 100mm mound around the top of the tank at ground level. This will prevent ponding of water around the top of the tank.

Step 3 Placement

position Action Tank in the hole to suit desired site connections using lifting lugs on the Action Tank. Each system weighs approx. 250 kg. * ENSURE SLINGS OR CHAINS DO NOT PRESS ON PUMP BOX. if being installed with additional servant cells? position other cells. Remove 50mm bungs at their bases and make the connection between the cells with 50mm poly pipe (at the bottom of the tank). Tighten all connections and proceed to step 4.

Step 4 Back filling

The Action Water tank has been tested and certified by a geotechnical Engineer not to pop out of the ground when installed in accordance with these installation requirements, even when the cell is empty and the external ground water level is 200mm from the top of the Action Tank.

To back fill - Once tank is half full of water and 200mm thick ring of concrete has been poured, it is very important to back fill up to the under side of overflow outlet. To do so, protect pump box and diverter chamber by covering with plastic and backfilling evenly around the Action Tank with 5 to 7 mm Crushed Blue Metal free of rocks. The use of specified backfill is important to prevent floatation and minimize soil Settlement and the risk of connection failure resulting in water contamination.

Step 4(A) Where no ground water is evident:

1. Half fill the Action Tank with water through the overflow hole while you complete any other excavations and service preparation.

2. To back fill - It is very important to back fill up to the under side of overflow outlet. To do so protect pump box and diverter chamber by covering with plastic and backfill evenly around the Action Tank with 5 to 7 mm Crushed Blue Metal free of rocks.

DO NOT DUMP FILL MATERIAL ON ONE SIDE AT A TIME OR USE MECHANICAL COMPACTION OR WHEEL ROLLING.

note if the action tank is not connected to a roof water collection area at time of installation, it must be fully filled with water.

Step 4 B Where ground water or high water table exists (ie tidal areas.):

1. Dewater your excavation.

2. Place the Action Tank in position and fill with water while maintaining dewatering.

3. Backfill as per step 2 above.

PLEASE NOTE: THESE REQUIREMENTS APPLY TO BOTH MASTER AND SERVANT ACTION TANKS.

Step 5 Connections

Connect services as required i.e Roof water from downpipe to first flush diverter, Overflow from tank to kerb or easement, Mains water to top up valve located in pump box and Rainwater from the tank system pump to the house, located in pump box. NOTE: You must flush out mains water line before connection! A pressure limiting valve will be required if mains pressure exceeds 800kpa.

ACTION WATER MANAGEMENT SYSTEMS IN MOST CASES WILL REQUIRE NO OTHER BACKFLOW PREVENTION DEVICES BUT YOU ARE ADVISED TO SEEK CONFIRMATION FROM THE RELEVANT LOCAL AUTHORITY OR COUNCIL.

Step 6 Inlet

The inlet stormwater pipe from the downpipes should rise out of the ground and empty into the top of the first flush diverter. The pipe should be deflected into the strainer with a 45degree bend allowing for the easy removal of the 1mm leaf filter, for cleaning.

Landscaping should make provision for over flow from the strainer during periods of peak rainfall. This has been designed like this to provide protection for the backflow prevention device. The inlet from the first flush diverter into the main tank is 100mm consideration should be given to the volume of water / m2 metres of roof space that is being directed into the tank system. (maximum suggested water volume of 8l/sec or 170m2 of roof space to be directed into each 100mm first flush diverter, refer AS3500).

Step 7 Overflow

Install the supplied 100mm non return flap valve and connect the supplied diverter hose from the first flush diverter to the overflow. (located inside pumpbox)

Step 8 Final Back fill

Top up to finished surface level with top soil free of rock and stones that is suitable for planting. It is recommended that the Action Tank is installed high enough to create a landscaping mound of a minimum 100 mm or higher so as to prevent any ponding of water around the top of the tank and the base of the pump box.

FILL MUST NOT BE HIGHER THAN THE BOTTOM EDGE OF THE GREEN PUMP BOX.

Step 9 Commissioning Pump

Remove brass bung on the top of pressure pump housing and fill slowly with water until full. Replace bung and ensure all taps are turned off. Note: – The Orange Pump Digital controller will

sense if there is no back pressure (i.e. No taps) and will shut down after a short time. Connect a tap to the pump outlet line and turn tap off. The pump will now shut off when pressure is up. The digital display will display 00 kpa if prime has not been successful. Repeat Step 8.

Step 10 Lid

Ensure pump box lid is installed and S/S screws are engaged through the side of the box.

Step 11

Check that all strainers are clear of wrapping and other obstructions and that all signage as required by the relevant local authority has been installed. I.e. Non-Potable Water.

Step 12

Complete the owners manual enclosed with the warranty sheets in the pump box. Pass them on to the builder or owner.

Electrician

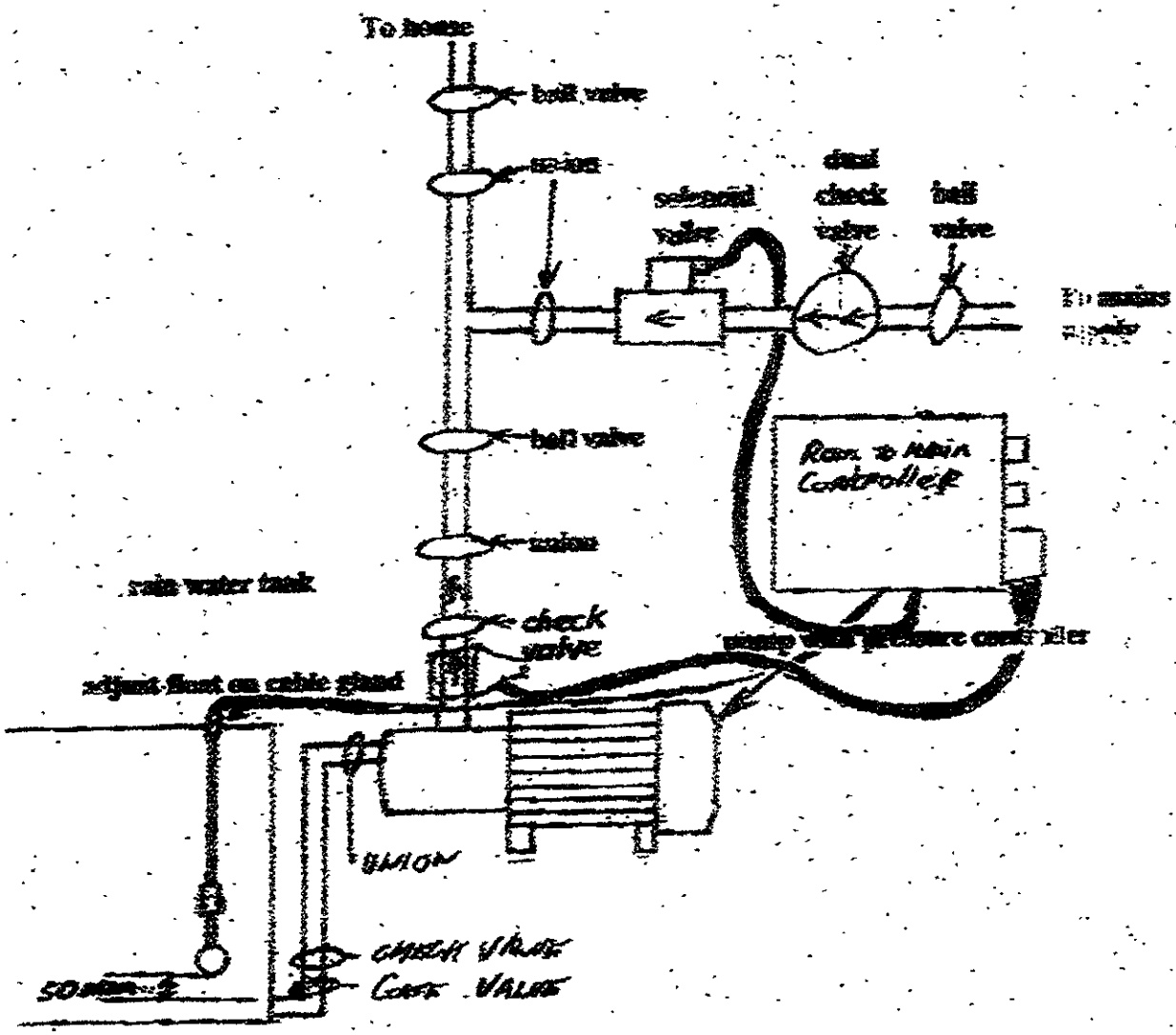
If Action system is equipped with a 24v low level shutoff. Make your connection in the externally mounted water proof box.

GREY-WATER HARVESTING AND ASSOCIATED WORKS:

Greywater Recycling (dual waste-water separation)

Grey-water waste from first floor bathroom and ensuite - **handbasins, baths and showers** is to be diverted to a future detention system (with overflow to sewer) for shallow underground irrigation of landscape. All other waste-water (W/C's, sinks, tubs, dishwasher and all laundry water) to sewer as normal.

Rain water to mains pressure diverter kit.
Installation by licenced plumber.
Plumber needs to check on back flow prevention at water meter with local Water Authority.



RAIN to MAINS DIVERTER

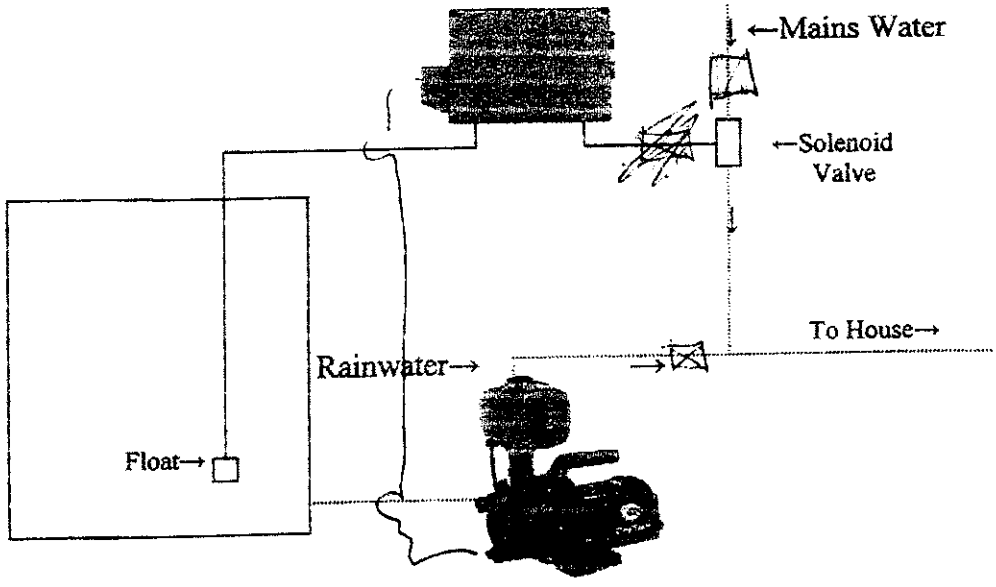
When your tankwater starts running low,
the Rain to Mains Diverter will;

- Automatically switch water supply from pump to mains pressure!
- Switch back to pump supply when rainwater level is restored!
- Switches to mains pressure in the event of blackout or power failure!

Lights indicate mains or tank water in operation.

Operates pumps up to 9 amps or 1.5 KW

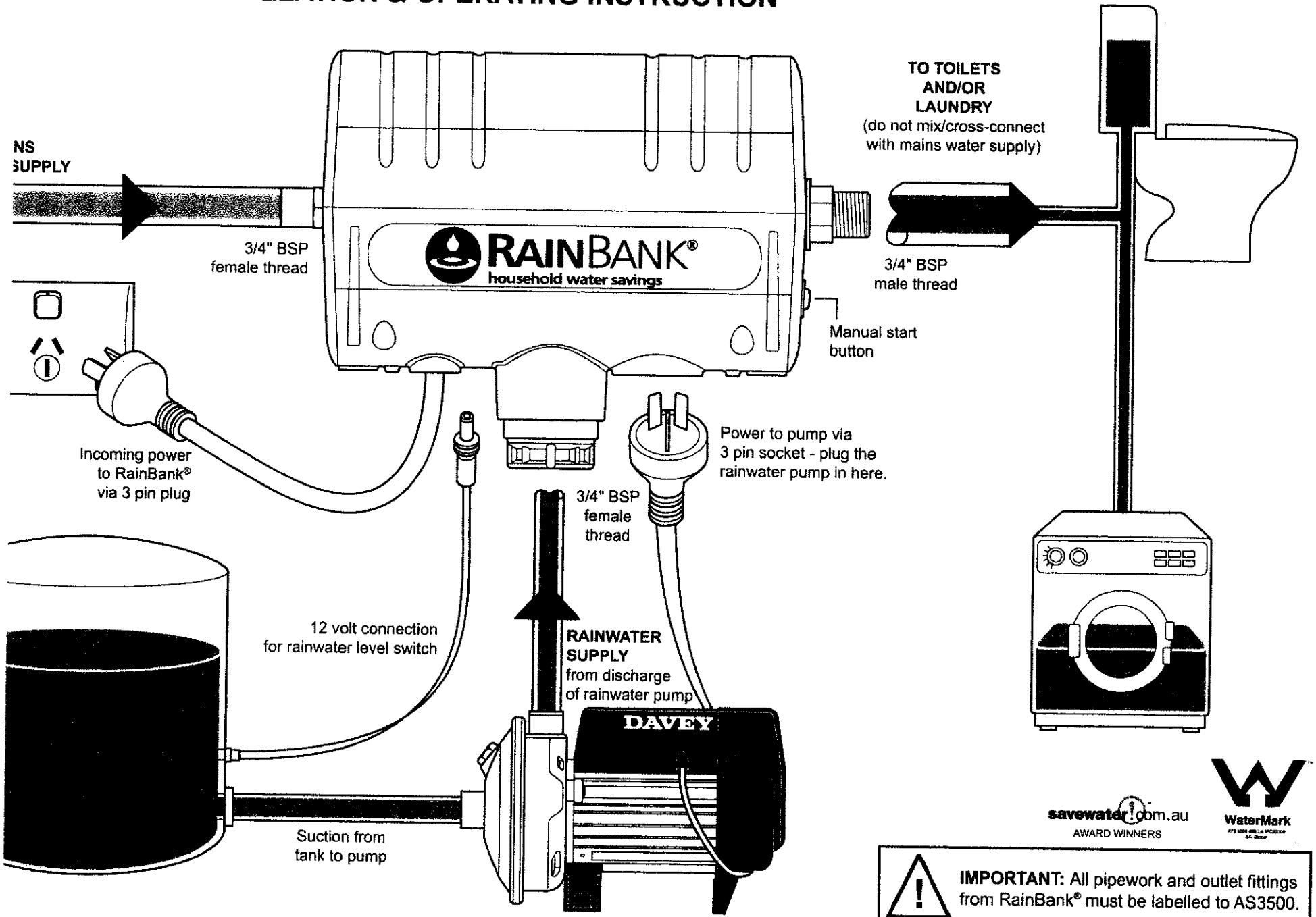
Shuts pump down before running dry!



Plumber to install appropriate backflow valve in Mains prior to solenoid valve, and in rainwater line after pump.

Dual Check-valve

LATION GUIDE - MUST BE READ IN CONJUNCTION WITH
ı RainBank® INSTALLATION & OPERATING INSTRUCTION



savewater!.com.au
AWARD WINNERS

WaterMark

IMPORTANT: All pipework and outlet fittings from RainBank® must be labelled to AS3500.

PLEASE NOTE: ILLUSTRATION NOT TO SCALE

TECHNICAL SPECIFICATIONS

MATERIALS OF CONSTRUCTION

PART	MATERIAL
Dual check valve	
- Body	D.R. brass
- Valves	Acetal
- Springs	304 stainless steel
Pressure control valve	
- Body	D.R. brass
- Valves	Acetal
Rainwater check valve	
- Body	Nylon
- Spring	316 stainless steel
- Seal	Nitrile
Pipework	D.R. brass
Enclosure	A.B.S.

ELECTRICAL DATA

Supply voltage	220-250V
Supply frequency	50Hz
Max. full load current	3.8A
Enclosure class	IP23
Power supply lead length	2m
Level switch lead length	5m

APPROVALS

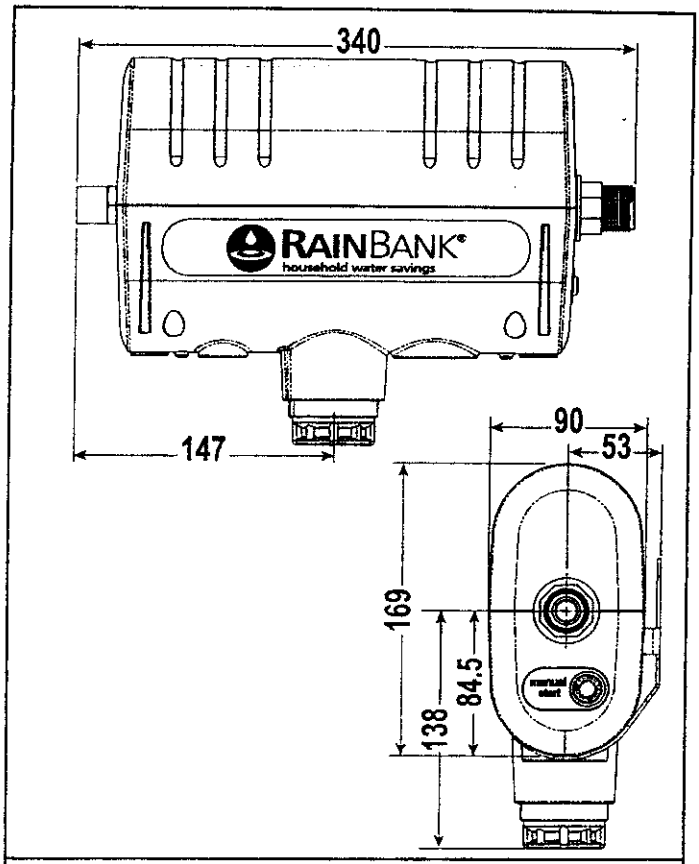
Complies with electrical standards :
AS/NZS3350.1:2002 Part 1
AS1939-1990

Certificate of electrical suitability Q031331

Complies with plumbing standards :
AS/NZS3500-1-2003 including provision of backflow protection when installed in compliance with product installation & operating instructions.

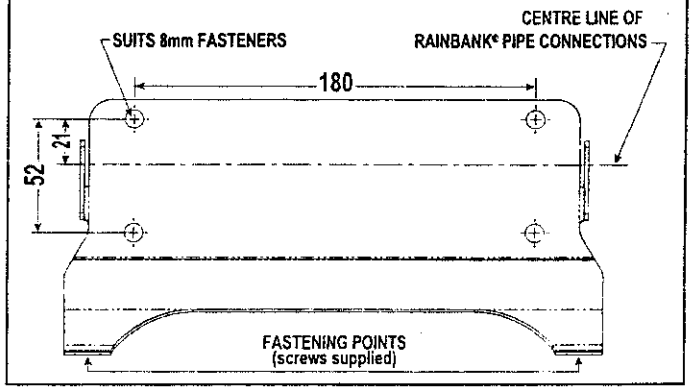
Watermark License IPC20009.

DIMENSIONS



OPTIONAL EXTRA'S

P/No 32028 - Pump Adaptor Kit (for ease of connection to Davey pumps)
P/No 32027 - Wall Bracket



All dimensions in mm unless otherwise stated.

Visit Davey Pumps on-line for further information

DEPEND ON DAVEY

Davey Products Pty Ltd
Member of the GUD Holdings Ltd Group
ABN 18 066 327 517
Head Office and Manufacturing
6 Lakeview Drive,
Scoresby, Australia 3179
Ph: +61 3 9730 9222
Fax: +61 3 9753 4100
Website: www.davey.com.au
Customer Service Centre
Ph: 1300 367 866

International
6 Lakeview Drive,
Scoresby, Australia 3179
Ph: +61 3 9730 9121
Fax: +61 3 9753 4248
E-mail: export@davey.com.au

Germany
Kantstrasse 47,
04275 Leipzig
Ph: +49 341 301 0412

New Zealand
220A Bush Road,
North Harbour, Auckland 1330
Ph: +64 9 914 3680
Fax: +64 9 914 3685
Website: www.daveynz.co.nz
E-mail: sales@daveynz.co.nz

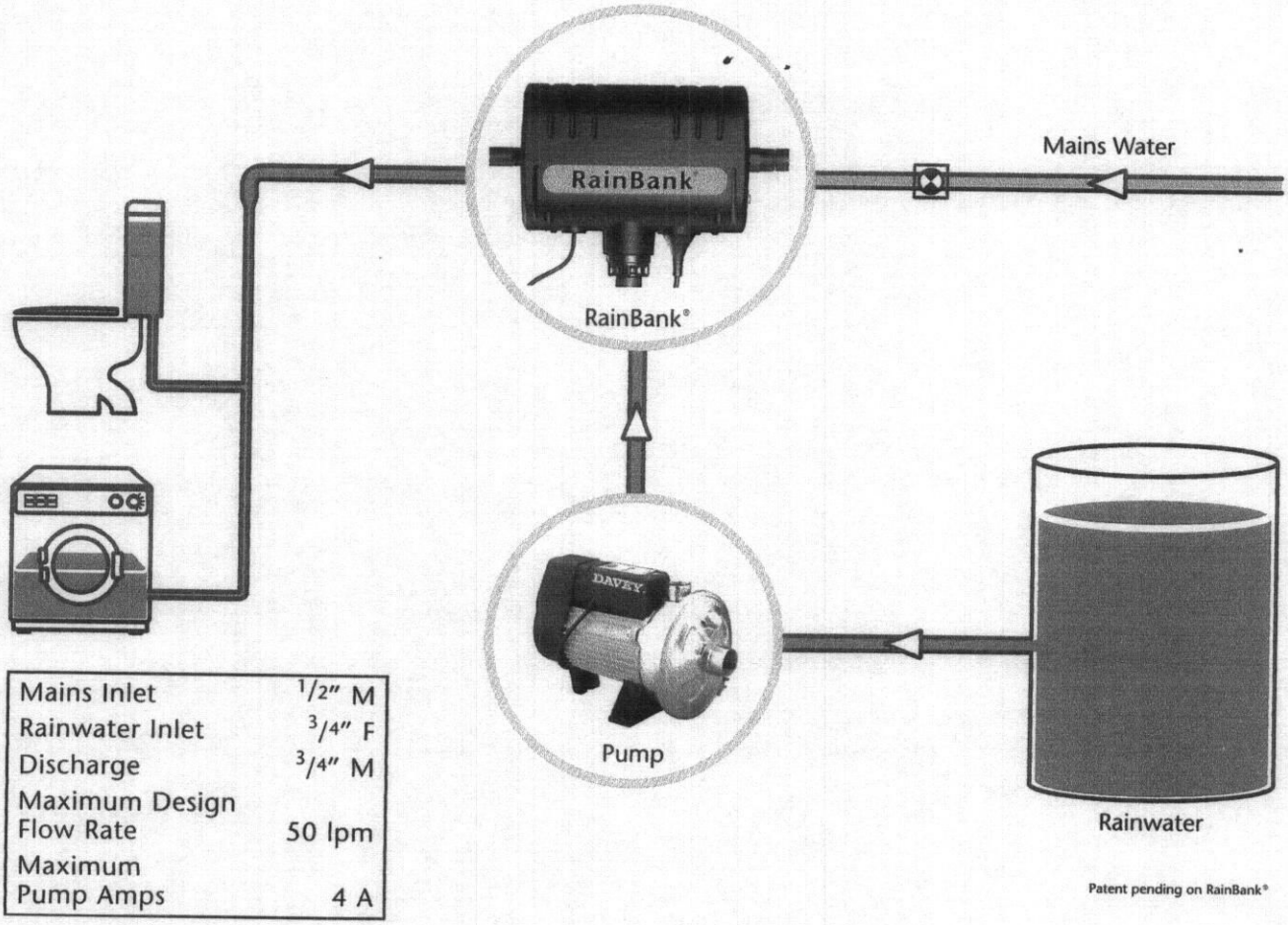
USA
1005 N. Commons Drive
Aurora, Illinois 60504
Ph: +1 630 898 6976

RainBank®

Davey RainBank® controller will allow town and city dwellers to easily take advantage of rainwater for applications, such as toilets and laundry.

With RainBank® you don't have to worry about where your water is coming from – it does the thinking for you – automatically. RainBank® automatically decides to source rainwater first and then mains water only as a back-up.

Unlike most other systems, even in the event of a power failure, RainBank® can still provide water for your toilet. Even in the unlikely event of a mains water interruption, you can manually start the pump using RainBank® to supply the rainwater you have.



Mains Inlet	1/2" M
Rainwater Inlet	3/4" F
Discharge	3/4" M
Maximum Design Flow Rate	50 lpm
Maximum Pump Amps	4 A

Patent pending on RainBank®

The RainBank® controller can be purchased in two forms, for use with many different pumps :-

Model Options

RainBank	For above ground tanks and pumps
RainBank/s	For below ground tanks or submersible pumps

or as a complete kit in three versions :-

Kit Options

KRB35	Suits single toilet and laundry & includes a JetPlus 350 pump
KRB50	Preferred option for average to larger homes with 2 to 3 toilets and laundry & includes a HP45-05 pump
KRB42	Specially suited to buried tanks, and includes a D42A submersible pump

Advanced control system for rainwater harvesting

- Automatically switches between rainwater and mains water supply.
- Provides water saving benefits of up to 40%.
- Incorporates easily with the plumbing of new and existing buildings.
- Unique technology with patent pending.
- Environmentally friendly.
- Provides seamless mains back-up in the event of no rainwater or electrical interruptions.
- No double handling of mains water.
- Adaptable to existing pumps and rainwater tanks.
- Built-in backflow protection valve for added safety (complies with AS/NZS3500).
- Can be mounted on pump or on nearby wall.
- No adjustment necessary.
- Simple to install.

Fact Sheet

Sydney WATER

RAINWATER TANKS

Information for Plumbers

This Fact Sheet applies to rainwater tanks that collect **roof water only**. Plumbing work for tanks includes "top up" from the mains supply or where the rainwater is plumbed to the toilet cistern or washing machine. The information below provides a brief outline of the key requirements.

Plumbers should complete all work in accordance with the *NSW Code of Practice Plumbing and Drainage* and follow the specific technical requirements for rainwater tank plumbing that are detailed in *Guidelines for the Installation of Rainwater Tanks on Residential Properties: Part 1 Plumbing requirements.*

1. Application must be made to Sydney Water on the standard **PERMIT APPLICATION – for Plumbing and Drainage Work** at least 2 working days prior to commencement of the work.
2. There must be no direct connection to pipes carrying water from the mains supply.
3. Where approval is given by Sydney Water for top up from the mains supply:
   - a flow restrictor must be installed to ensure the filling rate is no more than two litres per minute for every house, townhouse or strata unit supplied from the tank.
   - there must be a visible air gap (external to the rainwater tank) between the inlet pipe from the mains supply and the maximum level of the rainwater in the tank.
4. All tank outlets must be labelled "RAINWATER" on a metallic sign as specified in AS1319.
5. All pipes carrying rainwater must be labelled "RAINWATER". This can be done using identification tape for below ground pipe (made in accordance with AS2648) or adhesive pipe markers for above ground (made in accordance with AS1345).
6. A backflow prevention device must be installed at the property meter to protect the mains supply. The type of device varies in different situations. The details are as follows:

   For above ground rainwater tanks:

   20mm and 25mm meters Sydney Water will replace the existing meter free of charge with a new integral dual check valve meter. This will be done either on receipt of the customer's rebate application form (where eligible) or by calling 13 20 92 to arrange for the meter exchange.

   32mm+ meters A dual check valve must be installed adjacent to the meter. Please note that costs associated with this are the responsibility of the property owner.

   For below ground rainwater tanks:

   A new meter is not required but a testable double check valve must be installed at the meter due to higher risk to mains supply from underground tanks. Costs associated with this are the responsibility of the property owner. The owner must also arrange for a plumber to test the device once a year.

NOTE: In rare instances, Sydney Water may require a higher hazard backflow prevention device.

*For further information contact Plumbing Policy, Standards and Regulation group on **9952 0576.***

December 2002

Sydney WATER

Plumbing Requirements

Guidelines for **rainwater tanks** on residential properties

Amendment 1

Background

The Committee on Uniformity of Plumbing and Drainage Regulation in NSW (CUPDR) has reviewed and revised its regulatory requirements for plumbing for rainwater tanks following a request from the NSW Government.

The Government has recognised that some consumers may wish to use rainwater for all domestic purposes, including drinking, cooking, bathing and in hot water systems.

CUPDR recently issued Circular No.18, *GUIDELINES FOR PLUMBING ASSOCIATED WITH RAINWATER TANKS IN URBAN AREAS (WHERE A RETICULATED POTABLE WATER SUPPLY IS INSTALLED)* which addresses this arrangement. That circular replaces Circular No.17.

Circular No.18 permits the interconnection of the rainwater service with the on-site drinking water supply **provided that appropriate backflow prevention measures are in place.**

Purpose of Amendment

Amendment 1 to Sydney Water ***Guidelines for rainwater tanks on residential properties: Plumbing requirements*** is intended to provide plumbers with details of the new regulatory position and Sydney Water's requirements in regard to on-site interconnection between the rainwater supply and the drinking water supply.

This amendment sheet should be read together with the original Sydney Water *Guidelines* (April 2003) pictured opposite.

Where there is any conflict between the *Guidelines* and *Amendment 1*, in terms of the outlined requirements, *Amendment 1* should be followed.

NSW Health does not recommend the use of rainwater tanks for drinking purposes where a reticulated drinking water supply is available to the customer.

It is important to ensure that the property owner/consumer is aware that the maintenance of a rainwater tank and the quality of the water supplied from a tank is the responsibility of the owner, not the local water utility.

Consumer choice

If consumer's wish to make wider use of the water from a rainwater tank they are now able to do so. There are a number of plumbing configurations possible to enable consumers to make wider use of rainwater while still protecting the public drinking water supply.

Figures 1a and 1c on the following pages provide guidance as to acceptable plumbing configurations to enable tank water to be used for all purposes.

Where consumers prefer to limit their use of rainwater as previously accepted, the diagrams in Sydney Water's *Guidelines* are still an appropriate way of meeting the consumer and regulatory requirement. This *Amendment* also provides other alternatives to do this, in Figures 1b and 1d on the following pages.

Plumbing requirements

The following requirements reflect the changes to the plumbing regulations provided by CUPDR Circular No. 18. The drawings on page 3 and page 4 provide guidance to plumbers for rainwater tank installations being designed, installed and maintained with an interconnection to the on-site drinking water supply.

The key changes to Sydney Water's requirements for rainwater tank plumbing are as follows:

1. Rainwater supply from above ground rainwater tanks may be interconnected to the on-site drinking water service provided that suitable backflow protection is in place.
2. **Containment protection** - Where a rainwater tank is to be interconnected with the on-site drinking water supply, Sydney Water's mains supply is to be protected by installation of an authorised backflow prevention device, suitable for the degree of hazard and sized to suit the water service, **fitted immediately downstream of the water meter.**
3. If the drinking water service is 20-25mm DN and Sydney Water will permit a non-testable backflow prevention device to be used, then Sydney Water will provide an integral dual check valve in the water meter as backflow protection. In this case no further backflow device will be required for containment protection.
4. **Zone Protection** -Zone protection is also to be provided by installation of an authorised backflow prevention device, suitable for the degree of hazard and sized to suit the water service. The backflow prevention device shall be **fitted immediately upstream on the potable water service at the point of interconnection.**

These requirements replace the following sections in the original *Guidelines*:

Section	Clause	Page
2.2	b)	3
3.2	2nd dot point	4

Figure 1a. Plumbing for above ground rainwater tanks with a *direct inter-connection* to the drinking water supply & providing rainwater for all outlets for all purposes

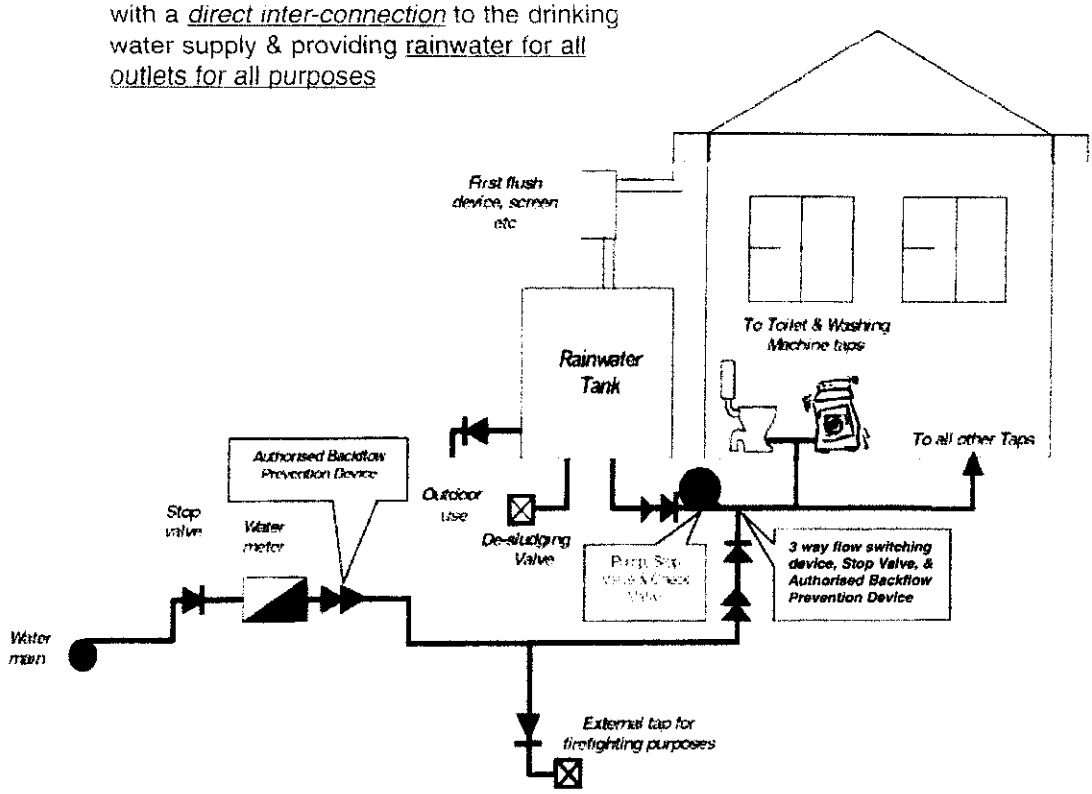


Figure 1b. Plumbing for above ground rainwater tanks with a *direct inter-connection* to the drinking water supply & providing rainwater to the garden, washing machine & toilet only

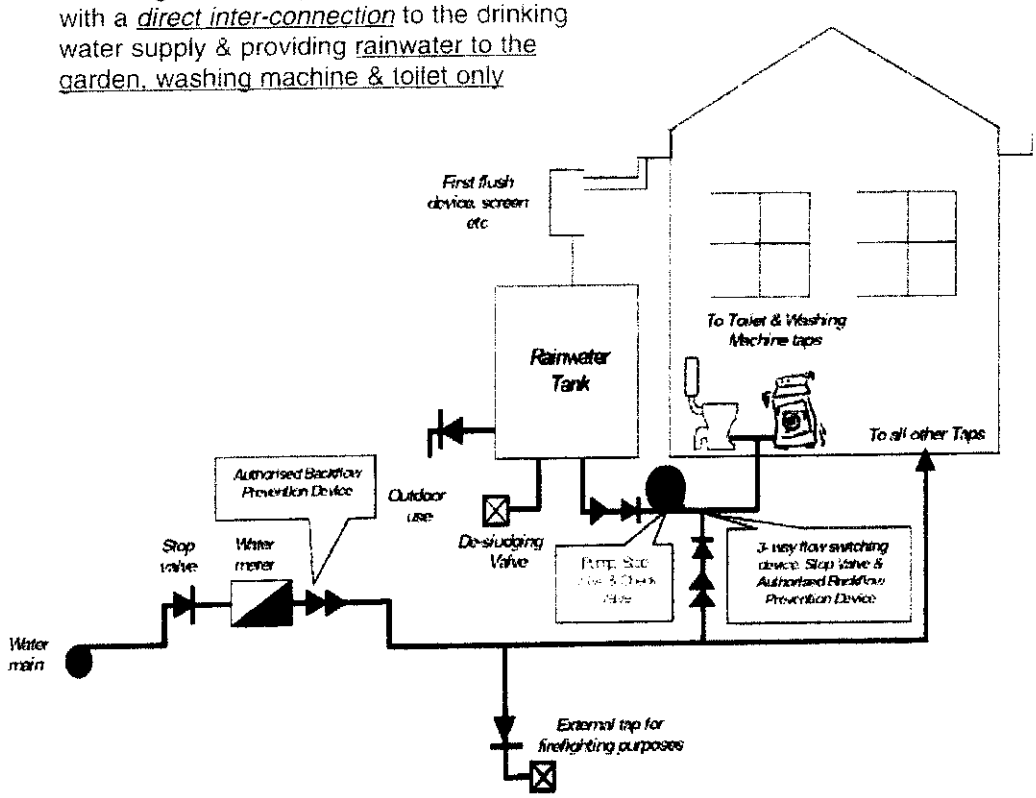


Figure 1c. Plumbing for above ground rainwater tanks with an Air gap and pump by-pass interconnection to the drinking water supply & providing rainwater for all purposes

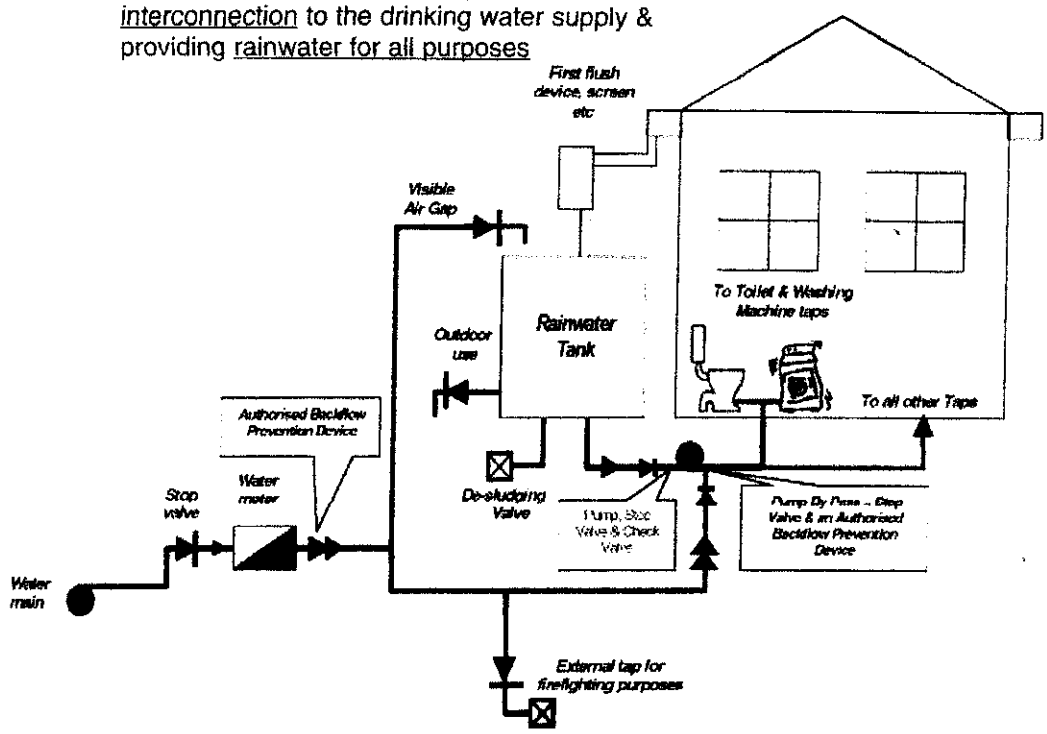
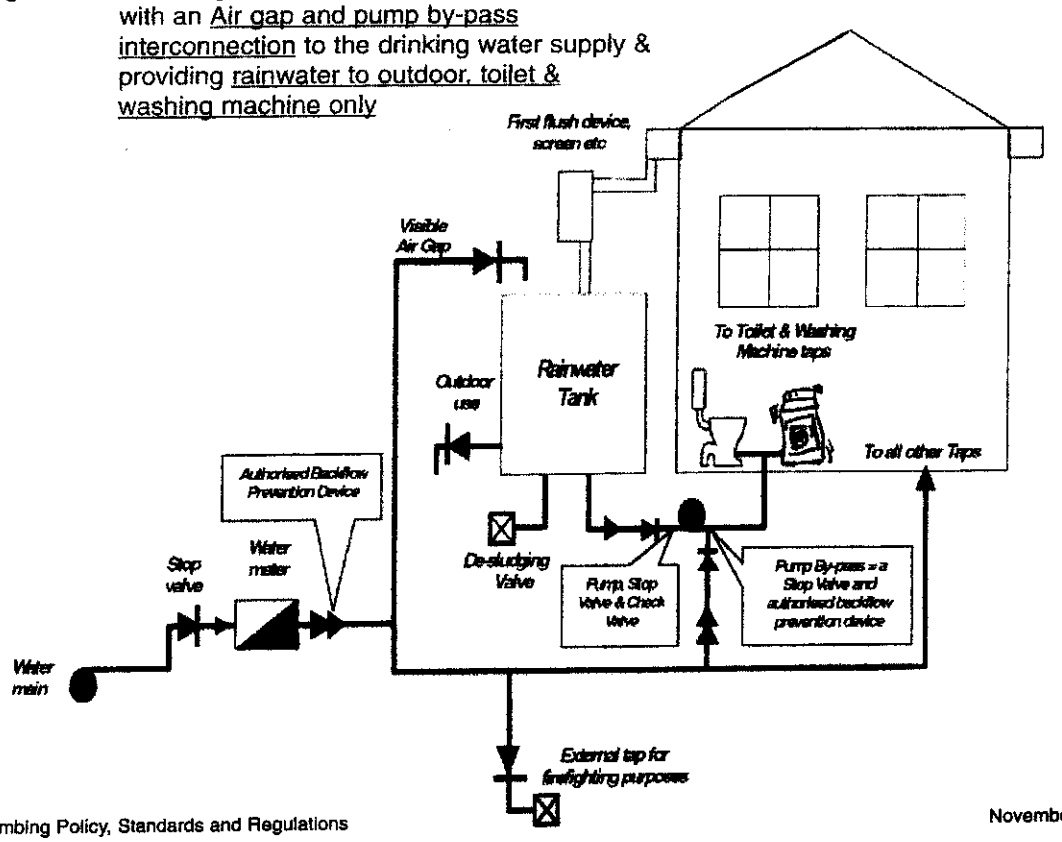
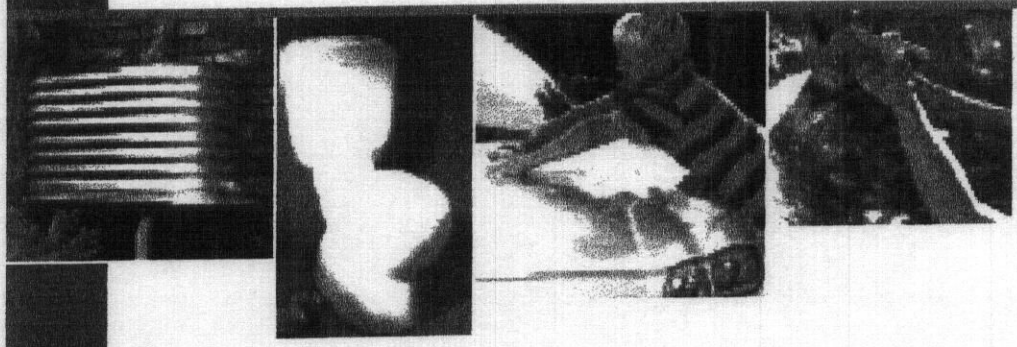


Figure 1d. Plumbing for above ground rainwater tanks with an Air gap and pump by-pass interconnection to the drinking water supply & providing rainwater to outdoor, toilet & washing machine only



Sydney WATER

Guidelines for **rainwater tanks** on residential properties



Plumbing requirements

Information for rainwater tank suppliers and plumbers

April 2003

Contents

Plumbing for rainwater tanks

A guide for rainwater tank suppliers and plumbers

1. Introduction

Rainwater tanks can make an important contribution towards reducing the demand for drinking water. However, certain requirements are necessary to protect reticulated drinking water and wastewater systems and to ensure public health is not compromised.

If the installation of a rainwater tank (regardless of size) involves work affecting the water supply system, sewerage system, stormwater drainage system, or any part of Sydney Water's systems, then such work can only be undertaken with Sydney Water's approval.

Sydney Water has developed the following guide on the technical and regulatory requirements for plumbing from rainwater tanks. This is to ensure that the rainwater service cannot accidentally backflow into the drinking water main or be cross-connected to the drinking water supply within the property. Any cross connection would change the quality of the drinking water.

As part of our Operating Licence and Customer Contract, Sydney Water has a responsibility to ensure that the quality of drinking water supplied to our customers is maintained. As the plumbing regulator in our area of operations, Sydney Water also has responsibility to ensure that the drinking water quality is maintained within the customer's property.

In this guide, you will find detailed requirements that must be met when installing drinking water top-up for rainwater tanks, technical drawings and fact sheets that your customers can obtain from the Sydney Water website.

You can find out more about rainwater tanks from our website www.sydneywater.com.au or by phoning our Plumbing Policy, Standards and Regulation group on 9952 0576.

Council Approval

The NSW government has amended the *State Environmental Planning Policy* (SEPP 4) so that rainwater tanks with a capacity of 10,000 litres or less do not require local council approval provided they meet the conditions outlined in SEPP 4. Details are provided in **Appendix 2**.

Installation of rainwater tanks with capacity above 10,000 litres still require local council approval.

2. The guidelines

a) Application

These guidelines apply only to the plumbing for rainwater tanks that collect water from the roofs of residential properties.

The guidelines do not apply to:

- Rainwater tanks that are not connected to the internal plumbing and do not have top-up from the reticulated drinking water supply.
- Tanks that collect ground water runoff.
- Roof plumbing to the tank.

Rainwater tanks on commercial and industrial properties need to comply with Sydney Water's *Backflow Prevention Policy* and the *New South Wales Code of Practice: Plumbing and Drainage.*

b) Rainwater uses

Rainwater can provide an alternative source for the following:

- toilet flushing
- garden irrigation
- washing cars
- filling ornamental ponds
- washing machines

In line with NSW Health recommendations, Sydney Water does not recommend the use of rainwater tanks for drinking purposes where a reticulated drinking water supply is available to the customer.

In this case NSW Health does not advise using rainwater for:

- ✗ drinking
- ✗ cooking or other kitchen purposes
- ✗ personal washing, such as baths, showers, hand basins and bidets.

2.1 Approval to install a rainwater tank

Under no circumstances is a rainwater tank permitted to be built over a Sydney Water maintenance structure or within any Sydney Water easement, regardless of tank size.

Tanks not connected to the plumbing

Sydney Water's approval to proceed is not needed unless the tank capacity is greater than 10,000 litres. If the tank capacity is greater than 10,000 litres Sydney Water needs to assess whether the tank is situated a sufficient distance from Sydney Water's sewer. This is the same requirement as for any proposed building application.

A plan illustrating the location and size of the proposed rainwater tank must be supplied. Sydney Water's standard building over sewer procedures will apply. If it is a sufficient distance from the sewer, then Sydney Water or a QuickCheck agent can give approval.

2.2 Sydney Water requirements

Below is a summary of Sydney Water's main requirements regarding plumbing for rainwater tanks for residential customers. **Note:** Words in *italics* are defined in Section 4.

a) Sydney Water needs to be informed of all proposed rainwater tank installations so that the meter can be replaced with another containing a *backflow prevention device*.

b) There must be no *direct connection* between the rainwater tank and Sydney Water's reticulated drinking water supply.

c) An application must be made to Sydney Water if the property owner wants a top-up from Sydney Water's drinking water supply to the rainwater tank, as this is defined as an *indirect connection*.

d) Top-up will be limited to a *trickle top up* to ensure that the water pressure to other customers is not compromised.

e) Top-up to the rainwater tank is **not** permitted from the reticulated recycled water supply.

f) In certain circumstances, Sydney Water can refuse to allow a connection from its system to the rainwater tank.

g) Where a higher risk is assessed, Sydney Water may require the property owner to install a higher hazard *Backflow Prevention Device* at the property owner's cost.

h) The overflow from the tank should be directed to the stormwater system. It must not discharge to Sydney Water's sewerage system.

i) With all plumbing work, the plumber is required to make an application to Sydney Water at least two working days before the commencement of work.

j) The plumber must arrange for the rainwater tank plumbing to be inspected by Sydney Water. The plumber must also submit a Certificate of Compliance to Sydney Water and the customer at the completion of the work.

3. Connecting properties to rainwater

3.1 Administrative requirements

- The plumber is required to apply to Sydney Water for a permit to do the work as they would when connecting any house service plumbing.
- Sydney Water's plumbing inspector must be contacted when work is completed to carry out a final inspection of the property before the *Certificate of Compliance* is submitted to Sydney Water and the customer.

3.2 Rainwater tank plumbing regulatory requirements

- All plumbing work is to be done or supervised by a licensed plumber in compliance with these guidelines and the *NSW Code of Practice: Plumbing and Drainage*
- Under no circumstances is there to be *direct connection* between the rainwater service and the drinking water service.

Figure 1 provides a drawing of plumbing for above ground rainwater tanks with an *indirect connection* to the drinking water supply.

a) Approved materials

Materials used in the rainwater tank plumbing must comply with *AS/NZS 3500 Part 1 Water Supply Section 2 Materials and Products*

Approved materials are those which have gone through the product approval process and have had a licence granted to mark the product accordingly. The certifying body provides the manufacturer with the following licensed marks to indicate that the products comply with the relevant standard. To the right are the current three types of "Marks" that indicate that the product has been certified.


The full Australian Standards Mark


Water Mark


Type Tested

b) Pipes and labelling

Pipe materials to be used for rainwater need to be approved products and be clearly and permanently identified '**RAINWATER**' continuously along the length. This can be done for below ground pipes by using identification tape (made in accordance with AS2648) or for above ground pipes by using adhesive pipe markers (made in accordance with AS1345).

Identification tape marked '**RAINWATER**' must be at least 75mm wide. The identification tape is to be installed on top of the rainwater pipeline, running longitudinally, and fastened to the pipe at not more than 3 metre intervals.

Every rainwater tank outlet must be labelled '**RAINWATER**' on a permanent sign. An example is shown in **Figure 2**. AS1319 provides direction as to appropriate layout, size and face materials for signs.

c) Proximity to other services

Rainwater pipes must be separated from any parallel drinking water service.

Above ground pipes

Any rainwater pipe installed above ground must be a minimum of 100mm away from any drinking water pipe.

Below ground pipes

Any rainwater pipe installed below ground must be a minimum of 300mm away from any drinking water pipe.

d) Backflow prevention

Check that all the following backflow protection is in place:

Above ground rainwater tanks

- Sydney Water has replaced the old meter with one containing an integral *dual check valve* for 20 - 25mm meters.
- For meters 32mm or above, you need to install a *dual check valve* adjacent to the meter.

Below ground tanks

- A *testable backflow prevention device* must be installed at the meter. It should be noted that for below ground tanks the cost of the device and its installation must be met by the customer.
- The device must be tested annually. The cost of this annual check is to be met by the customer.

Testable backflow prevention devices

These must be tested by a plumber accredited by Sydney Water. Accredited plumbers are listed on our website at http://www.sydneywater.com.au/html/yourBusiness/backflow/bckflw_plumber_search.cfm

A completed *Backflow Prevention Device - Inspection and Maintenance Report* must be forwarded within 2 working days of test completion to:

Sydney Water Corporation
Backflow Prevention Group
Chatswood NSW 2067

For information on device testing requirements call **1800 680 636** or check out our website.

e) Water meters

Where a rainwater tank is installed a meter with an integral dual check valve will be provided for each property with a current 20-25mm water meter. Property owners will be requested to advise Sydney Water when a rain water tank is installed at their properties for an Integral *dual check valve* water meter to be fitted free of charge.

20mm water meters with integral dual check valves

The *dual check valves* are built into the meters and will provide backflow protection to the drinking water supply system. There are no changes needed to the drinking water service installation requirements as the integral *dual check valve* meters are of the same length as existing meters.

Plumbers will be able to identify the new integral *dual check valve meters* by the longer "spud" at the end connection of the meter. The check valves will also be visible from the end of the meter and plumbers should ensure that they are not damaged during installation.

As Sydney Water will be providing 20mm drinking water meters with integral *dual check valves* plumbers may now use approved ball valves at the meter location as accepted in the Australian Standard AS/NZS 3500, Part 1, Clause 5.4. Using ball valves at the meter will lower the amount of water pressure loss within the drinking water service and minimise future maintenance.

Contact Sydney Water on 13 20 92 to arrange for a replacement meter with an integral dual check valve

f) Top-up service

The tank must meet Sydney Water's storage tank requirements if top-up is required. The inlet drinking water service must have a *visible air gap* between the reticulated supply and the tank external to the rainwater tank.

The drinking water top-up service will only be permitted as a trickle top-up. This maintains the drinking water pressure for internal purposes when the tank is filling. It also limits pressure fluctuations when flow to the tank turns on/off.

Note: Top-up to the rainwater tank is not permitted from the reticulated recycled water supply.

Flow rate

For single residential properties, the flow rate of the trickle top-up into the tank from Sydney Water's reticulated supply must be restricted to a maximum of 2 litres/minute.

For townhouse or unit development, the flow rate of the trickle top-up into the tank from Sydney Water's reticulated supply must be restricted to a maximum of 2 litres/minute times the total number of townhouses or units in the development.

Note: Sydney Water will generally allow an *indirect connection* between the tank and the reticulated drinking water supply as long as the requirements outlined in 3a) to f) above are met. This is subject to the disclaimer that, in accordance with the Customer Contract, Sydney Water is not responsible for any water collected in a rainwater tank.

4. Definitions

Above ground rainwater tank	A tank collecting roofwater only which is either: • fully above ground or • at least half the tank is above ground and the view of and access to the inlet pipe, air gap and overflow pipe are unobstructed.
Backflow prevention device	A *backflow prevention device* is a device, to prevent the reverse flow of water from a potentially polluted source into the drinking water supply system. All *backflow prevention devices* need to comply with AS/NZS 2845.1
Below ground rainwater tank	A tank collecting roof water only which is either: • fully or mostly underneath the ground • where the view of and access to any one of the air gap, inlet pipe or overflow pipe is obscured by the ground or something similar e.g. rockery or garden bed. There should be no possibility that surface run-off eg: on a sloping site will drain to a rainwater tank.
Connection	See *direct connection* or *indirect connection*.
Direct connection	Direct connection occurs: • where a pipe containing water from Sydney Water's reticulated supply is directly connected into a tank or pipe containing water from a rainwater tank, or • where the outlet of a pipe containing Sydney Water's reticulated supply is submerged beneath the surface of water from a rainwater tank. **Note:** Direct connection is expressly prohibited in Sydney Water's Customer Contract (clause 8.4) because of the risk of backflow of tank water into the reticulated supply.
Dual check valve (DCV)	A device to prevent backflow caused by backpressure, which incorporates two independently operating force loaded non-return valves.
Indirect connection	Indirect connection occurs between a rainwater tank and the Sydney Water supply where the outlet of a pipe containing drinking water from the Sydney Water reticulated supply is separated from the water in the rainwater tank by a visible air gap. This ensures that there is no possibility of the rainwater backflowing into the Sydney Water supply.
Reduced pressure zone (RPZ)	A backflow prevention device for high risk connections.
Standard connections	Connections of 20 - 25mm pipes.
Testable double check valve (TDCV)	A device to prevent backflow caused by backpressure, which has two independently operating force loaded non-return valves and incorporates specific test points for in-service testing.
Trickle top-up	Trickle top-up is the slow filling of the tank from the drinking water supply. It is designed to minimise effects on the reticulated system and allow for a reasonable re-supply into the tank over a period of several hours.
Visible air gap	The unobstructed vertical distance through the free atmosphere between the lowest opening of a water service pipe or fixed outlet supplying water to a fixture or receptacle and the highest possible water level of such fixture or receptacle.

5. Related Sydney Water policies

Backflow Prevention Policy

Rural Water Supply Policy

6. Useful references

Sydney Water Customer Contract (2002) Clauses 8.1 and 8.4

Sydney Water Regulation 2000 Part 2 'Plumbing and Drainage'

NSW Code of Practice Plumbing and Drainage (Edition No 2) July 1999

AS/NZS 3500 National Plumbing & Drainage Code

NSW State Environmental Planning Policy (SEPP) 4

National Environmental Health Forum (1998)
Guidance on the use of rainwater tanks, NEHF Monographs, Water Series No. 3

NSW Health Circular 2002/1 -
Use of rainwater tanks where a reticulated water supply is available

For further information on these guidelines contact

Sydney Water

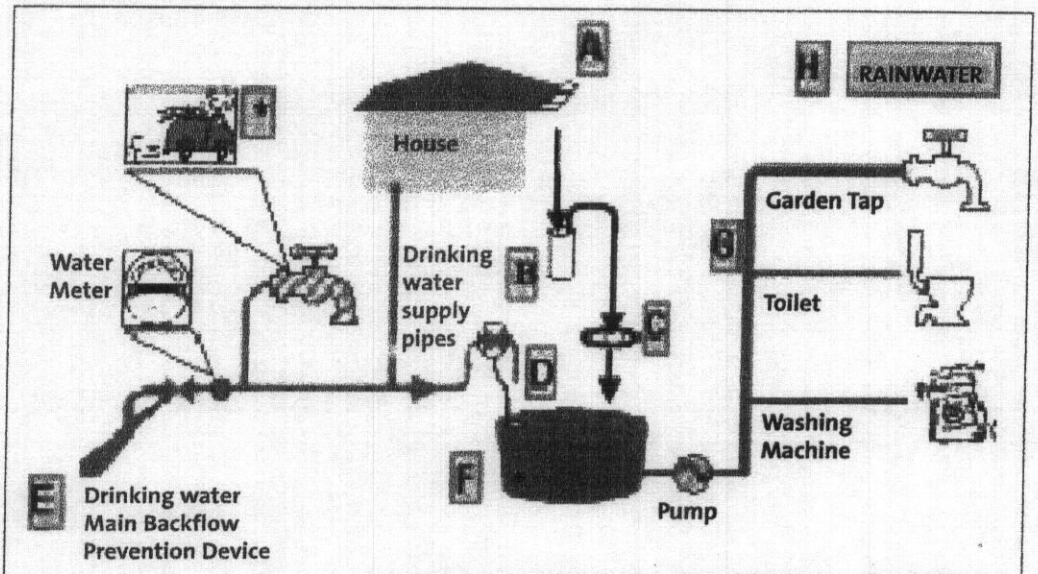
Plumbing Policy, Standards and Regulation

Phone **9952 0576**

Email plumbing@sydneywater.com.au

Figure 1

Plumbing configuration for rainwater tanks in urban areas with reticulated supply



* External mains tap, required for house fire fighting.

Key to:

Basic risk control measures

A Gutter screen
B First flush device
C Fine screen (mosquito)
D Air gap above tank (top up valve)
E Back flow prevention
F Tank de-sludging
G Use of approved materials
H Signage

Figure 2

Figure 2

Signage for rainwater tanks and outlets

Note: Background colour should be **Yellow**
Text is **white** on a **black** background
Tap symbol is **black**

RAINWATER TANK WITH DRINKING WATER TOP UP - SINGLE RESIDENTIAL - SHEET 1

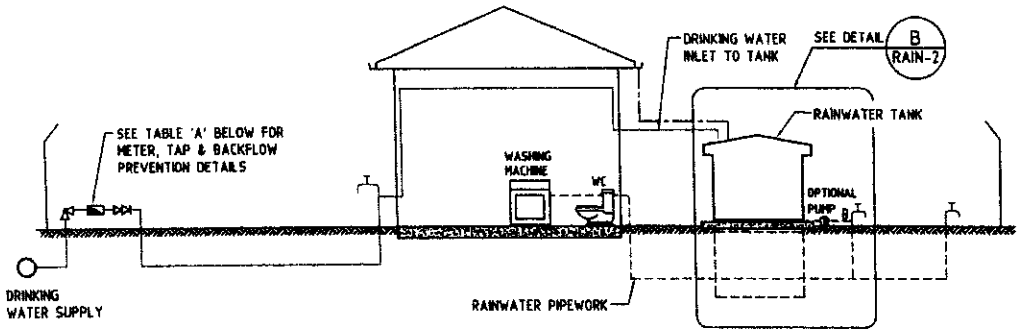


DIAGRAM NOTES :

DRAWING TO BE READ IN CONJUNCTION WITH SYDNEY WATER PLUMBING REQUIREMENTS

1. FOR TANKS 10,000 LITRES OR LESS, COUNCIL DEVELOPMENT CONSENT IS NOT REQUIRED, IF THEIR CONDITIONS FOR INSTALLATION ARE FOLLOWED.
2. FOR TANKS GREATER THAN 10,000 LITRES COUNCIL DEVELOPMENT CONSENT IS GENERALLY REQUIRED.
3. FOR TANKS MORE THAN 10,000 LITRES APPROVAL IS REQUIRED FOR BUILDING OVER SEWERS
4. SYDNEY WATER'S APPROVAL IS REQUIRED FOR ANY TOP UP FROM DRINKING WATER SUPPLY, REGARDLESS OF TANK SIZE.
5. NO DIRECT CONNECTION IS ALLOWED BETWEEN THE DRINKING WATER SUPPLY AND THE RAINWATER TANK SUPPLY.
6. RAINWATER PIPEWORK IS SHOWN ON THE DIAGRAM AS SUPPLYING INTERNAL & EXTERNAL RAINWATER USES. CUSTOMERS MAY WANT ONLY ONE OR THE OTHER.
7. THE INLET FILLING RATE FROM DRINKING WATER SUPPLY IS TO BE RESTRICTED TO A MAXIMUM OF TWO (2) LITRES PER MINUTE FOR EACH HOUSE, TOWN HOUSE OR UNIT SUPPLIED FROM THE TANK.

RAINWATER TANK LOCATION	METER SIZE (mm)	TYPE OF TAP	TYPE OF BACKFLOW PREVENTION
ABOVE GROUND	20	BALL VALVE	DUAL CHECK VALVE (COMBINED WITH METER)
	25	BALL VALVE	DUAL CHECK VALVE
	≥32	BALL VALVE	DUAL CHECK VALVE
BELOW GROUND	20	BALL VALVE	TESTABLE DOUBLE CHECK VALVE
	25	BALL VALVE	TESTABLE DOUBLE CHECK VALVE
	≥32	BALL VALVE	TESTABLE DOUBLE CHECK VALVE

TABLE-A

LEGEND:

- BALL VALVE RIGHT ANGLE TYPE
- METER
- DUAL CHECK VALVE
- PRESSURE VESSEL
- PUMP
- GARDEN TAP
- DRINKING WATER SUPPLY PIPES
- RAINWATER SUPPLY PIPES
- DOWN PIPES

Appendix 1
Technical Drawings

Rainwater tank with drinking water top up

Single residential

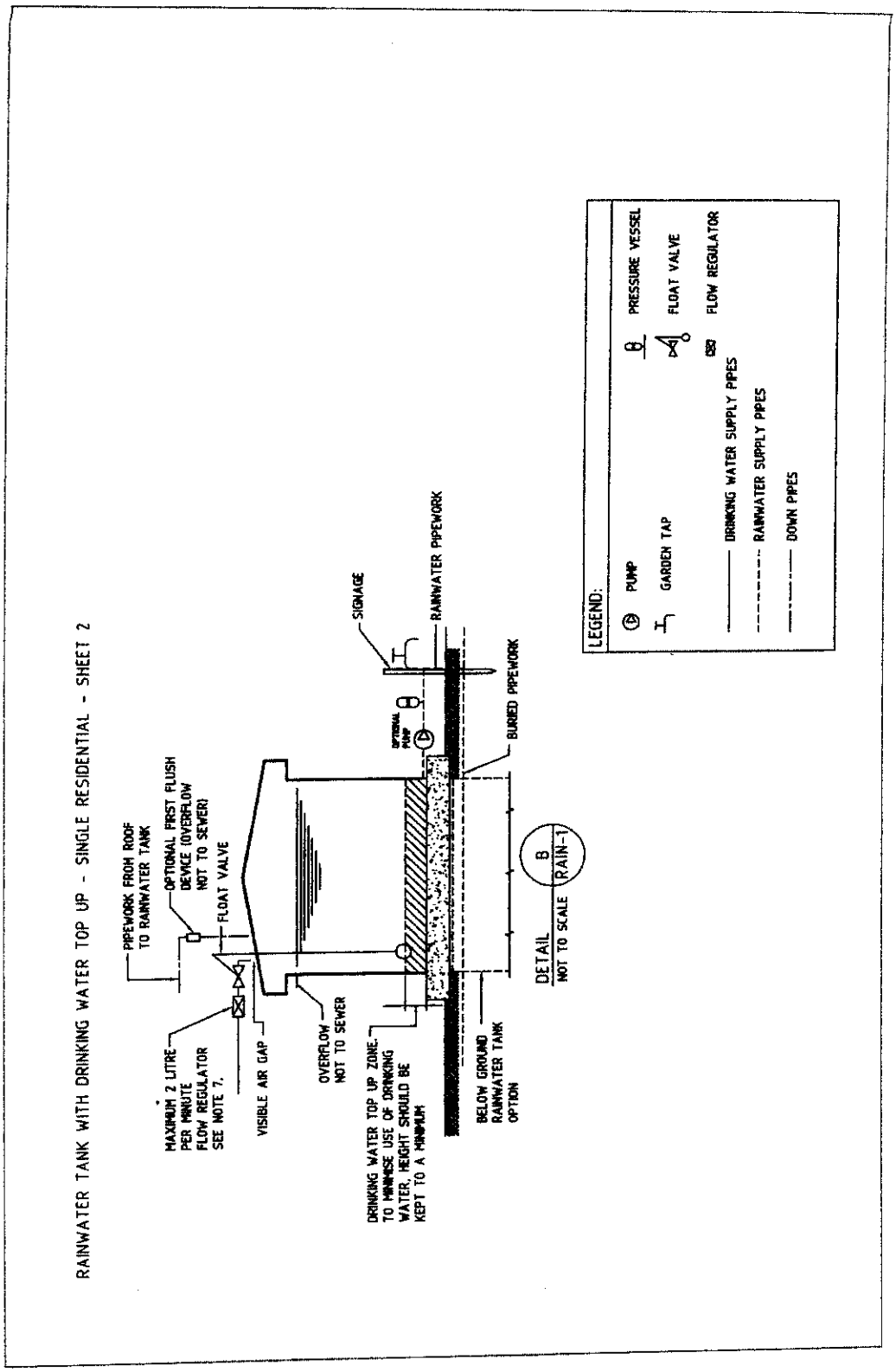
Sheet 1

Appendix 1 Technical Drawings

Rainwater tank with drinking water top up

Single residential

Sheet 2



Appendix 1
Technical Drawings

Dual drinking water and rainwater supplies to toilets

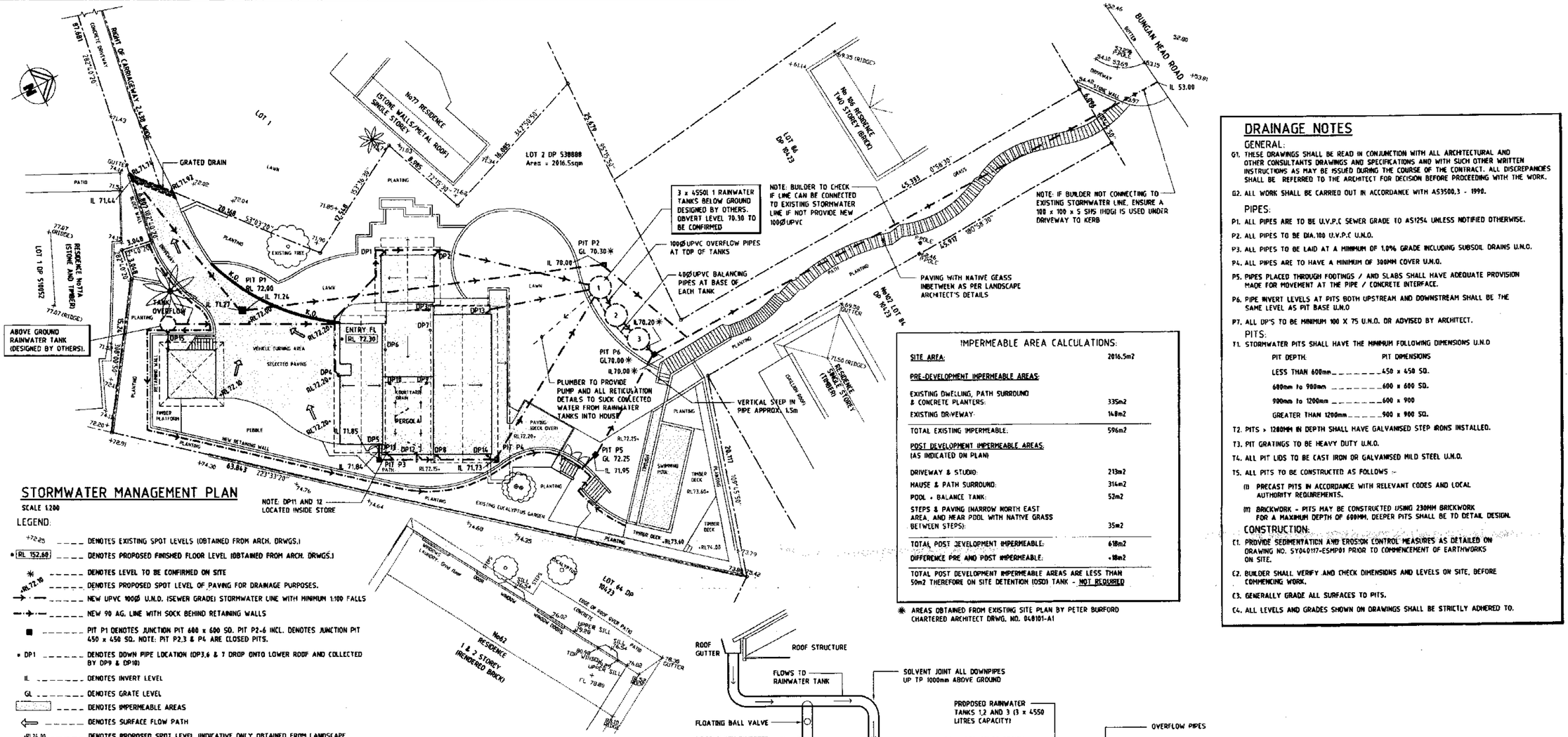
Single residential

Sheet 1

RAINWATER TANK LOCATION	METER SIZE (mm)	TYPE OF TAP	TYPE OF BACKFLOW PREVENTION
ABOVE GROUND	20	BALL VALVE	DUAL CHECK VALVE (COMBINED WITH METER)
	25	BALL VALVE	DUAL CHECK VALVE
	≥32	BALL VALVE	DUAL CHECK VALVE
BELOW GROUND	20	BALL VALVE	TESTABLE DOUBLE CHECK VALVE
	25	BALL VALVE	TESTABLE DOUBLE CHECK VALVE
	≥32	BALL VALVE	TESTABLE DOUBLE CHECK VALVE

TABLE A

Appendix 1



STORMWATER MANAGEMENT PLAN

SCALE 1:200

LEGEND:

- +72.25 _____ DENOTES EXISTING SPOT LEVELS (OBTAINED FROM ARCH. DRWGS.)
- RL 152.60 _____ DENOTES PROPOSED FINISHED FLOOR LEVEL (OBTAINED FROM ARCH. DRWGS.)
- * _____ DENOTES LEVEL TO BE CONFIRMED ON SITE
- +RL72.10 _____ DENOTES PROPOSED SPOT LEVEL OF PAVING FOR DRAINAGE PURPOSES.
- _____ NEW UPVC 100Ø U.N.O. (SEWER GRADE) STORMWATER LINE WITH MINIMUM 1:100 FALLS
- _____ NEW 90 AG. LINE WITH SOCK BEHIND RETAINING WALLS
- ■ _____ PIT P1 DENOTES JUNCTION PIT 600 x 600 SQ. PIT P2-6 INCL. DENOTES JUNCTION PIT 450 x 450 SQ. NOTE: PIT P2,3 & P4 ARE CLOSED PITS.
- DP1 _____ DENOTES DOWN PIPE LOCATION (DP3,6 & 7 DROP ONTO LOWER ROOF AND COLLECTED BY DP9 & DP10)
- IL _____ DENOTES INVERT LEVEL
- GL _____ DENOTES GRATE LEVEL
- _____ DENOTES IMPERMEABLE AREAS
- _____ DENOTES SURFACE FLOW PATH
- +RL74.00 _____ DENOTES PROPOSED SPOT LEVEL (INDICATIVE ONLY OBTAINED FROM LANDSCAPE ARCHITECT'S DRWGS.).

IMPERMEABLE AREA CALCULATIONS:

SITE AREA:	2016.5m2
PRE-DEVELOPMENT IMPERMEABLE AREAS:	
EXISTING DWELLING, PATH SURROUND & CONCRETE PLANTERS:	335m2
EXISTING DRIVEWAY:	148m2
TOTAL EXISTING IMPERMEABLE.	596m2
POST DEVELOPMENT IMPERMEABLE AREAS: (AS INDICATED ON PLAN)	
DRIVEWAY & STUDIO:	213m2
MAUSE & PATH SURROUND:	314m2
POOL + BALANCE TANK:	52m2
STEPS & PAVING (NARROW NORTH EAST AREA, AND NEAR POOL WITH NATIVE GRASS BETWEEN STEPS):	35m2
TOTAL POST DEVELOPMENT IMPERMEABLE:	618m2
DIFFERENCE PRE AND POST IMPERMEABLE:	+18m2

TOTAL POST DEVELOPMENT IMPERMEABLE AREAS ARE LESS THAN 50m2 THEREFORE ON SITE DETENTION (OSD) TANK - NOT REQUIRED

* AREAS OBTAINED FROM EXISTING SITE PLAN BY PETER BURFORD CHARTERED ARCHITECT DRWG. NO. 048101-A1

DRAINAGE NOTES

GENERAL:

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.

G2. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3500.3 - 1990.

PIPES:

P1. ALL PIPES ARE TO BE U.V.P.C SEWER GRADE TO AS1254 UNLESS NOTIFIED OTHERWISE.

P2. ALL PIPES TO BE DIA.100 U.V.P.C U.N.O.

P3. ALL PIPES TO BE LAID AT A MINIMUM OF 1.0% GRADE INCLUDING SUBSOIL DRAINS U.N.O.

P4. ALL PIPES ARE TO HAVE A MINIMUM OF 300MM COVER U.N.O.

P5. PIPES PLACED THROUGH FOOTINGS / AND SLABS SHALL HAVE ADEQUATE PROVISION MADE FOR MOVEMENT AT THE PIPE / CONCRETE INTERFACE.

P6. PIPE INVERT LEVELS AT PITS BOTH UPSTREAM AND DOWNSTREAM SHALL BE THE SAME LEVEL AS PIT BASE U.N.O

P7. ALL DP'S TO BE MINIMUM 100 X 75 U.N.O. OR ADVISED BY ARCHITECT.

PITS:

T1. STORMWATER PITS SHALL HAVE THE MINIMUM FOLLOWING DIMENSIONS U.N.O

PIT DEPTH:	PIT DIMENSIONS
LESS THAN 600mm	450 x 450 SQ.
600mm to 900mm	600 x 600 SQ.
900mm to 1200mm	600 x 900
GREATER THAN 1200mm	900 x 900 SQ.

T2. PITS > 1200MM IN DEPTH SHALL HAVE GALVANISED STEP IRONS INSTALLED.

T3. PIT GRATINGS TO BE HEAVY DUTY U.N.O.

T4. ALL PIT LIDS TO BE CAST IRON OR GALVANISED MILD STEEL U.N.O.

T5. ALL PITS TO BE CONSTRUCTED AS FOLLOWS :-

(I) PRECAST PITS IN ACCORDANCE WITH RELEVANT CODES AND LOCAL AUTHORITY REQUIREMENTS.

(II) BRICKWORK - PITS MAY BE CONSTRUCTED USING 230MM BRICKWORK FOR A MAXIMUM DEPTH OF 600MM, DEEPER PITS SHALL BE TO DETAIL DESIGN.

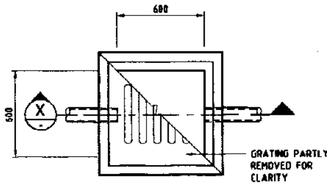
CONSTRUCTION:

C1. PROVIDE SEDIMENTATION AND EROSION CONTROL MEASURES AS DETAILED ON DRAWING NO. SY040117-ESMP01 PRIOR TO COMMENCEMENT OF EARTHWORKS ON SITE.

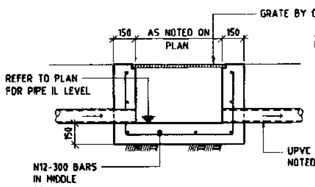
C2. BUILDER SHALL VERIFY AND CHECK DIMENSIONS AND LEVELS ON SITE, BEFORE COMMENCING WORK.

C3. GENERALLY GRADE ALL SURFACES TO PITS.

C4. ALL LEVELS AND GRADES SHOWN ON DRAWINGS SHALL BE STRICTLY ADHERED TO.



PIT PLAN
SCALE 1:20

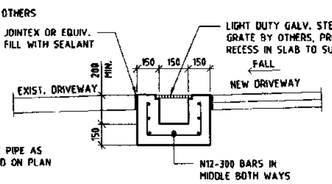


SECTION
SCALE 1:20

TYPICAL GRATED INLET PIT DETAIL

SCALE 1:20

- ALTERNATIVELY A PRECAST PIT MAY BE USED

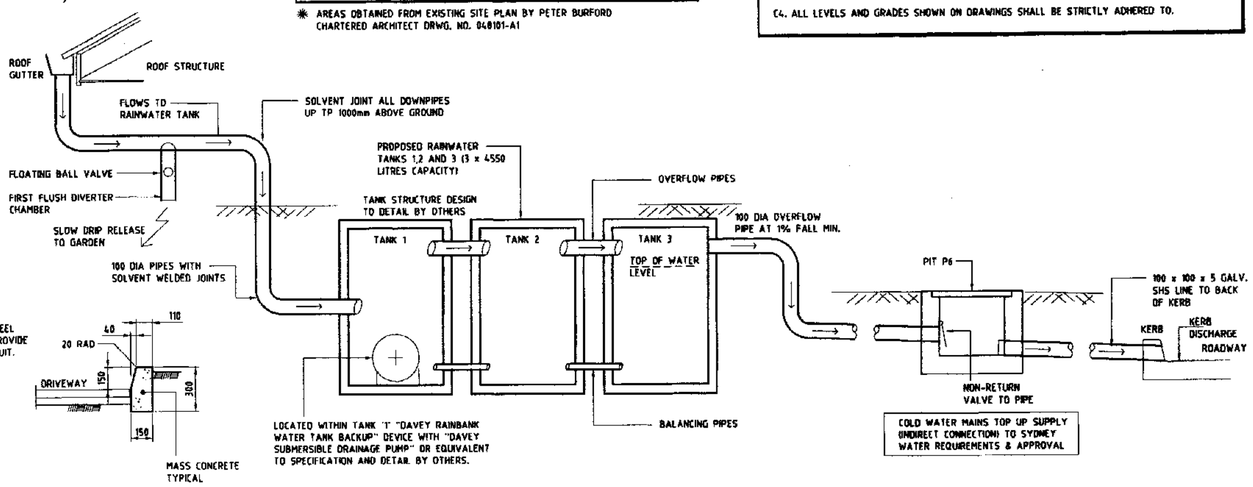


TYPICAL GRATED DRAIN DETAIL

SCALE 1:20

TYPICAL KERB (KO) DETAIL

SCALE 1:20



(SCHEMATIC DIAGRAM)

FIRST FLUSH WATER DIVERSION, RAINWATER TANK & OVERFLOW DETAILS

NOT TO SCALE - INDICATIVE ONLY

CONSTRUCTION

ISSUE	DESCRIPTION	DATE	APPROVED
A	ISSUED FOR CONSTRUCTION	20.10.05	
1	ISSUED FOR COMMENT	14.10.05	

This drawing shall not be scaled. Use figured dimensions only. Verify all dimensions on site.

DRG. CH'KED		DRAWN	SG
DES. CH'KED		DESIGN	MJ
APPROVED		DATE	OCT '05
		SCALE	AS SHOWN

CLIENT: MR. & MRS. ALLO

ARCHITECT: PETER BURFORD - ARCHITECT
TEL: (02) 9519 7398 FAX: (02) 9550 3241

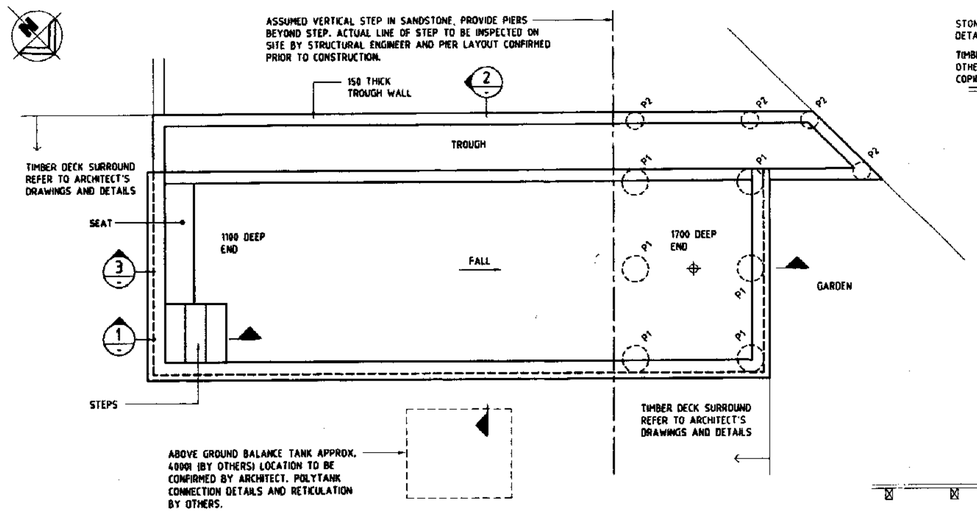
STRUCTURAL BUILDING DESIGN PTY LTD
STRUCTURAL & CIVIL CONSULTING ENGINEERS
PROJECT MANAGERS
SUITE 31, 401 PACIFIC HIGHWAY
ARTARMON, NSW. 2064
TEL. (02) 9438 3040
FAX (02) 9438 2013
E-MAIL:- sbd@sbd.net.au
SBD

PROJECT: NEW RESIDENCE at 81 MYOLA RD. NEWPORT NSW 2106

DRAWING TITLE: STORMWATER MANAGEMENT PLAN

DRAWING NUMBER: SY050174-SW01

ISSUE: A



SWIMMING POOL PLAN

SCALE 1:50

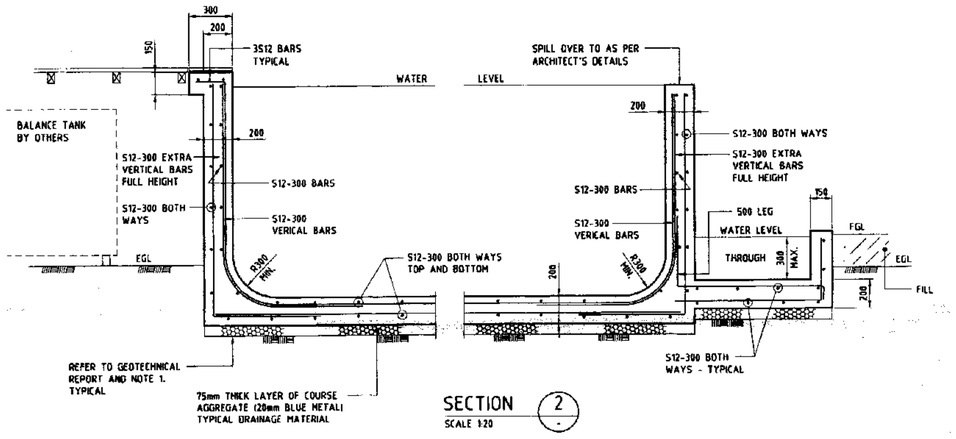
- 200 THICK REINFORCED FLOOR AND WALL SLAB U.N.O. REFER TO SECTIONS FOR REINFORCEMENT DETAILS. PLACE FLOOR SLAB ON 75mm THICK LAYER OF COURSE AGGREGATE (20mm BLUE METAL).
- WATERPROOF LINING, FIXTURES, FITTINGS AND FINISHES BY OTHERS.
- FINISHED LEVELS TO BE AS PER ARCHITECTS DETAILS.
- P1 ——— DENOTES 450Ø MASS CONCRETE PIERS AT 2400 MAX. CTS. ENGINEER TO APPROVE FOUNDING LEVEL AND ALLOWABLE BEARING CAPACITY.
- P2 ——— DENOTES 300Ø MASS CONCRETE PIERS AT 2400 MAX. CTS. ENGINEER TO APPROVE FOUNDING LEVEL AND ALLOWABLE BEARING CAPACITY.

NOTE 1:
POOL STRUCTURE TO BE FOUNDED ON HARD SHALE ROCK WITH AN ALLOWABLE BEARING CAPACITY EXCEEDING 800KPa FOUNDATION STRATA IS TO BE TESTED AND CONFIRMED BY GEOTECHNICAL ENGINEER AND A REPORT SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW. STRUCTURAL ENGINEER TO INSPECT REINFORCEMENT PRIOR TO CONCRETE POUR. AT DEEP END POOL BASE TO BE PIERED TO 800 KPa AS SHOWN, TO GIVE UNIFORM BEARING THROUGHOUT.

TYPICAL STEP DETAIL

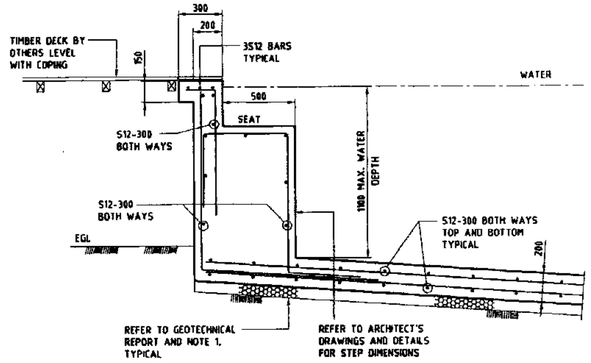
SECTION 1

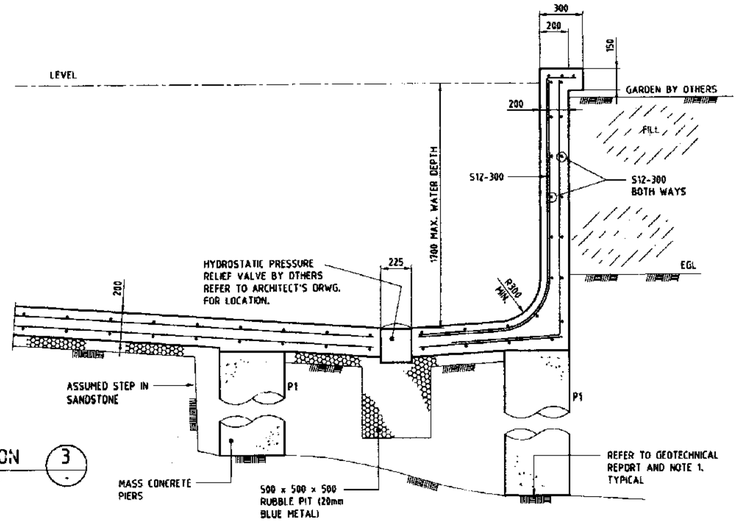
SCALE 1:20



SECTION 2

SCALE 1:20





SECTION 3

SCALE 1:20

POOL NOTES:

GENERAL:

1. This specification shall be read in conjunction with the structural drawings and the Architectural drawings and specification.
2. Setting-out dimensions or member sizes shall not be scaled from the drawings.
3. Pool area shall be fenced or secured to local Authority requirements.
4. This drawing is prepared with limited site knowledge. Any unforseen site conditions that may effect the design must be immediately notified to the Engineer.
5. Pool construction shall conform to A.S. 2783.
6. Builder, please note that all records must be kept as outline in Clause 6.4 of A.S. 2783.

FOUNDATIONS:

1. Required minimum safe bearing capacity of piered foundation material shall be 800KPa into HARD SHALE ROCK.
2. Foundation material shall be approved by the Engineer for safe bearing capacity before construction of the pool.
3. Foundation excavation shall free be kept of water. If the bearing surface deteriorates before concrete is poured it shall be cleaned out of all loose, soft material down to the specified bearing capacity.
4. All supporting soil shall be firm undisturbed natural material of the same type throughout.
5. Builder to allow 2.0 m contract length of piers.
6. Natural & Filled Ground lines are indicative only.

CONCRETE:

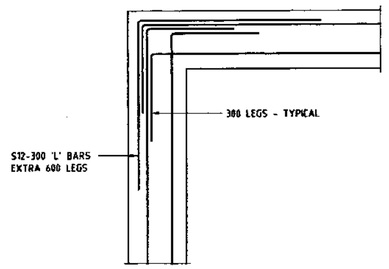
1. All concrete shall be Grade 25 with a maximum aggregate size of 20mm, and a maximum slump of 80mm.
2. Construction shall comply with Australian Codes AS 1379, AS 3600 and those mentioned in AS 3600. Refer to Clause 72 of AS 2783.
3. Concrete shall be placed pneumatically with approved pumping machine.
4. Concrete shall be cured by owner for 7 days by keeping all exposed surfaces wet with water.
5. No concrete shall be placed until the Engineer has inspected and approved the placed reinforcement.
6. All reinforcement shall be as follows.

SYMBOL	TYPES
R	Structural grade round bars to AS1302(230MPa)
S	Structural grade deformed bars to AS1302(230MPa)
N	Tempcore deformed bars to AS1302(410Y)
SL	Fabric to AS1304(450MPa)
NOTE	The number following R,S,& Y is the bar diameter in millimeters.

7. Reinforcement shall have the following clear cover of concrete:

Formwork faces	- 30mm
Earth faces	- 40mm
Walls and steps	- 40mm inside face
Floor and coping	- 40mm to top of concrete

8. Splices in reinforcement shall be : Trench Mesh and Fabric-2 transverse wires plus 25mm. S12-580mm. , S16-650mm.
9. No holes or chases or embedment of pipes other than those shown on the structural drawing shall be made in concrete members without the prior approval of the Engineer.
10. Polythene membrane shall have a thickness of 0.2mm (min). Lap all joints 200mm.
11. Reinforcement is represented diagrammatically, it is not necessarily shown in true projection.
12. Welding of reinforcement is not permitted unless shown on the drawing or approved by the Engineer.
13. Top and bottom reinforcement in slabs shall be supported in both directions at maximum centres of 600mm for bars 10mm or less, 900mm for bars 12mm and 16mm and 750mm for fabric.
14. Calcium chloride shall not be used as an admixture.
15. No internal finishes shall be applied for at least 28 days after spraying of the concrete shell.



TYPICAL CORNER REO BAR DETAIL

SCALE 1:10

CONSTRUCTION

ISSUE	DESCRIPTION	DATE	APPROVED
A	ISSUED FOR CONSTRUCTION	20.10.05	
1	ISSUED FOR COMMENT	14.10.05	

DRG. CH'KED	
DES. CH'KED	
APPROVED	
DRAWN	SG
DESIGN	AK
DATE	OCT '05
SCALE	AS SHOWN

CLIENT: MR. & MRS. ALLO

ARCHITECT: PETER BURFORD - ARCHITECT
TEL: (02) 9519 7398 FAX: (02) 9550 3241

STRUCTURAL BUILDING DESIGN PTY LTD

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SUITE 31, 401 PACIFIC HIGHWAY
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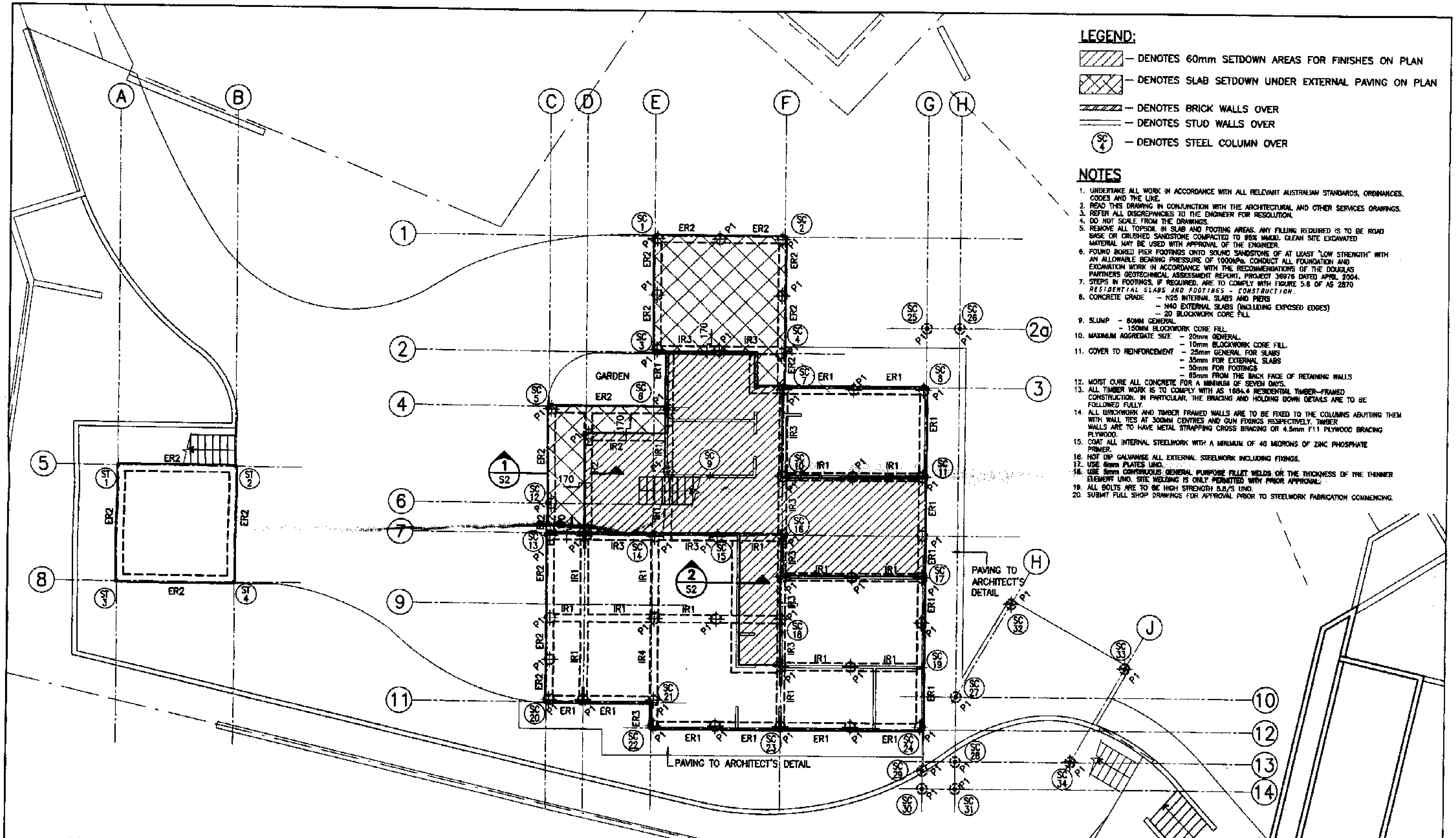
TEL. (02) 9438 3040
FAX (02) 9438 2013
E-MAIL:- sbd@sbd.net.au

PROJECT: NEW RESIDENCE at 81 MYOLA RD. NEWPORT NSW 2106

DRAWING NUMBER: SY050174-S01

DRAWING TITLE: SWIMMING POOL PLAN, NOTES AND DETAILS

ISSUE: A



LEGEND:

- DENOTES 60mm SETDOWN AREAS FOR FINISHES ON PLAN
- DENOTES SLAB SETDOWN UNDER EXTERNAL PAVING ON PLAN
- DENOTES BRICK WALLS OVER
- DENOTES STUD WALLS OVER
- (SC 4) DENOTES STEEL COLUMN OVER

NOTES

1. UNDERTAKE ALL WORK IN ACCORDANCE WITH ALL RELEVANT AUSTRALIAN STANDARDS, ORDINANCES, CODES AND THE LIKE.
2. READ THIS DRAWING IN CONJUNCTION WITH THE ARCHITECTURAL AND OTHER SERVICES DRAWINGS.
3. REFER ALL DISCREPANCIES TO THE ENGINEER FOR RESOLUTION.
4. DO NOT SCALE FROM THE DRAWINGS.
5. REMOVE ALL TOPSOIL IN SLAB AND FOOTING AREAS. ANY FILLING REQUIRED IS TO BE ROAD BASE OR CRUSHED SANDSTONE COMPACTED TO 95% MMDD. CLEAN SITE EXCAVATED MATERIAL MAY BE USED WITH APPROVAL OF THE ENGINEER.
6. FOUND BORED PIER FOOTINGS ONTO SOUND SANDSTONE OF AT LEAST "LOW STRENGTH" WITH AN ALLOWABLE BEARING PRESSURE OF 1000kPa. CONDUCT ALL FOUNDATION AND EXCAVATION WORK IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE DOUGLAS PARTNERS GEOTECHNICAL ASSESSMENT REPORT, PROJECT 36976 DATED APRIL 2004.
7. STEPS IN FOOTINGS, IF REQUIRED, ARE TO COMPLY WITH FIGURE 5.6 OF AS 2870 *RESIDENTIAL SLABS AND FOOTINGS - CONSTRUCTION.*
8. CONCRETE GRADE – N25 INTERNAL SLABS AND PIERS
   – N40 EXTERNAL SLABS (INCLUDING EXPOSED EDGES)
   – 20 BLOCKWORK CORE FILL
9. SLUMP – 80MM GENERAL.
   – 150MM BLOCKWORK CORE FILL.
10. MAXIMUM AGGREGATE SIZE – 20mm GENERAL.
    – 10mm BLOCKWORK CORE FILL.
11. COVER TO REINFORCEMENT – 25mm GENERAL FOR SLABS
    – 35mm FOR EXTERNAL SLABS
    – 50mm FOR FOOTINGS
    – 65mm FROM THE BACK FACE OF RETAINING WALLS
12. MOIST CURE ALL CONCRETE FOR A MINIMUM OF SEVEN DAYS.
13. ALL TIMBER WORK IS TO COMPLY WITH AS 1684.4 RESIDENTIAL TIMBER–FRAMED CONSTRUCTION. IN PARTICULAR, THE BRACING AND HOLDING DOWN DETAILS ARE TO BE FOLLOWED FULLY.
14. ALL BRICKWORK AND TIMBER FRAMED WALLS ARE TO BE FIXED TO THE COLUMNS ABUTTING THEM WITH WALL TIES AT 300MM CENTRES AND GUN FIXINGS RESPECTIVELY. TIMBER WALLS ARE TO HAVE METAL STRAPPING CROSS BRACING OR 4.5mm F11 PLYWOOD BRACING PLYWOOD.
15. COAT ALL INTERNAL STEELWORK WITH A MINIMUM OF 40 MICRONS OF ZINC PHOSPHATE PRIMER.
16. HOT DIP GALVANISE ALL EXTERNAL STEELWORK INCLUDING FIXINGS.
17. USE 6mm PLATES UNO.
18. USE 5mm CONTINUOUS GENERAL PURPOSE FILLET WELDS OR THE THICKNESS OF THE THINNER ELEMENT UNO. SITE WELDING IS ONLY PERMITTED WITH PRIOR APPROVAL.
19. ALL BOLTS ARE TO BE HIGH STRENGTH 8.8/S UNO.
20. SUBMIT FULL SHOP DRAWINGS FOR APPROVAL PRIOR TO STEELWORK FABRICATION COMMENCING.

GROUND FLOOR SLAB & FOOTING PLAN

110 THICK SLABS U.N.O.

1. WHERE SLABS BEAR DIRECTLY ON ROCK REDUCE SLAB THICKNESS TO 75mm THICK.
2. REINFORCE ALL SLABS WITH SL82 FABRIC IN TOP THROUGHOUT.

FABRIC LAP DETAIL

No	Amendments	Date
A	ISSUED FOR CONSTRUCTION CERTIFICATE	24.10.05

ARCHITECT
Peter Burford
Chartered Architect
166 Denison St Newtown NSW 2042
ph (02) 9519 7398 fax (02) 9550 3241

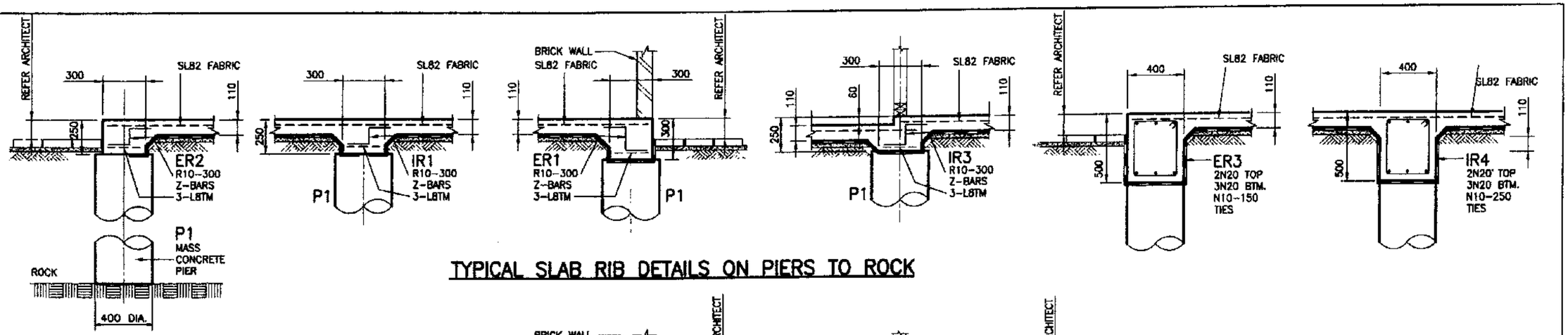
N

Bruce Delprado
Structural Consulting Engineer
3 Maytone Avenue, Killara 2071
Tel 9418 1373 Fax 9418 1135
Mob 0418 181 373 ABN 17 458 258 654
E-mail bdelprado@optushome.com.au

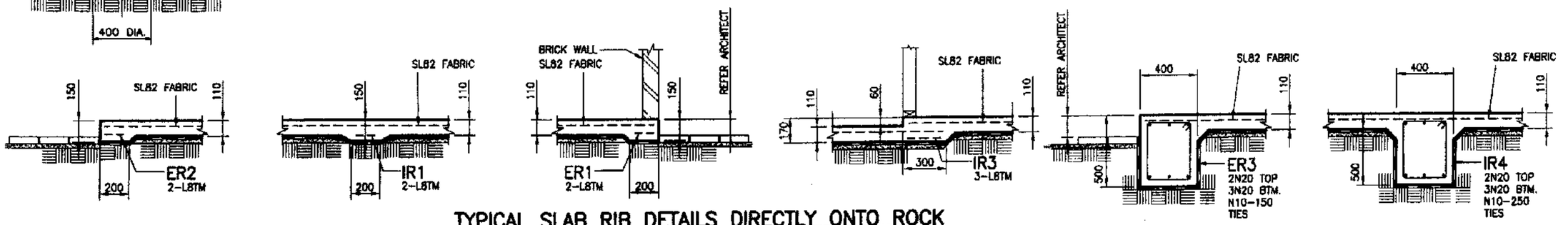
Project: NEW RESIDENCE AT 81 MYOLA RD NEWPORT NSW 2106
For: MR and MRS ALLO

Drawing Title: GROUND FLOOR SLAB PLAN

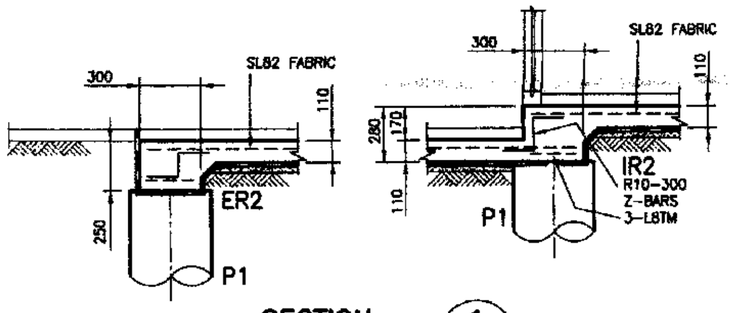
Scale at A2: 1:100	Designed: B.D.
Date: OCT 2005	Drawn: I.G.S.
Job No: 04/46	Sheet No: S1 A



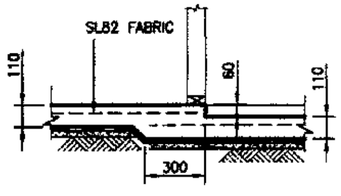
TYPICAL SLAB RIB DETAILS ON PIERS TO ROCK



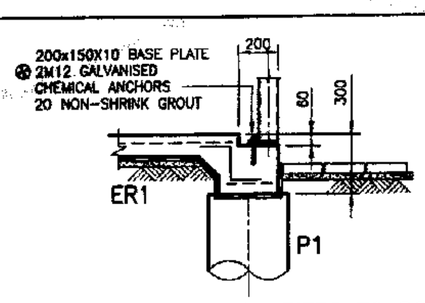
TYPICAL SLAB RIB DETAILS DIRECTLY ONTO ROCK



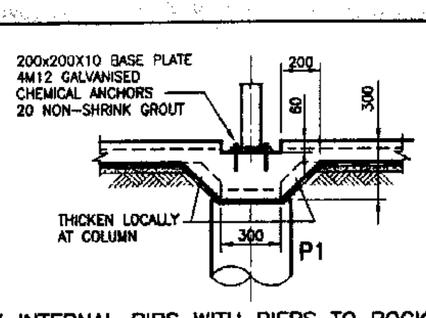
SECTION 1 / S1



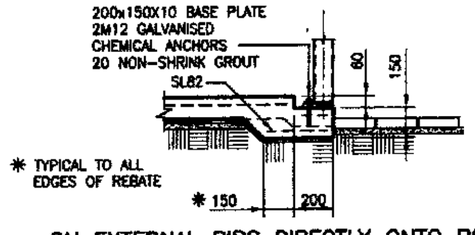
SECTION 2 / S1



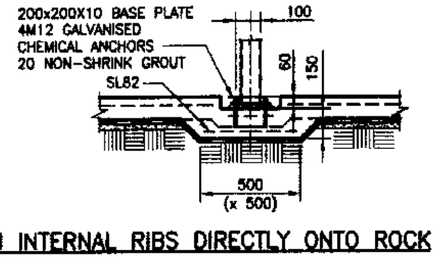
ON EXTERNAL RIBS WITH PIERS TO ROCK



ON INTERNAL RIBS WITH PIERS TO ROCK



ON EXTERNAL RIBS DIRECTLY ONTO ROCK



ON INTERNAL RIBS DIRECTLY ONTO ROCK

⊛ FOR COLUMN SC22 PROVIDE
200x200X16 BASE PLATE
3M20 CAST IN HD BOLTS,
300 EMBEDMENT INTO ER3

TYPICAL BASE PLATE DETAILS

No	Amendments	Date
A	ISSUED FOR CONSTRUCTION CERTIFICATE	24.10.05

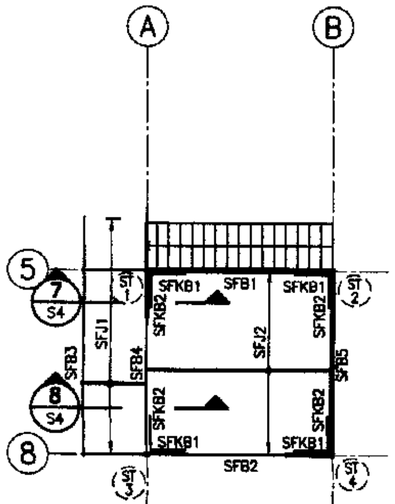
ARCHITECT
Peter Burford
Chartered Architect
166 Denison St Newtown NSW 2042
ph (02) 9519 7398 fax (02) 9550 3241

Bruce Delprado
Structural Consulting Engineer
3 Mayoune Avenue, Kiama 2071
Tel 9418 1373 Fax 9418 1133
Mob 0428 181 373 ABN 11 658 238 654
E-mail brucedelprado@optusHome.com.au

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
GROUND FLOOR SLAB
DETAILS

Scale at A2	Designed
1:20	B.D.
Date	Drawn
OCT 2005	I.G.S.
Job No	Sheet No
04/46	S2 A



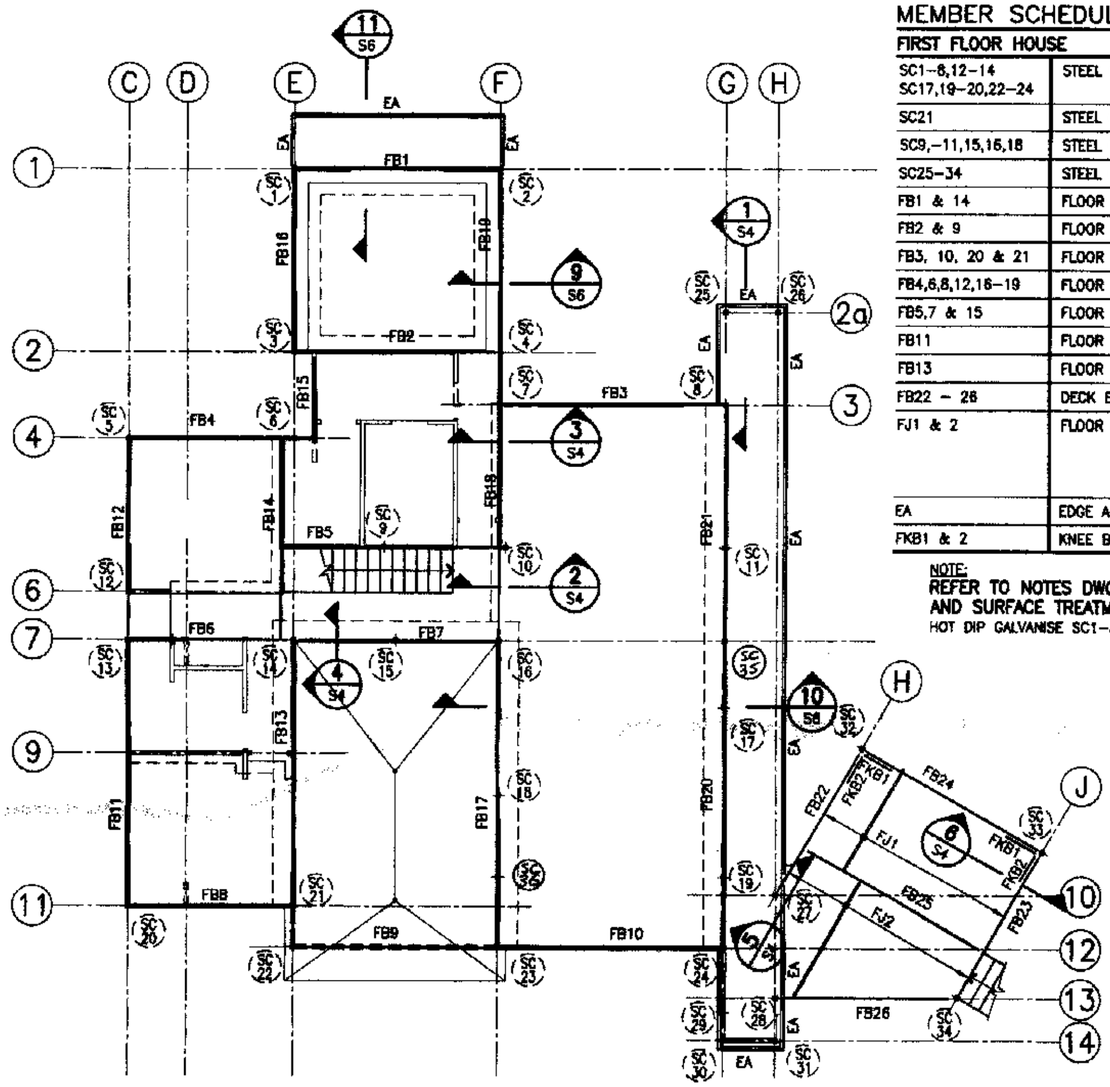
STUDIO FIRST FLOOR STEEL FRAMING PLAN

MEMBER SCHEDULE

FIRST FLOOR STUDIO

ST1–4	STEEL COLUMN	100 x 100 x 4 SHS
SFB1, 2, 4 & 5	FLOOR BEAMS	200UB22.3
SFB3	FLOOR BEAMS	200X63 HYSPAN LVL TREATED TO H2
SFJ1	FLOOR JOISTS	90x45 F7 TREATED PINE AT 450 CRS or 100x50 F14 HARDWOOD OF DURABILITY GRADE 2 AT 450 CRS.
SFJ2	FLOOR JOISTS	240x45 MGP10 AT 450 CRS or 200x45 HYSPAN AT 400 CRS.
SFKB1 & SFKB2	KNEE BRACE	8 GUSSET PLATES

NOTE:
REFER TO NOTES DWG S1 FOR FABRICATION REQUIREMENTS AND SURFACE TREATMENT U.N.O.
HOT DIP GALVANISE ALL COLUMNS & STEEL BEAMS



FIRST FLOOR STEEL FRAMING PLAN

(SC22) – DENOTES COLUMNS UNDER

(SC1) – DENOTES COLUMNS OVER

MEMBER SCHEDULE

FIRST FLOOR HOUSE

SC1–8,12–14 SC17,19–20,22–24	STEEL COLUMNS	100 x 100 x 4 SHS
SC21	STEEL COLUMN	100 x 100 x 6 SHS
SC9,–11,15,16,18	STEEL COLUMNS	89 x 89 x 5 SHS
SC25–34	STEEL COLUMNS	100 x 100 x 4 SHS
FB1 & 14	FLOOR BEAMS	250UB37.3
FB2 & 9	FLOOR BEAMS	310UB32
FB3, 10, 20 & 21	FLOOR BEAMS	310UB40.4
FB4,6,8,12,16–19	FLOOR BEAMS	250UB25.7
FB5,7 & 15	FLOOR BEAMS	200UB18.2
FB11	FLOOR BEAMS	360UB50.7
FB13	FLOOR BEAMS	410UB53.7
FB22 – 26	DECK BEAMS	200UB22.3
FJ1 & 2	FLOOR JOISTS	180x45 MGP10 AT 450 CRS TREATED PINE or 150x50 F14 HARDWOOD OF DURABILITY GRADE 2 AT 450 CRS.
EA	EDGE ANGLE	200x200x13 EA
FKB1 & 2	KNEE BRACE	8 GUSSET PLATES

NOTE:
REFER TO NOTES DWG S1 FOR FABRICATION REQUIREMENTS AND SURFACE TREATMENT U.N.O.
HOT DIP GALVANISE SC1–5 & SC25–34, FKB1, 2 & FB22 – FB26.

No	Amendments	Date
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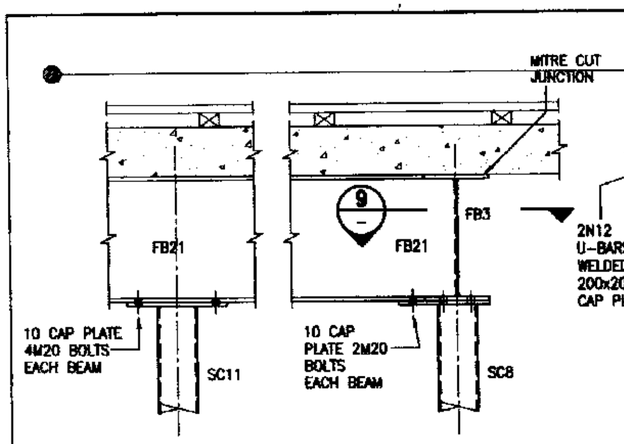
ARCHITECT
Peter Burford
Chartered Architect
166 Denison St Newtown NSW 2042
ph (02) 9519 7386 fax (02) 9550 3241

Bruce Delprado
Structural Consulting Engineer
3 Maylene Avenue, Killara 2071
Tel 9418 1373 Fax 9418 1135
Mob 0426 181 373 ABN 17 658 228 634
E-mail bdelprado@optusnet.com.au

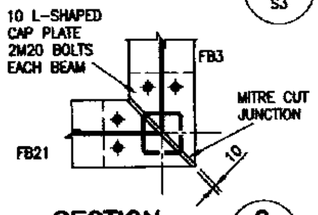
Project: NEW RESIDENCE AT 81 MYOLA RD NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title: FIRST FLOOR STEEL FRAMING PLAN

Scale at A2 1:100	Designed B.D.
Date OCT 2005	Drawn I.G.S.
Job No 04/46	Sheet No S3 A

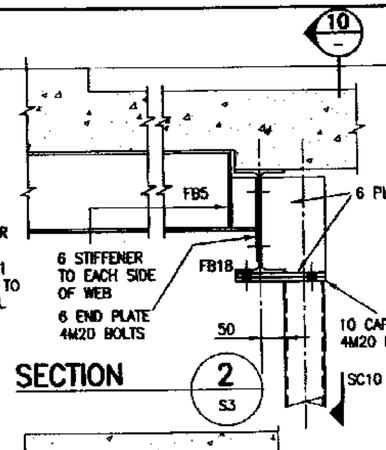


SECTION 1 S3

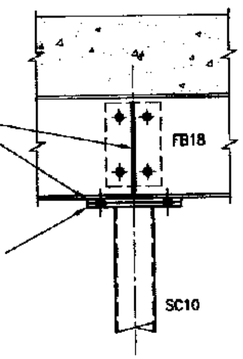


SECTION 9 –

TYPICAL FOR ALL CORNER CONNECTIONS



SECTION 2 S3



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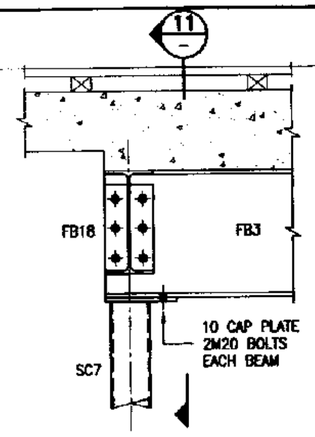
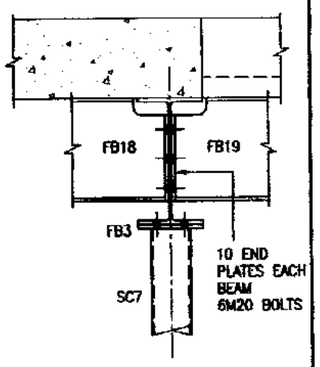


SECTION 3 S3



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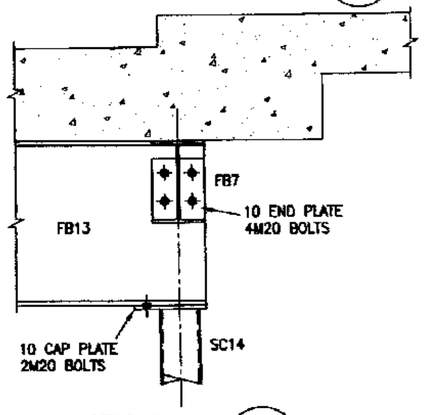

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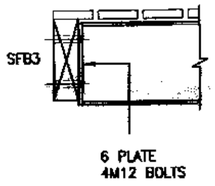
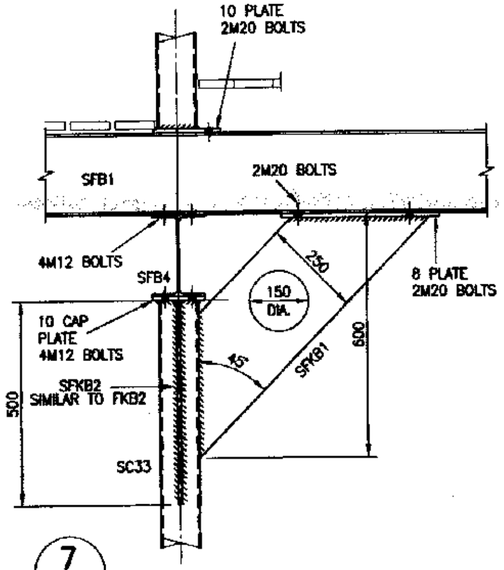
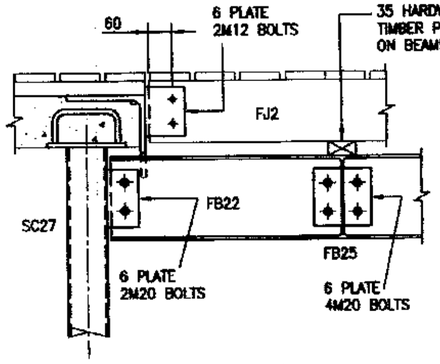




SECTION 7 S3



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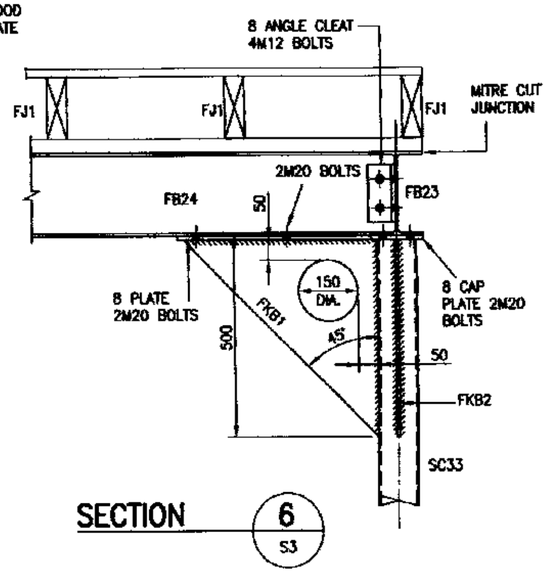
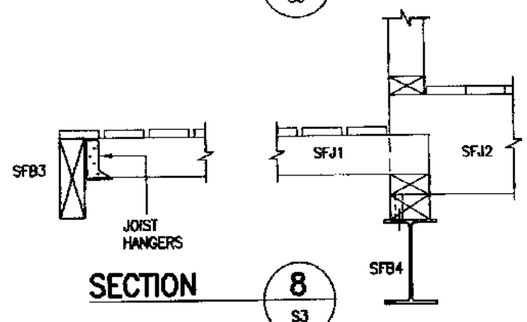


SECTION 6 S3



SECTION 8 S3

No	Amendments	Date
A	ISSUED FOR CONSTRUCTION CERTIFICATE	24.10.05

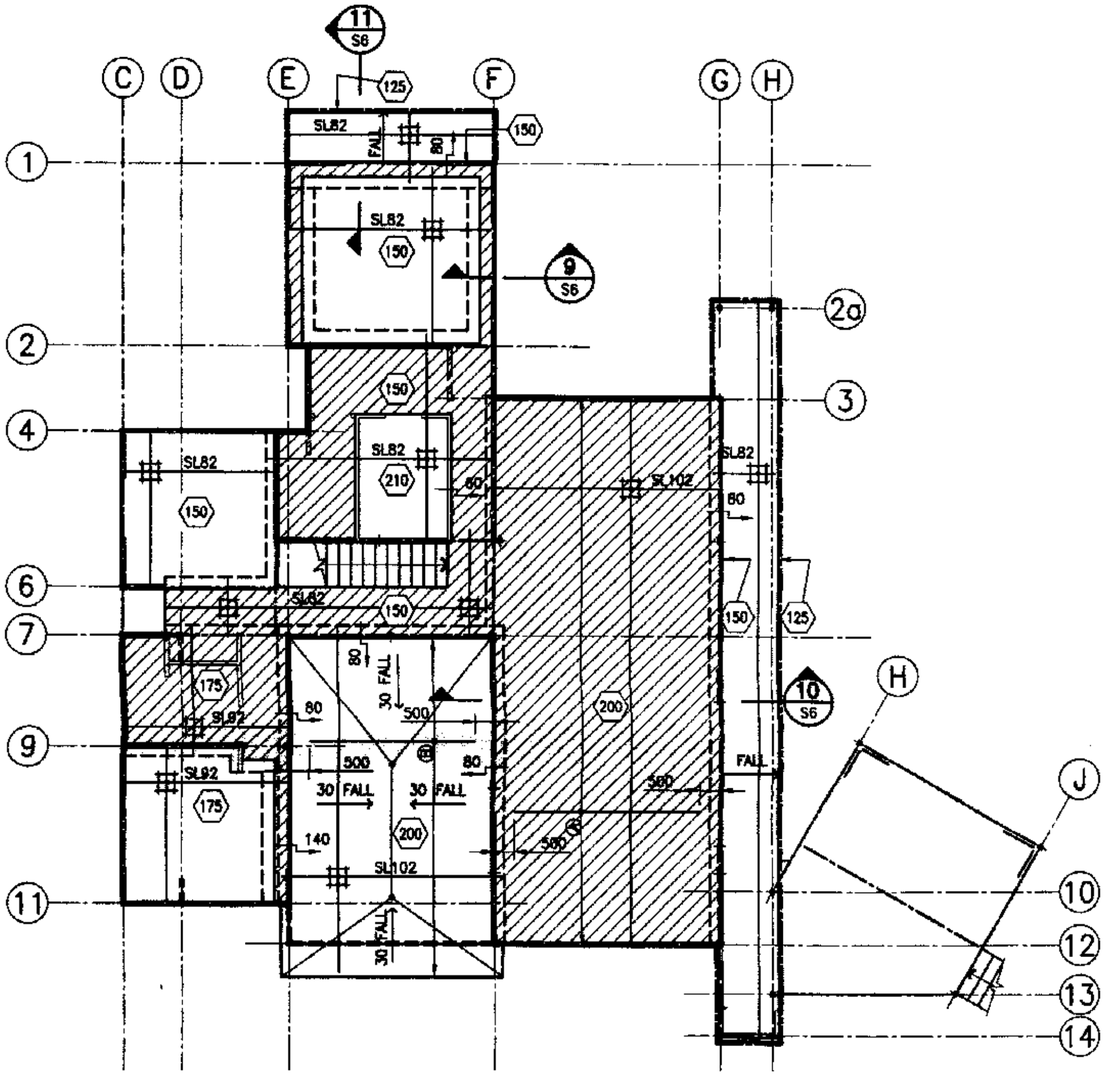
ARCHITECT
Peter Burford
Chartered Architect
166 Denison St Newtown NSW 2042
ph (02) 9519 7398 fax (02) 9550 3241

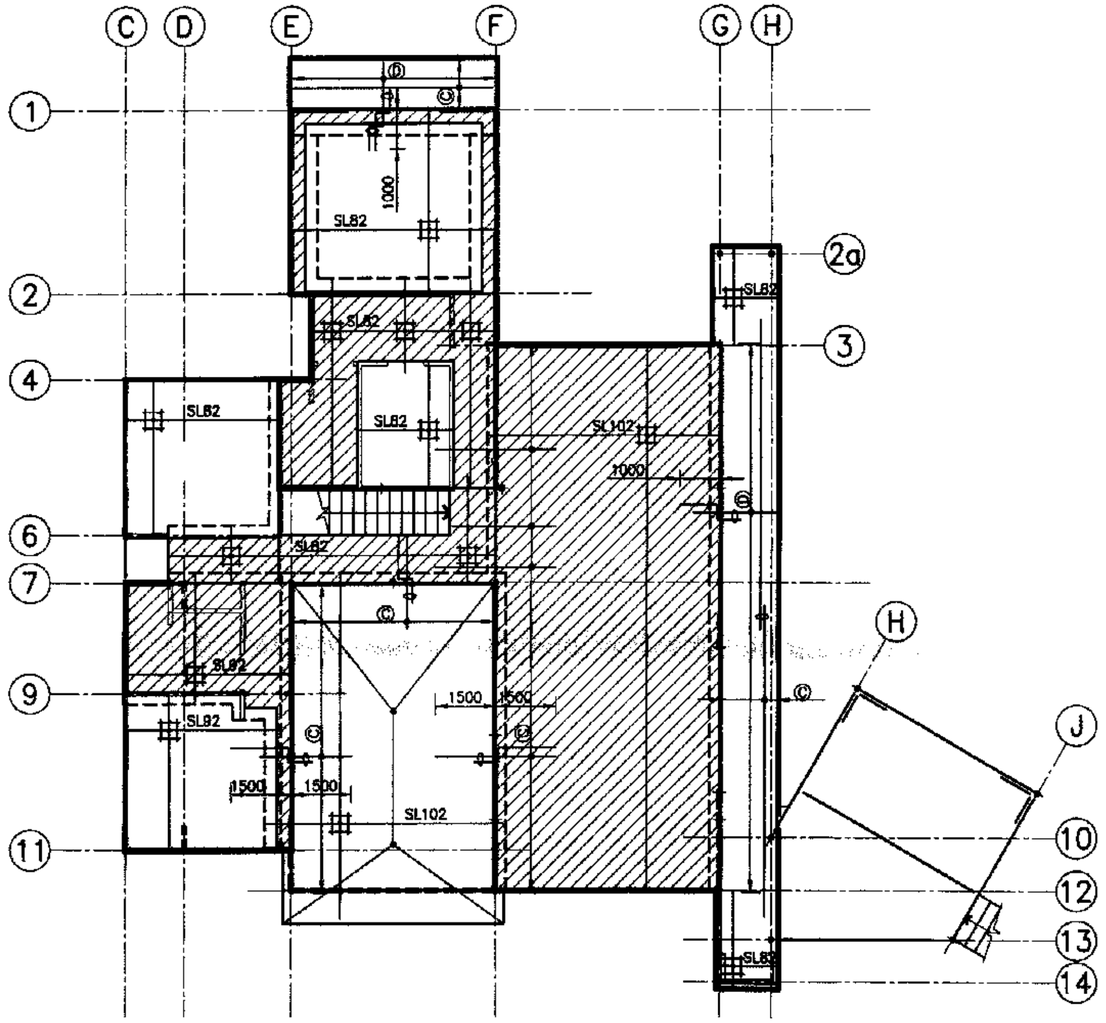
Bruce Delprado
Structural Consulting Engineer
3 Maytone Avenue, Killara 2071
Tel 9418 1373 Fax 9418 1135
Mob 0428 181 373 ABN 17 659 258 654
E-mail bdelprado@optusnet.com.au

Project: NEW RESIDENCE AT 81 MYOLA RD NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title: FIRST FLOOR STEEL DETAILS

Scale at A2	1:10
Designed	B.D.
Date	OCT 2005
Drawn	I.G.S.
Job No	04/46
Sheet No	S4 A





FIRST FLOOR SLAB PLAN BOTTOM REINFORCEMENT

REINFORCEMENT SCHEDULE

MARK	SIZE
Ⓐ	N12–400
Ⓑ	N12–600
Ⓒ	N12–300
Ⓓ	N12–200

FOR TIE BARS NOT SHOWN
PROVIDE N12–300 CRS

LAID 1ST | BTM.
LAID LAST | TOP

REINFORCEMENT LAYER ORDER

FIRST FLOOR SLAB PLAN TOP REINFORCEMENT

LEGEND:

- DENOTES 80mm SETDOWN AREAS FOR FINISHES ON PLAN
- DENOTES STUD WALLS OVER
- (150) — DENOTES SLAB THICKNESS

No	Amendments	Date
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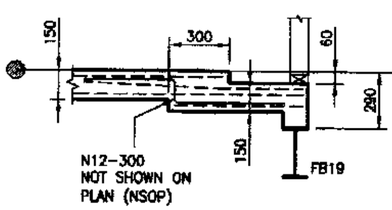
ARCHITECT
Peter Burford
Chartered Architect
166 Denison St Newtown NSW 2042
ph (02) 9519 7398 fax (02) 9550 3241

Bruce Delprado
Structural Consulting Engineer
3 Megarra Avenue, Kilsyth 3071
Tel 9418 1373 Fax 9418 1133
Mob 0428 181 373 ABN 17 638 258 654
E-mail: bdelprado@optusnet.com.au

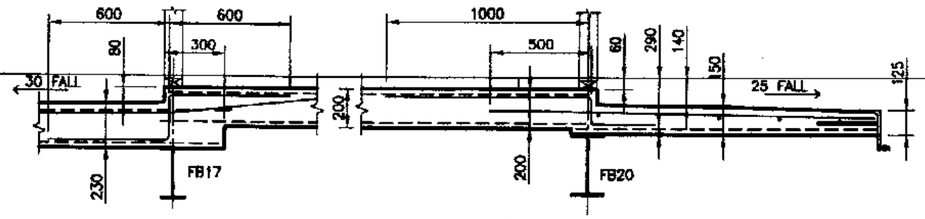
Project: NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title: FIRST FLOOR CONCRETE SLAB PLANS

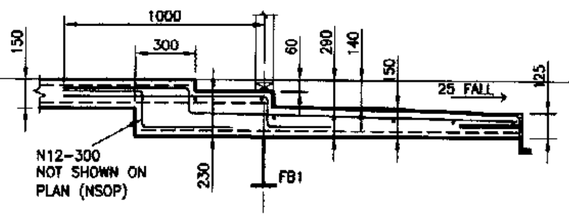
Scale at A2	Designed
1:100	B.D.
Date	Drawn
OCT 2005	I.G.S.
Job No	Sheet No
04/46	S5 A



SECTION 9 / 9 — S5 / S3



SECTION 10 / 10 — S5 / S3



SECTION 11 / 11 — S5 / S3

No	Amendments	Date
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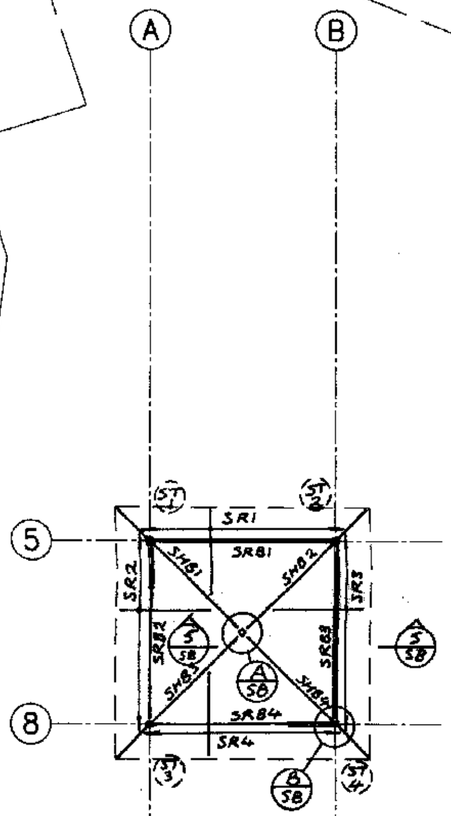
ARCHITECT
Peter Burford
Chartered Architect
166 Denison St Newtown NSW 2042
ph (02) 9519 7398 fax (02) 9550 3241

Bruce Delprado
Structural Consulting Engineer
5 Mayfield Avenue, Kiama 2071
Tel 9418 1373 Fax 9418 1135
Mob 0428 181 379 ABN 17 658 258 634
E-mail bdelprado@optusnet.com.au

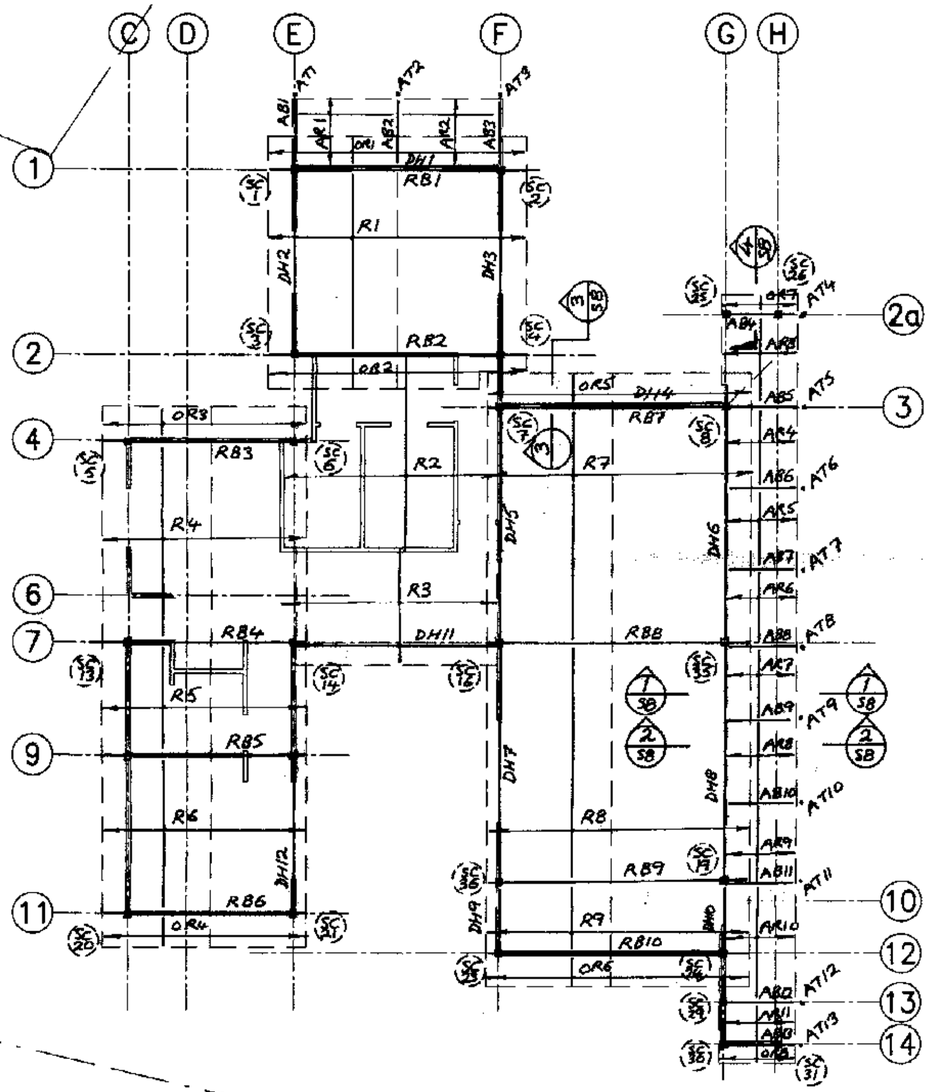
Project: NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title: FIRST FLOOR SLAB
CONCRETE DETAILS

Scale at A2 1:100	Designed B.D.
Date OCT 2005	Drawn I.G.S.
Job No 04/46	Sheet No S6 A



STUDIO ROOF FRAMING PLAN



ROOF FRAMING PLAN

(SC1) - DENOTES COLUMNS UNDER

MEMBER SCHEDULE

ROOF TO HOUSE

SC1, 2, 7, 8, 16, 19, 23, 24, 35 & 36	COLUMNS	100x100x6.0 SHS
SC3 – 6, 13, 14, 20, 21, 25, 26, 29, 30 & 31	COLUMNS	100x100x4.0 SHS
RB1 - 6	ROOF BEAMS	200 UB 22.3
RB7 - 10	ROOF BEAMS	200 UB 29.8
AB1 - 13	AWNING BEAMS	150 UB 14.0
DH1, 4, 6 & 8	DOOR HEAD BEAMS	200x100x9.0 RHS
DH2, 3, 7 & 11	DOOR HEAD BEAMS	200x100x6.0 RHS
DH5, 9 & 10	DOOR HEAD BEAMS	200x100x4.0 RHS
R1, 4, 5 & 6	RAFTERS	C20019 AT 900 CRS MAXIMUM WITH ONE ROW OF BRIDGING
R2 & 3	RAFTERS	140x45 MGP10 AT 600 CRS
R7, 8 & 9	RAFTERS	C20024 AT 900 CRS MAXIMUM WITH ONE ROW OF BRIDGING
AR1 - 11	AWNING RAFTERS	C10012 AT 900 CRS MAXIMUM WITH ONE ROW OF BRIDGING
OR1 – 6	ROOF OUTRIGGERS	50x50x3.0 SHS AT 600 CRS MAX.
OR7 & 8	ROOF OUTRIGGERS	100x75x6 UA AT 600 CRS MAX.
OR9	SUNSHADE OUTRIGGERS	50x50x3.0 SHS AT 600 CRS MAX.
AT1 - 11	ROOF TIE DOWNS	24mm DIAMETER ROD THREADED AT ONE END

NOTE: COLUMNS SC9 – 12, 15, 17, 18, 22, 27, 28, 32, 33 & 34 STOP AT FIRST FLOOR LEVEL

MEMBER SCHEDULE

ROOF TO STUDIO

ST1 – 4	COLUMNS	89x89x5.0 SHS
SRB1 - 4	LINTEL BEAMS	380x63 HYSPAN
SHB1 - 4	HIP RAFTERS	170x45 HYSPAN
SR1 - 4	RAFTERS	140x45 MGP10 AT 600 CRS
	CEILING JOISTS	90x45 MGP10 AT 600 CRS
	HANGING BEAM	240x45 MGP10 ACROSS CENTRE OF STUDIO

NOTE: ALL WALLS LINED INTERNALLY WITH 4.5MM F11 PLYWOOD BRACING

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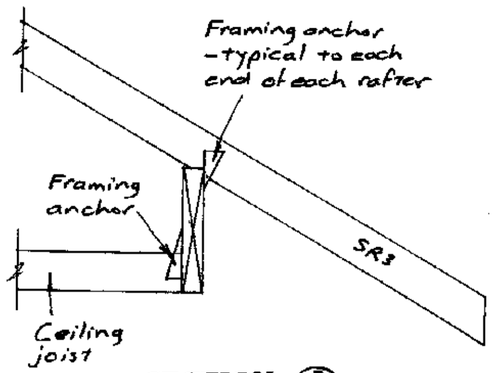
ARCHITECT
Peter Burford
Chartered Architect
166 Denison St Newtown NSW 2042
ph (02) 9519 7366 fax (02) 9550 3241

Bruce Delprado
Structural Consulting Engineer
3 Mayoona Avenue, Kiliara 2071
Tel 9418 1373 Fax 9418 1135
Mob 0428 181 373 ABN 17 658 258 654
E-mail bdelprado@optusnet.com.au

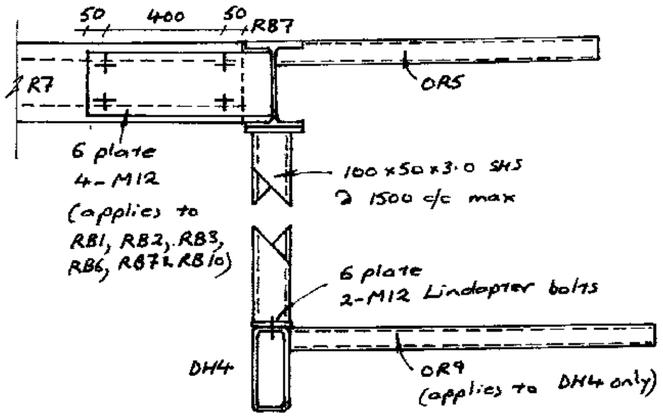
Project: NEW RESIDENCE AT 81 MYOLA RD NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title: ROOF FRAMING PLAN

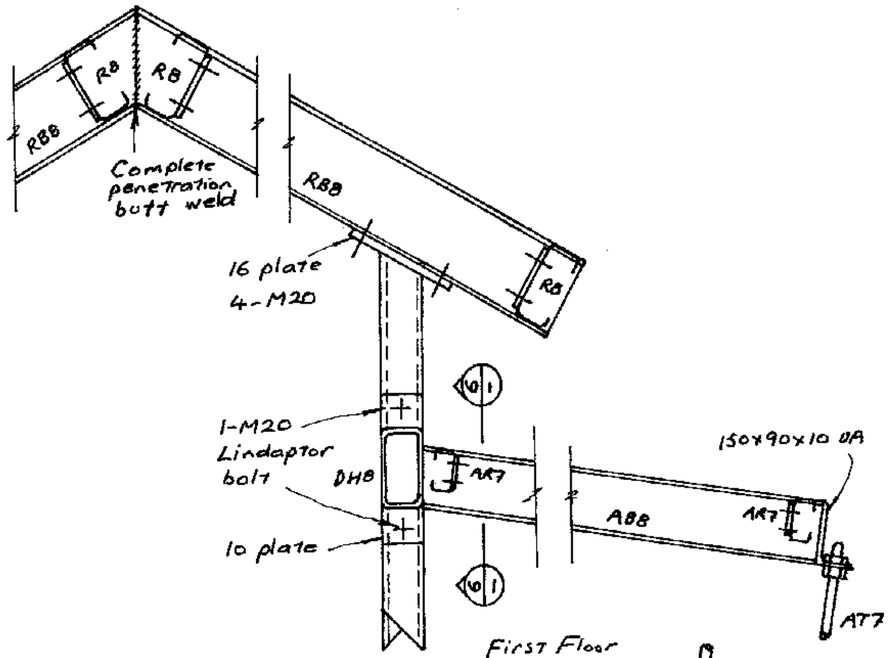
Scale at A2	1:100
Designed	B.D.
Date	OCT 2005
Drawn	I.G.S.
Job No	04/46
Sheet No	S7 A



SECTION 5 / S7



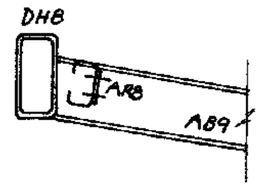
SECTION 3 / S7



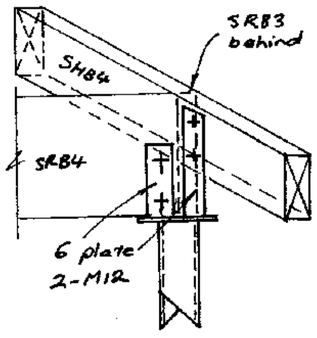
SECTION 1 / S7

DETAIL B / S7

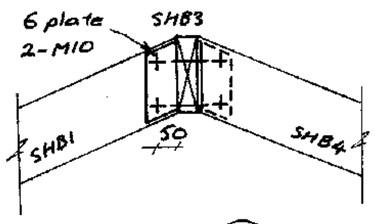
DETAIL A / S7



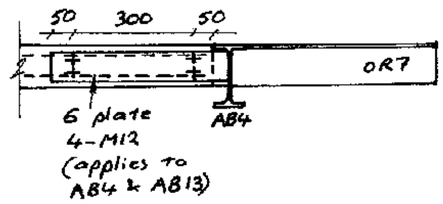
SECTION 2 / S7



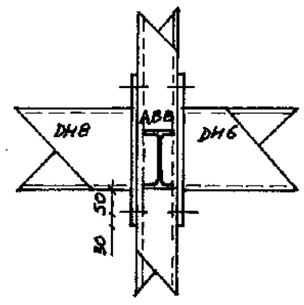
SECTION 8 / —



SECTION 7 / —



SECTION 4 / S7



SECTION 6 / —

No	Amendments	Date
A	ISSUED FOR CONSTRUCTION CERTIFICATE	24.10.06

ARCHITECT
Peter Burford
Chartered Architect
166 Denison St Newtown NSW 2042
ph (02) 9519 7398 fax (02) 9550 3241

Bruce Delprado
Structural Consulting Engineer
5 Maytone Avenue, Killara 2071
Tel 9418 1373 Fax 9418 1335
Mob 0428 181 373 ABN 17 658 258 654
E-mail bdelprado@optusnet.com.au

Project: NEW RESIDENCE AT 81 MYOLA RD NEWPORT NSW 2106
For: MR and MRS ALLO

Drawing Title: **ROOF FRAMING DETAILS**

Scale	Designed
	B.D.
Date	Drawn
Drawing No	Sheet No
04/46	S8 A

DRAWING SCHEDULE

ARCHITECTURAL DRAWINGS

Drawing No	Sheet No	Drawing Title
C050970	A1	CONSTRUCTION DRAWINGS, COVER SHEET AND SCHEDULE
C040102	A2	NEW SITE PLAN
C040103	A3	GROUND FLOOR PLAN
C040104	A4	FIRST FLOOR PLAN
C040105	A5	SECTIONS A-A and B-B, NORTH ELEVATION and SOUTH ELEVATION
C040106	A6	EAST and WEST ELEVATIONS, STUDIO NORTH and SOUTH ELEVATIONS
C040107	A7	ROOF PLAN and INSULATION NOTES
C050601	W1	WINDOW SCHEDULE, GROUND FLOOR PLAN, WINDOW LOCATIONS AND NUMBERS
C050602	W2	WINDOW SCHEDULE, FIRST FLOOR PLAN, WINDOW LOCATIONS AND NUMBERS
C050603	W2	WINDOW SCHEDULE, ELEVATIONS, RESIDENCE - EAST FACING WINDOWS, STUDIO - ALL WINDOWS
C050604	W4	WINDOW SCHEDULE, ELEVATIONS, RESIDENCE - SOUTH FACING WINDOWS, PART 1
C050605	W5	WINDOW SCHEDULE, ELEVATIONS, RESIDENCE - SOUTH FACING WINDOWS, PART 2
C050606	W6	WINDOW SCHEDULE, ELEVATIONS, RESIDENCE - NORTH FACING WINDOWS, PART 1
C050607	W7	WINDOW SCHEDULE, ELEVATIONS, RESIDENCE - NORTH FACING WINDOWS, PART 2
C050608	W8	WINDOW SCHEDULE, ELEVATIONS, RESIDENCE - WEST FACING WINDOWS

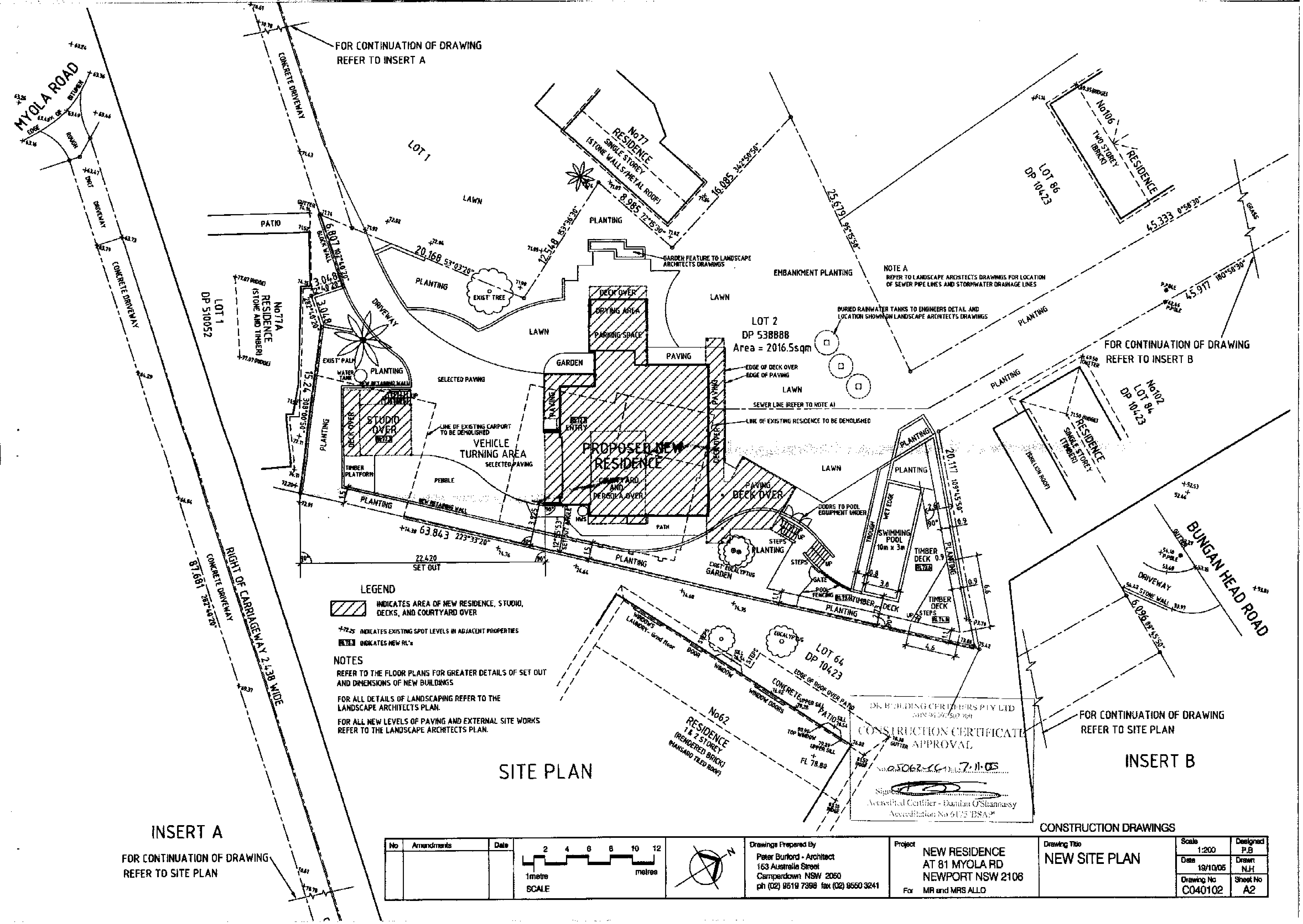
DK BUILDING CERTIFIERS PTY LTD
ABN 96 097 502 706
CONSTRUCTION CERTIFICATE APPROVAL
No. 05062-CC Date 7.11.05
Signed .....
Accredited Certifier - Damian O'Shannassy
Accreditation No 0175 BSAP

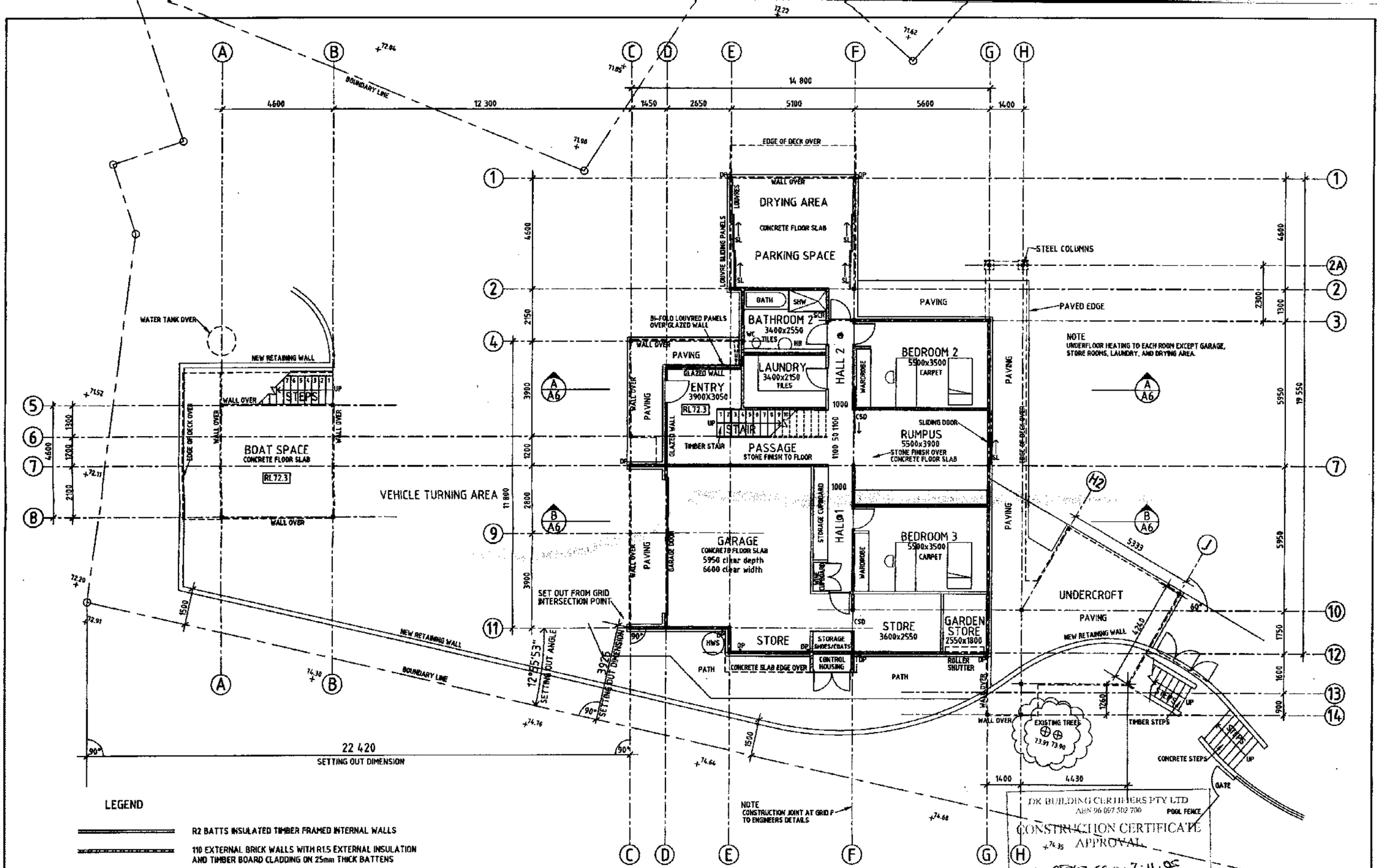
NEW ALLO RESIDENCE AT 81 MYOLA ROAD NEWPORT NSW 2106

Drawings Prepared By
Peter Busford - Architect
153 Australia Street
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Drawing Title
CONSTRUCTION DRAWINGS
COVER SHEET AND
DRAWING SCHEDULE

Drawing No C050970
Sheet No A1


FOR CONTINUATION OF DRAWING REFER TO INSERT A
MYOLA ROAD
CONCRETE DRIVEWAY
LOT 1
LAWN
PATIO
PLANTING
No77 RESIDENCE SINGLE STOREY (STONE WALLS/METAL ROOF)
8.985 72°15'30"
16.085 342°50'50"
12.548 153°26'30"
20.168 53°03'20"
6.807 107°49'20"
3.048
EXIST' TREE
GARDEN FEATURE TO LANDSCAPE ARCHITECTS DRAWINGS
EMBANKMENT PLANTING
25.679 95°15'50"
NOTE A
REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LOCATION OF SEWER PIPE LINES AND STORMWATER DRAINAGE LINES
No106 RESIDENCE TWO STOREY (BRICK)
LOT 86 DP 10423
45.333 0°58'30"
45.917 180°58'30"
GRASS
No77A RESIDENCE (STONE AND TIMBER)
LOT 1 DP 510052
DRIVEWAY
EXIST' PALM
WATER TANK
NEW RETAINING WALL
STUDIO OVER
DECK OVER
DRYING AREA
PARKING SPACE
GARDEN
SELECTED PAVING
LOT 2 DP 538888 Area = 2016.5sqm
BURIED RAINWATER TANKS TO ENGINEERS DETAIL AND LOCATION SHOWN ON LANDSCAPE ARCHITECTS DRAWINGS
FOR CONTINUATION OF DRAWING REFER TO INSERT B
PAVING
EDGE OF DECK OVER
EDGE OF PAVING
SEWER LINE (REFER TO NOTE A)
LINE OF EXISTING RESIDENCE TO BE DEMOLISHED
LINE OF EXISTING CARPORT TO BE DEMOLISHED
VEHICLE TURNING AREA
ENTRY
PROPOSED NEW RESIDENCE
COURTYARD AND PERGOLA OVER
No102 LOT 84 DP 10423
RESIDENCE SINGLE STOREY (TIMBER)
15.24 308°00'50"
TIMBER PLATFORM
PEBBLE
PATH
DECK OVER
DOORS TO POOL EQUIPMENT UNDER
SWIMMING POOL 10m x 3m
WET EDGE
TROUGH
TIMBER DECK
20.117 109°45'50"
63.843 223°33'20"
22.420 SET OUT
SET OUT
STEPS
GATE
POOL FENCING
EXIST' EUCALYPTUS
EUCALYPTUS
BUNGAN HEAD ROAD
STONE WALL
6.096 89°45'50"
LOT 64 DP 10423
No62 RESIDENCE 1 & 2 STOREY (RENDERED BRICK) (MANSARD TILED ROOF)
EDGE OF ROOF OVER PATIO
FL 78.80
RIGHT OF CARRIAGEWAY 2.438 WIDE
87.681 282°44'20"
LEGEND
INDICATES AREA OF NEW RESIDENCE, STUDIO, DECKS, AND COURTYARD OVER
+72.25 INDICATES EXISTING SPOT LEVELS IN ADJACENT PROPERTIES
INDICATES NEW FL's
NOTES
REFER TO THE FLOOR PLANS FOR GREATER DETAILS OF SET OUT AND DIMENSIONS OF NEW BUILDINGS
FOR ALL DETAILS OF LANDSCAPING REFER TO THE LANDSCAPE ARCHITECTS PLAN.
FOR ALL NEW LEVELS OF PAVING AND EXTERNAL SITE WORKS REFER TO THE LANDSCAPE ARCHITECTS PLAN.
SITE PLAN
CONSTRUCTION CERTIFICATE APPROVAL
No 05062-CC 7.11.05
Accredited Certifier - Damian O'Shannassy
FOR CONTINUATION OF DRAWING REFER TO SITE PLAN
INSERT B
INSERT A
FOR CONTINUATION OF DRAWING REFER TO SITE PLAN
CONSTRUCTION DRAWINGS
No Amendments Date
SCALE 1metre metres
Drawings Prepared By Peter Burford - Architect 153 Australia Street Camperdown NSW 2050 ph (02) 9519 7398 fax (02) 9550 3241
Project NEW RESIDENCE AT 81 MYOLA RD NEWPORT NSW 2106 For MR and MRS ALLO
Drawing Title NEW SITE PLAN
Scale 1:200
Date 19/10/05
Drawing No C040102
Designed P.B
Drawn N.H
Sheet No A2



LEGEND

R2 BATTS INSULATED TIMBER FRAMED INTERNAL WALLS

110 EXTERNAL BRICK WALLS WITH R1.5 EXTERNAL INSULATION AND TIMBER BOARD CLADDING ON 25mm THICK BATTENS

SMOKE ALARM

DK BUILDING CERTIFIERS PTY LTD
ABN 96 067 502 700

CONSTRUCTION CERTIFICATE APPROVAL

No. 050127-CC Date 7.11.05

Signed
Accredited Certifier - Damian O'Shannassy
Accreditation No 0175 BSAP

No	Amendments	Date

CONSTRUCTION DRAWINGS

0 1 2 3 4 5 metres
500mm
SCALE

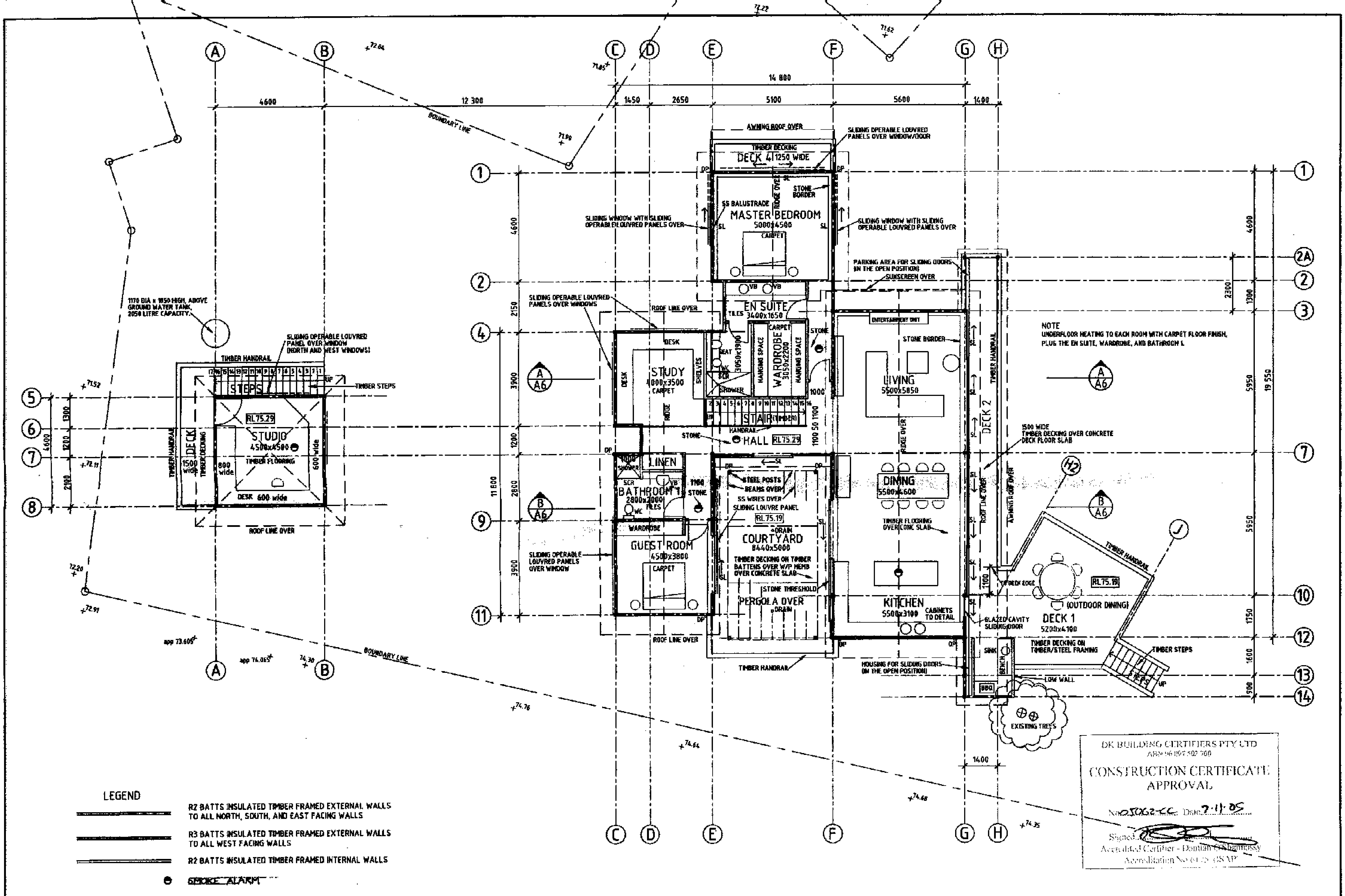
N

Drawings Prepared By
Peter Burford - Architect
153 Australia Street
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

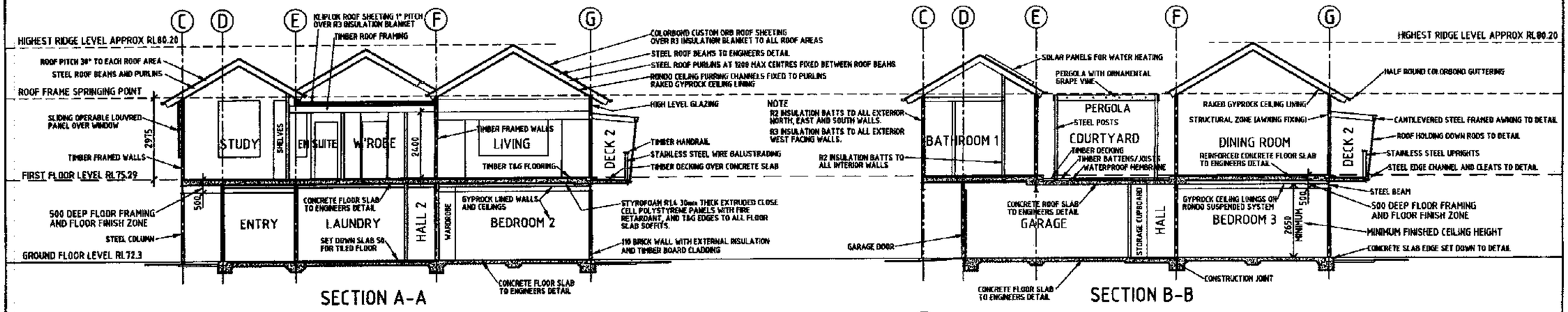
Drawing Title
GROUND FLOOR PLAN

Scale	Designed
1:100	P.B
Date	Drawn
19/10/06	N.H
Drawing No	Sheet No
C040103	A3



BOUNDARY LINE
DECK 4 1250 WIDE
MASTER BEDROOM 5000x4500
EN SUITE 3400x1650
WARDROBE 3050x2200
STUDY 4000x3500
STAIR
HALL
LINEN
BATHROOM 1 2800x2000
GUEST ROOM 4500x3800
COURTYARD 8440x5000
PERGOLA OVER
LIVING 5500x5850
DINING 5500x4600
KITCHEN 5500x3100
DECK 2
DECK 1 5200x4100
STUDIO 4500x4500
STEPS
DECK
TIMBER HANDRAIL
TIMBER STEPS
ROOF LINE OVER
EXISTING TREES
1170 DIA x 1850 HIGH, ABOVE GROUND WATER TANK, 2050 LITRE CAPACITY.
NOTE
UNDERFLOOR HEATING TO EACH ROOM WITH CARPET FLOOR FINISH, PLUS THE EN SUITE, WARDROBE, AND BATHROOM 1.
LEGEND
R2 BATTS INSULATED TIMBER FRAMED EXTERNAL WALLS TO ALL NORTH, SOUTH, AND EAST FACING WALLS
R3 BATTS INSULATED TIMBER FRAMED EXTERNAL WALLS TO ALL WEST FACING WALLS
R2 BATTS INSULATED TIMBER FRAMED INTERNAL WALLS
SMOKE ALARM
DK BUILDING CERTIFIERS PTY LTD
CONSTRUCTION CERTIFICATE APPROVAL

No	Amendments	Date						
			CONSTRUCTION DRAWINGS	SCALE 0 1 2 3 4 5 metres	Drawings Prepared By Peter Burford - Architect, 153 Australia Street, Camperdown NSW 2050, ph (02) 9519 7398 fax (02) 9550 3241	Project NEW RESIDENCE AT 81 MYOLA RD NEWPORT NSW 2106 For MR and MRS ALLO	Drawing Title FIRST FLOOR PLAN	Scale 1:100; Designed P.B; Date 19/10/05; Drawn N.H; Drawing No C040104; Sheet No A4



DK BUILDING CERTIFIERS PTY LTD
ABN 96 097 502 709
CONSTRUCTION CERTIFICATE APPROVAL
No 05062 cc Date 7.11.05
Signed
Accredited Certifier - Damian O'Shannassy
Accreditation No 6175 'BSA'

No	Amendments	Date

CONSTRUCTION DRAWINGS

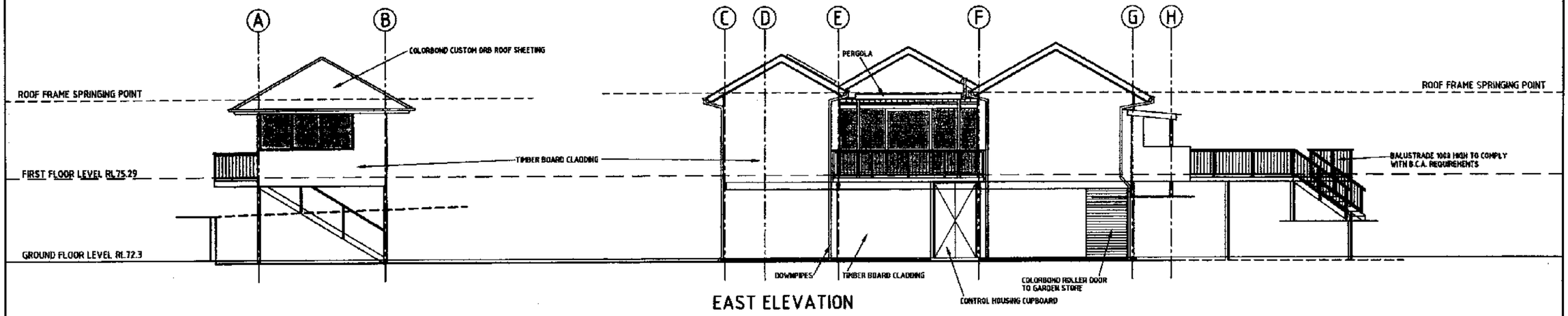
0 1 2 3 4 5 metres
500mm SCALE

Drawings Prepared By
Peter Burford - Architect
153 Australia Street
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

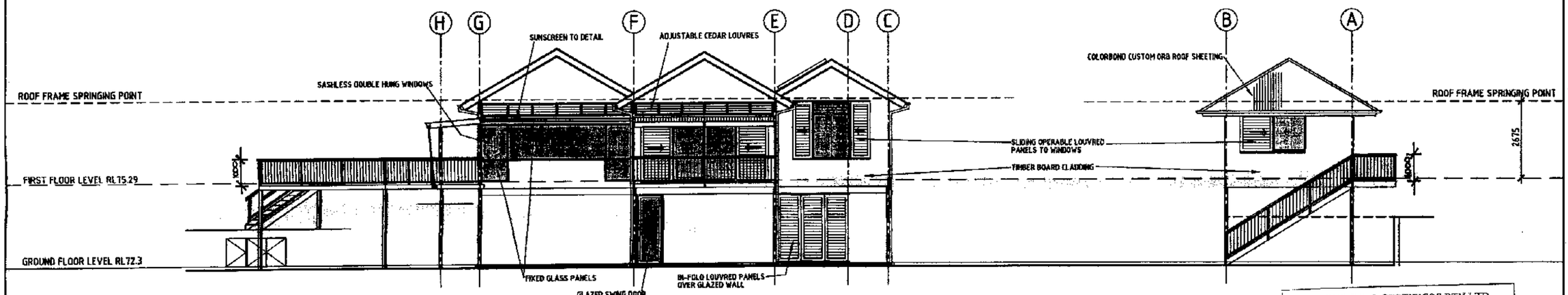
Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
SECTIONS A-A and B-B
NORTH ELEVATION and
SOUTH ELEVATION

Scale	Designed
1:100	P.B
Date	Drawn
19/10/05	N.H
Drawing No	Sheet No
C040105	A5



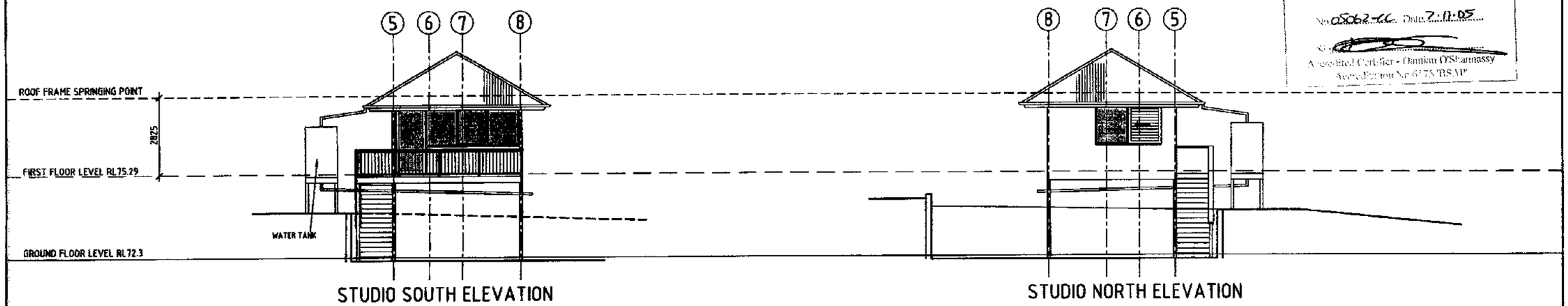
EAST ELEVATION



WEST ELEVATION

NOTE
ALL WEST FACING WALLS SHALL BE INSULATED WITH R3 BATTS

DK BUILDING CERTIFIERS PTY LTD
ABN 96 097 502 730
CONSTRUCTION CERTIFICATE APPROVAL
No C0562-06 Date 7.11.05
Accredited Certifier - Damian O'Shannassy
Accreditation No 6175 BSAP



STUDIO SOUTH ELEVATION

STUDIO NORTH ELEVATION

No	Amendments	Date

CONSTRUCTION DRAWINGS

0 1 2 3 4 5 metres
500mm SCALE

Drawings Prepared By
Peter Burford - Architect
153 Australia Street
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
EAST and WEST ELEVATIONS
STUDIO NORTH and
SOUTH ELEVATIONS

Scale	Designed
1:100	P.B
Date 19/10/05	Drawn N.H
Drawing No C040106	Sheet No A6

INSULATION - GENERAL SPECIFICATION / BRIEF

FLOOR-SLAB SOFFITS "STYROFOAM" R1.4 38mm
EXTRUDED CLOSED CELL POLYSTYRENE PANELS WITH FIRE RETARDANT AND T&G EDGES.
ADHESIVE AND MECHANICAL FIX TO UNDERSIDE OF SLAB

INSULATION RATINGS

EXTERIOR WALLS			
NORTH SOUTH EAST & WEST		R1.5(min)	GROUND FLOOR WALLS
NORTH SOUTH AND EAST FACING:	BATTS	R2(min)	FIRST FLOOR WALLS
WEST FACING:	BATTS	R3(min) RECOMMENDED HOLD POINT×	
INTERIOR WALLS:	BATTS	R2(min)	
ROOF:	BATTS	R3(min) RECOMMENDED HOLD POINT×	

×NOTICE/HOLD POINTS
ROOF AND WALL SPACES, INSULATION AND SARKING PRIOR TO CONCEALMENT

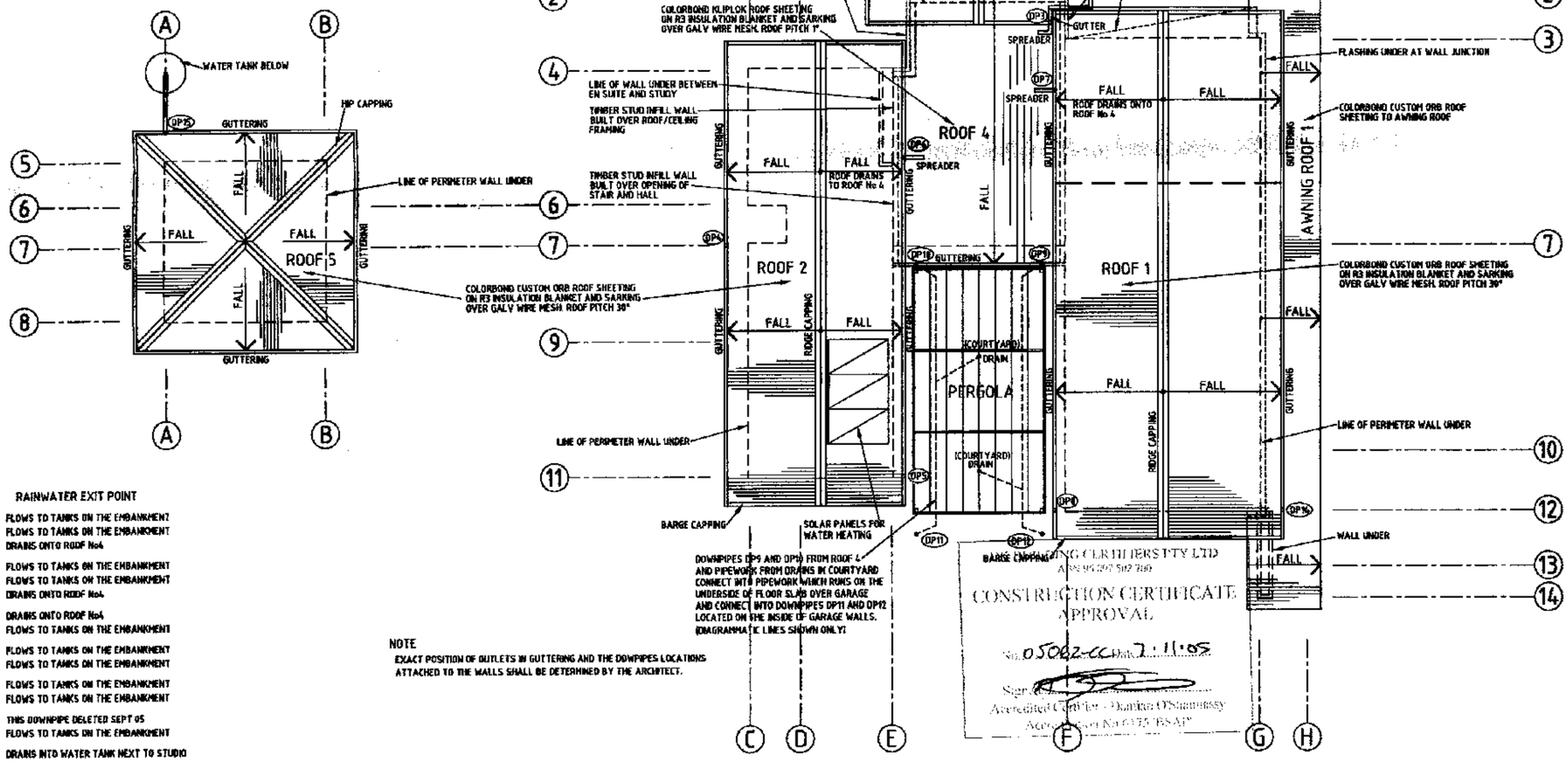
BULK INSULATION
STANDARD TO AS 3999-1992 (THERMAL INSULATION OF DWELLINGS - BULK INSULATION - INSTALLATION REQUIREMENTS).

BATTS
FIT TIGHTLY BETWEEN FRAMING MEMBERS. IF SUPPORT IS NOT OTHERWISE PROVIDED, SECURE NYLON TWINE TO THE FRAMING AND STRETCH TIGHT.

NOTE RE RIDGE VENTILATION
FINISH SARKING AT LEAST 50mm CLEAR OF RIDGES.

WEATHER SEALS AND FIRE STOPPING
CLOSED CELL POLYETHYLENE FOAM INFILL STRIPS PROFILED TO FIT CORRUGATIONS.
INSTALL IN ALL LOCATIONS UNDER FLASHINGS AND AS DETAILED TO PREVENT INGRESS OF WEATHER AND EMBERS.

FASTENERS
SELF-DRILLING SCREWS. TO AS 3566-1988 (SCREWS - SELF DRILLING - FOR THE BUILDING AND CONSTRUCTION INDUSTRIES), CORRISION RESISTANCE CLASS 3
"BOUSTEAD INSULOK" ROOFING SCREWS (AVOID PROBLEM OF INSULATION BINDING AROUND SCREW).



NOTE
THE HIGHEST LEVELS OF THERMAL SPECIFICATIONS AND INSULATION SPECIFICATIONS AS NOTED AND SCHEDULED ON THIS SET OF DRAWINGS SHALL TAKE PRECEDENCE OVER ANY LOWER LEVELS NOMINATED ELSEWHERE.

NOTE
EXACT POSITION OF OUTLETS IN GUTTERING AND THE DOWNPIPES LOCATIONS ATTACHED TO THE WALLS SHALL BE DETERMINED BY THE ARCHITECT.

DOWNPIPE SCHEDULE

DOWNPIPE NUMBER	ROOF NUMBER	LOCATION ON THE ROOF	RAINWATER EXIT POINT
DP1	ROOF 3	SOUTH SIDE	FLOWS TO TANKS ON THE EMBANKMENT
DP2	ROOF 3	NORTH SIDE	FLOWS TO TANKS ON THE EMBANKMENT
DP3	ROOF 3	NORTH SIDE	DRAINS ONTO ROOF No4
DP4	ROOF 2	SOUTH SIDE	FLOWS TO TANKS ON THE EMBANKMENT
DP5	ROOF 2	NORTH SIDE	FLOWS TO TANKS ON THE EMBANKMENT
DP6	ROOF 2	NORTH SIDE	DRAINS ONTO ROOF No4
DP7	ROOF 1	SOUTH SIDE	DRAINS ONTO ROOF No4
DP8	ROOF 1	SOUTH SIDE	FLOWS TO TANKS ON THE EMBANKMENT
DP9	ROOF 4	EAST SIDE	FLOWS TO TANKS ON THE EMBANKMENT
DP10	ROOF 4	EAST SIDE	FLOWS TO TANKS ON THE EMBANKMENT
DP11	ROOF 4 AND COURTYARD	CONCEALED IN GARAGE	FLOWS TO TANKS ON THE EMBANKMENT
DP12	ROOF 4 AND COURTYARD	CONCEALED IN GARAGE	FLOWS TO TANKS ON THE EMBANKMENT
(DELETED) DP13	ROOF 1	NORTH SIDE	THIS DOWNPIPE DELETED SEPT 05
DP14	ROOF 1	NORTH SIDE	FLOWS TO TANKS ON THE EMBANKMENT
DP15	ROOF 5	WEST SIDE	DRAINS INTO WATER TANK NEXT TO STUDIO

No.	Amendments	Date

CONSTRUCTION DRAWINGS

0 1 2 3 4 5 metres
500mm SCALE

N

Drawings Prepared By
Peter Burford - Architect
159 Australia Street
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

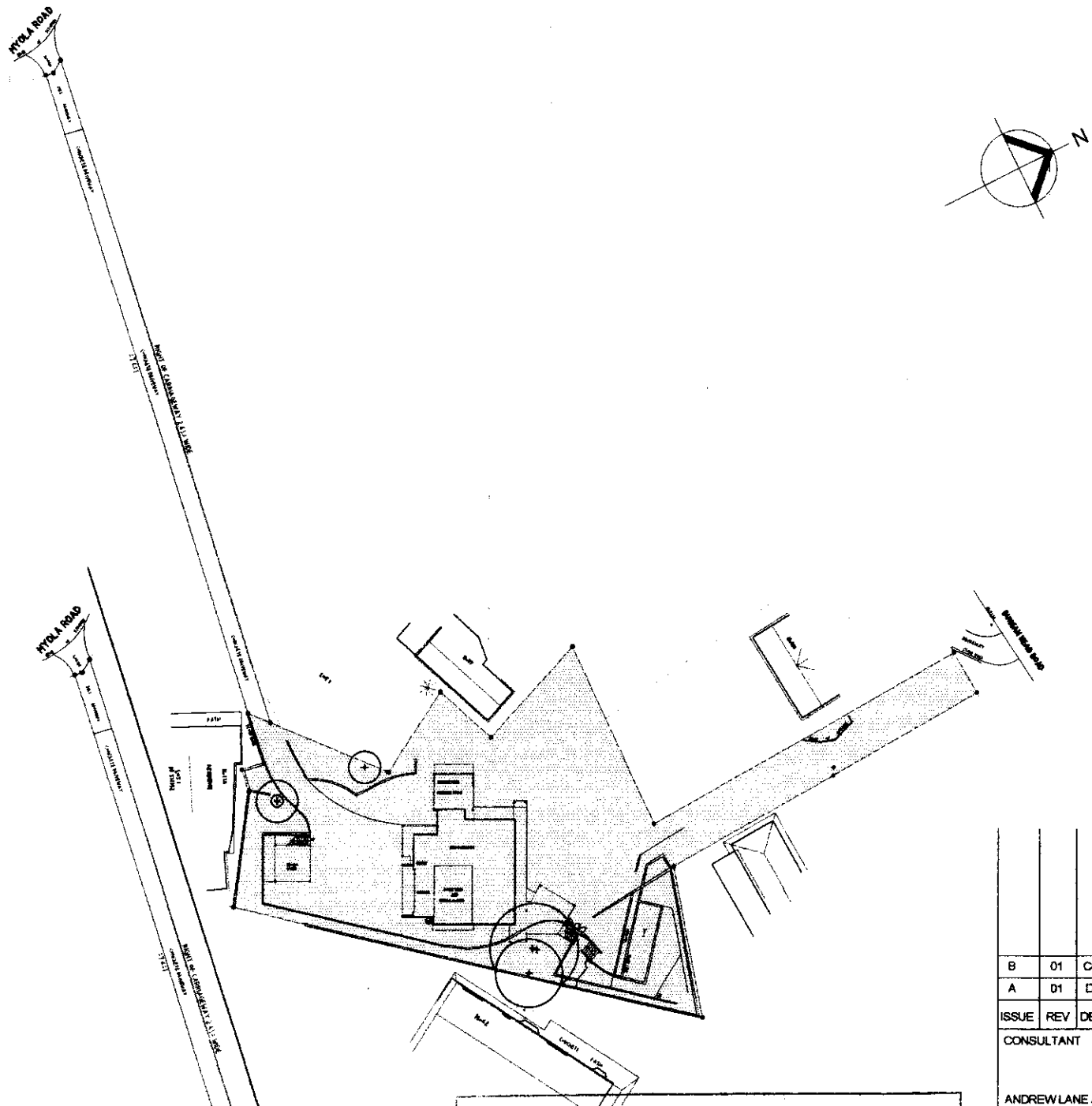
Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
ROOF PLAN
AND INSULATION NOTES

Scale	Designed
1:100	P.B
Date	Drawn
19/10/05	N.H
Drawing No	Sheet No
C040107	A7

CONTENTS

DWG. NO.	TITLE
LP-00	COVER / CONTENTS
LP-01	EARTHWORKS, LEVELS & DRAINAGE
LP-02	EARTHWORKS, LEVELS & DRAINAGE
LP-03	MATERIALS & FINISHES
LP-04	MATERIALS & FINISHES (Plant Schedule 1)
LP-05	SETOUT
LP-06	SETOUT
LP-07	PLANTING PLAN
LP-08	PLANTING PLAN (Plant Schedule 2)
LP-09	DETAILS
LP-10	DETAILS
LP-11	DETAILS
LP-12	EXTERNAL LIGHTING PLAN
LP-13	SPECIFICATION NOTES



DK BUILDING CERTIFIERS PTY LTD
ABN 96 097 502 700

CONSTRUCTION CERTIFICATE APPROVAL

No. 05062 cc Date 7.11.05

Signed .....
Accredited Certifier - Damian O'Shannassy
Accreditation No 5175 'BSAP'

ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	29-09-05
A	D1	Draft	20-09-05

CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

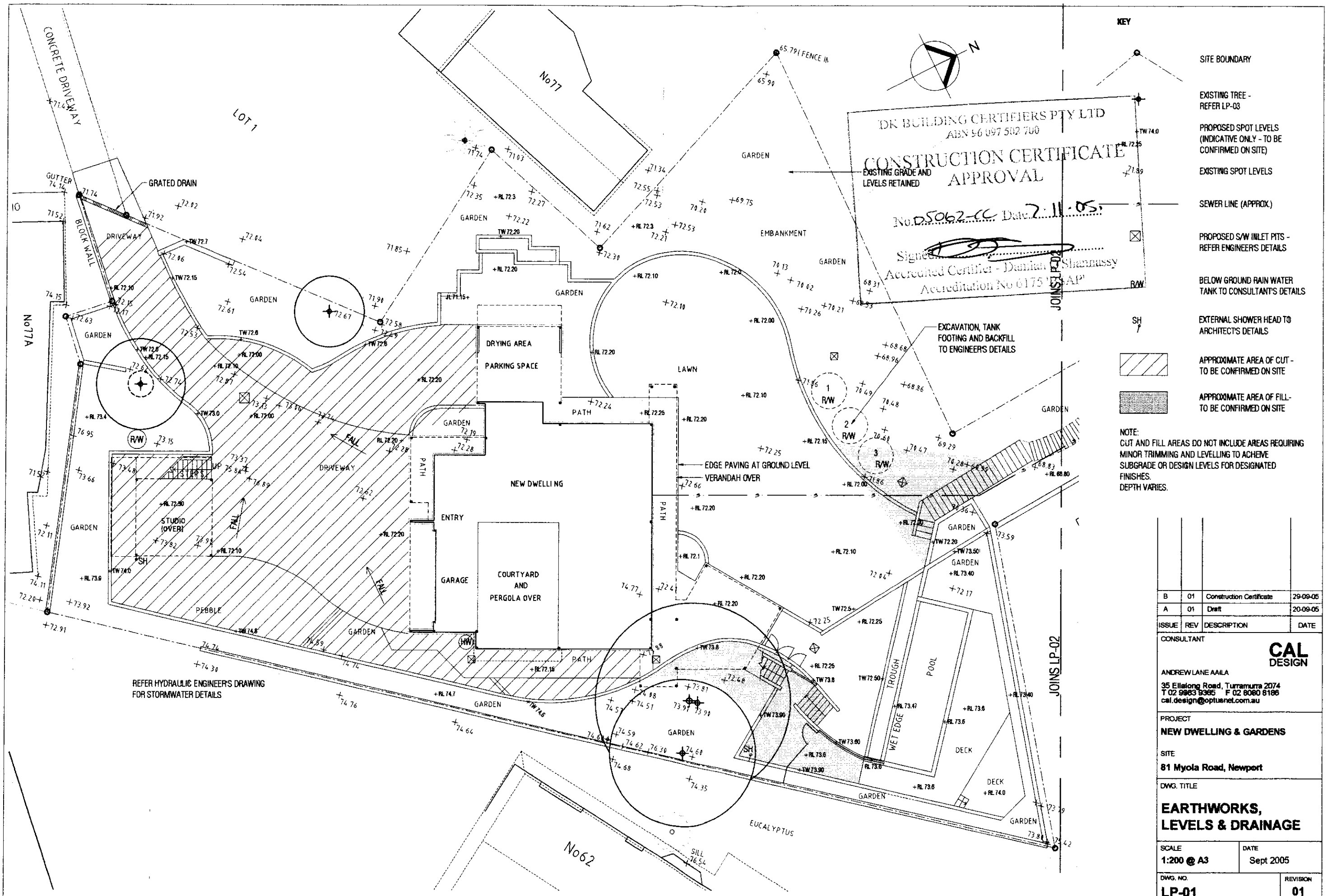
DWG. TITLE
COVER
CONTENTS

SCALE

DATE
Sept 2005

DWG. NO.
LP-00

REVISION
01



ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	29-09-05
A	01	Draft	20-09-05

CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

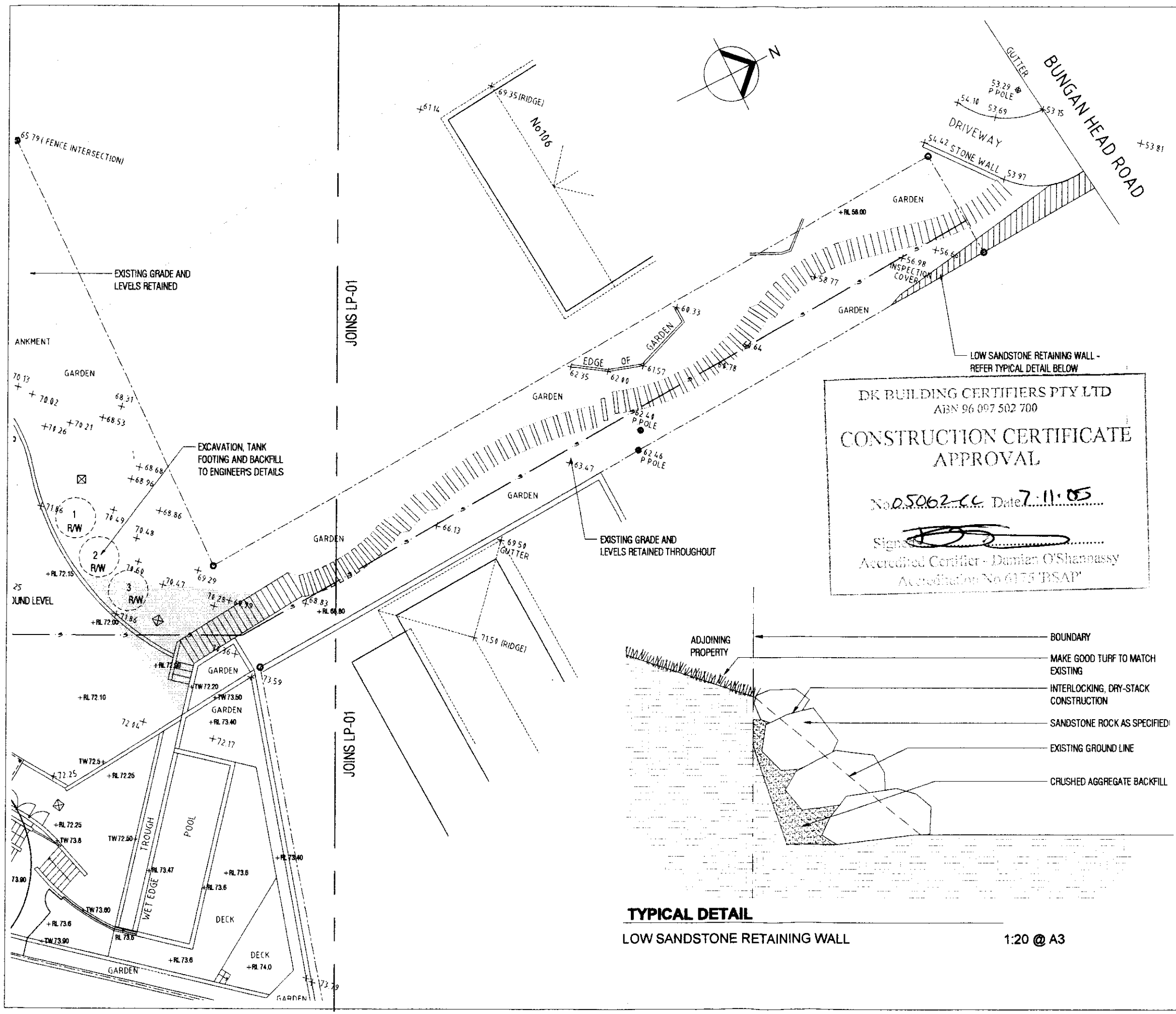
PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
EARTHWORKS, LEVELS & DRAINAGE

SCALE	DATE
1:200 @ A3	Sept 2005

DWG. NO.	REVISION
LP-01	01



DK BUILDING CERTIFIERS PTY LTD
ABN 96 097 502 700

CONSTRUCTION CERTIFICATE APPROVAL

No 05062-cc Date 7·11·05

Signed .....
Accredited Certifier - Damian O'Shannassy
Accreditation No 6175 'BSAP'

KEY

- SITE BOUNDARY
- EXISTING TREE - REFER LP-03
- +TW 74.0 / +RL 72.25 — PROPOSED SPOT LEVELS (INDICATIVE ONLY - TO BE CONFIRMED ON SITE)
- +71.89 — EXISTING SPOT LEVELS
- SEWER LINE (APPROX.)
- PROPOSED S/W INLET PITS - REFER ENGINEER'S DETAILS
- R/W — BELOW GROUND RAIN WATER TANK TO CONSULTANT'S DETAILS
- SH — EXTERNAL SHOWER HEAD TO ARCHITECT'S DETAILS
- APPROXIMATE AREA OF CUT - TO BE CONFIRMED ON SITE
- APPROXIMATE AREA OF FILL - TO BE CONFIRMED ON SITE

NOTE:
CUT AND FILL AREAS DO NOT INCLUDE AREAS REQUIRING MINOR TRIMMING AND LEVELLING TO ACHIEVE SUBGRADE OR DESIGN LEVELS FOR DESIGNATED FINISHES.
DEPTH VARIES.

TYPICAL DETAIL

LOW SANDSTONE RETAINING WALL 1:20 @ A3

ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	29-09-05
A	01	Draft	20-09-05

CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

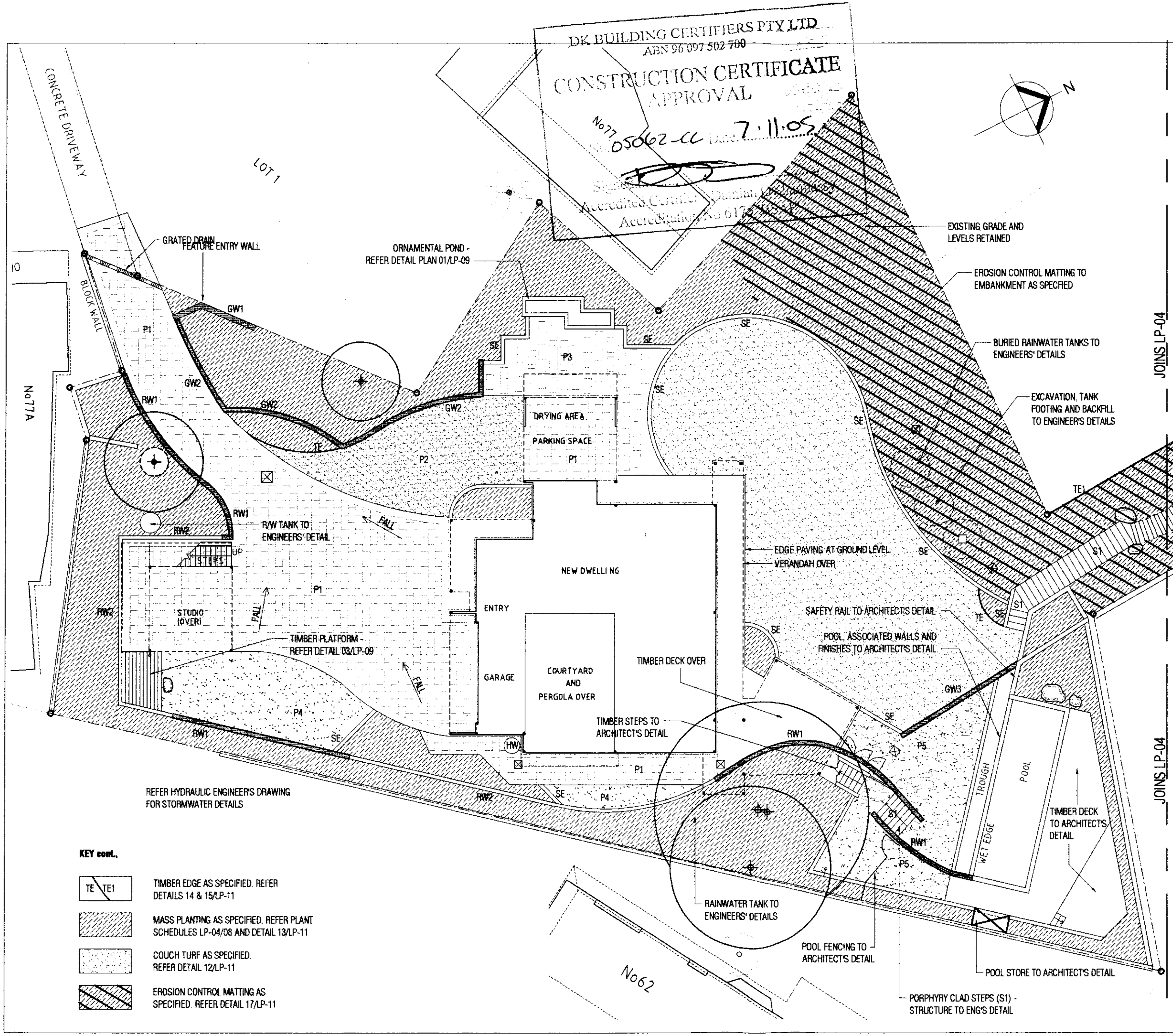
PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
EARTHWORKS, LEVELS & DRAINAGE

SCALE	DATE
1:200 @ A3	Sept 2005

DWG. NO.	REVISION
LP-02	01



KEY

P1	CONCRETE UNIT PAVING AS SPECIFIED REFER DETAILS 09-09A/LP-10
P2	CONCRETE UNIT PAVING AND TURF AS SPECIFIED. REFER DETAIL 10/LP-10
P3	STEPPING STONES AS SPECIFIED REFER DETAIL 10/LP-10
P4	PEBBLE GROUNDCOVER AS SPECIFIED REFER DETAIL 09/LP-10
P5	PORPHYRY FLAGGING IN PEBBLE AS SPECIFIED. REFER DETAIL 08/LP-10
	FEATURE ROCK AS SPECIFIED
RW1	SPLIT PORPHYRY CLADDING AS SPECIFIED. REFER DETAIL 04/LP-09
RW 2	RENDER PAINT FINISH TO RETAINING WALL AS SPECIFIED
GW1	PORPHYRY CLAD ENTRY WALL AS SPECIFIED. REFER DETAIL 06/LP-10
GW2	PORPHYRY CLAD GARDEN RET. WALL AS SPECIFIED. REFER DETAIL 07/LP-10
GW3	PORPHYRY CLAD SITTING WALL AS SPECIFIED. REFER DETAIL 08/LP-10
S1	PORPHYRY CLAD STEPS AS SPECIFIED - REFER DETAIL 05/LP-09
S2	CONCRETE SLEEPER STEPS AS SPECIFIED - REFER DETAIL 02/LP-09
SE	GARDEN EDGING AS SPECIFIED. REFER DETAIL 18/LP-11

REFER BOTTOM LEFT FOR CONTINUATION OF MATERIALS AND FINISHES KEY

KEY cont.,

TE TE1	TIMBER EDGE AS SPECIFIED. REFER DETAILS 14 & 15/LP-11
	MASS PLANTING AS SPECIFIED. REFER PLANT SCHEDULES LP-04/08 AND DETAIL 13/LP-11
	COUCH TURF AS SPECIFIED. REFER DETAIL 12/LP-11
	EROSION CONTROL MATTING AS SPECIFIED. REFER DETAIL 17/LP-11

ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	29-09-05
A	01	Draft	20-09-05

CONSULTANT

CAL DESIGN

ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

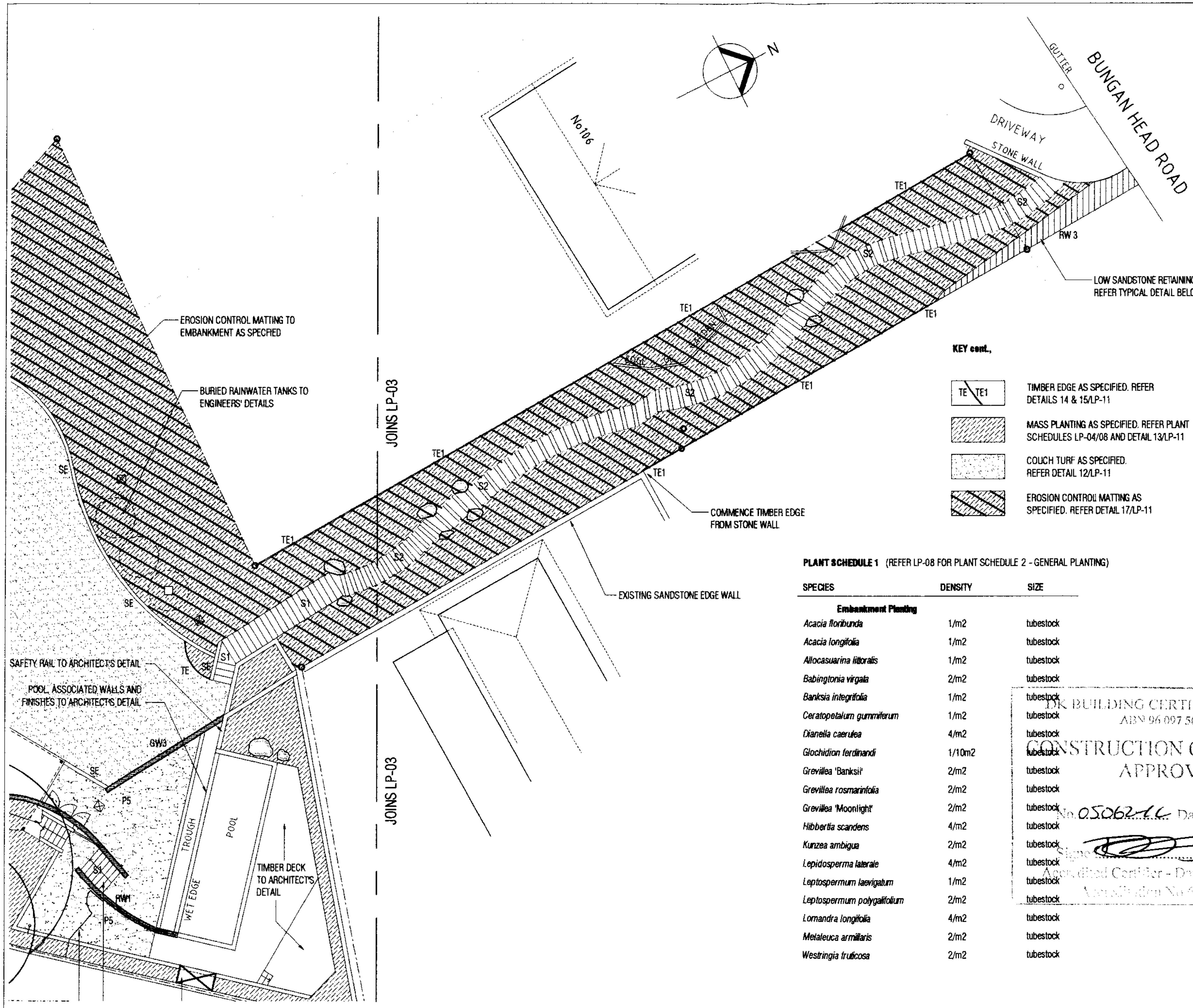
PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
MATERIALS & FINISHES

SCALE **1:200 @ A3** | DATE **Sept 2005**

DWG. NO **LP-03** | REVISION **01**



KEY

P1	CONCRETE UNIT PAVING AS SPECIFIED REFER DETAILS 09-09A/LP-10
P2	CONCRETE UNIT PAVING AND TURF AS SPECIFIED. REFER DETAIL 10/LP-10
P3	STEPPING STONES AS SPECIFIED REFER DETAIL 10/LP-10
P4	PEBBLE GROUNDCOVER AS SPECIFIED REFER DETAIL 09/LP-10
P5	PORPHYRY FLAGGING IN PEBBLE AS SPECIFIED. REFER DETAIL 08/LP-10
	FEATURE ROCK AS SPECIFIED
RW1	SPLIT PORPHYRY CLADDING AS SPECIFIED. REFER DETAIL 04/LP-09
RW 2	RENDER PAINT FINISH TO RETAINING WALL AS SPECIFIED
GW1	PORPHYRY CLAD ENTRY WALL AS SPECIFIED. REFER DETAIL 06/LP-10
GW2	PORPHYRY CLAD GARDEN RET. WALL AS SPECIFIED. REFER DETAIL 07/LP-10
GW3	PORPHYRY CLAD SITTING WALL AS SPECIFIED. REFER DETAIL 08/LP-10
S1	PORPHYRY CLAD STEPS AS SPECIFIED - REFER DETAIL 05/LP-09
S2	CONCRETE SLEEPER STEPS AS SPECIFIED - REFER DETAIL 02/LP-09
SE	GARDEN EDGING AS SPECIFIED. REFER DETAIL 18/LP-11

KEY cont.

TE / TE1	TIMBER EDGE AS SPECIFIED. REFER DETAILS 14 & 15/LP-11
	MASS PLANTING AS SPECIFIED. REFER PLANT SCHEDULES LP-04/08 AND DETAIL 13/LP-11
	COUCH TURF AS SPECIFIED. REFER DETAIL 12/LP-11
	EROSION CONTROL MATTING AS SPECIFIED. REFER DETAIL 17/LP-11

PLANT SCHEDULE 1 (REFER LP-08 FOR PLANT SCHEDULE 2 - GENERAL PLANTING)

SPECIES	DENSITY	SIZE
Embankment Planting		
Acacia floribunda	1/m2	tubestock
Acacia longifolia	1/m2	tubestock
Allocasuarina littoralis	1/m2	tubestock
Babingtonia virgata	2/m2	tubestock
Banksia integrifolia	1/m2	tubestock
Ceratopetalum gummiferum	1/m2	tubestock
Dianella caerulea	4/m2	tubestock
Glochidion ferdinandi	1/10m2	tubestock
Grevillea 'Banksii'	2/m2	tubestock
Grevillea rosmarinifolia	2/m2	tubestock
Grevillea 'Moonlight'	2/m2	tubestock
Hibbertia scandens	4/m2	tubestock
Kunzea ambigua	2/m2	tubestock
Lepidosperma laterale	4/m2	tubestock
Leptospermum laevigatum	1/m2	tubestock
Leptospermum polygalifolium	2/m2	tubestock
Lomandra longifolia	4/m2	tubestock
Melaleuca armillaris	2/m2	tubestock
Westringia fruticosa	2/m2	tubestock

DK BUILDING CERTIFIERS PTY LTD
ABN 96 097 502 700
CONSTRUCTION CERTIFICATE APPROVAL
No. 0506216 Date 7.11.05.
Signed ....
Accredited Certifier - Damian O'Shannassy
Accreditation No. 0177 BSAP

ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	29-09-05
A	01	Draft	20-09-05

CONSULTANT

CAL DESIGN

ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9988 9365 F 02 8080 8186
cal.design@optusnet.com.au

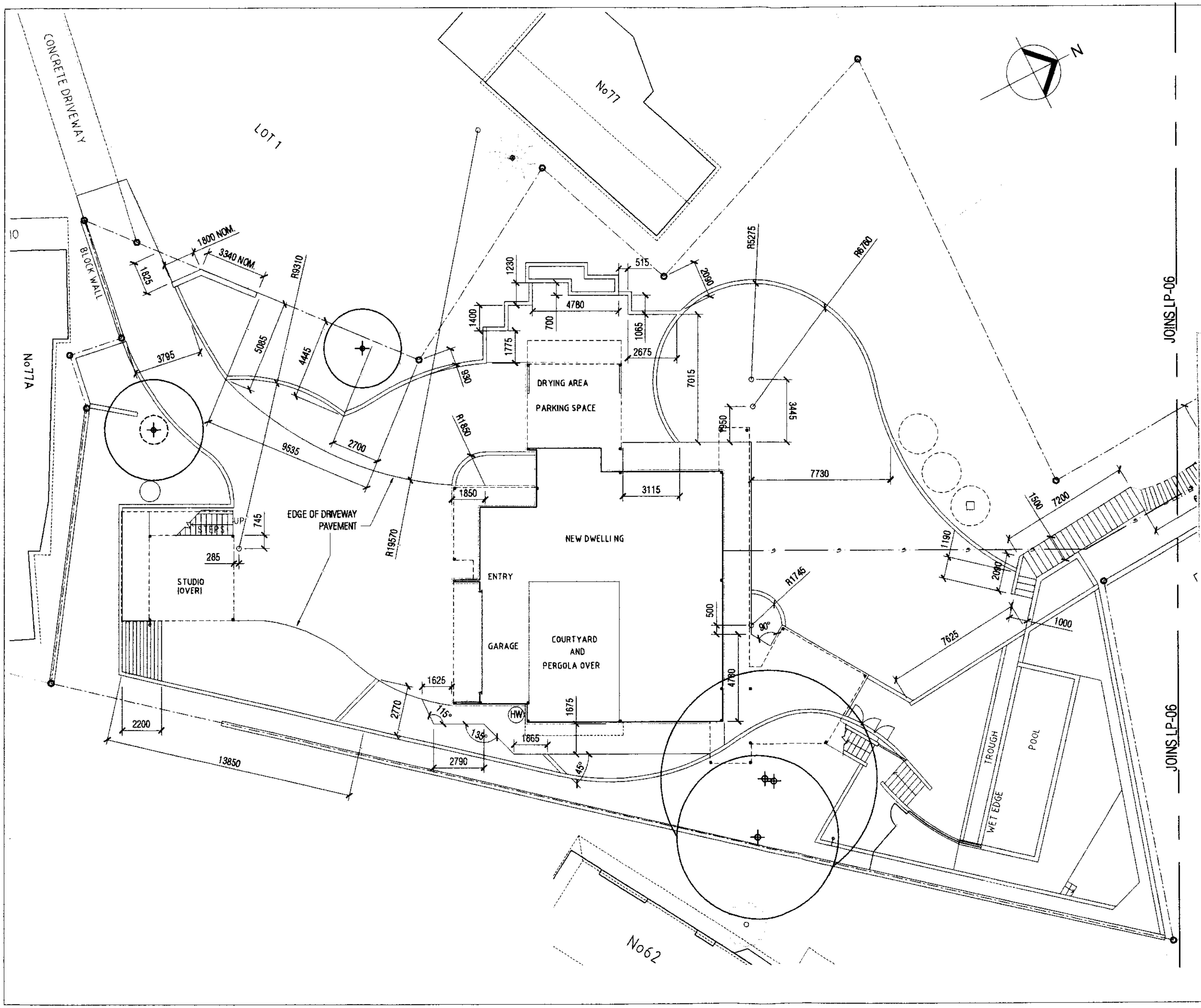
PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
MATERIALS & FINISHES

SCALE	DATE
1:200 @ A3	Sept 2005

DWG. NO. / ISSUE	REVISION
LP-04	01



DK BUILDING CERTIFIERS PTY LTD
ABN 96 097 502 700

CONSTRUCTION CERTIFICATE
APPROVAL

No 05062-CC Date 7.11.05

Signed: ....
Accredited Certifier - Damian O'Shannassy
Accreditation No. 0175 'BSAP'

ISSUE	REV	DESCRIPTION	DATE
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A	01	Draft	20-09-05

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CAL DESIGN

ANDREW LANE AAILA
35 Eilalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

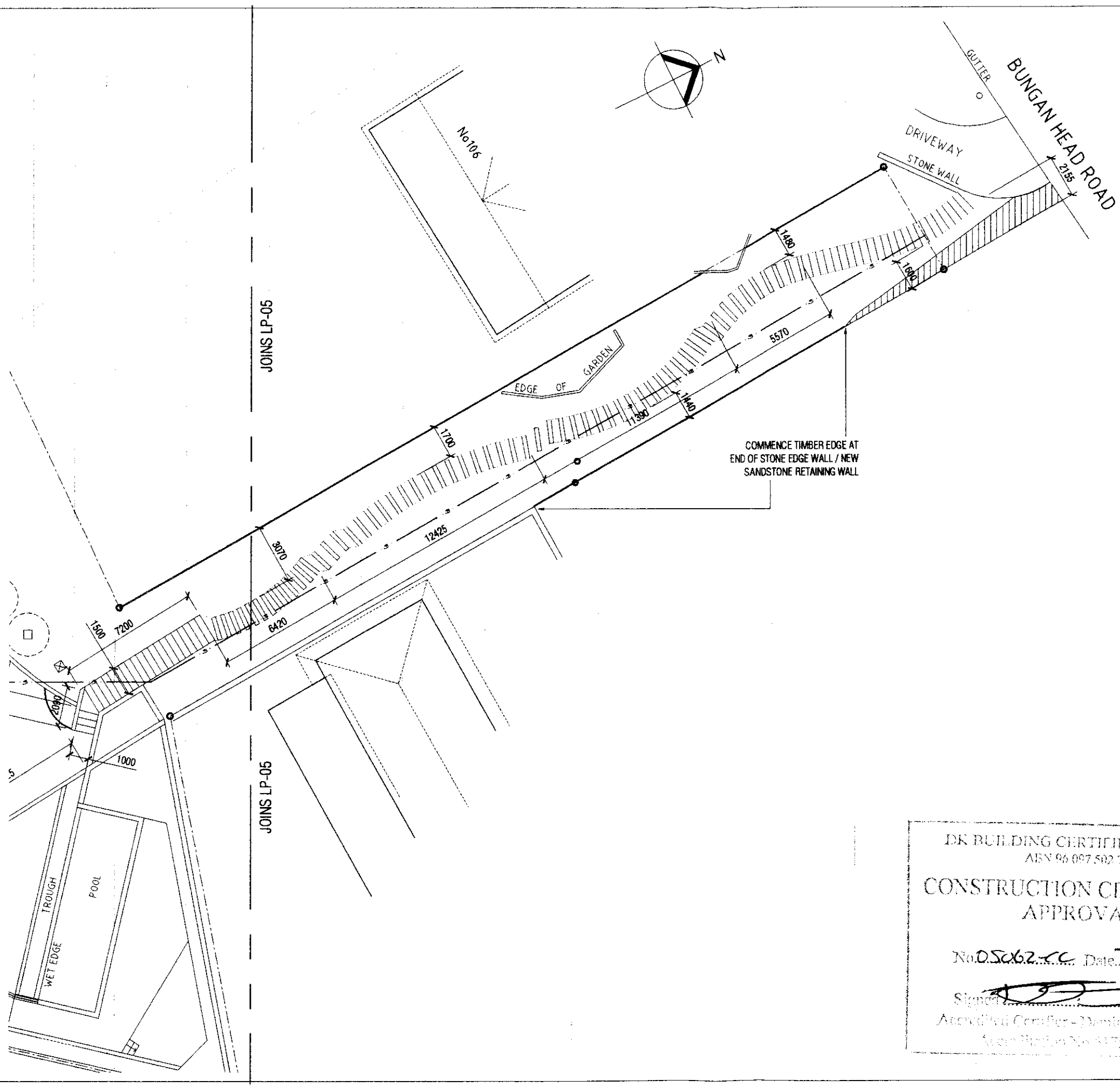
PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
SETOUT

SCALE	DATE
1:200 @ A3	Sept 2005

DWG. NO.	REVISION
LP-05	01



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ABN 96 097 502 700

CONSTRUCTION CERTIFICATE
APPROVAL

No 05062-CC Date 7·11·05

Signed .....

Accredited Certifier - Damian O'Shannessy

Accreditation No BPB 0075 AP

ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	29-09-05
A	01	Draft	20-09-05

CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

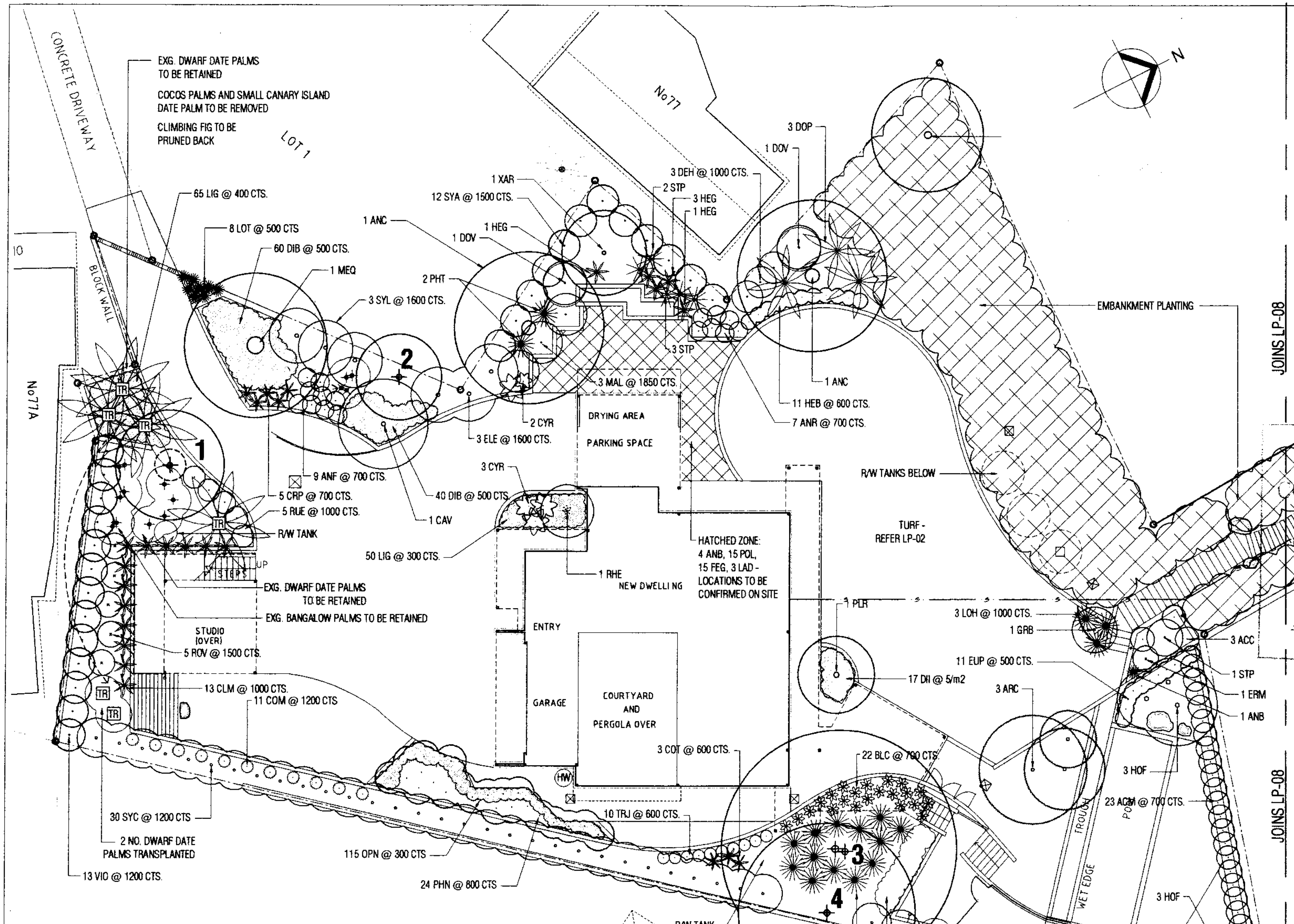
PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
SETOUT

SCALE	DATE
1:200 @ A3	Sept 2005

DWG. NO.	REVISION
LP-06	01



KEY

- EXISTING TREE TO BE RETAINED. REFER EXISTING TREE SCHEDULE LP-07
- EXISTING SHRUB / PALM TREE TO BE RETAINED
- TRANSPLANT - REFER DETAIL 19/LP-11
- FEATURE ROCK / BOULDER AS SPECIFIED
- PLANTING WITHIN STEPPING STONES AS NOTED
- EMBANKMENT PLANTING - REFER PLANT SCHEDULE 1/LP-04

REFER PLANT SCHEDULE 1 / LP-04 AND PLANT SCHEDULE 2 / LP-08 FOR DETAILS OF NEW PLANTINGS

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ACN 097 502 709
CONSTRUCTION CERTIFICATE APPROVAL
No. 05062-CC Date 7.11.05
Signed
Accredited Certifier - Dunlan O'Shaunassy
Accreditation No. 0172 BSAP

EXISTING TREE SCHEDULE

No.	SPECIES	COMMON NAME	PROPOSED ACTION	COMMENT
1	*Phoenix canariensis*	Canary Island Date Palm	Protect and Retain	Remove dead fronds
2	*Eucalyptus* spp.	Eucalyptus	Protect and Retain	Remove dead wood
3	*Eucalyptus* spp.	Eucalyptus	Protect and Retain	Minor pruning required
4	*Eucalyptus* spp.	Eucalyptus	Protect and Retain	

REFER PLANT SCHEDULE 1 / LP-04 AND PLANT SCHEDULE 2 / LP-08 FOR DETAILS OF NEW PLANTINGS

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CONSULTANT

CAL DESIGN

ANDREW LANE AAILA
35 Elialong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

PROJECT: NEW DWELLING & GARDENS

SITE: 81 Myola Road, Newport

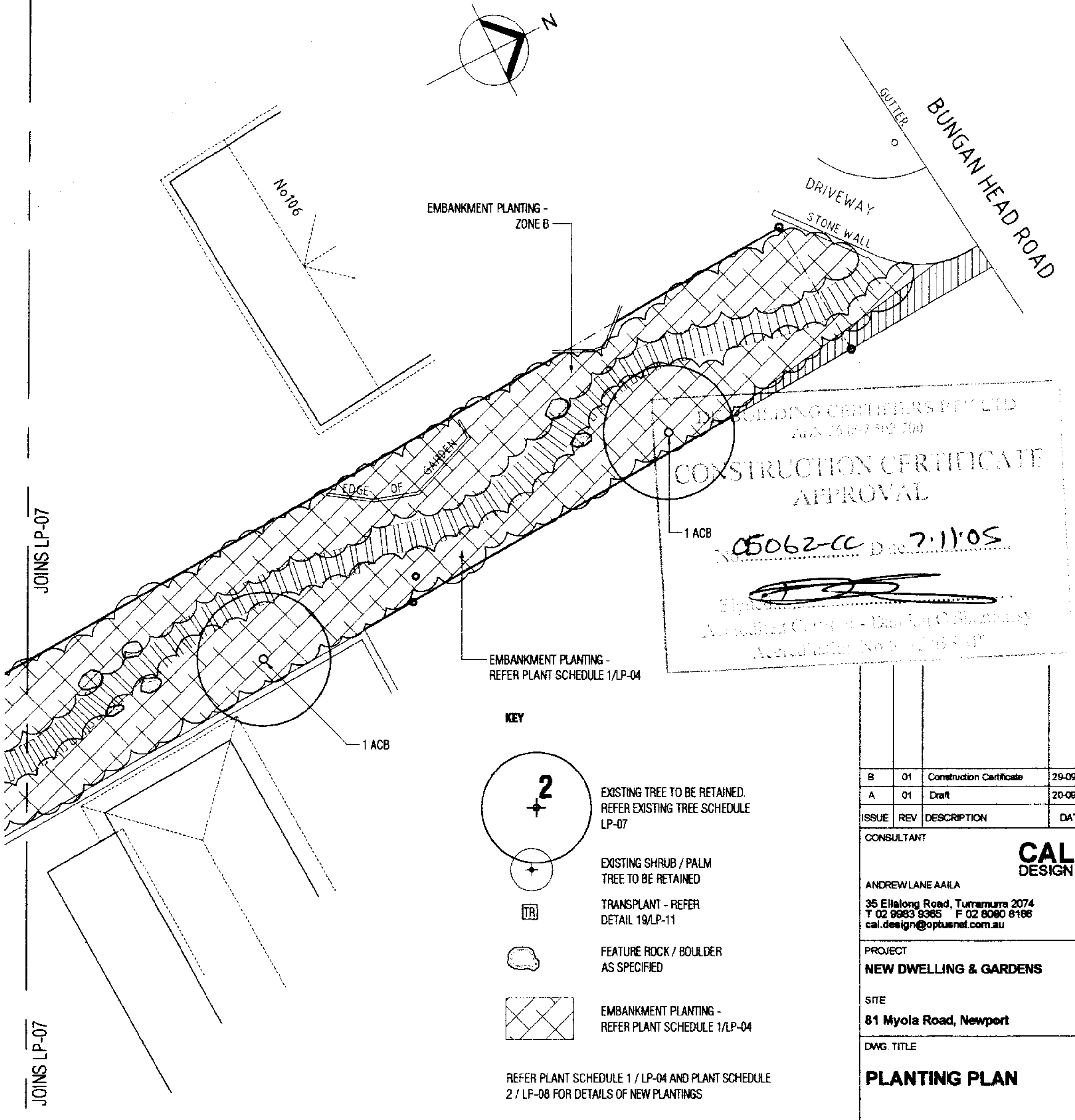
DWG. TITLE: **PLANTING PLAN**

SCALE: 1:200 @ A3 | DATE: Sept 2005

DWG. NO.: LP-07 | REVISION: 01

PLANT SCHEDULE 2 (REFER LP-04 FOR PLANT SCHEDULE 1 - PLANTING TO EMBANKMENTS)

SYM	SPECIES	COMMON NAME	QTY	SIZE
	Canopy Trees			
ANC	*Angophora costata*	Smooth-Barked Apple	2	25L
ACB	*Acacia binervia*	Coastal Myall	3	25L
MEQ	*Melaleuca quinquenervia*	Large-Leaved Paperbark	1	45L
	Palm Trees			
ARC	*Archontophoenix cunninghamiana*	Bangalow Palm	3	75L
HOF	*Howea forsteriana*	Kentia Palm	6	25L-45L
RHE	*Rhapis excelsa*	Lady Palm	1	100L
	Small Trees and Shrubs			
ACC	*Acacia cultriformis* 'Austraflora Cascade'	Knife-Leaf Wattle (Prostrate Form)	3	5L
ACM	*Acmena smithii* var. *minor*	Small-Leaved Lilly Pilly	23	25L
ANB	*Anigozanthos* 'Bush Gem'	Dwarf Kangaroo Paw	5	140mm
ANF	*Anigozanthos flavidus*	Green Kangaroo Paw	9	140mm
ANR	*Anigozanthos rufus*	Red Kangaroo Paw	7	140mm
BLN	*Blechnum cartilaginem*	Gristle Fern	22	5L
CAV	*Callistemon viminalis*	Weeping Bottlebrush	1	25L
CLG	*Clivia miniata* var. *hybrida*	Cream Hybrid Bush Lily	13	5L
CRP	*Crinum pedunculatum*	Swamp Lily	5	25L
CYR	*Cycas revoluta*	Sago Palm	5	25L-45L
DEH	*Decaspermum humile*	Satinash	3	75L
DII	*Dietes iridioides*	Fortnight Lily	17	140mm
DOP	*Doryanthes palmeri*	Palm Lily	3	45L
DOV	*Dodonaea viscosa*	Hop Bush	2	5L
ELE	*Elaeocarpus eumundii*	Eumundy Quandong	3	75L
EUP	*Euphorbia* spp.	Spurge	11	5L
GRB	*Grevillea* 'Banksii'	Bank's Grevillea	1	5L
HEB	*Hebe* 'Autumn Beauty'	Veronica	11	5L
HEG	*Helmholtzia glaberrima*	Stream Lily	5	5L
LAD	*Lavandula dentata*	French Lavender	3	140mm
LOH	*Lomandra hystrix*	Tropical Mat-Rush	16	140mm
MAL	*Magnolia* 'Little Gem'	Dwarf Bull Bay Magnolia	3	35L
MET	*Metrosideros* 'Thomasii'	New Zealand Christmas Bush	10	45L
PHN	*Phyllostachys nigra*	Black-Stemmed Bamboo	24	25L
PHT	*Phormium cookianum*	Bronze Flax Lily	2	5L
PLR	*Plumeria rubra* var. *acutifolia*	Frangipani	1	100L
ROV	*Rhododendron vireya*	Vireya Rhododendron	5	25L
RUE	*Russelia equisetiformis*	Coral Fountain	5	5L
STP	*Strelitzia parvifolia*	Crane Flower	6	10L
SYA	*Syzygium australe*	Brush Cherry	12	45L
SYC	*Syzygium* 'Cascade'	Weeping Riberry	30	25L
SYL	*Syzygium leuhmannii*	Riberry	3	25L
VIO	*Viburnum odoratissimum*	Sweet Viburnum	13	25L
XAR	*Xanthostemon resinosum*	Golden Penda	1	75L
	Groundcovers			
COM	*Convolvulus mauritanicus*	Moroccan Glory Vine	11	140mm
DIB	*Dianella* 'Breeze'	Clumping Flax Lily	100	140mm
FEG	*Festuca glauca*	Blue Fescue	15	140mm
LIG	*Liriope* 'Evegreen Giant'	Giant Lilyturf	115	5L
LOT	*Lomandra* 'Tanika'	Fine-Leaved Mat-Rush	8	5L
OPN	*Ophiopogon planiscapus* 'Nigrescens'	Black Mondo Grass	115	140mm
POA	*Poa labillardieri* 'Eskdale'	Blue Tussock Grass	15	140mm
TRJ	*Trachelospermum jasminoides*	Chinese Star Jasmine	10	5L



KEY

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- TR — TRANSPLANT - REFER DETAIL 19/LP-11
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- EMBANKMENT PLANTING - REFER PLANT SCHEDULE 1/LP-04

REFER PLANT SCHEDULE 1 / LP-04 AND PLANT SCHEDULE 2 / LP-08 FOR DETAILS OF NEW PLANTINGS

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B	01	Construction Certificate	29-09-05
A	01	Draft	20-09-05

CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8166
cal.design@optusnet.com.au

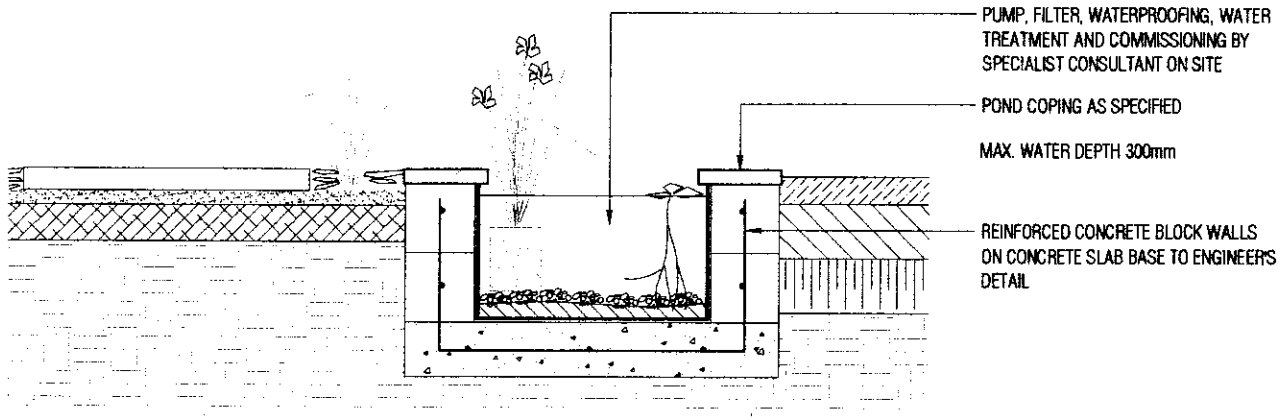
PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
PLANTING PLAN

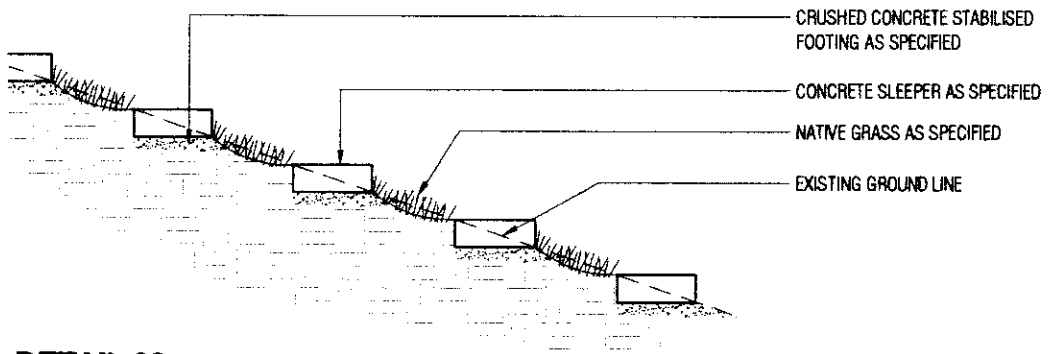
SCALE 1:200 @ A3 | DATE Sept 2005

DWG. NO. LP-08 | REVISION 01



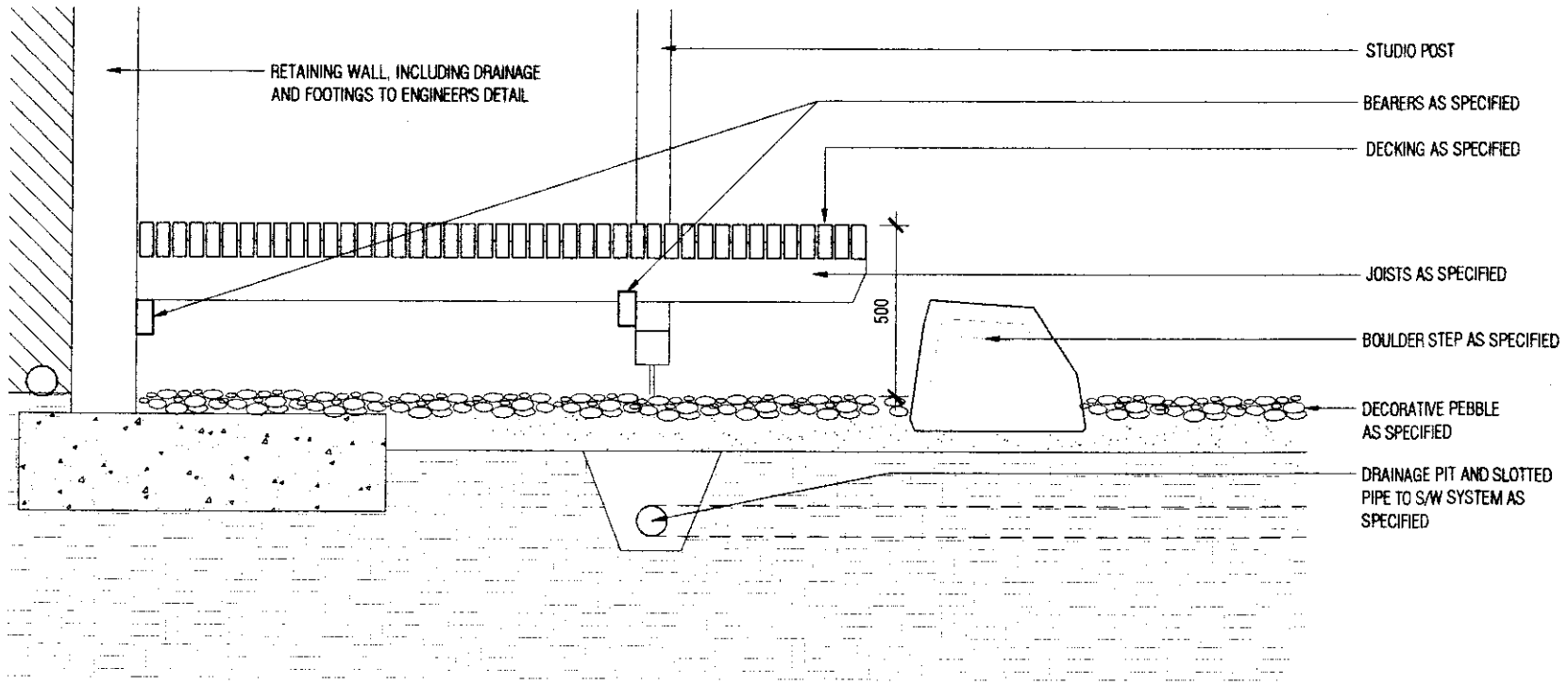
DETAIL 01

ORNAMENTAL POND 1:20 @ A3



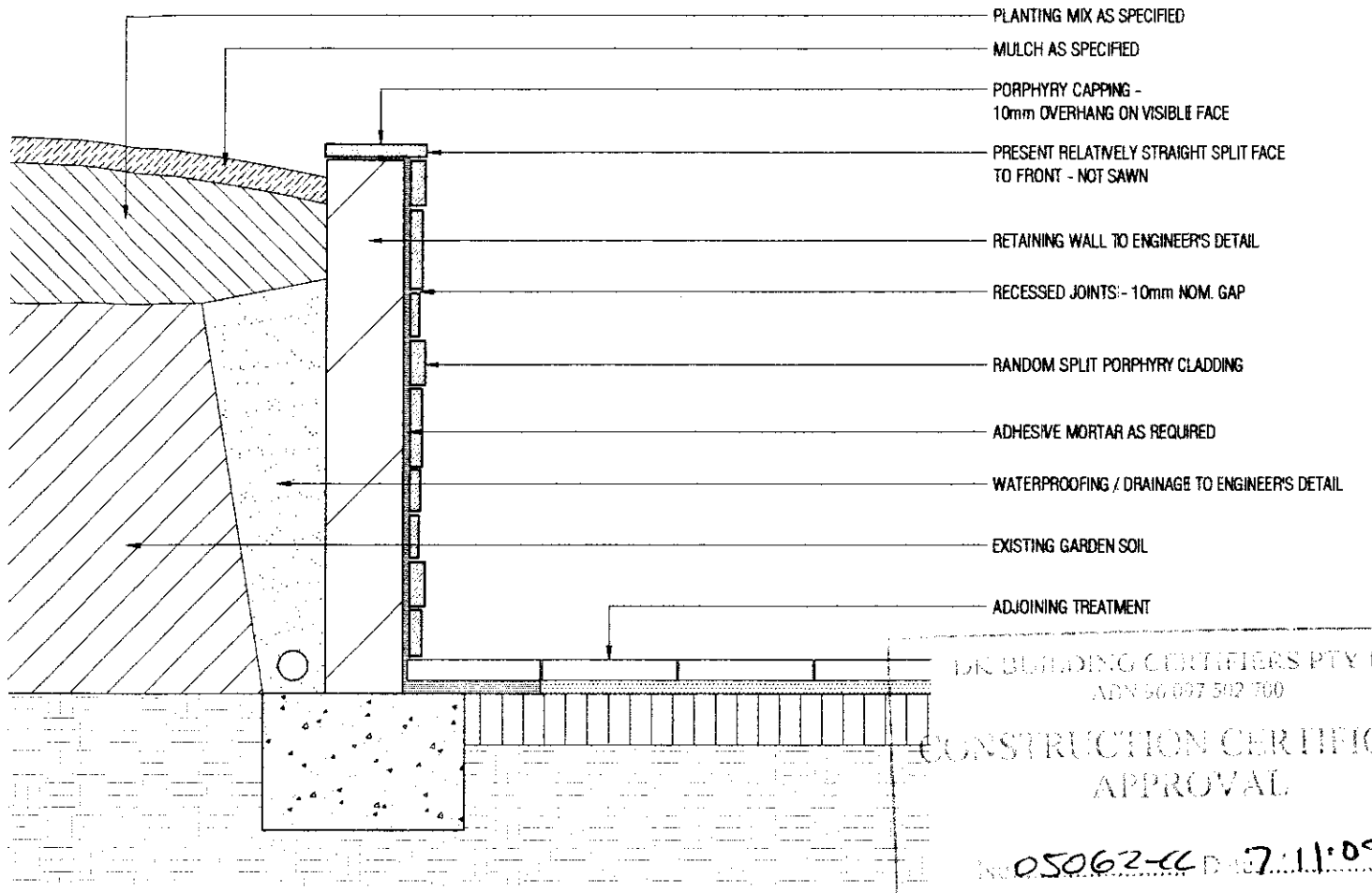
DETAIL 02

ACCESS TRACK 1:20 @ A3



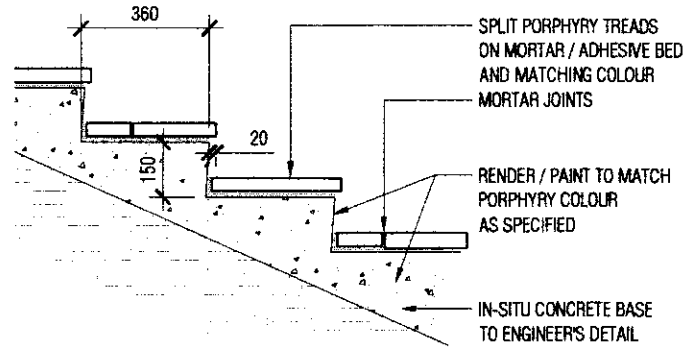
DETAIL 03

TIMBER PLATFORM 1:20 @ A3



DETAIL 04

PORPHYRY CLADDING (RW1, W1, W2) 1:20 @ A3



DETAIL 05

PORPHYRY STEPS 1:20 @ A3

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CONSTRUCTION CERTIFICATE APPROVAL
No 05062-CC Date 7.11.05.

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CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Elsiong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

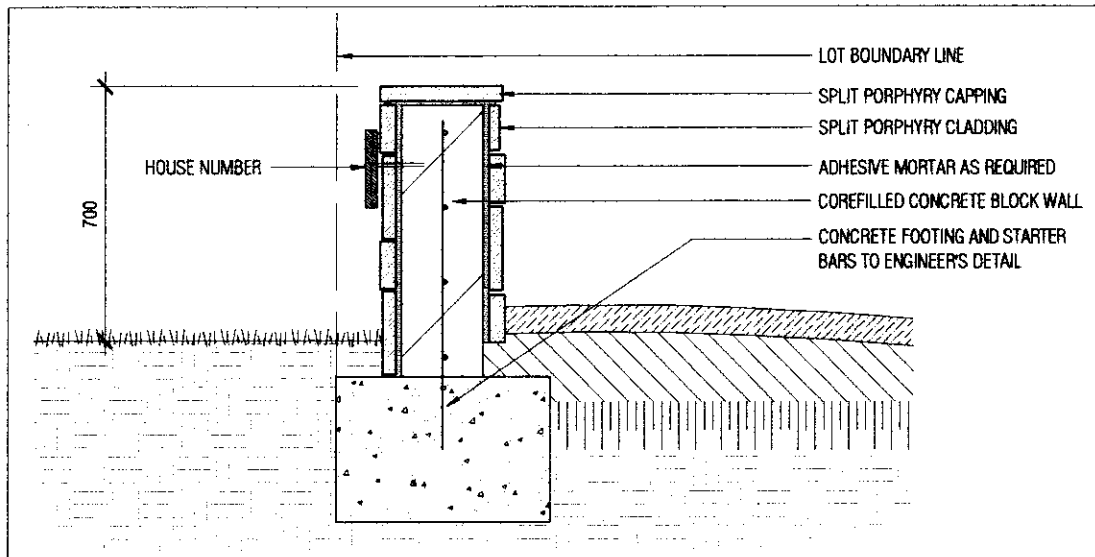
DWG. TITLE
DETAILS

SCALE

DATE
Sept 2005

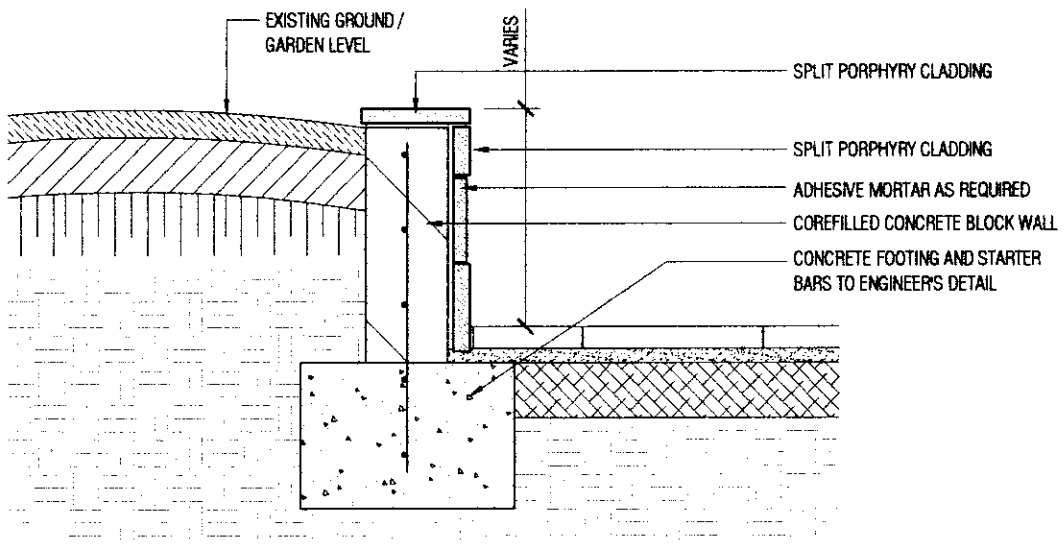
DWG. NO.
LP-09

REVISION
01



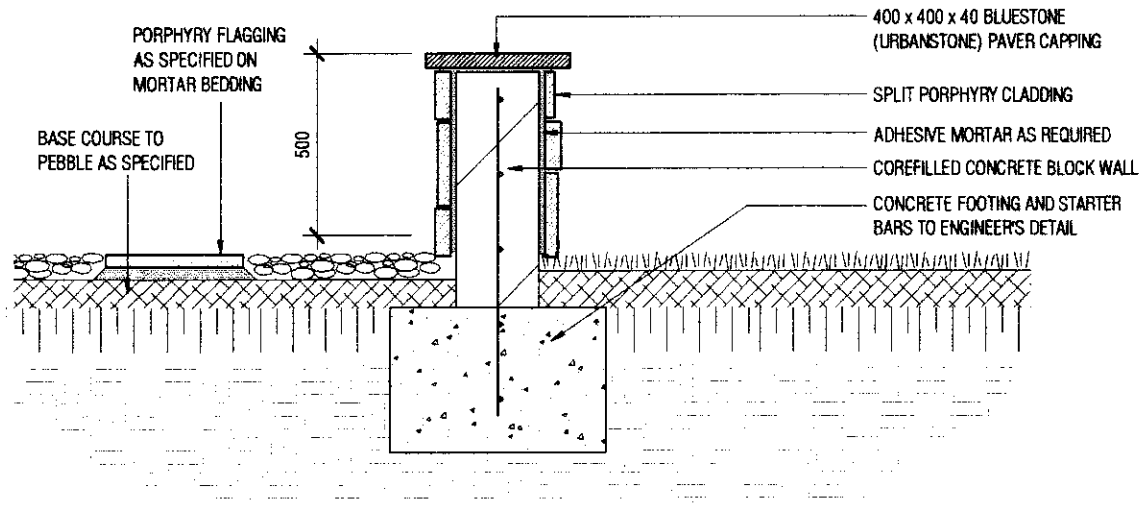
DETAIL 06

ENTRY WALL (GW1) 1:20 @ A3



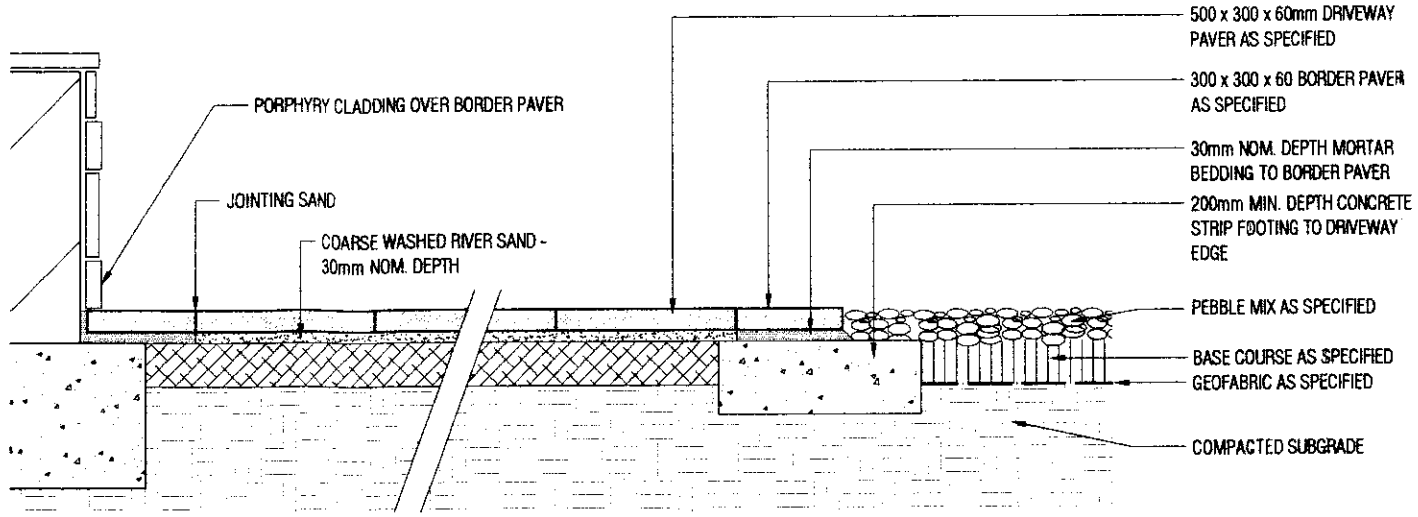
DETAIL 07

LOW RETAINING WALL (GW2) 1:20 @ A3



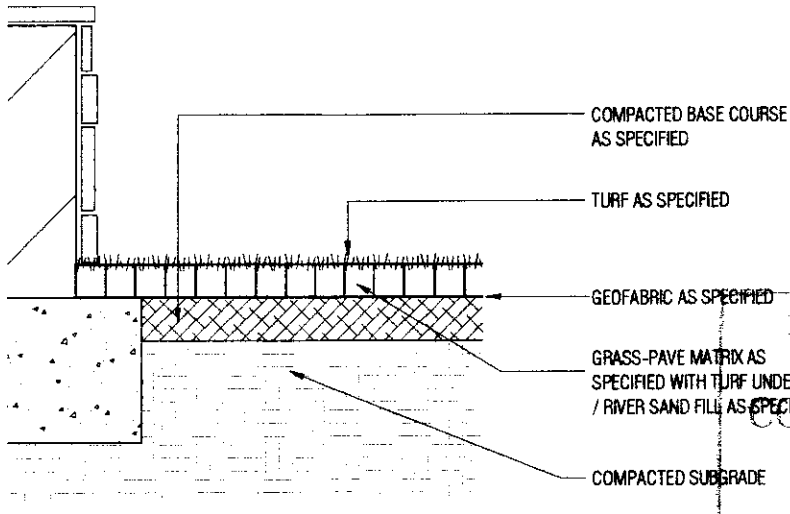
DETAIL 08

SITTING WALL (GW3) - PORPHYRY FLAGGING (P5) TRANSITION 1:20 @ A3



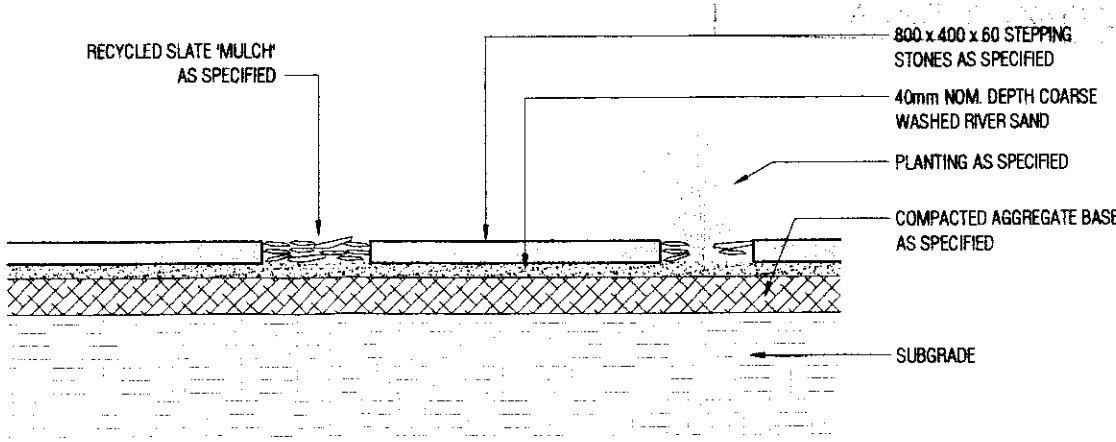
DETAIL 09

DRIVEWAY PAVING (P1) - PEBBLE (P4) TRANSITION 1:20 @ A3



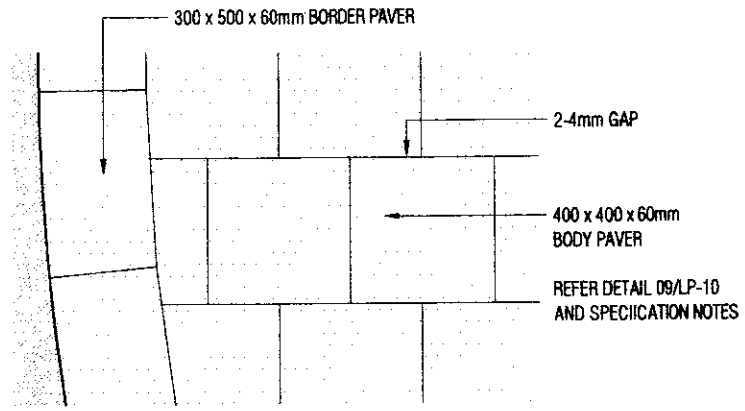
DETAIL 10

GRASS-PAVE (P2) 1:20 @ A3



DETAIL 11

STEPPING STONES (P3) 1:20 @ A3



DETAIL 09A

DRIVEWAY PAVING (P1) - PATTERN 1:20 @ A3

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CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
DETAILS

SCALE

DATE
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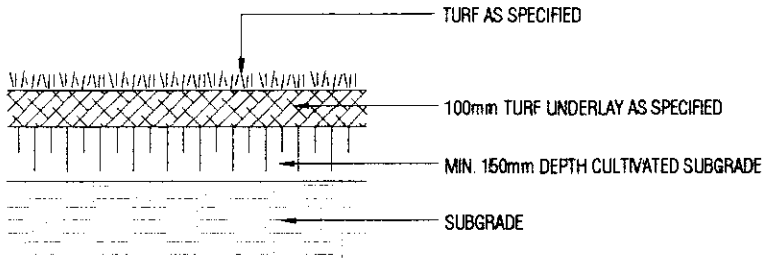
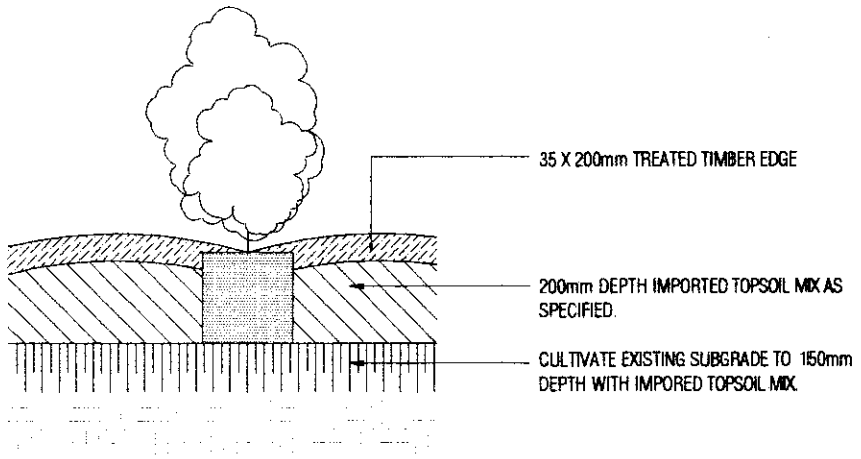
DWG. NO.
LP-10

REVISION
01



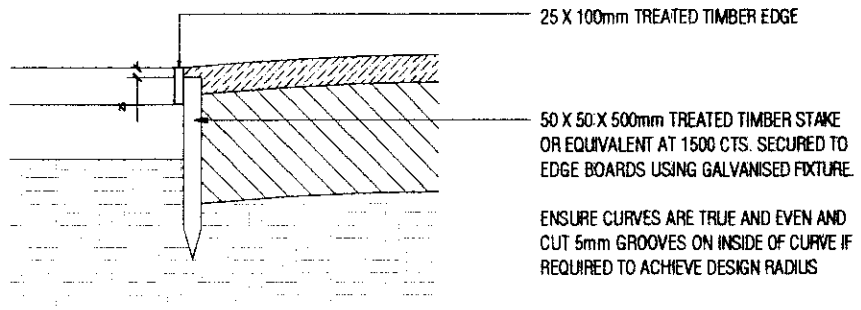
DETAIL 12

TURF 1:20 @ A3



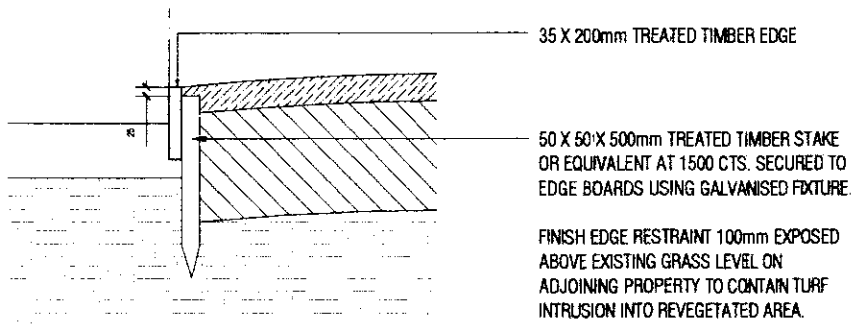
DETAIL 13

SHRUB PLANTING 1:20 @ A3



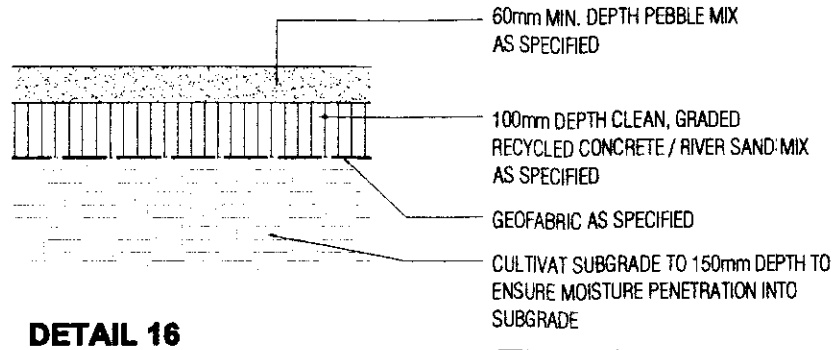
DETAIL 14

TIMBER EDGE (TE) 1:20 @ A3



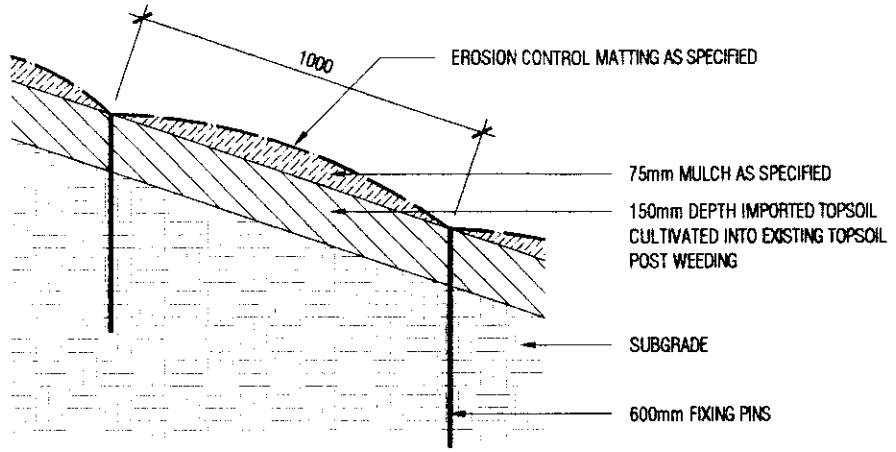
DETAIL 15

TIMBER EDGE (TE1) 1:20 @ A3



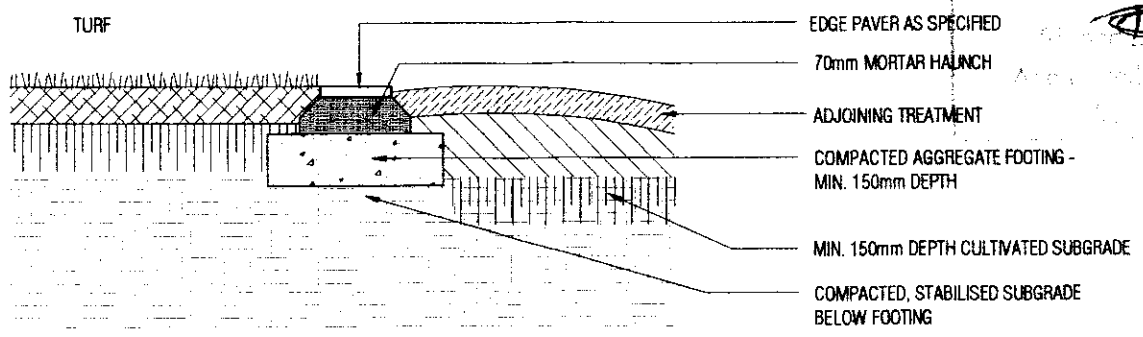
DETAIL 16

PEBBLE GROUNDCOVER (P4) 1:20 @ A3



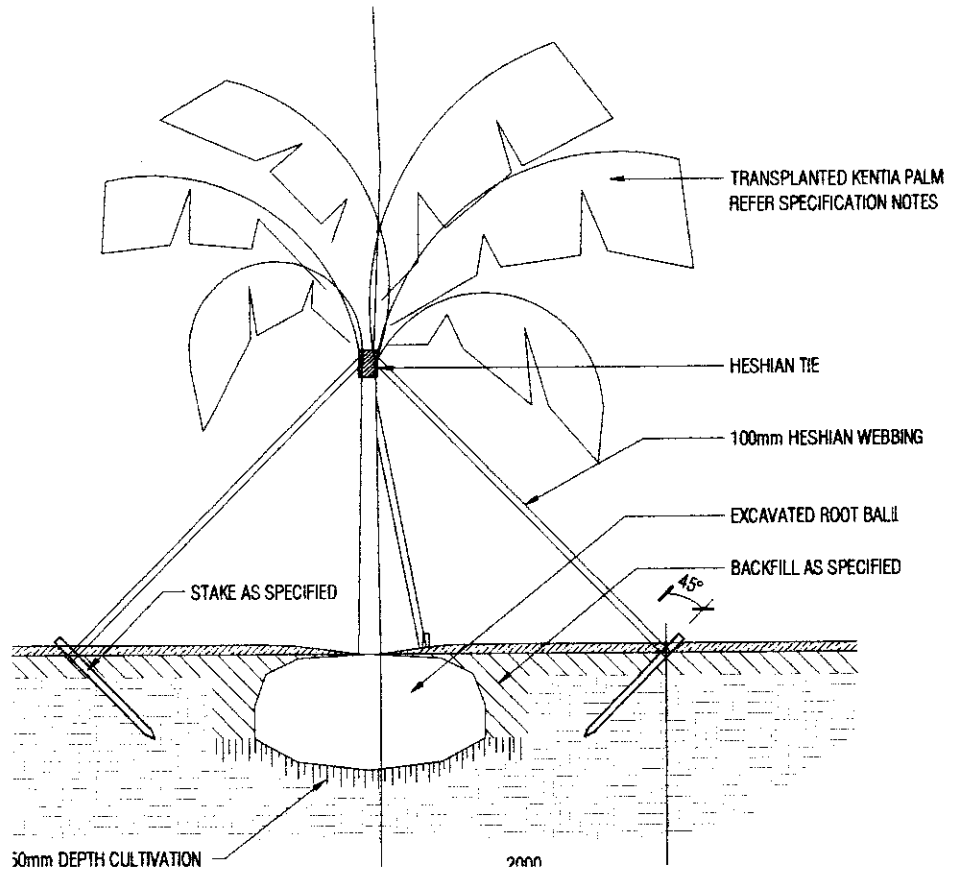
DETAIL 17

EMBANKMENT PLANTING 1:20 @ A3



DETAIL 18

GRADEN EDGING 1:20 @ A3



DETAIL 19

PALM TRANSPLANTS 1:20 @ A3

ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	29-09-05
A	01	Draft	20-09-05

CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

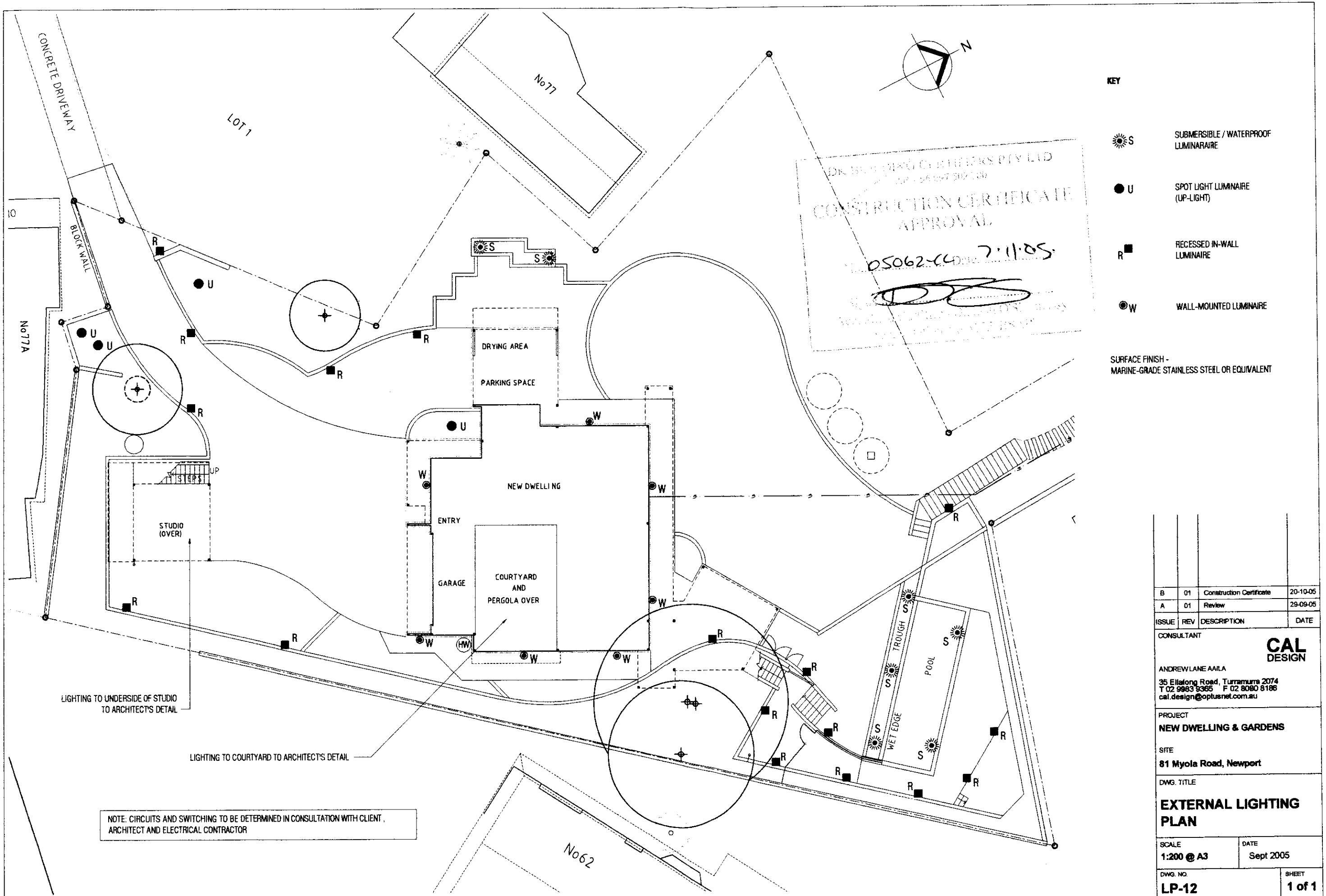
DWG. TITLE
DETAILS

SCALE

DATE
Sept 2005

DWG. NO.
LP-11

REVISION
01



ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	20-10-05
A	01	Review	29-09-05

CONSULTANT

CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 8186
cal.design@optusnet.com.au

PROJECT
NEW DWELLING & GARDENS

SITE
81 Myola Road, Newport

DWG. TITLE
EXTERNAL LIGHTING PLAN

SCALE	DATE
1:200 @ A3	Sept 2005

DWG. NO.	SHEET
LP-12	1 of 1

SPECIFICATION NOTES

SCOPE OF WORK
LANDSCAPE WORKS TO INCLUDE, BUT NOT NECESSARILY BE LIMITED TO, THE FOLLOWING:
HARDWORKS -
FREE-STANDING AND SECONDARY GARDEN RETAINING WALLS (GW1, GW2, GW3) INCLUDING INFORMAL SANDSTONE RETAINING WALL AT THE BOTTOM OF THE ACCESS TRACK ADJOINING BUNGAN HEAD ROAD.
PORPHYRY CLADDING AND CAPPING TO PRIMARY RETAINING WALLS (RW1). WALLS TO BE CONSTRUCTED BY THE BUILDER.
PORPHYRY CAPPING TO ACCESS STEPS (S1). CONCRETE BASE STRUCTURE TO BE CONSTRUCTED BY THE BUILDER.
CONCRETE SLEEPER STEPS TO ACCESS TRACK (S2).
GARDEN EDGING (SE, TE, TE1).
ONAMENTAL POND, TIMBER PLATFORM ADJACENT STUDIO PAVILLION AND FEATURE ROCK ELEMENTS.
DRIVEWAY PAVING (P1), GRASS-PAVE (P2), CONCRETE AND PORPHYRY STEPPING STONES AND MIXED PEBBLE GROUNDCOVERS (P3, P4, P5), INCLUDING SUBGRADE COMPACTION/ REMEDIATION AND BASE COURSE PREPARATION.

SOFTWORKS -
TRANSPLANTATION OF SELECTED PLANT SPECIMENS.
WEEDING, SUBGRADE CULTIVATION AND TOPSOIL AMELIORATION WITH IMPORTED SOIL MIXES AND CONDITIONERS.
SOIL STABILISATION USING EROSION CONTROL MATTING TO EMBANKMENT AREAS.
PLANT SUPPLY, PLANTING AND MULCHING WORKS.

ESTABLISHMENT MAINTENANCE AND DRIP IRRIGATION WORKS.

GENERAL PREPARATION & SOIL WORKS
CONTRACTOR TO ENSURE ALL APPROVED BUILDING WORKS ARE COMPLETED AND FUNCTIONAL, INCLUDING VERIFICATION OF ALL BURIED SERVICES AND UTILITIES INFRASTRUCTURE. ALL BUILDING DEBRIS IS REMOVED AND WORKABLE SUBGRADE LEVELS ARE PRESENTED PRIOR TO HAND-OVER AND COMMENCEMENT OF LANDSCAPE WORKS.
BACKFILL TO PLANTING HOLES IS TO BE WITH PREMIUM SOIL MIXES SUITABLE FOR EACH PLANT GROUP TYPE AND COMPLYING WITH AS 4419.
RAISED / BOXED PLANTERS ARE TO BE BACKFILLED WITH A PRE-APPROVED PREMIUM PLANTER BOX MIX (LOW ORGANIC CONTENT), WHICH IS FREE-DRAINING, MOISTURE RETENTIVE AND LOW IN PHOSPHORUS CONTENT (SUITABLE FOR USE WITH NATIVE PLANTS) AND COMPLYING WITH AS 4419.

TRANSPLANTING GUIDE
AVOID HOT AND WINDY WEATHER WHEN TRANSPLANTING.
TWO WEEKS PRIOR TO TRENCH DIGGING / REMOVAL PRUNE OFF WORN, DAMAGED AND LOWER FRONDS FROM PALM TREES AND APPROXIMATELY 1/3 OF FOLIAGE FROM SHRUBS. MOISTEN ROOT ZONE WITH SLOW PENETRATING WATERING OVER THIS PERIOD MIXED WITH A DILUTED SEAWEED-BASED SOIL CONDITIONER.
WHERE SPECIMENS ARE TO BE RELOCATED IMMEDIATELY, PREPARE HOLES AND STOCKPILE AMELIORATED TOPSOIL OR IMPORTED SOIL MIX READY FOR BACKFILLING. OBTAIN ALL NECESSARY TRANSPLANTING AIDS AS DESCRIBED BELOW. FENCE OR CLEARLY MARK HOLES TO AVOID TRIP HAZARD IF LEFT OVERNIGHT. DETERMINE APPROPRIATE ROOT BALL SIZE ACCORDING TO SPECIMEN TYPE AND SIZE AND MEANS OF TRANSPORTATION BEFORE DIGGING TRENCH.
PRIOR TO REMOVAL APPLY TRANSPIRATION INHIBITOR TO FOLIAGE AS INSTRUCTED AND CAREFULLY REMOVE SPECIMEN BY CUTTING ROOTS EXTENDING BEYOND TRENCH WITH CLEAN, SHARP CUTTERS.
WRAP ROOT BALL IN MOIST HESHIAN AND TRANSPORT CAREFULLY TO NEW LOCATION OR STORAGE AREA. PREPARE NEW HOLE ACCORDING TO ROOT BALL DEPTH, CULTIVATE BASE MATERIAL TO ENSURE ADEQUATE DRAINAGE AND PLACE SPECIMEN IN HOLE WITH TOP OF ROOT BALL LEVEL WITH PROPOSED FINISHED SURFACE LEVEL OF GARDEN BED.
CHECK ORIENTATION AND STATURE OF SPECIMEN AND BACKFILL WITH STOCKPILED MATERIAL. SECURE LARGE SPECIMENS WITH HESHIAN TIES AND STAKES AS INSTRUCTED. MULCH AS SPECIFIED.
MOISTEN AREA WITH DILUTED ROOT STIMULANT OR EQUIVALENT AT APPROPRIATE TIMES AND MAINTAIN WATERING REGIME AS NECESSARY WITHOUT WATERLOGGING. RE-APPLY TRANSPIRATION INHIBITOR AS REQUIRED.
MONITOR AND CARE FOR TRANSPLANTS UNTIL ESTABLISHED.

PLANTS AND PLANTING
OBTAIN AND ORDER PLANTS FROM APPROVED SUPPLIERS. ALL PLANTS SHALL DISPLAY AN OPTIMUM HABIT OF GROWTH AND SHALL BE SOUND, HEALTHY, VIGOROUS AND FREE FROM DISEASE. ANY TREE OR SHRUB DISPLAYING A WEEK, BENT OR THIN TRUNK, NOT CAPABLE OF SUPPORTING ITSELF WHEN PLANTED IN THE OPEN SHOULD NOT BE USED. ALL PLANTS TO HAVE A LARGE HEALTHY ROOT SYSTEM, WITH NO EVIDENCE OF ROOT CURL, RESTRICTION OR DAMAGE.
THOROUGHLY WATER PLANTS PRIOR TO PLANTING AND IMMEDIATELY UPON INSTALLATION IN PREPARED BEDS AND HOLES. ENSURE THAT AFTER PLANTING THE TOPSOIL LEVEL OF THE ROOT BALL IS LEVEL WITH THE FINISHED SURFACE LEVEL OF THE SURROUNDING SOIL AND IS NOT IN CONTACT WITH THE TRUNK.
AN APPLICATION OF AN APPROVED SLOW RELEASE FERTILISER, SUITABLE TO EACH PLANT TYPE, SHALL BE PLACED AT THE BASE OF EACH PLANT IN ACCORDANCE WITH THE MANUFACTURERS' WRITTEN SPECIFICATION.

MULCHING, IRRIGATION AND MAINTENANCE
MULCH ALL GARDEN AREAS TO A MINIMUM 75MM DEPTH OF COVER USING HORTICULTURAL GRADE MULCH AS SPECIFIED IN THE MATERIALS SCHEDULE OPPOSITE.
THE CAREFUL PLANNING AND INSTALLATION OF A FULLY AUTOMATED DRIP-IRRIGATION SYSTEM, BY AN EXPERIENCED IRRIGATION SPECIALIST, SHALL BE CARRIED OUT IN ORDER TO HELP ESTABLISH AND MAINTAIN ALL NEW PLANTED AREAS, ESPECIALLY IF WORK IS CARRIED OUT IN SUMMER.
AN INTEGRATED 13 WEEK POST CONSTRUCTION MAINTENANCE CONTRACT IS RECOMMENDED INITIALLY TO ENSURE PROPER ESTABLISHMENT OF PLANTINGS AND TO MONITOR IRRIGATION SET-UP AND SOIL CONDITIONS, INCLUDING PH, MOISTURE BALANCE AND ROOT GROWTH. THEREAFTER PROFESSIONAL HORTICULTURAL MAINTENANCE SHALL REGULARLY CHECK THE PROGRESS OF NEW PLANTINGS, SELECTIVELY PRUNING FOLIAGE TO MAINTAIN COMPACT AND VIGOROUS GROWTH HABITS AND HEIGHTS. MAINTENANCE TO INCLUDE REGULAR FERTILISING AND TOPPING UP OF MULCH LEVELS AND REGULAR IRRIGATION FINE-TUNING TO SUIT PREVAILING ATMOSPHERIC AND SUBSOIL CONDITIONS AND GARDEN ESTABLISHMENT RATES. PARTICULAR ATTENTION NEEDS TO BE MADE TO TRANSPLANTS FOR A PERIOD OF APPROXIMATELY ONE YEAR.

MATERIALS SCHEDULE

CONCRETE PRODUCTS
DRIVEWAY PAVING (P1) -
BODY PAVER: STONEVUE *ECOVUE* 400 x 400 x 60mm IN 'MIST GREEN' COLOUR
BORDER PAVER: STONEVUE *ECOVUE* 500 x 300 x 60mm IN 'MIST GREEN' COLOUR
Contact: stonevue, tel- 03 9374 2811

STEPPING STONES (P3) -
STONEVUE *ECOVUE* 400 x 800 x 60mm IN 'MIST GREEN' COLOUR
Contact: as above

GARDEN EDGING (SE) -
URBANSTONE *ULTRA PREMIUM COLLECTION* 400 x 400 x 40mm IN 'BLUESTONE'
Contact: Phillip Isenegger, tel- 02 9907 2382 fax- 02 9907 2462

CAPPING (TO FREESTANDING SITTING WALL GW3) -
URBANSTONE *ULTRA PREMIUM COLLECTION* 400 x 400 x 40mm IN 'BLUESTONE'
Contact: as above

CONCRETE SLEEPERS (S2) -
GUMNET PRE-CAST CONCRETE REPLICA SLEEPERS 1200 x 220 x 75mm
Contact: Mike @ Masonary and Slate, tel- 02 9624 7133 fax- 02 9674 6560

NATURAL ROCK, STONE & PEBBLE
SANDSTONE ROCKS -
600W x 600L x 400H NOM. RECYCLED ROCK WITH FLAT TOP FOR STEP AT TIMBER PLATFORM (STUDIO).
700W x 700L x 700H NOM. RECYCLED ROCK WITH FLAT TOP FOR POOL-SIDE GARDEN BED.
600W x 600L x 400H NOM. RECYCLED ROCK WITH ANGULAR SHAPE FOR ACCESS PATH.
Contact: Local recycler.

STONE CLADDING / CAPPING (RW2, GW1, GW2, GW3, S1) -
AUSTRALIAN PORPHYRY STONE, RANDOM SPLIT STONE IN STANDARD GREY MIX.
Contact: Gary Bazzana @ JML International P/L, tel- 02 9411 7266 fax- 02 9413 2044

STEPPING STONES (P5) -
AUSTRALIAN PORPHYRY STONE, SELECTED LARGE RANDOM SPLIT STONE IN STANDARD GREY MIX.
Contact: as above

SLATE MULCH (P3) -
RECYCLED SLATE CHIPS, VARIABLE SIZE.
Contact: David or Angela @ Stoned, tel- 0428 608 850

MIXED PEBBLE (P4) -
80% 'SEAL GREY' DECORATIVE PEBBLE, 20-30mm GRADE.
20% 'POLISHED BLACK' DECORATIVE PEBBLE, 30-50mm GRADE.
Contact: as above

PEBBLE MULCH (P5) -
'GREEN' DECORATIVE PEBBLE, 7-9mm GRADE.
Contact: as above

TIMBER & ACCESSORIES
TIMBER PLATFORM (ADJACENT STUDIO) -
F17 KILN-DRIED HARDWOOD OR RECYCLED EQUIVALENT ALL TO CARPENTER'S SPECIFICATIONS.
NATURAL FINISH SURFACE AND PENETRATING SEALANTS AND PRESERVATIVES AND GALVANISED FIXINGS TO CARPENTERS' SPECIFICATIONS.

TIMBER EDGE (TE) -
25 x 100mm TIMBER EDGE BOARD AND 50 x 50 x 500mm STAKES OR EQUIVALENT, SUITABLE FOR IN-GROUND USE, + GALVANISED FIXINGS.

TIMBER EDGE (TE1) -
35 x 200mm EDGING BOARD AND 50 x 50 x 500mm STAKES OR EQUIVALENT, SUITABLE FOR IN-GROUND USE, + GALVANISED FIXINGS.

EROSION CONTROL MATTING
BIO T900 EROSION CONTROL MATTING OR APPROVED EQUIVALENT.
Contact: Raymond Chow @ Maccaferri, tel- 02 8825 6300

TURF
REAR LAWN AND GRASS-PAVE (P2) AREAS -
Cynodon dactylon - COUCH GRASS, VARIETY: *tbc*

MULCH (RECYCLED PRODUCTS)
GENERAL AREAS -
PINE BARK HORTICULTURAL GRADE, FINE (15mm) GRADED PINE BARK OR APPROVED EQUIVALENT.

EMBANKMENT AREAS -
AGED, WELL-COMPOSTED NATIVE LEAF MULCH, COARSE (20-40mm) GRADE OR COARSE NO-FINES PINE CHIP.

SOIL MIXES AND CONDITIONERS
GENERAL ON-GRADE AREAS -
PREMIUM LOW PHOSPHOROUS SOIL CONDITIONERS AND AMELIORANTS (TO BE CULTIVATED INTO CLEANED/ CULTIVATED SITE TOPSOIL) INCLUDING WETTING AGENTS.

RAISED OR BOXED PLANTING BEDS -
PREMIUM FREE-DRAING LOW PHOSPHOROUS PLANTER BOX MIX (LOW ORGANIC CONTENT FOR DEPTHS OVER 300mm) INCLUDING WETTING AGENTS.

EMBANKMENT AREAS -
PREMIUM NATIVE SOIL CONDITIONING MIXES AND AMELIORANTS (TO BE CULTIVATED INTO CLEANED/ CULTIVATED SITE TOPSOIL) INCLUDING WETTING AGENTS.

BASE-COURSE MATERIALS
TO PERMEABLE AND SEMI-PERMEABLE PAVEMENTS (P1, P2, P3) -
CLEAN, FREE-DRAINING RECYCLED AGGREGATE TO AUSTRALIAN STANDARDS.
COMPACTION TO 95% MMDD (modified maximum dry density).

TO SLATE MULCH (P3) -
MEDIUM-GRADE RECYCLED CRUSHED SANDSTONE

TO MIXED PEBBLE (P4) -
FINE-GRADE RECYCLED CRUSHED CONCRETE.

TO PEBBLE MULCH (P5) -
FINE-GRADE RECYCLED CRUSHED SANDSTONE

SUBSOIL DRAINAGE AND RELATED MATERIALS
DRAINAGE -
CLEAN RECYCLED ANGULAR AGGREGATE TO BE PRE-APPROVED AND 90-100mm DIAMETER SLOTTED PVC AND FLEXIBLE PIPE WITH GEOTEXTILE SOC

GEOFABRIC -
PRE-APPROVED GEOTEXTILE FILTER FABRIC

HESHIAN WEBBING, STAR PICKETS
REFER DETAIL 19/LP-11 AND SPECIFICATION NOTES OPPOSITE - 'TRANSPLANTING GUIDE'

05062-CC 7.11.05

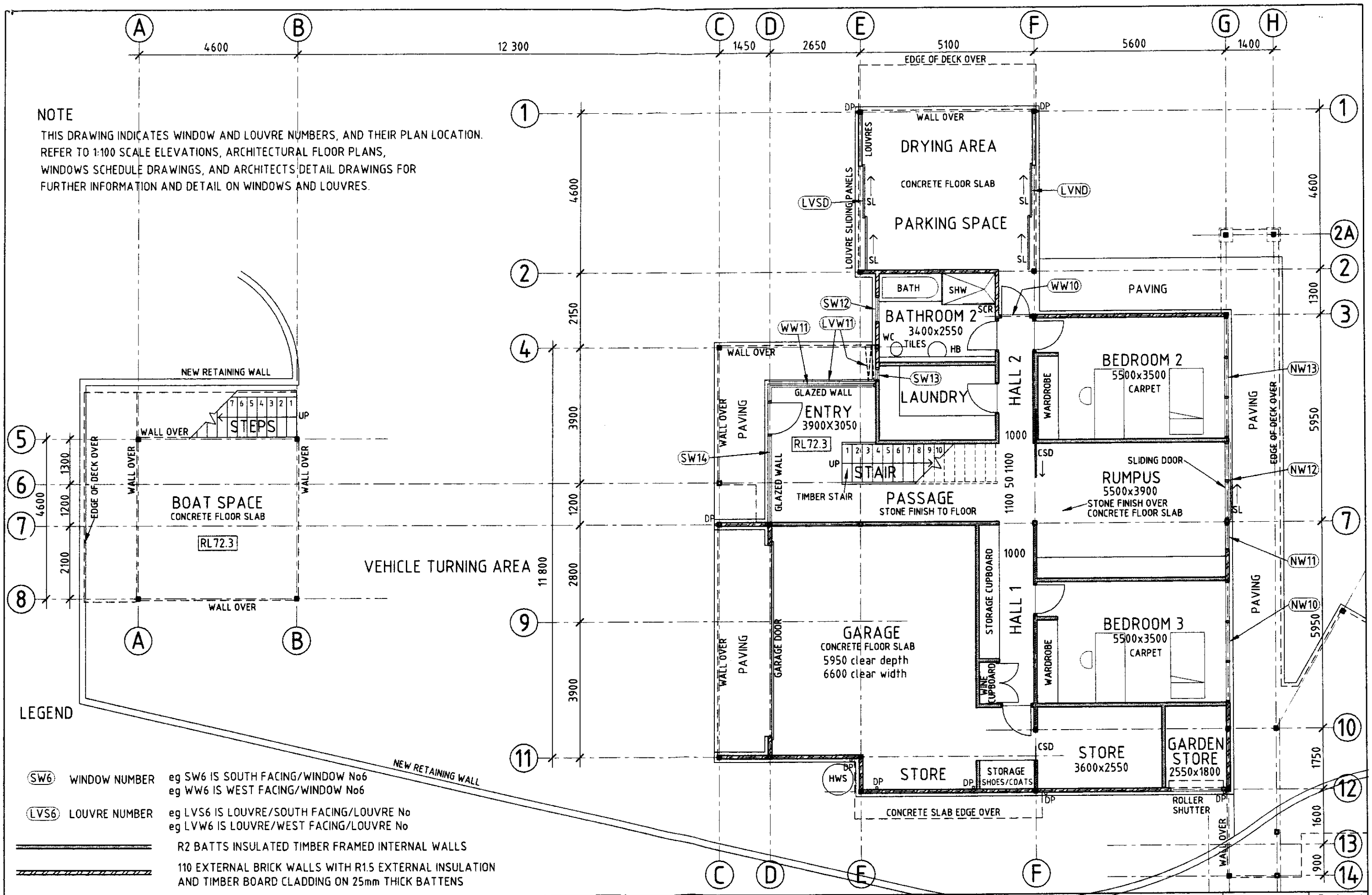
ISSUE	REV	DESCRIPTION	DATE
B	01	Construction Certificate	29-09-05
A	01	Draft	20-09-05

CONSULTANT
CAL DESIGN
ANDREW LANE AAILA
35 Ellalong Road, Turramurra 2074
T 02 9983 9365 F 02 8080 6186
cal.design@optusnet.com.au

PROJECT: **NEW DWELLING & GARDENS**
SITE: **81 Myola Road, Newport**
DWG. TITLE: **SPECIFICATION NOTES MATERIALS SCHEDULE**
SCALE:
DATE: Sept 2005
DWG. NO.: **LP-13**
REVISION: **01**

NOTE

THIS DRAWING INDICATES WINDOW AND LOUVRE NUMBERS, AND THEIR PLAN LOCATION.
REFER TO 1:100 SCALE ELEVATIONS, ARCHITECTURAL FLOOR PLANS,
WINDOWS SCHEDULE DRAWINGS, AND ARCHITECTS DETAIL DRAWINGS FOR
FURTHER INFORMATION AND DETAIL ON WINDOWS AND LOUVRES.



LEGEND

SW6	WINDOW NUMBER	eg SW6 IS SOUTH FACING/WINDOW No6 eg WW6 IS WEST FACING/WINDOW No6
LVS6	LOUVRE NUMBER	eg LVS6 IS LOUVRE/SOUTH FACING/LOUVRE No eg LVW6 IS LOUVRE/WEST FACING/LOUVRE No
		R2 BATTS INSULATED TIMBER FRAMED INTERNAL WALLS
		110 EXTERNAL BRICK WALLS WITH R1.5 EXTERNAL INSULATION AND TIMBER BOARD CLADDING ON 25mm THICK BATTENS

No	Amendments

CONSTRUCTION DRAWINGS

FILE: CCWINDMYOLA

Drawings Prepared By
Peter Burford - Architect
153 Australia St
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
WINDOW SCHEDULE
GROUND FLOOR PLAN
WINDOW LOCATIONS AND NUMBERS

Scale	Designed
1:100	P.B
Date	Drawn
19/9/05	N.H
Drawing No	Sheet No
C050601	W1

NOTE

THIS DRAWING INDICATES WINDOW AND LOUVRE NUMBERS, AND THEIR PLAN LOCATION.
REFER TO 1:100 SCALE ELEVATIONS, ARCHITECTURAL FLOOR PLANS,
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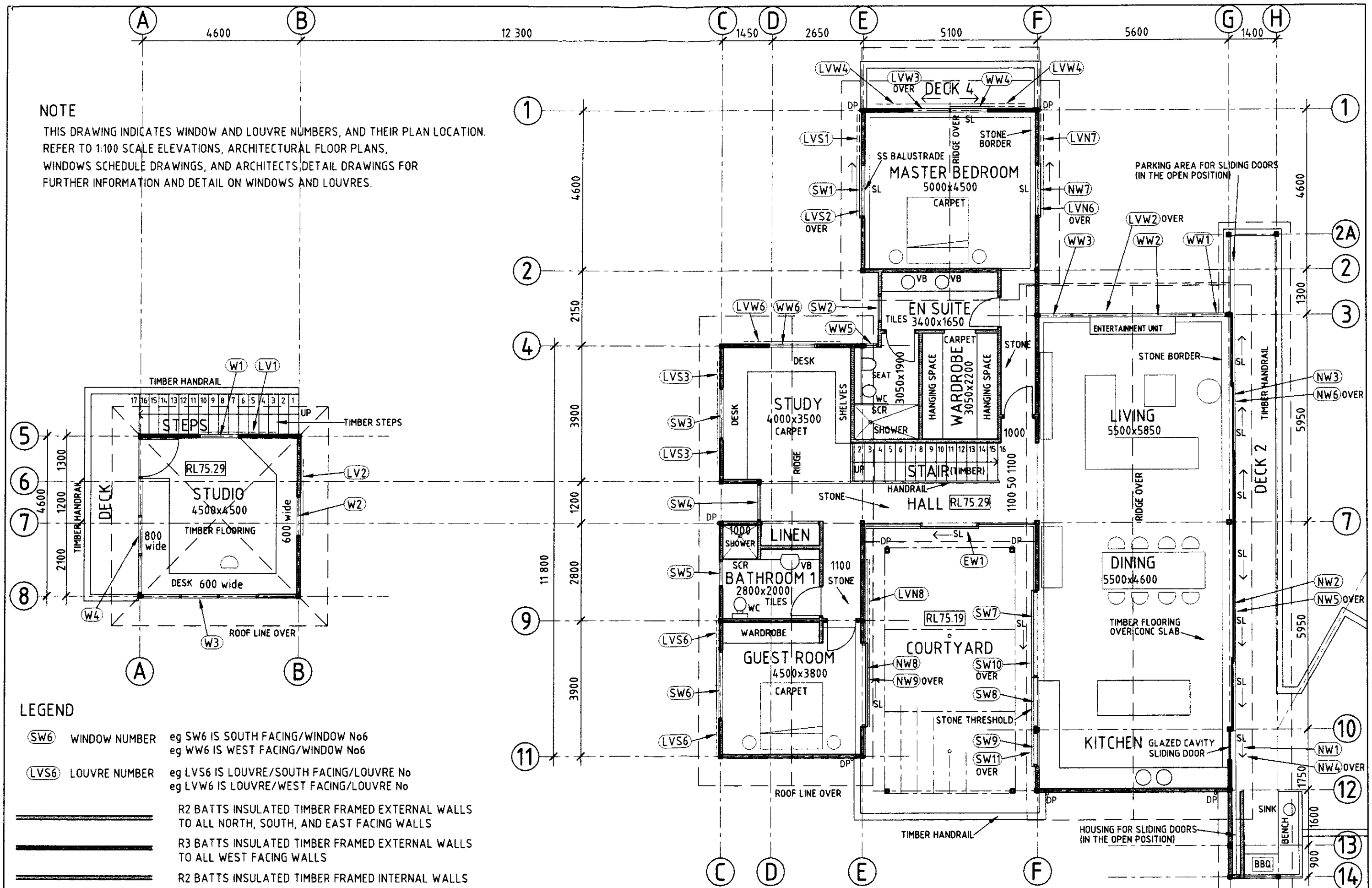
FURTHER INFORMATION AND DETAIL ON WINDOWS AND LOUVRES.



LEGEND

SW6	WINDOW NUMBER	eg SW6 IS SOUTH FACING/WINDOW No6 eg WW6 IS WEST FACING/WINDOW No6
LVS6	LOUVRE NUMBER	eg LVS6 IS LOUVRE/SOUTH FACING/LOUVRE No eg LVW6 IS LOUVRE/WEST FACING/LOUVRE No
═══		R2 BATTS INSULATED TIMBER FRAMED EXTERNAL WALLS TO ALL NORTH, SOUTH, AND EAST FACING WALLS
═══		R3 BATTS INSULATED TIMBER FRAMED EXTERNAL WALLS TO ALL WEST FACING WALLS
═══		R2 BATTS INSULATED TIMBER FRAMED INTERNAL WALLS

No	Amendments	Date

CONSTRUCTION DRAWINGS

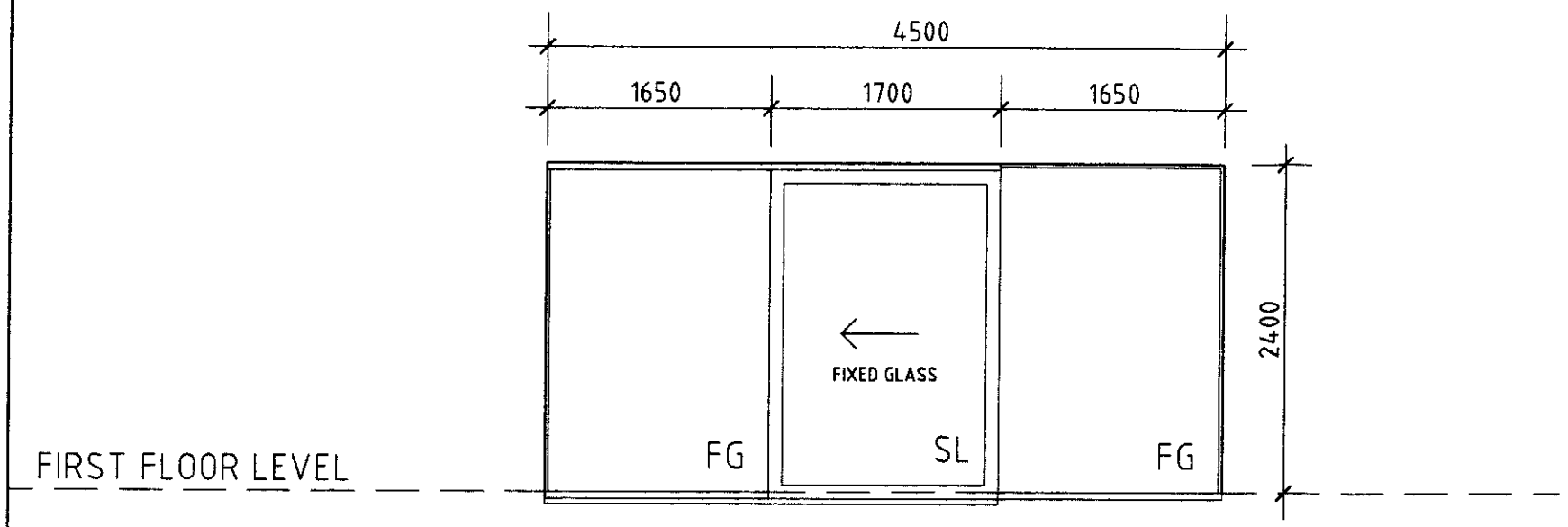
FILE: CCWINDMYOLA

Drawings Prepared By
Peter Burford - Architect
153 Australia St
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
WINDOW SCHEDULE
FIRST FLOOR PLAN
WINDOW LOCATIONS AND NUMBERS

Scale	Designed
1:100	P.B
Date	Drawn
19/9/05	N.H
Drawing No	Sheet No
C050602	W2



EW1 (HALL)

RESIDENCE EAST WINDOW

GENERAL NOTES

WINDOW SCHEDULE ELEVATIONS SHALL BE READ IN CONJUNCTION WITH FLOOR PLANS.

ALL DIMENSIONS GIVEN ARE FOR ESTIMATING PURPOSES ONLY.

SITE OPENING SIZES AND ARCHITECTS DETAILS DETERMINE EXACT WINDOW SIZES.

ALL EXACT DIMENSIONS TO BE MEASURED ON SITE.

ALL WINDOWS ARE ALUMINIUM FRAMED.

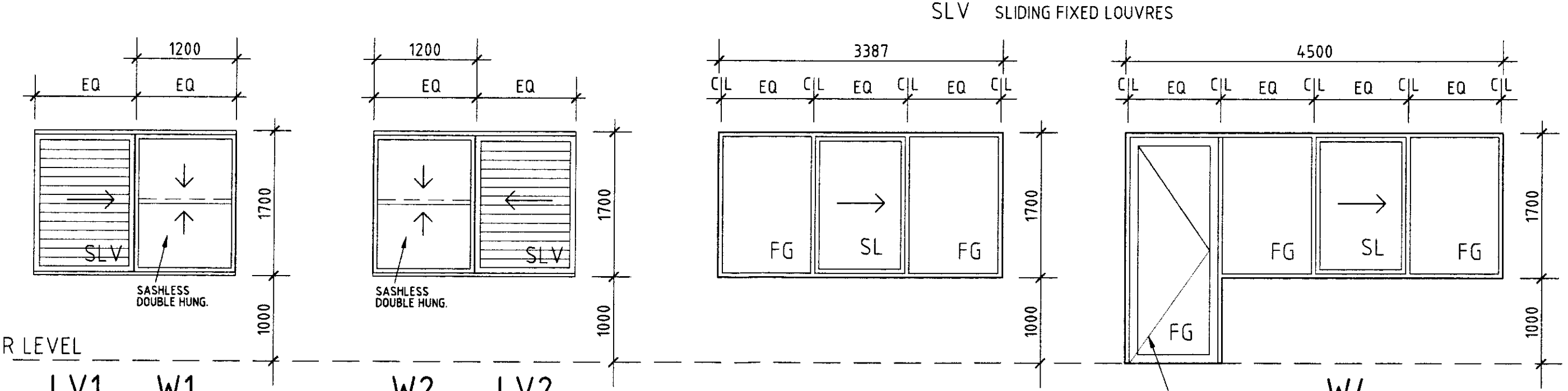
ALL LOUVRES ARE OF ALUMINIUM CONSTRUCTION, UNLESS NOTED OTHERWISE.

ALL LOUVRES ARE FIXED BLADE UNLESS NOTED OTHERWISE.

ALL GLAZING IS CLEAR GLASS UNLESS NOTED OTHERWISE.

ABBREVIATIONS LEGEND

BFLV	BI FOLD FIXED LOUVRES
CLV	ADJUSTABLE CEDAR LOUVRES
FG	FIXED GLASS
GLV	ADJUSTABLE GLASS LOUVRES
LV	FIXED LOUVRES
SL	SLIDING
SLV	SLIDING FIXED LOUVRES



LV1 W1 (WEST)

W2 LV2 (NORTH)

W3 (EAST)

W4 (SOUTH)

STUDIO WINDOWS

No	Amendments	Date

CONSTRUCTION DRAWINGS

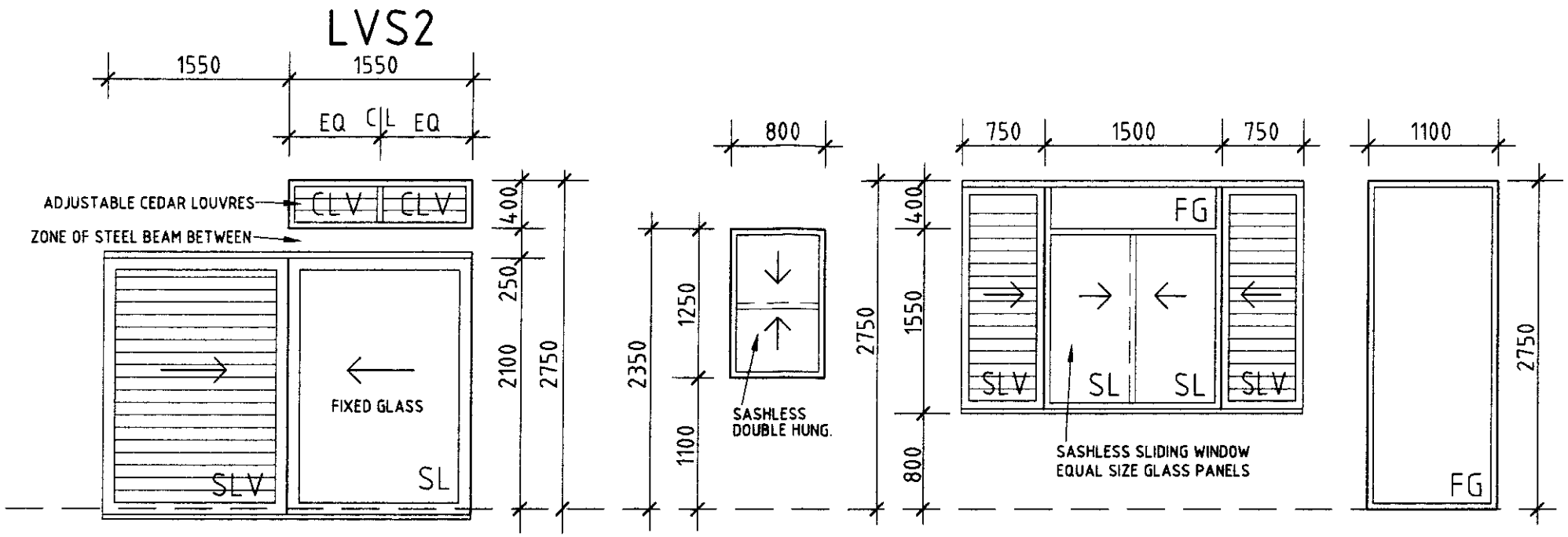
FILE: CCWINDMYOLA

Drawings Prepared By
Peter Burford - Architect
153 Australia St
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
WINDOW SCHEDULE ELEVATIONS
RESIDENCE - EAST FACING WINDOWS
STUDIO - ALL WINDOWS

Scale	Designed
1:50	P.B
Date	Drawn
19/9/05	N.H
Drawing No	Sheet No
C050603	W3

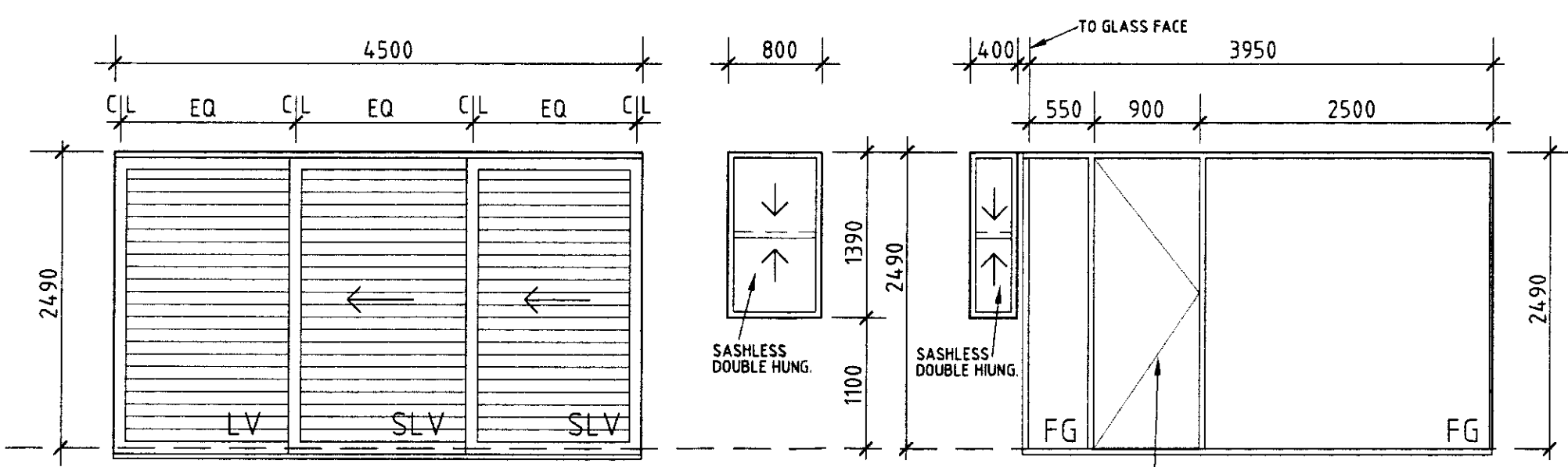


LVS1 SW1
(MASTER BEDROOM)

SW2
(EN SUITE)

LVS3 SW3 LVS3
(STUDY)

SW4
(HALL)



LVSD
(DRYING AREA)

SW12
(BATH 2)

SW13
(LAUNDRY)

SW14
(ENTRY)

No	Amendments	Date

CONSTRUCTION DRAWINGS

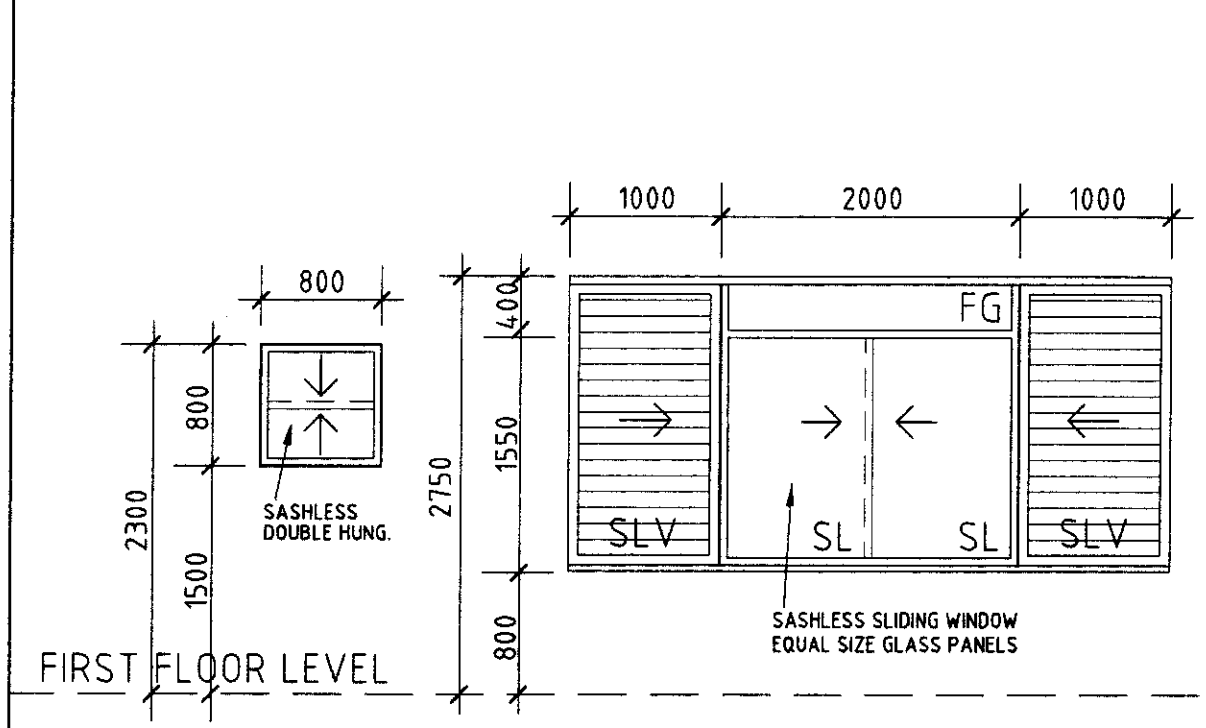
FILE: CCWINDMYOLA

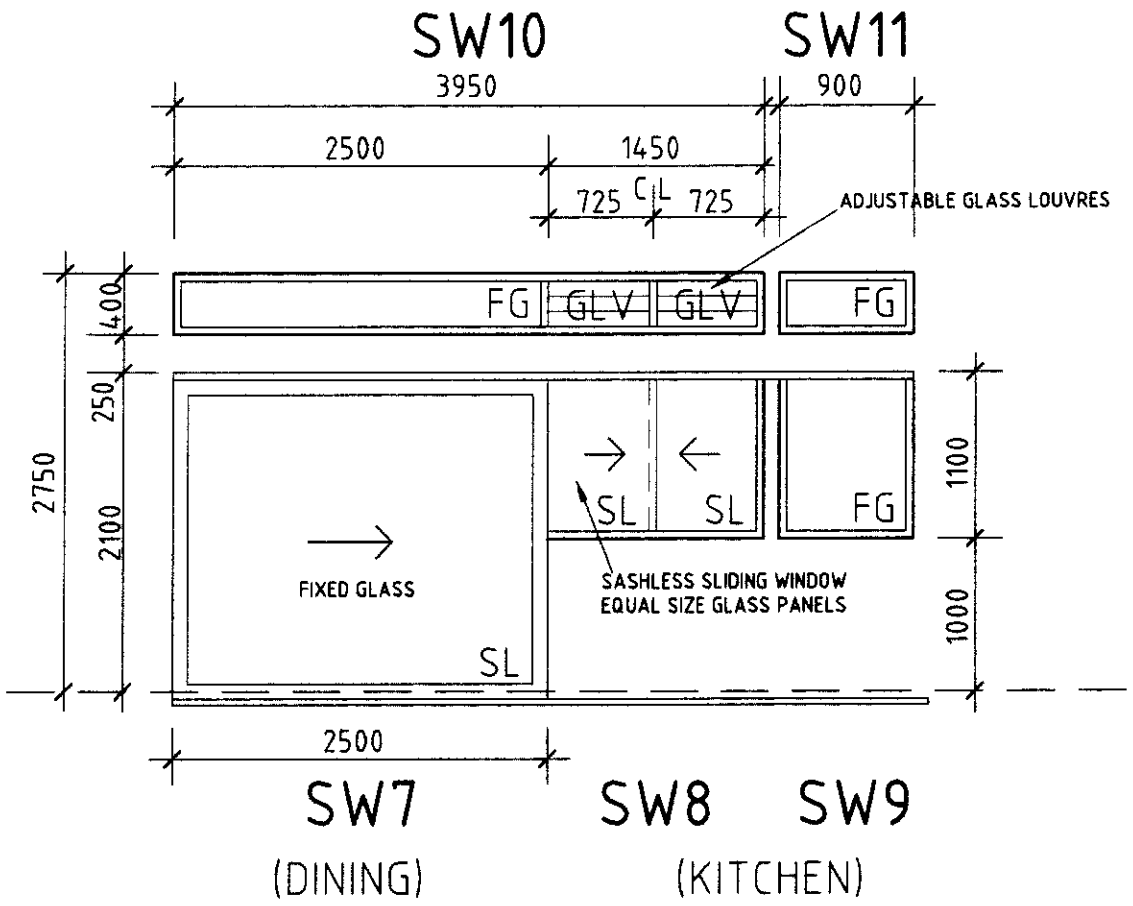
Drawings Prepared By
Peter Burford - Architect
153 Australia St
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
WINDOW SCHEDULE ELEVATIONS
RESIDENCE - SOUTH FACING WINDOWS
PART 1

Scale	Designed
1:50	P.B
Date	Drawn
19/9/05	N.H
Drawing No	Sheet No
C050604	W4





GROUND FLOOR LEVEL

No	Amendments	Date

CONSTRUCTION DRAWINGS

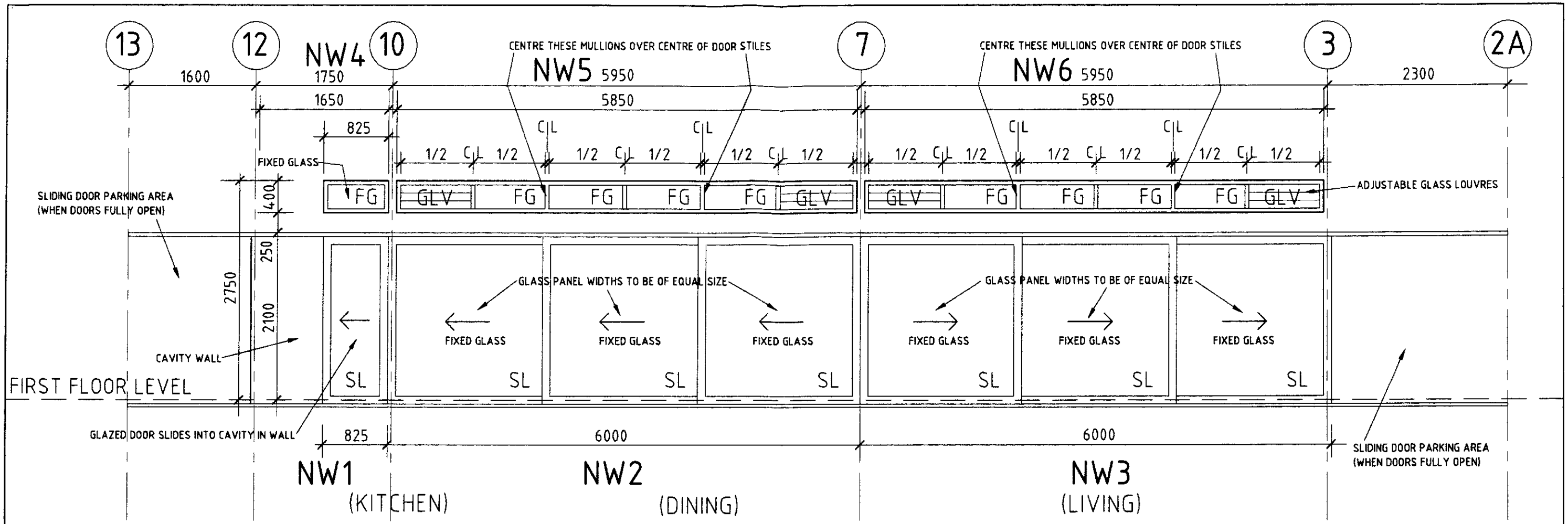
FILE: CCWINDMYOLA

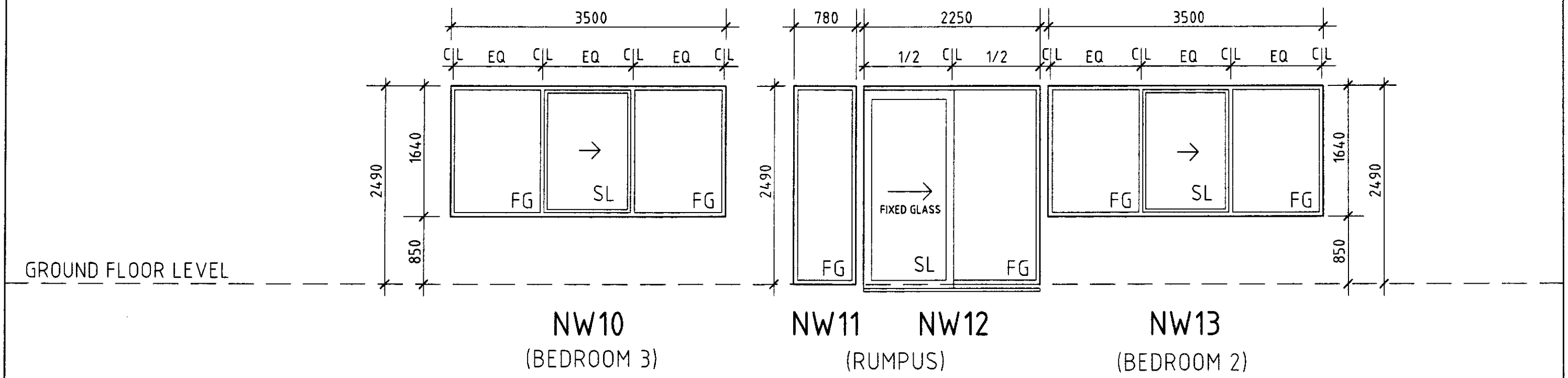
Drawings Prepared By
Peter Burford - Architect
153 Australia St
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
WINDOW SCHEDULE ELEVATIONS
RESIDENCE - SOUTH FACING WINDOWS
PART 2

Scale	Designed
1:50	P.B
Date	Drawn
19/9/05	N.H
Drawing No	Sheet No
C050605	W5





No	Amendments	Date

CONSTRUCTION DRAWINGS

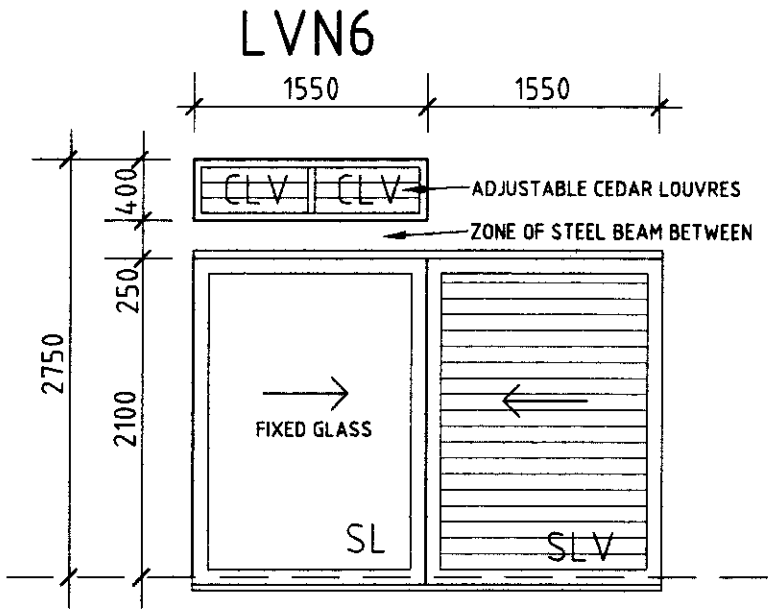
FILE: CCWINDMYOLA

Drawings Prepared By
Peter Burford - Architect
153 Australia St
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

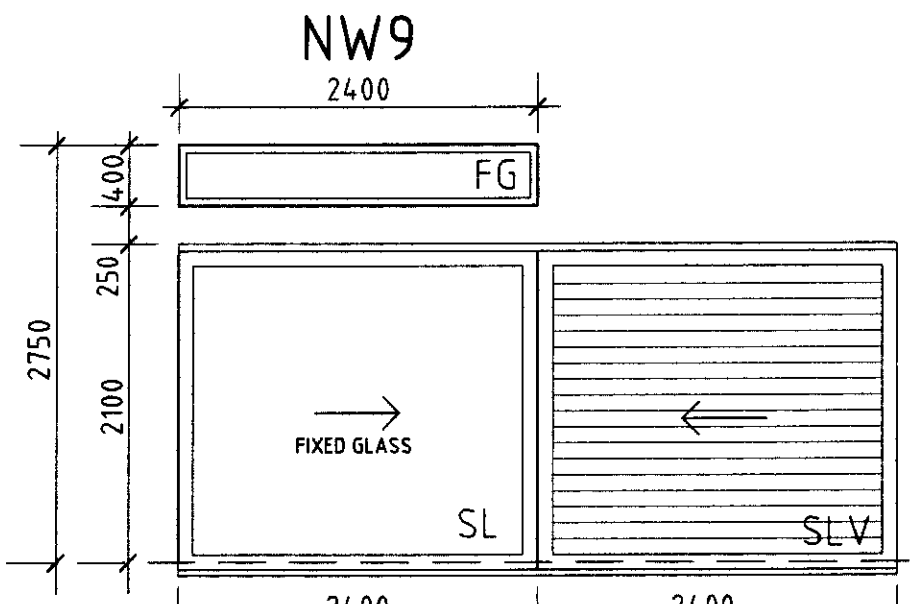
Drawing Title
WINDOW SCHEDULE ELEVATIONS
RESIDENCE - NORTH FACING WINDOWS
PART 1

Scale	Designed
1:50	P.B
Date	Drawn
19/9/05	N.H
Drawing No	Sheet No
C050606	W6



NW7 LVN7

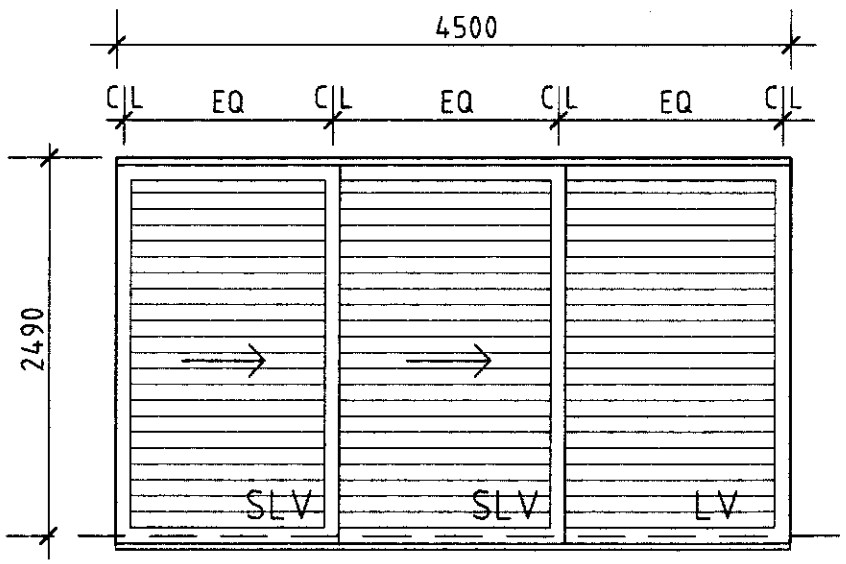
(MASTER BEDROOM)



NW8 LVN8

(GUEST ROOM)

FIRST FLOOR LEVEL

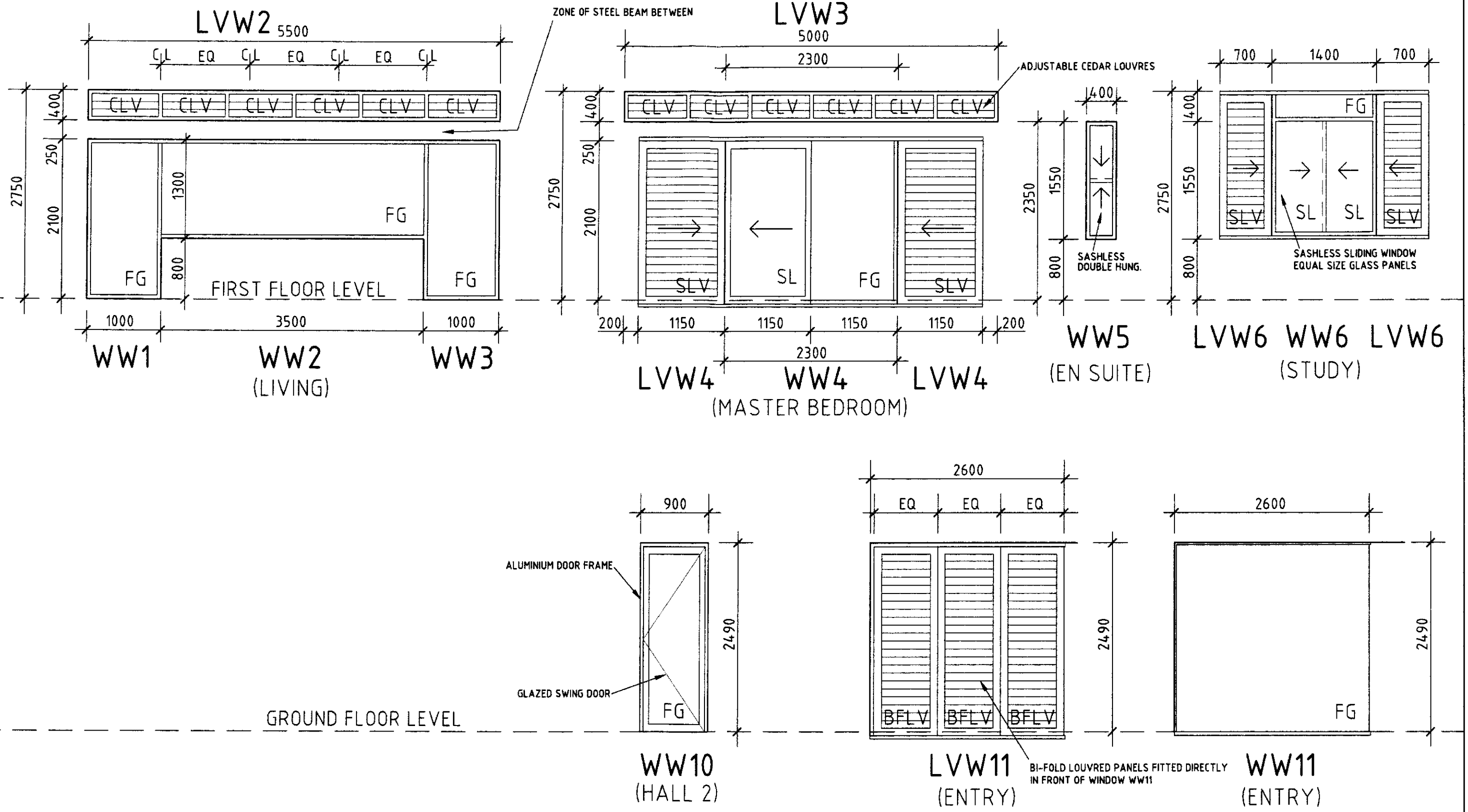


LVND

(DRYING AREA)

GROUND FLOOR LEVEL

No	Amendments	Date					
			CONSTRUCTION DRAWINGS FILE: CCWINDMYOLA	Drawings Prepared By Peter Burford - Architect 153 Australia St Camperdown NSW 2050 ph (02) 9519 7398 fax (02) 9550 3241	Project NEW RESIDENCE AT 81 MYOLA RD NEWPORT NSW 2106 For MR and MRS ALLO	Drawing Title WINDOW SCHEDULE ELEVATIONS RESIDENCE - NORTH FACING WINDOWS PART 2	Scale 1:50 / Designed P.B Date 19/9/05 / Drawn N.H Drawing No C050607 / Sheet No W7



No	Amendments	Date

CONSTRUCTION DRAWINGS

FILE: CCWINDMYOLA

Drawings Prepared By
Peter Burford - Architect
153 Australia St
Camperdown NSW 2050
ph (02) 9519 7398 fax (02) 9550 3241

Project
NEW RESIDENCE
AT 81 MYOLA RD
NEWPORT NSW 2106
For MR and MRS ALLO

Drawing Title
WINDOW SCHEDULE ELEVATIONS
RESIDENCE - WEST FACING WINDOWS

Scale	Designed
1:50	P.B
Date	Drawn
19/9/05	N.H
Drawing No	Sheet No
C050608	W8

Specification of work to be done and materials to be used in the completion of:

RESIDENCE, STUDIO AND POOL
81 Myola Road Newport 2106
for
Mr and Mrs Allo

According to this specification, accompanying drawings and future instructions of:

Peter Burford Architect
153 Australia Street
Camperdown NSW 2050
M 0425 310 088
Ph 95197398 Fax 95503241

Builder:
Peter Barnett
24 Wollstonecraft NSW 2107

This specification is referred to in the Cost Plus Contract for Building Works FF/C Revised Edition

dated:

Owner:

Witness:

Builder:

Witness

Contract Documents include:
This Specification.
Architectural Drawings
C050970 A1 to C040107 A7.
Window Drawings
C050601 W1 to C050608 W8.
Structural Engineers Drawings

Site Survey Drawing 5785A
Stormwater Management Plan - SY050174 – SW01
Swimming Pool Plan SY050174 – S01
Rainwater Harvesting Addendum by Tier Consulting dated 9/23/2005

DK BUILDING CERTIFIERS PTY LTD
ABN 96 097 502 700
CONSTRUCTION CERTIFICATE APPROVAL
No 05062-CC Date 7.11.05
Signed...
Accredited Certifier - Damian O'Shannassy
Accreditation No [illegible]

CONTENTS

1 GENERAL REQUIREMENTS

1.01 Scope of work

The scope of work comprises:

- The demolition of the existing house and carport
- Erection of the new residence, studio and swimming pool
- Installation of rainwater tanks
- Erection of retaining walls
- Completion of all paving and hard landscaping
- Various other minor items as shown or specified

1.02 Standards and codes

The whole of the work shall comply with the requirements of:

- The Building Code of Australia;
- All relevant SAA standards;
- The Home Building Act, and
- The requirements of Pittwater Council which are imposed as conditions of the Development Approval – a copy of the DA forms part of the documents.

1.03 Development consent

A copy of the Development Consent forms part of the documentation. The Contractor is required to comply with the conditions of the Consent. The various conditions have been incorporated into the appropriate sections of this Specification.

1.04 Construction certificate

The Architect will apply for the Construction Certificate through a private certifier. The Contractor shall not commence demolition or construction until Pittwater Council has issued an Authority to Commence Construction.

1.05 Approvals and notices

Give all notices, pay all fees and obtain all approvals including but not limited to the Occupation Certificate. Comply with the following conditions of the Development Consent:

A4. To allow a principal certifying authority or another certifying authority time to carry out critical stage inspections required by the principal certifying authority, the principal contractor for the building site, or the owner- builder must notify the principal certifying authority at least 48 hours before building work is commenced at the site if a critical stage inspection is required before the commencement of the work, in accordance with clause 162 of the Environmental Planning and Assessment Regulation 2000.

A5. Critical stage inspections are to be carried out in accordance with clause 162A of the Environmental Planning and Assessment Regulation 2000.

E. MATTERS TO BE SATISFIED PRIOR TO ISSUE OF OCCUPATION CERTIFICATE

NOTE: The issue of interim or partial Occupation Certificates is not permissible within the terms of this consent unless otherwise specifically stated. Prior to the issue of an Occupation Certificate the principal certifying authority is to ensure that Council's assets, including road, kerb and gutter and drainage facilities adjacent or near to the site have not been damaged as a result of the works. Where such damage has occurred, it is to be repaired to Council's written satisfaction prior to the issue of an Occupation Certificate or suitable arrangements put in place to affect those repairs at a future date to Council's written satisfaction. Should this process not

be followed, Council will pursue action against the principal accredited certifier in relation to the recovery of costs to affect such works.

NOTE: It is an offence to occupy the building or part thereof to which this consent relates prior to issue of an Occupation Certificate.

E10. A certificate prepared by an appropriate qualified person is to be submitted for the following building components, certifying to the principal certifying authority that the nominated works have been carried out in accordance with the Building Code of Australia, relevant Australian Standards and any conditions of Development Consent. Works are not to progress past this point until the principal certifying authority has confirmed that this condition has been satisfied (see copy of form attached).

E10a. Ground floor levels

E10b. Subsequent floor levels

E10c. External Finishes EF-1

E10d. Roof ridge levels RL-1

E10e Excavation and/or filling EX-1

E10g. Landscaping LS-1

E10i. Pool filter noise PFN-1

E54. New electrical connections are to be carried out using underground cabling.

E75. Backwash water from the pool filter is to be connected to the sewer prior to the issue of a Construction Certificate.

E76. A Resuscitation and External Cardiac Compression Chart is to be affixed in a prominent location adjacent to the pool/spa, prior to the issue of a Construction Certificate

E84. The pool/spa is not to be used until the Occupation Certificate has been issued, confirming that the project complies with the relevant standards and the conditions of the development consent. The request for an Occupation Certificate is to be accompanied by a copy of all the Compliance Certificates required by the conditions of the development consent (see copies attached to DA Consent).

E86. The building is not to be occupied or used until the Occupation Certificate has been issued, confirming that the project complies with the relevant standards and the conditions of the development consent. The request for an Occupation Certificate is to be accompanied by a copy of all the Compliance Certificates required by the conditions of the development consent (see copies attached to DA Consent).

E87. Prior to issue of the Occupation Certificate, Form 3 of the "Geotechnical Risk Management Policy" is to be completed and submitted to Council or the Accredited Certifier. Certificates are to be submitted where the recommendations of the approved Geotechnical Report Risk Analysis & Risk Management Report Project 36976, dated April 2004, prepared by Douglas Partners require sign-offs during the construction phase to achieve the "acceptable level of risk" criteria specified in the Geotechnical Risk Management Policy.

E88. A positive covenant/restriction on the use of the land is to be created prior to the issue of the Occupation Certificate where the recommendations of the approved Geotechnical Report Risk Analysis & Risk Management Report Project 36976, dated April 2004, prepared by Douglas Partners requires on-going maintenance/inspections to ensure that the development achieves the "acceptable level of risk" criteria over the life of the development.

E89. A positive covenant is to be created on the title to ensure the ongoing maintenance and performance of the on-site stormwater detention system. The terms of the covenant are to be in accordance with the Council's standard wording.

1.06 Materials

Materials are to be new, the best of their respective kinds and suited to their particular application, except where second-hand materials are specified.

Secondhand materials which are to be recycled from the site are scheduled in the Demolition trade and shown on the drawings.

The colour, texture and substance of all exterior materials shall be as detailed in the Development Application and as set out in the Schedule of External Finishes and Colours.

1.07 Interpretation

Supply: Supply only - do not install.

Provide: Supply and install.

Required: Required by the contract documents or by the local council or statutory authorities.

Proprietary: Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.

Standards: Use referenced Australian or other standards (including amendments) which are current one month before the date of the contract except where other editions or amendments are required.

Manufacturers' or suppliers' recommendations: Select, store, handle and install proprietary products or systems in accordance with the current published recommendations of the manufacturer or supplier.

1.08 Programme

Before commencement of the work, the Contractor is to provide a programme for the works.

All trades shall work to the approved programme, and are to return to the site at intervals as required to comply with that programme.

All appropriate trades are to attend regular co-ordination meetings on site.

Confirm the setout of the works particularly in relation to height prior to commencement of any work.

1.09 Verification of levels and dimensions

The Contractor is to verify all dimensions and levels on site. The whole of the works is to be set out in broad terms but not necessarily in detail prior to starting construction. Detail dimensions and levels are to be checked in advance of construction during the progress of the works.

Notify the Architect of any discrepancies and request an instruction prior to proceeding with the works.

1.10 Protection

Protect all fences and boundary walls designated for retention, and all trees and other landscaping, from damage during the course of the works. Make good to any damage at the Contractor's expense.

1.11 Housekeeping

Building materials shall not be placed on Council's footpath, roadways, parks or grass verges and a suitable sign to this effect shall be erected adjacent to the street alignment.

Unless otherwise specifically approved by the Council, all works, processes, storage of materials, loading and unloading associated with the development, is to occur entirely on the property. The Contractor is required to apply for specific permits available from Council for the purpose.

Debris and surplus materials are to be removed from the site at regular intervals, and the site is to be kept neat and tidy at all times.

Areas for storage of materials on site are to be agreed with the Architect.

1.12 Plant and equipment

Comply with the following conditions of the Development Consent:

"D60. The footpath and adjacent roadway are to be kept free of obstruction by building materials and/or plant. All concrete trucks, pumps and associated plant are to be kept wholly within the site. No concrete or slurry is to be discharged into the street or the street drainage system.

"D61. If approved works are likely to cause pedestrian or vehicular traffic in a public place to be obstructed or if works involve the enclosure of a public place, then a hoarding or fence must be erected between the work site and the public place. If necessary, an awning or other structure is to be erected, sufficient to prevent any substance from, or in connection with, the work falling into the public place. Further, the work site must be kept lit between sunset and sunrise if it is likely to be hazardous to persons in the public place. Any such hoarding, fence or awning is to be removed when the work has been completed. NOTE: Hoardings and temporary awnings erected on or over public places are required to be subject to a separate approval from Council."

1.14 Toilet facilities

Comply with the following conditions of the Development Consent:

D75. Toilet facilities are to be provided at or in the vicinity of the work site during the duration of the development."

1.15 Approved plans

Comply with the following conditions of the Development Consent:

"D76. A stamped copy of the approved plans is to be kept on the site at all times during construction."

1.16 Noise and vibration

Noise emissions must comply with the applicable standards under the Protection of the Environment Operations Act 1997. Vibration from the works must not be felt on any adjacent property. The c

Contractor is to comply with all requirements and recommendations detailed in the Geotechnical Report by Douglas Partners dated April 2004.

1.17 Dust emission and air quality

Materials must not be burnt on the site.

Vehicles entering and leaving the site with soil or fill or waste material must have their loads covered.

Dust suppression measures must be carried out to minimise wind-borne emissions in accordance with the NSW Department of Housing's 1998 guidelines – Managing Urban Stormwater: Soils and Construction. Odour suppression measures must be carried out so as to prevent nuisance occurring at adjoining properties.

1.18 Permits

The Contractor is to make application to Council for any permits required in relation to on-street mobile plant, hoardings, storage of building materials and building waste containers (skips) on Council's property and kerbside restrictions and construction zones.

1.19 Construction hours

Comply with the following conditions of the Development Consent:

"D89. The hours of construction are restricted to between the hours of 7.00am and 5.00pm Monday - Friday and 7.00am to 1.00pm on Saturdays. No works are to be carried out on Sundays or Public Holidays. Internal building work may be carried out at any time outside these hours, subject to noise emissions from the building or works not being audible at any adjoining boundary."

1.20 Site Management

Comply with the following conditions of the Development Consent:

D220. A clearly legible "Site Management Sign" is to be erected and maintained throughout the course of works on the site. The sign is to be centrally located on the main street frontage of the site and is to state in clearly legible lettering the following:

- Builder's name, builder's telephone contact number during work hours.
- A site fence and/or silt and sediment control fence is to be erected and maintained during the course of works along any street frontage boundary to the site.
- Street levels are to be obtained for the construction of any access driveway crossing between the site and the constructed roadway in accordance with Condition B27.
- A Road Opening Permit, issued by Council, must be obtained for any road openings or excavation within Councils Road Reserve associated with the development of the site, including stormwater drainage, water, sewer, electricity, gas and telephone connections etc. During the course of the road opening works the Road Opening Permit must be visibly displayed at the site.
- No other works are to be carried out in Councils Road Reserve without its approval.
- No skip bins or materials are to be stored on Council's Road Reserve.

1.21 Completion

Warranties: Name the owner as warrantee and give the owner copies of manufacturers' warranties. Provide any required additional guarantees and warranties.

Instruction manuals: Give the owner manufacturers' instruction manuals.

Cleaning: Remove rubbish and surplus material from the site and clean the work throughout.

Operation: Ensure moving parts operate safely and smoothly.

Chemical termite barriers: If a chemical treatment has been used, provide the Architect with a certificate of completion to AS 3660.

Surveyor's certificate: Provide the Architect with a certificate which confirms that the work, including boundary fences, has been correctly located. Provide additional survey information as required by the conditions of the Building Approval, particularly in relation to height.

Services layout: Provide the Architect with "as installed" drawings which show the location of underground services.

Authorities' approvals and fees: Obtain all approvals and pay all associated fees. Provide the Architect with evidence of approval of the local council and statutory authorities whose requirements apply to the work.

Keys: Provide two keys for each set of locks keyed alike and two keys for each lock keyed to differ.

1.21 DA Conditions

The builder shall comply with all Development Consent conditions including the following:

D15. Pool fencing is to be designed and located in accordance with the Swimming pool Act 1992, AS 1926. 1-1993 'Fencing for swimming pools', AS 1926.1-1995 ' Location of fencing for private swimming pools'.

D.16 Water conservation devices with an AAA rating must be installed, including tap flow regulators, shower head roses and dual flush toilets. All new hot water systems are to have a minimum rating of 3.5 stars.

D.38 Compliance with the Schedule of External Colours and finishes: roof – 'Deep Ocean', walls – timber with 'Woodman's Lime Wash' and steel with grey tone paint.

D.85 All external glazing is to have a maximum reflectivity index of 25%.

D.208 The studio building is not to be adapted for occupation as a separate occupancy or, where relevant, adapted for commercial/industrial activities, without prior Development consent.

2.00 demolition

2.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS 2436 - 1981 Guide to noise control...and demolition sites.
- AS 2601 - 1991 The demolition of structures.

2.02 Scope

Demolish all the existing buildings on the site, including the demolition of the existing concrete slabs and existing retaining walls as indicated on drawings.

Provide all necessary toms and props to ensure the stability of the building.
No items are to be salvaged for the Owners.

2.03 Hazardous materials

All asbestos bearing material is to be removed and disposed of by experienced personnel using methods set out in the National Occupations and Safety Commission document No 3002: Guide to the control of asbestos in buildings and structures (1988) and No 2002: Code of practice for the safe removal of asbestos (1988).

Comply with the following conditions of the Development Approval:

"C10. In the event that asbestos is on a site or building under demolition or construction, WorkCover NSW is to be contacted to ascertain the appropriate response, to ensure the safety and protection of existing and future workers and residents.

An Asbestos Removal Contractor licensed by WorkCover NSW is to handle/remove/transport and dispose of any products containing asbestos in a manner approved by the Environment Protection Authority.

Asbestos can only be disposed of at a landfill site nominated by Waste Services NSW for that purpose. An appointment must be made with Waste Services NSW to dispose of asbestos materials at the nominated landfill.

"D11. Any proposed demolition works shall be carried out in accordance with the requirements of AS2601-1991 "The Demolition of Structures".

Amongst others, precautions to be taken shall include compliance with the requirements of the WorkCover Authority of New South Wales, including but not limited to:

1. Protection of site workers and the general public.
2. Erection of hoardings where appropriate.
3. Asbestos handling and disposal where applicable.
4. Any disused service connections shall be capped off.

"Council is to be given 48 hours written notice of the destination/s of any excavation or demolition material. The disposal of refuse is to be to an approved waste disposal depot.

"D12. In order to ensure safe handling of asbestos materials, the re-use or sale of asbestos building materials is prohibited."

2.04 Adjoining Properties

Protect all adjoining properties from damage during demolition. In particular, the house at No 77a Myola Road is to be protected by a hoarding during demolition of the existing carport so

that no demolished material is allowed to fall onto the house or the property... The owners are to be notified prior to the commencement of demolition.

2.05 Completion

The demolished materials shall become the property of the Contractor, and shall be removed from the site.

In particular, ensure that there are no timbers left in contact with the ground.

3.00 excavation and siteworks

3.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS 1289 Methods of testing soils.
- AS 3798 1996 Guidelines on earthworks for commercial and residential developments.
- AS/NZS 4200 1994 Pliable building membranes and underlays.
- AS 2870- 1996: Residential slabs and footings – construction.

3.02 Council Instructions

"D23. Adequate measures shall be undertaken to remove clay from vehicles leaving the site so as to maintain public roads in a clean condition"

"D28. All excavated material is to be removed from the site unless otherwise directed by the geotechnical engineer. This is due to the site's location in an area identified as being subject to possible landslip."

"D34 All excavations and backfilling associated with the demolition or erection of a building must be executed safely and in accordance with appropriate professional standards."

"D35. All excavations and backfilling associated with the demolition or erection of a building must be properly guarded and protected to prevent them from being dangerous to life and property."

"D36. Where excavations extend below the level of the base of a building on an adjoining allotment of land, the person causing the excavation must preserve and protect the building from damage and, if necessary, underpin and support the adjoining building in an appropriate manner."

D220 [Part of clause only] A site fence and/or silt and sediment control fence is to be erected and maintained during the course of works along any street frontage boundary to the site.

3.03 Designated slip area

The site is in a designated slip area. The works are to be carried out strictly as described in the documents prepared by the Structural and Geotechnical Engineers, and no additional excavation is to be carried without specific permission.

3.04 Erosion and sediment control

Control erosion and surface runoff from disturbed soil including but not limited to the construction of banks and barriers to divert and control water flow, and the provision of hay bales, geotech fabric and similar filters to prevent migration of soils.

Comply with the following clauses of the Development Consent:

"D20. Temporary sedimentation and erosion controls are to be constructed prior to commencement of any work to eliminate the discharge of sediment from the site.

"D21. Sedimentation and erosion controls are to be effectively maintained at all times during the course of construction and shall not be removed until the site has been stabilised or landscaped to the Principal Certifying Authority's satisfaction."

3.05 Scope

The scope of work of this trade includes excavation as shown the drawings and as necessary for the full and proper completion of the works.

Excavation for services is the responsibility of each particular trade.

3.06 Excavation and backfilling

Allow for excavation in rock.

Excavation is to bi in accordance with the requirements and recommendations of the Geotechnical Report April 2004, by Douglas Partners.

Excavate, backfill and compact to the satisfaction of the engineer.

Provide 100mm of compacted hardcore under all concrete slabs, blinded with sand.

Work to the levels shown on the drawings and to instructions which will be given from time to time by the Architect.

Comply with the following conditions of the Development Consent:

"D23. Adequate measures shall be undertaken to remove clay from vehicles leaving the site so as to maintain public roads in a clean condition"

"D28. All excavated material is to be removed from the site unless otherwise directed by the geotechnical engineer. This is due to the site's location in an area identified as being subject to possible landslip."

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D220 [Part of clause only] A site fence and/or silt and sediment control fence is to be erected and maintained during the course of works along any street frontage

3.07 Noise and vibration

Noise emissions must comply with the applicable standards under the Protection of the Environment Operations Act 1997. Vibration from the works must not be felt on any adjacent property.

Vibration is to be limited to the levels detailed in the Geotechnical Report April 2004, by Douglas Partners.

3.08 Tree protection

Install exclusion fencing/tree protection fencing to protect significant trees to be retained. Star pickets and mesh are adequate.

3.09 Termite protection

Provide physical termite barriers to all new work, and ensure that there are no bridges that would allow termites to access timber members.

3.10 Completion

Remove all surplus spoil from the site.

4.00 concrete

4.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- SAA HB64: Guide to concrete construction.
- AS 1012: Testing concrete.
- AS 1304 1991: Welded wire reinforcing fabric for concrete.
- AS 2870 1996: Residential slabs & footings.
- AS 3600 1994: Concrete structures.
- AS 3610 1995: Formwork for concrete.
- AS/NZS 3727: Guide to residential pavements.

4.02 Scope

Provide all vapour barriers, reinforcing steel and concrete as required for the work.

4.03 Instructions

Work to the Structural Engineer's drawings.

4.04 Extent

Perform the following works:

- Construct new concrete footings for the residence and studio and for posts and bases for steps.
- Construct new footings for retaining walls.
- Construct new footings for all water storage tanks
- Construct new swimming pool
- Build in all fixings, straps, holding bolts etc water stops and the like as required.

4.05 Materials

Item	Location
• Vapour barrier:	0.3 mm thick polythene.
• Concrete:	As shown on the Structural Engineering documents.

- Use no additives without written approval of the Structural Engineer.

4.06 Inspection

- Inspect conditions on site before starting work. Start of work means total acceptance of conditions.
- Give 48 hours notice to the Superintendent when fabrications may be inspected by the Structural Engineer before delivery. Steel components bent or buckled before erection will be rejected.
- Prepare surfaces to receive concrete smooth, clean & stable under concrete load.

4.07 Execution

Work to the Structural Engineer's drawings.

4.08 Inspection

Inspect conditions on site before starting work. Start of work means total acceptance of conditions.

Give 48 hours notice to the Superintendent when fabrications may be inspected by the Structural Engineer before delivery. Steel components bent or buckled before erection will be rejected.

Prepare surfaces to receive concrete smooth, clean & stable under concrete load.

4.09 Execution

Co-ordinate the installation of pipes, cables, conduits etc to be built into the work.

Place reinforcement, secure in place & prevent movement during pour. Maintain required concrete cover.

Comply with the Structural Engineer's requirements for joints, splices etc.

Finish exposed floor surfaces steel trowelled to match existing adjacent.

Provide setdowns for concrete screeds. Provide fall to outlets:

Cure finished concrete as required by the Structural Engineering documents.

Slump Tests: Carry out slump tests as required by the Structural Engineer. Tests and rejection criteria will be in accordance with AS 3600.

Vibrate concrete to achieve compaction. Do not "travel" vibrators.

Strip formwork in accordance with Table in AS 3610 "Minimum Stripping Times".

4.10 Floor Heating System

Devitex cable system is to be installed in concrete slab under all floors designated for a stone or tile finish. System is available from Floorheat (Australia) Pty Limited. System is to be installed and tested in accordance with manufacturer's instructions.

5.00 concrete masonry

5.01 Scope

Construct all retaining walls as indicated on drawings.

Supply all labour and materials. Build in miscellaneous items (flashing, wall ties, damp proof course, anchors etc.)

Provide all staging, scaffolding & cleaning.

5.02 Co-operation

Co-operate with all other trades as required and as necessary.

5.03 Compliance

Comply with applicable clauses of the current edition of the following codes and standards:

- AS/NZS 2904 Damp proof course & flashings.
- AS 2975 Accessories for masonry construction.
- AS 3700 Masonry code.

5.04 Materials

Item	Description	
Blocks:	Sizes:	390 x 190 x 190mm
	Type	Hollow
	Strength:	Refer Structural Engineering docs
	Colour:	Natural concrete.
Mortar:	6 parts sand, 1 part cement, 1 part hydrated lime.	
Reinforcement:	Refer Structural Engineering documents.	
Wall ties:	Refer Structural Engineering documents.	
Damp proof course:	Heavy duty Alcor.	
Expansion (control) joint:	Refer Structural Engineering documents.	
Lintels:	Refer Structural Engineering documents.	
Bond beams:	Refer Structural Engineering documents.	

5.05 Preparation

Inspect conditions at site before starting work

Review work with other trades, piping, ducts etc. Clean base before laying masonry. Set door frames plumb and brace.

5.06 Execution

Start of work means total acceptance of conditions.

Work to the documents provided by the Structural Engineer. Bed joints to be 10mm thick. Construct walls of hollow concrete blocks laid in stretcher bond with joints struck flush with the trowel for face finish externally. Install ties to anchor masonry to doors: grout up jambs and heads of door frames as the work proceeds. Clean with 5% hydrochloric acid to face work.

Core fill walls to the documents provided by the Structural Engineer.

6.00 brickwork

6.01 Scope

Lay brickwork to form inner skin to all ground floor walls to residence.

6.02 Standards

Brickwork shall comply with AS1640.

6.03 Bricks Generally

Allow to lay dry pressed commons of evenly burnt clay to areas as indicated on architectural drawings.

6.04 Storage

Bricks shall be unloaded by hand and stacked neatly. Do not tip. Protect from moisture.
Store bricks on site a minimum of seven days prior to laying in such a manner as to prevent contamination of mud, dust or salts from the ground or materials likely to cause staining or defects.
Bricks shall be wetted before laying.

6.05 Workmanship

Perform all operations necessary for the proper execution of the work, such as cutting, chasing, bonding and making good. Build in as necessary all flashings, DPC's, arch bars, frames, straps, bolts, lugs, wall ties, metalwork, sills, joists and the like.
Carefully set out and leave openings for other trades to eliminate cutting. Keep beds level and perpends vertical, keep arises, quoins, jambs, reveals and wall faces plumb. Carry no part of the work more than 1000mm above any adjoining work.

6.06 Mortar

Mortars for brickwork shall comply with as 123 mix mortar in batches and quantities sufficient only for immediate use.
In gradients shall be Portland cement, hydrated lime, Lumpily or other approved brand and sand.

6.07 Mortar Joints

All mortar joints, unless otherwise noted or specified, shall be an even thickness of 10mm to both bed joints and perpends for brickwork.

6.08 Bond

All brickwork shall be built in stretcher bond.

6.09 Reinforcement

Joint reinforcement for crack control of brickwork shall conform to AS Int 325. Reinforce walls with continuous rolls of 'Bricktor' or similar galvanised mesh 60mm wide with one ribbon to each 11mm walling thickness well lapped at junctions and securely bedded every tenth course.

6.10 Damp Proof Course

Install damp proof course to new and existing walls of ground floors at a level below finished floor level and engaged with membrane of slab. Each DPC shall extend the full length and width of the walling and be lapped 150mm at joints. DPC in the existing walls is to be installed by cutting out the mortar joints for one section of wall at a time and overlapping with the DPC of adjacent area.

6.11 Lintels

Provide and fit mild steel angle of bar to each opening in brickwork.

6.12 Cleaning Down

Exposed walls shall be protected from damage during erection and cleaned on completion. Use selected acid solution as recommended by the brick manufacturer. Wash off finally with clean water. Remove all stains and marking.

7.00 structural steel

7.01 Scope

Perform work described here and shown on drawings including but not limited to supply, fabricate, apply surface treatment, anchor bolts and other attachments, field welding, permanent grouting.

Submit shop drawings to the Superintendent for inspection. Do not proceed to order materials or commence fabrication without written approval to proceed.

7.02 Co-operation

Co-operate with all other trades as required and as necessary.

7.03 Compliance

Comply with applicable clauses of the current edition of the following codes and standards:

- SAA HB48 – 1993: Steel Structures Design.
- AS 1538 – 1988: Cold formed steel structures code
- AS/NZS 1554: Structural Steel Welding.
- AS 1627: Metal Finishing - Preparation & Pre-treatment.
- AS 4100 – 1990: Steel Structures.
- AS/NZS 4680 – 1999: Hot-dip galvanised (zinc) coatings on fabricated ferrous articles.

7.05 Inspection

Inspect conditions on site before starting work. Start of work means total acceptance of conditions.

Advise Structural Engineer when fabrications may be inspected before delivery. Steel components bent or buckled before erection may be rejected.

7.06 Execution

Work to the Structural Engineering drawings and specification. Comply with all instructions issued by the Structural Engineer. For expediency, these instructions may be issued direct by the Engineer and confirmed by the Architect.

Provide holding down bolts to Concretor for building in.

Erect steelwork plumb and secure in place so that components can be fixed without distortion. Provide temporary bracing against wind and other stresses. Grout under base plates in high strength, non-shrink epoxy mortar.

Advise the Structural Engineer when erected steel is ready for inspection. Adjust if and as instructed.

7.07 Damage to finishes

Site welding of or alterations to hot dipped galvanised steel will not be permitted.

8.00 carpentry and joinery

8.01 Standards and Codes

Comply with all applicable current standards and codes including but not limited to:

- SAA HB44: Guide to the timber framing code.
- AS 1684: Nat. Timber Framing Code.
- AS 1720: Timber Structures Code.
- AS 1860 1998: Installation of Particleboard flooring.
- AS 4055: Wind Loads for Housing.
- AS 2688: Timber doors.
- AS 2689: Timber doorsets.
- AS 1288: Glass in Buildings, amended 1997.
- AS 2047 1996: Windows in buildings in 2 parts.
- AS 1859 Re-constituted wood-based panels – Part1 Particleboard, Part 2 MDF.
- AS/NZS 2589.1 1997: Gypsum linings in residential & commercial construction.
- AS 3740: Waterproofing of wet areas within residential buildings.
- AS 2796: Timber/Hardwood/Sawn and milled products – Part 1 1999 product specification.
- AS 3959: Construction of buildings in bushfire-prone areas.
- Comply with recommendations of the National Assoc. of Forest Industries Technical bulletins.

8.02 Framing generally

The carpenter is responsible for the structural adequacy of the timber framed section of the building except as shown on the Structural Engineer's drawings.

The whole of the framing of the building shall be designed and constructed in accordance with AS 1684: Timber Framing Code except to the extent shown on the Structural Engineer's drawings...

8.03 Timbers generally

Framing timbers may be either new or second-hand, and shall be of the stress grade required for the design. Reuse existing timber framing where possible. The use of good quality second-hand timber is encouraged.

Note, however, that because the house is located in a bushfire area (flame zone), all new works are to be carried out so as to achieve Level 3 Construction as set out in AS 3959: Construction of buildings in bushfire-prone areas. This limits the timber species that may be used externally.

There are 7 timber species that satisfy the requirements of AS 3959:

- Blackbutt
- Kwila (Merbau)
- Red Iron Bark
- River Red Gum
- Silver Top Ash
- Spotted Gum
- Turpentine.

For reasons of strength and durability, Spotted Gum has been selected for all timbers for external use.

For internal use, framing timbers may be of Pine or similar approved species.

Do **not** use materials externally that are unsuited to exposure – eg LVL beams.

8.04 Fixings

Provide all straps, bolts, spikes and fixings as required.

Due to the exposure of the site, all fixings are to be non-ferrous or hot dipped galvanised. Note in particular that zincannealed finish is not to be used – this includes but is not limited to spikes, screws, brackets and sheet materials.

8.05 Stud walls

To be constructed of 100 mm x 50 mm top and bottom plates, and timber studs at 450 mm centres. Brace as necessary. Construct of pine or similar approved conventional materials.

Provide timber lintels where shown on the drawings and as necessary.

Provide sarking to the outer faces of stud walls prior to the installation of insulation or timber weatherboarding. Sarking is to be a breather type sarking complying with AS/NZS 4200.2 and with a flammability index of not more than 5 (see AS 1530.2) installed immediately behind the external cladding.

8.06 Insulation

Insulate all external and internal walls as detailed in the Insulation Schedule on Architectural Drawing A7.

8.07 Timber flooring

The Owner is to supply timber floor boards to the Living, Dining, Kitchen and Studio. The Contractor is to install the boarding on 25x50mm battens fixed to the slab at 450mm centres, The contractor is to install Latham expansion strips to the perimeter of the timber generally and as directed by the Architect

Punch and fill all nail heads, sand and fine sand the whole of the floor. The finish is to be nominated by the Architect

8.08 Ceiling Lining

Ceiling lining to all pitched rooves (Kitchen, Dining, Living, Master Bedroom, Study, Guest Bedroom and Studio) is to be 100x19mm Hoop Pine boarding. All other areas are to have plasterboard ceilings. Refer Finishes Schedule for details.

8.09 Trims and detailing

Provide and fix timber skirtings, architraves, sill boards and mouldings as necessary for the full and proper completion of the work. Trims mouldings may be of MDF or a suitable closed grain timber eg finger jointed pine but not Pacific Maple. Paint finish.
Skirtings are to be ex 100x 25 timber with square edge. Refer Architectural Drawings for details regarding other trims.

8.10 Internal Stair

Fabricate and install steel/timber stair to main foyer as detailed on Architectural Drawings.

8.11 Fitments.

All kitchen fitments, wardrobes, vanity fitments, desks, shelving and living and family room fitments are to be supplied by the Owner and installed by the joiner. The Contractor is to allow for the installation and co-ordination of all services to these units.

8.12 Door hardware

Door hardware will be supplied by the Owners and installed by the Contractor.

Hang internal hinged doors on 1½ pairs of loose pin brass butt hinges supplied and installed as part of the contract. Hang external doors on 1½ pairs of fixed pin stainless steel butt hinges.

8.13 External Framing

(to Deck 1 , Deck to Studio, Deck to Swimming Pool and Shower Platform to Studio)

Framing to the new external decks is to be in Spotted Gum, stress grade F17. Timbers may be seasoned, kiln dried or unseasoned. If unseasoned timbers are used, adequate allowance is to be made for shrinkage so that it is not visible in the completed work.

All timbers are to DAR where exposed to view.

Where visible, members are to be morticed and tenoned together generally as shown on the drawings. Where unseasoned timbers are used, ensure that future shrinkage is masked.

Decking is to be 'iClip Decking Boards', made from Ironwood, fixed with 'iClip' fastening system, fixed in accordance with the manufacturer's instructions.

8.14 Timber decking

Timber decking is to be installed to Deck1, Deck 2, Studio Deck and courtyard. Decking is to be 'iClip' Ironwood Decking Boards', fixed with 'iClip' fastening system, in accordance with the manufacturer's instructions.

8.15 Eaves and gables

New eaves and gables are to be as detailed on the drawings. Fascias and barges are to be Spotted Gum. Eaves are to be lined on the soffit with 100x19mm Hoop Pine boarding.

8.16 Exterior Timber Stairs

Construct timber stairs to Deck 1 and to Studio as detailed on the Architectural Drawings.

8.17 Exterior Timber Elements

Construct timber sunscreen to west wall of living room as detailed on Architectural Drawings. Fix 190x45mm Merbau shelf to all external balustrades. Shelf is to be screw fixed from the underside through the steel balustrade framing.

8.18 Weatherboards

Allow the sum in the Schedules for the supply only of ex 200mm x 25mm Hoop Pine weatherboards. Installation forms part of the contract.

Sheet the whole of the exterior of the building in weatherboarding. Fit vertical battens at external and internal corners. Punch and fill all nail holes.

Finish weatherboarding as specified in the Painting section of the Specification.

9.00 aluminium windows

9.01 Scope

Supply and install metal window frames and glass, glazed doors, flyscreens, hardware, flashing, and the like.

9.02 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS 1170 SAA Loading Code.
- AS 1288 Glass in Buildings.
- AS 2047 1996 Windows in buildings.
- AS 3715 Thermoset powdercoatings.
- AS/NZS 4680 1999 Hot-dip galvanised (zinc) coatings on fabricated ferrous articles.

9.03 Materials

Windows to be manufactured from Extruded Aluminium Alloy 6063, Temper T5 or T6.

Finish is to be natural anodised.

9.04 Aluminium windows

Provide extruded aluminium windows, glazed sliding doors and sliding louvre screens and panels as shown on the Architectural Drawings and Window Schedule. All doors and windows to have sub sills.

Provide drawings of sections of windows for approval prior to ordering windows, and provide shop drawings of windows for inspection prior to commencing manufacture. . Fix all hardware .

10.00 miscellaneous metalwork

10.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS/NZS 1554: SAA Structural Steel Welding.
- AS 1627 1989: Metal finishing - Preparation and pretreatment of surfaces.

10.02 Materials

All ferrous metalwork is to be heavily hot dipped galvanised **after** fabrication. Due to the proximity of the site to the ocean, site touching up of galvanised surfaces will not be permitted.

Stainless steel is to be 316 (marine) grade.

10.03 Balustrades

All balustrading is to be Fencing Fabrications 'System 316' Marine installed in accordance with the manufacturer's instructions. Posts are to be at 1500mm max centres.

Balustrarding is to comply with Part 3.0.2 and table3.9.2.1 of the BCA.

11.00 glazing

11.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS 1288: Glass in Buildings, amended 1997.
- AS 2047 1996: Windows in buildings in 2 parts.

11.02 Materials

Glass selection and installation shall comply with the requirements of AS 1288.

All glazing is to be low E throughout. All glazing to be clear float except where safety glass is required by AS 1288 and to all new windows facing south where toughened glass is to be used. All external glazing is to have a maximum reflectivity index of 25%.

Note particularly code requirements for safety glass.

12.00 plastering

12.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS/NZS 2589.1 1997: Gypsum linings in residential & commercial construction.
- AS 3740: Waterproofing of wet areas within residential buildings.
- AS 3972 1997: Portland and blended cements.
- SAA HB63 – 1994: Home Insulation in Australia.
- AS 2627: Thermal insulation of dwellings.
-
-

12.02 Plasterboard

Plasterboard is to be 10 mm thick to walls, and may be either 10 mm thick to ceilings where supports are spaced at maximum 450 mm centres, or 13 mm thick where supports are spaced at maximum 600 mm centres. Do not use 10mm thick plasterboard which is designed to span more than 450mm between supports.

Use moisture resistant grade in areas subject to humidity, steam or damp.

Joints are to be recessed, taped and set. Use corner reinforcing beads and the like. Do not use casing beads and similar accessories which are visible on the surface of the plasterboard.

12.03 Shadow mounds

P50 shadow moulds are to be used at wall/ceiling junctions and at junctions of plasterboard and window and door reveals.

12.04 Insulation

Install insulation as detailed on the Architectural Drawing A7. Locate and restrain the insulation in the middle of the stud walls so as to achieve an air gap each side of the insulation.

13.00 roofing

13.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- SAA HB39: Code of common practice for steel roofing.
- AS 1562: Design & Installation of sheet roof & wall cladding.
- AS 2180 1986: Metal rainwater goods, selection and installation.
- SAA HB63 – 1994: Home Insulation in Australia.
- AS 2627: Thermal insulation of dwellings.

13.02 Insulation

Provide insulation as detailed on Architectural Drawing A7 laid between purlins and under the roof sheeting to all roofs. The foil blanket is to serve as both insulation and sarking.

13.03 Roof sheeting

All new roof sheeting to be Colorbond Ultra Zincalum corrugated roof sheeting with matching accessories. Colour: Deep Ocean.

Provide rolled ridge cappings and all matching accessories as necessary. Ridge cappings are to be profiled so as to seal the roof against ember attack.

13.04 Gutters and downpipes

Gutters to be 150mm dia half round, fabricated from Colorbond Ultra Zincalum steel. Colour: deep Ocean. Brackets to be cast zinc powdercoated to match.

Provide approved leafguards to all gutters. Leafguards to have a flammability index not greater than 5 (refer AS 1530.2). Leaf guards are to be easily lifted to allow cleaning of the gutters.

Downpipes to be 75mm diameter fabricated from Colorbond Ultra Zincalum steel. Colour: Wilderness. Provide matching spreaders where downpipes discharge onto roofs below.

14.00 wall and floor tiling

14.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS/NZS 3661: Slip resistance of pedestrian surface.
- AS 3740: Water proofing of wet areas within residential buildings.
- AS 3958: Ceramic Tiles.

14.02 Materials

Tiles will be supplied by the Owners.

14.03 Membranes

Provide flexible sheet membrane to decks at first floor level in accordance with the Architectural Drawings and to the satisfaction of the Architect. The use of liquid applied membranes is **not** acceptable.

Water test the balconies and decks on completion and make good to any defects.

Provide liquid applied membranes to all internal floors to be tiled, and to walls within showers and similar areas exposed to water. Note that there is to be no step at showers, which are to fall to the linear floor grates.

14.04 Setout

Set out tiles to a grid pattern as instructed. Obtain approval of setout prior to laying. Note in particular that the perimeters of rooms are to be level throughout.

14.05 Wet area floor tiling and floor tiling generally

Lay tile and stone flooring as indicated on the Architectural Drawings. Discuss tile and stone setout with the Architect prior to proceeding with the work. Tile the bathroom and shower room walls with selected ceramic tiles laid to falls to outlets. Point up with grout of an approved colour.

14.06 Wall tiling

Tile walls of the bathrooms and shower rooms are to be full height of the wall and to be in accordance with any architectural details. Point up with grout of an approved colour.

14.07 Fittings

Supply and install fixtures and fittings as shown on the drawings, as specified and as scheduled.

14.08 Perimeter Threshold

Supply and install L shaped perimeter threshold sections as detailed on the Architectural Drawings. Install flashings to achieve a watertight junction. Threshold sections are to be laid to be level with the adjacent floor finish (timber of carpet).

15.00 plumbing and drainage

15.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS/NZS 1260: PVC Pipes & fittings.
- AS 1432: Copper tubing for plumbing, gas fitting.
- AS 3500: National plumbing and drainage code.

- AS 3550: National Plumbing and Drainage code, Part 2: sanitary plumbing and sanitary drainage.
- AS/NZS 4494 1998: Discharge of commercial and industrial liquid waste to sewer - general performance requirements.

15.02 Licensed tradespersons

Sanitary plumbing and hot and cold water plumbing are to be carried out by licensed plumbers and drainers **only**.

15.03 Plumbing generally

Comply with the following condition of the Development Consent:

D77. All plumbing and drainage fixtures are to be concealed and not exposed to public view on buildings over one storey in height.

15.04 Water conservation devices

Comply with the following condition of the Development Consent:

D16. Water conservation devices with an AAA rating must be installed, including tap flow regulators, shower head roses and dual flush toilets. All new hot water systems are to have a minimum rating of 3.5 stars.

15.05 Sanitary plumbing

All sanitary plumbing is to be carried out in UPVC pipes complete with all bends, junctions, inspection eyes etc.

All services are to be run via concealed routes.

15.06 Rainwater Harvesting Addendum

Refer to Rainwater Harvesting Addendum prepared by Tier Consulting Group Pty Ltd dated 09/23/05 for information on tanks, grey water harvesting, water heaters and additional requirements.

15.07 Hot water plumbing

Reticulate hot water from the new water heater to all fittings. Fully insulate all hot water piping. Note that the copper tubing from the new water heater to the various fittings is to be sized in accordance with the recommendations of the supplier of the water heater and the available pressure.

15.08 Fittings

Supply and install sanitary fittings and the like as scheduled.

15.09 Gas plumbing

Provide gas plumbing to water heaters, cook-top, barbeque and to locations of bayonet outlets for heaters to be advised by the Architect.

15.10 Stormwater drainage

All plumbing with the site shall be carried out in accordance with:

- AS/NZ3500.3.2 1998: National Plumbing and Drainage Code;
- AS 3959-1999: Construction of buildings in bushfire prone areas, and
- the requirements of Pittwater Council and

16.00 electrical trades

16.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS/NZS 3000: Wiring Rules.
- AS/NZS 3018 1997: Electrical installation - Domestic.
- AS 3786: Smoke Alarms.

16.02 Scope

Provide a new meter board in the new location shown on the drawings.

Install new circuit breakers and new earth leakage protection in the new meter board.

Three phase power is required.

Provide GPO's and light points in locations as directed. Connect to the new fittings, including the new electric oven, cooktop and other appliances. Install new light fittings to be supplied by the Owner.

Install earth leakage protection in the meter board.

16.03 Smoke detectors

Install smoke detectors to the extent required by the BCA, but in not less than the following locations:

- Studio
- Main Stair Hall
- Corridor to Master Bedroom
- Corridor to Guest Bedroom
- Kitchen
- Hall 1 and 2 on the ground floor
- Garage

16.04 Exhaust fans

Install exhaust fans in bathrooms and shower rooms.

Install a new ducted exhaust fan to serve the new laundry. The ducting is to be routed under the house without loss of headroom in the underfloor space.

16.05 Under Floor Heating

Devitex cable system is to be installed in concrete slab under all floors designated for a stone or tile finish. System is available from Floorheat (Australia) Pty Limited. System is to be installed and tested in accordance with manufacturer's instructions. System must be connected to a 30mA Residual Current Device.

17.00 painting

17.01 Standards and codes

Comply with all applicable current standards and codes including but not limited to:

- AS 2311 1992: The painting of buildings.
- AS 4361: Guide to lead paint management

17.02 Scope

Painting includes the whole of the house and studio including all walls, ceilings, timber joinery, doors, barges, eaves linings, and all metalwork which is not prefinished. The scope excludes timber which is clear finished.

The external timber decks are to be left unpainted.

17.03 Materials

Use materials from the Dulux range of products or **approved** equal. Murobond paint is to be used where nominated. Use only full paint systems – do not mix systems or use materials from differing manufacturers.

17.04 Preparation and application

Prepare surfaces and apply products strictly in accordance with the printed recommendations of the manufacturer.

17.05 Colour Schedules

Work to the Schedule of External Finishes and Colours provided. Schedules of internal finishes and colours will be provided during the course of the work.

17.06 Materials

Allow for the following materials, to be confirmed:

External walls: Murobond Pure Low Sheen plus Grain

External timber fascias and eaves lining: Murobond Pure Low Sheen

Internal walls: Murobond Pure Low Sheen

Internal plasterboard ceilings: Murobond Pure Flat

Internal timber ceilings: Murobond Low Sheen

Internal timber joinery: Semi gloss alkyd enamel.

18.00 The schedules

18.01 External elements

No	Type/location	Supplier	Specification
1.	Roofing	John Lysaght	Custom Orb corrugated iror Ultrazincalum finish Colour: Deep Ocean
2.	Gutters		Deep Ocean
3.	Downpipes		75 dia CZS finish. Colour Deep Ocean
4.	Wall Cladding		Hoop Pine boards 200x25mm
5.	Windows, Doors, Adjustable Louvres		Natural Anodised Aluminium
6.	Decks	I Clip	Ironwood Decking Boards
7.			

18.02 Internal Finishes

No	Room	Walls	Floor	Ceiling
1	Entry	Plasterboard	Stone to be selected	Plasterboard
2	Passage/Stair	Plasterboard, special finish to west wall	Stone to be selected	Plasterboard
3	Hall1, Hall 2	Plasterboard	Stone to be selected	Plasterboard
4	Bathroom 2	Full height tiles	Tiles	Plasterboard
5	Laundry	Full height tiles	Tiles	Plasterboard
6	Bedroom 2	Plasterboard	Carpet	Plasterboard
7	Rumpus	Plasterboard	Stone to be selected	Plasterboard
8	Bedroom 3	Plasterboard	Carpet	Plasterboard
9	Garage	Render/Plasterboard	Concrete – brush finish	Plasterboard
10	Store	Render/Plasterboard	Concrete – brush finish	Plasterboard
11	Garden Store	Face Brickwork	Concrete – brush finish	Concrete
12	Drying Area	Timber boarding, Alum shutters	Concrete pavers over slab	Styrofoam panels
13	Living	Plasterboard	Timber supplied by Owner, stone edging	Timber boarding
14	Dining	Plasterboard	Timber supplied by Owner, stone edging	Timber boarding
15	Kitchen	Plasterboard	Timber supplied by Owner, stone edging	Timber boarding
16	Master Bedroom	Plasterboard	Carpet/Stone perimeter	Timber boarding
17	Ensuite	Full height tiling	Tiles	Plasterboard
18	Master WIR	Plasterboard	Carpet	Plasterboard
19	Corridor to MB	Plasterboard	Stone to be selected	Plasterboard
20	Stair Hall	Plasterboard, special finish to west wall	Stone to be selected	Plasterboard
21	Study	Plasterboard	Carpet	Timber boards
22	Bathroom 1	Full height tiling	Tiles	Plasterboard
23	Corridor to GR	Plasterboard	Stone to be selected	Timber boards
24	Guest Room	Plasterboard	Carpet/stone edge to east wall and corridor	Timber boards
25	Studio	Timber boards	Timber boards	Timber boards

Douglas Partners
Geotechnics • Environment • Groundwater

Douglas Partners Pty Ltd
ABN 75 053 980 117
96 Hermitage Road
West Ryde NSW 2114
Australia

PO Box 472
West Ryde NSW 1685
Phone (02) 9809 0666
Fax: (02) 9809 4095
sydney@douglaspartners.com.au

GRW:pc
Project 36976
12 November, 2004

Mr and Mrs R Allo
c/- Peter Burford Architects
166 Denison Street
NEWTOWN NSW 2042

Attention: Mr Peter Burford

Fax No: 95503241

Dear Sir

PROPOSED RESIDENCE
81 MYOLA ROAD, NEWPORT

As requested, the revised architectural drawings (Drawing 040101, Sheets A1 – A7) for the proposed residence at 81 Myola Road, Newport have been inspected and the following comments supplement the Douglas Partners Pty Ltd report (Project 36976, dated 8 April 2004).

The revisions to the proposed development are the addition of two groups of two rainwater tanks to the north and west of the residence and a swimming pool and associated timber decking at the northeastern corner of the lot. The previous report included consideration of a swimming pool (location not finalised) within the northern section of the site. The locations of the proposed structures are given on an amended Drawing 1.

The construction detailing for the tanks and swimming pool should include connection of overflow lines to the stormwater system to ensure that the stability of the filled slope at the northern site boundary. The foundations for the structures should be prepared in accordance with the previous advice which should be read in conjunction with this letter.

It is considered that the completion of the structures in accordance with this and previous advice will not alter the site risks previously assessed in Table 1 of the 8 April 2004 report.

We trust that the above information is as required at this time. Please do not hesitate to contact the undersigned if additional assistance is required,

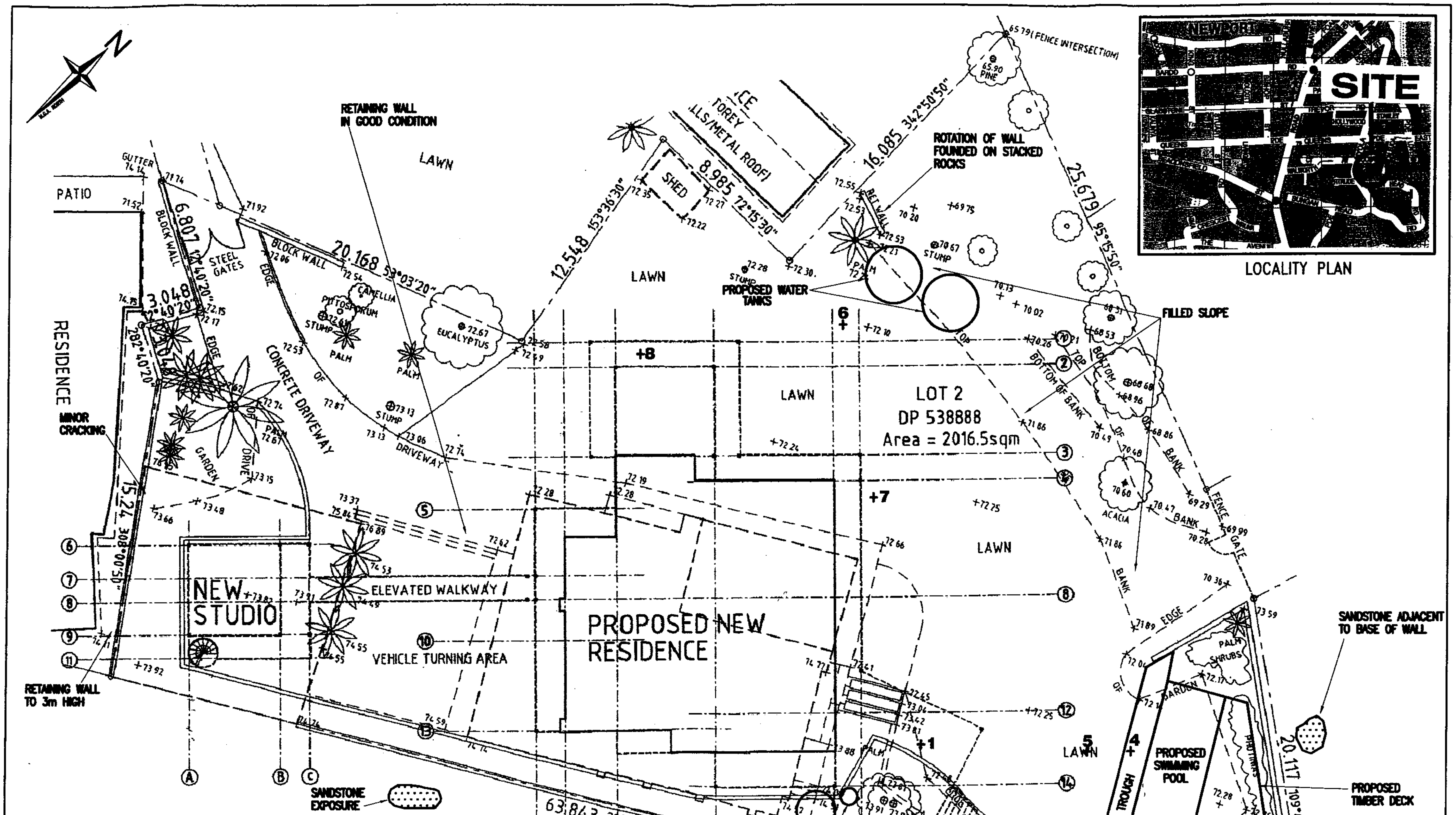
Yours faithfully
DOUGLAS PARTNERS PTY LTD

Grahame Wilson
Principal

Reviewed by

R K Lloyd
Associate

Attached: Drawing 1 (Amendment 1)
Forms 1 and 1a



N
LOCALITY PLAN
SITE
NEWPORT
LOT 2
DP 538888
Area = 2016.5sqm
PROPOSED NEW RESIDENCE
NEW STUDIO
ELEVATED WALKWAY
VEHICLE TURNING AREA
CONCRETE DRIVEWAY
PROPOSED SWIMMING POOL
TROUGH
PLANTER
GARDEN
LAWN
SHED
PATIO
RESIDENCE
STEEL GATES
BLOCK WALL
RETAINING WALL IN GOOD CONDITION
ROTATION OF WALL FOUNDED ON STACKED ROCKS
FILLED SLOPE
PROPOSED WATER TANKS
SANDSTONE ADJACENT TO BASE OF WALL
PROPOSED TIMBER DECK
CONCRETE BLOCK RETAINING WALL IN GOOD CONDITION
BRICK BOUNDARY WALL IN GOOD CONDITION
SANDSTONE EXPOSURE
MINOR CRACKING
RETAINING WALL TO 3m HIGH
65.79 (FENCE INTERSECTION)
25.679 95°15'50"
16.085 342°50'50"
8.985 72°15'30"
12.548 153°36'30"
20.168 53°03'20"
6.807 12°40'20"
3.048 282°40'20"
15.24 308°00'50"
63.843 223°33'20"
20.117 109°45'50"
LEGEND
SANDSTONE OUTCROP
+ DYNAMIC CONE PENETROMETER TEST LOCATION
SCALE 1:200
0 5 10 15 20m

Douglas Partners
· Geotechnics, Environment, Groundwater

Sydney, Newcastle, Brisbane, Melbourne, Perth, Wyong, Campbelltown, Townsville Cairns, Wollongong

TITLE:
Location of Investigation & Site Features
Proposed Residence
81 Myola Road
NEWPORT

CLIENT: Mr & Mrs R Allo			
DRAWN BY: PSCH	SCALE: As shown	PROJECT No: 36976	OFFICE: SYDNEY
APPROVED BY:		DATE: 26.3.2004	DRAWING No: 1

AMDT	1.Swimming Pool & Water Tanks Added	12/11/04	GRW

:\DRAWINGS 2004\MARCH2004\36976.dwg, 11/12/2004 02:22:36 PM

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1 – To be submitted with Development Application

Development Application for MR & MRS R ALLO
Name of Applicant

Address of site 81 MYOLA ROAD, NEWPORT

Declaration made by geotechnical engineer or engineering geologist or coastal engineer (where applicable) as part of a geotechnical report

I, G.R. WILSON (Insert Name) on behalf of DOUGLAS PARTNERS P/L (Trading or Company Name)

on this the 12 NOVEMBER 2004 certify that I am a geotechnical engineer or engineering geologist or coastal engineer as defined by the Geotechnical Risk Management Policy for Pittwater and I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least $2million.
I have:

Please mark appropriate box

☑ Prepared the detailed Geotechnical Report referenced below in accordance with the Australia Geomechanics Society's Geotechnical Risk Management Guidelines and the Pittwater Council Policy

☐ Am willing to technically verify that the detailed Geotechnical Report referenced below has been prepared in accordance with the Australian Geomechanics Society's Geotechnical Risk Management Guidelines and the Pittwater Council Policy

☐ Have examined the site and the proposed development/alteration in detail and am of the opinion that the Development Application only involves Minor Development/Alterations that do not require a Detailed Geotechnical risk Assessment and hence my report is in accordance with the Policy requirements for Minor Development/Alterations.

☐ Provided the coastal process and coastal forces analysis for inclusion in the geotechnical report

Geotechnical Report Details:

Report Title: PROPOSED RESIDENCE 81 MYOLA ROAD, NEWPORT

Report Date: 8 APRIL 2004
: 12 NOVEMBER 2004 (SUPPLEMENTARY LETTER REPORT)

Author: G. WILSON

Documentation which relate to or are relied upon in report preparation:

ARCHITECTURALS: DRAWINGS 040101 SHEETS A1–A7 BY PETER BUCHAN (CHARTERED ARCHITECT)

I am aware that the above geotechnical report, prepared for the abovementioned site is to be submitted in support of a Development Application for this site and will be relied on by Pittwater Council 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 G R Wilson

Name G R WILSON

Chartered Professional Status RPGEO

Membership No. 10007

REGISTERED PROFESSIONAL GEOSCIENTIST
AUSTRALIAN INSTITUTE OF GEOSCIENTISTS AIG
G.R. WILSON 10,007

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER

FORM NO. 1(a) - Checklist Of Requirements For Geotechnical Risk Management Report for Development Application or Part V assessment

Development Application for MR & MRS R ALLO
Name of Applicant

Address of site 81 MYOLA ROAD, NEWPORT

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk Management Geotechnical Report. This checklist is to accompany the Geotechnical Report and its certification (Form No. 1).

Geotechnical Report Details:

Report Title: PROPOSED RESIDENCE 81 MYOLA ROAD NEWPORT
Report Date: 8 APRIL 2004 & 12 NOVEMBER 2004 (SUPPLEMENTARY LETTER REPORT)
Author: G. WILSON

Please mark appropriate box

- ☑ Comprehensive site mapping conducted 25 MARCH 2004 (date)
- ☑ Mapping details presented on contoured site plan with geomorphic mapping to a minimum scale of 1:200 (as appropriate)
- ☑ Subsurface investigation required
  - ☐ No Justification
  - ☑ Yes Date conducted 25/3/04
- ☑ Geotechnical model developed and reported as an inferred subsurface type-section
- ☑ Geotechnical hazards identified
  - ☐ Above the site
  - ☑ On the site
  - ☐ Below the site
  - ☐ Beside the site
- ☑ Geotechnical hazards described and reported
- ☑ Risk assessment conducted in accordance with Council's Policy
  - ☑ Consequence analysis
  - ☑ Frequency analysis
- ☑ Risk calculation
- ☑ Risk assessment for property conducted in accordance with Council's Policy
- ☑ Risk assessment for loss of life conducted in accordance with Council's Policy
- ☑ Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk Management Policy for Pittwater
- ☑ Opinion has been provided that the design can achieve the "Acceptable Risk Management" criteria provided that the specified conditions are achieved.
- ☑ Design Life Adopted:
  - ☑ 100 years SUBJECT TO IMPLEMENTATION OF MAINTENANCE & INSPECTION PROGRAM
  - ☐ Other specify
- ☑ Development Conditions to be applied to all four phases as described in Pittwater Geotechnical Risk Management Policy have been specified
- ☐ Additional action to remove risk where reasonable and practical have been identified and included in the report.

I am aware that Pittwater Council will rely on the Geotechnical Report, to which this checklist applies, as the basis for ensuring that the geotechnical risk management aspects of the proposal 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

REGISTERED PROFESSIONAL GEOSCIENTIST
AUSTRALIAN INSTITUTE OF GEOSCIENTISTS AIG
G.R. WILSON
10,007

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REPORT
on
GEOTECHNICAL ASSESSMENT

PROPOSED RESIDENCE
81 MYOLA ROAD, NEWPORT

Prepared for
MR AND MRS R ALLO

Project 36976
April 2004

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1 – To be submitted with Development Application

Development Application for MR & MRS R ALLO
Name of Applicant

Address of site 81 MYOLA ROAD, NEWPORT

Declaration made by geotechnical engineer or engineering geologist or coastal engineer (where applicable) as part of a geotechnical report

I, G.R. WILSON (Insert Name) on behalf of DOUGLAS PARTNERS (Trading or Company Name)

on this the 8 APRIL 2004 certify that I am a geotechnical engineer or engineering geologist or coastal engineer as defined by the Geotechnical Risk Management Policy for Pittwater and I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least $2million.
I have:

Please mark appropriate box

✓ Prepared the detailed Geotechnical Report referenced below in accordance with the Australia Geomechanics Society's Geotechnical Risk Management Guidelines and the Pittwater Council Policy

• • Am willing to technically verify that the detailed Geotechnical Report referenced below has been prepared in accordance with the Australian Geomechanics Society's Geotechnical Risk Management Guidelines and the Pittwater Council Policy

• • Have examined the site and the proposed development/alteration in detail and am of the opinion that the Development Application only involves Minor Development/Alterations that do not require a Detailed Geotechnical risk Assessment and hence my report is in accordance with the Policy requirements for Minor Development/Alterations.

• • Provided the coastal process and coastal forces analysis for inclusion in the geotechnical report

Geotechnical Report Details:

Report Title: PROPOSED RESIDENCE 81 MYOLA ROAD, NEWPORT

Report Date: 8 APRIL 2004

Author: G R WILSON

Documentation which relate to or are relied upon in report preparation:

ARCHITECTS PLANS: DRAWINGS 04010 – 040106 DATED 15 MARCH 2004 BY PETER BURFORD (CHARTERED ARCHITECT)

I am aware that the above geotechnical report, prepared for the abovementioned site is to be submitted in support of a Development Application for this site and will be relied on by Pittwater Council 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

REGISTERED PROFESSIONAL GEOSCIENTIST
AUSTRALIAN INSTITUTE OF GEOSCIENTISTS AIG
G.R. WILSON
10,007

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1(a) - Checklist Of Requirements For Geotechnical Risk Management Report for Development Application or Part V assessment

Development Application for MR & MRS R ALLO
Name of Applicant
Address of site 81 MYOLA ROAD, NEWPORT

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk Management Geotechnical Report. This checklist is to accompany the Geotechnical Report and its certification (Form No. 1).

Geotechnical Report Details:

Report Title: PROPOSED RESIDENCE 81 MYOLA ROAD, NEWPORT
Report Date: 8 APRIL 2004
Author: G R WILSON

Please mark appropriate box

- ✓ Comprehensive site mapping conducted 25 MARCH 2004 (date)
- ✓ Mapping details presented on contoured site plan with geomorphic mapping to a minimum scale of 1:200 (as appropriate)
- ✓ Subsurface investigation required
  - No Justification .....
  - ✓ Yes Date conducted 25/3/04
- ✓ Geotechnical model developed and reported as an inferred subsurface type-section NO TEXT
- Geotechnical hazards identified
  - Above the site
  - ✓ On the site
  - Below the site
  - Beside the site
- ✓ Geotechnical hazards described and reported
- ✓ Risk assessment conducted in accordance with Council's Policy
  - ✓ Consequence analysis
  - ✓ Frequency analysis
- ✓ Risk calculation
- ✓ Risk assessment for property conducted in accordance with Council's Policy
- ✓ Risk assessment for loss of life conducted in accordance with Council's Policy
- ✓ Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk Management Policy for Pittwater
- ✓ Opinion has been provided that the design can achieve the "Acceptable Risk Management" criteria provided that the specified conditions are achieved.
- ✓ Design Life Adopted:
  - ✓ 100 years SUBJECT TO MAINTENANCE & INSPECTION PROGRAM
  - Other ..... specify
- ✓ Development Conditions to be applied to all four phases as described in Pittwater
- ✓ Geotechnical Risk Management Policy have been specified
- ✓ Additional action to remove risk where reasonable and practical have been identified and included in the report.

I am aware that Pittwater Council will rely on the Geotechnical Report, to which this checklist applies, as the basis for ensuring that the geotechnical risk management aspects of the proposal 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 ..... G R Wilson
Name ..... G R WILSON
Chartered Professional Status ..... RPGeo
Membership No. 10007

REGISTERED PROFESSIONAL GEOSCIENTIST
AUSTRALIAN INSTITUTE OF GEOSCIENTISTS AIG
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REPORT
on
GEOTECHNICAL ASSESSMENT

PROPOSED RESIDENCE
81 MYOLA ROAD, NEWPORT

Prepared for
MR AND MRS R ALLO

Project 36976
April 2004

Douglas Partners Pty Ltd
ABN 75 053 980 117

96 Hermitage Road
West Ryde NSW 2114
Australia

PO Box 472
West Ryde NSW 1685

Phone (02) 9809 0666
Fax: (02) 9809 4095
sydney@douglaspartners.com.au

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Project 36976
8 April 2004

REPORT ON GEOTECHNICAL ASSESSMENT
PROPOSED RESIDENCE
81 MYOLA ROAD, NEWPORT

1. INTRODUCTION

This report details the results of a geotechnical assessment carried out for a proposed residence at 81 Myola Road, Newport. The work was carried out at the request of Mr Peter Burford, acting on behalf of the property owners, Robert and Elaine Allo.

It is understood that the demolition of the existing residence and the construction of a new two storey residence with a detached studio is proposed. Associated works will comprise a swimming pool and new garden retaining walls.

Assessment was carried out to provide information on subsurface conditions for the Development Application purposes and for the design of site works and building foundations. It comprised a detailed geological inspection of the site and accessible adjacent areas and dynamic penetrometer testing. Details of the field work are given in this report, together with comments relating to design and construction practice.

Architectural and site survey drawings (Drawings 040101 -040106, dated 15 March 2004) by Peter Burford, Chartered Architect, were supplied by for use in the investigation.

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2. SITE DESCRIPTION AND GEOLOGY

The site comprises an irregular shaped lot, with maximum plan dimensions of 63.8 m (eastern boundary) and approximately 43 m (east – west). It is accessed by a 88 m long right-of-carriageway from Myola Road and also has a 45 m long by 6 m wide access to Bungan Head Road (see Locality Plan, Drawing 1). It is bounded on all sides by developed residential lots.

The site is located on a ridge crest location which has been modified during residence construction. It may be divided into the following topographic sections as summarised below and additionally shown in Drawing 1 and Photos 1 – 6 (Plate 1, Appendix A):

- a filled area up to 3 m deep at the sandstone boundary wall at the south-eastern corner of the lot. The depth of filling appears to reduce rapidly to the north below the existing carport and adjacent lawn area (Photo 2) which lies at approximately RL 74.5.
- an original ridge crest area at about RL 72 - 74.6 which has probably been modified during the construction of the existing brick and tile residence located in the east-central section of the lot.
- levelled garden areas (Photo 5) extending around the northern and western sides of the residence at about RL 72 – 73.
- the north-western margin of garden areas (Photo 6) appears to have been formed side spoiling of filling to form a batter which is now grass-covered and has several immature trees.
- the north-eastern boundary is marked by a concrete block retaining wall to about 2 m high.

Reference to the Sydney 1:100 000 Geological Series Sheet 9130 indicates that the site is underlain by the Newport Formation close to the boundary with the overlying Hawkesbury Sandstone of Triassic age. The Newport Formation comprises interbedded quartz and lithic sandstone, laminite and shale. . The Hawkesbury Sandstone comprises horizontally bedded and vertically jointed, massive and cross-bedded quartz sandstone with a few shale interbeds.

The historical photograph (Photo 1) indicates that the sandstone formed a discontinuous capping of the ridge crest.

3. FIELD WORK

3.1 Methods

The field investigation comprised a detailed geological inspection and photography of the site and adjacent areas by a senior engineering geologist on 25 March 2004 and eight dynamic penetrometer tests (DCP 1 – 8) to depths ranging from 0.15 – 1.5 m.

The locations of the DCPs and site features are shown on Drawing 1 and were determined by tape measurement from site boundaries or structures shown on the site survey drawing. The surface levels shown on the DCP report sheet were determined by interpolation from the site survey plan provided.

3.2 Results

Details of the DCPs are included in Appendix A, together with notes defining classification methods and descriptive terms.

The geological mapping and dynamic penetrometer testing indicates that:

- medium and high strength, quartz sandstone exposures (consistent with typical profiles in the Hawkesbury Sandstone) are present within the adjacent properties (Photos 3 and 4) and are consistent with the historical photograph (Photo 1).
- there is no evidence of seepage or deep seated-slope instability.
- the sandstone and rendered retaining walls bounding the existing carport and adjacent garden areas are generally in good condition.
- the concrete block garden retaining wall (without reinforcement or concrete filled core) is distorted (Photo 5), apparently due to soil pressure or tree growth. The adjacent brick boundary wall is however, in good condition.
- the concrete block retaining wall at the north-eastern boundary is in good condition.

- the north-western section of the site includes a well-vegetated filled slope at about 358which terminates at the boundary fence. At the crest of the slope at the boundary with 77 Myola Road, an approximately 1 m high retaining wall founded on stacked sandstone pieces has rotated outwards.
- the external walls of the residence are in good condition.
- the DCPs indicate a shallow depth (0.15 – 0.45 m) filling or residual soil adjacent to the north-eastern boundary, deepening to about 1.5 m in the western section of the site.
- no seepage was affecting the site at the time of the inspection.

4. COMMENTS

4.1 Proposed Development

It is understood that the construction of the proposed residence will require the demolition of the existing residence, carport and garden retaining walls at the north-eastern and southern sides of the residence.

The proposed residence will be a two storey steel-framed structure with an elevated studio connected to the residence by a walkway. A swimming pool is also proposed within the northern garden area, however the position has not yet been finalised. The approximate footprint of the proposed development is shown on Drawing 1.

4.2 Geological Model

The geological subsurface model for the site comprises:

- a gently to moderately sloping, pre-development ridge crest with irregularly distributed sandy, residual or colluvial soil profile (probably generally less than 1 m deep) between bedrock exposures.

- a building platform constructed by cut and fill methods across the ridge crest.
- bedrock (Hawkesbury Sandstone) of weathering-resistant quartz sandstone, probably including joint blocks with open joints as a result of weathering downslope creep.
- a groundwater table at significant depth within the sandstone profile of the generally well-drained site. Minor seepage may however occur along the bedrock surface following periods of heavy or extended rainfall.

4.3 Risk Assessment

The site has been assessed in accordance with the methods of the Australian Geomechanics Society (Landslide Risk Management AGS Subcommittee, May 2002) and Pittwater Council Interim Geotechnical Risk Management Policy (IGRMP) guidelines of 16 June 2003. Identified hazards within and adjacent to the site are summarised in Table 1, together with qualitative assessment of likelihood, consequence and risk to the existing and proposed residential structures after completion of construction including appropriate engineering design and construction works.

Table 1 - Property and Life Risk Assessment for Proposed Development

Hazard	Likelihood	Consequence	Risk
Failure of proposed 1 m high garden retaining wall	Rare for engineered structure with appropriate maintenance	Property – Minor	Very low
		Life - Insignificant	1×10^{-9}
Failure of existing north-eastern boundary retaining wall	Rare for engineered structure with appropriate maintenance	Property – Minor	Very low
		Life - Insignificant	1×10^{-9}
Soil creep or shallow slumping of steep northern embankment	Unlikely for well drained, grass and tree protected batter	Property - Minor	Low
		Life - Insignificant	1×10^{-8}
Failure of minor retaining wall at north-western section of embankment	Possible if not remediated	Property - Insignificant	Very low
		Life - Insignificant	1×10^{-9}

When compared to the requirements of the IGRMP, it is considered that the proposed development will achieve the "Acceptable Risk Management" criteria for both property and life under the current site and reasonably foreseeable conditions. Should site conditions unexpected change, the risk assessment should be reviewed. It is also considered that the site is suitable for the proposed development.

4.4 Excavation

Construction of the proposed residence will require excavation to a maximum depth of about 2.3 – 2.5 m within the studio and eastern section of the residence foundation area.

It is anticipated that the excavations will intersect both soil and sandstone bedrock of up to medium or high strength with relatively widely spaced jointing, although some of the joints and bedding planes may be widely open. Excavation of this material will require the use of pneumatic or hydraulic equipment.

The sandstone within the site extend into the adjacent properties and are likely to act as wave guides to vibrations generated by the excavation process. The residences to the south and east are located approximately 1 m and 5 m from the proposed demolition / excavation area.

The recommended maximum peak particle velocity from AS 2187 Explosives Code for various structures subject to vibration is 10 mm/sec for houses and low rise residential buildings and 25 mm/sec for commercial and industrial buildings or structures of reinforced concrete or steel construction. However, previous experience by Douglas Partners Pty Ltd has indicated that architectural damage may occur at lesser vibration levels. It is therefore recommended that a peak particle velocity of 5 mm/sec at foundation level of adjacent residential structures be employed to at this site for both structural and human comfort considerations.

Neighbours will probably find vibration levels above about 3 mm/s as being strongly perceptible to disturbing. Hence complaints from neighbours are possible and some reassurance, possibly by vibration monitoring, may be necessary.

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Vibration monitoring carried out by Douglas Partners at various excavation sites in Hawkesbury Sandstone around Sydney has indicated the following relationships (Table 2) of peak particle velocity versus distance for various hammer types, milling heads and rock saw attachments.

Table 2 - Measured Relationship Between Hammer Weight/Rock Saw/Milling Head and Distance from Monitor

Hammer Type	Distance (m)	Peak Particle Velocity (mm/s)
Krupp 300 or equivalent	1.0 1.5 2.0	15 10 7
Krupp 600 or equivalent	3.5 6 9	10 4 – 5 2
Krupp 900 or equivalent	6 9 20	20 10 – 11 4
3m diameter saw on excavator	0.5 - 1 1 – 2	5 3
Milling head of excavator	1 1 - 2	5 3

As the proposed excavation area will be located some 1 – 5 m from the nearest adjacent residential structures, it is recommended that, if hydraulic rock breaking equipment is to be used, a Krupp 300 hammer or equivalent be used no closer than 2.5 m from the nearest structure. Similarly, a Krupp 600 hammer or equivalent should not be used closer than 6 m to the nearest structure.

To further minimise the effects of hydraulic rock hammer equipment, the work method should allow for:

- excavation of loose or rippable sandstone blocks by bucket or single tyne attachments prior to commencement of rock hammering. Care should be taken to assure that existing, loosened blocks do not continue into the adjacent foundation areas.
- progressive breakage from open excavated faces.
- selective breakage along open joints where these are present.
- use of rock hammers in short bursts to prevent generation of resonant frequencies.

- orientation of the rock hammer pick away from property boundaries and into the existing open excavation.
- the movement of large blocks away from the structures prior to breaking up for transport from site.

It is also suggested that neighbours be made aware of the timing of the excavation works and possible vibration levels, such that any vibration sensitive items can be secured during the work.

4.5 Retaining Walls

It is understood that a new retaining wall (to replace the existing distorted wall in Photo 5) about 1 m high will be constructed to support a new garden area. Minor retaining walls may also be required to support soil or weathered rock within the residence excavation area.

It is recommended that the retaining walls be founded on intact sandstone of at least low strength that the design of the retaining system be based upon an average bulk unit weight of 20 kN/m^3 for soil, with a triangular earth pressure distribution based on lateral earth pressure coefficients of 0.4 (level backfill conditions). Additional pressure should be allowed where surcharging occurs from structures or a sloping surface above the wall. Unless positive drainage measures can be incorporated to prevent water pressure build up behind the walls, full hydrostatic head should be allowed for in design while, at the same time, allowing for the soil density to reduce due to the buoyant condition.

The bedrock surface (of probably low or greater strength) is assessed as being located at depths of less than 0.5 m below the existing surface within the proposed garden retaining wall area. Restraint may be developed below the level of the filling and soils by keying shallow footings into the rock. Allowable lateral passive pressures of 1000 kPa in low strength and 3000 kPa in medium strength sandstone are suggested for design purposes.

4.6 Foundations

It is anticipated that the bulk excavation level will variously expose filling, residual soil and sandstone of up to high strength.

To minimise the potential for differential settlement, it is considered that a suitable foundation system could comprise a combination of strip or pad footings, bulk piers and/or bored pier carried into sandstone of at least low strength. Sandstone is expected to be exposed in part of the excavation area and at a depth of about 1.5 m in the western section of the residence. An allowable bearing pressure of 1000 kPa is considered appropriate for this material.

To ensure that footings are not located on dislodged blocks or ledges underlain by open seams and for confirmation of allowable bearing pressures, all footings should be inspected by a geotechnical consultant.

5. CONDITIONS RELATING TO DESIGN AND CONSTRUCTION MONITORING

To comply with Council conditions and to enable the completion of Forms 2 and 3 required as part of construction, building and post-construction certificate requirements of the Interim Geotechnical Risk Management Policy, it will be necessary for Douglas Partners Pty Ltd to:

- review the structural drawings for compliance with the recommendations of this report.
- inspect all footings prior to placement of steel or concrete.

6. DESIGN LIFE AND MAINTENANCE

Douglas Partners Pty Ltd interprets the reference to design life requirements specified within the IGRMP to refer to structural elements designed to retain the subject slope and maintain the risk of instability within acceptable limits.

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Specific structures that may affect the maintenance of site stability are considered to include:

- existing boundary walls that will remain as part of the new development.
- new retaining structures to support cut faces within sections the new residence and garden area.
- stormwater and subsoil drainage systems.

These features should be designed and maintained for the design life of the proposed structures, which in our experience, is normally taken to be in the order of 60 years. In order to attain a life of 100 years as required by the IGRMP, it will be necessary for the structural engineer to incorporate appropriate design and structural inspection considerations and for the property owner to adopt and implement a maintenance and inspection program. A recommended program is given in Table 3.

Table 3 – Recommended Maintenance and Inspection Program

Structure	Maintenance/Inspection Task	Frequency
Drainage Lines	Inspect to ensure line is flowing without blockages.	Every 5 years or following each significant rainfall event.
Drainage Pits	Inspect to ensure that pits are free of debris and sediment buildup. Clear surface grates of vegetation/litter build-up.	During normal ground maintenance and following each significant rainfall event.
Retaining Walls	Inspect walls for deviation from as-constructed condition.	Every 5 years or following each significant rainfall event.

Where changes to site conditions are identified during the maintenance and inspection program, reference should be made to a relevant professional (e.g. structural engineer or geotechnical engineer).

DOUGLAS PARTNERS PTY LTD

Grahame Wilson
Principal

Reviewed by

G S Young
Principal

APPENDIX A
Notes Relating to this Report
Results of Field Work
Photographic Plates 1 and 2
Drawing 1

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NOTES RELATING TO THIS REPORT

Introduction

These notes have been provided to amplify the geotechnical report in regard to classification methods, specialist field procedures and certain matters relating to the Discussion and Comments section. Not all, of course, are necessarily relevant to all reports.

Geotechnical reports are based on information gained from limited subsurface test boring and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726, Geotechnical Site Investigations Code. In general, descriptions cover the following properties - strength or density, colour, structure, soil or rock type and inclusions.

Soil types are described according to the predominating particle size, qualified by the grading of other particles present (eg. sandy clay) on the following bases:

Soil Classification	Particle Size
Clay	less than 0.002 mm
Silt	0.002 to 0.06 mm
Sand	0.06 to 2.00 mm
Gravel	2.00 to 60.00 mm

Cohesive soils are classified on the basis of strength either by laboratory testing or engineering examination. The strength terms are defined as follows.

Classification	Undrained Shear Strength kPa
Very soft	less than 12
Soft	12—25
Firm	25—50
Stiff	50—100
Very stiff	100—200
Hard	Greater than 200

Non-cohesive soils are classified on the basis of relative density, generally from the results of standard penetration tests (SPT) or Dutch cone penetrometer tests (CPT) as below:

Relative Density	SPT "N" Value (blows/300 mm)	CPT Cone Value (q_c — MPa)
Very loose	less than 5	less than 2
Loose	5—10	2—5
Medium dense	10—30	5—15
Dense	30—50	15—25
Very dense	greater than 50	greater than 25

Rock types are classified by their geological names. Where relevant, further information regarding rock classification is given on the following sheet.

Sampling

Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing with a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Details of the type and method of sampling are given in the report.

Drilling Methods.

The following is a brief summary of drilling methods currently adopted by the Company and some comments on their use and application.

Test Pits — these are excavated with a backhoe or a tracked excavator, allowing close examination of the in-situ soils if it is safe to descent into the pit. The depth of penetration is limited to about 3 m for a backhoe and up to 6 m for an excavator. A potential disadvantage is the disturbance caused by the excavation.

Large Diameter Auger (eg. Pengo) — the hole is advanced by a rotating plate or short spiral auger, generally 300 mm or larger in diameter. The cuttings are returned to the surface at intervals (generally of not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube sampling.

Continuous Sample Drilling — the hole is advanced by pushing a 100 mm diameter socket into the ground and withdrawing it at intervals to extrude the sample. This is the most reliable method of drilling in soils, since moisture content is unchanged and soil structure, strength, etc. is only marginally affected.

Continuous Spiral Flight Augers — the hole is advanced using 90—115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in

clays and in sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are very disturbed and may be contaminated. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively lower reliability, due to remoulding, contamination or softening of samples by ground water.

Non-core Rotary Drilling — the hole is advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from 'feel' and rate of penetration.

Rotary Mud Drilling — similar to rotary drilling, but using drilling mud as a circulating fluid. The mud tends to mask the cuttings and reliable identification is again only possible from separate intact sampling (eg. from SPT).

Continuous Core Drilling — a continuous core sample is obtained using a diamond-tipped core barrel, usually 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in very weak rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation.

Standard Penetration Tests

Standard penetration tests (abbreviated as SPT) are used mainly in non-cohesive soils, but occasionally also in cohesive soils as a means of determining density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, "Methods of Testing Soils for Engineering Purposes" — Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of say 4, 6 and 7

  as 4, 6, 7
  N = 13

- In the case where the test is discontinued short of full penetration, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm

  as 15, 30/40 mm.

The results of the tests can be related empirically to the engineering properties of the soil.

Occasionally, the test method is used to obtain samples in 50 mm diameter thin walled sample tubes in clays. In such circumstances, the test results are shown on the borelogs in brackets.

Cone Penetrometer Testing and Interpretatior

Cone penetrometer testing (sometimes referred to Dutch cone — abbreviated as CPT) described in th report has been carried out using an electrical friction coi penetrometer. The test is described in Australian Standa 1289, Test 6.4.1.

In the tests, a 35 mm diameter rod with a cone-tipp end is pushed continuously into the soil, the reaction beir provided by a specially designed truck or rig which is fitte with an hydraulic ram system. Measurements are made the end bearing resistance on the cone and the frictic resistance on a separate 130 mm long sleeve, immediate behind the cone. Transducers in the tip of the assemt are connected by electrical wires passing through th centre of the push rods to an amplifier and recorder ur mounted on the control truck.

As penetration occurs (at a rate of approximately 20 m per second) the information is plotted on a comput screen and at the end of the test is stored on the comput for later plotting of the results.

The information provided on the plotted resul comprises: —

- Cone resistance — the actual end bearing force divide by the cross sectional area of the cone — expressed MPa.
- Sleeve friction — the frictional force on the slee\ divided by the surface area — expressed in kPa.
- Friction ratio — the ratio of sleeve friction to cor resistance, expressed in percent.

There are two scales available for measurement of cor resistance. The lower scale (0—5 MPa) is used in ve soft soils where increased sensitivity is required and shown in the graphs as a dotted line. The main scale (0- 50 MPa) is less sensitive and is shown as a full line.

The ratios of the sleeve friction to cone resistance w vary with the type of soil encountered, with higher relati friction in clays than in sands. Friction ratios of 1%—2' are commonly encountered in sands and very soft clay rising to 4%—10% in stiff clays.

In sands, the relationship between cone resistance ar SPT value is commonly in the range:—

q_c (MPa) = (0.4 to 0.6) N (blows per 300 mm)

In clays, the relationship between undrained she: strength and cone resistance is commonly in the range:—

q_c = (12 to 18) c_u

Interpretation of CPT values can also be made to allo estimation of modulus or compressibility values to allo calculation of foundation settlements.

Inferred stratification as shown on the attached reports assessed from the cone and friction traces and fro experience and information from nearby boreholes, et This information is presented for general guidance, bi must be regarded as being to some extent interpretiv The test method provides a continuous profile engineering properties, and where precise information c soil classification is required, direct drilling and samplin may be preferable.

Hand Penetrometers

Hand penetrometer tests are carried out by driving a rod into the ground with a falling weight hammer and measuring the blows for successive 150 mm increments of penetration. Normally, there is a depth limitation of 1.2 m but this may be extended in certain conditions by the use of extension rods.

Two relatively similar tests are used.

- Perth sand penetrometer — a 16 mm diameter flat-ended rod is driven with a 9 kg hammer, dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands (originating in Perth) and is mainly used in granular soils and filling.
- Cone penetrometer (sometimes known as the Scala Penetrometer) — a 16 mm rod with a 20 mm diameter cone end is driven with a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). The test was developed initially for pavement subgrade investigations, and published correlations of the test results with California bearing ratio have been published by various Road Authorities.

Laboratory Testing

Laboratory testing is carried out in accordance with Australian Standard 1289 "Methods of Testing Soil for Engineering Purposes". Details of the test procedure used are given on the individual report forms.

Bore Logs

The bore logs presented herein are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable, or possible to justify on economic grounds. In any case, the boreholes represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes, the frequency of sampling and the possibility of other than 'straight line' variations between the boreholes.

Ground Water

Where ground water levels are measured in boreholes, there are several potential problems;

- In low permeability soils, ground water although present, may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report.
- The use of water or mud as a drilling fluid will mask any ground water inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water observations are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Engineering Reports

Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal (eg. a three storey building), the information and interpretation may not be relevant if the design proposal is changed (eg. to a twenty storey building). If this happens, the Company will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface condition, discussion of geotechnical aspects and recommendations or suggestions for design and construction. However, the Company cannot always anticipate or assume responsibility for:

- unexpected variations in ground conditions — the potential for this will depend partly on bore spacing and sampling frequency
- changes in policy or interpretation of policy by statutory authorities
- the actions of contractors responding to commercial pressures.

If these occur, the Company will be pleased to assist with investigation or advice to resolve the matter.

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, the Company requests that it immediately be notified. Most problems are much more readily resolved when conditions are exposed than at some later stage, well after the event.

Reproduction of Information for Contractual Purposes

Attention is drawn to the document "Guidelines for the Provision of Geotechnical Information in Tender Documents", published by the Institution of Engineers, Australia. Where information obtained from this investigation is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section

is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. The Company would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The Company will always be pleased to provide engineering inspection services for geotechnical aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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DESCRIPTION AND CLASSIFICATION OF ROCKS FOR ENGINEERING PURPOSES

DEGREE OF WEATHERING

Term	Symbol	Definition
Extremely Weathered	EW	Rock substance affected by weathering to the extent that the rock exhibits soil properties - i.e. it can be remoulded and can be classified according to the Unified Classification System, but the texture of the original rock is still evident.
Highly Weathered	HW	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substance is no longer recognisable.
Moderately Weathered	MW	Rock substance affected by weathering to the extent that staining or discolouration of the rock substance usually by limonite has taken place. The colour of the fresh rock is no longer recognisable.
Slightly Weathered	SW	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance usually by limonite has taken place. The colour and texture of the fresh rock is recognisable.
Fresh Stained	Fs	Rock substance unaffected by weathering, but showing limonite staining along joints.
Fresh	Fr	Rock substance unaffected by weathering.

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index ($I_{s(50)}$) and refers to the strength of the rock substance in the direction normal to the bedding. The test procedure is described by Australian Standard 4133.4.1 - 1993.

Term	Symbol	Field Guide*	Point Load Index $I_{s(50)}$ MPa	Approx Unconfined Compressive Strength q_u ** MPa
Extremely low	EL	Easily remoulded by hand to a material with soil properties	<0.03	< 0.6
Very low	VL	Material crumbles under firm blows with sharp end of pick; can be peeled with a knife; too hard to cut a triaxial sample by hand. SPT will refuse. Pieces up to 3 cm thick can be broken by finger pressure.	0.03-0.1	0.6-2
Low	L	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long 40 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.	0.1-0.3	2-6
Medium	M	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.	0.3-1.0	6-20
High	H	Can be slightly scratched with a knife. A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow, rock rings under hammer.	1 - 3	20-60
Very high	VH	Cannot be scratched with a knife. Hand specimen breaks with pick after more than one blow, rock rings under hammer.	3 - 10	60-200
Extremely high	EH	Specimen requires many blows with geological pick to break through intact material, rock rings under hammer.	>10	> 200

Note that these terms refer to strength of rock material and not to the strength of the rock mass, which may be considerably weaker due to rock defects.

* The field guide assessment of rock strength may be used for preliminary assessment or when point load testing is not able to be done.

** The approximate unconfined compressive strength (q_u) shown in the table is based on an assumed ratio to the point load index of 20:1. This ratio may vary widely.

RESULTS OF DYNAMIC PENETROMETER TESTS

CLIENT	Mr and Mrs R Allo	DATE	25/3/04
PROJECT	Proposed Residence	PROJECT NO	36976
LOCATION	81 Myola Road, Newport	PAGE NO	1 of 1

TEST LOCATIONS	1	2	3	4	5	6	7	8		
RL OF TEST	72.5	72.5	72.5	72.3	72.3	72.1	72.3	72.4		
DEPTH m	PENETRATION RESISTANCE BLOWS/150mm									
0.00 - 0.15	2	2	1	3	4	5	2	1		
0.15 - 0.30	12	B at 0.15m	4	4	8	6	6	5		
0.30 - 0.45	20		10	10	6	6	7	5		
0.45 - 0.60	B at 0.45m		B at 0.35m	B at 0.4m	14	4	21	6		
0.60 - 0.75					R at 0.47m	5	7	5		
0.75 - 0.90						5	8	5		
0.90 - 1.05						8	B at 0.9m	7		
1.05 - 1.20						13		8		
1.20 - 1.35						B at 1.1m		34		
1.35 - 1.50								Forced to 1.5m		
1.50 - 1.65										
1.65 - 1.80										
1.80 - 1.95										
1.95 - 2.10										
2.10 - 2.25										
2.25 - 2.40										
2.40 - 2.55										
2.55 - 2.70										
2.70 - 2.85										
2.85 - 3.00										

TEST METHOD AS 1289.6.3.2, CONE PENETROMETER √

TESTED BY: GRW
CHECKED BY: GRW

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STRATIFICATION SPACING

Term	Separation of Stratification Planes
Thinly laminated	<6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	>2 m

DEGREE OF FRACTURING

This classification applies to diamond drill cores and refers to the spacing of all types of natural fractures along which the core is discontinuous. These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks. The orientation of rock defects is measured as an angle relative to a plane perpendicular to the core axis. Note that where possible, recordings of the actual defect spacing or range of spacings is preferred to the general terms given below.

Term	Description
Fragmented	The core consists mainly of fragments with dimensions less than 20 mm.
Highly Fractured	Core lengths are generally less than 20 mm - 40 mm with occasional fragments.
Fractured	Core lengths are mainly 40 mm - 200 mm with occasional shorter and longer sections.
Slightly Fractured	Core lengths are generally 200 mm - 1000 mm with occasional shorter and longer sections.
Unbroken	The core does not contain any fracture.

ROCK QUALITY DESIGNATION (RQD)

This is defined as the ratio of sound (i.e. low strength or better) core in lengths of greater than 100 mm to the total length of the core, expressed in percent. If the core is broken by handling or by the drilling process (i.e. the fracture surfaces are fresh, irregular breaks rather than joint surfaces) the fresh broken pieces are fitted together and counted as one piece.

SEDIMENTARY ROCK TYPES

This classification system provides a standardised terminology for the engineering description of sandstone and shales, particularly in the Sydney area, but the terms and definitions may be used elsewhere when applicable.

Rock Type	Definition
Conglomerate	More than 50% of the rock consists of gravel-sized (greater than 2 mm) fragments
Sandstone:	More than 50% of the rock consists of sand-sized (0.06 to 2 mm) grains
Siltstone:	More than 50% of the rock consists of silt-sized (less than 0.06 mm) granular particles and the rock is not laminated.
Claystone:	More than 50% of the rock consists of clay or sericitic material and the rock is not laminated.
Shale:	More than 50% of the rock consists of silt or clay-sized particles and the rock is laminated.

Rocks possessing characteristics of two groups are described by their predominant particle size with reference also to the minor constituents, eg. clayey sandstone, sandy shale.

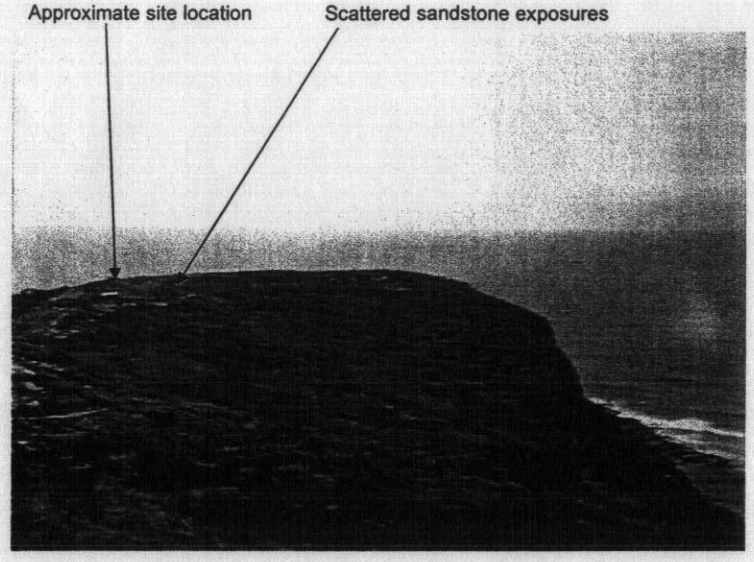

Photo 1: Looking east to site - 1912.

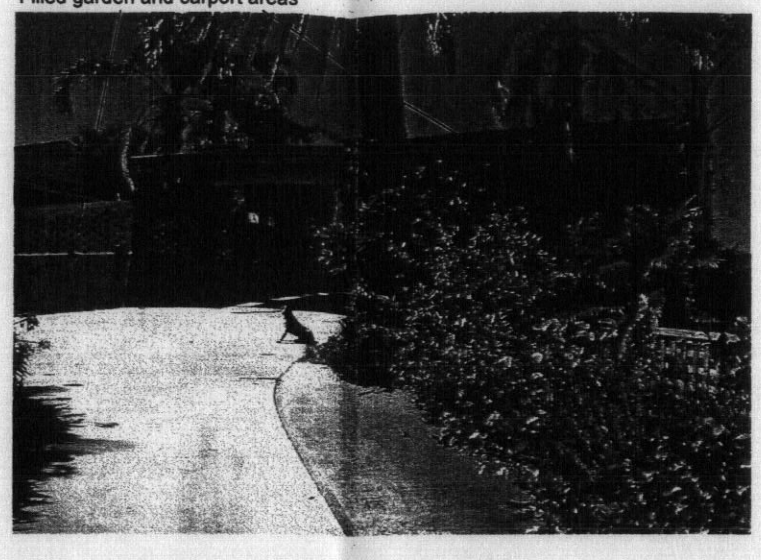

Photo 2: Access driveway at western side of residence.

Photo 3: Sandstone outcrops approximately 8m southeast of lot corner.

Photo 4: Sandstone exposure in adjacent property, 7m from the southeastern corner of the proposed residence.

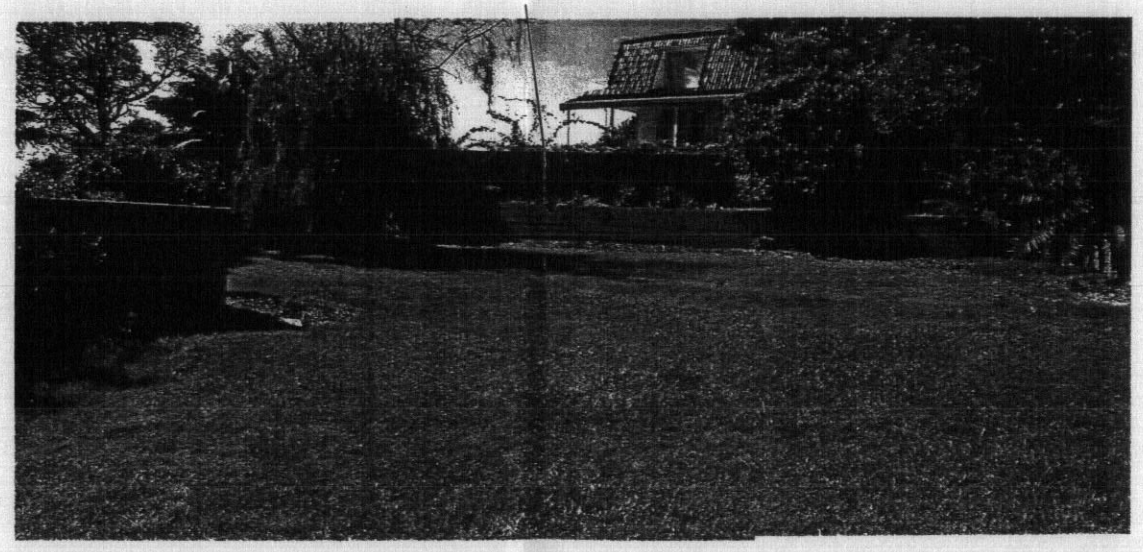

Photo 5: Rear garden area - proposed swimming pool within mid-ground.

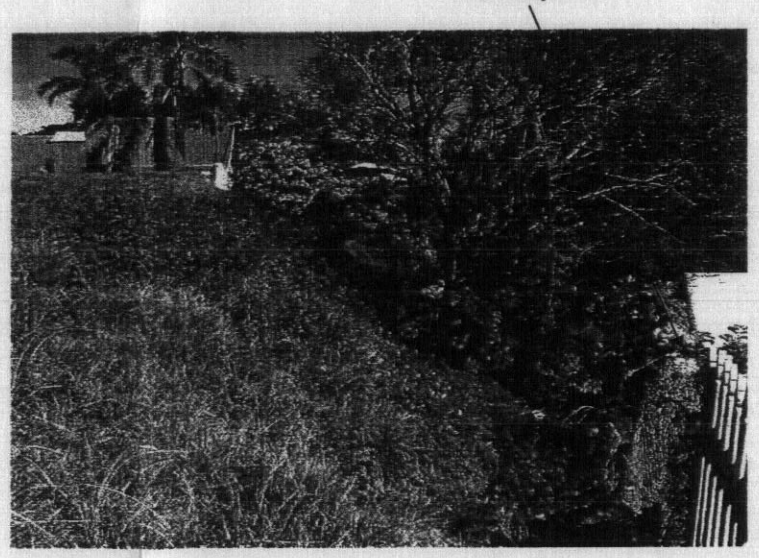

Photo 6: Filled batter at northern boundary of lot.

Proposed Residence **81 Myola Road** **Newport**	**Project No** **36976**	**April-04** **Plate 1**

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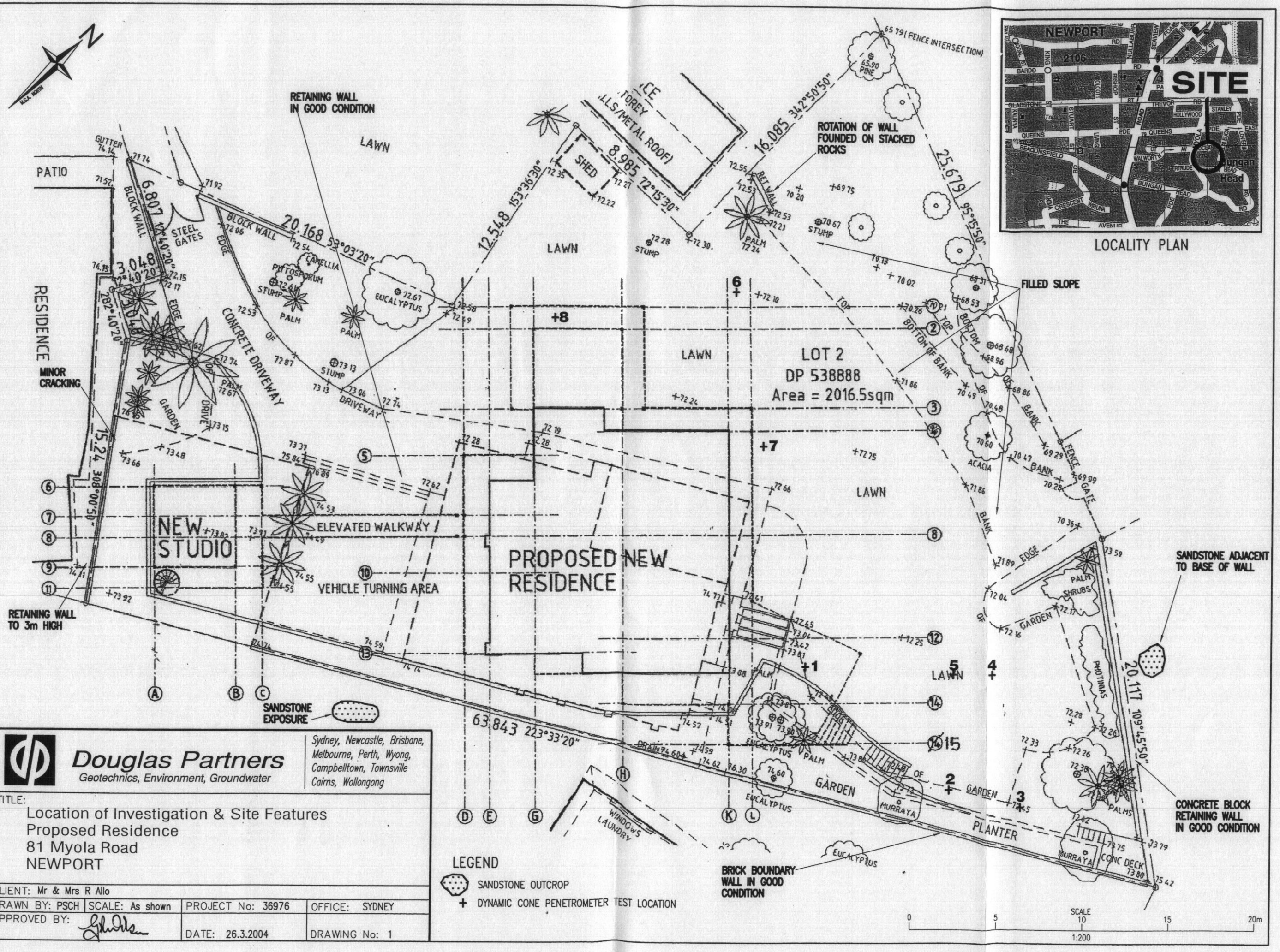

LOCALITY PLAN

Douglas Partners
Geotechnics, Environment, Groundwater

Sydney, Newcastle, Brisbane, Melbourne, Perth, Wyong, Campbelltown, Townsville Cairns, Wollongong

TITLE:
Location of Investigation & Site Features
Proposed Residence
81 Myola Road
NEWPORT

CLIENT: Mr & Mrs R Allo			
DRAWN BY: PSCH	SCALE: As shown	PROJECT No: 36976	OFFICE: SYDNEY
APPROVED BY:		DATE: 26.3.2004	DRAWING No: 1

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