CC NO 443/05 R178006

CONSTRUCTION CERTIFICATE APPLICATION

Made under the Environmental Planning and Assessment Act 1979 Sections 109C (1) (b), 81a (2) and 81a (4)

$108.30 LSL
$519.30 CC Fee.

Pittwater Council

PO Box 882, Mona Vale NSW 1660
Tel: (612) 9970 1111
Fax: (612) 9970 7150
Internet: www.pittwaterlga.com.au
Email: pittwater_council@pittwater.nsw.gov.au

SITE DETAILS

Unit/Suite:	Street No:	Street:	
	277	Lower Plateau Road	
Suburb: Bilgola Plateau		**Lot No:**	**Deposit /Strata Plan:**

DEVELOPMENT CONSENT

Development Application No:	Determination Date:
443/05	29/08/2005

APPLICANT DETAILS

Name/Company:	Contact Person:
Sunrise Pools P/L	Kelly
Postal Address: 518 Victoria Ave, Castle Hill	**Contact Numbers:** Phone (H/B): 96802574, Mobile: —, Fax: 9899 4450
Signature of Applicant:	**Date:** 30.09.2005

OWNERS DETAILS

Name:	If Company, contact person:
John & Cerian Brondum	
Postal Address: 277 Lower Plateau Rd, Bilgola Plateau 2107	**Contact Numbers:** Phone (H/B): 9973 1858, Mobile: 0403 084 942, Fax:

As the owner of the land to which this application relates, I consent to this application. I also give consent for the authorised Council Officer to enter the land to carry out inspections.

Signature of Owners: (see attached letter) **Date:**

If more than one owner, every owner must sign. If the owner is a company, the form must be signed by an authorised director and the common seal must be stamped on this application.
If the property has been recently purchased, written confirmation from the purchaser's Solicitor must be provided.
If the contracts have been exchanged for the purchase of the land, the current owner is to sign the application.

DEVELOPMENT DETAILS

Type of Work: ☑ Building Work

OR

☐ Subdivision Work

Description of proposal – (Provide brief, concise details):

construct new inground swimming pool

WHO WILL BE DOING THE BUILDING WORKS?

☐ Owner Builder

Owner Builders Permit No: .....

Copy of Owner Builders permit attached:
☐ Yes
☐ No – to be provided with Notice of Commencement Form

If you are an Owner-Builder for the residential building work exceeding $5000 you must apply for a permit at NSW Office of Fair Trading, 1 Fitzwilliam Street, Paramatta NSW 2150 Australia. Tel: 61 2 98950111 Fax: 61 2 9895 0222.

OR

☑ Licensed Builder
Builder's License Number 46723C

Name of Builder: Sunrise Pools P/L	Phone: 9680 2574
Contact person: Kelly	Mobile: .....
Address: 5/8 Victoria Rd Castle Hill	Fax: 9899 4450

Insurance Company: HIA Insurance

Insurance Certificate attached:
☑ Yes
☐ No – to be provided with Notification of Commencement form

If you are using a licensed builder for residential building work exceeding $12,000 you must obtain Home Building Act Insurance. A certificate of insurance must be provided with this application or submitted with the Notification of Commencement form.

VALUE OF PROPOSED DEVELOPMENT

Value of Works: $ 54,170— (including full cost of labour and materials)

DO YOU NEED TO PAY THE BUILDING INDUSTRY LONG SERVICE LEVY?

☑ Yes ☐ No

Only required if the development involves building works exceeding $25,000.00.

CCNO 443/05

OFFICE USE ONLY

Fee Type	Cashier's Code	Fee Amount
Construction Certificate Application Fee	TCER	
Long Service Levy Fee	QLSL	
Driveway/Street Levels	ESTR	
Sec 94 Contributions		
Bonds/Guarantees		
Other Fees		
TOTAL		
Date of Receipt:	**Receipt No:**	**Accepted By:**

PRIVACY AND PERSONAL INFORMATION PROTECTION NOTICE

Purpose of collection:	To enable Council as the consent authority to assess your proposal.
Intended recipients	Council Staff and any other relevant government agency that may be required to assess the proposal.
Supply:	The information is required by legislation.
Consequence of Non-provision:	Your application may not be accepted, not processed or rejected for lack of information
Storage:	The Pittwater Council will store details of the application and any subsequent decision in a register that can be viewed by the public.
Retention period:	Hard copies of the application will be destroyed after 7 years and electronic records will be kept indefinitely.

Please contact Council if this information you have provided is incorrect or changes.

STATISTICAL RETURN FOR AUSTRALIAN BUREAU OF STATISTICS

What is the area of the land?	Area in square metres	700 m^2
Gross floor area of existing building? *If no existing building, write "NIL"*	Area in square metres	126.5 m^2
What is the existing building or site used for at present?	Main uses:	residential
	Other uses:	
Does the site contain a dual occupancy?	☐ Yes	☑ No
Gross floor area of proposed building?	Proposed floor area in square metres	51.1 m^2
What will the proposed building to be used for?	Main uses:	swimming pool
	Other uses:	
How many dwellings:		
Are pre-existing at this property?	Dwellings:	1
Are proposed to be demolished?	Dwellings:	0
Are proposed to be constructed?	Dwellings:	0
How many storeys will building consist of?	Storeys:	0

What are the main building materials?

Walls		**Roof**	
Full Brick	☐	Aluminium	☐
Brick veneer	☐	Concrete or slate	☐
Concrete, masonry	☑	Tile	☐
Steel	☐	Fibrous cement	☐
Fibrous cement	☐	Steel	☐
Timber/weatherboard	☐	Other	☐
Cladding-aluminium	☐	Unknown	☑
Curtain glass	☐		
Other	☐		
Unknown	☐		

Floor		**Frame**	
Concrete	☑	Timber	☐
Timber	☐	Steel	☑
Other	☐	Other	☐
Unknown	☐	Unknown	☐

APPLICANTS CHECK LIST

Note: This list is intended as a guide to the type of information to be submitted. Some items may not be required and Section B of the Conditions of Development Consent for the building works may specify further additional information required with submission of your Construction Certificate Application.

Application Form –	☑ Owners Consent ☑ Applicant's Signature ☑ Long Service Levy ☐ Driveway/Street levels Application N/A pool.
Supporting Documentation - (3 copies of each)	☑ Architectural Plans ☐ Quick Check Plans endorsed by Sydney Water ☑ Construction Specifications for Building Works on plans ☑ Structural Engineer's Plans ☑ Structural/Geotechnical Certificates report/specs council has one as well. ☑ Landscape Plans ☑ Driveway Level Plans levels on plans ☐ On-site Stormwater Detention Plans N/A ☐ Drainage Plans on Site Storm Management N/A ☑ Erosion and Sediment Management Plan ☑ Sydney Water Quick Check Plans ☐ Subdivision Work Plans N/A ☐ Schedule of External Finishes/Colours N/A ☐ Fire Safety Measures Schedule N/A ☑ Form No. 2 – "Geotechnical Risk Management Policy for Pittwater" report encl. ☑ Details and location of fencing for Swimming Pool to comply with AS 1926-1986 "Fences and Gates for Private Swimming Pools" ☐ Specifications for construction of buildings in Bushfire-prone areas N/A ☑ Security Deposit / Section 94 contributions

TREE MANAGEMENT CONSULTING ARBORICULTURISTS

ARBORICULTURAL ASSESSMENT
AND
PLAN OF MANAGEMENT FOR TREES WITHIN 5 METRES OF A PROPOSED POOL

for

Sunrise Pools Australia Pty Ltd
5/8 Victoria Avenue
CASTLE HILL NSW 2154

SITE ADDRESS
277 LOWER PLATEAU ROAD
BILGOLA PLATEAU NSW

SEPTEMBER 2005

MEMBER OF
INSTITUTE OF AUSTRALIAN
CONSULTING ARBORICULTURISTS

URBAN FORESTRY AUSTRALIA

ABN 90 639 906 218

www.urbanforestry.com.au

Correspondence:

PO Box 151
NEWPORT NSW 2106

Telephone: (02) 9918 9833
0414 997 417

Facsimile: (02) 9918 9844

Email: cmackenzie1@bigpond.com

CONTENTS

1 INTRODUCTION

1.1 This Arboricultural Assessment was commissioned by Ms Kelly Robinson of Sunrise Pools Australia Pty Ltd., on behalf of the owners of the subject site.

1.2 The subject site is identified as 277 Lower Plateau Road, Bilgola Plateau, New South Wales.

1.3 This Arboricultural Assessment addresses the proposed construction of an approved swimming pool in the rear yard of the subject site.

1.4 This Arboricultural Assessment reports on the health and condition of surveyed trees, and examines the possible development impacts on trees in proximity to the proposal.
This Arboricultural Assessment gives recommendations as to the retention or removal of trees on the site based on their Safe Useful Life Expectancy, comments on the nature of the development, and gives recommendations to minimize any identified impacts from the proposed development.

1.5 A Plan of Management has been prepared for the trees to be retained on the site, and is included in the Recommendations section of this assessment.

1.6 Information contained in this Arboricultural Assessment covers only the trees that were examined and reflects the condition of the trees at the time of inspection.
Care has been taken to obtain all information from reliable sources.
All data has been verified as far as possible; however, I can neither guarantee nor be responsible for the accuracy of information provided by others.

1.7 This Arboricultural Assessment is not intended as an assessment of any impacts on trees by any proposed future development of the site, other than the current approved development.

1.8 This report is not intended to be a comprehensive hazard assessment, however the report may make recommendations, where appropriate, for further testing of trees where potential structural problems have been identified or where below-ground investigation may be required.

2 METHODOLOGY

2.1 In preparation for this report a ground level visual tree assessment (Mattheck 1994) was undertaken by the author of this Arboricultural Assessment on Friday 26 September, 2005.

2.2 The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring.
No aerial (climbing) inspections, woody tissue testing or tree root investigation was undertaken as part of this tree assessment.

2.3 Tree height and canopy spread of the subject trees was estimated and expressed in metres.
Trunk diameter at breast height *(DBH)* was estimated at approximately 1.4 metres above ground level.

2.4 Plans and/or documents used for the preparation of this Arboricultural Assessment include:

- Site Plan, Dwg, No. SRP0506 - 1, dated June 2005, prepared by Right Angle Drafting;
- Pool Plan and Sections, Dwg, No. SRP0506 - 2, dated June 2005, prepared by Right Angle Drafting; and
- Excerpt of Pittwater Council Conditions of Development Consent for the construction of a swimming pool.

2.5 Six (6) trees inside the subject site were assessed for this report.

3 DISCUSSION

3.1 Location of Existing Trees

3.1.1 The subject trees are located in the east, south and west perimeters of the site. A cleared area between two large rock outcrops is approved for the location of the proposed pool.

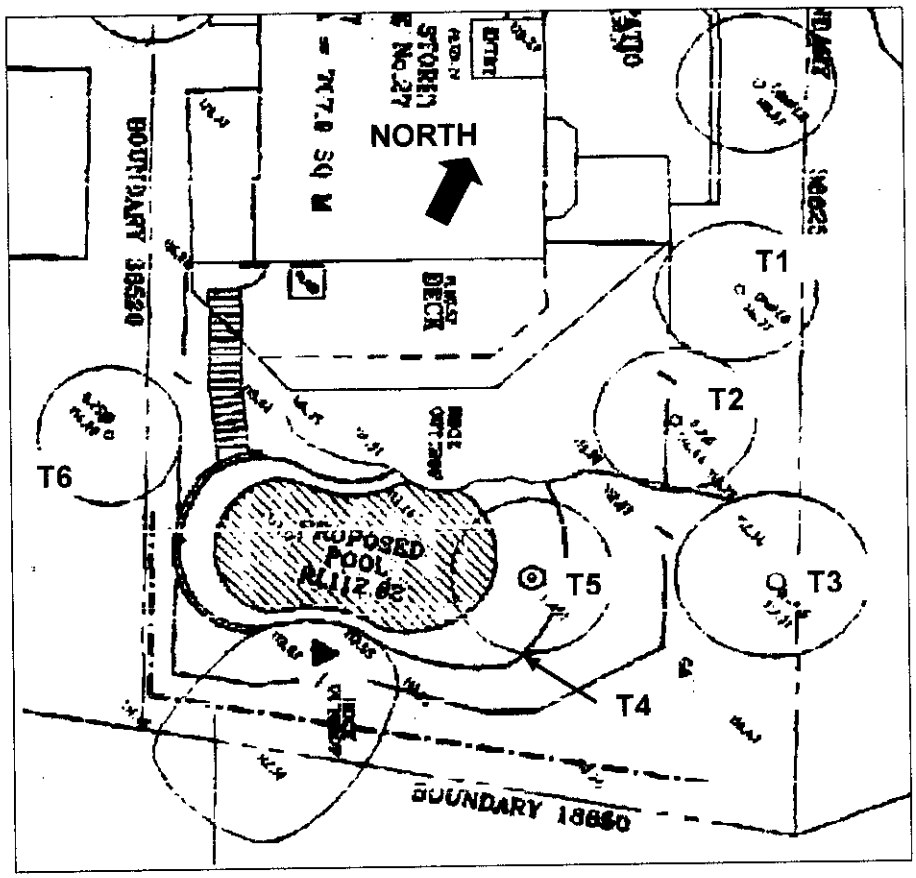


Figure 1 Location of subject trees in rear yard of subject site.

3.2 Tree Details

3.2.1 Schedule of Surveyed Trees

Tree No.	Species and Common Name	Height (M)	Canopy spread (M)	DBH (mm)	Age	Health	Condition	SULE
1	*Cupressus macrocarpa* Monterey Cypress							
2	*Elaeocarpus reticulatus* Blueberry Ash	11	6	280	M	Fair	Fair	3A
3	*Ceratopetalum apetalum* Coachwood	15	10	480	M	Good	Good	2A
4	*Cyathea australis* Tree Fern x 2	3 – 4	4	120	M	Good	Good	3A
5	*Livistona australis* Cabbage Tree Palm	9	6	400	SM	Good	Good	1A
6	*Allocasuarina torulosa* Forest Oak	11	7	320	M	Fair	Fair	3B

3.2.2 With the exception of Tree 1, all trees are locally indigenous species. Tree 1 is an introduced conifer and the species is exempt from protection under the Tree Preservation and Management Order.

3.2.3 No trees meet the physical criteria defining them as significant[1], however the species assemblage is typical of local rainforest communities and contributes to the local character and biodiversity of the locality.

1. Significant trees are trees that:
   i. are listed as Heritage Items in *Pittwater LEP 1993*; and/or
   ii. contribute substantially, either individually or as a component of a tree group, to the landscape character, amenity, cultural values or biodiversity of their locality. (Generally trees with a girth greater than 500mm and a canopy spread of 6m radius would be considered significant however this should be confirmed by an independent arborist.) Pittwater Council DCP – *Pittwater 21*, Section A, p 16.

3.3 Proposed Tree Removal

3.3.1 No trees are proposed for removal.

3.4 Potential Impacts on Trees to be Retained

3.4.1 The proposed pool is set back at adequate distance from the majority of the subject trees and excavation for the pool is not expected to have a significant effect on nearby trees.

3.4.2 The excavation for the pool is about 700mm from the stem of the Cabbage Tree Palm (T5), which is enough to accommodate the root mass at the base of the tree and some space between the roots and pool wall.

3.4.3 The proposed deck around Tree 2 is to have an opening to accommodate the stem of the tree. This is easily constructed, but must allow for stem movement and expansion over time to avoid damage to the tree and deck.

3.4.4 The deck may also conflict with the location of the two (2) Tree Ferns located approximately 3 metres south of Tree 5. These tree ferns can be retained but this may require some slight amendment to the deck design to allow their retention.

3.4.5 The pool fencing location is very close to the Blueberry Ash, northeast of the pool. Final location of the fence will need to allow a minimum distance of 100 – 200 mm from the base of the tree to ensure no damage is inflicted on the tree. Locations for fence posts will need to be flexible to ensure no damage to woody support roots occurs.
These requirements are minor and can be easily incorporated without affecting the construction of the pool fence.

3.4.6 The remaining trees i.e. Trees 1, 3 and 6, are not expected to suffer any impacts as a result of the excavation and construction of the approved pool.

4 CONCLUSIONS

4.1 There are no trees to be removed as part of this approved development.

4.2 Trees within proximity to the development can be retained without significant or adverse impacts on their health or condition, provided adequate protection measures are installed prior to construction.

4.3 Some minor adjustment to the location of the pool fence is likely, if damage to the stem or roots of trees is to be avoided.

5 RECOMMENDATIONS

5.1 Specific

5.1.1 Tree 5

1. Prior to commencement of work, Tree 5 must be provided with hessian wrapping of a minimum thickness of 25mm, from base to 2.0 metres above existing ground level, in order to protect the stem against physical damage.
2. The ground beneath the palm is to be covered in leaf mulch to a depth of 100mm and a radial setback of 1.5 metres to reduce soil compaction during works.
3. Allowance must be made for a minimum gap of 100mm between any parts of the proposed deck to the stem of the palm. Provision of a flexible rubber collar to this gap will prevent debris or other objects from falling through or being caught in the gap, and prevent damage to the structure and the stem of the palm.

5.1.2 The location of the proposed pool fencing and posts is to remain flexible, where it is indicated as being within 3 metres of Trees 2 and 6.
The fence must not be located any closer than 200mm from the stem of any tree.

6 PLAN OF MANAGEMENT

6.1 Pre - Construction

6.1.1 Tree Protection Devices

A Tree Protection Zone (TPZ) is to be provided to trees to be retained prior to the commencement of works on site, including any clearing or grading. The TPZ is to consist of 1.8m chain link with 50mm metal pole supports installed at no less than 3 metres around trees to be retained. The exceptions are Trees 4 and 5, where mulch and hessian wrapping is to be provided, and Trees 1, 2 and 6 where access to the site may be restricted with these setbacks to fencing. In this case, thick mulch must be provided in the areas where construction access to the rear yard is likely.

During installation of the protection fencing, care must be taken to avoid damage to significant roots.

Advice must be sought from a qualified arborist if protection fencing cannot be provided in accordance with the above.

6.1.2 Mulching

The inclusion of a temporary mulch layer of composted leaf and woodchip to a depth of 75mm within TPZ will help retain soil moisture, protect soil from contaminants and reduce soil compaction.

6.1.3 Signage

Signage should explain exclusion from the fenced off areas and carry a contact name for access or advice.

6.1.4 Certification

The TPZ must be inspected by an appropriately qualified arborist to ensure adequate tree protection is provided to the trees, prior to commencement of works. The arborist is to provide confirmation that protection measures are satisfactory and will meet minimum requirements for the protection of trees. In the event that protection is not considered adequate, the arborist is to advise on the appropriate materials and methods of protection to be provided to the trees to be retained.

6.2 Construction

6.2.1 Maintaining Tree Protection

The TPZ may only be removed, altered, replaced or relocated with the authorisation of the project arborist.

The contractor and supervisor of the site works must ensure that the integrity of the Tree Protection Zone is not compromised by any unauthorised activities carried out near trees to be retained.

All access to personnel and machinery, as well as storage of fuel, chemicals, cement or site sheds, is prohibited within the TPZ;

No washing of tools, wheelbarrows, etc. is to take place within 6 metres upslope of trees to be retained.

6.2.2 Site works

The following must be adhered to during all works within 5 metres of trees to be retained.

- No stock-piling is to take place around the root zones of trees.
- Providing a regular supply of water to the tree during the period of works is recommended.
- During this period it is also recommended that the tree be given fortnightly applications of a rooting hormone, such as Hormone 20®, to encourage the development of new roots.
- Service trenches should not pass through a fenced area, although if this cannot be avoided a qualified arborist should be present to supervise excavation, cut torn roots cleanly or redesign around roots.

  Any roots that must be severed must be cut cleanly with a sharp handsaw or secateurs. Tearing of roots is not acceptable.
- Any excavation within the TPZ of trees to be carried out by hand i.e. a trench along the line of cut adjacent to the tree should be carefully dug by hand to expose any roots. After cutting of roots, machinery may complete the excavation.
- Do not allow excavation vehicles or equipment to rip at, or remove the roots along the face of any excavation adjacent to a tree.

In the event the vehicles 'grab' at roots during works, the machine operator must stop work immediately and allow the roots to be cut before continuing.

- Where significant tree roots are encountered which coincide with the desired location for a pier, the location should be moved so as to avoid the root/s. In the event this is not possible to achieve, an arborist should be consulted to assess the impacts on the tree's health and stability of the removal of further significant roots.
- Irrigation – An arborist should determine whether irrigation should be carried out during extended periods of drought.

6.2.3 Monitoring

The trees must be monitored for signs of stress or decline in their health or condition. Any indication of stress (e.g. dull foliage, dieback of branch tips, fresh wounds or 'bleeding', etc.) must be reported to the project arborist as soon as noted.

6.3 Post - Construction

6.3.1 Removal of Tree Protection devices

Tree protection fencing must not be removed until all site works are finished. Fencing must not be stockpiled near, or lean against trees, before being collected and removed off site.

6.3.2 Re-mulching

Mulch must be removed after construction to remove any contaminants. Replacement with a good quality mulch and addition of 10% organic matter will improve beneficial soil micro-organisms, retain moisture and improve aeration and water infiltration.

6.3.3 Landscaping

Any proposed planting locations within the TPZ of trees to be retained must remain flexible so as to avoid damage to existing roots.

In some cases, tubestock container size may be the only suitable size for planting within the root zone of a tree.

Mattocks and similar digging instruments must not be used within the dripline of trees to be retained. Planting holes should be dug by hand with a garden trowel, or similar small tool.

Should you require further assistance with this matter, or require my liaison with Council officers, please do not hesitate to contact me.

Yours faithfully,

Catriona Mackenzie
Consulting arboriculturist and landscape designer.
Member Australian Institute of Horticulture
Founding Member Institute of Australian Consulting Arboriculturists
Member International Society of Arborists – Australian Chapter
Certificate of Horticulture *Honours*
Associate Diploma of Applied Science (Landscape) *Distinction*
Diploma of Horticulture (Arboriculture) *Distinction*

7 BIBLIOGRAPHY

Barrell, J (1995) *Pre-development Tree Assessment* from *Trees and Building Sites*, Eds. Watson & Neely, International Society of Arboriculture, Illinois.

Mattheck, C. & Breloer, H.(1999) *The Body Language of Trees.* Research for Amenity Trees No.4 the Stationary Office, London.

Pittwater Council *Pittwater 21 Development Control Plan*, Adopted 8 December, 2003

APPENDIX A

TERMS AND DEFINITIONS

TERMS AND DEFINITIONS

The following relates to terms or abbreviations that may have been used in this report and provides the reader with a detailed explanation of those terms.

Age classes

- (I) = immature and refers to a well established but juvenile tree.
- (S) = semi-mature and refers to a tree at growth stages between immaturity and full size.
- (M) = mature and refers to a full sized tree with some capacity for further growth.
- (O) = over-mature and refers to a tree about to enter decline or already declining.

Condition refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition.

Diameter at Breast Height (DBH) refers to the tree trunk diameter at breast height (1.4 metres above ground level)

Health refers to the tree's vigour as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion, and the degree of dieback.

SAFE USEFUL LIFE EXPECTANCY (SULE)
In a planning context, the time a tree can expect to be usefully retained is the most important long-term consideration. SULE i.e. a system designed to classify trees into a number of categories so that information regarding tree retention can be concisely communicated in a non-technical manner.
SULE categories are easily verifiable by experienced personnel without great disparity.
A tree's SULE category is the life expectancy of the tree modified first by its age, health, condition, safety and location (to give safe life expectancy), then by economics (i.e. cost of maintenance: retaining trees at an excessive management cost is not normally acceptable), effects on better trees, and sustained amenity (i.e. establishing a range of age classes in a local population).
SULE assessments are not static but may be modified as dictated by changes in tree health and environment. Trees with a short SULE may be at present be making a contribution to the landscape but their value to the local amenity will decrease rapidly towards the end of this period, prior to their being removed for safety or aesthetic reasons.
For details of SULE categories see Appendix B, adapted from Barrell 1996.

Tree Protection Zone (TPZ), generally the minimum distance from the center of the tree trunk where protective fencing or barriers are to be installed to create an exclusion zone.

APPENDIX B

SULE CATEGORIES

SULE CATEGORIES (after Barrell 1996, Updated 01/04/01)

The five categories and their sub-groups are as follows:

1. **Long SULE** - tree appeared retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance:

    A. structurally sound trees located in positions that can accommodate future growth
    B. trees which could be made suitable for long term retention by remedial care
    C. trees of special significance which would warrant extraordinary efforts to secure their long term retention

2. **Medium SULE** - tree appeared to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk, assuming reasonable maintenance:

    A. trees which may only live from 15 to 40 years
    B. trees which may live for more than 40 years but would be removed for safety or nuisance reasons
    C. trees which may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
    D. trees which could be made suitable for retention in the medium term by remedial care

3. **Short SULE** - tree appeared to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk, assuming reasonable maintenance:

    A. trees which may only live from 5 to 15 years
    B. trees which may live for more than 15 years but would be removed for safety or nuisance reasons
    C. trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
    D. trees which require substantial remediation and are only suitable for retention in the short term

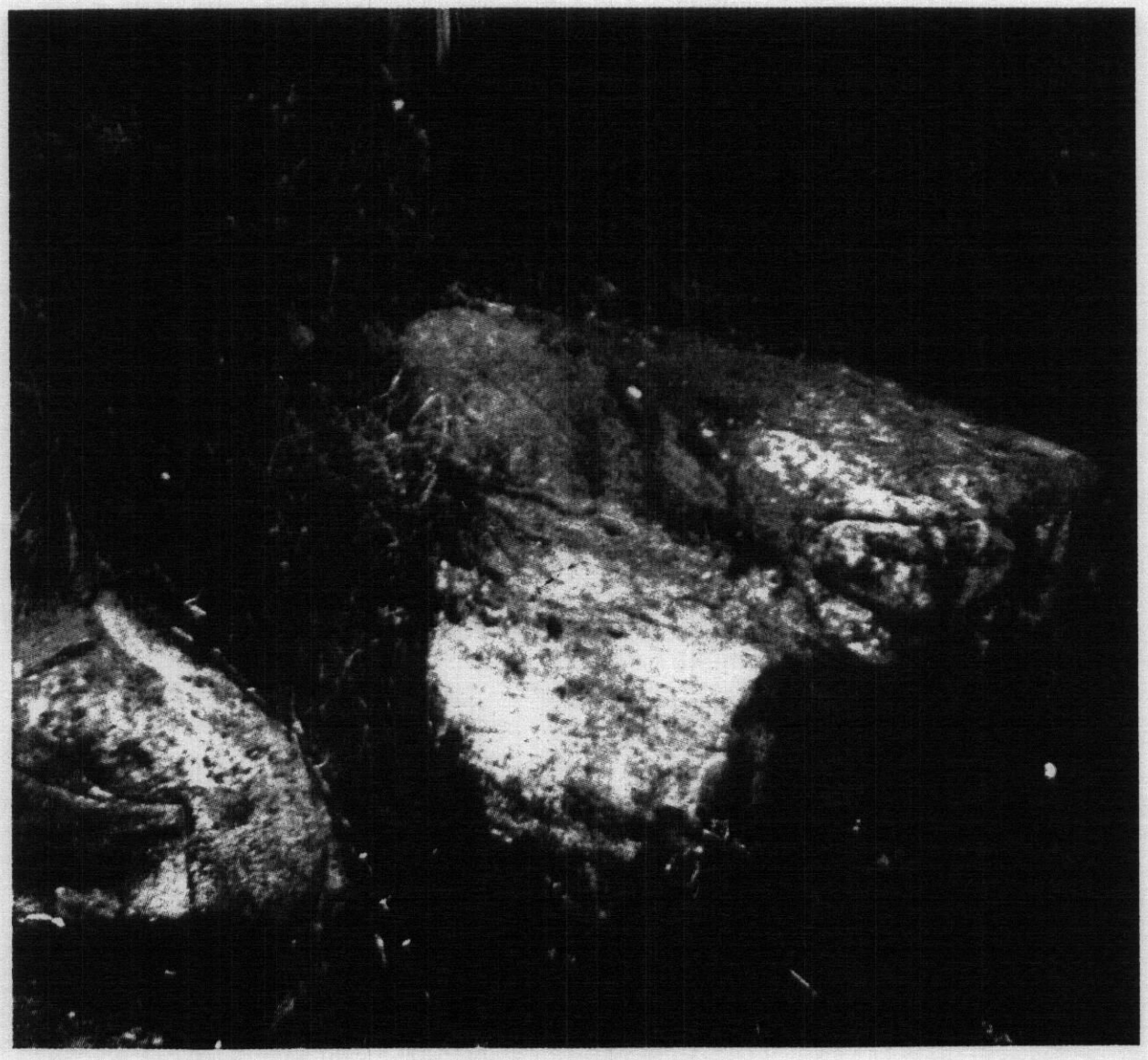
4. **Removal** - trees which should be removed within the next 5 years

    A. dead, dying, suppressed or declining trees
    B. dangerous trees through instability or recent loss of adjacent trees
    C. dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form.
    D. damaged trees that are clearly not safe to retain.
    E. trees which may live for more than 5 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting.
    F. trees which are damaging or may cause damage to existing structures within the next 5 years.
    G. trees that will become dangerous after removal of other trees for the reasons given in (a) to (f).
    H. trees in categories (a) to (g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.

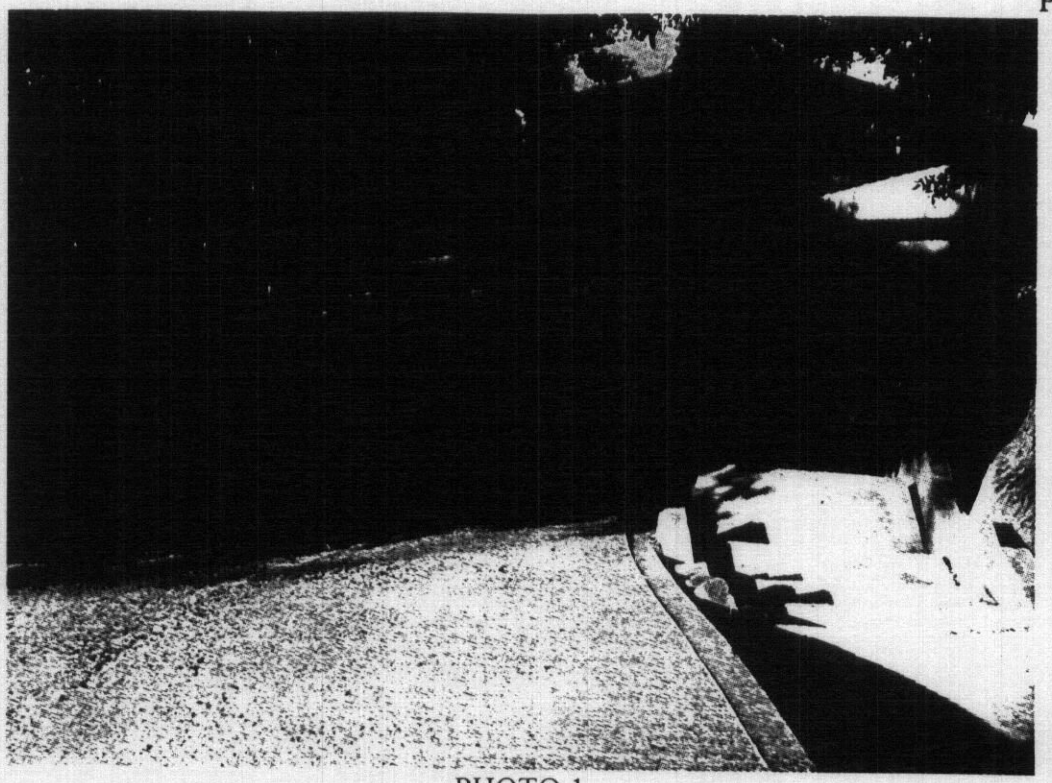
5. **Small, young or regularly pruned** - Trees that can be reliably moved or replaced.
    A. small trees less than 5m in height.
    B. young trees less than 15 years old but over 5m in height.
    C. formal hedges and trees intended for regular pruning to artificially control growth.

Jack Hodgson Consultants Pty Limited
CONSULTING CIVIL, GEOTECHNICAL AND STRUCTURAL ENGINEERS
ABN: 94 053 405 011

RISK MANAGEMENT FOR PROPOSED POOL AT 277 LOWER PLATEAU ROAD BILGOLA PLATEAU



DIRECTOR: J.D. HODGSON, M. Eng. Sc., F.I. E. Aust., Nper3 Struc. Civil 149788
67 Darley Street, Mona Vale NSW 2103
PO Box 389 Mona Vale NSW 1660
Telephone: 9979 6733 Facsimile: 9979 6926



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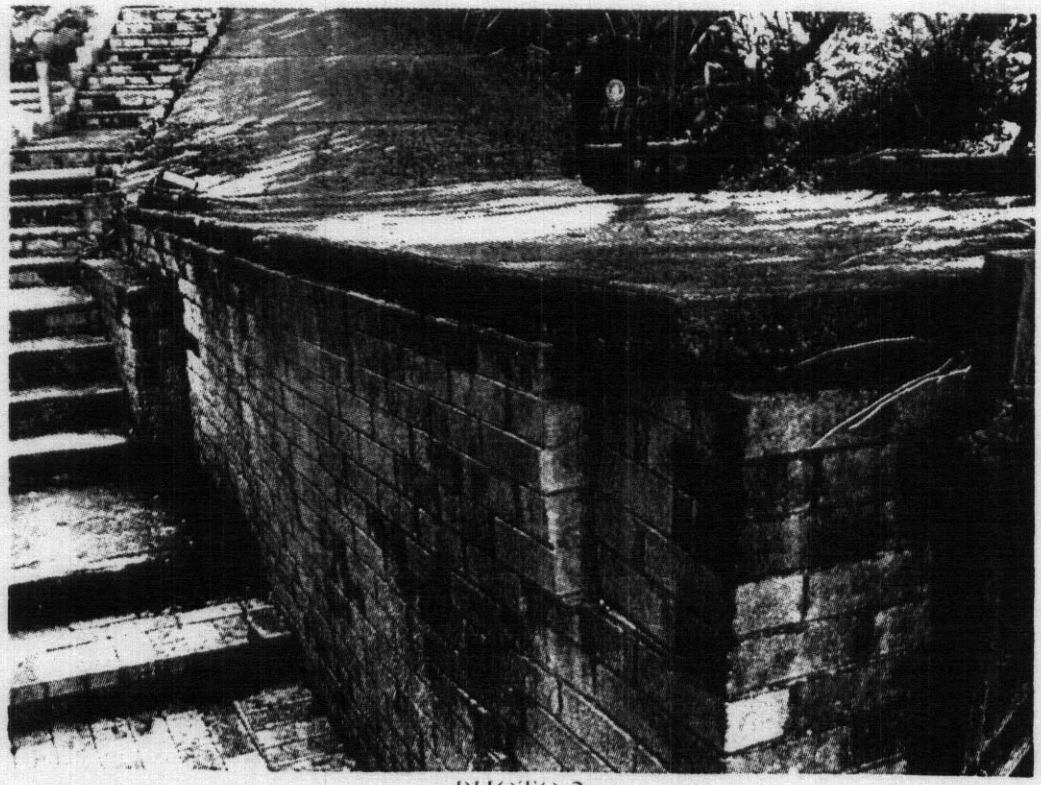

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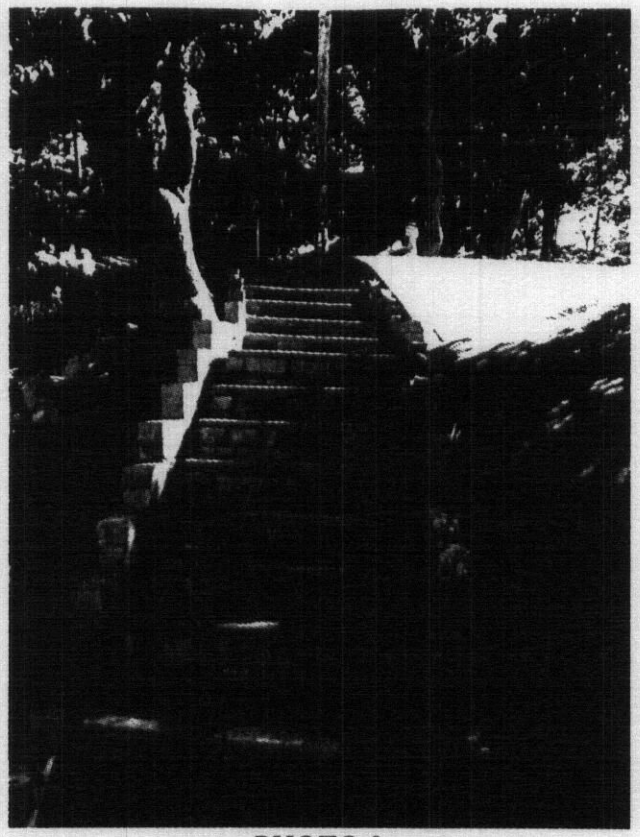

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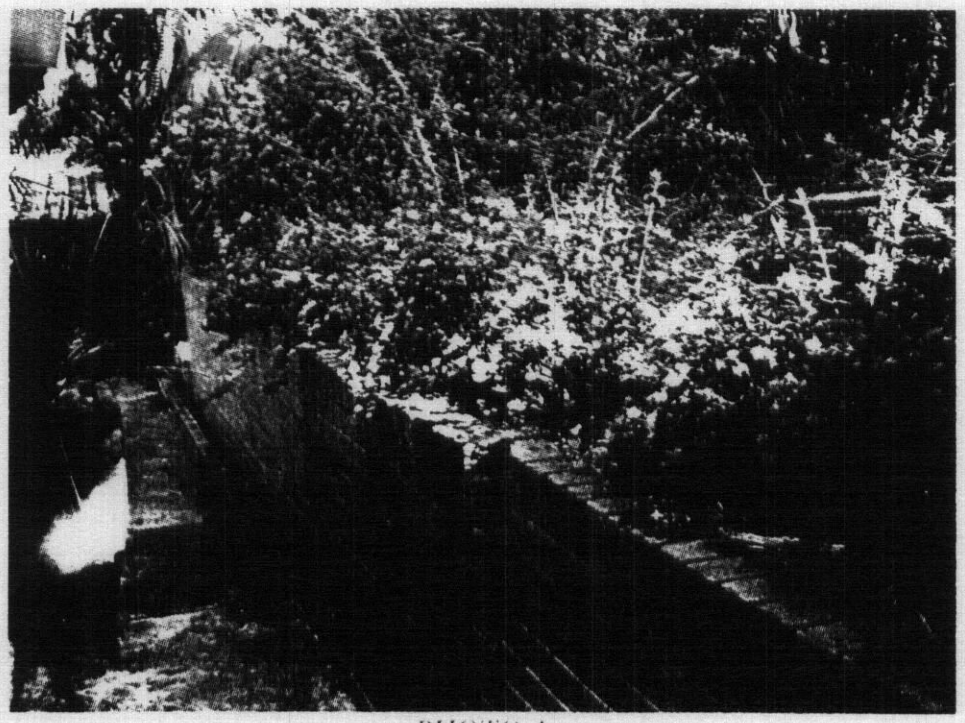

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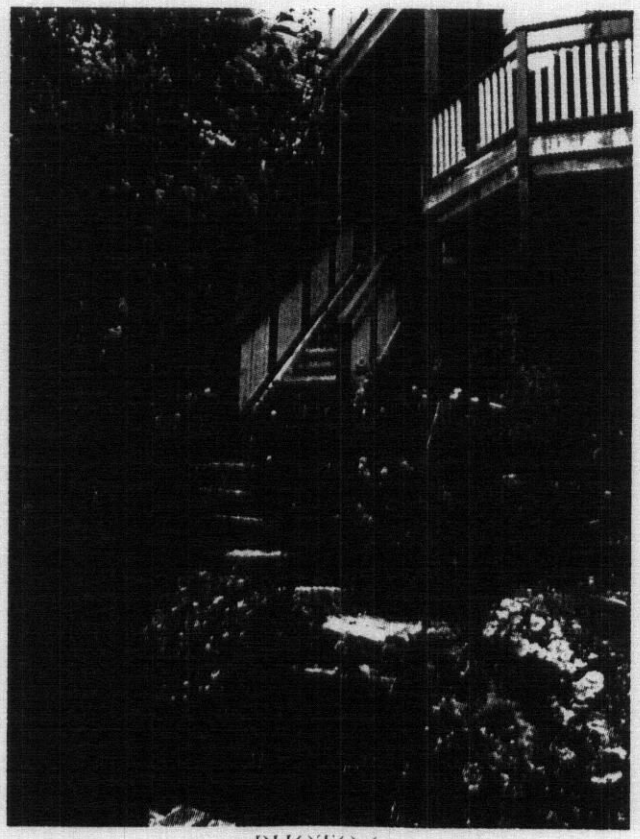
PHOTO 5



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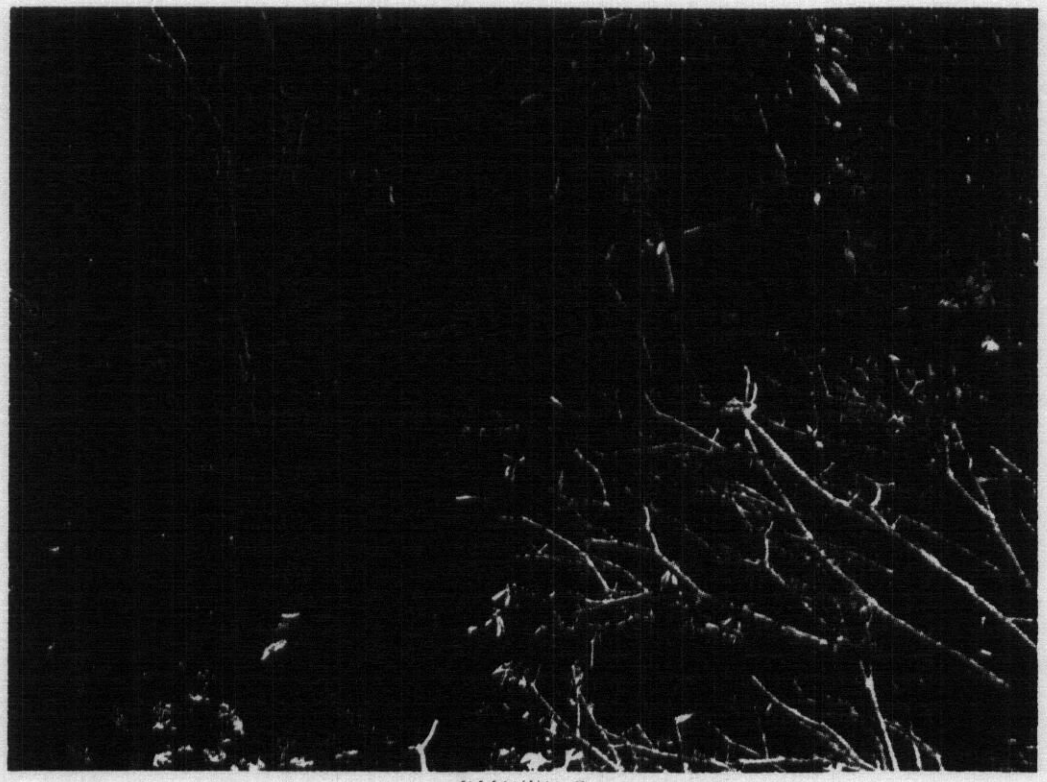

PHOTO 8

PHOTO 9

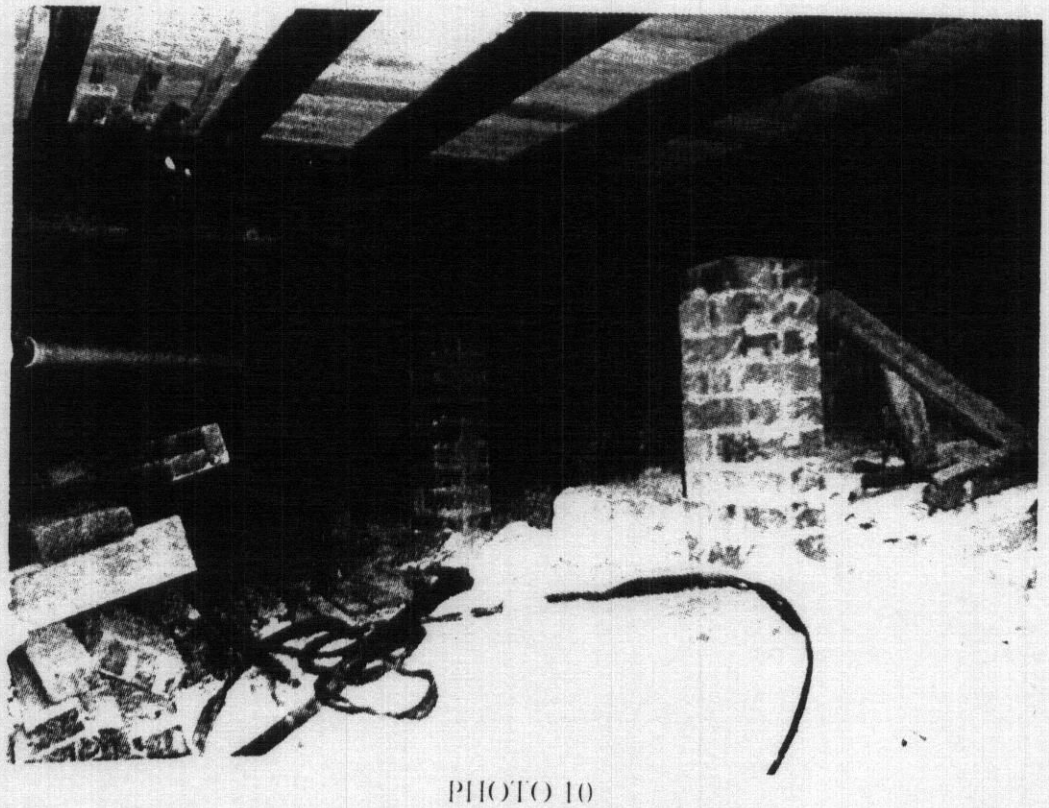

PHOTO 10

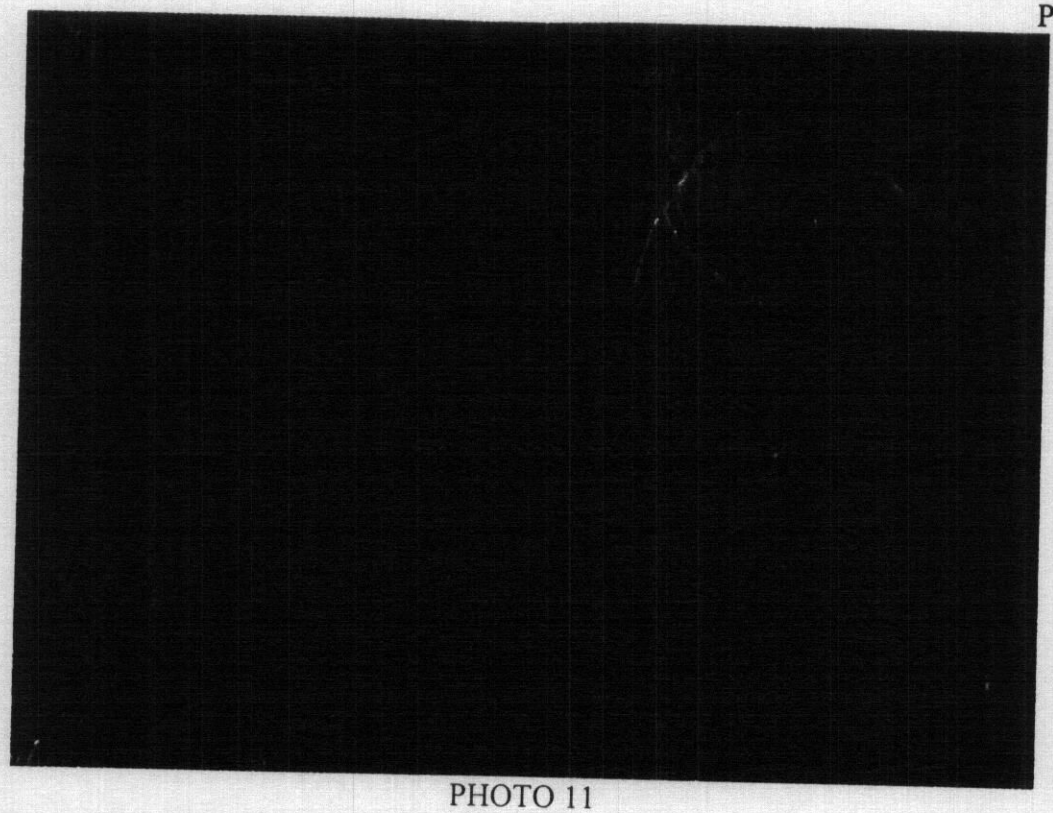

PHOTO 11

Appendix A Qualitative Terminology and Risk Matrix

GEOTECHNICAL HAZARD RISK ASSESSMENT

QUALITATIVE TERMINOLOGY AND RISK MATRIX

The tables are based on the principles outlined in "Landslide Risk Management Concepts and Guidelines", as presented in Australian Geomechanics, Vol. 35, No. 1, 2000.

Qualitative Measures of Likelihood

Level	Descriptor	Description	Indicative Annual Probability
A	ALMOST CERTAIN	The event is expected to occur.	$\geq 10^{-1}$
B	LIKELY	The event will probably occur under adverse conditions.	$\geq 10^{-2}$
C	POSSIBLE	The event could occur under adverse conditions.	$\geq 10^{-3}$
D	UNLIKELY	The event might occur under very adverse circumstances.	$\geq 10^{-4}$
E	RARE	The event is conceivable, but only under exceptional circumstances.	$\geq 10^{-5}$
F	BARELY CREDIBLE	The event is almost fanciful.	$< 10^{-5}$

QUALITATIVE MEASURES OF CONSEQUENCES TO PROPERTY

Level	Descriptor	Description	* Approximate Cost of Damage
1	CATASTROPHIC	Structure(s) completely destroyed or large scale damage requiring major engineering works for stabilisation. Could cause at least one adjacent property major consequence damage.	> 100 %.
2	MAJOR	Extensive damage to most of structure, or extending beyond site boundaries requiring significant stabilisation works. Could cause at least one adjacent property medium consequence damage.	> 10 %.
3	MEDIUM	Moderate damage to some of structure, or significant part of site requiring large stabilisation works. Could cause at least one adjacent property minor consequence damage.	> 1 %.
4	MINOR	Limited damage to part of structure, or part of site requiring some reinstatement stabilisation works.	> 0.1 %.
5	INSIGNIFICANT	Little damage.	> 0.01 %.

* Note: The cost of damage is expressed as a percentage of the cost of the improved value of the unaffected structure(s).

Qualitative Measures of Consequences to Life

Level	Descriptor	Description	Indicative Vulnerability
1	CATASTROPHIC	Almost Certain Fatality	$\geq 10^{-1}$
2	MAJOR	Likely Fatality	$\geq 10^{-2}$
3	MEDIUM	Possible Fatality	$\geq 10^{-3}$
4	MINOR	Unlikely Fatality	$\geq 10^{-4}$
5	INSIGNIFICANT	Rare Fatality	$< 10^{-4}$

QUALITATIVE RISK ANALYSIS MATRIX – LEVEL OF RISK TO PROPERTY AND PERSONS

LIKELIHOOD	CONSEQUENCE TO PROPERTY OR TO LIFE				
	1 CATASTROPHIC	2 MAJOR	3 MEDIUM	4 MINOR	5 INSIGNIFICANT
		10^{-1}	10^{-2}	10^{-3}	10^{-4}
A- ALMOST CERTAIN	VH	VH	H	M	M
B- LIKELY	VH	VH	H	M	L
C- POSSIBLE	VH	H	M	L	VL
D- UNLIKELY	H	M	L	L	VL
E- RARE	M	L	L	VL	VL
F- BARELY CREDIBLE	L	VL	VL	VL	VL

10^{-5} 10^{-6} 10^{-7} 10^{-8} 10^{-9}

Notes: 1. The risk matrix has been skewed in favour of consequence.

2. The diagonal lines give indicative (p.a.) risk levels for life.

Risk Level Implications

Risk Level		Implications
VH	VERY HIGH RISK	Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to acceptable levels: may be too expensive and not practical.
H	HIGH RISK	Detailed investigation, planning and implementation of treatment options required to reduce risk to acceptable levels.
M	MODERATE RISK	May require investigation and planning of treatment options. Tolerable provided treatment options are implemented to maintain or reduce risks.
L	LOW RISK	Treatment requirements and responsibilities to be defined to maintain or reduce risk.
VL	VERY LOW RISK	Manage by normal slope maintenance procedures.

The following notes should be read in conjunction with the Qualitative Risk Analysis Matrix – Level of Risk to Property and Persons

Notes (1) The cost of damage is expressed as a percentage of the cost of the improved value of the unaffected property, which includes the land plus the unaffected structure(s).

(2) The Approximate Cost is to be an estimate of the direct cost of the damage, such as the cost of reinstatement of the damaged portion of the property (land plus structures), which would include professional design fees, but does not include consequently costs such as legal fees, temporary accommodation, and stabilization works to "fix" the event.

(3) To assess an appropriate Descriptor, it is preferable to prepare a cost estimate and then select the appropriate Descriptor accordingly.

(4) If the Descriptor is being selected based on the Description alone, then the most severe Descriptor should be selected based on either the assessed extent of damage to the structure, or assessed extent of stabilization works, or assessed effect on adjacent structures.

APPENDIX J

SOME GUIDELINES FOR HILLSIDE CONSTRUCTION

ADVICE	*GOOD ENGINEERING PRACTICE*	*POOR ENGINEERING PRACTICE*
GEOTECHNICAL ASSESSMENT	Obtain advice from a qualified, experienced geotechnical consultant at early stage of planning and before site works.	Prepare detailed plan and start site works before geotechnical advice.
PLANNING		
SITE PLANNING	Having obtained geotechnical advice, plan the development with the risk arising from the identified hazards and consequences in mind.	Plan development without regard for the Risk.
DESIGN AND CONSTRUCTION		
HOUSE DESIGN	Use flexible structures which incorporate properly designed brickwork, timber or steel frames, timber or panel cladding. Consider use of split levels. Use decks for recreational areas where appropriate.	Floor plans which require extensive cutting and filling. Movement intolerant structures.
SITE CLEARING	Retain natural vegetation wherever practicable.	Indiscriminately clear the site.
ACCESS & DRIVEWAYS	Satisfy requirements below for cuts, fills, retaining walls and drainage. Council specifications for grades may need to be modified. Driveways and parking areas may need to be fully supported on piers.	Excavate and fill for site access before geotechnical advice.
EARTHWORKS	Retain natural contours wherever possible.	Indiscriminant bulk earthworks.
CUTS	Minimise depth. Support with engineered retaining walls or batter to appropriate slope. Provide drainage measures and erosion control.	Large scale cuts and benching. Unsupported cuts. Ignore drainage requirements
FILLS	Minimise height. Strip vegetation and topsoil and key into natural slopes prior to filling. Use clean fill materials and compact to engineering standards. Batter to appropriate slope or support with engineered retaining wall. Provide surface drainage and appropriate subsurface drainage.	Loose or poorly compacted fill, which if it fails, may flow a considerable distance including onto property below. Block natural drainage lines. Fill over existing vegetation and topsoil. Include stumps, trees, vegetation, topsoil, boulders, building rubble etc in fill.
ROCK OUTCROPS & BOULDERS	Remove or stabilise boulders which may have unacceptable risk. Support rock faces where necessary.	Disturb or undercut detached blocks or boulders.
RETAINING WALLS	Engineer design to resist applied soil and water forces. Found on rock where practicable. Provide subsurface drainage within wall backfill and surface drainage on slope above. Construct wall as soon as possible after cut/fill operation.	Construct a structurally inadequate wall such as sandstone flagging, brick or unreinforced blockwork. Lack of subsurface drains and weepholes.
FOOTINGS	Found within rock where practicable. Use rows of piers or strip footings oriented up and down slope. Design for lateral creep pressures if necessary. Backfill footing excavations to exclude ingress of surface water.	Found on topsoil, loose fill, detached boulders or undercut cliffs.
SWIMMING POOLS	Engineer designed. Support on piers to rock where practicable. Provide with under-drainage and gravity drain outlet where practicable. Design for high soil pressures which may develop on uphill side whilst there may be little or no lateral support on downhill side.	
DRAINAGE		
SURFACE	Provide at tops of cut and fill slopes. Discharge to street drainage or natural water courses. Provide general falls to prevent blockage by siltation and incorporate silt traps. Line to minimise infiltration and make flexible where possible. Special structures to dissipate energy at changes of slope and/or direction.	Discharge at top of fills and cuts. Allow water to pond on bench areas.
SUBSURFACE	Provide filter around subsurface drain. Provide drain behind retaining walls. Use flexible pipelines with access for maintenance. Prevent inflow of surface water.	Discharge roof runoff into absorption trenches.
SEPTIC & SULLAGE	Usually requires pump-out or mains sewer systems; absorption trenches may be possible in some areas if risk is acceptable. Storage tanks should be water-tight and adequately founded.	Discharge sullage directly onto and into slopes. Use absorption trenches without consideration of landslide risk.
EROSION CONTROL & LANDSCAPING	Control erosion as this may lead to instability. Revegetate cleared area	Failure to observe earthworks and drainage recommendations when landscaping.
DRAWINGS AND SITE VISITS DURING CONSTRUCTION		
DRAWINGS	Building Application drawings should be viewed by geotechnical consultant	
SITE VISITS	Site Visits by consultant may be appropriate during construction/	
INSPECTION AND MAINTENANCE BY OWNER		
OWNERS RESPONSIBILITY	[illegible] slope. [illegible] and leaks in supply [illegible]	[illegible]

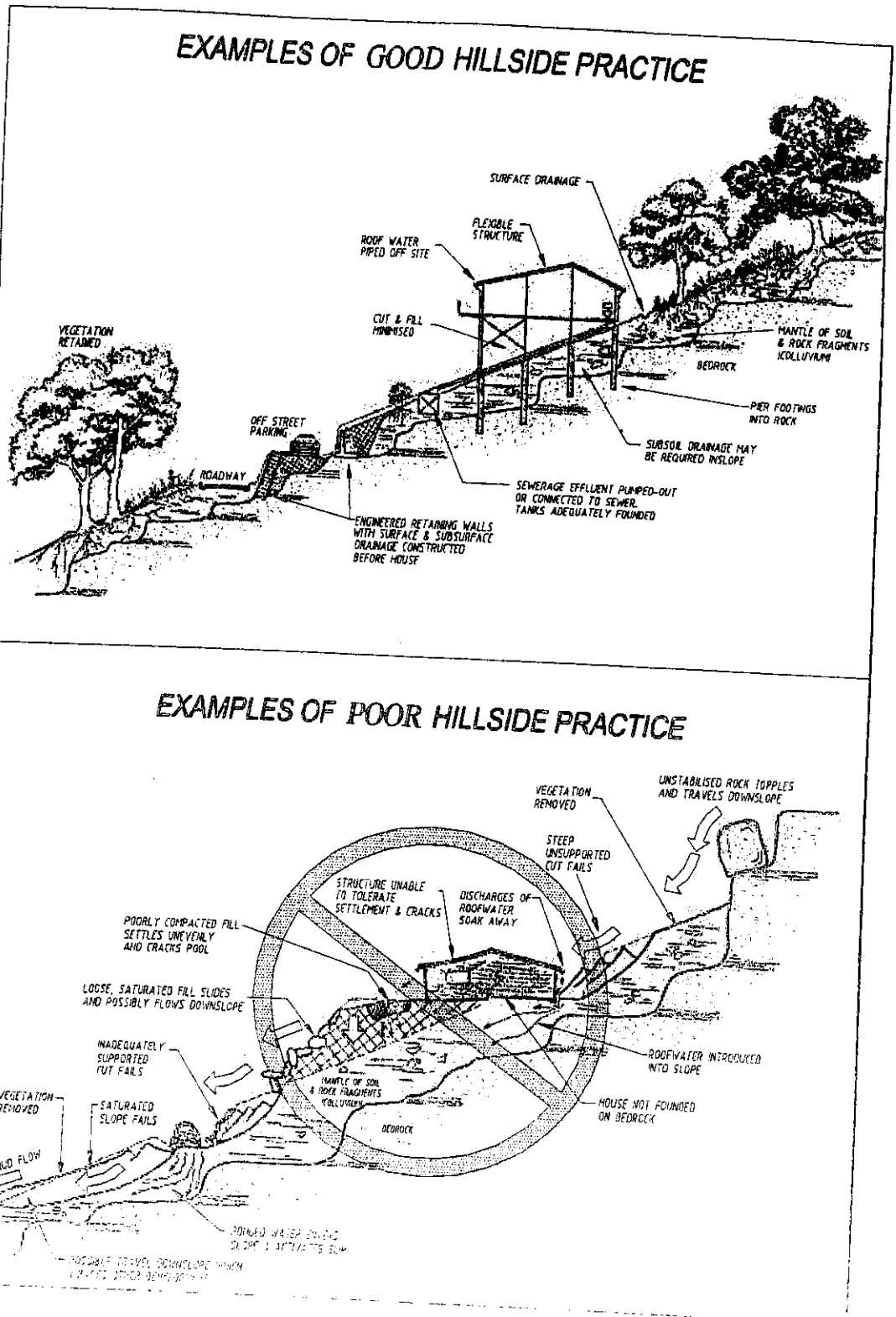

Figure 7.1 Illustrations of Good and Poor Hillside Practice

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1 – To be submitted with Development Application

Development Application for _____
Name of Applicant

Address of site 277 Lower Plateau Road Bilgola Plateau

Declaration made by geotechnical engineer or engineering geologist or coastal engineer (where applicable) as part of a geotechnical report

I, J HODGSON (Insert Name) on behalf of Jack Hodgson Consultants Pty Limited (Trading or Company Name)

on this the 19-7-05 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: Risk Management for Proposed Pool at 277 Lower Plateau Road Bilgola Plateau

Report Date: 19-7-05

Author: J HODGSON

J422696A

Documentation relied upon in report preparation:

Architectural Plan
Survey Plan

I am aware that the geotechnical report, prepared for the abovementioned is to be submitted in support of a Development Application 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 and that reasonable and practical measure ha been identified to remove risk.

Signature .....

Name J HODGSON

Chartered Professional Status MEngS. FIEAust
149 7848

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 _____ Name of Applicant

Address of site 277 Lower Plateau Road Bilgola Plateau

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 Risk Management for Proposed pool at 277 Lower Plateau Road. Bilgola Plateau

Report Date 19-7-05

Author J HUDGSON U422696A

Please mark appropriate box

- ☑ Comprehensive site mapping conducted 25-5-05. (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 ..... See Report .....
  - ☐ Yes Date conducted .....
- ☐ Geotechnical model developed and reported as an inferred subsurface type-section N/A
- ☑ Geotechnical hazards identified
  - ☐ Above the site none
  - ☑ On the site
  - ☐ Below the site none
  - ☐ Beside the site none
- ☑ 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
  - ☐ Other ..... specify
- ☑ Development all four phases as described in Pittwater Geotechnical Risk Management Policy have been
- ☑ Additional action to remove risk where reasonable and practical have been identified and included in

I am aware that Pittwater Council will rely on the Geotechnical Report, to which this checklist applies, 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, justified and that reasonable and practical measure ha been identified to remove foreseeable risk.

Signature .....

Name J HUDGSON

Chartered Professional Status MEngSc FIEAust

144 788

Jack Hodgson Consultants Pty Limited
CONSULTING CIVIL, GEOTECHNICAL AND STRUCTURAL ENGINEERS
ABN: 94 053 405 011

RISK MANAGEMENT FOR PROPOSED POOL AT 277 LOWER PLATEAU ROAD, BILGOLA PLATEAU.

1. INTRODUCTION.

1.1 This assessment has been prepared to accompany an application for development approval. The requirements of the Interim Geotechnical Risk Management Policy for Pittwater, June 2003 have been met.

1.2 The definitions used in this Report are those used in the Interim Geotechnical Risk Management Policy for Pittwater, June 2003.

1.3 The methods used in this Assessment are based on those described in Landslide Risk Management Concepts and Guidelines, March 2000, published by the Sub-Committee on Landslide Risk Management of the Australian Geomechanics Society and as modified by the Interim Geotechnical Risk Management Policy for Pittwater, June 2003.

1.4 The experience of the author of this Report spans some 50 years in many areas of Australia and in the Pittwater area, particularly in the last 30 years as Principal of Jack Hodgson Consultants Pty Limited.

2. PROPOSED DEVELOPMENT.

2.1 Construction of an in ground pool.

2.2 Details of the proposed development are shown on two drawings numbered SRP0506-1 & 2 prepared by Right Angle Drafting, and dated June 2005.

3. DESCRIPTION OF SITE & SURROUNDING AREA.

3.1 The property was inspected on 23rd May 2005.

3.2 This property is located on the low side of Lower Plateau Road and has a southerly aspect. The property slopes down to the house at quite a steep angle and continues to slope down to the rear boundary after the house. Access to the house is via a concrete driveway that slopes down to an unused carport (PHOTO 1).

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67 Darley Street, Mona Vale NSW 2103
PO Box 333 Mona Vale NSW 1660
Telephone 9979 6733 Facsimile 9979 6926

3. DESCRIPTION OF SITE & SURROUNDING AREA. Continued.

3.3 The carport is unused as it is structurally unsound with evidence of large cracking and displacement (PHOTO 2). Pedestrian access to the house is via a stairway that runs beside the driveway. (PHOTO 3). In front of the house is a small retaining wall that is supporting the garden behind it. The brick retaining wall is also cracked and displaced (PHOTO 4). The west side of the house is drained by a pit that collects water from the upper sections of the property (PHOTO 5), and drains the water off the property via terracotta piping. Access to the back of the property is via a stairway that runs down the east side of the house, over the back deck and then down a further set of stairs (PHOTO 6). There are numerous outcroppings of sandstone on the rear of the block. (PHOTO 7). Beyond the rear boundary the land is heavily vegetated (PHOTO 8) and there is a drop down to the property below.

3.4 The house is a double storey house constructed of weatherboard with brick foundations. The back of the house is surrounded by wooden decking (PHOTO 9). The house and its footings are in good condition with no sign of cracking or displacement (PHOTO 10).

3.4 There is evidence of rock outcropping on the site to the east (PHOTO 11). The surrounding houses are of similar age and are also in good condition. The property to the south of the subject property is located after a significant drop in the land.

4. GEOLOGY OF THE SITE.

4.1 The site is underlain by Hawkesbury Sandstones that outcrop on the site. These sandstones are of Middle Triassic age and were probably laid down in braided streams. The sand grains are mainly quartz with some sand grade claystone fragments. There are lenticular deposits of mudstones and laminites which are thought to have been deposited in abandoned channels of the main streams. The sandstones generally have widely spaced sub vertical joints with some current bedding. The joint directions are approximately north/south and east/west. The beds vary in thickness from 0.5 to in excess of 5 metres.

4.2 The soils on the property are organic soils with clayey sands and sandy clays with depths varying from shallow to 0.9 metres.

5. SUBSURFACE INVESTIGATION.

Sandstone outcrops around the site of the proposed pool, therefore no subsurface investigation was deemed necessary.

6. DRAINAGE OF THE SITE.

6.1 ON THE SITE.

The site is well drained with no natural water courses running through the property.

6.2 SURROUNDING AREA.

No signs of water flows entering the site from adjoining properties were observed during the inspection.

7. GEOTECHNICAL HAZARDS.

7.1 ABOVE THE SITE.

7.1.1 No geotechnical hazards likely to adversely affect the subject property were observed above the site.

7.2 ON THE SITE.

7.2.1 The cut batters of the excavation for the construction of the pool are a potential hazard. **(HAZARD ONE).**

7.2.2 For all other potential hazards see our Previous Report.

7.3 BELOW THE SITE.

7.3.1 No geotechnical hazards likely to adversely affect the subject property were observed below the site.

7.4 BESIDE THE SITE.

7.4.1 No geotechnical hazards likely to adversely affect the subject property were observed beside the site.

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Jack Hodgson Consultants Pty Limited
CONSULTING CIVIL, GEOTECHNICAL AND STRUCTURAL ENGINEERS
ABN: 94 053 405 011

8. RISK ASSESSMENT.

8.1 ABOVE THE SITE.

8.1.1 As no geotechnical hazards likely to adversely affect the subject site were observed above the site, no risk analysis is required

8.2 ON THE SITE.

8.2.1 HAZARD ONE. It is anticipated that the pool excavation will be substantially in rock. Therefore the likelihood of failure during construction is assessed as 'Unlikely' (10^{-4}). The consequences to property of such a failure are assessed as 'Minor' (>0.1%) as the cut will not effect any structural elements of the house. The consequences to life of such a failure are assessed as 'Medium' as the excavations are large enough to engulf a person. The risk to property is 'Low' (10^{-7}). The risk to life is 'Low' (10^{-6}).

8.3 BELOW THE SITE.

8.3.1 As no geotechnical hazards likely to adversely affect the subject site were observed below the site, no risk analysis is required.

8.4 BESIDE THE SITE.

8.4.1 As no geotechnical hazards likely to adversely affect the subject site were observed beside the site, no risk analysis is required.

9. SUITABILITY OF DEVELOPMENT FOR SITE.

9.1 GENERAL COMMENTS.

The proposed development is suitable for the site.

9.2 GEOTECHNICAL COMMENTS.

No geotechnical hazards will be created by the completion of the proposed development.

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PO Box 339 Mona Vale NSW 1660
Telephone 9979 6733 Facsimile: 9979 6926

9. SUITABILITY OF DEVELOPMENT FOR SITE.

9.3 CONCLUSIONS.

The site and the proposed development can achieve the Acceptable Risk Management criteria outlined in the Pittwater Interim Geotechnical Risk Policy provided the recommendations given in **Section 10** are undertaken.

10. RISK MANAGEMENT.

10.1. TYPE OF STRUCTURE.

The proposed structure is suitable for this site.

10.2. EXCAVATIONS.

Excavation is required for the construction of the pool. Excavations in rock may be near vertical, depending on the quality of the sandstone. The excavation is to be limited to hydraulic picks with a hammer blow of not more than 1400 joules per blow.

10.3. FILLS.

No fills are shown on the plan of the proposed development.

10.4. FOUNDATION MATERIALS AND FOOTINGS.

It is recommended that the pool be founded on sandstone. The design ultimate bearing pressure is 1.2MPa.

10.5. STORM WATER DRAINAGE.

No storm water will be generated by the proposed development.

10.6. SUBSURFACE DRAINAGE.

No subsurface drainage is required.

10.7. INSPECTIONS.

10.7.1 It is recommended that the foundation materials of all footing excavations be inspected and approved before concrete is placed.

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CONSULTING CIVIL, GEOTECHNICAL AND STRUCTURAL ENGINEERS
ABN: 94 053 405 011

13. RISK ANALYSIS SUMMARY.

HAZARDS	HAZARD ONE
TYPE	Failure of the cut batters of the excavation for the proposed pool.
LIKELIHOOD	'Unlikely' ($>10^{-4}$)
CONSEQUENCES TO PROPERTY	'Minor' (>0.1%).
CONSEQUENCES TO LIFE	'Medium' ($>10^{-3}$).
RISK TO PROPERTY	'Low' (10^{-7}).
RISK TO LIFE	'Low' (10^{-6}).
COMMENTS	'Acceptable'.

JACK HODGSON CONSULTANTS PTY. LIMITED.

J. D. Hodgson M.Eng.Sc., F.I.E.Aust., CP ENG.
Civil & Structural Engineer.
Nper3, Struct. Civil. No. 149788.
Director.

QUOTATION ACCEPTANCE - REF NO: Q05100a

CLIENT: John & Ceri Brondum

ADDRESS: 277 Lower Plateau Road Bilgola Plateau

We hereby accept Sunrise Pools quotation for the construction of our pool, and authorise Sunrise Pools to commence works for the necessary approval process.

QUOTATION AMOUNT - **$54,170**

OPTIONS -

_____

_____

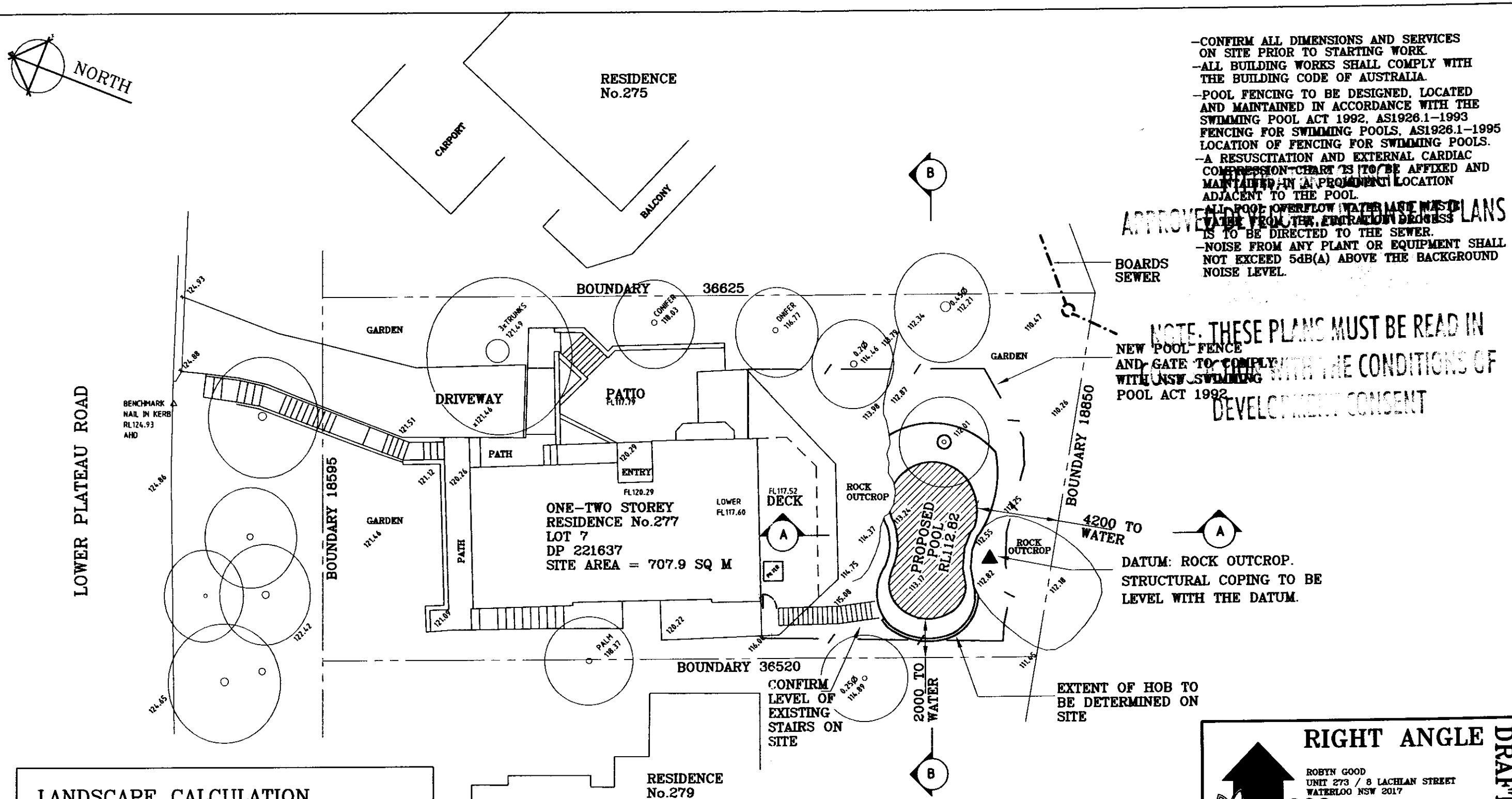
_____

_____

_____

TOTAL INVESTMENT AMOUNT - $54,170

ACCEPTANCE.....**DATE**.....5/6/05



SITE PLAN

- CONFIRM ALL DIMENSIONS AND SERVICES ON SITE PRIOR TO STARTING WORK.
- ALL BUILDING WORKS SHALL COMPLY WITH THE BUILDING CODE OF AUSTRALIA.
- POOL FENCING TO BE DESIGNED, LOCATED AND MAINTAINED IN ACCORDANCE WITH THE SWIMMING POOL ACT 1992, AS1926.1–1993 FENCING FOR SWIMMING POOLS, AS1926.1–1995 LOCATION OF FENCING FOR SWIMMING POOLS.
- A RESUSCITATION AND EXTERNAL CARDIAC COMPRESSION CHART IS TO BE AFFIXED AND MAINTAINED IN A PROMINENT LOCATION ADJACENT TO THE POOL.
- ALL POOL OVERFLOW WATER AND WASTE WATER FROM THE EXCAVATION PROCESS IS TO BE DIRECTED TO THE SEWER.
- NOISE FROM ANY PLANT OR EQUIPMENT SHALL NOT EXCEED 5dB(A) ABOVE THE BACKGROUND NOISE LEVEL.

APPROVED FOR TENDER PLANS

NOTE: THESE PLANS MUST BE READ IN CONJUNCTION WITH THE CONDITIONS OF DEVELOPMENT CONSENT

DATUM: ROCK OUTCROP.
STRUCTURAL COPING TO BE LEVEL WITH THE DATUM.

LANDSCAPE CALCULATION

HARD SURFACE

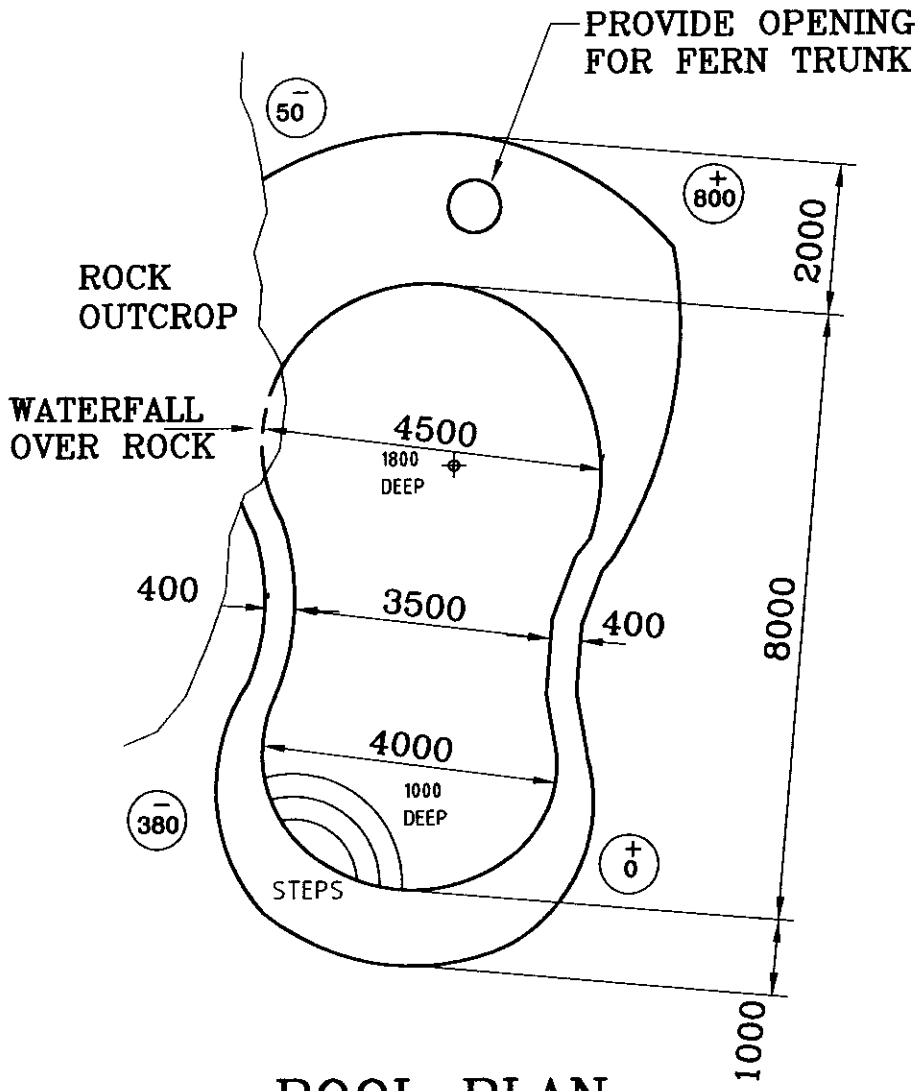
HOUSE	=126.5m^2
DECK	= 63.8m^2
PATIO	= 35.8m^2
PATHS	= 37.2m^2
DRIVE	= 37.2m^2
PROPOSED POOL	= 51.1m^2
TOTAL HARD SURFACE OR 49% OF THE SITE	= 351.6m^2
TOTAL SOFT SURFACE	= 51% OF SITE

RIGHT ANGLE DRAFTING
ROBYN GOOD
UNIT 273 / 8 LACHLAN STREET
WATERLOO NSW 2017
PH/FAX: (02) 8399–0072
MOBILE: 0425 227–055
EMAIL: robyn.g@ihugdsl.com.au
ABN: 72 884 786 455

PROPOSED NEW SWIMMING POOL
JOHN & CERIAN BRONDUM
277 LOWER PLATEAU ROAD
BILGOLA PLATEAU

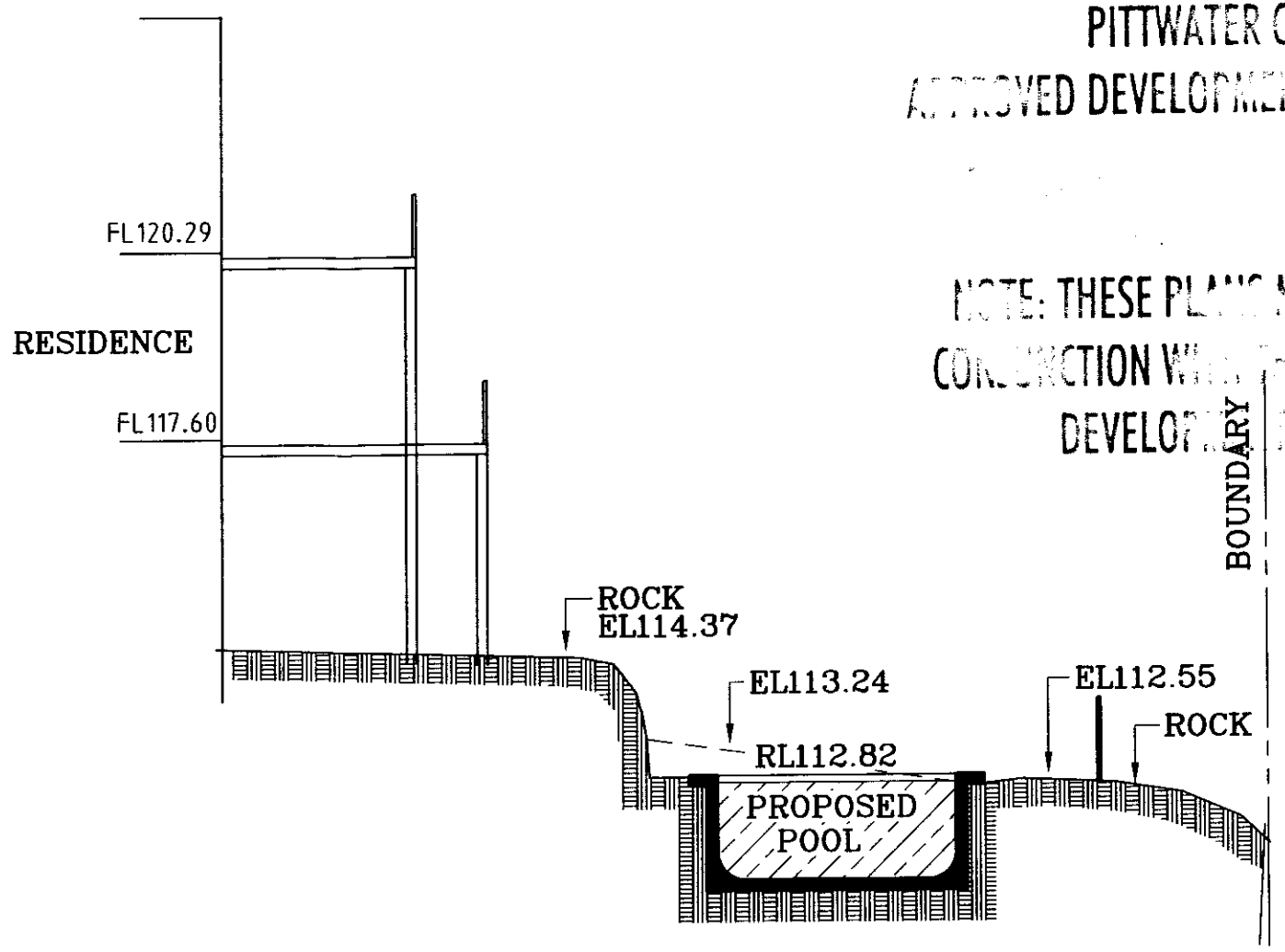
DWG NAME
SITE PLAN

DATE	SCALE AT A3	DRAWING NUMBER
JUNE 05	1:200	SRP0506–1

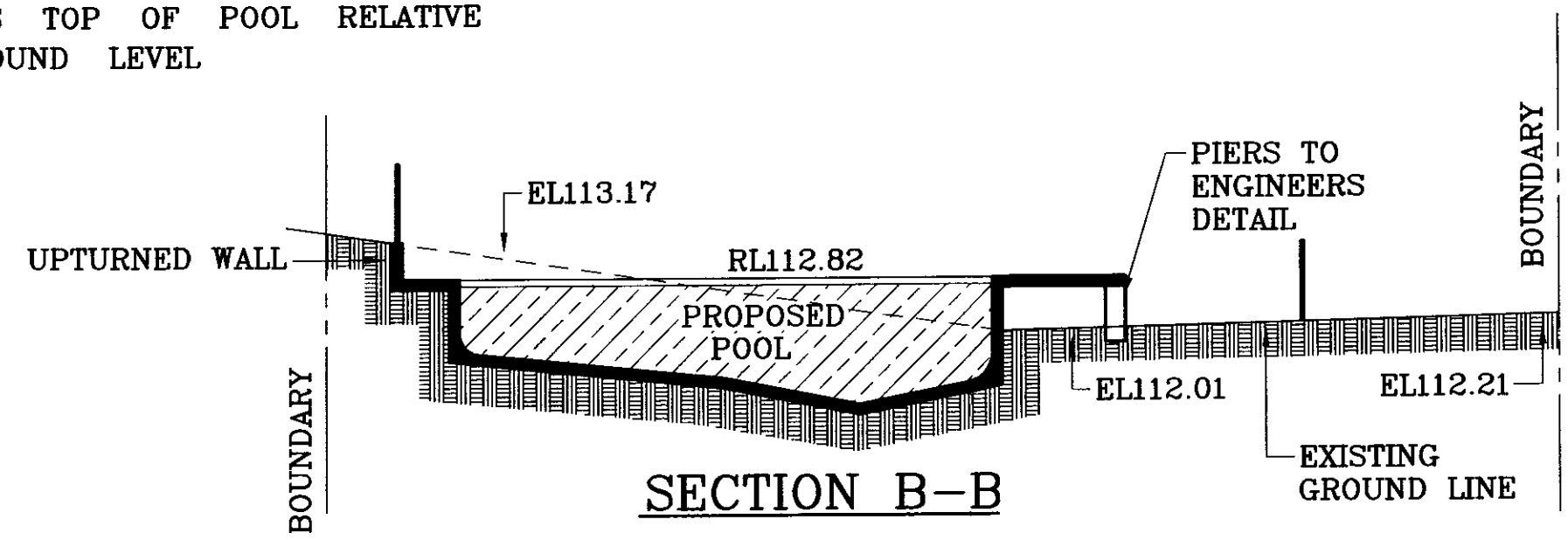


POOL PLAN

(+100) DENOTES TOP OF POOL RELATIVE TO GROUND LEVEL



SECTION A–A



SECTION B–B

PITTWATER COUNCIL
APPROVED DEVELOPMENT CONSENT PLANS

NOTE: THESE PLANS MUST BE READ IN CONJUNCTION WITH THE CONDITIONS OF DEVELOPMENT CONSENT

RIGHT ANGLE DRAFTING
ROBYN GOOD
UNIT 273 / 8 LACHLAN STREET
WATERLOO NSW 2017
PH/FAX: (02) 8399–0072
MOBILE: 0425 227–055
EMAIL: robyn.g@ihugdsl.com.au
ABN: 72 884 786 455

PROPOSED NEW SWIMMING POOL
JOHN & CERIAN BRONDUM
277 LOWER PLATEAU ROAD
BILGOLA PLATEAU

DWG NAME
POOL PLAN AND SECTIONS

DATE	SCALE AT A3	DRAWING NUMBER
JUNE 05	1:100	SRP0506–2

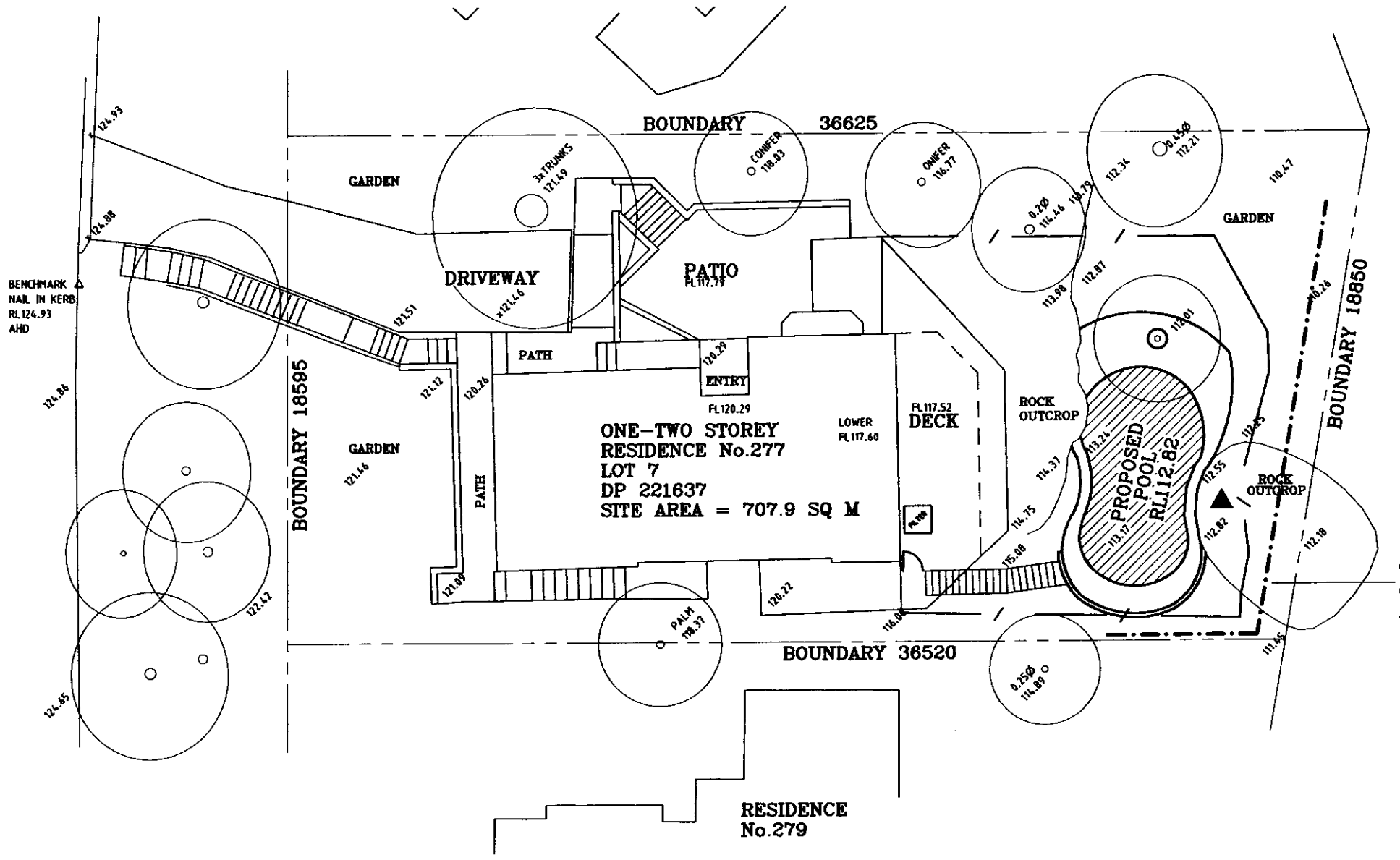
0 10 20 30 40 50 100mm 1:1

SEDIMENT CONTROL

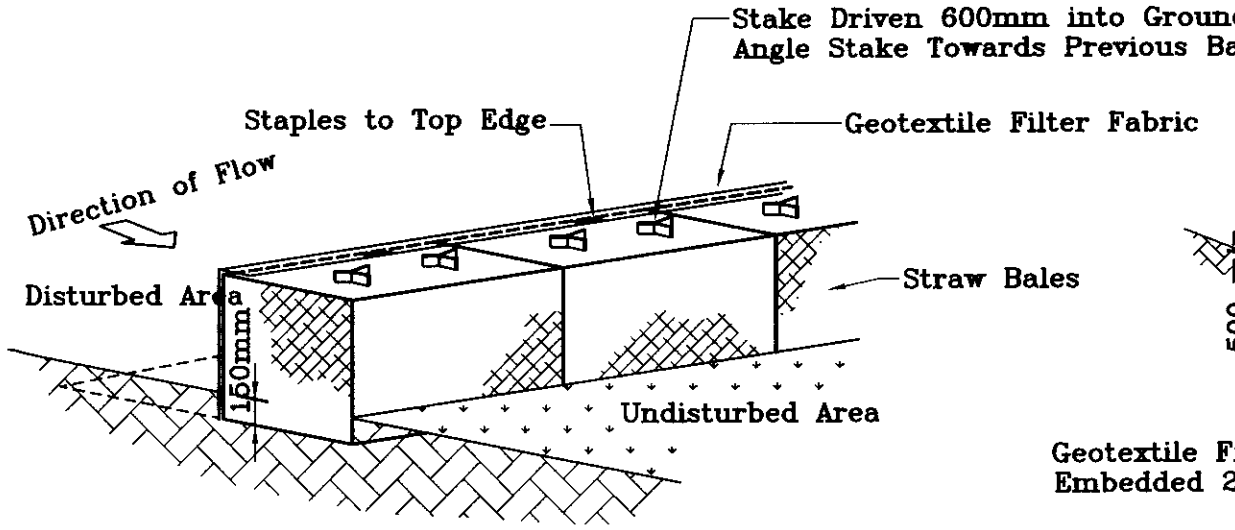
1. INSTALL SEDIMENT CONTROL STRUCTURES IN LOCATIONS INDICATED ON PLANS AND OTHERWISE REQUIRED TO CONTROL SEDIMENT DURING ALL EXCAVATIONS AND WHILST AREAS OF THE SITE ARE EXPOSED TO EROSION.
2. CONTROL STRUCTURES TO BE AS DETAILED OR AS OTHERWISE REQUIRED BY CERTIFYING AUTHORITY.
3. REVIEW CONTROL MEASURES AND MAINTAIN STRUCTURES DURING CONSTRUCTION.
4. IF ADDITIONAL MEASURES ARE REQUIRED FOR EROSION CONTROL OR BY COUNCIL REQUIREMENTS REFER TO "URBAN EROSION AND SEDIMENT CONTROL" GUIDELINES PREPARED BY THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT.

APPROVED PLANS FOR CONSENT PLANS

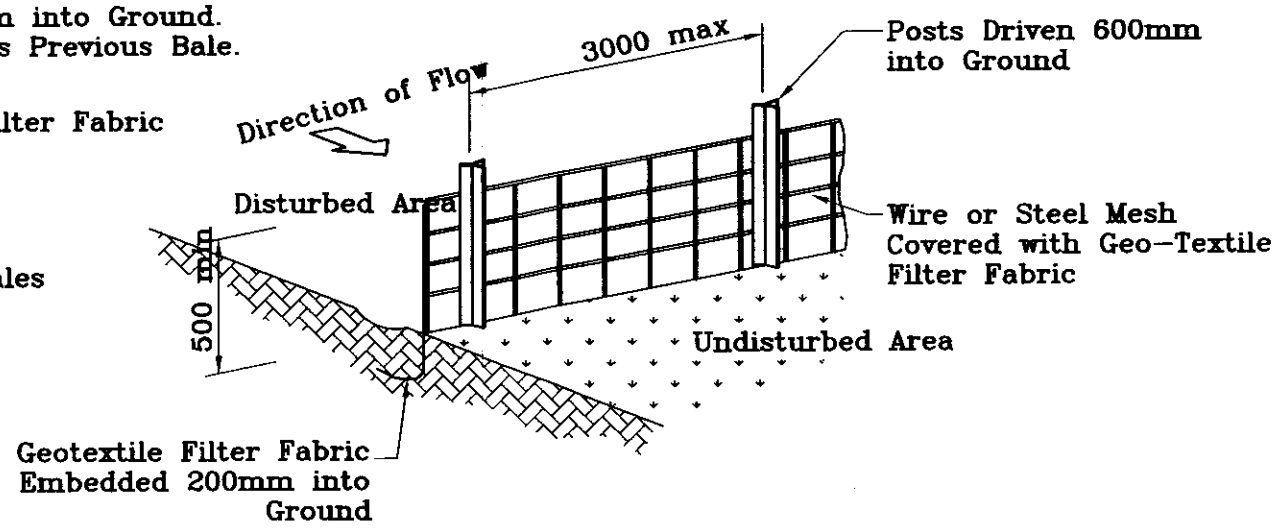
NOTE: THESE PLANS MUST BE READ IN CONJUNCTION WITH THE CONDITIONS OF DEVELOPMENT CONSENT



SILT AND SEDMIENT CONTROL PLAN



STRAW BALE SEDIMENT FILTER



SEDIMENT FENCE DETAIL

0 10 20 30 40 50 100mm 1:1

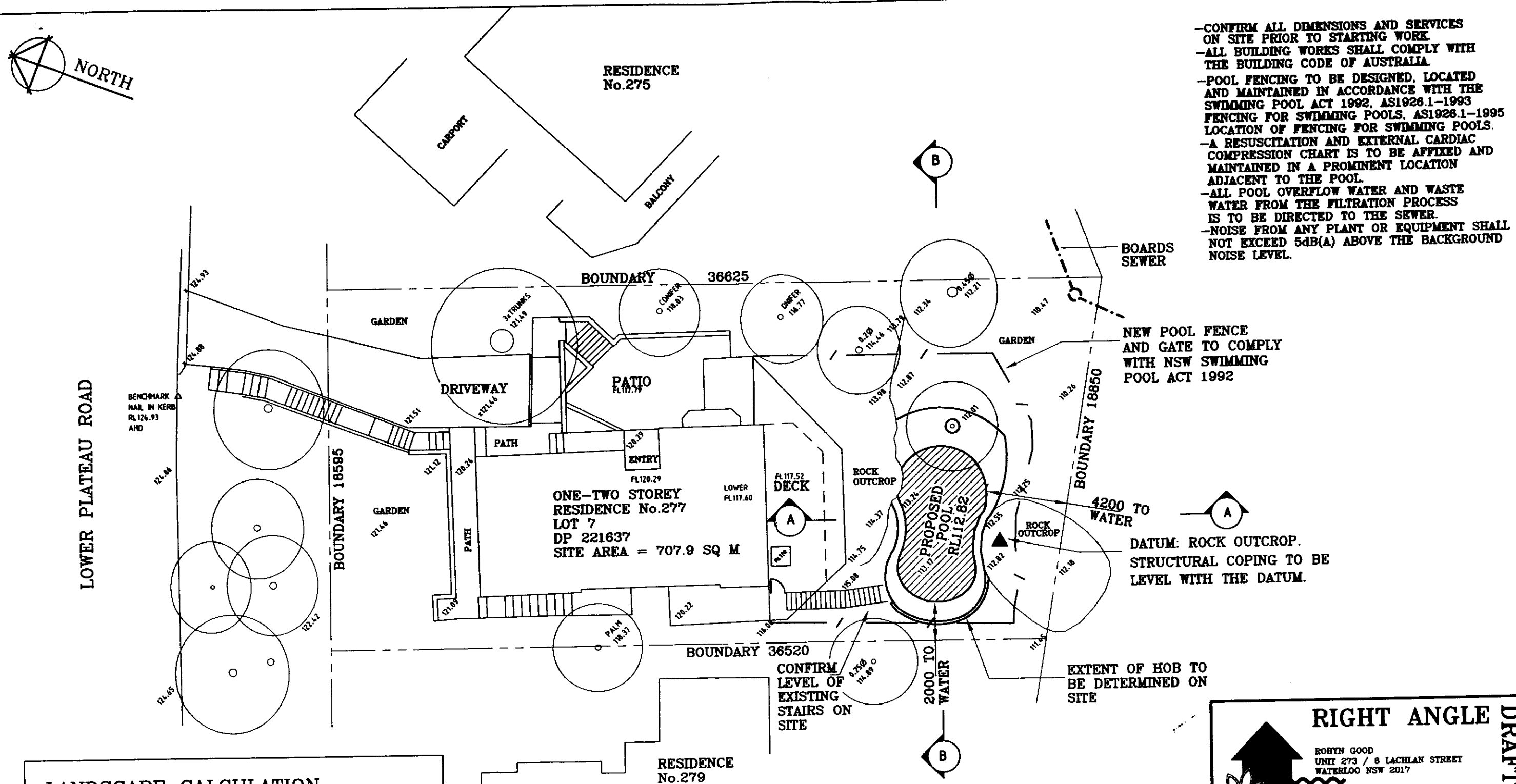
RIGHT ANGLE DRAFTING

ROBYN GOOD
UNIT 273 / 8 LACHLAN STREET
WATERLOO NSW 2017
PH/FAX: (02) 8399-0072
MOBILE: 0425 227-055
EMAIL: robyn.g@ihugdsl.com.au
ABN: 72 884 786 455

PROPOSED NEW SWIMMING POOL
JOHN & CERIAN BRONDUM
277 LOWER PLATEAU ROAD
BILGOLA PLATEAU

DWG NAME
SILT AND SEDIMENT CONTROL PLAN

DATE	SCALE AT A3	DRAWING NUMBER
JUNE 05	1:200	SRP0506-3



SITE PLAN

- CONFIRM ALL DIMENSIONS AND SERVICES ON SITE PRIOR TO STARTING WORK.
- ALL BUILDING WORKS SHALL COMPLY WITH THE BUILDING CODE OF AUSTRALIA.
- POOL FENCING TO BE DESIGNED, LOCATED AND MAINTAINED IN ACCORDANCE WITH THE SWIMMING POOL ACT 1992, AS1926.1–1993 FENCING FOR SWIMMING POOLS, AS1926.1–1995 LOCATION OF FENCING FOR SWIMMING POOLS.
- A RESUSCITATION AND EXTERNAL CARDIAC COMPRESSION CHART IS TO BE AFFIXED AND MAINTAINED IN A PROMINENT LOCATION ADJACENT TO THE POOL.
- ALL POOL OVERFLOW WATER AND WASTE WATER FROM THE FILTRATION PROCESS IS TO BE DIRECTED TO THE SEWER.
- NOISE FROM ANY PLANT OR EQUIPMENT SHALL NOT EXCEED 5dB(A) ABOVE THE BACKGROUND NOISE LEVEL.

LANDSCAPE CALCULATION

HARD SURFACE

HOUSE	=126.5m^2
DECK	= 63.8m^2
PATIO	= 35.8m^2
PATHS	= 37.2m^2
DRIVE	= 37.2m^2
PROPOSED POOL	= 51.1m^2
TOTAL HARD SURFACE OR 49% OF THE SITE	= 351.6m^2
TOTAL SOFT SURFACE	= 51% OF SITE

RIGHT ANGLE DRAFTING
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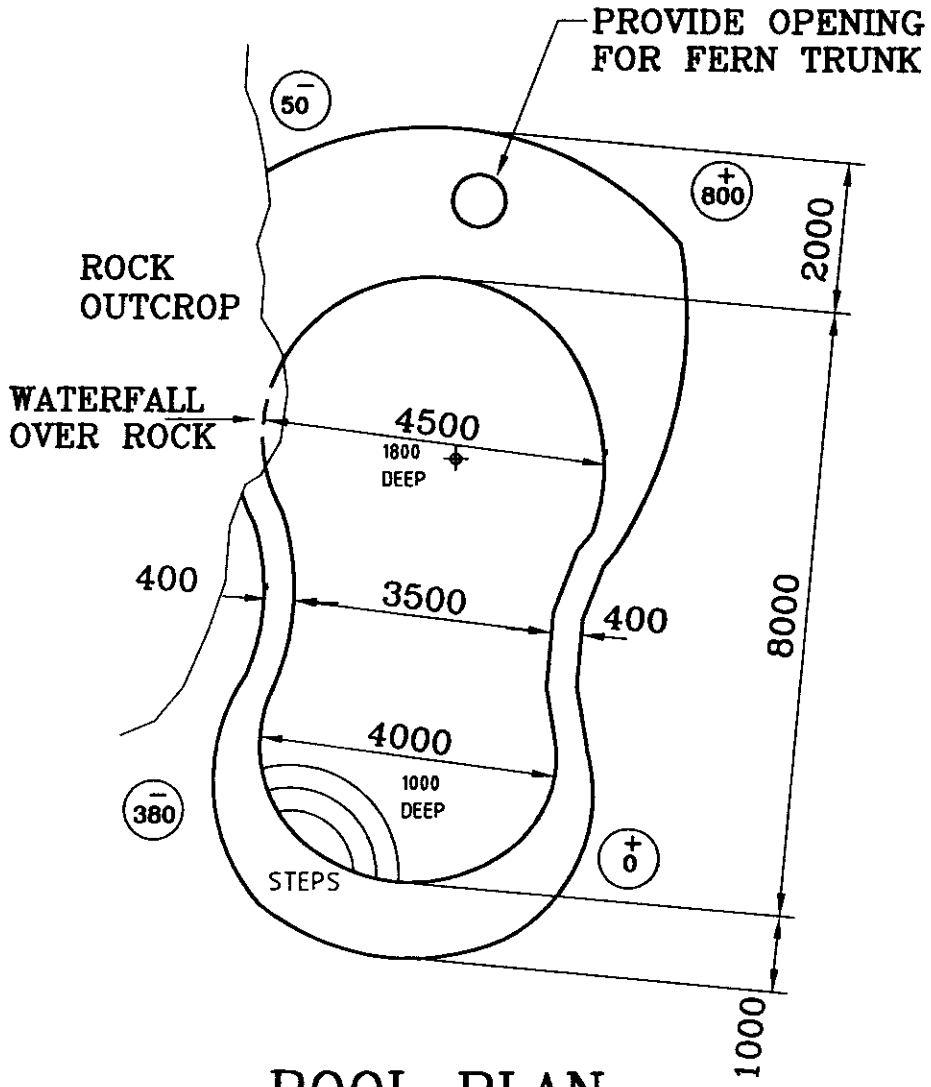
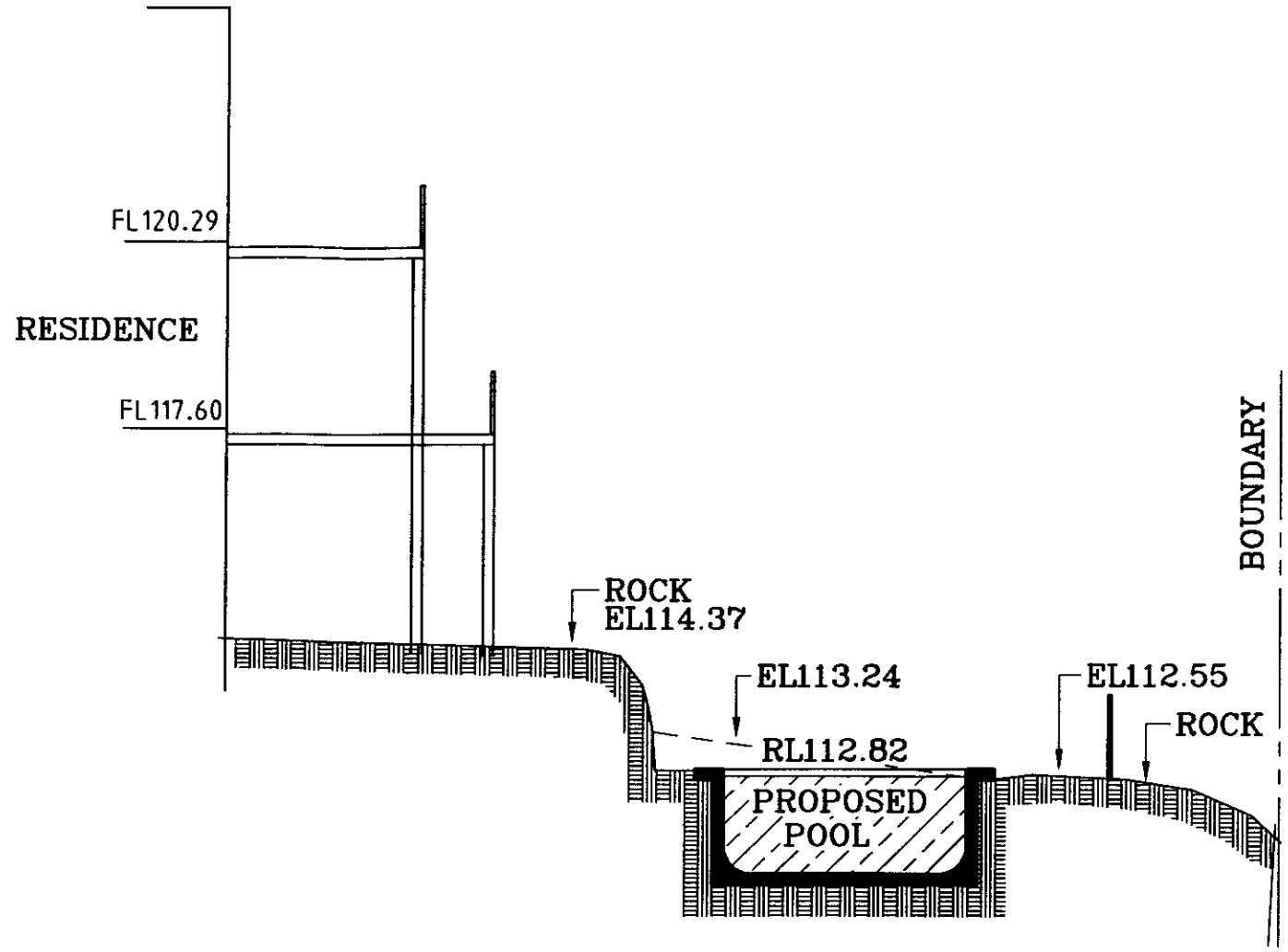
PROPOSED NEW SWIMMING POOL
JOHN & CERIAN BRONDUM
277 LOWER PLATEAU ROAD
BILGOLA PLATEAU

DWG NAME
SITE PLAN

DATE	SCALE AT A3	DRAWING NUMBER
JUNE 05	1:200	SRP0506–1

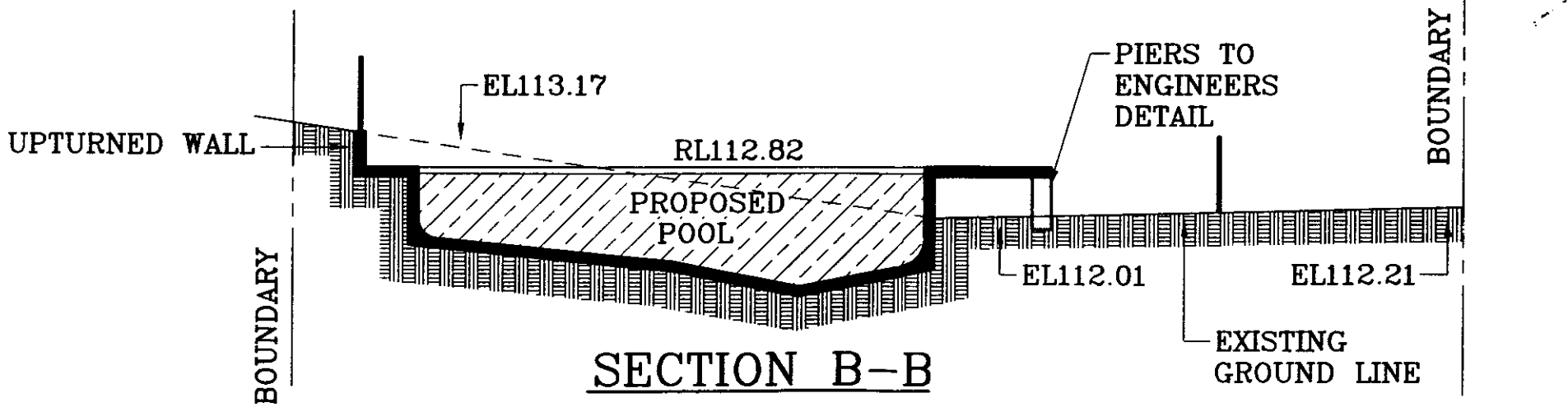


POOL PLAN



SECTION A–A

+100 DENOTES TOP OF POOL RELATIVE TO GROUND LEVEL



SECTION B–B

0 10 20 30 40 50 100mm 1:1

RIGHT ANGLE DRAFTING
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WATERLOO NSW 2017
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PROPOSED NEW SWIMMING POOL
JOHN & CERIAN BRONDUM
277 LOWER PLATEAU ROAD
BILGOLA PLATEAU

DWG NAME
POOL PLAN AND SECTIONS

DATE	SCALE AT A3	DRAWING NUMBER
JUNE 05	1:100	SRP0506–2

SEDIMENT CONTROL

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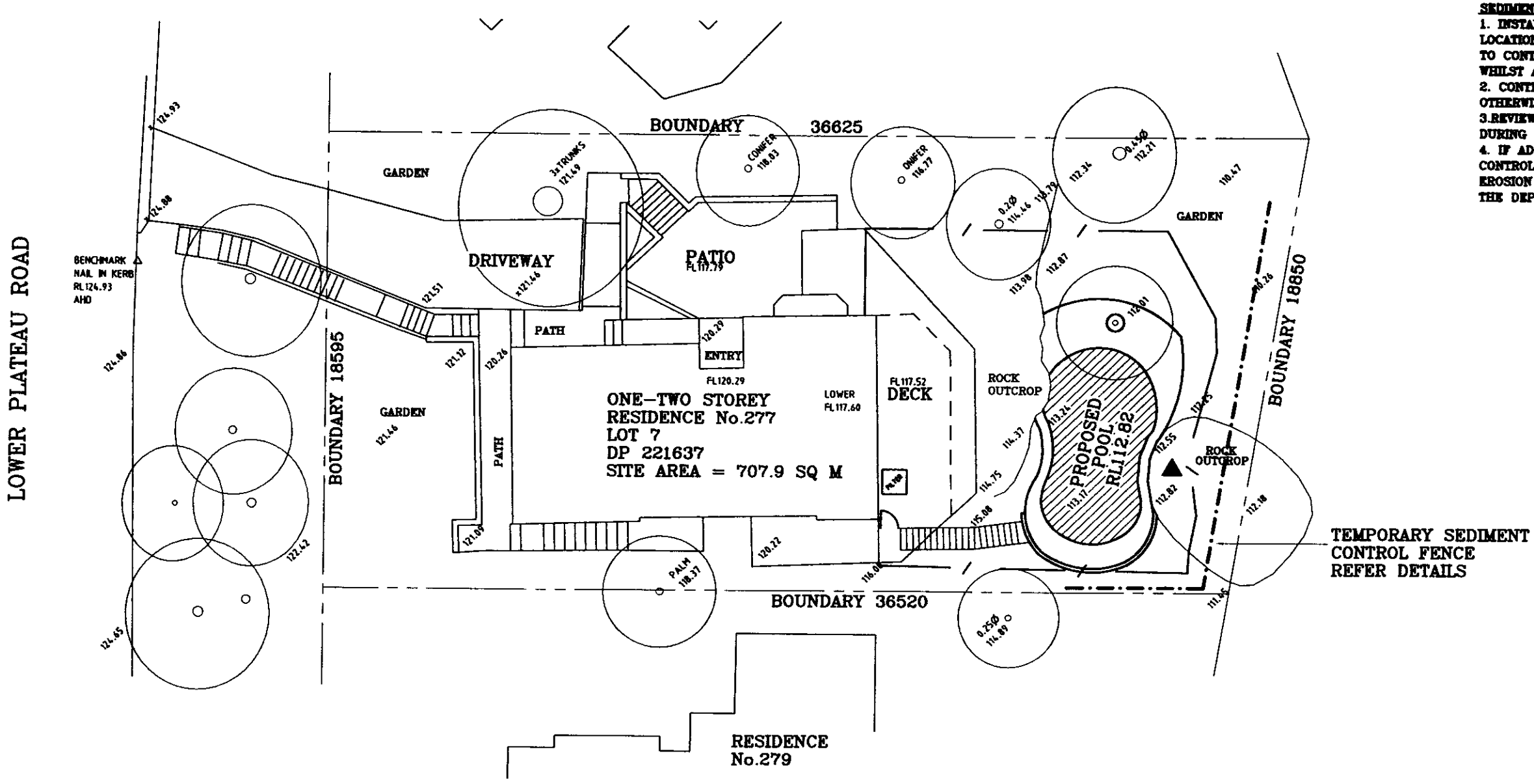
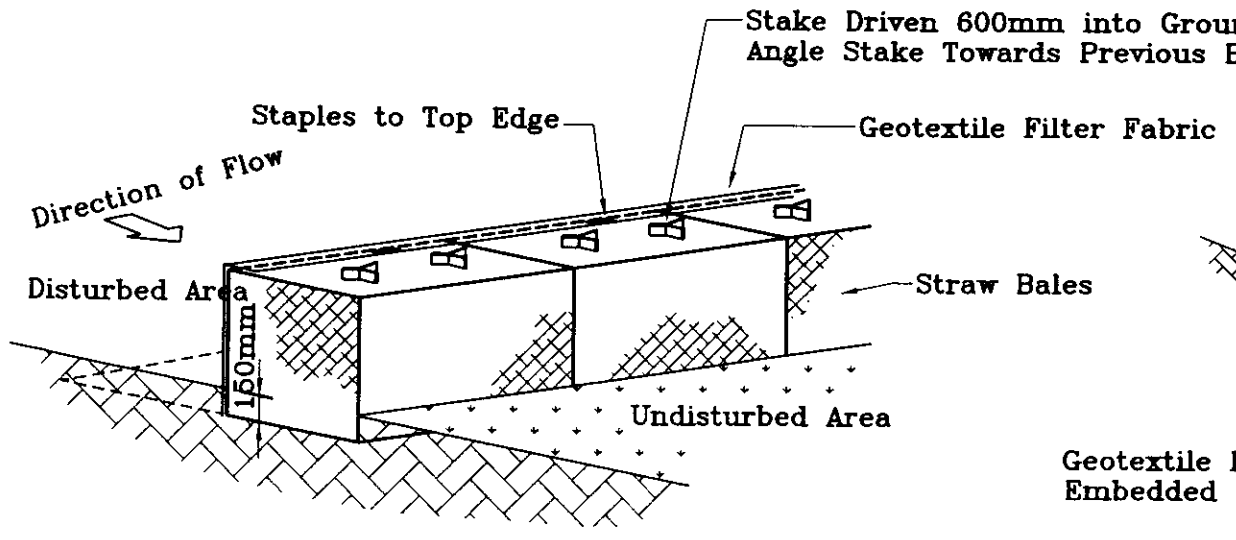
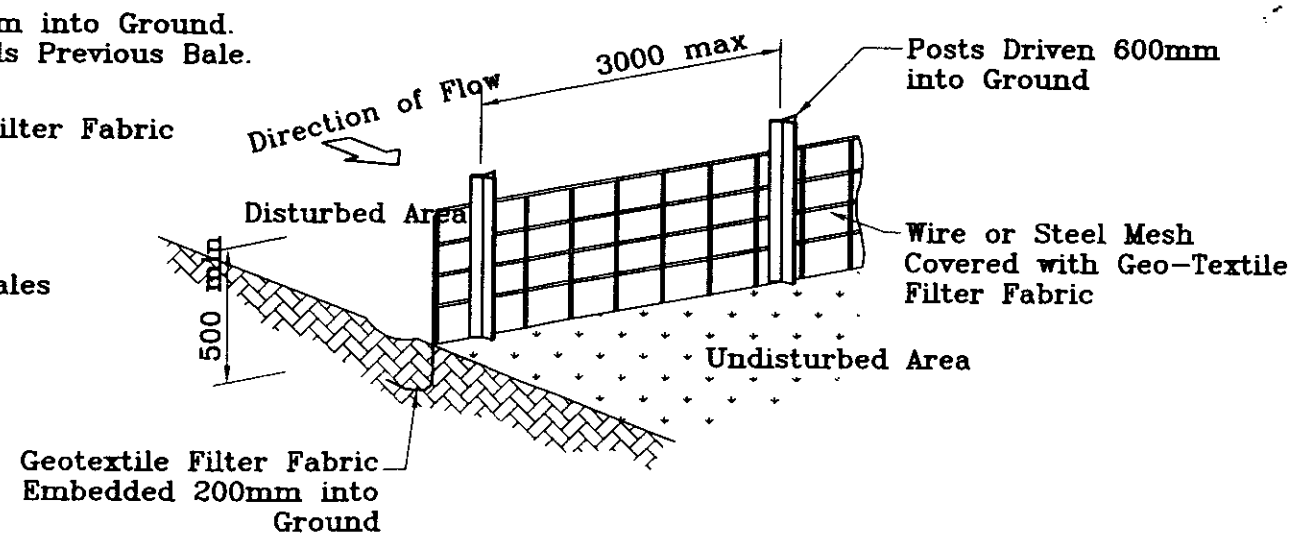


SILT AND SEDMIENT CONTROL PLAN



STRAW BALE SEDIMENT FILTER



SEDIMENT FENCE DETAIL

0 10 20 30 40 50 100mm
1:1

RIGHT ANGLE DRAFTING
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WATERLOO NSW 2017
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PROPOSED NEW SWIMMING POOL
JOHN & CERIAN BRONDUM
277 LOWER PLATEAU ROAD
BILGOLA PLATEAU

DWG NAME
SILT AND SEDIMENT CONTROL PLAN

DATE	SCALE AT A3	DRAWING NUMBER
JUNE 05	1:200	SRP0506-3

SYDNEY WATER

FILLING OF SWIMMING POOLS

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

EMPTYING OF SWIMMING POOLS

Pools emptying into Sydney Water's Sewer must:

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

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

Cooks, Castle Hill,
Quick Check Agent on behalf of
~~SYDNEY WATER~~

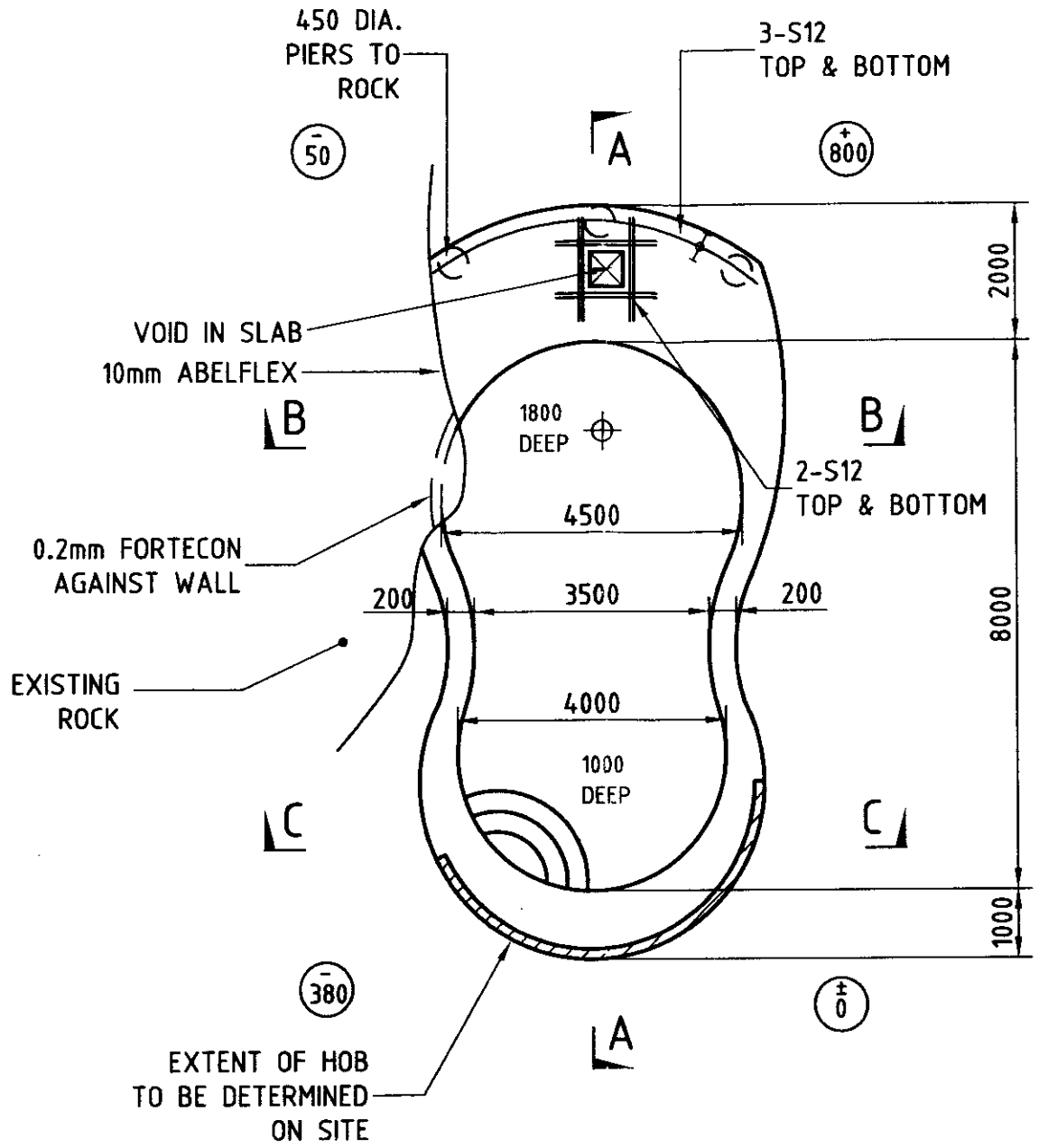
Per: Dean Nethercott 21/09/05

SYDNEY WATER
APPROVED

1. Position of structure in relation to Sydney Water's assets is satisfactory.
2. Connections to Sydney Water sewer/water services may only be made following the issue of a permit to a licenced plumber/drainer.
3. It is the owner's responsibility to ensure that all proposed fittings will drain to Sydney Water's sewer.
4. 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.
5. Gullies, Inspection Shafts and Boundary Traps shall not be placed under any Roof, Balcony, Verandah, Floor or other cover unless otherwise approved by Sydney Water.
6. Property No. 3446209

Cooks, Castle Hill,
Quick Check Agent on behalf of
~~SYDNEY WATER~~

Per: Dean Nethercott 21.09.05



POOL PLAN

DENOTES APPROX. HEIGHT OF POOL ABOVE EXISTING GROUND LEVEL.

NOTE: THIS POOL IS NOT DESIGNED FOR DIVING

Rev No	Revision Description	By	Date	Approval

SUNRISE POOLS PTY LTD

5/8 Victoria Avenue,
Castle Hill 2154
Phone: 9680 2574, 9680 2668
Fax: 98994450

A.C.N. 003 088 803
Gold Licence No. 46723C

PROPOSED SWIMMING POOL FOR
JOHN & CERIAN BRONDUM
277 LOWER PLATEAU RD, BILGOLA PLATEAU

Swimming Pool Consultants Trading as
Geoff Ninnes, Fong
& Partners, Pty. Ltd.

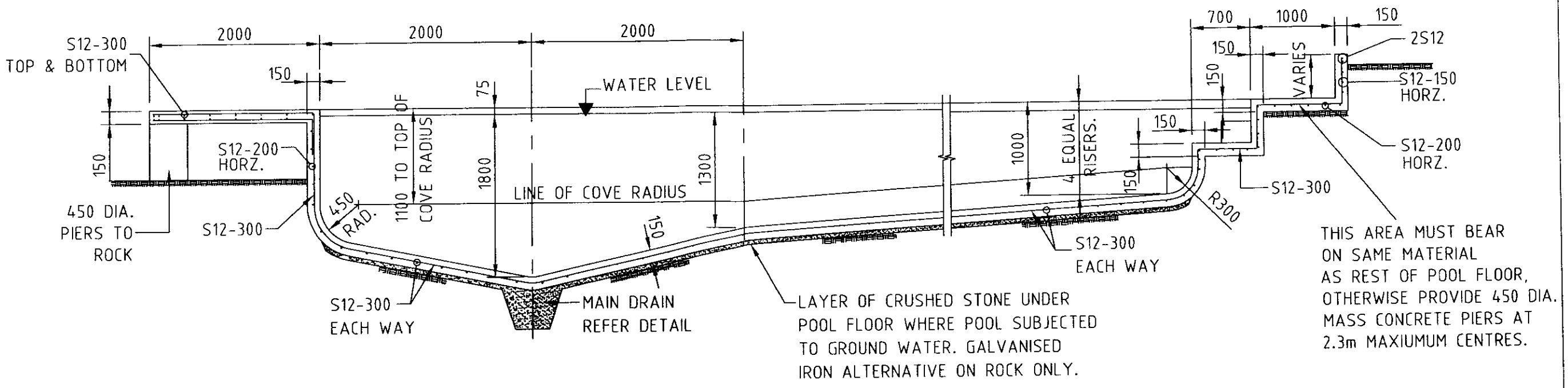
ACN No. 081 849 289
Consulting Engineers
Civil Structural Stormwater

Level 1,
68-78 Crown Street,
Woolloomooloo, N.S.W. 2011
Phone 9331 5100 Fax 9331 2963
Email: sydney@gnfp.com.au

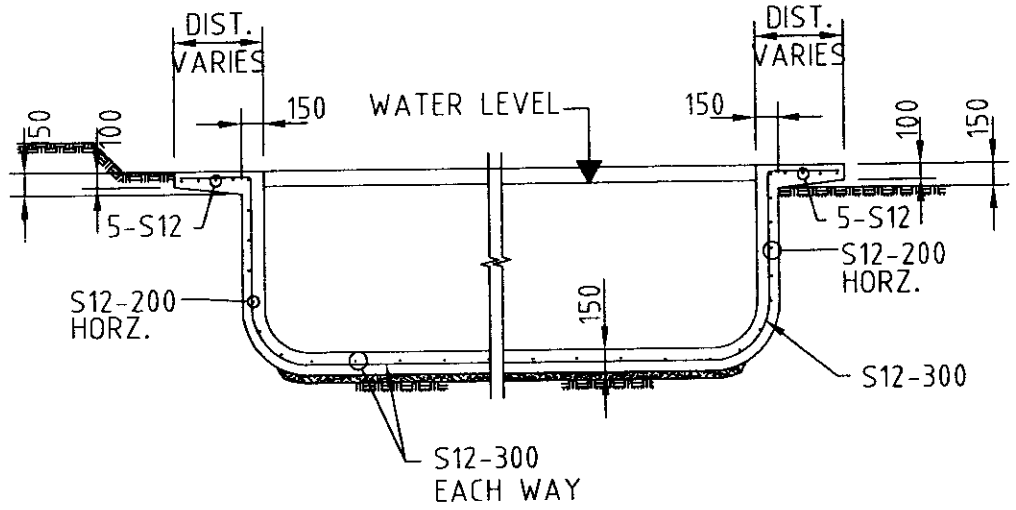
Engineer
ME(AUST) Approved

Date SEPT 2005
Drawn J.F
Scale 1:100, 1:200

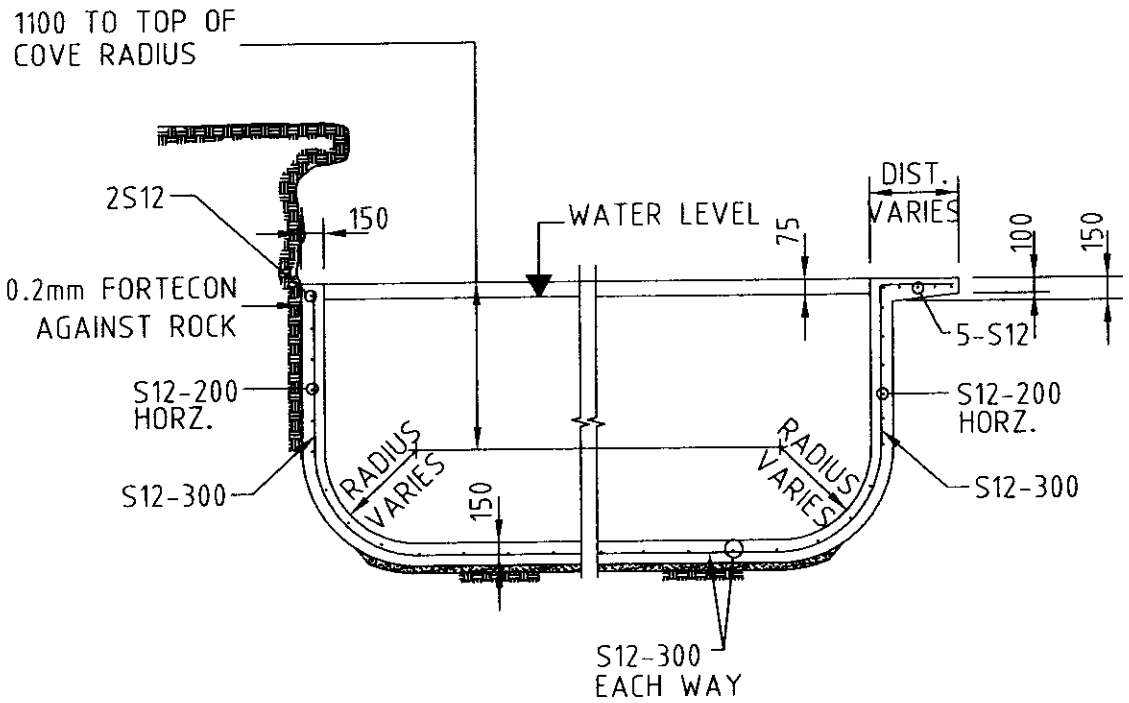
Drawing No.
SUN0530/1



SECTION A
1:50



SECTION C
1:50



SECTION B
1:50

NOTE:
ANY PAVING LAID ADJACENT TO POOL COPING MUST HAVE 15mm WIDE CONSTRUCTION OR EXPANSION JOINTS.
IF PAVING LAID IN MORTAR, EXPANSION JOINT MUST BE INSERTED BETWEEN PAVING AND POOL COPING.
LEAVE 3mm GAPS BETWEEN PAVERS LAID ON SAND.

SUNRISE POOLS PTY LTD
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Phone 9331 5100 Fax 9331 2963
Email: sydney@gnfp.com.au

Engineer
MIE(AUST) Approved

Date SEPT 2005
Drawn J.F
Scale 1:50 1:20

Drawing No.
SUN0530/2

POOL BUILDER: GENERAL NOTES

G1 This design applies only for ground levels as shown.
G2 All workmanship and materials shall comply with relevant current SAA codes, By-laws and ordinances of the local Building Authority.
G3 The overall dimensions shall be checked on site. Dimensions shown are concrete sizes and do not include finishes. These drawings are to be read in conjunction with the Contract but do not form part of the Contract. Do not scale from this drawing. Any discrepancies shall be notified to the Engineer.
G4 The foundation material must be stable, in natural ground, and uniform and shall have a minimum bearing capacity of 150 kPa for piers 350 kPa Any variation in foundations from that assumed shall be immediately referred to the Engineer.
G5 Excavations shall not be permitted within 2 metres of an existing structure without prior approval or recommendations for shoring or underpinning provided by the Engineer.
G6 Walkways have been designed for a distributed load of 3KPa. Balustrade load is 30 kg/m UNO. No additional loads shall be permitted without prior approval from the Engineer. N.B. Engineer should be notified if masonry walls, planter boxes or heavy loads are to be placed on walkways.
G7 Provide temporary drain holes in both shallow and deep ends of pool shell. Hydro valve to be cleared of debris on completion of concreting.
G8 Underside of pool shell to be separated from underlying material by 75mm layer of crushed stone draining to hydrostatic valve.
Place membrane between pool shell and bluemetal.
Corrugated iron alternative on rock only. Fill main drain sump with blue metal.
G9 Notify Engineer if pool more than 900 above N.G.L.

CONCRETE NOTES

C1 The mix shall be proportioned to produce a minimum 28 day compressive strength of 25MPa when tested in accordance with AS1012 and suitable for pneumatic application. All workman-ship and materials shall be in accordance with AS2783:1994.
C2 Exclude calcium chloride. Max aggregate size 10mm. Max slump 80mm. Cement type A.
C3 Reinforcement cover -

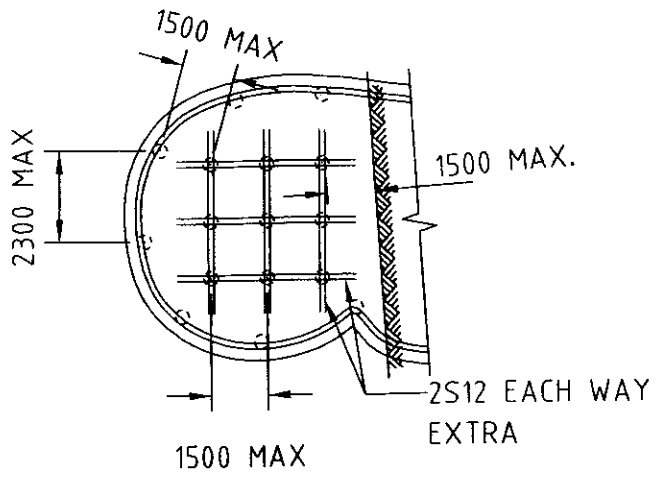
	Soil Face	Air Face	Water Face
Walkway	65	40	-
Floor	65	50	60
Walls	65	50	60
Beams	50	50	-
Piers	65	65	-

Vibrate concrete in piers longer than 2m and all beams.
C4 Plumbing piping to be behind reinforcement and to have minimum 65 clear cover from soil or air.
C5 Reinforcement to comply with SAA Standards and be supported on non-rusting chairs at approximately 1m centres.
C6 Reinforcement to be adequately wire tied with wire ends flattened into plane of bars. Seperate lap bars by 75mm.
C7 All splices to bars and fabric to be 450.
S = Grade 230 structural grade deformed
Y = Grade 410 tempcore deformed
R = Grade 230 plane grade round.
F = Grade 450 hard drawn wire fabric.
C8 Plastic chairs that restrict entry of concrete into and around them shall not be used.

POOL OWNER NOTES

01 If owner is dissatisfied with initial pool set out, location or depths, builder should be notified before steel reinforcement is fixed.
02 The position of skimmers, lights, return lines etc. on this drawing is indicative only and final position ot be determined on site.
03 The pool concrete should be cured by hosing four times per day for seven days (10 days in summer) to keep exposed concrete continually wet after concrete placement.
04 Safety fencing should be in accordance with Local Councils requirements and conform to Australian Standards.
05 The pool is not designed for diving. Provide safety signage to SAA code and Council requirements and AS2416, AS2899.2.
06 Notify engineer if pool to be emptied after finishing.

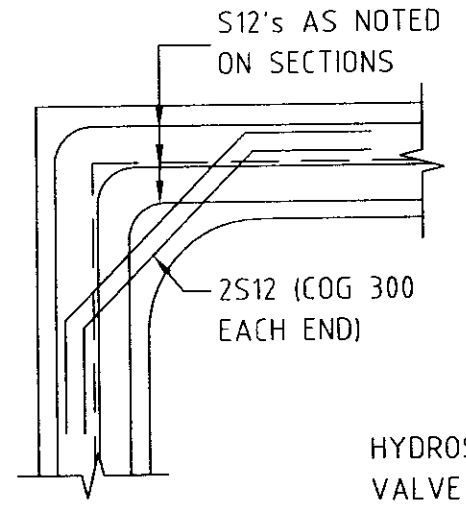
WIRE CHAIRS (PLASTIC TIPPED) TO BE USED IN ALL OUT OF GROUND WALLS AND COPINGS. PLASTIC CHAIRS SHALL NOT BE USED. WHERE PLASTIC CHAIRS ARE USED ELSEWHERE IN POOL, PARTICULAR CARE TO BE TAKEN TO ENSURE CONCRETE IS COMPACTED AROUND AND UNDER CHAIR.



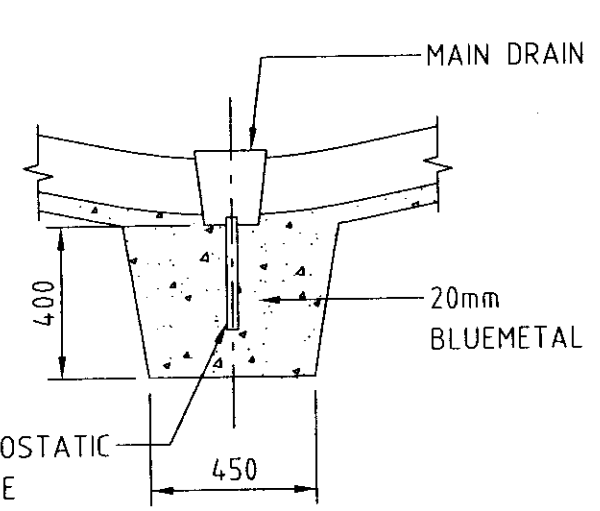
NOTE: WHERE POOL PARTIALLY ON ROCK SUSPEND THE REMAINDER OF THE POOL ON 450Ø MASS CONCRETE PIERS TO ROCKS.
PIERS UNDER WALLS @ 2300 MAX. CTRS.
PIERS UNDER FLOOR @ 1500 MAX. CTS.
PIERS LONGER THAN 1000 TO BE REINFORCED WITH 6S12 & R10-300 TIES.

ALTERNATIVE SUPPORT DETAIL

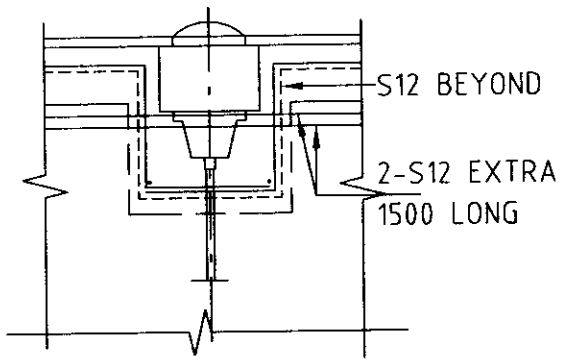
(THIS POOL IS NOT DESIGNED FOR DIVING)



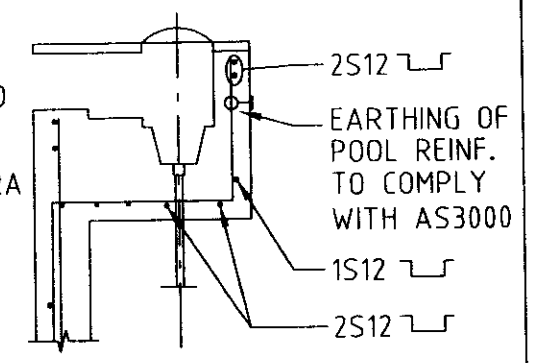
COPING CORNER DETAIL
(FOR 300mm COPINGS OR SMALLER)



MAIN DRAIN DETAIL

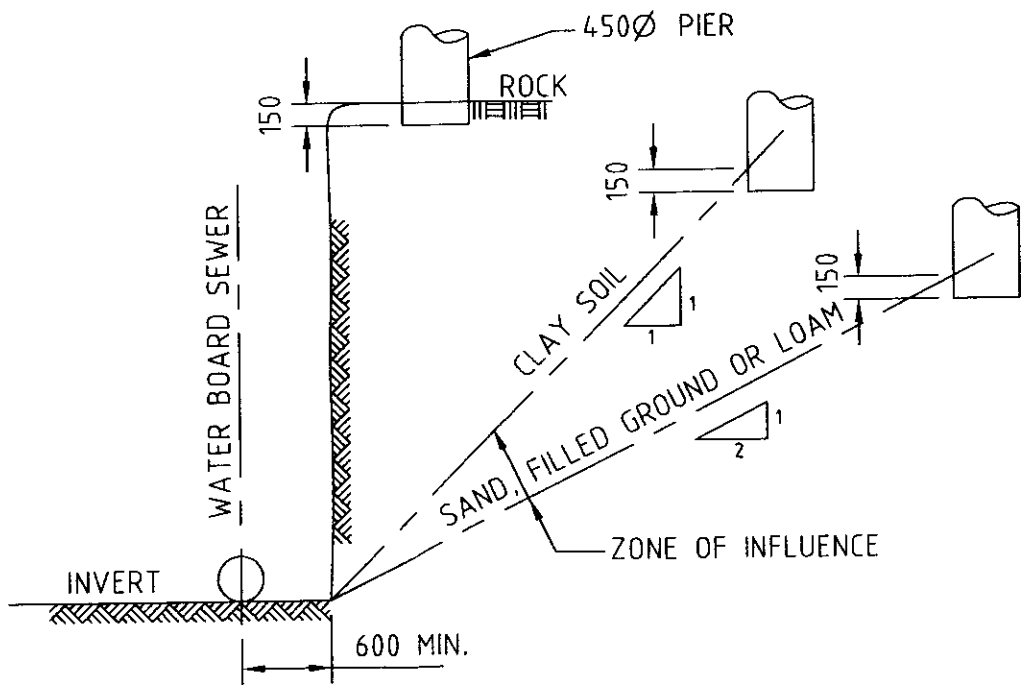


ELEVATION



SECTION

SKIMMER DETAIL



WATER BOARD SEWER DETAILS

INDICATIVE ONLY. ENGINEER TO BE NOTIFIED IF SEWER IS ADJACENT TO OR UNDER POOL

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5/8 Victoria Avenue,
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Email: sydney@gnfp.com.au

Engineer MIE(AUST) Approved

Date	SEPT 2005
Drawn	J.F
Scale	1:50 1:20
Drawing No.	SUN0530/3