

Pittwater Council

Construction Certificate No: CC 0545/06

Site Details:

109 & 111 Orchard Street, Warriewood

Legal Description:

Lot 3 & 4, DP 734891 & Lot 2, DP 715324

Type of Development:

Building Work

Description:

Construction of a private access way

Associated Development Consent No: N0457/05

Dated:

04/04/2006

COPY

Modified:

22/12/06

Building Code of Australia Classification: Class 10b

Details of plans, documents or Certificates to which this Construction Certificate relates:

- Working Drawing No 4670-01 E (16/10/06), 4670-02 D (21/07/06), 4670-03 E (18/10/06), 4670-04 E (16/10/06), 4670-05 E (21/07/06), 4670-06 D (21/07/06), 4670-07 E (16/10/06), 4670-08 E (16/10/06), 4670-09 E (16/10/06), 4670-10 D (21/07/06), 4670-11 D (21/07/06), 4670-12 D (21/07/06), 4670-13 A (21/07/06), prepared by Patterson Britton & Partners Pty Ltd
- Certification from Patterson Britton & Partners Pty Ltd, dated 22/11/06
- Pittwater Council Approval (works in public road reserve), dated 19/10/06
- Form No 2 Geotechnical Risk Management, prepared by Jack Hodgson Consultants Pty Ltd / M Tooker, dated 28/11/06
- Waste Management Plan, prepared by Patterson Britton & Partners Pty Ltd, dated 21/07/06
- Pittwater Council Approval (consent operative), dated 02/11/06
- Pittwater Council Approval (construction phase traffic management plan), dated 16/08/06
- Construction Phase Traffic Management Plan, prepared by Patterson Britton & Partners Pty Ltd, dated 21/09/06

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

- The relevant provisions of the Building Code of Australia, and
- The relevant conditions of Development Consent No: N0457/05

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

Issued By: Wayne Trebie

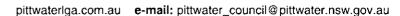
Accreditation Number: Dept of Planning P0100

Pittwater Council Consultant

Building Surveyor

Date of Endorsement: 9 January 2007

<u>Note</u>: You are reminded that pursuant to provisions of Clause 81A, you must nominate whether Council or an accredited certifier will be the principal certifying authority, also you must give notice to Council of your intention to commence work at least two days beforehand.





Environmental Compliance 8am to 5.30pm Mon - Thurs, 8am to 5pm Fri Phone 9970 1111

9 January 2007

D M & V Bubalo 107 Orchard Street WARRIEWOOD NSW 2102



Dear Wally

Re:

Construction Certificate CC0545/06

Property: 109 & 111 Orchard Street, Warriewood

Please find enclosed your approved Construction Certificate and stamped plans.

Did you know that work is unable to commence until such time as a completed Notification of Commencement Form has been submitted to Council at least two (2) days prior to starting work? Not to do so is a breach of the Environmental Planning and Assessment Act, which would result in a Penalty Infringement Notice (on-the-spot fine) being issued to you and the builder.

To assist you please find enclosed a "Notification of Commencement and Principal Certifying Authority Service Agreement" form to enable you to appoint Pittwater Council as your Principal Certifying Authority (PCA).

If appointed as the PCA, Council would engage the services of The Certification Group to carry out the various inspections as indicated in Part 6 of the enclosed "Notification of Commencement and Principal Certifying Authority Service Agreement" form and ultimately issue an Occupation Certificate for your development. Appointment and inspection fees are also detailed in the enclosed form.

Council will endorse your completed "Notice of Commencement and Principal Certifying Authority Service Agreement" form and return a copy to the applicant with advice as to the required critical stage and other inspections to be carried out on behalf of Council.

Council is committed to providing a quality service and would value your business in being appointed as the Principal Certifying Authority for your development.

Yours faithfully

Development Compliance Group

Dor:

1 1 JAN 2007

This form is valid from 1st July 2006 to 30 June 2007



Pittwater Council PO Box 882 Mona Vale NSW 1660 Tel: (612) 9970 1111 Fax: (612) 9970 7150

Payment of fees

NOTIFICATION OF COMMENCEMENT & PRINCIPAL CERTIFYING AUTHORITY SERVICE AGREEMENT

under Environmental Planning and Assessment Act 1979 sections 81A (2) (b) (ii) or (c), or (4) (b) (ii) or (c), 86 (1) and (2)

About this form	ertifying ilding / iificate i of two (2)		
 days prior to the commencement of works. Who can complete this form? The owner of the property or the person having the benefit of development consent. Note: The builder or other contractor cannot complete this form they are also the owner of the property. 			
Applicant's Checklist	 Read this document Complete pages 1, 2 & 3 Sign on page 8 Attach a copy of Owner Builder Permit or Home Owner Warranty Insurance Certificate. 		

• Critical Stage Inspection fees (refer to Part 6e of this form) must be paid at the time of booking the inspection.

This form is valid from 1st July 2006 to 30 June 2007

1a)) DEVELOPMENT CONSENT						
	Developme	nt Application N	lo: N0457/05	Determination Date: 04/04/2006			
				J			
1b)		CTION CERT n Certificate No		Date of Issue: 09/0	1/2007		
	. 				 -		
1c)	c) DEVELOPMENT DETAILS						
	Type of Wo	rk:	Brief description	n of development:			
	☐ New Bu	_					
	☐ Addition☐ Subdivis	s / Alterations	5				
4.0			<u> </u>				
1d)	Unit/Suite:		Street:				
	3,11000110	109 & 111	Orchard Street				
	Suburb: Warriewood	1			Lot No: 2 & 3	Deposit /Strata Plan: 715324 & 734891	
1e)			D DEVELOPMEN	Т			
46	DATEMO	BY IS TO CO	ARRACNICE	<u> </u>	_	· · · · · · · · · · · · · · · · · · ·	
11)		RK IS TO CO otice of two (2)		be given prior to com	mencement of wo	rks.	
	1						
2.	APPLICANT DETAILS Note: The builder or other contractor cannot complete this form unless they are also the owner of the property.						
	Name (own	er):					
	Postal Addr	ess:		Phon	e (H/B) [.]		

		***************************************		Emai	l:		
				Fax:			

1. DEVELOPMENT INFORMATION

This form is valid from 1st July 2006 to 30 June 2007

PITTWATER	00011012	Db. 003	70 1111
PO Box 882 Mona Vale N	SW 1660	Ph: 997 Fax: 997	
Wichia Vaic 14			
COMPLIANCI	E WITH DEVELOPM	ENT CONSE	NT
Have all conditi	ons to be addressed pr	ior to the comm	nencement of works been satisfied?
	YES		NO (see Note below)
Note: If NO v	vork must not comme	nce.	
Please be aware	that failure to address the	ese conditions ma	ay leave you liable and in Breach of the Environmer
Planning and Ass	sessment Act 1979 (as am	nended). Penalti	es may include an on-the-spot fine and/or legal acti
If you are uncerta	ain as to these requiremer	nts please contac	t Council's Development Compliance Group.
·	·	- · · · · · · · · · · · · · · · · · · ·	
WHO WILL BI	E DOING THE BUILL	DING WORKS	<u> </u>
	Owner Builder		
	Owner Builders Peri	mit Nla:	***************************************
	Owner Builders Fen	IIIIL INO	
Copy o			
Copy o	of Owner Builders per		☐ YES
attache	of Owner Builders per ed: Owner-Builder for the	rmit residential bui	☐ YES
attache If you are an C for a permit at	of Owner Builders per ed: Owner-Builder for the NSW Office of Fair Tr	rmit residential bui rading, 1 Fitzw	
attache If you are an C for a permit at	of Owner Builders per ed: Owner-Builder for the	rmit residential bui rading, 1 Fitzw 0222.	☐ YES Iding work exceeding \$5000 you must appliation of the street, Parramatta NSW 2150 Austral
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attache If you are an C for a permit at Tel: 61 2 98956 Name of Build Contact perso Address:	of Owner Builders per ed: Owner-Builder for the NSW Office of Fair Tr 0111 Fax: 61 2 9895 Licensed Builder Builder's License Nu der:	residential buil rading, 1 Fitzw 0222. OR umber Insurance Co Yes No - s of the	Phone: Pax: Estatement attached: Statement attached & signed by each owner appoint attached & signed by each owner appoint attached & signed by each owner appoint attached & signed by each owner appoperty that the reasonable market cost abour & materials to be used is less than

This form is valid from 1st July 2006 to 30 June 2007

6. RESPONSIBILITIES OF THE PRINCIPAL CERTIFYING AUTHORITY (PCA)

6a) Quality of Service:

Pittwater Council will carry out PCA and inspection services in a professional manner and in accordance with the requirements of the Environmental Planning & Assessment Act 1979 and Council's Code of Conduct.

6b) Site Signage:

Pittwater Council will erect a sign on the site to advise the general public of the contact details of the PCA. The sign will be erected during the Commencement Inspection, on Council's acceptance of appointment as PCA.

6c) Inspections:

Pittwater Council officers will undertake the Critical Stage Inspections of the work during construction and prior to issuing an Occupation Certificate to ascertain compliance of specified stages of construction with the Development Consent, Construction Certificate, Building Code of Australia & relevant standards of construction. On appointment as the PCA, Pittwater Council will notify the applicant in writing of the Critical Stage & other Inspections.

6d) Critical Stage and other inspections:

The following stages of construction are required to be inspected by Council (as indicated by a ✓ in the relevant box).

Note: Council's Development Compliance Officer will complete this section of the form.

		☑ Footing Inspection (prior to placement of concrete)					
<u>></u>		Slab and other Steel Inspection (prior to placement of concrete)	Office Use Only				
ose Only	☐ Frame Inspection (prior to fixing floor, wall & ceiling linings)						
Oilice O							
5	☑ Stormwater Inspection (prior to backfilling of trenches)						
		Swimming Pool Safety Fence Inspection (prior to placement of water)					
	\square	Final Inspection (all works completed and prior to occupation of the building)					

Note: Should the building works be completed in parts & not all aspects of a Critical Stage Inspection be ready, additional inspections maybe required – with a further inspection fee payable.

Eg: If two slabs are prepared at separate times, two separate inspection bookings and fees are required.

6e) Critical Stage and other inspection fees:

An inspection fee is required for each inspection identified in Part 6d of this form.

A separate inspection fee is required for each Critical Stage Inspection. Should works be either incomplete or incorrect at the time of inspection a further separate reinspection fee will be required.

This form is valid from 1st July 2006 to 30 June 2007

Each inspection fee must be paid at the time of requesting the inspection.

Critical Stage or other Inspection Fee current to 30 June 2007 \$210 (Code: HINR)

Final Inspection Fee Scale current to 30 June 2007 \$280 (Code: FOCC)

Please note that a failure to give correct notification of required inspections may result in the issuing of a Penalty Infringement Notice (PIN or on-the-spot fine) and/or a Notice and Order by Council and may result in refusal to issue an Occupation Certificate.

6f) Inspection Results:

Pittwater Council will provide written confirmation to the applicant of the inspection results and indicate if satisfactory or if additional works are required prior to reinspection.

7. RESPONSIBILITIES OF THE APPLICANT

7a) Inspections:

A minimum of forty-eight (48) hours notice (excluding weekends and public holidays) must be given to Council to enable the specified stages of construction to be inspected as identified in Item 6 of this agreement.

Should an inspection be missed, the applicant must advise Council in writing (as soon as practicable after the event) of that fact, the circumstances causing the inspection to be missed and supporting documentation for Council's consideration. In such cases, the inspection fee, which would normally have been required, must still be paid.

The applicant must ensure that the Principal Contractor (Builder/Owner Builder) is advised of the required inspections and that the directions of Council's Development Compliance Officers are to be observed to ensure compliance with the Development Consent, Construction Certificate, Building Code of Australia and the terms of this agreement.

7b) Booking of Inspections:

The applicant shall request an inspection via Pittwater Council's Inspection Booking Hotline on 9970 1300. A minimum of forty-eight (48) hours notice must be provided to Council to arrange for completion of the inspection.

At the time of requesting the inspection, Pittwater Council will confirm an inspection time and day, name of inspecting officer and mobile contact number.

Building works must **not** proceed to the subsequent stages of construction prior to obtaining a satisfactory inspection from Council for each stage of construction specified in Item 6d of this agreement.

This form is valid from 1st July 2006 to 30 June 2007

7c) Site Signage:

The applicant is responsible to maintain the PCA signage provided by Pittwater Council at the site until the work is completed.

The applicant is responsible to ensure that the Owner Builder or Principal Contractor (Builder) provide a rigid durable sign at the site, visible from the public place and maintained at the site until the work is completed. Such a sign shall display: (a) the name, address and telephone number of the person; (b) an after-hours emergency telephone number for the person and (c) stating "Unauthorised Entry to the Site is Prohibited".

7d) Compliance with the Development Consent and Construction Certificate:

All works must be carried out in accordance with the terms and conditions of Council's Development Consent and the Construction Certificate and relevant provisions of the Building Code of Australia and Environmental Planning and Assessment Act 1979.

Development Consent and a Construction Certificate must be obtained for any amendments or variations to the development, prior to the commencement of the amendment or variation.

Works not in accordance with the approval and Building Code of Australia may result in the refusal to issue an Occupation Certificate. Council may also serve a Notice and Order to comply with the approval and/or the institution of legal proceedings.

7e) Structural Engineering and Other Specialist Details:

The following details are to be forwarded to the PCA prior to commencement of the relevant stage of construction (as identified by a
The details are to be prepared by a suitably qualified person to confirm compliance with the relevant provisions of the BCA and Australian Standards:

Note: Council's Development Compliance Officer will complete this section of the form.

		Timber framing details including bracing and tie-downs	No ticked:			
		Roof construction or roof truss details				
		Termite control measures	Office Use Only			
<u> </u>		Glazing details				
Onice Use Only						
aom						
)	☐ Details of fire resisting construction					
		Details of essential fire and other safety measures				
		Sound transmission and insulation details				
		Details of compliance with development consent conditions				

Certification of Works:

To ensure compliance with the Construction Certificate and Building Code of Australia (BCA), the applicant is to provide certification, verifying that the following specialist matters (identified by a \checkmark) have been carried out.

Each certification must:

7f)

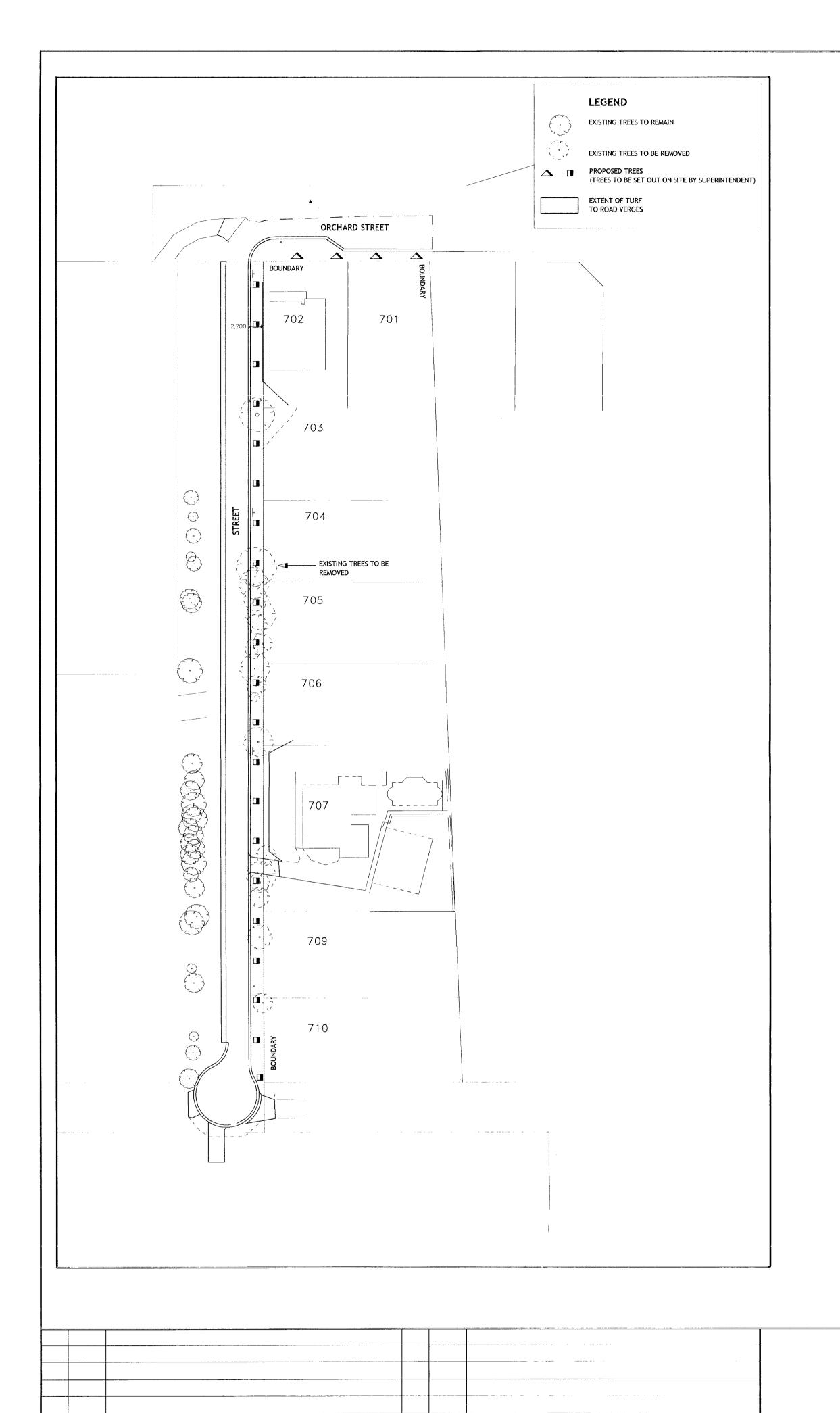
- reference the approved Construction Certificate number, property address, relevant provisions of the BCA, Australian Standards and approved drawings.
- be prepared by an accredited certifier or other suitably qualified & experienced person to the satisfaction of Pittwater Council.

Note: Council's Development Compliance Officer will complete this section of the form.

	Survey detailing building setbacks, reduced levels of floors & ridge by a registered surveyor
	Shoring and support for adjoining premises and structures by a structural engineer
	Contiguous piers or piling by a structural engineer
	Underpinning works by a structural engineer
$\overline{\mathbf{V}}$	Structural engineering works by a structural engineer on all structural
build	ding elements –(i.e footings, slabs, floor, wall & roof framing)
	Retaining walls by a structural engineer
\square	Inspection and approval of all subsurface drains by the Geotechnical engineer before backfilling is completed
\square	Inspection and approval of all fill material by the Geotechnical engineer before backfilling is completed
	Stormwater drainage works by a hydraulic engineer and surveyor
	Landscaping works by the landscaper
	Condition of trees by an Arborist
	Mechanical ventilation by a mechanical engineer
	Termite control and protection by a licensed pest controller
	Waterproofing of wet areas by a licensed waterproofer or licensed builder
	Installation of glazing by a licensed builder
	Installation of smoke alarm systems by a licensed electrician
	Plumbing and Drainage Contractors certificate indicating that sewer/waste water system has been installed and completed in accordance with the Sydney Water requirements.
	Completion of construction requirements in a bush fire prone area by a competent person
	Completion of requirements listed in the BASIX Certificate by a competent person
	Fire resisting construction systems by a competent person
	Smoke hazard management systems by a competent person
	Essential fire safety and other safety measures by a competent person (Form 15a)

This form is valid from 1st July 2006 to 30 June 2007

	☐ Completion of	of Bushland Management requirements by a suitably qualified person.
	Installation of	f Waste Water Management System by a suitably qualified person
	Installation of	f the inclined lift by a suitably qualified person
	Installation of	f sound attenuation measures by an acoustic engineer
7g)	of a new building	on Certificate must be obtained from the PCA prior to the occupation or use (or part of a building) or prior to the change of an existing building n. An inspection fee is to be paid to the PCA in accordance with the fee scale
	considered in ac	lay be made to the PCA for an <i>Interim</i> Occupation Certificate, which will be cordance with the provisions of the Environmental Planning and Assessment inditions of development consent.
	Environmental P	al Certifying Authority can issue an Occupation Certificate and the lanning and Assessment Act 1979 contains penalty provisions for failing to discupation Certificate.
	or interim fire sai	or an Interim or Final Occupation Certificate must be accompanied by a final fety certificates as required by the EP&A Regulations, Clauses 80E or 80F er than Class 1 and 10.
7h)		requirements: required to ensure that valid public liability insurance cover to the value of nimum) is held by the applicant and/or builder.
		required to notify Council, in writing, of any change in the details or address or head contractor.
	Pittwater Counci	I may cancel the agreement if there is a breach of the agreement.
8.		ns and conditions of this service agreement, including the associated and appoint Pittwater Council as the Principal Certifying Authority for the
	Signature:	Date:
9.	COUNCIL'S AG	REEMENT TO APPOINTMENT
		in Parts 6d, 7e & 7f of this agreement have been completed and I acknowledge the vater Council as the Principal Certifying Authority.
	Officer's name:	on behalf of Pittwater Council
	0.5	Date:
	ACY AND PERSON	AL INFORMATION PROTECTION NOTICE
Purp	/ACY AND PERSON ose of collection:	To enable Council to act as the Principal Certifying Authority for the development.
Purp Inter	/ACY AND PERSON ose of collection: ided recipients:	To enable Council to act as the Principal Certifying Authority for the development. Pittwater Council staff
Purp Inter Supp	/ACY AND PERSON ose of collection: ided recipients:	To enable Council to act as the Principal Certifying Authority for the development.
Purp Inter Supp Cons provi	VACY AND PERSON ose of collection: ided recipients: oly: sequence of Non- ision:	To enable Council to act as the Principal Certifying Authority for the development. Pittwater Council staff The information is required by legislation Your application may not be accepted, not processed or rejected for lack of information
Purp Inter Supp Cons provi	VACY AND PERSON ose of collection: ided recipients: oly: sequence of Non- ision: age:	To enable Council to act as the Principal Certifying Authority for the development. Pittwater Council staff The information is required by legislation Your application may not be accepted, not processed or rejected for lack of information Pittwater Council will store details of this form in a register that can be viewed by the public.
Purp Inter Supp Cons provi	VACY AND PERSON ose of collection: ided recipients: oly: sequence of Non- ision:	To enable Council to act as the Principal Certifying Authority for the development. Pittwater Council staff The information is required by legislation Your application may not be accepted, not processed or rejected for lack of information



REV. DATE

AMENDMENTS

A OCT 05

REV. DATE

FOR APPROVAL

AMENDMENTS

SPECIFICATION NOTES

WOODCHIP MULCH.

SITE PREPARATION / SOIL WORKS
ALL EXISTING TREES MARKED FOR RETENTION SHALL BE
PROTECTED FOR THE DURATION OF THE BUILDING WORKS.
REMOVE FROM SITE ALL PERENNIAL WEEDS SUCH AS OXALIS,

ONION WEED AND THE LIKE. NO REGRADING IS TO BE CARRIED OUT WITHIN THE DRIPLINE OF THE TREES TO BE RETAINED. WHERE EXCAVATION IS NECESSARY USE HAND METHODS TO AVOID DAMAGE TO THE ROOT SYSTEM. DO NOT CUT ROOTS GREATER THAN 50MM. CUT ROOTS CLEANLY WITH A SAW AND DO NOT SEAL THE

TREE PROTECTION
PROTECT ALL EXISTING TREES AS NOTED ON THE DRAWINGS
FOR THE DURING OF THE BUILDING WORKS. TAKE ALL NECESSARY PRECAUTIONS, INCLUDING THE

Tree Protection fence:
INSTALL A TREE PROTECTION FENCES AT THE MAXIMUM
RADIUS ALLOWABLE TO ACCOMMODATE THE PROPOSED
DEVELOPMENT. MAINTAIN THE FENCE FOR THE DURATION OF

THE BUILDING WORKS. CONSTRUCT THE FENCE 1.8 M HIGH WITH CHAINWIRE MESH ON STEEL POSTS. ALL AREAS WITHIN THE PERIMETER OF THE FENCE ARE TO BE COVERED TO A DEPTH OF 100MM WITH

Temporary irrigation: INSTALL A TEMPORARY IRRIGATION SYSTEM TO ALL TREES TO BE RETAINED. INSTALL DRIP EMITTERS ON POLY LATERALS.
THE IRRIGATION SYSTEM IS TO BE CONTROLLED BY A GALCON OR SIMILAR AUTOMATIC CONTROLLER.

Harmful materials: DO NOT STORE, STOCKPILE, DUMP OR OTHERWISE REPLACE UNDER OR NEAR TREES, BULK MATERIALS AND HARMFUL MATERIALS INCLUDING OIL, PAINT, WASTE CONCRETE, CLEARINGS, BOULDERS AND THE LIKE. DO NOT PLACE SPOIL FROM EXCAVATIONS AGAINST TREE TRUNKS, EVEN FOR SHORT PERIODS. PREVENT WIND-BLOWN MATERIALS SUCH AS CEMENT FROM HARMING TREES AND PLANTS.

Damage: PREVENT DAMAGE TO TREE BARK. DO NOT ATTACH STAYS, GUYS AND THE LIKE TO TREES.

Work under trees:
DO NOT REMOVE TOPSOIL FROM WITHIN THE DRIP LINE OF
TREES UNLESS OTHERWISE SPECIFIED. IF IT IS NECESSARY TO
EXCAVATE WITHIN THE DRIP LINE, USE HAND METHODS SUCH
THAT ROOT SYSTEMS ARE PRESERVED INTACT AND

Roots:

DO NOT CUT TREE ROOTS EXCEEDING 50 MM DIAMETER UNLESS PERMITTED BY THE SUPERINTENDENT. WHERE IT IS NECESSARY TO CUT TREE ROOTS, USE A CHAIN SAW OR SIMILAR MEANS SUCH THAT THE CUTTING DOES NOT UNDULY DISTURB OR ROCK THE REMAINING ROOT SYSTEM. IMMEDIATELY AFTER CUTTING, APPLY AN APPROVED BITUMINOUS FUNGICIDAL SEALANT TO THE CUT SURFACE TO PREVENT THE INCURSION OF ROT OR DISEASE.

Compacted Ground:
AVOID COMPACTION OF THE GROUND UNDER TREES. IF THE GROUND UNDER TREES. IF THE GROUND UNDER TREES. IF THE DURING THE WORK UNDER THE CONTRACT, FOR EXAMPLE BY THE OPERATION OF HEAVY CONSTRUCTIONAL PLANT, LOOSEN THE SOIL BY CORING.

SOIL WORKS
THOROUGHLY CULTIVATE THE SUBSOIL TO A DEPTH OF 200MM.
SUPPLY AND INSTALL THE FOLLOWING SOIL MIX:

SOIL DEPTH	
TURF	1 5 0 M M
PLANTING	3 0 0 M M
SOIL MIX	
BLACK LOAM	60%
COARSE WASHED RIVER SAND	40%
ORGANIC LAYER 50 MM DEEP	
CULTIVATE A 50MM LAYER OF	ORGANIC ADDMIX INT
THE TOP 100MM OF SOIL MIX	

Addmix composition TREATED HARDWOOD SAWDUST PINE PARK FINES COMPOSTED MANURE

TREE PLANTING AREAS TO BE MOUNDED 100 MM ABOVE THE EXISTING GROUND LINE TO IMPROVE DRAINAGE FROM PLANTING HOLES. TREE HOLES TO BE EXCAVATED 2 TIMES LARGER THAN THE ROOTBALL AND BACKFILLED WITH SOIL MIX AS SPECIFIED ABOVE.

MULCH
SUPPLY AND PLACE 75 MM LAYER OF HARDWOOD
HORTICULTURAL GRADE MULCH, (GRADED IN SIZE 15 MM X
15MM X 15MM, FREE FROM WOOD SLIVERS). SET DOWN 25MM
FROM ADJACENT PAVING.

TURFED AREAS

APPLY SHIRLEYS NO 17 LAWN FERTILISER TO SOIL APPLIED IN
ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. COUCH BUFFALO WITH AN EVEN THICKNESS OF 30MM. DO NOT LET TURF DRY OUT. LIGHTLY TOP DRESS TURF 6 WEEKS AFTER LAYING WITH 10MM IMPORTED TOPSOIL. THATCH TO BE LAID WITH STAGGERED JOINTS , FLUSH WITH PATHWAY LEVELS.

PLANT MATERIALS

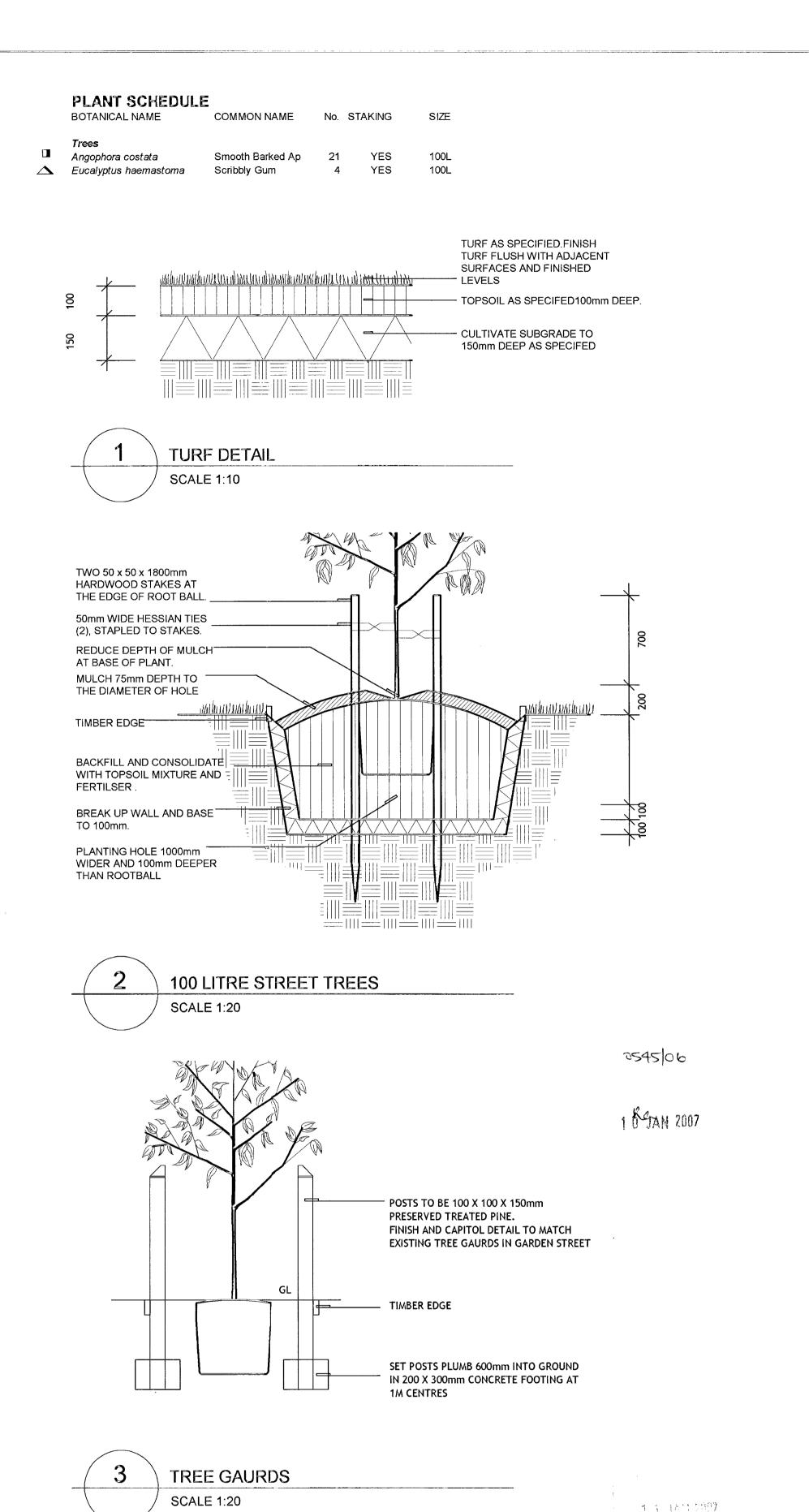
ALL PLANTS SHALL BE TRUE TO TYPE, OF HEALTHY GROWTH DISEASE FREE NURSERY STOCK AND NOT DISPLAYING RESTRICTED GROWTH PATTERNS. SHOULD THERE BE A REQUIREMENT FOR SUBSTITUTIONS THEY SHALL NOT CHANGED WITHOUT PRIOR APPROVAL OF THE LANDSCAPE ARCHITECT. NO VARIEGATED STRAIN SHALL BE USED. ALLOW FOR SLOW RELEASE FERTILISER TO ALL PLANTS APPLIED AT THE MANUFACTURERS RECOMMENDED RATE TO BE SAME OR SIMILAR TO OSMOCOTE.

STAKES AND TIES

DURABLE HARDWOOD, STRAIGHT, SIZE SHALL BE 50X50X1800 WITH TIES SPACED APPROXIMATELY 300MM APART. DRIVE STAKES 600MM INTO THE GROUND ON THE WINDWARD SIDE OF THE PLANT. TIES SHALL BE 50MM HESSIAN WEBBING FIXED IN A FIGURE OF EIGHT PATTERN.

PLANT ESTABLISHMENT PERIOD

FROM THE DATE OF PRACTICAL COMPLETION, THERE SHALL BE A PERIOD OF 52 WEEKS FOR THE PLANTING ESTABLISHMENT PERIOD. ANY FAILED PLANTS SHALL BE REPLACED WITH THE SAME TYPE AND SPECIES, THE MULCHED SURFACES SHALL BE MAINTAINED IN A NEAT AND TIDY CONDITION, STAKES AND TIES SHALL BE ADJUSTED AS REQUIRED AND THE TURF SHALL BE REGULARLY MOWED TO MAINTAIN A HEALTHY GROUND COVER. A CONSTANT WATER REGIME SHALL BE MAINTAINED TO ENSURE HEALTHY GROWTH OF ALL PLANT MATERIAL.









	V,D AND M BUBALO	
Project:		
	7 & 7A ORCHARD STREET	

1:1000

05004

Drawing No:



FILE COPY

grand and make the Salada Patterson Britton & Partners Pty Ltd

level 4 104 Mount Street North Sydney 2060 PO Box 515 North Sydney 2059 Australia

telephone: facsimile: email: ABN

(02) 9957 1291 reception@patbrit.com.au 89 003 220 228

Newcastle Office 8 Telford Street Newcastle East 2300 PO Box 668 Newcastle 2300 Australia

telephone: facsimile:

(02) 4928 7777 (02) 4926 2111

(02) 9957 1619

mail@newcastle.patbrit.com.au email:

consulting engineers

it467002mis-bubalo cert letter.doc

W. D and M Bubalo 107 Orchard Street **WARRIEWOOD NSW 2102**

Fax 9970 8454

PHTWAT: RIGOUNG!LICONS 00 0545106

CC The Certification Group Attention Mr Wayne Treble Fax 9944 6330

_ 1 0 JAN 2007

Wednesday, 22 November 2006

Attention: Mr Wally Bubalo

Dear Sir

107 ORCHARD STREET, WARRIEWOOD - ROAD AND SUBDIVISION WATER MANAGEMENT CERTIFICATION

I refer to your request to provide a summary of the engineering documents produced by Patterson Britton & Partners (PBP) to date for both the access road and subdivision DA's at the above address.

It is understood that the above clarification is required to assist in the assessment of your Construction Certificate (CC) applications by the Certification Group (ie on behalf of Pittwater Council). In this regard we refer to the two letters from the Certification Group dated 8th November, 2006 (Ref ADD INFO. 0546.06 and ADD INFO. 0545.06).

In terms of engineering/water management related CC requirements:

DA N0457/05 was utilised to determine CC requirements for the Access Road (refer to Appendix F); and

DA N0152/02 was utilised to determine CC requirements for the subdivision (refer to Appendix G)

In summary, PBP have produced the following engineering related documentation to date:

Access Road design drawings – CC Issue (refer to Appendix A);

2. Subdivision stormwater management design drawings - CC Issue (refer to Appendix B);

3. CC Stage Water Management Report (refer to Appendix C);

Waste Management Plan – CC Issue (refer to Appendix D); and

5. Traffic Management Plan – CC Issue (refer to Appendix E).

Principals

Senior Associates

Greg Britton BE MEngSc FIEAust Andrew Chitty BE MIEAust CPEng Peter Coltman BE MEngSc MIEAust Bruce Druery BE Dip Sc(Geol) M AppSc MIEAust Paul Harvey-Walker BE FIEAust David McConnell BSc MIEAust Joe Marson BE MEngSc FIEAust Andrew Patterson BE FIEAust Christopher Thomas BE MEngSc MIEAust Mark Tooker BSc(Eng) MEngSc FiEAust CPEng Michael Wright BE MEngSc MiEAust

Steve Barrett Simon Batt BE MIEAust Paul Macinante BE MEnvEngSc MIEAust Ben Patterson BE MIEAust Marc Roberts BE Michael Shaw BE MIEAust CPEng

Associates

Stephen Aebi BE MIEAust Neville Boyes OMIEAust Scot Cranfield Cameron Druery BE MIEAust Adam Knight BE MIEAust CPEng Cameron Smith BE MEngSc MIEAust CPEng Alexandra Stone BE MIEAust Chris Yates BE MIEAust



In addition, PBP utilised the services of Geotechnique Pty Ltd to assist in geotechnical considerations for the proposed access road (refer to report at Appendix F).

Based on the above documentation and in response to the Certification Group correspondence dated 8th November, 2006 we confirm the following:

Access Road DA Conditions (DA N0457/05) - CC 0545/06

- Condition B1 is understood to be satisfied by PBP document at Appendix D (ie waste management plan);
- We confirm a shared trench arrangement is proposed as shown on the Drawings at Appendix A to locate all new utility services for the lots below ground and clear of landscaping in accordance with Condition B3;
- Condition C5 is understood to be satisfied by PBP document at **Appendix A** (ie detailed road design drawings);
- Conditions C1 is understood to be satisfied by PBP document at Appendix A (ie detailed road design drawings);
- We herby certify that the engineering design and plans for road and drainage works comply with the requirements of Conditions C1, C2 and C3 – Michael Shaw CPEng MIEAust (1126270) NPER (compliance with Condition C4); and
- For assistance in compliance with Conditions C9 and C10 see attached Geotechnical report at Appendix H.

Subdivision DA Conditions (DA N0152/02) - CC 0546/06

- Condition B25, B26, B27 and B28 are understood to be satisfied by PBP document at Appendix A (ie detailed road design drawings);
- We herby certify that the engineering design and plans for road and drainage works comply with the requirements of Conditions B26, B27 and B28 – Michael Shaw CPEng MIEAust (1126270) NPER (compliance with Condition B28a);
- Condition B29 is understood to be satisfied by PBP document at Appendix B (*Drawing 4670-01-06*). Note we confirm all silt fences are proposed to be contained wholly within 107 Orchard St see mark up on Drawing 4670-01-06;
- Condition B29a is also understood to be satisfied by the above document (ie *Drawing* 4670-01-06 at *Appendix B*);
- Condition B29b is understood to be satisfied by PBP document at Appendix E (ie traffic management plan) and Appendix B;
- We herby certify that the water management report at Appendix C and associated plans complies with the requirements of Conditions B30, and B31 – Michael Shaw CPEng MIEAust (1126270) NPER (compliance with Condition B32);
- The drawings at Appendix A show that the works comply with Condition D31; and
- We confirm a shared trench arrangement is proposed as shown on the Drawings at Appendix A to locate all new utility services for the lots below ground and clear of landscaping in accordance with Condition D44.

Patterson Britton & Partners Pty Ltd

We trust this information is satisfactory. Should you have any further enquiries, please do not hesitate to contact either Michael Shaw or myself on (02) 9957 1619.

Yours faithfully PATTERSON BRITTON		
	Review / Verification by	Date
Mark Tooker Principal	······································	,.,



Ross McWhirter, Project Leader - Warriewood Infrastructure 8am to 5pm Mon - Fri Phone 9970 1207 Mobile 0419 629 007

19 October 2006

W D Bubalo 7 Orchard Street WARRIEWOOD NSW 2102

Dear Sir.

Re: Engineering Plans for Orchard Street and Access Road

This correspondence refers to Clause C1 (second paragraph) of Consent No. N0457/05, and Clause B26 (second paragraph) of Consent No. N0152/02 requiring engineering plans and specifications within the public road reserve to be submitted and approved by Council prior to the issue of any Construction Certificate.

This advice refers to Orchard Street Access Road, Warriewood Civil Road Design prepared by Patterson Britton & Partners Pty Ltd: -

Drawing No. 4670, Sheet: -

01 Issue E, 02 Issue D, 03 Issue E, 04 Issue E, 05 Issue E, 06 Issue D, 07 Issue E, 08 Issue E, 09 Issue E, 10 Issue D, 11 Issue D, 12 Issue D and 13 Issue A.

The Plans are satisfactory subject to the following:

 All Engineering Plans to be certified by an experienced Civil Engineer who is NPER accredited by the Institution of Engineers (Australia), in accordance with Condition C4 of Consent No. N0457/05 and Condition B28a of Consent No. N0152/02.

Yours faithfully

James/Payne / / MANAGER - URBAN INFRASTRUCTURE

00 0545/06

K. 10 IAN 2007 level 4 104 Mount Street North Sydney 2060 PO Box 515 North Sydney 2059 Australia telephone (02) 9957 1619 facsimile (02) 9957 1291 email: reception@patbrit.com.au A.C.N. 003 220 228 A.B.N. 89 003 220 228

Patterson Britton & Partners Pty Ltd

Newcastle Office 14 Telford Street Newcastle East 2300 PO Box 668 Newcastle 2300 Australia telephone (02) 4928 7777 facsimile (02) 4926 2111 email: mail@newcastle.patbrit.com.au

consulting engineers

Waste Management Plan

DA No. N0457/05 and N0152/02 Construction of Private Accessway and Subdivision of 7 Orchard St into 10 lots

7 Orchard St, Warriwood Valley, NSW for WD & M Bubalo

This waste management plan has been prepared in accordance with Appendix 4 of the Warriewood Valley Urban Land Release DCP 29 to demonstrate the following:

- The volume and type of waste to be generated;
- 2. How waste is to be stored and treated on site;
- 3. How residual waste is to be disposed of; and
- 4. How ongoing waste management will operate.

1. Description of Proposed Works

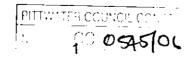
It is proposed that the existing property at 7 Orchard Rd, Warriewood Valley be subdivided into 10 individual lots and all associated infrastructure required to service the lots be constructed. In summary, this would entail the following works:

- Half width road construction along the private access road frontage of the lots as per PBP design Drawings contained in Appendix A;
- Half width reconstruction of the Orchard Road frontage as per PBP design Drawings contained in Appendix A;
- Provision of all utility infrastructure (ie gas, telecommunications, water, sewer and power) to serve the proposed new lots and to maintain connection to existing lots;
- Provision of all required stormwater management systems as per PBP report titled "Warriewood Valley 7&7A Orchard St (Part of Sector 10) - Water Management Report Construction Certificate Stage" (Issue 1 September 2005) and associated PBP design Drawings contained within Appendix B;
- Bulk earthworks within the new lots; and
- Demolition of existing structures within the new lots.

2. Volume and Type of Waste to be Generated by the Development

The major component of waste to be generated by the proposed works is related to bulk earthworks activities.







lt467002mjs0607t4-bubalo CC Waste Management Plan.doc

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Bulk earthworks will be undertaken simultaneously within both the lots and proposed roadways (ie on the lots and within Orchard Rd and the private accessway).

In summary, the proposed roadworks will result in a net surplus of cut material which will have to be transported from the site to be disposed at an appropriate landfill facility (*ie Kimbriki*). Special fill material will also have to be brought into the site for construction of the road (*ie from Kimbriki*). However, within the proposed lot areas, cut and fill works will generally be undertaken without the need to import or export material from the site. Some of the suitable spoil generated by the proposed roadworks will also be used to fill areas within the lots themselves.

A summary of the proposed bulk earthworks for the site is as follows:

- Lots minor regrading (generally balanced cut and fill), use of cut material from road works as fill for batters on western edge of lots and minor filling on southern lots;
- Road cut works approximately 1000m³, of which 700m³ is assumed to be clean and would be stockpiled for reuse on the lots as mentioned above. The remaining 300m³ would need to be removed from the site and disposed of at Kimbriki;
- Road fill works approximately 600m³ of material is required for the batters on the east side of the road, 100m³ would be used to fill the southern lots and 400m³ of special fill (ie base-course and sub-base material) is required to be imported to construct the roads themselves;
- Hence, an estimated 300m³ is proposed to be trucked out from the site and 400m³ is proposed to be trucked in.

The 300m³ of material to be removed from the site would consist of the old AC pavement and inert but unsuitable/uncompactable fill. The 400m³ to be imported to the site would consist of recycled roadbase and basecourse material from Kimbriki.

In addition to the above, the following waste material is also likely to be generated as part of the roadworks:

- General Contractors waste (ie litter, offcuts etc); and
- Effluent from portable on site toilets.

For the minor demolition works to be undertaken on the lots themselves, the following waste products are likely to be produced:

- Bricks;
- Concrete;
- Timber;
- Asbestos sheeting; and
- Vegetation.

3. Waste Management Plan

A summary of the proposed waste management plan for the proposed construction and ultimate stages of the project is as follows:

It is proposed to promote waste minimisation for both the construction and ultimate stages
of the development. This will be achieved by using at source waste separation, use of
recycled materials in construction and disposal of materials to facilities that separate and
sell for reuse (ie Kimbriki tip);

- Topsoil stripped from the areas of proposed road construction and lot earthworks will be stored on site, treated for weeds and reused again as topsoil at completion of all works;
- Any good quality roadbase and/or basecourse material found beneath the existing road will be separated and stored on site for potential reuse beneath the new roadways;
- Any hardwood timbers within the existing structures to be demolished will be separated and stored onsite for reuse. Those timbers not used will be taken to Kimbriki tip (an approved recycling facility) for reuse by others;
- Any existing concrete slabs to be demolished will be separated and taken to Kimbriki tip (an approved recycling facility) for processing and reuse as roadbase or aggregate;
- Any existing bricks obtained from demolition of existing structures will be separated and taken to Kimbriki tip (an approved recycling facility) for processing and reuse as drainage aggregate;
- Any Asbestos contained within the existing structures on site will be removed in accordance with the appropriate health guidelines and disposed of at an approved facility (ie Kimbriki tip);
- Any proposed waste storage containers utilised during the construction phase will be stored wholly within the development site (ie not in the public road reserve);
- On site portable toilet waste will be removed from the site and disposed of at an approved facility; and
- General contractors waste will be removed from the site and disposed of at an approved facility.

No substantial ongoing waste management issues are envisaged from the proposed works in the post construction phase other than quarterly removal of gross pollutants from the proposed street drainage litter baskets to be located near the southern end of the new accessway. This material would be disposed of at an approved facility.

This DA only involves subdivision of the lots and no ongoing waste management issues are envisaged to arise from the empty lots, until housing is constructed, which is not part of this DA.

We trust this information is satisfactory. Should you have any further enquiries, please do not hesitate to contact either Michael Shaw or myself on (02)9957 1619.

Yours faithfully

PATTERSON BRITTON

Mark Tooker Principal Review / Verification by

Date

Wayne Treble

From: nathan_huon@pittwater.nsw.gov.au

Sent: Thursday, 2 November 2006 10:46 AM

To: wayne@thecgroup.com.au

Subject: DA N0152/02

Wayne,

As per our disucssion Council confirms that the deferred commencement condition on consent N0152/02 has ben satisfied and the consent is operative.

For your information Ross McWhirter has confirmed via a file note on Council's datatworks records system the following:

The letter to Barry L. Doyle dated 12 September 2005 provides evidence that the Deferred Commencement condition of Consent No. N0152/02 has been satisfied. The water management for the subdivision is to be in accordance with the Water Management Report prepared by Patterson Britton and Partners Pty Ltd. The report requires the stormwater from the site to be disposed through the stormwater drainage system constructed by Stockland. The necessary drainage infrastructure, easements and S88B Instruments are in place to cater for the 7 Orchard Street subdivision.

Ross McWhirter

PROJECT LEADER WARRIEWOOD INFRASTRUCTURE

Regards

Nathan Huon

Project Manager (Land Release Projects)

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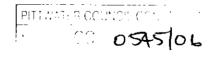
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Pittwater Council

www.pittwater.nsw.gov.au

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pittwaterlga.com.au e-mall: plttwater_council@pittwater.nsw.gov.au

Business Hours: 8.00am to 5.30pm, Monday to Friday

DA No: N0152/02

5 October 2006

MILEVA BUBALO 107 ORCHARD STREET WARRIEWOOD NSW 2102

Dear Sir/Madam

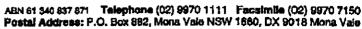
Extension of Development Consent for subdivision of one of into ten lots.

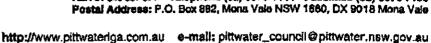
7 ORCHARD STREET, WARRIEWOOD NSW 2102,

Please be advised that an extension of the above Development Consent has been granted to 20/10/2007.

Yours faithfully

Anna Williams
PRINCIPAL DEVELOPMENT OFFICER







Ross McWhirter, Project Leader - Warriewood Infrastructure 8am to 5pm Mon - Fri Phone 9970 1207 Mobile 0419 629 007

12 September 2005

Barry L. Doyle 64 Cassia Street DEE WHY NSW 2099

Dear Sir.

Re: 7 Orchard Street, Warriewood

Reference is made to your letter dated 23 March 2005 and Council's letter dated 30 March 2005 concerning stormwater drainage for Sector 10.

Council advises that the completed stormwater drainage works in Stages 4 and 5 of Sector 10 to facilitate external drainage of the subdivision at 7 Orchard Street have been completed and are satisfactory. The subdivision certificates also provide the drainage easements and Section 88B Instrument requirements necessary for stormwater drainage of 7 Orchard Street. Accordingly, Council has released the Subdivision Certificates for Stages 4 and 5.

Yours faithfully

Ross McWhirter

R. Mc Whiter

PROJECT LEADER - WARRIEWOOD INFRASTRUCTURE

cc. Stockland Development Pty Ltd



Case Number: 76708

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SUMMARY OF REQUIREMENTS¶

V & D & M Bubalo c/- Byrne & Associates Pty Ltd

Dear Applicant

REVISED NOTICE OF REQUIREMENTS for SECTION 73 SUBDIVIDER/DEVELOPER COMPLIANCE CERTIFICATE (Sydney Water Act 1994, Part 6, Division 9)

This Notice of Requirements letter supersedes the Notice letter issued on 9 May 2005

Developer:

V & D & M Bubalo

Your reference:

20516

Development address:

7 Orchard Street Warriewood

Development description: Residential subdivision of one lot into ten (10) Torrens Title lots

Consent No:

N0152/02 by Pittwater Council of 31 March 2005.

Your application:

31 March 2005

Your attention is drawn to the requirements in this Notice that must be met before a Section 73 Subdivider/ Developer Compliance Certificate (the Certificate) can be issued. This Notice is given by Sydney Water on 26 May 2006 and the requirements are to apply for a year from that date after which the requirements will be updated on reapplication,

You must engage your current or another authorised Water Servicing Coordinator (the Coordinator) to manage the design and construction of the Water and Sewer works that you must provide, at your cost, to service your development. Upon your meeting of this and all other requirements, the Certificate will be issued to you by your Coordinator.

For a list of authorised Coordinators, either see www.sydneywater.com.au and refer to Developing Your Land under Building Developing and Plumbing, or call 13 20 92. Coordinators may provide you with a quote or advice regarding costs for their and other supplier's services/ works as well as other Sydney Water costs.

The Coordinator generally will be the single point of contact between you and Sydney Water and can answer any questions in the first instance you may have on Sydney Water's developer process and developer charges.

SUMMARY OF REQUIREMENTS TO OBTAIN A CERTIFICATE:

You must:

- 1. Engage a Coordinator prior to signing the enclosed Agreement.
- 2. Sign both copies of the enclosed Agreement and lodge with the Coordinator.
- 3. Consequent to signing the Agreement, build Water and Sewer works at your cost, pay associated charges and note advice on existing service availability.

4. Pay a total of \$75,981 in charges identified in Section 4.

Please Note:

- You need to obtain a Tax Invoice before you can pay this charge in person at a Sydney
 Water Customer Service Centre (located in the City, Wollongong and Katoomba). If you
 require an invoice, please contact your Coordinator.
- 5. Complete any special requirements detailed in Section 5.

DETAILED REQUIREMENTS

1. Water Servicing Coordinator

You must engage an authorised Coordinator to manage the design and construction of works that you must provide, at your cost, to service your development.

2. Major Works Agreement.

After you engage a Coordinator, you will need to sign and lodge both copies of the enclosed Major Works Agreement with your nominated Coordinator. The agreement identifies the responsibilities of Sydney Water, the Coordinator and you (the Developer) for your development's Water and Sewer construction. After execution by Sydney Water, one copy will be returned to your authorised Coordinator.

Note: The authorisation of the Coordinator must be current at all times throughout the project.

3. Water and Sewer works.

The water and sewer works you construct and pay for under the Agreement entered into must include extensions to Sydney Water's systems to ensure each lot in your development has:

- a frontage to a watermain to enable a separate connection and meter.
- a sewer main with a connection point within the boundary of each lot.

Sydney Water's specific requirements for your project are:

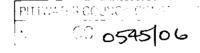
Water

An extension to the existing 100mm CICL diameter water main in Orchard Street is required to service lots 703 to 710. As the proposed water main is to be laid in a proposed Right of Carriageway, you will need to create an easement over the main in favour of Sydney Water. Details regarding the easement creation are set out in this letter in item 5 under Special Conditions.

Lot 701 and 702 have frontage to the existing 100mm CICL diameter water main in Orchard Street.

*Each lot will require a separate 20mm connection, 20mm water service and 20mm water meter.

Currently the existing property (with three flats/dwellings) is connected to the existing water main via a 25mm connection and served by a 40mm water meter. *This set-up will need to be adjusted to reflect the above arrangement for torrens title lots. Each of the existing dwellings will need to be reconnected to the existing/proposed water mains. A copy of your licensed plumbers signed Plumbing and Drainage Compliance Certificate will need to be submitted to Sydney Water when the work is satisfactory completed.



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Sewer

An extension to the existing 150mm PVCP sewers (constructed by the adjoining developer) to enable each lot of the subdivision to have a point of connection within their respective property boundaries. Each lot must have separate sewer house service lines wholly within their boundaries.

Please be aware that floor levels must be able to meet Sydney Water's soffit requirements for property connection and drainage.

Future Adjustments

If the watermain/ sewer main located in the footway/ your property is found, after the issue of this notice, to require adjustment or deviation this work must be undertaken in conjunction with the abovementioned extension. The conditions of this notice will apply including engagement of a Coordinator, signing of an agreement, and completion at no cost to Sydney Water prior to the issue of the Certificate (see also section on building plan stamping). After the design has been completed and its nature and complexity considered, Sydney Water may require your lodgement of an appropriate security that will be refunded upon completion.

Note: If construction must take place on neighbouring properties, written consent to enter for design/construction purposes must be obtained from the relevant property owners and tenants using Sydney Water's Permission to Enter form(s). Your Coordinator has copies of the form(s) that are also available on the Internet at the address as above and can negotiate on your behalf. All items on the form(s) must be addressed including payment of compensation and consideration of design and construction alternatives to avoid/minimise impacts. You will be responsible for all costs of mediation necessary to resolve disputes with affect property owners/tenants. Please allow sufficient time for entry issues to be concluded.

In providing these works to Sydney Water you will need to pay project management, survey, design and construction costs directly to your suppliers. These costs may include Sydney Water charges for:

- Watermain shutdown and disinfection
- Connection of new mains to Sydney Water system(s)
- Design and construction audit fees
- Contract administration on project finalisation
- Creation or modification of Sydney Water interests in land (eg. easements)
- Further application fees for staged developments
- Redress under Sydney Water's Customer Contract.

Your Coordinator can advise you about these costs and how they may be quoted.

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4. Developer charges.

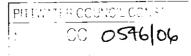
Development Servicing Plan (DSP)	Basis of Calculation	Charge (S) for Applicable period (26/05/06-30/06/06)	Charge (\$) for Applicable Period (01/07/06-25/05/07) STBA	
Warringah Water DSP Arca	Residential Development Density >0-20 dwellings per ha band 10 dwellings @ \$871 = \$8,710 Less Credit of \$2,613 for previous payment/ use plus Upsizing Development Density >0-20 dwellings per ha band 10 dwellings @ \$192 = \$1,920 Less Credit of \$576 for previous payment/ use	\$ 6,097 \$ 1,344		
Warriewood Sewer DSP Area	Residential Development Density >0-20 dwellings per ha band 10 dwellings @ \$6,765 = \$67,650 Less Credit of \$0 for previous payment/ use plus Upsizing Development Density >0-20 dwellings per ha band 10 dwellings @ \$89 = \$890 Less Credit of \$0 for previous payment/ use	\$67,650 \$ 890	STBA STBA	
Reticulation Recovery				
13623WW	37 metres of 150mm PVCP sewer. The adjoining developer laid two sewer 'lead-outs' to service your property.	\$16,027	STBA	
	CHARGES TOTAL: nvoice Charges total- Developer \$73,747 and	\$92,008	STBA	

Notes:

New IPART Determination:

- Sydney Water has commenced its five-yearly review of developer charges in accordance with IPART Determination No. 9 2000. Developer charges will be revised to take into account Sydney Water's latest capital expenditure projections as well as current development forecasts. The revised developer charges and associated DSPs will be placed on public exhibition for 30 working days in April/ May 2006. You will have the opportunity to comment on the new charges during this time. The new developer charges will then take effect from 1 July 2006.
- Some of the new charges may significantly decrease, others may increase and additional charges may be introduced. Consequently it may be to your advantage to consider when you will make payment. That is:
- ➤ If payment is made before 1 July 2006, then Sydney Water must apply the charges quoted in this Notice; or
- > If payment is made on or after 1 July 2006, then:
- If the new charges have decreased you will only have to pay the new lower charges that will be advised to you when you seek to make payment; or
- If the new charges have increased and/or additional charges introduced then Sydney Water will apply the old lower charges, plus any CPI increase, for the remainder of the applicable period of this Notice. After that time, Sydney Water is required to apply the new higher and/ or additional charges when you re-apply.

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Sydney Water is unable to advise possible new charges until the DSPs are exhibited in April/ May 2006, or to advise firm new charges until registration of the DSPs with IPART in June 2006. Contact your Coordinator for advice on charges during this period.

Annual CPI adjustment from 1 July:

If you do not pay the charges identified in column 3 of the above table by 30 June (and as advised above), the total will be adjusted for inflation (based on the weighted average of the capital cities.
 CPI for the 12 months to the end of the previous March) from 1 July for the balance of the 12 month period. The charge from 1 July is only shown in column 4 if the inflation figure is known.

Also

- DSP charges are a contribution towards the cost of systems (eg pipelines & treatment plants), which serve your development. They have been calculated using base developer charges that cannot be changed or waived by Sydney Water having been established in Plan(s), available on request, and registered with the Independent Pricing and Regulatory Tribunal (IPART) under its relevant Determination. For further details, and a copy of the IPART Act 1992 including section 31 that refers to arbitration rights, see the IPART web site www.IPART.nsw.gov.au. Costs of arbitration, if appropriate, are borne equally by you and Sydney Water irrespective of outcome.
- These charges are directly payable to Sydney Water.
- You must pay your DSP charge before you will be given permission to connect your development to Sydney Water's water/sewer systems.
- Reticulation Recovery Charges recover part of the cost of works that have been provided by
 Sydney Water or other developers that benefit your development. This charge has been calculated
 before your detailed designs are completed. If later design investigation shows your development
 will be connected to other main/s, the Reticulation Recovery charge may be varied and/or you may
 need to construct other works.

5. Special requirements

Creation of easement over water main

Each water main to be constructed for purpose of the *approval* in land other than a dedicated public road or pathway must have an appropriate easement in favour of Sydney Water created at your cost.

Your Design Consultant must take this requirement into account when preparing the design for the works.

A compliance certificate in respect of the approval will not be granted until:-

- (a) the water main(s) have been constructed; and
- (b) adequate drainage facilities have been provided to allow for the flushing of the main by Sydney Water without the discharge of water onto private property (Sydney Water's rights in this regard must be incorporated in the Easement documentation); and
- (c) a survey has been carried out, at your cost, prior to backfilling of trenches, to define the centreline of each water main; and
- (d) all plans and documents relating to the easement have been approved by Sydney Water; and
- (e) payment of Sydney Water's related costs have been made; and
- (f) the required security has been lodged with Sydney Water in respect of each easement pending its registration.

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Specific details with respect to each easement to be created may be obtained from Sydney Water's Group Property, 5th Floor, 115-123 Bathurst Street, Sydney, 2000. Ph: (02) 9350-5670 or (02) 9350-5647.

Provide a copy of the Plumbing and Drainage Compliance Certificate

It will be necessary to provide a signed copy of the above Certificate to Sydney Water following the capping of the existing 25mm drilling, disconnection of the 40mm water meter and the reconnection of the existing dwellings to the existing/ proposed water mains. This work will need to be carried out by a licensed plumber.

GENERAL INFORMATION

Stamping and approval of your engineering and building plans.

While NOT a requirement for the Certificate, you are reminded that, on development of each lot, building plans must be stamped and approved at either:

- a Quick Check agency (for an agency list either see www.sydneywater.com.au, refer to Quick Check under Building Developing and Plumbing or call 13 20 92); or
- a Sydney Water Customer Service Centre.

Approval is required as construction/building works (eg earthworks, roadworks, drainage, landscaping, excavation, foundation works) may impact on existing Sydney Water assets (eg water, sewer and stormwater mains). Approval of the plans may take up to 21 days and the results may affect the construction/building activities.

Approval is required as construction/building works (eg earthworks, roadworks, drainage, landscaping, excavation, foundation works) may impact on existing Sydney Water assets (eg water and sewer mains). Approval of the plans may take up to 21 days and the results may affect these activities.

POSSIBLE FUTURE COSTS

Requirements in this Notice relate to your Certificate application and may not cover all aspects of Sydney Water's involvement with your development. During design and construction of your development other Sydney Water fees/requirements may be necessary, including:

- construction/building plan stamping fees including fees to ensure the protection of Sydney Water assets
- plumbing and drainage inspection costs for private service lines (including property service connection and/ or disconnection and inspection fees)
- council fire fighting requirements (if not catered for by your current Sydney Water main). You
 should investigate fire fighting facility requirements for your development as soon as possible,
 including a standard pressure inquiry to Sydney Water if needed.

END OF NOTICE

CO OSALION

10 JAN 2007

level 2 104 Mount Street North Sydney 2060 PO Box 515 North Sydney 2059 Australia telephone: (02) 9957 1619 facsimile: (02) 9957 1291 reception@patbrit.com.au ABN 89 003 220 228

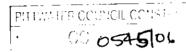
Patterson Britton & Partners Pty Ltd

Newcastle Office 8 Telford Street Newcastle East 2300 PO Box 668 Newcastle 2300 Australia tetephone: (02) 4928 7777 facsimile: (02) 4926 2111 mail@newcastle.patbrit.com.au

consulting engineers

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WD & M Bubalo 7 Orchard Street Warriewood NSW 2102



Friday, 21 July 2006

Attention: Mr W Bubalo

Dear Sir

10 JAN 2007

DA N0457/05 & N0152/02 ORCHARD ST, WARRIWOOD – CONSTRUCTION PHASE TRAFFIC MANAGEMENT PLAN

As requested following is the proposed construction phase traffic management plan for both the lot and accessway/Orchard Rd works proposed at the above site.

1. Description of Works

It is proposed that the existing property at 7 Orchard Rd, Warriewood Valley be subdivided into 10 individual lots and all associated infrastructure required to service the lots be constructed. In summary, this would entail the following works:

- Half width road construction along the private access road frontage of the lots as per PBP design Drawings contained in Appendix A;
- Half width reconstruction of the Orchard Road frontage as per PBP design Drawings contained in Appendix A;
- Provision of all utility infrastructure (ie gas, telecommunications, water, sewer and power) to serve the proposed new lots and to maintain connection to existing lots;
- Provision of all required stormwater management systems as per PBP report titled "Warriewood Valley 7&7A Orchard St (Part of Sector 10) - Water Management Report Construction Certificate Stage" (Issue 1 September 2005) and associated PBP design Drawings contained within Appendix B; and
- Bulk earthworks within the new lots.

2. Proposed Earthworks

Bulk earthworks will be undertaken simultaneously within both the lots and proposed roadways (ie on the lots and within Orchard Rd and the private accessway).

In summary, the proposed roadworks will result in a net surplus of cut material which will have to be transported from the site to be disposed at an appropriate landfill facility (ie Kimbriki).

Principals

Greg Britton BE MEngSc FIEAust Andrew Chitty BE MIEAust CPEng Peter Coltman BE MEngSc MIEAust Bruce Druery BE Dip Sc(Geol) M AppSc MIEAust Paul Harvey-Walker BE FIEAust David McConnell BSc MIEAust Joe Marson BE MEngSc FIEAust Andrew Patterson BE FIEAust Christopher Thomas BE MEngSc MIEAust Mark Tooker BSc(Eng) MEngSc FIEAust CPEng Michael Wright BE MEngSc MIEAust

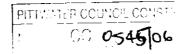
Senior Associates

Steve Barrett Simon Batt BE MIEAust Paul Macinante BE MEnvEngSc MIEAust Ben Patterson BE MIEAust Marc Roberts BE Michael Shaw BE MIEAust CPEng

Associates

Stephen Aebi BE MIEAust Neville Boyes OMIEAust Scot Cranfield Cameron Druery BE MIEAust Tod Hall BA (Bio) MEM (Coastal) Grad Dip (Bus-HR) Adam Knight BE MIEAust CPEng Cameron Smith BE MEngSc MIEAust CPEng Alexandra Stone BE MIEAust Chris Yates BE MIEAust





Patterson Britton & Partners Pty Ltd

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Special fill material will also have to be brought into the site for construction of the road (*ie from Kimbriki*). However, within the proposed lot areas, cut and fill works will generally be undertaken without the need to import or export material from the site. Some of the suitable spoil generated by the proposed roadworks will also be used to fill areas within the lots themselves.

A summary of the proposed bulk earthworks for the site is as follows:

- Lots minor regrading (generally balanced cut and fill), use of cut material from road works as fill for batters on western edge of lots and minor filling on southern lots;
- Road cut works approximately 1000m³, of which 700m³ is assumed to be clean and would be stockpiled for reuse on the lots as mentioned above. The remaining 300m³ would need to be removed from the site and disposed of at Kimbriki;
- Road fill works approximately 600m³ of material is required for the batters on the east side of the road, 100m³ would be used to fill the southern lots and 400m³ of special fill (ie base-course and sub-base material) is required to be imported to construct the roads themselves:
- Hence, an estimated 300m³ is proposed to be trucked out from the site and 400m³ is proposed to be trucked in.

3. Estimated Truck Movements and Proposed Route

The proposed destination for all waste disposal and supply of all new road construction materials is the Kimbriki Recycling and Waste Disposal Facility on Mona Vale Rd at Tumbledown Dick.

Assuming 20t trucks are used for the works, it is estimated that 20 truck movements per day over 3 days (ie during Council stipulated working hours only of 7am to 5pm Monday – Friday and 7am to 1pm on Saturdays. No works to be undertaken on Sunday or Public Holidays) would be required during the material disposal phase of the works and 20 truck movements per day for 4 days for the road fill import phase of the works. If road fill material is able to be stockpiled on the site during the excavation phase for the roadworks, then the number of truck movements could potentially be reduced by half with trucks dropping off waste and picking up base-course/sub-base material in the same trip.

Hence, the estimated worst case truck movements is predicted to be 20 trucks per day over 7 days, however it is suspected that the actual movements will be considerably less.

Figure 1 shows the proposed truck route to and from the site to Kimbriki. This route has been selected as Council have advised that no truck movements are permitted along Garden St south of Mullet Creek and on Mona Vale Road between Tumbledown Dick and Mona Vale.

4. Maintaining Access to all Existing Lots in Orchard Road During The Works

So as to provide continued access to all existing properties during the works, a construction phase traffic management plan has been developed as shown in **Drawing 4670-13** at **Appendix A**.

In summary the road works would be undertaken in two phases. The first phase would entail construction of parts of the accessway to the east of the existing bitumen pavement and the southern half of the orchard Road frontage. This would allow continued access to all existing



properties via the existing bitumen road. Following completion of the phase 1 works, all traffic would then be transferred to the new road constructed in Phase 1 whilst the areas to the west of the phase 1 works are completed.

Temporary traffic management signage, barricades and fencing would be used during both phases of the works as shown in **Drawing 4670-13** at **Appendix A** so as to maintain safety during the works.

5, Sediment, Erosion and Dust Control

A sediment and erosion control strategy for the proposed road works is shown on **Drawing 4670-12** at **Appendix A**.

A sediment and erosion control strategy for the proposed lot works is shown on **Drawing** 4670-01-06 at **Appendix B**.

Manual watering down of exposed earthworks areas would be undertaken for the purposes of dust control. In addition, all loads transported from the site would be covered and all fencing used around the perimeter of the works would incorporate a geotextile cover to assist in capture of dust.

We trust this information is satisfactory. Should you have any further enquiries, please do not hesitate to contact either Michael Shaw or myself on (02) 9957 1619.

Yours faithfully

PATTERSON BRITTON

Mark Tooker Principal Review / Verification by

cation by Date

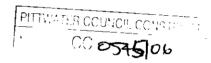
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Patterson Britton & Partners Pty Ltd

FIGURES

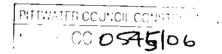


10 JAN 2007

m erson Street 1 0 JAN 2005 This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate. Mumber CC 0915 06 FIGURE 1 PITTWATER COUNCIL CONSTRUCTION CERTIFICATE



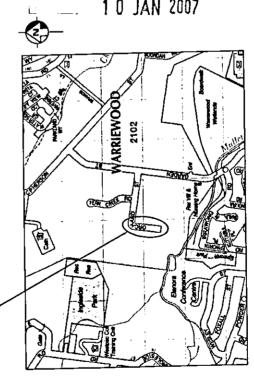
APPENDIX A



10 JAN 2007

ORCHARD STREET ACCESS ROAD, CIVIL ROAD DESIGN WARRIEWOOD

V, D AND M BUBALO for



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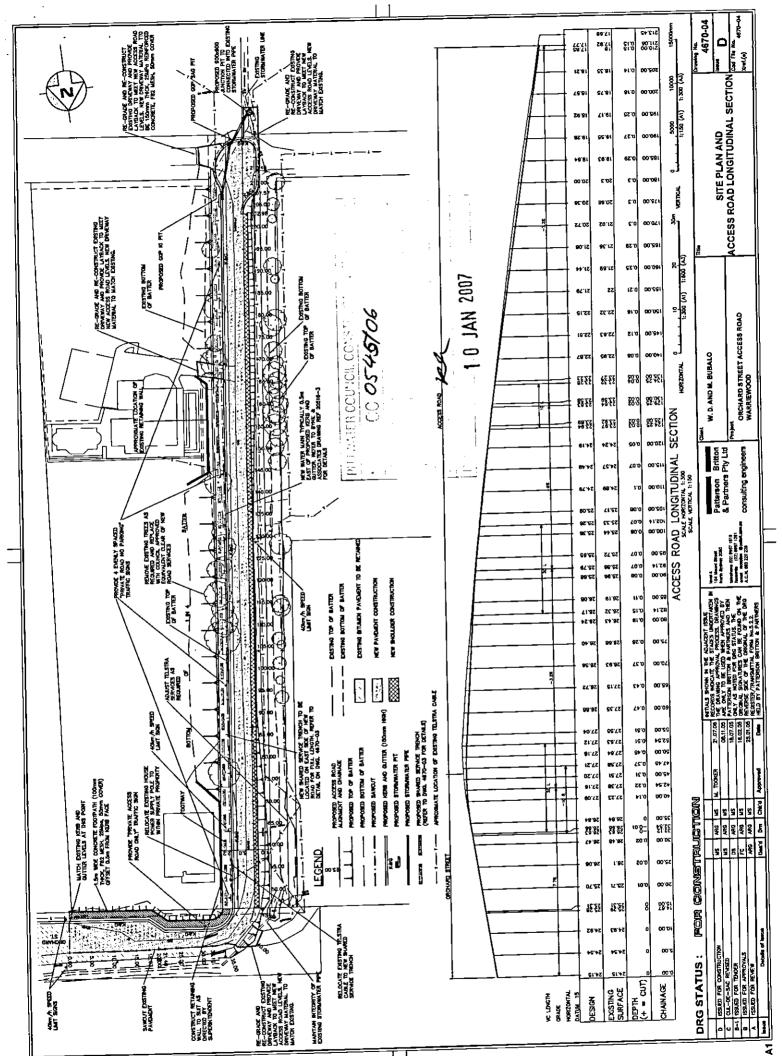
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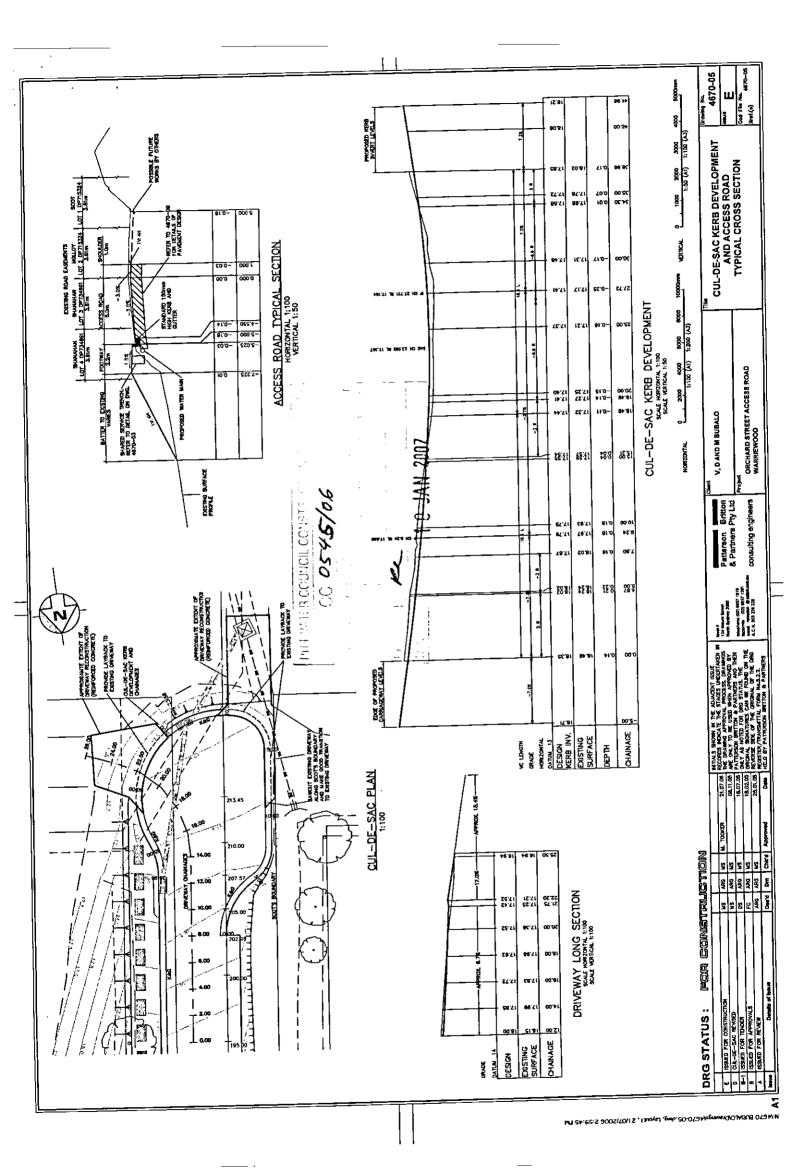
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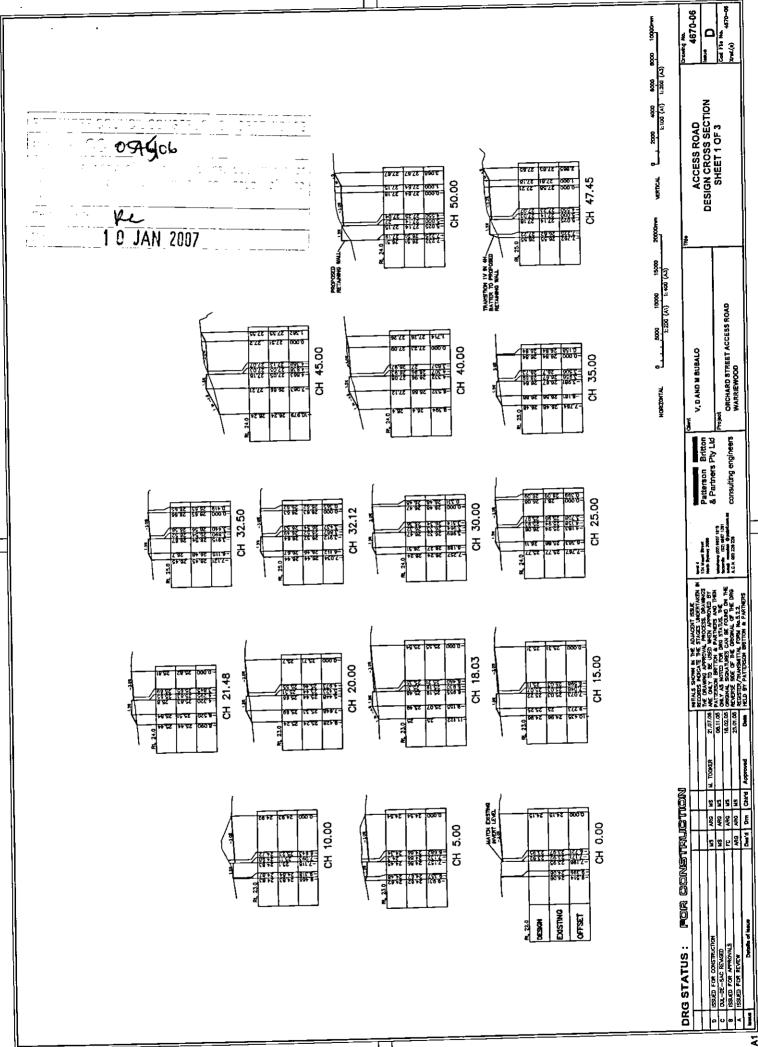
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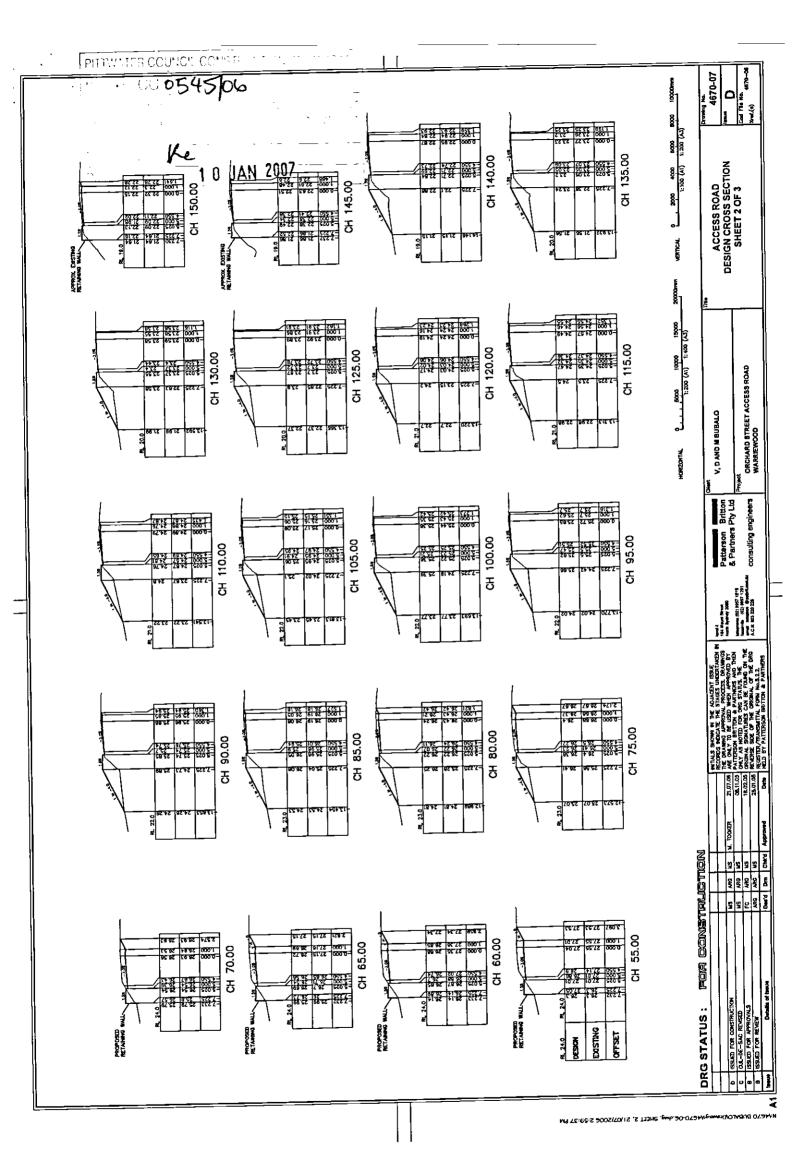
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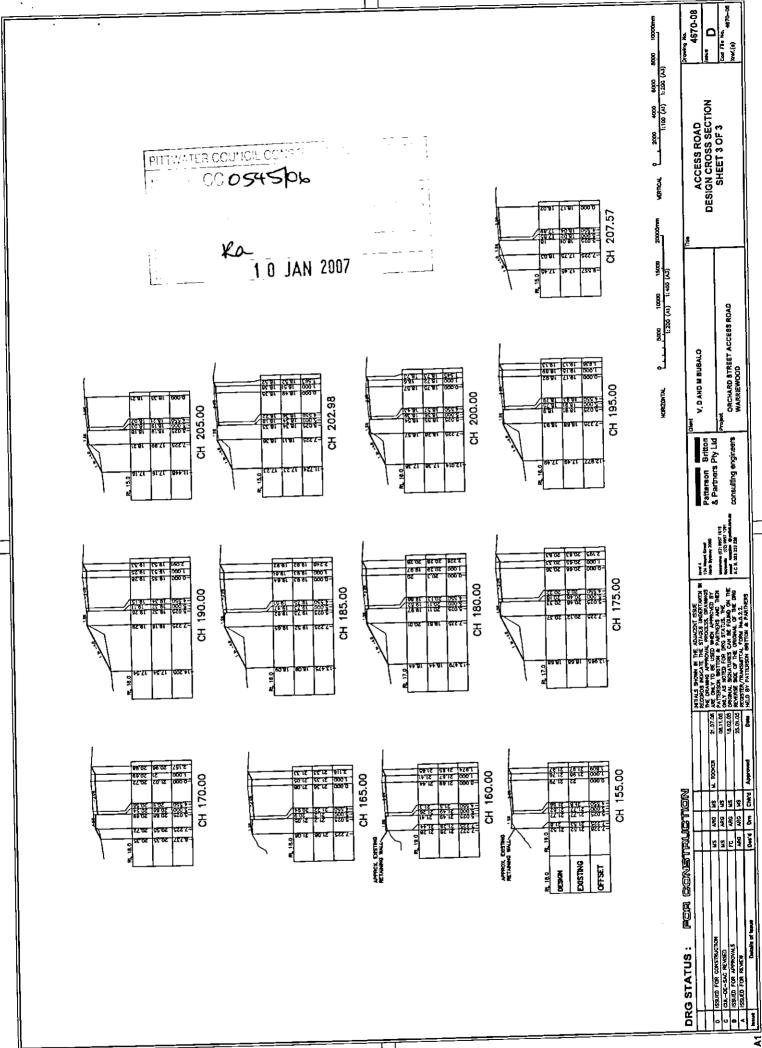
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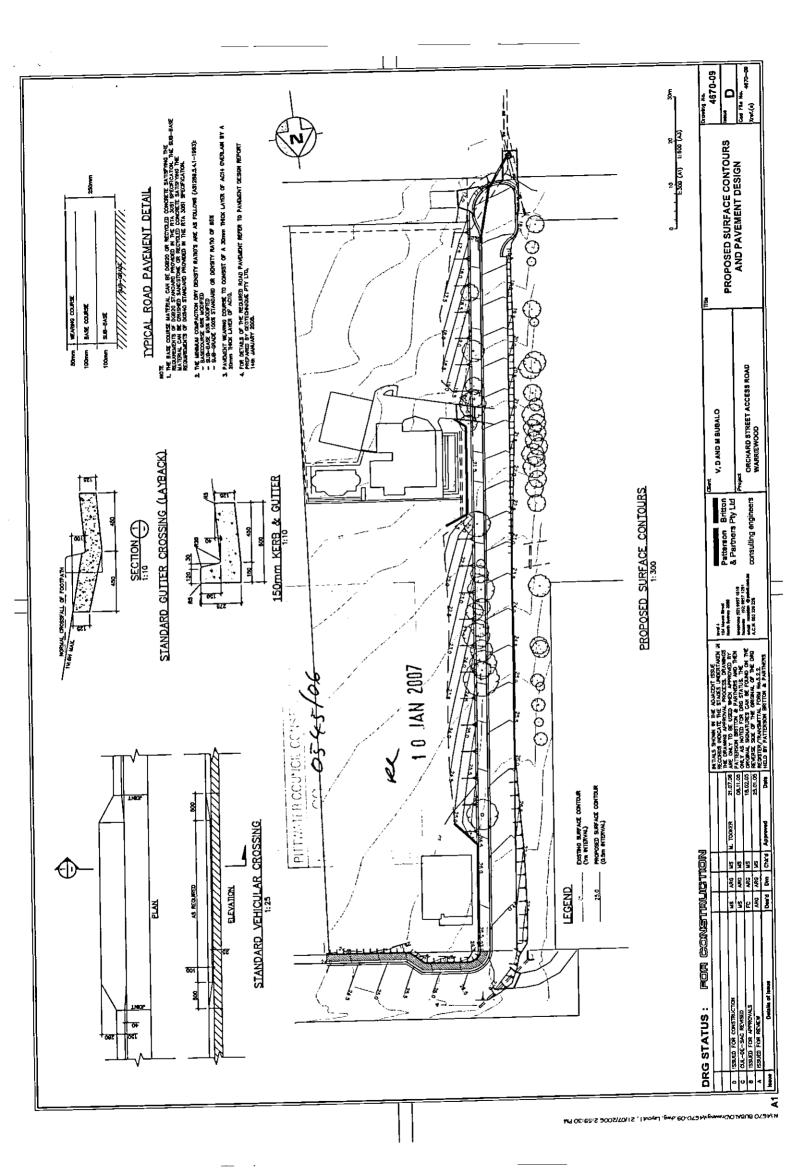


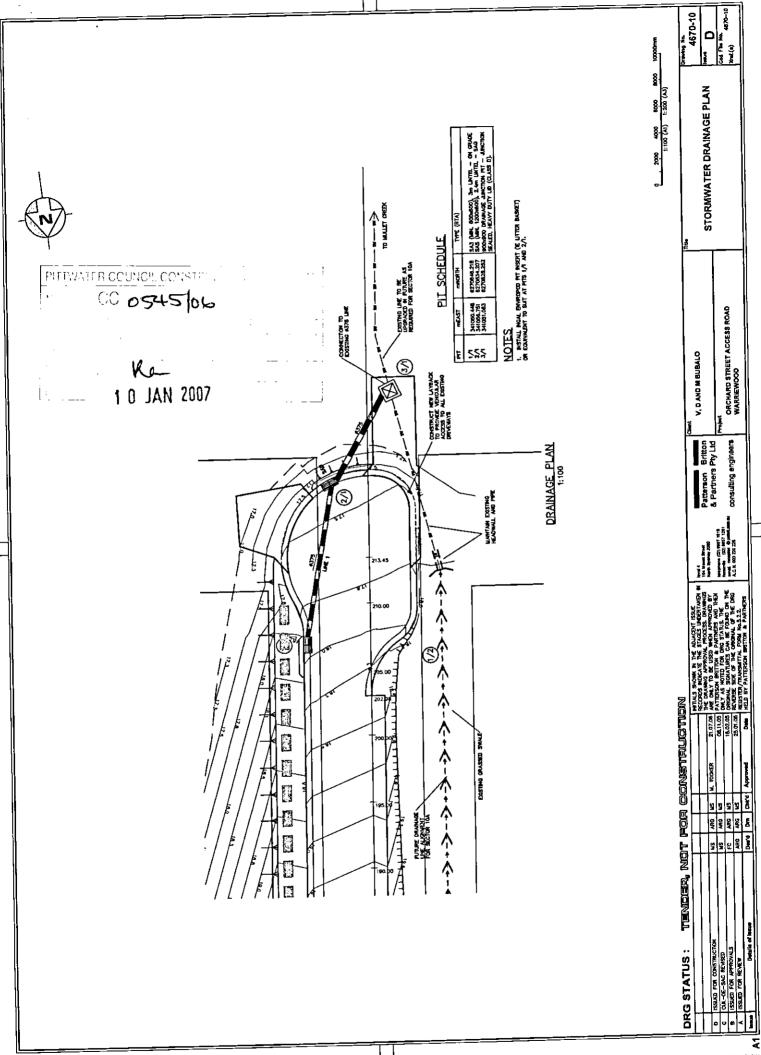


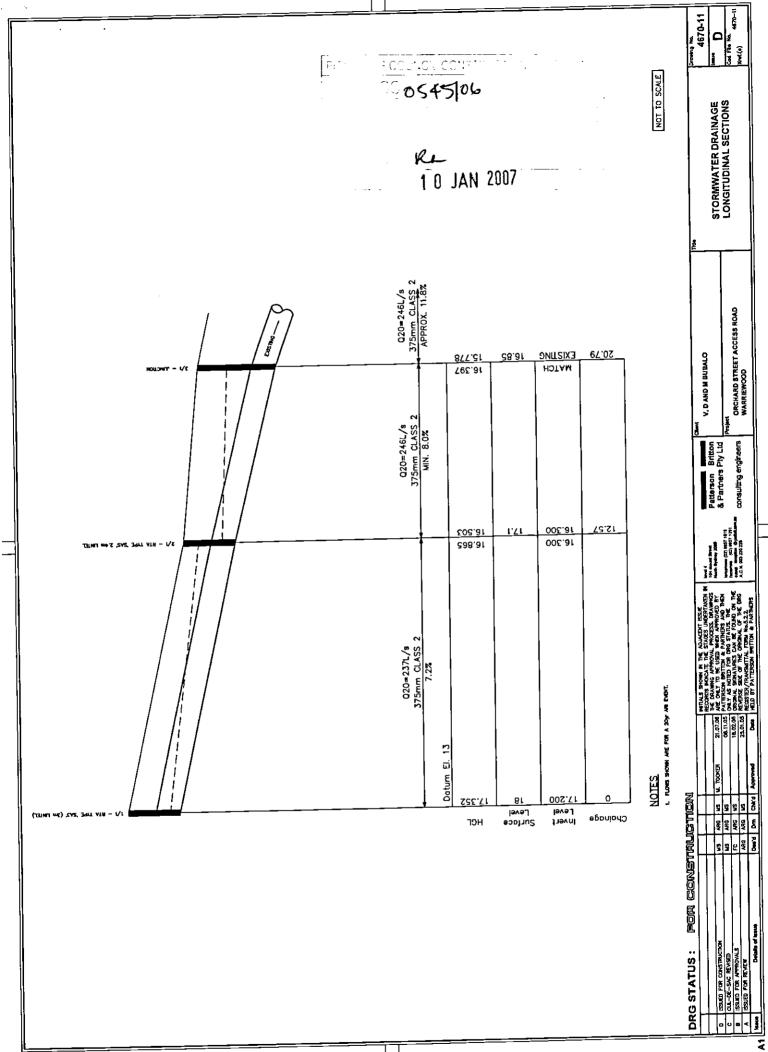


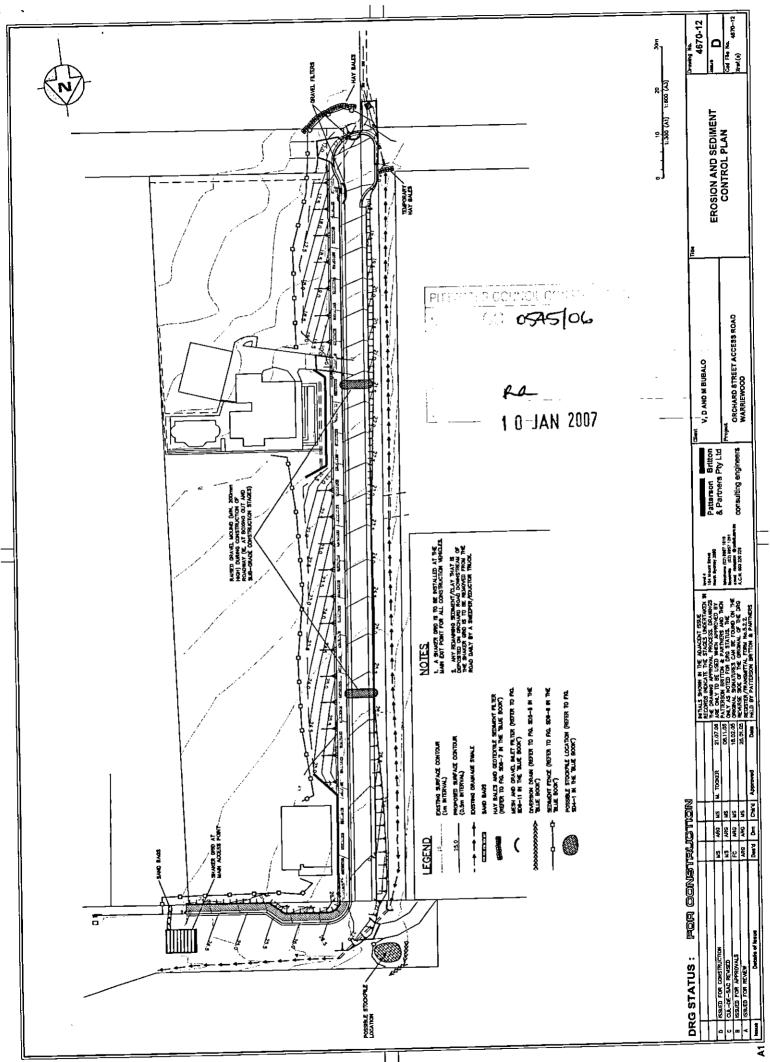


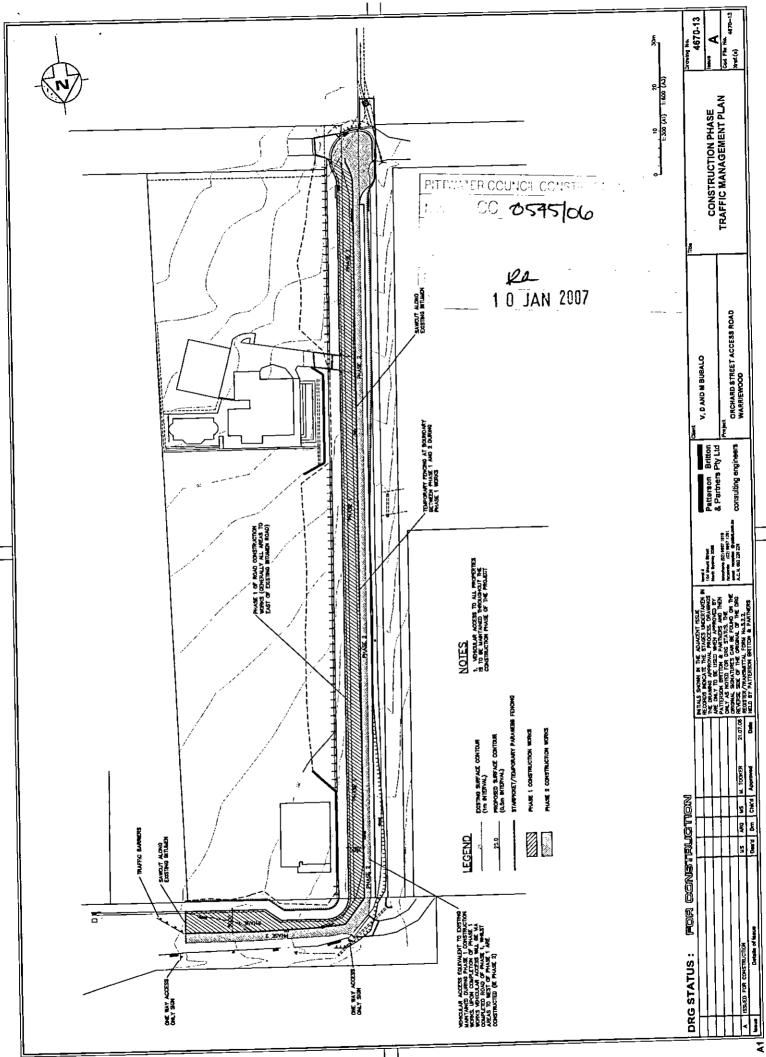


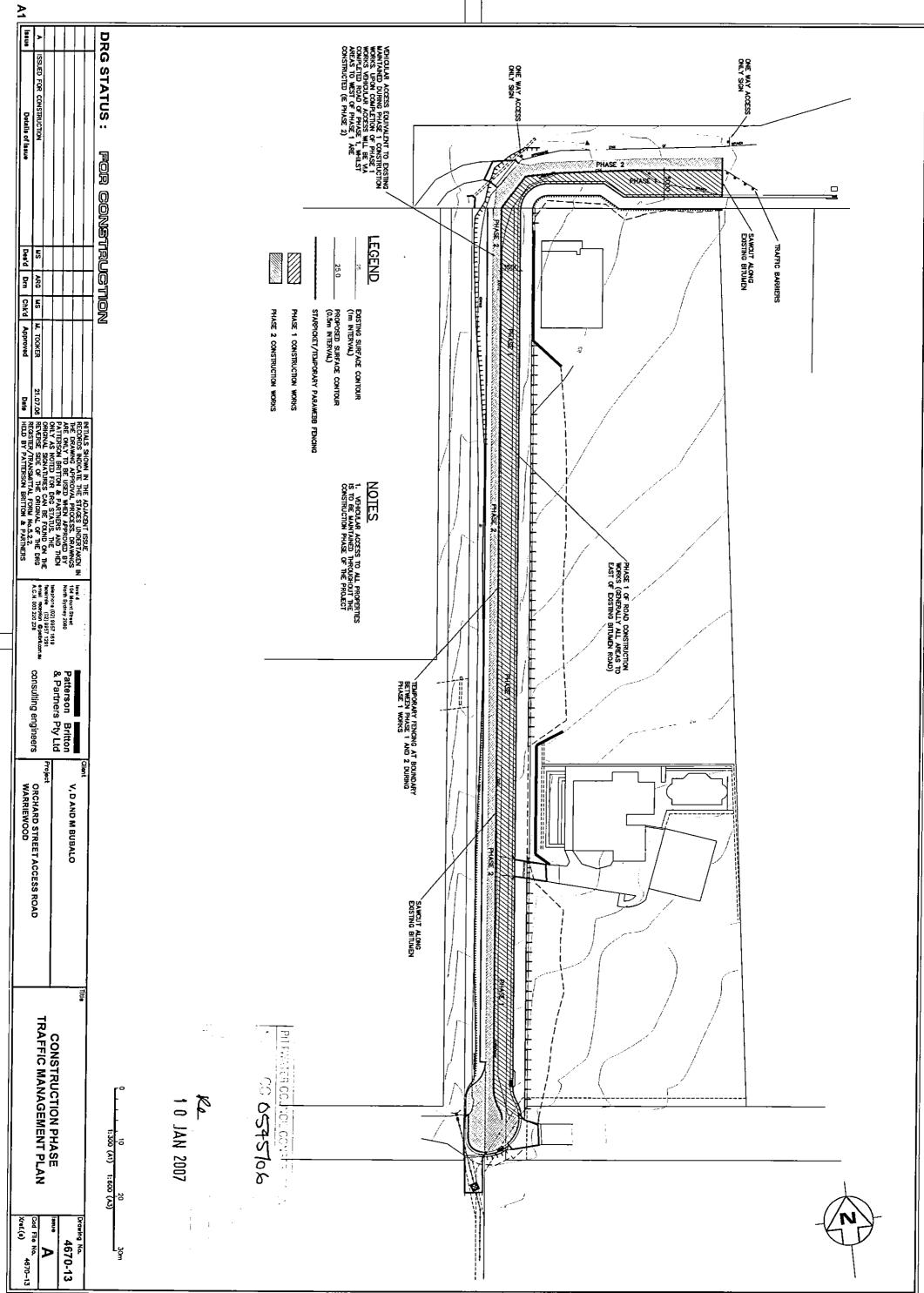












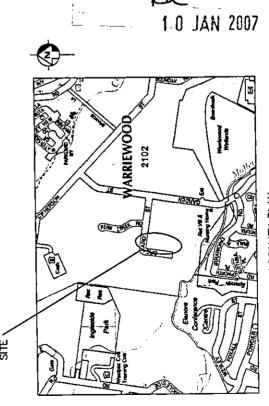
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APPENDIX B

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RAWING LIST:

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LOCALITY PLAN

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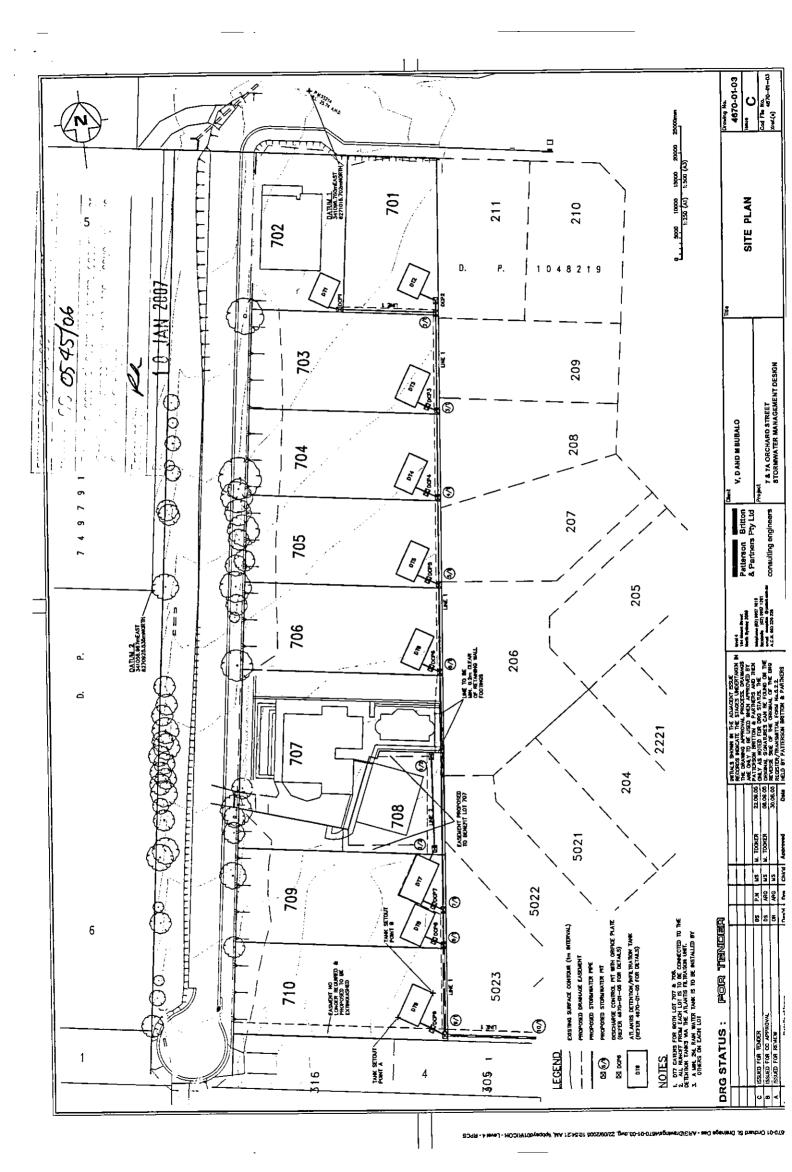
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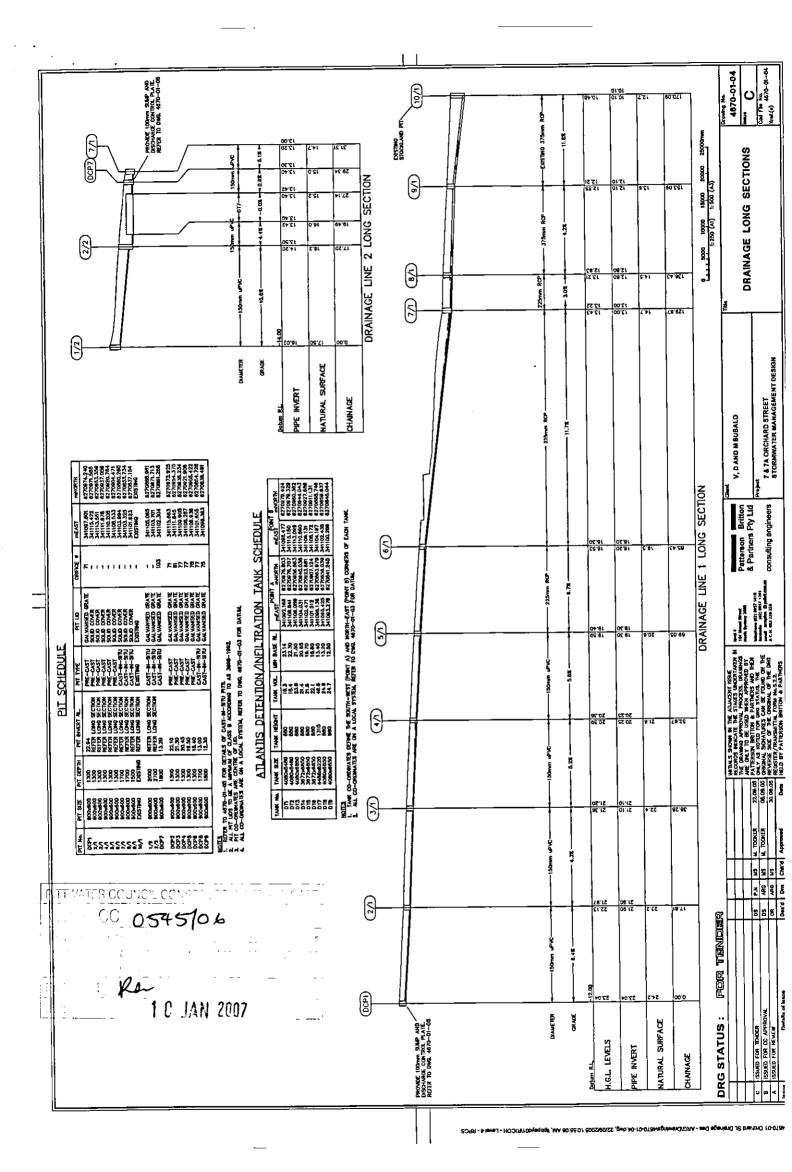
2. THE DESIGN CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF THE FORMINDER AND PASSIONS IS THE RESPONSIBILITY OF THE CONTRACTOR. 4. DURING CONSTRUCTION, SUPPORT PROPEND WILL BE RECURED. RECEIVED FROM STANDARD AND AUTHORITY AUTHORITY AUTHORITY . ALL PANDLEIT RECONSTRUCTION TO BE IN ACCORDANCE WITH COLMICLES STANDARD PEDIFICATIONS AS DIRECTED BY THE SLIPERMEDICIPIT. 3, design and construction and strepping that's shall comply with as 3610 and as 3600 unless otherwise moted on approved by the superwitencyt. A, THE PONYMON BLALL NOT BE DESIGNED TO RELY ON RESTRANT OR SUPPORT FROM THE PERMANENT STRUCTURE WITHOUT THE PROFA APPROVAL OF THE SUPERNITINGORIT. UNITSS OTHERWAY SPECIFIED, ALL SUMFACES ARE TO BE REDISTANTO TO THE STAFFACE CONDITION (A.E. ROAD PAYEARM, NOTION AND CUTTER, CRASSED VERGE (TODPATH). , UNLESS NOTED OTHERWISE ALL CONCRETE FORWINDER SHALL BE FOR A CLASS " R. FARRIC SYALL DE LAPPED 2 TRANSVERSE WIRES PLUS 50 mm. BUNDLED BANS SYALL DE TRUD TOORTHER AT 30 BAN DALMETER CONTRES WITH 3 WARRS OF THE WINEL. I, UMEESS OTHERWISE SPECIFIED ALL EXCANATIONS ARE TO BE RENISTATED TO THE DESIRAL GROUND SAFFACE LEVEL. I, IF FENCES ARE DAMAGED OR REJONED DURBNE CONSTRUCTION THEY ARE TO BE RESERVED AT THE COMPLACTORS EXPENSE. R. SOUCES IN REPRUNCIBENT SHALL RE MADE ONLY IN POSITIONS SHOWN ON OPERANCE, AMPROADD IN WARRY OF THE SUPPORTICIONET. LLA'S SHALL RE IN ACCORDANCE WITH 35 SHOW NO NET LESS THAN THE DEPORTICIANTED THAT IS NOT SHALL BE IN CONTINUED TO SHALL BE AND NET LESS TO SHALL BE AND SHALL BE AS FALLOWED. M. WE'DE TRANSMERSE TE BARS ARE NOT SHOWN PROVICE NIZ-400 SPLICED SPEEKE NECESSARY AND LAP WITH BARS 400 MM LIALO. , JOGGES TO BARS SHALL BE 1 BAR DAMETER OVER A LENGTH OF 12 BAR YAMETERS. DIAL HOO IQ. THE FULLOWING HOTATIONS MAY HAVE BEEN USED ON THE DRAWINGS. 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CONDETE LISTO BY THE WORSS SHALL BE ETHER MASS CONDETE OF REPORTED STORES AND SHALL COMPLY BY THE FOLLOWING TOWNSTRATE TO THE FORMANISM TO SHALL COMPLY BY THE FOLLOWING 3. The cortracting bilal detain carbot service locations from all relevant authorities page to the commenciabit of works. 4. WERE DICAMINOW WORK IS RECURED IN THE MONITY OF EXISTING SPINGS, THE CONTRACTOR SHALL LICKITE AND SUPPORT ALL STRACES GURBS THE WORKS, MASS CONCRETE ALL WASTE MATERIALS SHALL BE DISPOSED OFF-SITE IN AN APPROPRATE MANAGER. 1. EXCAVATION IN ROCK SHALL BE LINEARSED, WE'RE THE DESIGN WOULD RECURRED TOTTHESKE SHALL BE BEFORMED THE SUPERINDADENT SHALL BE BEFORMED FROM TO PROCEEDERS, CANADA SHADE STATEMED THE SUPERINDADENT SHALL BE BEFORMED FROM TO MOOD FLOAT I, THE SUPERITIONAL BEALD BE GIVEN 24 HOURS NOTICE FOR REWEREIGHT WINNEYSCHOOL AND CONCRETE SHALL NOT BE DELIVERED UNTER PILIA. APPROVIAL OF BELIVERED. 2. ALL EXCAVATION WORKS ADJACENT TO EXISTING STRUCTURES OR IN UNSTABLE. EXISTING THE SHORMS. BAR GRADE AND TYPE NOMINAL BAR DIAMETER IN MIN MANNAMA SPACING IN MINI V, D AND M BUBALO NUMBER OF BANS IN DROLF SENEDROSD, CONCRETE BREATH STATE OF STATE consulting engineers & Partners Pty Ltd z 8 2. REINFORCEMENTS SYMBOLS: 5 - 5 KI REINFORCEMENT ╁ Integrations (E2) 8957 1518 November (ICS) 8957 1281 o mail program Optifications A.C.A. 463 279 228 March Speed 164 March Speed North Speeds 2008 I, ATLANTS MATRIX TANK WOOLLS TO BE ETHER YOUBE MOOLE" (PART MA. YOOCK) OR "TRIFIE MOOLE" (PART MA. YOOCK) WITH A MINIMAL ORUSH STRENGTH OF TARRAPM". NORMAL ATLANTS CEL BACKSTA CONCR IN WON-TRAFFICALE ANEAS IS TO RE-3, MON-WONEN GEOTENTE TO BE PLAZED ARGUND ENTRE FERNETER OF FRASHED BLOCK OF ATLANTS CELLS. 2. PLITATION UNIT TO BE 'ATLANTS LANCE PLITATION UNIT (PART No. BOOZA) WITH ALIBERTAL LIO AND GEOTEXINE BASICT. AT PERETRATIONS THROUGH THE CUITER GEOTEXTILE LAYER, ADMITIONAL FORESTILE TO BE PLACED WITH IMMENTA PETRAL OF 300MM BETHEZH ATLANTES COLL & DONERT OF INCOMMO/OVIDORING PPER. | WITLAS SHOWN IN The ADACTOST TOSAS | WITLAS SHOWN IN The ADACTOST TOSAS | WITLAS SHOWN IN The ADACTOST TOSAS | WITLAS SHOWN IN The ADACTOST SHOWN IN THE 21. UNLESS SPECPED ALL DRAMAGE GRATES TO BE GALVANDED MAD STED. TO AS 3008 AND GLASS B. 24. JOHN 1962 SHALL CONTONN IN ALL RESPECTS WITH THE RECORDERSTS OF AGENCY. RECORDERS OF AGENCY. THE CLASS OF PRESS SHALL BE UPPER SHALL BE UPPER SHALL SHOWN WHEN SHOWED OTHER WAY. 18. LM ESS SPECKED OTHERWEZ ALL DEAMAGE FITS TO BE CAST PARTI. THE CAPACIF OF COUNTY OF A LIMBOUR TO AN COMPRESSIVE STERRORM OF YOLK A LIMBOUR TO AN COMPRESSIVE STERRORM OF YOLK AT A STEAL REPORTERED WAS SALL COMPLY WITH THE RECURREDATES OF AST NOT. WELLOOD WAS REAFFORCEME SHALL COMPLY WITH A SALL NAME. 17. ALL BACKEL, FOR STORMANTS DRAWACE WORKS IS TO BE COMPACTED BY LATERS WHO EXCENDED SOOMS LOCKED TO SOOM TO SOUTH TO BE THOUGHT ON DISPLACED WITHOUT DAMAGES AND COMPACTED WITHOUT DAMAGES ON DISPLACED BY FRENCH. 14, COMPLETED CEASIVE MORTAR, JOHN'S SHALL BE KENT DAMP AND PROTECTED FROM THE DRIECT RAYS OF SAM UNTL. BACKSTEARD TAKES PLACE. 28. THE JUNC PIPE BIOS SHALL BE THOROUGHLY CLEANED SETONE THE LOW! TO SHALL BE IM ACCORDING. WITH THE JUNCKFICHNERS DISCUSSIONE THAT THE JUNCKFICHNERS DISCUSSIONS THAT THE JUNCKFICHNERS. 11. JOHN SOLL NOT BE MADE INCOMINED THE TREATH SHALL BE DEWINDED TO FACULTATE CONTINUES AND RESISTING PRECAUTIONS SHALL BE TAKEN TO PRECAUTION SHALL BY MONNO CLREBATE OF WHITE. 13. DIVANAZE LNES SIALL BE CONSTRUCTED TO THE TOLERANCES AS FOLLOWS 25. WHO PPES SHALL BE SUPPLED WITH SUPPLEDIT CLAMPIES OF SCLYDIT FOR MACHO OF THE PPE JOHIES. NOT WINSTANDING THE TOLERANCES ABONE EACH PIPE SHALL HAVE A MEMBANA FALL (APPROVED BY THE SUPERINTENDENT) IN THE DIRECTION OF FLOW. II. BACKFIL FOR STORAWITER FITS AND PPETS SHALL BE COMPACTED TO AT LEAST SOR, OF THE MAXMAM LINY DENSITY AND GRADED IN ACCORDANCE WITH AS 3600 (2003). 28. LOVE PIPE DUS SHALL RE THOUROUGHY DEANED RESORE THE USHT IS SHOCK-LOWING SHALL BE IN ACCORDANG WITH THE LANKFACTURESS SPECIFICATIONS USHAL CHITHO SILVENT AND PIPLET. 13. "OPED POPE LAYANG SHALL BECOM AT THE DOWNSTREAM DISC OF THE LINE WITH THE STORTED DO OF THE POPE LAND LUSTREAM, WHEN THE PRESTAND LAND THE BARRIEL OF EACH POPE SHALL BE IN CONTACT WITH THE BECOMEN MATERIAL PRECLOSIONT THE TIME LEWOTH. I, ALL ATLANTS PRODUCTS ARE TO BE INSTALLED IN ACCORDANCE WITH THE JAMEN ACTURERS SPECIFICATIONS. 20. GALVANEED STEEL STEP HOUSE AT SPACKEDS OF G.Ym ANE REGURED M ALL DRAMAGE PITS OPEATER THAN 1.2m DED? 13. AL PRE-CLOT MTS TO BE BUY PRE-CLOT (OR APPROVED EXEMVLENT) WITH LEMBLAN BLOT HEARING (E. DROER CODE PTO-1150) AND THE MEMBER OF RESIDENT COLUMN TO MAKE UP THE SPECIFIED HT DEPTH. IR. BACGEL MARTRAL SHALL BE INSPECTED AND APPROVED BY THE SLAFFONTENCY PROBE TO PLACEND AND COMPACTION. 27. WPAC PRES SHALL BE TRANSPORTED, HANCLED AND STACKED IN ACCORDANCE WITH MANIFACTUREST'S RECOMMENDATIONS. ATLANTIS DETENTION TANKS OS AND MS IL TOCKER OS AND MS IL TOCKER OR AND MS Dec'd Approved 9. PRY LAYING SAILL RECOMMENTED TO THE LINE WITH THE SAINCE TO BE OF THE PRY FACIOUS PIECES. THE BARRED OF BOOK PIECES SAILL BE HE CONTACT WITH THE BEDOMO MATERIAL PRECURACION TO THE CONTACT WITH THE BEDOMO MATERIAL. 4. IN WET OR UNSTABLE DROAD CONDITIONS WERRE. THE TROOD IS AND WORKEN STABLEMENTS STABLEMENT, ADMINISTAL EXTONIOR OF STABLEMENTS STABLEMENT, ADMINISTAL EXTONIOR OF STABLEMENT AND MEMORY. SET AND ONE STABLEMENT OF THE STABLEMENT STA 13. THE CONTRACTOR SHALL TANK ALL PREDLITIONS TO PROTECT DISSING STRICES, ANY SERVICE, AUTHORITES PROFESTIT OMAJAGED DURING THE CONTRACT SHALL BE, RETARED AT THE CONTRACTORS LEVERSE. 4. WALES WOTO DYNAMINES ALL STREETS PROSESSED FOR SAN TO DECENTION OF SAN THE 3. DESCH BASED ON SURKEY WITCHAUTON SUPPLIED BY BYONE & ASSOCIATES FOR LINE HE BANKEY MAN ON PROCUE OF ALL EDISTING FEATURES AND EDISTING BY SUBJECT ON THAT OF A SHALL WORKED THE CANTIFACTOR FROCESSIANO. 1. ALT PREVIOUS SHALL BE REDDED ON A CONTRIBUTION LANGUAGE AND COM-LINCA HE PROCESS ATTER CONSTRUCTION OF SHARP FOCK, AND ZONA-THOSE HE PROCESS ATTER CONSTRUCTION OF SHARP FOCK AND DAY ACCORDANCE WHI ASSOCIATION OF THE GRAND OF THE SECURING GANDERI OF THE FPELLING. A. CHASTS SHALL BE TORNED WHERE MEDISTAMY TO PHENDAY SOCKETS, FLANCES OR THE LING, FROM BEANNING ON THE TIEDHOM BOTTOM OR THE UNDERLY. 1. HESE DRAWING SHALL DE REJO IN CONLINCTION WITH ALL OTHER DRAWINGS AND SECULEATION AND WITH SIGH OTHER WITH CONTRACT. ANY DESIDENCING AS MAY BE RESED UNION THE CONTRACT ANY DESIDENCING AS MAY BE RESED UNION THE SAFERWIDE BOTH BEFORE PROCESSING WITH ME WORK. THE CONTRACTOR SHALL PROMIC REST CENTRICATES PROM A NATLA APPROADD RESTING LABORATORY CENTRANG THAT THE MATERIALS USED COMPLY WITH THE RELEVANT SPECIFICATIONS. A. IF THE CONTRACTOR HAS ANY QUESTION, REQUIRES CLANFFOATION OF ANY ISSUE, OR THUS ANY CISCAFDANCY WITHIN THESE DIAMININGS, THE CONTRACTOR SHALL ADVISE THE SUPERITIDIDENT REFORE PROCEDUAL. 4. ALL WATERALS AND WERGLANGSHP SHALL BE BE ACCORDANCE WITH THE RELEYAT AND CAPROTIS SAN COCKS, WITH THE BY-LAMS AND CORRENCES OF THE RELEVANT BULDING MUTHORITES, DICCEPT WE'BE, WARD BY THESE DRAWN'GS. 1. THE BED AND HALMOT MATERIAL SHALL BE COMPACIED FOR THE TRILL WOTH FOR THE TRENCH OF THE TRENCH OF THE PRINCE TO THE SATISFACTION OF WERKING PLATE OR HAMD TAMPHO METHOD TO THE SATISFACTION OF THE SUPERIFICIAL. ? THE CONTRACTOR SHALL ENSURE THAT ANY EXETTING STRUCTURES LOCATED ADJUGENT TO EXCHANTED TREASHES AND SUPPORTED OF PROPERTIED TO PROCEED TO RECOVER TO ON MONEMENT OF THESE STRUCTURES. r. The contractor must leave all strukmats demande works Undocred untl. May testing detaed necessary by the Superaitements has been percomed. IG. FOR RUBBER IRNG JOHITS THE PRE DIOS SHALL RE THOROUGHY OLEAND REFORE THE LANGE THE THO PHY EXCITORS SHALL THEN BE FORTH Y GUED WITH THER PARE SURFACES AT THE JAMAN ADURER'S MOMENTED LAWN OAP. 12. CUTTING OPERATIONS FOR CONCISE PIPES SHALL PROVIDE NEXT DED SUPPLYCES, THE COLT SUPERATIONS SHALL BE GIVEN TWO COATS OF A SUPERATIONAL MPROVIDE DOUGH PANH. II. LETING HOLES WI PPETS AND CALMERTS SHALL BE PLUGGED WITH WORTAR, PRECAST TAPERED PLUGS, OR TAPE SUPPORTED OR OTHER APPROVED INCARES PRICE TO BACKFOLL MATERIAL BEING PLACED. I. ALL STORMWATER WORKS ARE TO BE UNDERTAKEN OPPETALLY IN ACCREDANCE WIN AS JOOD (2003) STORMWATER UNANAME. A. NO WORK IS TO BE UNDERTANDED ON PHYANE PROPERTY WITHOUT CONSENT FROM THE SUPERWITHOOM & THE PROPERTY OWNERS. DO NOT SCALE FROM THESE DRAWINGS UNLESS NOTED DTHEYWISE 2. ALL LEVELS ARE IN TERMS OF AUSTRALIAN HEIGHT DATHM (AND). ALL CO-CROMATES ARE ON A LOCAL SYSTEM, RETER TO DIVID. 4670-01-03 FOR DATHM. ALL DARTHSHOWS ARE IN MILITARTIES UNLESS WOTED OTHERWISE. DRG STATUS: FOR THENIDER 10. ALL SETOLT DAKINGONS SHOWN SHALL BE VERTED BY THE CONTRACTOR ON SITE BEFORE WORK COLAMINOSS. 4. NO TREES ARE TO BE REMOVED (LALESS WORCATED ON THE DRAWINGS) WITHOUT THE SUPERINTENDENTS CONSONT. Datalla of lustre C ISSUED FOR TOWER B ISSUED FOR PENEW A ISSUED FOR PENEW STORWWATER DRAINAGE GENERAL NOTES

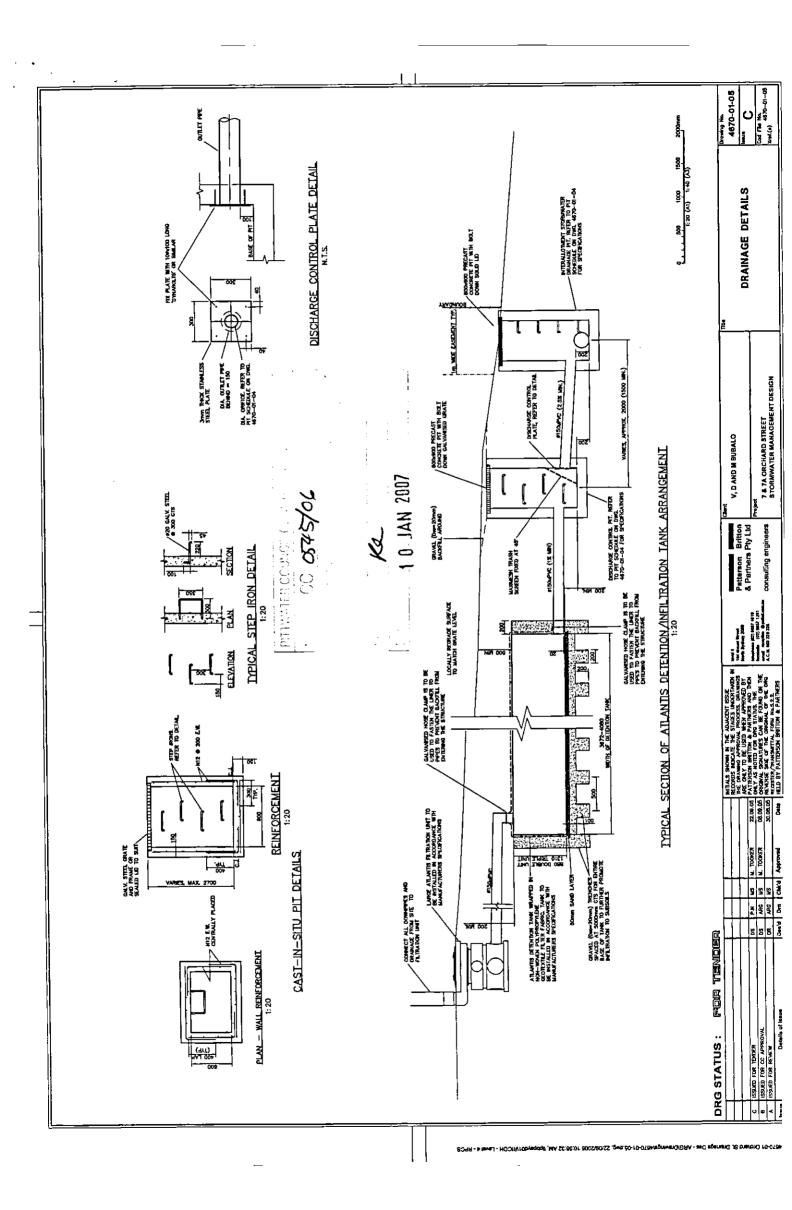
REINFORCEMENT (cont.)

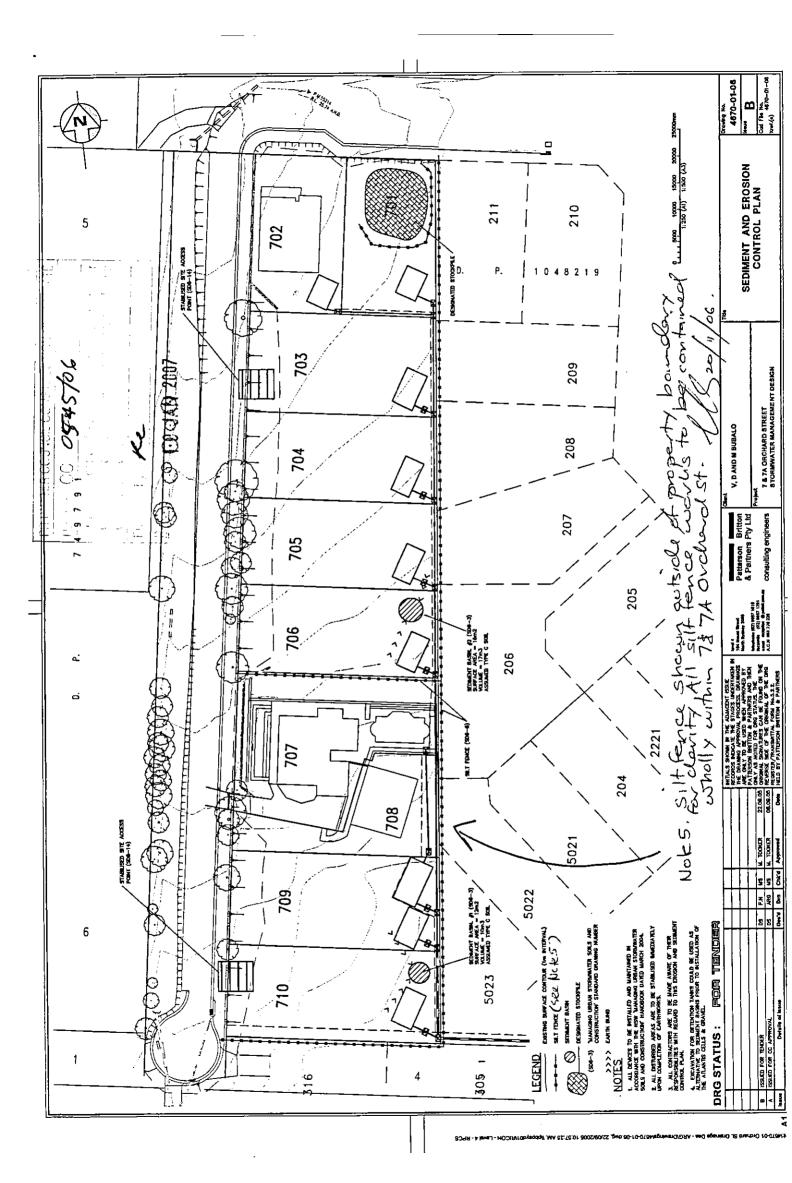
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CEFICIAL RECEIPT

30/06/2006 Receipt No 194981

TO D BURALO M BUBALO V BUBALO

WARRIEWOOD 2102 107 ORCHARD STREET

Applic Reference

;;;) (B)

SWEF-594

\$4,327.08 Amount

CREEKLINE BUSHFIRE SWCF-S94 PUBLIC RECREATION \$4 SWLS-894 CREEKLINE CORKIDOR SWCL-894 \$41,676.95 TRAFFIC & TRANSFORT PEDESTRIAN CYCLEWAY ALINDWARDS A LIBRARY PLAN MANAGEMENT \$99,515.01 \$26,722.36 \$45,108.28 \$70,257.39 \$34,449.66 \$6,887.83 \$7,543.20

Money Order Agency Rec Db/Cr Card Rounding Cheque Change Total Amounts Tendered \$338,487,73 \$338,487.73 \$338,487.73 \$338,467,73 **\$0.00** \$0.00 \$0.00 #O.00 ₹ SEND COMPLETED FORM AND A COPY OF THE RECEIPT TO PROJECT LEADER WARRIEWOOD INFRASTRUCTURE

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TE: - PLEASE ENSURE THAT PAYMENT IS SUBMITTED TO CASHIER WITH THIS FORM

3/52/02 (For Receipt Description)

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,,722 .36 1,257.39 5,108.28 99.6717,1 ,515.01 intribution Amount ,327.05 ,676.95 ,543.20 8,487.73 ,887.83 Cashier Code SWPM SWCW SWVP SWPC SWPR SWCF SWTT SWLS SWBF SWCL 91318C2210000 91315C1210000 91250C1210000 91314C1210000 91311C1210000 91312C121000C 91316C1210000 91303C1210000 91317C1210000 91310C1210000 Account No. Urban Infrastructure Community & Library Services Natural Resources Reserves & Recreation Reserves & Recreation Community & Library Services Urban Infrastructure Urban Infrastructure Urban Infrastructure Responsible Business Unit (For Receipt Description)

0545/06

JAN 2007 10

Section 94 Contribution Breakdown (Warriewood Valley)

NOTE: - PLEASE ENSURE THAT PAYMENT IS SUBMITTED TO CASHIER WITH THIS FORM

Date Paid: **Total Payment** Plan Management Ponderosa Parade Public Recreation Community Facilities Creekline corridor (land) To be completed by Cashiei Library Services Bushfire Pedestrian Cycleway Creekline corridor (works) S94 Subset Property Address: Consent Date: Traffic and Transport DA Consent Description: DA Consent No.: \$99,515.01 30.06.06 \$34,449.66 \$26,722.36 \$70,257.39 \$45,108.28 \$41,676.95 No152/02 20/10/04 SUBDIVISION OF 338,487.73 4,327.05 Contribution Amount 7,543.20 8,887.83 ORCHARD Cashier Code (For Receipt Description) SWCW SWIT SWVP SWPR SWCF SWCL SWLS SWBF SWPC STREET, CHT COT INTO HELD 91318C2210000 91250C121000C 91315C1210000 91317C1210000 91314C121000C 91311C1210000 91312C1210000 91316C121000C 91303C121000C 91310C1210000 Account No. WARRITHOOD Urban Infrastructure Community & Library Services Natural Resources Reserves & Recreation Reserves & Recreation Community & Library Services Urban Infrastructure Urban Infrastructure Urban Infrastructure Responsible Business Unit (For Receipt Description)

NOTE TO CASHIER: -

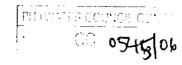
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PLEASE SEND COMPLETED FORM AND A COPY OF THE RECEIPT TO PROJECT LEADER WARRIEWOOD INFRASTRUCTURE

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JAN 2007



Ne... 10 JAN 2007

Pittwater Council

Telephone (02) 9970 1111 Facsimile (02) 9970 7150



Facsimile

□ Urg	ent	☐ Please Comment ☐ Please Reply		
cc:		Pages:	1	
From:	Ross McWhirter	Re:	7 Orchard Street subdivision	
Fax:	9970 8454	Date:	19 May 2006	
To:	Wally Bubalo	Address:	7 Orchard Street, Warriewood	

Message: - Revised Section 94 Contributions.

The revised Section 94 contributions applicable until 30 June 2006 are: -

ELEMENT	CONTRIBUTION per DWELLING	TOTAL CONTRIBUTION (7 dwellings)	
Traffic and Transport	\$5,953.85	\$41,676.95	
Creekline Corridor (Works)	\$6,444.04	\$45,108.28	
Creekline Corridor (Land)	\$10,036.77	\$70,257.39	
Community Facilities	\$3,817.48	\$26,722.36	
Recreation and Open Space	\$14.216.43	\$99,515,01	
Pedestrian and cycleway network	\$4,921,38	\$34,449.66	
Bushfire protection	\$613.15	\$4,327.05	
Library services	\$1,077.60	\$7,543.20	
Plan Management	\$1,269.69	\$8,887.83	
		\$338,487.73	

Please contact the undersigned if you have any enquiries concerning this matter.

R. McWhinter

Ross McWhirter

PROJECT LEADER WARRIEWOOD INFRASTRUCTURE

CONFIDENTIALITY NOTICE TO RECIPIENTS EXTERNAL TO PITTWATER COUNCIL

The information in this facsimile is intended for the named recipient only. It may contain privileged and confidential information. If you are the intended recipient, you must not copy, distribute, take action in reliance on it, or disclose any details of the facsimile to any person, firm or corporation. If you have received this facsimile in error, please notify us immediately by reverse charge call and return the original to us by mail. We will reimburse you any costs you may incur in notifying us and returning the original facsimile to

KYORA LANDSCAPES



Professional Landscape Design and Construction

www.kyora.com.au

21 November, 2006

Wayne Treble
The Certification Group
c/-

Dear Wayne

Re: WD & M Bubalo, 7 Orchard Street, Warriewood

Lot 3, DP 23863

Development Application No: NO152/02

Please be advised that the Landscaping plans have been prepared in accordance with conditions B45, B45a, B45b & D44, Development Control Plan No 29 – Warriewood Valley Urban Land Release, regarding the above property

For further clarification, please do not hesitate to contact me on the numbers below.

Yours sincerely, KYORA LANDSCAPES

> المرابعة ا - 1 0 JAN 2007

STUART MERCER





level 4

104 Mount Street North Sydney 2060 PO Box 515

North Sydney 2059

telephone: facsimile emait:

(02) 9957 1619 (02) 9957 1291 reception@patbrit.com.au

Patterson Britton & Partners Pty Ltd

Newcastle Office **B Tellord Street** Newcastle Fast 2300 PO Box 668 Newcastle 2300 Australia

telephone facsimile:

ARN

(02) 4928 7777 (02) 4926 2111

89 003 220 228

email:

mail@newcastle.patbrit.com.au.

consulting engineers

lt487002m/s070105-bubalo cert cond B25 and B29.doc

The Certification Group PO Box 870 Narrabeen, NSW, 2101 Fax 9944 6330

CC Wally Bubalo Fax 9997 6090

Friday, 5 January 2007

Attention: Mr Wayne Treble

Dear Sir

BUBALO SITE ACCESS AND SEDIMENT/EROSION CONTROL CERTIFICATION

Further to your recent request we certify that the design undertaken for the above site complies with both Conditions B25 and B29 of DA Consent No. N0152/02.

We confirm that access to the site complies with the requirements of Pittwater Councils DCP No. 3 "Driveways and Internal Roadways and AS2890.1-1993: "Parking Facilities - Off Street Carparking*.

We also confirm that the proposed sediment and erosion control plan/details for the site has been designed in accordance with the requirements of the NSW Department of Land and Water Conservation (Now DNR).

We trust this information is satisfactory. Should you have any further enquiries, please do not hesitate to contact me on (02) 9957 1619.

Yours faithfully

PATTÉRSON BRITTON

700S NAL U I

Review / Verification by

Date

Mark Tooker Principal (

Principals

Greg Britton BE MEngSc FIEAust Andrew Chitty BE MIEAust CPEng Peter Coltman BE MEngSc MIEAust Bruce Druery BE Dip Sc(Geol) M AppSc MIEAust Paul Harvey-Walker BE FIEAust David McConnell BSc MIEAust Joe MengOn BE MEngSc FIEAust Andrew Patterson BE FIEAust Christopher Thomas BE MEngSc MIEAust Mark Tooker BSc(Eng) MEngSc FIEAust CPEng Michael Wright BE MEngSc MIEAust

Steve Barrett Simon Gatt BE MIEAust Paul Macinente BE MEnvEngSc MIEAust Ban Patterson BE MIEAust Marc Roberts BE Michael Shaw BE MIEAust CPEng

Associates

Stephen Aebi BE MIEAust Neville Boyes OMIEAust Scot Cranfield Cameron Druery BE MIEAust Adam Knight BE MIEAust CPEng Cameron Smith BE MEngSc MIEAust CPEng Alexandra Stone BE MIEAust Chris Yetze BE MIEAust





James Payne, Manager - Urban Infrastructure 8am to 5:30pm Mon - Thurs, 8am to 5pm Fri Phone 9970 1188

16 August 2006

W D & M Bubalo 107 Orchard Street WARRIEWOOD 2102

Dear Sir

Re: DA N0457/05 & N0152/02 Orchard Street Warriewood Construction Phase - Traffic Management Plan

Council refers to construction phase, Traffic Management Plan as set out in the Patterson Britton & Partners Pty Ltd letter dated Friday, 21 July 2006.

Council is satisfied with the Traffic Management Plan as set out in the above referred correspondence.

This letter may be submitted with your application for a construction certificate for the works under the above referred development consent.

Yours faithfully

James Payne MANAGER - URBAN INFRASTRUCTURE 0515/06

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1 0 JAN 2007

Pittwater Council

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OFFICIAL RECEIPT

09/01/2007 Receipt No 208571

To D, M & B BUBALO

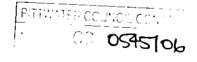
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107 ORCHARD STREET WARRIEWBOD NSW 2102

Applic	Reference	Amount
GL Re	OLSL-Buil 1 X NO152/02	\$875.00

Total:	\$875.00
Amounts	Tendered
Cash	\$0,00
Cheque	\$875.00
Db/Cr Card	\$0.00
Money Order	\$0.00
Agency Rec	\$0.00
Total	\$875.00
Rounding	\$0.00
Change	\$0.00
Nett	\$875.00

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a 10 JAN 2007

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Local Council Area		
DA/CC/CDC No.	NOUSINGGOOD	
Estimated value of work (see note on back)		
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I hereby declare that the information	on provided on this form may result in prosecution un ion provided on this form is true and correct to the b	der Section 584
Name VLADO BUBA	1110 / 1 1)	rest of my knowledge
A PART OF THE PROPERTY OF	1808 Marie Common Land	_ Date D O Q M O J V 2007
Exemption Approval Certificate No.		R# 208571
Building and Constitut Tel: 13 14 41 Fax	on Industry Long Service Payments Corporation, Locked Bag (02) 9287 5685 Email: levy@lspc.nsw.gov.au www.lspc.ns	R##208571 0%0V06
	en Industry Ling Service Payments Corporation, Locked Bag : (02) 9287 5685 Email: levy@lspc.nsw.gov.au www.lspc.ns	5W.gov.au ABN 93 646 090 808 Jano6/180
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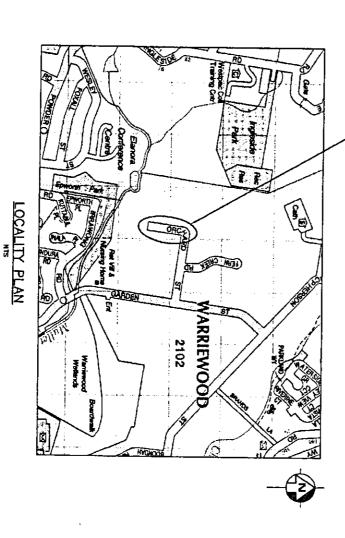
DRG STATUS:

FOR CONSTRUCTION

AND M BUBALO for

SIE

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works consistent with Consent N0152/02 Note: Constructio 4670-11 STORMWATER DRAINAGE LONGITUDINAL SECTIONS ONSTRUCTION PHASE TRAFFIC MANGEMENT PLAN ROSION AND SEDRIENT CONTROL PLAN on Certificate only approves

4670-10

TORMWATER DRAINAGE PLAN

ACCESS ROAD DESIGN CROSS SECTIONS SHEET 3 OF 3

PROPOSED SURFACE CONTOURS AND PAVEMENT/KERB

ACCESS ROAD DESIGN CROSS SECTIONS SHEET 2 OF 3

ACCESS ROAD DESIGN CROSS SECTIONS SHEET 1 OF 3 CUL-DE-SAC KERB DEVELOPMENT AND ACCESS ROAD TYPICAL SECTION 4670-03

SITE PLAN AND LONGITUDINAL SECTION

JENERAL NOTES & SPECIFICATIONS (SHEET 2 OF 2) AND MISCELLANEOUS DETAILS DEMERAL NOTES & SPECIFICATIONS (SHEET 1 OF 2)

LITY PLAN AND DRAWING LIST

0 JAN 2007

Patterson Britton & Partners Pty Ltd V, DAND M BUBALO

consulting engineers

ORCHARD STREET ACCESS ROAD WARRIEWOOD

TITLE SHEET, LOCALITY PLAN
AND DRAWING LIST 4670-01

FILE COPY

V, D AND M BUBALO CHARD STREET ACCESS ROAD WARRIEWOOD

2. THESE DRAWNICS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWNICS. SPECIFICATIONS AND WRITTEN INSTRUCTIONS AS MAY BE ISSUED OUTING THE CONTRACT. 1. ALL WORKS SHALL BE M ACCORDANCE WITH PITTWATER COUNCILS AUS-SPEC CONSTRUCTION SPECIFICATION, DETAILS SHOWN ON THESE DRAWNOS, AND TO THE DIRECTIONS OF THE PROJECT MANAGER. 3. ALL SET OUT DIMENSIONS SHOWN SHALL BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE WORK COMMENCES. DRAWNOS SHALL NOT BE SCALED FOR DMENSIONS. SAFETY 2 THE COMPACTOR MUST, AT ALL THES, EXERCISE ANY OTHER RECESSARY AND REASON-MILE PRECAUTIONS APPROPRIATE TO THE NATURE OF THE WORK AND THE COMUNICANS UNDER WHICH THE COMUNICATS TO BE PERFORMED FOR THE SAFETY OF ALL PERSONS ON THE WORK SITE, OR IN THE VICINITY. I. ATTENION IS DRAWN TO THE OCCUPATIONAL HEALTH AND SAFETY ACT (2000), WHICH RECURRES THAT EMPLOYERS ENSURE THE HEALTH, SAFETY AND WELFARE OF THEIR EMPLOYEES.

A DURNO CONSTRUCTION THE WORKS SHALL BE MAINTAINED IN A STABLE CONDITION AND MO PART SHALL BE OVERSTRESSED. TEMPORARY BRACHIG AND BATTERS SHALL BE PROVIDED BY THE CONTRACTOR TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.

S. ALL MATERIALS AND WORKMANSHIP USED IN THE CONSTRUCTION OF THIS DESIGN SHALL BE IN ACCORDIANCE WITH ALL RELEVANT CURRENT AUSTRALIAN STANDARDS. ALL DINENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE,

7. ECISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA. THE ACCURACY IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ESTINABLY THE LOCATION AND LEAST OF THE COSTABLY THE LOCATION AND LEAST OF THE COMMENCING WORK. ALL CLEVELANCES AND APPROVALS SHALL ALSO BE GOTAINED FROM THE RELEVANT SERVICE AUTHORITY PROR TO THE COMMENCEMENT OF WORK

A. THE CONTRACTOR SHALL COTAN SETOUT CO-ORDINATES FROM THE SUPERINTENEUR, AND ARRANCE ALL SURVEY SETOUT BY A REGISTERED SURVEYOR

IO. ON COMPLETION OF SERVICES INSTALLATION. ALL DISTURBED AREAS SMALL BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCORTE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PANEMENTS. ALL NEW AND EXPUNED SERVICES THAT CROSS EXISTING AND FUTURE MISS/PARKENTS WITH THE STIE SHALL BE BACKPILED WITH D0820 UTENAL TO SUBGROVE LETA, AND COMPACTED TO BOX STANDARD WISTY RATIO, SUBJECT TO PRIOR APPROVAL FROM RELEVANT

II. WHERE YEN WORK ABUTS EASING, THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE FREE FROM ABRUPT CHANGES, IS OBTAINED.

13. THE CONTRACTOR SHALL NOT DISTURB ANY EXISTING SURVEY BENCH MARKS OR RETERENCE MARKS (UNLESS HONCATED FOR REJROYAL) WITHOUT LANDS DEPT APPROVAL IN WEITING. 12. CAPE TO BE TAKEN WHEN EXCAVATING NEAR ENERGY AUSTRALIA, MITIGRAL ENERGY, TELSTRA, AND AGL SERVICES. HO MECHANICAL ENCAVATION TO BE LINDERYMEN OVER POWER, TELSTRA, LIAISE WITH AGL SERVICES HAND EDICAVATE M THESE AREAS. LIAISE WITH RELEVANT AUTHORITY AS REQUIRED.

14. THE CONTRACTOR TO FENCE AND SECURE SITE

15. EXBLIC ROAD WORKS

THE CONTRACTOR'S ATTENTION IS DRAWN TO THE REQUIREMENTS OF PITTWATER COUNCE. WEREE THE WORKS ARE LOCATED IN A ROAD RESERVE OR CROSSES THE PARSMENT OF A PUBLIC ROADWAY OR FOOTMAY. THE CONTRACTOR SHALL DOTAM A PERMIT TO SOMETING THE RECESSARY WORKS AND COMPLY WITH ALL THE CONDITIONS CONCEING THE ISSUE OF SACUEDY OPENICS. THE CONTRACTOR SHALL ORIVAN BETWEEN THE CONNEX AND CARRY OUT ALL LANSAN AT NO ETRIA COST. ALL PARSMENT SHALL ORIVAN SHAPE OF THE CONTRACTOR, ALL FOR REASTATEMENT TO BE UNDEFLAKED BY THE CONTRACTOR, ALL TO PRITAMENT TO BE UNDEFLAKED BY THE CONTRACTOR, ALL TO PRITAMENT TO BE UNDEFLAKED BY THE CONTRACTOR, ALL TO PRITAMENT TO BE UNDEFLAKED BY THE CONTRACTOR, ALL TO PRITAMENT TO BE UNDEFLAKED BY THE CONTRACTOR, ALL TO PRITAMENT COUNCIL'S STANDARDS AND APPROVAL

18. PAVEMENT DESIGN REPORT BY DEDIECHNIQUE, JUNUARY 2005 — THE CONTRACTOR SHALL ENSURE THAT THEY ARE FAMILIAR WITH THE CONTENTS OF THIS REPORT.

T), ALL CONSTRUCTION WORK SHALL BE CARRIED OUT SO THAT AT ANY THE ADJUNHING PROPERTY OWNERS ARE NOT DEPRIVED OF AN ALL-WEATHER ACCESS OR SERVEDED TO ACCIDIONAL OR POLLUTED STORM WATER RUNOFF DURING THE PERGO OF CONSTRUCTION.

18. THE CONTRACTOR IS TO PREPARE AND MAPLEMENT A TRAFFIC MANAGEMENT PLAN TO COUNCIL'S STANDARDS AND APPROVAL FOR ALL WORKS. 18. THE COMPRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGE TO COUNCIL'S HIPPLASTINGUINE, SUCH REPAIR OR REINSTATEMENT TO BE CARRIED OUT IMMEDIATELY TO THE SATISFACTION OF COUNCIL.

za. Site survey upon which design has been based prepared by byrne a Associates, december 2004.

QUALITY ASSURANCE

1. THE COMTRACTOR SHALL IMPLEMENT AND MAINTAIN A QUALITY ASSURANCE SYSTEM MEETING THE REQUIREMENTS OF ALS 9002. THE QUALITY SYSTEM SHALL ASPECTS AND STACES OF THE WORK.

EXISTING SERVICES AND FEATURES

1. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF EXCAVATION AND RELOVAL IF RECURED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY THE WORKS WHINN THE CONTRACT AREA AS SHOWN ON THE DRAWNES BY THE SUPERINTENDENT.
ALL TO REGALATORY AUTHORITY STANDARDS AND APPROVAL.

3. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL FOR HIS PROGRAMME FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES.

GENERAL STORMWATER NOTES

1. ALL STORNWATER WORKS ARE TO BE UNDERTAKEN GENERALLY IN ACCORDANCE WITH AS 3500 STORNWATER DRAINAGE. 2. UNLESS OTHERWSE APPROVED ALL DRAINAGE PIPES SHALL BE CLASS "2" SPICOT AND SOCKET RCP PIPES WITH RUBBER RING JOINTS.

4, ALL CONNECTIONS TO EASTING DRAINAGE FITS SHALL BE HADE N A TRADESHAM-LIKE HAMBER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE COLEMIT RENDERED WITH A NON-SHRINK EPOXY GROUT TO ENSURE A SMOOTH FINISH. 3. CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PPE GAAPTORS TO ENSURE PROPER CONNECTION TO DISSIMILAR PPEWORK.

8. PRECAST MTS SHALL NOT BE USED, ALL DRANAGE PITS TO BE CAST INSTILLINTELS MAY BE PRECAST TO SUIT PROPOSED PITS. 8. Step froms at spacings of 0.3m are to be provided in drainage pits more than 1.2m deep. 7. PROVIDE 3.0M LENGTH OF 1000IA SUBSOIL DRAINAGE PIPE WRAPPED IN PARIC SOCK AT UPSTREAM END OF EACH 1717.

S. THE EXCAVATED TREMSH WOTH FOR PIPE LAYING MUST BE AT LEAST SOOME WIDER THAM THE GUITER VARACTERY OF THE PIPE. PIPES ARE TO BE LAND CONTRALLY WITHIN THE EXCAVATED TREMSH.

. ALL PIPES ARE TO BE LIAID ON A IMMANAM BEDDING OF 75mm OF SAND ADDD NA ACCORDANCE WITH AS 3500.3. BEDDING SHALL BE COMPACTED TO LEAST 90% OF THE MAXMUM DRY DENSITY.

CO. CURE ALL DOMORETE USING AN APPROVED METHOD IN ACCORDANCE WITH ACCE SPECIFICATION. CURING COMPOUNDS TO COMPLY WITH ASSET OF BASED CURING COMPOUNDS ARE NOT ACCEPTABLE. cs, no adaptures are to be used without the approval of the engineers.

GENERAL NOTES

THE RECORDS FOR EACH CONSTRUCTION TASK SHALL BE STACED AND ITEMISED OF THE CONTRACTOR ADMINISTRATION. THE PROFERMAS FOR SCIONES SHALL BE SEMBLATTED TO THE CONTRACTOR ADMINISTRATOR FOR PROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN PROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN PROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN PROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN PROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN PROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN PROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN PROVAL HAS BEEN PROVADED BY THE PROVINCE OF THE PROVADED BY THE PROVADED BY THE PROVINCE OF THE PROVIN

A DUBNO THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL MANTAIN ACCURATE AND UP TO DATE RECORDS AND SHALL MAKE SUCH RECORDS AND SHALL MAKE TO THE CONTRACTOR ADMINISTRATOR IF REQUESTED, FALURE TO MAINTAIN RECORDS AS SPECIFIED WILL RESULT IN THE CONTRACTOR RE-MISSECTING COMPLETED WORKS IF INSTRUCTED TO DO SO BY THE CONTRACTOR ADMINISTRATOR, 4. AT THE COMPLETION OF EACH STACE OF THE WORKS THE COMPLECTOR SHALL EXPIRY THAT THOSE WORKS HAVE BEEN UNDERTIXEN AND COMPLETED IN MCOCROANCE WITH THE DRAWNICKS, SPECIFICATION AND INSTRUCTIONS ISSUED DURING THE COURSE OF THE CONTRACT.

2. NANTAN EXISTING STORMWATER DRANAGE FLOWS THROUGH THE SITE AT ALL SUCH FLOWS AT ALL TWES

4 CONTRACTOR SMALL CONSTRUCT IDJPORARY SERVICES AS REQUIRED TO MARTIAN EXISTING SUPPLY TO BUILDINGS REJAMING IM OPERATION DIRING WORST OT HE SATES-ACTION AND APPROVAL OF THE SUPPERMITMENDENT. ONCE OIVERSOM IS COMPLETE AND COMMISSIONED THE CONTRACTOR SMALL REMOVE ALL SUCH TELPORARY SERVICES AND MARE COOD TO THE SATES-ACTION OF THE SUPERMITMENDENT.

. Interription to supply of Easting Services shall be done so is not to cause any inconvenence or dimage to the adjacent esdedices. The contraction is 0 ani approval of the superintendent in the time of integruption.

8 ALL CONCRETE USED IN DRAINAGE PITS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 40MPC.

.. BACKFILL FOR STORMWATER PITS AND PIPES SHALL BE COMPACTED TO AT JACKT 85% (98% UNER ROADS) OF THE MAXIMUM DRY DENSITY AND GRADED II COORDANCE WITH AS 3500.3.

12. BACKFILL MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO PLACING AND COMPACTION.

13. THE CONTRACTOR SHALL ENSURE THAT ANY EXISTING STRUCTURE: ADJACENT TO EXCAVATED REMOVES ARE SUPPORTED ON PROTECTED PREVENT DAMAGE TO OR MOVEMENT OF THESE STRUCTURES

A. CHASES SHALL BE FORMED WHERE NECESSARY TO FREVENT SOCKETS, LANGES OR THE LIKE FROM BEAVING ON THE TRENCH BOTTOM OR THE NDERLAY.

16. MATERIAL SHALL RE PLACED IN THE PIPE SURROUND IN LAYERS. THAN 2000M LOOSE THICKNESS AND COMPACT WITHOUT DAMAGNO DISPLACING THE PIPEWORK.

1. FOUNDATION MATERIAL DEDIED BY THE SUPERINTENDENT AS MISSITIABLE TO BE REJUVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACE MITH APPROVED MATERIAL SATISTYNG THE REQUIREMENTS LISTED BELOW.

LOCATION STANDARD DRY DENSITY
-AREAS OF SERVICE TRENCHES 98%
-ROAD AND CARPARKS 100%
-LANDSCAPED AREAS 90%

4. THE CONTRACTOR SAALL PROGRAMME THE EARTHWORKS OPERATION SO THAT THE WORMON AREAS ARE ADEQUATELY DRAINED DURING THE PERKO OF CONSTRUCTION. THE SURFACE SHALL BE GRANDED AND SCALED OFF TO RELIVE DEPRESSIONS. ROLLER MARKS AND SMALAR WHICH WOLDE LADW WATER TO POHIO AND PEDETARE THE UNDERLING WATERAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVANT THESE RECURRENCING SHALL BE RECIFIED BY THE CONTRACTOR AT HS COST.

CONCRETE NOTES

GI. CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH ASSIGN THE SPECIFICATION. KEEP A COPY OF THE DOCUMENTS ON SITE. G2. VERIFY ALL SETTING OUT DIMENSIONS WITH THE SUPERINTENDENT AND/OR THE SURVEYOR. 충

C2. CONCRETE USED IN THE WORKS SHALL BE ETHER MASS COMORETE OR REINFORCED CONCRETE AS MORE ON THE DRAWNOS AND SHALL COMPLY WITH THE FOLLOWING RECURPENENTS: CI, ALL WARKMANSHE AND MATERIALS SHALL COMPLY WITH ASSBOO CURRENT EXTINUS WITH AMENOMENTS, EXCEPT WHERE VARIED BY TH CONTRACT DOCUMENTS.

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WATHER ZE PHISH — FORMED

WATHER CA CEMENT TO BE TIPE SI TO ASSUTZ MAX CONCRETE SHRIMKAGE TO BE BOOKM TO ASSUTZ. CA NO BRECCIA' TIPE ACCREGATE IS TO BE USED. RENEDECTA CONCRETE
82 MPq
40 M E MACS CONVERTE
B2
32 MPa
32 MPa
GENERAL PURPOSE
3004/m3
0.53
45 mm
GLASS 2
WOOD FLOAT
20 mm

GENERAL STORMWATER NOTES (cont.)

14. UNLESS SPECIFIED ALL DRAINAGE GRATES TO BE HEAVY DUTY GALVANISED HAD STEEL TO AS 3896. S LOCATED

C7. THE FINISHED CONCRETE SHALL BE DENSE HOMOGENEOUS MASS, COMPLETELY PILLING THE FORMWORK, THOROLIGHLY EMBEDDING THE REPHORICEMENT AND FREE OF STONE POCKETS. CONCRETE SHALL BE COMPACTED WITH MECHANICAL MBRATCHS

CONCRETE NOTES (cont.)

SHOPE SHOPE

GENERAL COMPACTION NOTES

CIO. MAINTAIN COVER TO REINFORCEMENT AT CHAMPERS, DRIP GROOVES, REGLETS, ETC.

OR, ALL RENFORCEMENT SHALL BE FIRMLY SUPPORTED ON PLASTIC CHARS AT NOT GREATER THAN 1'M CENTRES BOTH WAYS, PLASTIC TIPPED WILD STEEL CHARS SHALL NOT BE USED. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.

OR. TESTING AND ASSESSMENT FOR COMPLANCE OF CONCRETE SHALL BE CARRED OUT OF THE CONTRACTOR IN ACCORDANCE WITH AS 3000. SUBJUIT ALL RESULTS TO THE SUPERINEDADOM:

, THE PHINSED CONCRETE SUPPLICE SHALL BE FREE OF CRACKS HAVING A LACK WIDTH EQUAL TO OR GREATER THAN 0.1 mm AT THE OF PRACTICAL MAPLETION, IF CRACKS TO GREETEDS THIS UNIT, THE CONTRACTOR STALL MAKE DOD THE CRACKS TO THE SATISFACTION OF THE SUPERHITDUDENT WHICH MIGHT MAPPIES REPLACEMENT OF CONCRETE ELEMENT OR SEALING THE CRACKS WITH AMPRICE REPLACEMENT OF ORDERS.

2. UNLESS OTHERWISE APPROVED OR SPECIFIED. ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERITIENDENT AND SHALL COMPLY WITH THE FOLLOWING.

1) FREE FROM ORGANIC AND PERISHABLE MATTER

B) MAXIMUM PARTICLE SIZE 75MM

C) PLASTICITY NIDEX BETWEEN 2X AND 20X

D) CBR > 10X

3. SELECT FILL MATERIAL SHALL BE PLACED IN MADMINE 200MIN LOOSE THICK LAYERS AND COMPACTED AT OPTIMEN MOSTURE CONTENT (+ OR — 28) TO ACHEVE A DRY DEVISTY DETERMINED IN ACCORDANCE WITH AS1288E3.1 OF NOT LESS THAN THE FOLLOWING STANDARD MADIKULI DRY DENSITY M ACCORDANCE WITH AS1288E1.1:

CIA, THE SUPERWITENCENT SHALL BE CAYEN 24 HOURS NOTICE FOR REDIFFORCEMENT INSPECTION, AND CONCRETE SHALL NOT BE DELIVERED UNTIL FINAL APPROVAL IS OBTAINED.

CIA, CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES OF COMMINGUALY WET FOR A PERIOD OF 7 DAYS, AND PREVAINION OF LOS OF ACISTURE BY A TOTAL OF 14 DAYS FOLLWED BY A GOADULA DRYING OUT, POLYTHENE SHEETING OR WET HESSIAN MAY BE USED IF PROTECTED FROM WIND AND TRAFFIC, DO NOT USE APPLIED CURBING AGENTS.

CI3. DURNIG AND INMEDIATELY FOLLOWING POURING, THE CONCRETE SHALL BE PROTECTED FROM MIND AND SIN. AMWINGS AND WIND BREAKS ARE TO BE UTILISED FOR THIS PURPOSE. C12. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE SUPERINTENBENT. (1), NO HOLES, CHASES OR EMEDIMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DISKINGS SHALL BE MADE IN CONFERTE MEMBER'S WITHOUT THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT.

COMPACTION CONTROL TESTING SHALL BE CARRED OUT BY AND AT E COST OF THE COMITRACTOR TO CONFORM WITH LEVEL 1. AS DETINED AS3798-1898. ti. The concrete shall be screeded to the required cross section profile free of depressions and high areas to satisfy the requirements of an initial finish.

F2. Final Findshing moludes floating and texturing the Water Sheeza Parelient and Shall commence only as soon as the Water Sheeza Has left the Ancient Surface and not in any area where there is free surface water.

TWAL DESIGN AND CONSTRUCTION AND STREPPING TIMES SHALL COMPLY WITH AS USED AND AS 3800 UNILESS OTHERWISE NOTED OR APPROVED BY THE SLPERM TENDERT. "32. THE DESIGN CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF THE "ORIMINARY AND FALSEWORK IS THE RESPONSIBILITY OF THE CONTRACTOR. NIT. UNLESS NOTED OTHERWISE ALL CONCRETE FORMWORK SHALL BE CLASS NISH

THA DURNA CONSTRUCTION SUPPORT PROPING MIL RE RECURED M-CRE LOADS FROM STACED MATERIALS, FORMWORK AND OTHER SUPPORT SLABS NOUVE LOADS H. A. SLAB OR BEAM MICH EXCEED THE DESIGN LOAD FOR STRENGTH OR SERVICE/BILLTY AT THAT AGE. ONCE THE HOMINATED 28 DAY STRENGTH HAS BEEN ATTAINED THESE LOADS SHALL NOT EXCEED THE DESIGN SUPERMIMPOSED LIVE LOADS. THIS, THE FORMWORK SHALL HOT BE DESIGNED TO RELY ON RESTRAINT OR SUPPORT FROM THE PERMANENT STRUCTURE WITHOUT THE PRIOR APPROVAL OF THE SUPERNITEMENT.

PITTE OF BOOK CONSTRUCTION

90/5450 00

Cod File No. 4870-02 3 4670-02 O

DRG STATUS: Details of Issue FOR CONSTRUCTION Da. MITIALS SHOWN IN THE ADACENT ISSUE
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OR THE ORIGI belephone (02) 9057 1018 facelinde (02) 9057 1291 emel reception @patiet.com A.C.N 903 220 228 Patterson Britton & Partners Pty Ltd consulting engineers ORCHARD STREET ACCESS ROAD WARRIEWOOD V, D AND M BUBALO

SOIL EROSION AND SEDIMENT CONTROL NOTES

ASPHALTIC CONCRETE NOTES

WHERL AGGREGATES TO COMPLY WITH CLAUSE 2.1 - MATERIALS OF A SPECIFICATION RISE "ASPILAT (DENSE AND OPEN GRADED)".

MINERAL FLER TO COMPLY WITH ASSASSA-1980 MINERAL FLERS FOR PHALT AND CLAUSE 2.1.2 - FLER OF RIA SPECIFICATION RISE SPHALT (DENSE AND OPEN GRADED)".

BITILIEN BINGER SHALL COMPLY WITH CLAUSE 2.1.3 - BINDER OF RTA ECTICATION RISE - "ASPHALT (DENSE AND OPEN GRADED)".

1. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO THE STANDARD RECOMMENDED BY THE NSW DEPARTMENT OF HOUSING'S "BLUE BOOK TITLE "MANAGEME URBAN STORMWATER SOILS AND CONSTRUCTION", 4TH EDITION, MARCH 2004.

3. SLT SOCKS AND GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED AT ALL DRAINAGE INLET PITS.

CONSTRUCTION MATERIALS

1. WATERIALS AND WORKMANSHIP SHALL BE THE BEST OF THEIR RESPECTIVE KINGS, AND, UNLESS OTHERWISE SPECIFIED, SHALL CONFORM TO THE RELEVANT AUSTRALIAM STANDARDS.

4. ALL EROSION AND SEDMENT CONTROL MEASURES ARE TO BE INSTALLED PRIOR TO COMMENCIALENT OF CONSTRUCTION. ALL SEDMENT CONTROL STRUCTURES SMALL BE INSPECTED AFTER EACH WEFALL EVENT FOR STRUCTURAL DIMANGE AND ALL TRAPPED SEDMENT TO ERECUTE TO THE APPROPRIATE STOCKPILE.

2. MIX PROPORTIONS
A) JOB MIX — 100mm & 14mm (AS SPECIFIED ON DRAWNOS) NOMINAL SIZE ADDREASH INMALM BITLIMEN
ADDREASH INMALM BITLIMEN
CONTENT (3) BY MASS OF TOTAL MASS — 5.1%
B) MIX STABLITY — BETWEEN 1804 AND 38KN AS DETERMINED BY RTA
TEST METHOUS TROS AND TROP.
C) AR VOIDS IN COMPACTED MIX — BETWEEN 4% AND 7% OF THE VOLLME
OF THE MIX.
D) VOIDS RILED IN BINDER — 85-80% OF AR VOIDS IN THE TOTAL
MINERAL ADDREASH FILED BY BINDER IN ACCORDANCE WITH RTA
TEST METHOD TROS AND TROP.

B. STABILISE ALL COMPLETED ROAD BATTERS WITH HYDROMULCH,

I. SUFFICIENT NOTICE SHALL BE GIVEN BY THE CONTRACTOR TO THE IMPERIORSHIT TO BHABLE MY MATERIALS THAT ARE BROUGHT ON THE RITE. TO BE SUITABLY STACKED TO ACLUTATE EXAMINATION. WHERE THE CONTRACTOR SUPPLES MATERIALS OF A MICE OR POOR
ALITY, THE SUPPLEWINDHOSH IS MALL HAVE THE POMES TO REQUIRE THE
MITACTOR TO PICK OUT AND STACK THOSE MATERIALS WHICH IN HIS
MOUN ARE SUTTABLE FOR THE WORKS, AND TO HAVE THOSE UNSTATABLE
MOVED FROM THE SITE OF THE WORKS.

4. TACK COAT

A) THE WHOLE OF THE AREA TO BE SHEETED WITH ASPHALTIC CONCRETE
SHALL BE LIGHTLY AND EVENLY COAITED WITH RAPPD SETTING BITUMEN
COMPLYING WITH RIX SPECIFICATION STATE, 3753, 3754, 3759 AND 3269.
APPLICATION RATE FOR RESOURL BITUMEN SHALL BE 0.15 TO 0.35

LITRES/SOLIABE METRIC. APPLICATION SHALL BE BY MEANS OF A
MECHANICAL SPRAYER WITH SPRAY BAR.

SPREADING

ALL ASPHALTIC CONCRETE SHALL BE SPREAD WITH A SELF PROPELLED VANG MACHINE

ONE ASPHALTIC CONCRETE SHALL BE L'AID AT A MIX TEMPERATURE AS (°C)

ONE ASPHALTIC CONCRETE SHALL BE L'AID AT A MIX TEMPERATURE AS (°C)

ONE ASPHALTIC CONCRETE SHALL BE L'AID AT A MIX TEMPERATURES (°C)

OND SURFACE TEMPERATURE IN SHADE (°C) MIX TEMPERATURES (°C)

TEMPERATURE IN SHADE (°C) MIX TEMPERATURES (°C)
NOT PERMITTED

1. PANEMENT PREPARATION

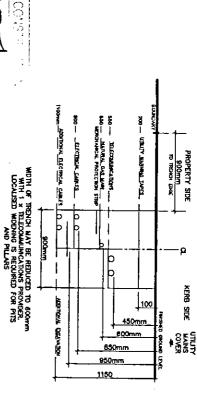
2. PANEMENT PREPARATION

2.) THE ENSITING SURFACE TO BE SEALED SHALL BE DRY AND BROOMED BEFORE COMPLETE REMOVAL OF WICK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL FOREIGN MATTER

3.) ALL DEPRESSIONS OR WHICKEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO GENERAL LIKEL OF PAYELENT WITH ASPHALTIC CONCRETE BEFORE LAYING OF MAIN COURSE.

2. THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL INFORM THEIR STAFF OF THEIR OBLIGATIONS UNDER THIS EROSION AND SEDMENT CONTROL SECTION.

PITTAMER COUNCY CONST \bigcirc 2015450



1 0 JAN 2007 SUBGRADE UNDER ALL FOOTINGS TO BE COMPACTED TO BUS MAXIMUM DRY DENSITY AND INSPECTIED BY THE SUPERINITATION TO PLACEMENT OF CONCRETE FOOTING ALL REPIEL SCUMM IN 12-400 INTO HE WILL AND SHIED MILE SCUMM IN 185 SECTION ON 195 IN 195 SECTION OF 195 SECTIO EXISTING GROUND TYPYCAL SHARED SERVICE TRENCH FORMAT RI VARIES -EMP L JN12 TAB BOUNDARY 8 50 COVER OR APPROVED EQUIVALENT CAPPING BLOCK, TYP N12 HORIZ EVERY SECOND COURSE 2200

> FINISHED DESIGN CEVEL -- PROPOSED ROAD

15-25
15-25
14.0
15-25
14.0
15-87-4. TO CONCRETE SHALL NOT BE LAD WIEN THE ROAD SURFACE IS WIT OR WEN COLD HANDS CHILL THE WIX TO ADVENSELY AFFECT SPREADING AND COMPACTION.

B. Jonns A) The Number of Johns Both Longitudinal and Transverse Syall be Kept to a minalua. B) The Density and Surface thish at Joints Shall be Smalar to Those of the Remander of the Layer.

COMPACTION SHALL BE UNDERTAKEN USING SELF PROPELLED

TYPICAL RET AINING WALL SECTION (MAX 800 HIGH)

9. THE PROPOSED IN WIDE ROAD SHOULDER AT THE WESTERN EDGE OF THE NEW ROAD IS TO BE STABLISED WITH A FLUSH SEAL FINISH ONLY.

FINISHED PAVEMENT PROPERTIES
INFRACES SHALL BE SMOOTH DENSE AND TRUE TO SHAPE
TO SHALL HOT VARY HORE THAN TOWN FROM THE SPECIFIED FLAN
VEL AT ANY POINT AND SHALL NOT DENATE FROM THE BOTTOM OF A ORARY
A STRAIGHT EDGE LAID IN ANY DIRECTION BY MORE THAN SHAL

WINAL ROLING SHALL BE COMPLETED BEFORE THE MIX MPERATURE FALLS BEJOW 105°C.
SECONDARY FOLLING SHALL BE COMPLETED BEFORE THE MIX SECONDARY FOLLING SHALL BE COMPLETED BEFORE THE MIX MPERATURE FALLS BELOW 60°C. USE PREJIMATIC TYPED ROLLER.
MINIMALI CHARACTENISTICS HALLE OF RELATIVE COMPLOTION OF A MEM TESTED IN ACCORDANCE WITH CLAUSE (A)— COMPLOTION OF A SECORCATION 116 "ASPHALT (DENSE AND OPEN GRADED)" SHALL BE 95%.

 ${\underbrace{\mathsf{NOTES}}}$ i. Folyndations have been designed for a safe bearing capacity of 100 kpg safe bearing capacity to be confined by a geofechnical engineer.

2. ALL CONCRETE CURRENT EDITION WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3000 WITH AMERICANIS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

3. ALL STEEL REINFORCEMENT TO BE GRADE 500 N BARS TO AS/NZS 4671 DUCTILITY CLASS N

4, all masonry workmans-ip and materials shall be in accordance with asstro and the specification.

S. APRY 3 COATS OF WATERPROOF PAINT, HYDROSEAL BITUMHOUS EMULSION OR EQUIVALENT ON RETAINED EARTH SIDE OF RETAINENG WALL OVER FULL HEIGHT OF RETAINING WALL 6. PROVIDE 2 LAYERS OF 0.2mm POLYETHELDHE WATERPROOF WEMBRANE BENEATH CONCRETE FOOTING LAPPED 400 AT JOINTS AND TAPED, TEARS OR PUNCTURES ARE TO BE TAPED.

CONCRETE

SHEET 2 OF 2 AND MISCELLANEOUS DETAILS	GENERAL NOTES & SPECIFICATIONS	Titie	
III	4670-03	Drawing No.	

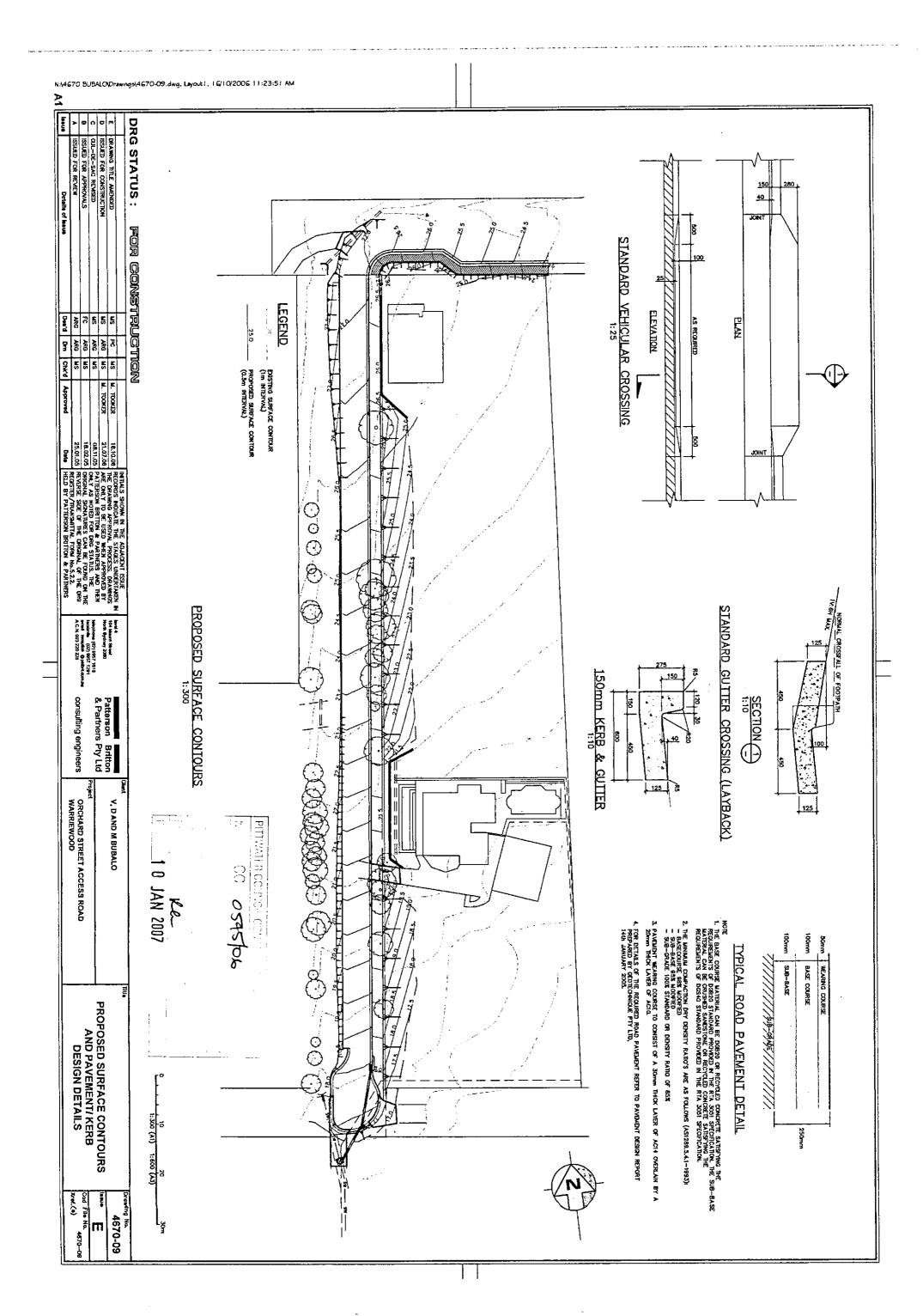
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N:\4670 BUBALO\Drawings\4670-04.dwg, Layout1, 16/10/2006 11:04:41 AM 2 DRG STATUS: DUSTING STORMWATER PIP RETAINING WALL DETAIL ADDI ISSUED FOR CONSTRUCTION CAL-DE-SAG REVISED ISSUED FOR TENDER CLD = + CUT) EXISTING ORADE ORADE CHAINAGE DESIGN DATUM 15 ORIZONTAL 40km/h SPEED : RELOCATE EXISTING TELSTRA CABLE TO NEW SHARED SERVICE TRENCH 0.00 5.00 24.54 24,54 10.00 24.93 24.92 13:86 8 23.39 23.31 25.28 25.31 ORCHARD STREET 20.00 25.71 25.70 LEGEND 25.00 1.5m WDE CONCRETE FOOTPATH (100mm THICK, F82 MESH, 25Mpa, 50mm COVER) OFFSET 0.5m FROM KERB FACE 0.02 26.1 26.08 WATCH EXISTING KERB AND CUTTER LEVELS AT THIS POINT ARG US 30.00 0.02 26.48 26.47 PROVIDE "PRIVATE ACCESS
ROAD ONLY" TRAFFIC SIGN ď 32.12 32.54 -8.01 26.63 25.66 26.63 26.66 Chica 35.00 26.84 26.84 RELOCATE EXISTING HOUSE POWER SUPPLY POLE TO WITHIN PRIVATE PROPERTY APROXIMATE LOCATION OF EXISTING TELSTRA PROPOSED SHARED SERVICE TRENCH (REFER TO DWG. 4670—03 FOR DETAILS) PROPOSED STORWWATER PIPE PROPOSED STORWWATER PIT PROPOSED KERS AND GUTTER (150mm PROPOSED SAWCUT PROPOSED BOTTOM OF BATTER PROPOSED TOP OF BATTER PROPOSED ACCESS ROAD 40.00 27.23 27.09 42.54 0.22 27.38 27.15 NEW SHARED SERVICE TRENCH TO BE LOCATED ON EAST SIDE OF NEW ROAD FOR FULL LENGTH, REFER TO DETAIL ON DWG. 4870-03 45.00 0.31 27.51 27.20 47.45 0.37 27.58 27.21 27.64 27.18 50.00 0.45 0.51 27.63 27.12 LIMIT SIGN 55.00 0.51 27.55 27.04 FOLLOR MINIALS SHOWN IN THE ADJACENT ISSUE
DO RECORDES MOCATE THE STACES UNDERTAKEN IN
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JUNCTION PIT TO
CONNECTED INTO EXISTING
STORMWATER PIPE Cod FTe No. 4870-04 STORMWATER LINE 205.00 4670-04 ш 210.00 211.06 18 17.92 17.83 17.77 15000mm 17.68

CUL-DE-SAC KERB DEVELOPMENT SCALE HORIZONTAL 1:100
SCALE HORIZONTAL 1:50 SS ROAD TYPICAL SECTION
HORIZONTAL 1:100
VERTICAL 1:50 SHANAHAN LDT 4 DP734891 3.81m 1: 200 (A3) 25.00 -0.16 17.21 -5.000 -0.18 STANDARD 150mm HIGH KERB AND GUTTER 4.550 -0.14 ACCESS ROAD 5.0m EXISTING ROAD EASEMENTS
SHANAHAN MOLLOY
LOT 3 DP7/34891 LOT 2 DP7/5324
3.81m
3.81m CUL-DE-SAC KERB DEVELOPMENT AND ACCESS ROAD TYPICAL CROSS SECTION 27.72 -0.25 17.17 P CH 27,727 RL 17,184 VERTICAL -0.17 17.31 30.00 1,000 -0.03 FOR DETAILS OF PAVEMENT DESIGN S00T L0T 1 DP715324 3.81m 1:50 (A1) 1:100 (A3) 35.00 0.07 17,78 17,72 0.17 18.02 36.95 17.65 MORKS BY OTHERS PROPOSED KERS Cad Fis No. 4570-05 ĝ 40.00 4670-05 18.06 5000mm 41.96

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Patterson Britton Maken Spring 2000 Maken (27) 9657 1291 ACH 200 220 228 Patterson Britton & Patterson Britton	DRAINA DRAINA		
Britton To Pty Ltd Project ORCHARD STREET ACCESS ROAD WARRIEWOOD	CONSTRUCT NEW LAYBACK TO PROVICE KEHACILLA ACCESS TO ALL ENSTRUC AND ACCESS TO ACCESS TO ALL ENSTRUC AND ACCESS TO ACCES		
	EXISTING AS75 LINE EXISTING LINE TO BE LEGINED FOR SECTOR 10A PIT SCHED A 341050.043 6270624.238 OTES INSTALL INGAL ENVIROPOD PIT INSERT EQUIVALENT TO SUIT AT PITS 1/7 AND EQUIVALENT TO	РИТПИЛ В СС <u>ОУС</u>	
STORMWATER DRAINAGE PLAN Cod File Statice)	JAN 2007 JAN 20	RCCUYOLCCY,STE	Z
4670-10 D D 10 No. 4870-10	15COOOmmin		

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	ijue			FOR CONSTRUCTION							
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MR W BUBALO

WARRIEWOOD VALLEY 7&7A ORCHARD STREET (PART OF SECTOR 10)

Water Management Report Construction Certificate Issue

Issue No. 1 SEPTEMBER 2005 PITTWATER COUNCIL CONSTRUCTION CERTIFICATE

Number: CC OSAS OS

This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate.

Endorsed by: QC

Date: 1 0 JAN 2007

Patterson Britton & Partners Pty Ltd consulting engineers

MR W BUBALO

WARRIEWOOD VALLEY 7&7A ORCHARD STREET (PART OF SECTOR 10)

Water Management Report Construction Certificate Issue

Issue No. 1 SEPTEMBER 2005

Document Amendment and Approval Record

1 0 JAN 2007

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Note: This document is preliminary unless it is approved by a principal of Patterson Britton & Partners.

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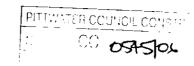
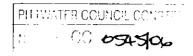


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TABLE 1 -PRE CONSTRUCTION (7&7A ORCHARD ST) WATER QUALITY MONITORING RESULTS

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1 EXECUTIVE SUMMARY

1 N JAN 2007

This document is the Construction Certificate (CC) issue Water Management Report (WMR) for the proposed development of 7&7A Orchard Street (part of Sector 10), Warriewood Valley. It follows on from the Development Application (DA) issue water management report, detailing additional information gathered during the design process and where necessary recalibration of previously developed models.

Pittwater Councils "Warriewood Valley Urban Release Water Management Specification" (WMS), Feb 2001 has been utilised as the guiding document for preparation of the report, with detailed analysis of the following aspects of water management for the proposed development:

- Water cycle management;
- Water quality management;
- Flood protection; and
- Stormwater quantity management.

Appendix A includes a signed copy of Councils CC document checklist to confirm that all the tasks required of the above aspects have been undertaken.

The runoff quantity, water cycle, flooding and quality control measures proposed in the development satisfy Councils requirements detailed in their WMS.

1.1 WATER MANAGEMENT PLAN

The proposed development of 7&7A Orchard St (Part of Sector 10) provides a Water Management Plan (WMP) that is detailed in the **Drawings** and in summary incorporates the following:

- Stormwater retention and WSUD measures that include Atlantis infiltration/retention cells and rainwater tanks that allow achievement of the predevelopment runoff volume (refer to Section 4 of this report titled "Description of Proposed Water Management Measures" for details);
- A water quality control treatment train that consists of a major water quality control pond (WQCP1), Gross Pollutant Traps (GPT's) and other WSUD measures (refer to Section 5 of this report titled "Water Quality Assessment" for details);
- A detailed stormwater quality monitoring programme (refer to Section 5 of this report titled "Water Quality Assessment" for details)
- Stormwater Detention measures consisting of Atlantis Cell type detention tanks on each proposed lot to ensure downstream flows are maintained at predevelopment levels (refer to Section 7 of this report titled "Stormwater Quantity Management" for details); and
- Provision of a development that complies with both NSW floodplain management policy and Councils flood planning requirements (including evacuation) (refer to Section 7.3 of this report titled "Flood Management" for details).

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1.2 SECTOR 10 OWNERSHIP

Sector 10 consists of a number of different landholders. 7&7A Orchard St is approximately 0.6ha out of a total of 13.9ha for the Sector as a whole.

The water management plan for Sector 10 previously developed for the Stockland component of the Sector also took into consideration the Sector wide implications for future water management. This has meant some of the various components of the Stockland water management plan have been sized to accommodate development of 7&7A Orchard Street.

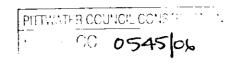
The components of the Stockland development that have been sized to include development of 7&7A Orchard Street include the water quality control ponds (WQCP's) and GPT's. In addition, a significant proportion of the monitoring undertaken for the Stockland development also applies to this site.

1.3 CERTIFICATION

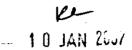
The contents of this report are certified by Michael Shaw, who is a registered NPER engineer with the Institution of Engineers, to comply with the requirements of Pittwater Council's Water Management Specification (*February 2002*).

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2 INTRODUCTION



The proposed development site (7 & 7A Orchard Street, Warriewood Valley) is part of Sector 10 and is included within the Warriewood Valley Urban Release Area, which has been identified for release for urban purposes by the Minister for Planning.

The site has a total area of approximately 6,068m² and has frontage to the southern side of Orchard Street at Warriewood. The site is bounded on the north by a private accessway and on the south by Stockland owned land (refer to Figure 1 for details). No creeks or major overland flow paths currently traverse or impact on the site.

Patterson Britton & Partners (PBP) has been engaged by Mr W Bubalo to prepare a Water Management Report relating to the impacts of the proposed development on water management issues. These issues include long-term hydrologic assessment (water balance), water quality assessment, flood attenuation, floodplain management and stormwater quantity management.

It should be noted that this report only applies to the land owned by Mr W Bubalo which is proposed to be subdivided into 10 residential lots. It does not relate to the proposed reconstruction of the adjacent private access road. Details of the access road design have been included in **Appendix B** for information purposes only.

This current report has been prepared for the Construction Certificate (CC) stage of the overall development process.

The Water Management Report has been prepared in accordance with Pittwater Council's publication "Warriewood Valley Urban Land Release – Water Management Specification" (February, 2001) (WMS).

A completed copy of the "Documentation Checklist – Construction Certificate", confirming that all tasks required by Council's WMS have been undertaken, is found at Appendix A.



3 DESCRIPTION OF PROPOSED WATER MANAGEMENT MEASURES 10 JAN 2007

A number of different water management measures are proposed to be used for this site. These measures are illustrated in the **Drawings** and described below and include:

- Rainwater Tanks:
- Atlantis Detention/Infiltration Tanks and Filtration Units; and
- A Water Quality Control Pond located in the downstream area of Sector 10.

3.1 RAINWATER TANKS

A 2m³ rainwater tanks is proposed to be installed on each lot (ie a total volume of 20m³). The location of the tanks on each of the lots will vary depending on the final form of the individual dwellings.

The rainwater tanks are to be installed such that only roof water is collected. The water from the tanks is to be used, as a minimum, for irrigation and toilet flushing purposes. A trickle top up and back flow prevention device are to be installed to Sydney Water's specifications.

While providing a retention function, the rainwater tanks also provide a detention function, as determined in the water cycle assessment (refer to Section 4). Studies have shown that at the beginning of a storm event the rainwater tanks will, on average, be only 58% full with the remainder being able to be included as effective detention.

When full, overflow from the rainwater tanks is to be directed to the Atlantis cell detention/infiltration taks installed at the rear of each lot.

3.2 ATLANTIS TANKS AND FILTRATION UNITS

Atlantis detention/infiltration tanks and filtration units are proposed to be installed at the low point of each lot (refer to Drawing 4670-01-03). The size of the tanks varies for each lot. A schedule of tank sizes is included in Drawing 4670-01-04.

All overflow from the rainwater tanks and other surface water runoff is to be directed to the Atlantis filtration units and tanks.

Each tank is to be installed with a filtration unit upstream to provide pre treatment and prevent clogging of the tanks and infiltration media. Filtration units are to be installed to the manufacturers and Patterson Britton & Partners specifications (refer to Appendix D and Drawings 4670-01-02 and 05).

The base of each tank is to be underlain by 50mm of sand and evenly spaced gravel trenches (as detailed in **Drawing 4670-01-05**) in order to enhance the infiltration capacity of the site.

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Downstream of each tank is a Discharge Control Pit (DCP). These pits restrict the discharge from the site to the permissible site discharge (PSD) by using a discharge control plate or orifice. The DCP's also include a surface grate to allow surface runoff not collected upstream of the Atlantis cells to be detained prior to discharge from the site. A trash screen is also to be installed over the orifice plate to prevent clogging.

Tank 'DT7', which benefits lots 707 and 708, is located within lot 709. This requires an easement to be established in Lot 709 for the benefit of these lots. The drainage lines running along the rear of all the lots (ie Line 1 and Line 2) will also require easements.

3.3 WATER QUALITY CONTROL POND

Water Quality Control Pond 1 (WQCP1) was constructed as part of the downstream Stockland development and was sized to provide stormwater treatment for the 7&7A Orchard Street development. For details of the construction of WQCP1 refer to the CC Issue Water Management Report (PBP, February 2002) prepared for the Stockland Development. For details of the performance of WQCP1 since construction, refer to monitoring results provided in Appendix C and also the 8th Quarter Post Subdivision Certificate Water Quality Monitoring Report (PBP, November 2004) prepared for the Stockland development. The results show that it is currently exceeding its performance targets.

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4 WATER CYCLE ASSESSMENT



An assessment of the water cycle for the site (ie 7&7A Orchard St only) was carried out at DA stage to ascertain the impact of the proposed development on runoff volume and baseflow. The existing water cycle was used as a basis of comparison for two development scenarios. The first scenario explored the impact of development where minimal management practices were introduced. The second scenario compares existing conditions with the proposed development layout where a suite of water management practices is proposed.

The DA water cycle model did not require amendment at CC stage as the detailed design shown in the **Drawings** has been undertaken to meet the outcomes of the earlier modelling by incorporating an equivalent suite of water management practices. All other assumptions made within the DA water cycle model remain valid.

To achieve the objective of the DA model the following stormwater retention volumes were required to, and have been incorporated into the design:

- Implementation of $2m^3$ (2kL) rainwater tanks within each of the 10 proposed lots (ie total capacity of $20m^3$); and
- Provision of 222.1m³ of Atlantis infiltration/detention tanks.

4.1 WATER CYCLE ASSESSMENT RESULTS

4.1.1 Existing Conditions

The results indicated that 24% of total rainfall was converted to runoff for existing conditions.

For the years 1995 to 1998:

- The average annual rainfall volume falling on the site was 8,876 m³;
- The average annual volume of runoff from impervious surfaces was 0 m³;
- The average annual volume of pervious surface runoff was 2,108 m³; and
- The average annual volume of infiltration was 1,820 m³.

The total runoff as a percentage of total rainfall (24%) is slightly lower than the percentage calculated in the IWMS (36%), however considering that the L&T IWMS model (NAM) simulated a 10 year period of rainfall for a much larger area with likely lower average infiltration rates than for this site, the result is considered acceptable.

4.1.2 Post Development - No Water Management Practices

The results indicated that 56% of total rainfall was converted to runoff for the post development conditions without introduction of specific water volume reduction measures.

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For the years 1995 to 1998:

- The average annual rainfall volume falling on the site was 8,876 m³;
- The average annual volume of runoff from impervious surfaces was 3,919 m³;
- The average annual volume of pervious surface runoff was 1,077 m³; and
- The average annual volume of infiltration was 898 m³.

Of particular interest is the increase in runoff volume from impervious surfaces and the decrease in infiltration volume.

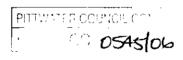
4.1.3 Post Development - Introduction of Water Management Practices

The results of the water balance indicated that 23% of total rainfall was converted to runoff for the post development conditions with the introduction of the above mentioned measures.

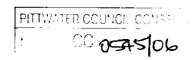
For the years 1995 to 1998:

- The average annual rainfall volume falling on the site was 8,876 m³;
- The average annual flow volume to the rainwater tanks was 2,351 m³, reuse demand was 1,646 m³, 1,151 m³ of mains water was required and 1,859 m³ of spilled to the infiltration systems;
- The average annual flow volume to the infiltration systems was 4,686 m³; and
- The average annual volume of infiltration was 2,430 m³.

Introduction of the proposed water management practices reduces the fraction of runoff from 56% to 23% of the total rainfall, which is 1% less than the runoff rate for existing conditions.



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5 WATER QUALITY ASSESSMENT



This section contains a description of the updated CC monitoring plan for the site including the results of additional sampling, undertaken since publication of the DA stage WMR.

5.1 MONITORING PLAN OBJECTIVES

Prior to urbanisation of Sector 10, a monitoring plan was developed for Stockland in accordance with Council's Water Management Specification (February 2001) and AS/NZ 5667.6: 1998 "Water Quality Sampling – Guidance on Sampling of Rivers and Streams". The Stockland monitoring plan was developed based on a sector wide approach and hence incorporates the Bubalo owned land (7&7A Orchard Street).

The objectives of the monitoring plan are to:-

- develop an understanding of the existing conditions present in the waterways within and adjacent to Sector10;
- continually assess the quality of these waterways during the construction phase of Sector 10;
 and
- assess the impact of constructed water quality measures following construction to ensure the development is ecologically sustainable.

Monitoring undertaken prior to the development of Stockland's lots within Sector 10 was used to establish the pre-development quality of the waterways within and adjacent to Sector 10 (termed "baseline data"). This data was compared with post subdivision monitoring results of the Stockland development and will also be compared with the post subdivision results of the 7&7A Orchard Street development to determine whether pollution controls are operating adequately and if the water quality is improving.

During the development stage of 7&7A Orchard Street, implementation of the monitoring plan will allow early detection of any adverse impacts likely to risk the health of the public or the quality of downstream waterways such as Warriewood Wetlands.

5.2 SCOPE OF MONITORING PLAN

7&7A Orchard Street drains directly to the Stockland drainage system of Sector 10, which inturn leads to WQCP1. Discharge from WQCP1 then drains through Sector 12 to Warriewood Wetlands.

5.2.1 Monitoring Locations

The primary waterway that was selected for monitoring as part of the Stockland monitoring programme for Sector 10 was Mullet Creek. This creek receives runoff in part from Sector 10 and then discharges into Warriewood Wetlands. Sampling locations for existing

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conditions were selected at the downstream and upstream ends of this creek with relation to Sector 10 (refer to Figure 1).

A third internal sampling site was also monitored at the discharge point from Sector 10 into Sector 12 (refer to Figure 1).

As part of the post subdivision certificate water quality monitoring programme for the Stockland owned land, both the inlets and outlets from WQCP1 and WQCP 2 were monitored.

Currently no water body exists within or immediately adjacent to 7&7A Orchard Street. In addition to the Sector 10 monitoring, sampling has also been undertaken at the existing piped drainage discharge point to Mullet Creek (refer to Figure 1, sampling site IS3). This pipe currently drains the existing private access road and any upstream areas which also drain to this road. However, 7&7A Orchard Street does not currently drain to this point and the proposed lots are designed to drain through the Stockland development rather than to Mullet Creek.

Following development of 7&7A Orchard Street, a sampling site will be established at the piped discharge point from the proposed subdivision into the Stockland development (refer to Figure 1, sampling site IS2).

5.2.2 Types of Monitoring

The monitoring plan for Sector 10 (including 7&7A Orchard Street) consists of three main categories:-

- physico-chemical water quality monitoring;
- ecosystem/rapid biological assessment monitoring, and
- riparian sediment toxicant monitoring.

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5,2.3 Water Quality Monitoring (Discrete Sampling)

The water quality monitoring component of the plan consists of:-

- wet weather sampling undertaken for at least 3 events (recording a rainfall depth greater than 20mm over the catchment in a 24 hour period) spread evenly over the year and sampling throughout the rainfall event (rising and falling limbs of storm hydrograph).

Samples are tested for the constituents listed in Council's WMS and reported to conform with Council's specification.

As mentioned above, discrete sampling of two dry weather events has already been undertaken at the access road discharge point to Mullet Creek. Following construction of 7&7A Orchard Street sampling will be undertaken at the discharge point of 7&7A Orchard Street into the Stockland development (refer to Figure 1, sampling site IS2).

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CC Water Management Report
7&7A Orchard St, Warriewood Valley

5.2.4 Rapid Biological Assessment Monitoring

Habitat monitoring has been undertaken as part of the Stockland development in Mullet Creek (ie. at the location of the water sampling stations).

As no natural aquatic systems exist on the site (7&7A Orchard Street), no additional rapid biological assessment has been or will be required.

5.2.5 Sediment Toxicant Monitoring

Sampling and testing of bed sediment has already been undertaken in Mullet Creek as part of the Stockland development

As no natural waterways currently exist on the site (7&7A Orchard Street) no additional bed sediment sampling will be required.

5.2.6 SQUID Monitoring

All Stockland constructed stormwater quality improvement devices (SQUID's) for Sector 10 have been monitored for 2 years since issue of the Stage 1 subdivision certificate. This has included:

- Measurement of volume/mass of material removed from GPT's and an assessment of its relative composition;
- Discrete sampling at the major inlets/outlets of the proposed WQCP; and
- Qualitative assessment of effectiveness of other proposed water quality control measures (ie bio-retention swales)

Following construction within 7&7A Orchard Street, the qualitative assessment for Stockland constructed devices will be extended to quarterly inspection of the proposed infiltration tanks within 7&7A Orchard Street (for a 2 year period).

5.2.7 Flow Gauging for Monitoring

To assess the magnitude of wet weather events and determine the position of a particular sample within a storm event, both the rainfall depth and flood depth will be recorded. Rainfall depth data will be obtained from the BoM, whilst flood depths will be recorded at the closest available flood gauge to the site (Garden Street crossing of Mullet Creek).

The total depth of rainfall experienced during the event will allow PBP to determine if the event sampled will comply with Council's minimum 20mm depth over 24 hours criteria. A sustained length of record of the water levels at Garden Street will allow PBP to determine if the sample has been taken on either the rising or falling limb of the regional storm hydrograph.

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5.2.8 Quality Assurance/Measurement Accuracy

All samples collected for the monitoring plan will be tested by a NATA certified laboratory. Copies of all original data testing certificates will be provided along with information detailing the collection and preservation status upon delivery at the laboratory. The laboratory testing detection limits will also be included on all test certificates.

5.3 MONITORING RESULTS

5.3.1 Water Quality Monitoring Results

Summary tables of the pre construction, construction and post subdivision water quality data from sampling undertaken for the Stockland development is included in **Appendix C**. **Table 1** contains data for the pre construction monitoring undertaken at the discharge point of the access road to Mullet Creek.

The results for the sample taken on 5 May 2005 are similar to results for previous monitoring of the Stockland upstream site in Mullet Creek as would be expected. However, results from 26 July 2005 show high levels of a number of pollutants when compared to previous monitoring and Councils objectives. Nutrient levels (ie Total Nitrogen (TN) and Total Phosphorus (TP)) were significantly higher than the previous monitoring and above Council's medium and long term goals. This is most likely due to external sources, which may include excess fertiliser application to land upstream.

The highly turbid nature of the sample could explain the high concentrations of copper, lead and zinc (the values for these metals were all above Council's medium and long term objectives). The high suspended solids concentration may indicate the bed sediments had been disturbed and pollutants stored in the sediments had been remobilised.

5.3.2 Rapid Biological Assessment Monitoring Results

For details of the rapid biological assessment monitoring results for Sector 10 refer to the Stockland water management reports (*DA to post sub-division issues*).

5.3.3 Bed Sediment Toxicant Monitoring Results

For details of the bed sediment toxicant monitoring results for Sector 10 refer to the Stockland water management reports (DA to post sub-division issues).

PITTWITER COUNCIL CONTIN

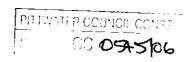
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Table 1 -Pre Construction (7&7A Orchard St) Water Quality Monitoring Results

arameter	Units	During Const.	Short-Term Goal	Medium-Term Goal	Long-Term Goal*	5 May 2005	26 July 2005
						WSIS10A	WSBUB2
					-		
otal rain over 5 days breceding sampling	mm					0	0
Ammonia - N	mg/L	NS	<2.3	<0.3	<0.3	0.02	1.30
Total Nitrogen	mg/L	<1.6	SQ	<1.6	1.0	0.8	8.2
litrate	mg/L	NS	NS	NS	NS	0.06	<0.02
Vitrite	mg/L	NS	NS	NS	NS	<0.02	<0.02
otal Kjeldahl Nitrogen	mg/L	NS	NS	NS	NS	0.8	8.2
Total Phosphorous	mg/L	<0.1	SQ	<0.1	0.04	0.05	1.70
Filterable Phosphorous	mg/L	NS	NS	NS	NS	<0.05	0.80
Non-Filterable Phosphorous	mg/L	NS	NS	NS	NS	0.01	<0.01
Faecal Coliforms	cfu/100m	<150	<1000	<150	<150	980	40
Suspended Solids	mg/L	<100	SQ	<20	<6	2	430
Turbidity (field)	NTU	NS	SQ	<50	<20	5	105
pH (field)	pH unit	NS	6.6-8	6.6-8	6.6-8	8.76	8.54
Dissolved Oxygen (field)	mg/L	NS	sQ	<90% sat.	<90% s	2.91	2,54
Temperature (field)	°C	NS	SQ	SQ	SQ	19.7	19.2
Conductivity (field)	mŚ/cm	NS	NS	NS	NS	0.234	0.335
Salinity (field)	%	NS	NS	NS	NS	0	0
Arsenic	ug/L	NS	SQ	50%SQ	50	<2	5
Chromium	ug/L	NS	SQ	50%SQ	10	<5	<5
Copper	ug/L	NS	SQ	50%SQ	2	<5	16
Lead	ug/L	NS	SQ	50%SQ	1	<2	27
Mercury	ug/L	NS	SQ	50%SQ	0.1	<0.05	<0.05
Zinc	ug/L	NS	SQ	50%SQ	50	20	120
Organo chlorine Pesticides (OC)	mg/L	NS	SQ	50%SQ	NS	<21	<21
Organo phosphate Pesticides (OP)	mg/L	NS	SQ	50%SQ	NS	<220	<220
Phenols	mg/L	NS	SQ	50%SQ	NS	<170	<170
PAHs	mg/L	NS	SQ	50%SQ	NS	<17	<17
Hardness	mg/L	NS	NS	NS	NS	68	140
Chlorophyll A	mg/L	NS	15	15	10	<0.005	0.09
Oil and Grease	mg/L	NS	NS	NS	NS	<5	<5
1. Long-Term water quality g						C2 - Feb 2001.	,
2. Figures in normal case sati							
3. Figures <u>underlined</u> achieve				ity goal.			
4. Figures in italics achieve the					_ _		
5. Figures in Bold do not ach				the short term gos	u PIII,∀575	CONTRACT CO.	
6. Rainfall data obtained from	n Bureau of	f Meteorolog	y			000	

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7. NS - Not Specified by Council, SQ - Status Quo,



6 WATER QUALITY MANAGEMENT



This section contains a description of the updated CC water quality management plan for the site including a detailed description of the proposed measures and their management.

6.1 CONSTRUCTION PHASE

During bulk earthworks and construction for the proposed development, sediment and erosion control facilities will be constructed/installed in accordance with Council's specifications and with the requirements of the publication "Managing Urban Stormwater – Soils and Construction" (Landcom, 2004).

A sediment and erosion control plan has been developed for construction (refer to **Drawing 4670-01-06**) which outlines the strategies proposed to prevent excessive pollutant loads being exported from the site in runoff during and immediately following construction.

6.2 POST DEVELOPMENT PHASE

As required in Council's WMS, the objective of the water quality management strategy for the proposed development of Section 10 is to ensure a "no net increase" in pollutant loads discharged from the developed site compared to the existing conditions.

The proposed water quality management system for 7&7A Orchard Street consists of the following elements:

- the maximisation of pervious areas (on each development lot) so as to increase the infiltration potential;
- use of rainwater storage tanks for reuse in non-potable supply purposes and irrigation;
- use of Atlantis infiltration tanks (described earlier in this report);
- installation of Atlantis Purification Units (refer to Appendix D for details);
- utilisation of the Stockland constructed underground Gross Pollutant Traps (GPTs) these have been sized to account for 7&7A Orchard Street; and
- utilisation of the Stockland constructed water quality control pond 1(WQCP1) this has been sized to account for 7&7A Orchard Street

It has been estimated that the pollutant loads discharging from Sector 10 as a whole (*ie including 7&7A Orchard Street*) will be lower than for the existing site conditions, making a substantial contribution to long-term improvements in receiving water quality.

Post sub-division certificate stage water quality monitoring results for WQCP1 show that the wetland is achieving better than the design objective in terms of TN, TP and SS reduction (refer to Appendix C for details).

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Patterson	Dritton	αP	artners

6.2.1 Maintenance

The maintenance program for all water quality control measures implemented with 7&7A Orchard Street is as follows:

- Periodic (3 monthly) inspection and removal of accumulated sediments and trash from the Atlantis purification units; and
- Yearly inspection and removal of accumulated sediments from rainwater tanks and the Atlantis infiltration units.

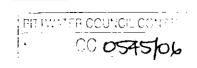
6.2.2 Mosquito Risk Assessment

An assessment of the mosquito risk for all water quality control measures implemented within 7&7A Orchard Street has been undertaken. The outcomes of the assessment have resulted in incorporation of the following design measures to minimise mosquito nuisance:

- Pre-screening all flows to both the rainwater and infiltration tanks;
- Regular maintenance of infiltration tanks to prevent blockage; and
- Providing a seal to all maintenance access points to both the rainwater and infiltration tanks.



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7 STORMWATER QUANTITY MANAGEMENT 1.0 JAN 2007

7.1 INTEGRATED STRATEGY

The integrated strategy proposed for management of stormwater runoff quantity on the site is comprised of:

- source control which includes:
 - use of rainwater tanks $(2 m^3/lot (20 m^3))$, of which 42% is counted as effective OSD storage $-8.4m^3$) to reduce runoff volume, maximise non-potable supply/re-use and minimise peak flows discharging from individual allotments;
 - minimising impervious surfaces (*limited to 50% site wide*) to maximise infiltration potential and reduce runoff volumes;
 - the use of landscaping which encourages the maximisation of infiltration.
- the conveyance system which includes:
 - the proposed 20yr ARI piped drainage system (effective detention storage volume = $19.4m^3$) to reduce peak flow rates in events between the 20yr and 100yr ARI events;
- formal stormwater detention facilities to be incorporated at the downstream area of each lot which includes:
 - the proposed Atlantis Tank On site Detention system (also utilised for infiltration purposes) to provide a total detention volume of 366m³/ha or 222.1m³ at a PSD of 225L/s/ha or 136.5L/s for the ten lot subdivision.

7.2 STORMWATER DETENTION

The proposed design achieves the requirements of the DA water management report, therefore no further detention modelling was required for the CC stage.

We confirm that CC design as shown in the **Drawings** results in post development outflows from 7&7A Orchard Street that are lower than for the base conditions model.

7.2.1 Flood Flow Gauging

No waterways exist on the site (7&7A Orchard Street), hence no flood flow gauging was undertaken.

7.3 FLOOD MANAGEMENT

The Bubalo site is not flood impacted by any major water body (creek or major overland flow path). A stormwater easement was originally proposed on the southern boundary of the site to allow access for the upstream development (ie Sector 10A) to the Stockland piped drainage system for all flows up to the 20 year ARI event. Overland flows in excess of the 20 year ARI event were

Patterson Britton & Partners

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proposed to drain directly to Mullet Creek. However, during design of the access road an existing drainage line was discovered at the end of the road, discharging directly to Mullet Creek. At the same time Lawson & Treloar also identified potential flooding problems at the downstream end of Sector 10 and the main access road to Sector 12. It was therefore decided to drain all upstream flows for all events directly to Mullet Creek. An easement to drain these flows to the Stockland drainage system is therefore no longer required.

Note that the road drainage, as illustrated in **Appendix B**, has been designed to convey the 100 year ARI flows to Mullet Creek

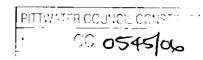
7.4 FLOOD EVACUATION

The proposed development is sited well clear of the floodwaters of Mullet Creek in both the 100yr ARI and PMF events. Hence, all habitable floor levels will be sited clear of both the 100yr ARI and PMF events.

No flood evacuation strategy is therefore required for the site as it is not impacted by the PMF of Mullet Creek.

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8 REFERENCES

1 0 IAN 2007

Institution of Engineers, Australia

"Australian Rainfall and Runoff, a Guide to Flood Estimation" Canberra, 1987

Lawson & Treloar Pty Ltd

"Integrated Water Management Strategy – Warriewood Valley" November 1997 Report prepared for Pittwater Council

Patterson Britton & Partners

"Water Management Report Sector 10 Warriewood Valley" Issue 1, June 2001 Prepared for Stockland Trust Group

Patterson Britton & Partners

"Water Management Report Sector 10
Warriewood Valley-Construction Certificate Issue" Issue 7, February 2002
Prepared for Stockland Constructors

Patterson Britton & Partners

"Post Subdivision Certificate Water Quality Monitoring Report Sector 10 Warriewood Valley" Issue 1, January 2003
Prepared for Stockland Constructors

Pittwater Council

"Flood Risk Management Policy for Pittwater Council" 19 June 2001

Pittwater Council

"Warriewood Valley Urban Land Release Water Management Specification" February, 2001



DRAWINGS

Patterson Britton & Partners

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DRG STATUS:

PRILIMINARY, NOT FOR CONSTRUCTION

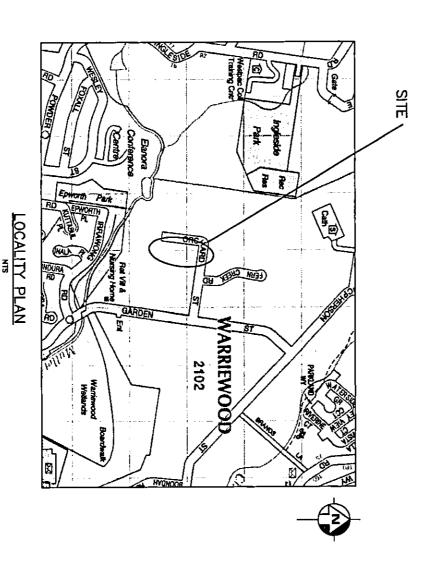
FOR CC APPROVAL

D ARG

WARRIEWOOD VALLEY, 7 & 7A OR INTERALLOTMENT DRAINAGE (PART OF SECTOR 10) ESIGN

V, D AND M BUBALC for

> PITTER COUNCE COUNTY CO OSASTOL



DRAWING LIST:

4870-01-01 4670-01-02 GENERAL NOTES & SPECIFICATIONS TITLE SHEET, LOCALITY PLAN AND DRAWING LIST

4670-01-05 4870-01-04 4670-01-03 DRAINAGE LONG SECTION DRAINAGE DETAILS NATA 311S

4670-01-08

SEDIMENT AND EROSION

CONTROL PLAN

Patterson Britton & Partners Pty Ltd 7 & 7A ORCHARD STREET INTERALLOTMENT DRAINAGE DESIGN V, D AND M BUBALO

consulting engineers

TITLE SHEET, LOCALITY PLAN AND DRAWING LIST

Cod File No. 4670-01-01 Xref.(s) 4670-01-01 Œ

1. THESE DRAWNGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWNGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH THE WORK.

2. ALL LEVELS ARE IN TERMS OF AUSTRALIAN HEIGHT DATUM (AHD). ALL CO-ORDINATES ARE ON A LOCAL SYSTEM, REFER TO DWG. 4870-01-03 FOR DATUM.

3. DESIGN BASED ON SURVEY INFORMATION SUPPLED BY BYRIE & ASSOCIATIS PTY LTD. THE SURVEY MAY NOT PICK UP ALL EXISTING FEATURES, WHERE MANDE DISCREPANCES ARE IDENTIFED THE CONTRACTOR SHALL INFORM THE SUPPRINTENDENT BEFORE PROCEEDING.

4. NO TREES ARE TO BE REMOVED (UNLESS INDICATED ON THE DRAWNIGS) WITHOUT THE SUPERINTENDENTS CONSENT.

S. NO WORK IS TO BE UNDERTAKEN ON PRIVATE PROPERTY WITHOUT CONSENT FROM THE SUPERINTENDENT & THE PROPERTY OWNERS. DO NOT SCALE FROM THESE DRAWINGS UNLESS NOTED OTHERWISE. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

9. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT SLA COORS, WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES, EXCEPT WHERE VARIED BY THESE DRAWNINGS. B. IF THE CONTRACTOR HAS ANY QUESTION, REQUIRES CLARIFICATION OF ANY ISSUE, OR FINDS ANY DISCREPANCY WITHIN THESE DRAWNICS, THE CONTRACTOR SHALL ADMSE THE SUPERINTENDENT BEFORE PROCEEDING.

10. ALL SETOUT DIMENSIONS SHOWN SHALL BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE WORK COMMENCES.

12. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO PROTECT EDISTING SERVICES. ANY SERVICE AUTHORITIES PROPERTY DAMAGED DURING THE COURSE OF THE CONTRACT SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE. 11. THE CONTRACTOR SHALL PROVIDE TEST CERTIFICATES FROM A N.A.T.A. APPROVED TESTING LABORATORY CERTIFICING THAT THE MATERIALS USED COMPLY WITH THE RELEVANT SPECIFICATIONS.

STORMWATER DRAINAGE

1. ALL STORMWATER WORKS ARE TO BE UNDERTAKEN GENERALLY IN ACCORDANCE WITH AS 3500 (2003) STORMWATER DRAINAGE.

2. UNLESS NOTED OTHERWISE, ALL REINFORCED CONCRETE PIPES ARE TO BE CLASS 2 AND RUBBER RING JOINTED, RUBBER RINGS SMALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH AS1644. THE DICANANTED TRENCH WIDTH FOR PIPE LAYING MUST BE AT LESST 400MM WIDER THAN THE OUTER DIAMETER OF THE PIPES ARE TO BE LAID CENTRALLY WITHIN THE EXCAVATED TRENCH.

3. ALL PIPEWORK SHALL BE BEDDED ON A CONTINUOUS UNDERLAY OF SAND, NOT LESS THAN 75MM THICK IN OTHER THAN ROCK AND 200MM THICK IN ROCK AFTER COMPACTION. THE SAND SHALL BE GRADED IN ACCORDANCE WITH ASSSOO AND COMPACTED TO AT LEAST BOX OF THE MADURUM DRY DEPISITY AND SHALL BE GRADED EVENLY TO THE REQUIRED CRADIENT OF THE PIPELINE.

4. IN WET OR UNSTABLE GROUND CONDITIONS WHERE THE TREMO!
BOTTOM, REQUIRES FURTHER STABILIZING, ADDITIONAL, BEDDING OF ZOMA
AND/OR ZOMIN NOMINAL SIZE AGGREGATE (AS DIRECTED BY THE
SUPERINTENDENT), SHALL BE PLACED BLOW THE STANDARD BEDDING TO
SUPERINTENDENT AN APPROVADE PILIER FABRIC SHALL BE USED IN
CONJUNCTION WITH THE ADDITIONAL BEDDING.

5. THE BED AND HAUNCH MATERIAL SHALL BE COMPACTED FOR THE FILL WIDTH OF THE TRENCH BY A MINIMUM OF TWO PASSES OF A VIBRATING PLATE OR HAND TAMPING METHOD TO THE SATISFACTION OF THE SUPERINTENDENT.

8. CHASES SHALL BE FORMED WHERE NECESSARY TO PREVENT SOCKETS, FLANCES OR THE LIKE FROM BEARING ON THE TRENCH BOTTOM OR THE UNDERLAY.

, THE CONTRACTOR SHALL ENSURE THAT ANY EXISTING STRUCTURES OCCATED ADJACENT TO EXCANATED TREDICHES ARE SUPPORTED OR PROTECTED TO PREVENT DAMAGE TO OR MOYEMENT OF THESE TRUCTURES

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8. THE CONTRACTOR MUST LEAVE ALL STORMWATER DRAINAGE WORKS UNCOVERED UNTIL ANY TESTING DEEMED NECESSARY BY THE SUPERINTENDENT HAS BEEN PERFORMED.

9. PIPE LAYING SHALL BEGIN AT THE DOWNSTREAM END OF THE LINE WITH THE SOCKET ENDS OF THE PIPE FACING UPSTREAM. THE BARREL EACH PIPE SHALL BE IN CONTACT WITH THE BEDDING MATERIAL THROUGHOUT ITS FULL LENGTH.

10. FOR RUBBER RING JOINTS THE PIPE BIOS SHALL BE THOROUGHLY CLEANED BEFORE THE JOINT IS MADE. THE TWO PIPE SECTIONS SHALL THEN BE TIGHTLY JOINED WITH THEIR MINER SURFACES AT THE MANUFACTURER'S NOMINATED LAYING GAP.

12. CUTTING OPERATIONS FOR CONCRETE PIPES SHALL PROVIDE NEAT END SURFACES, THE CUT SURFACES SHALL BE GIVEN TWO COATS OF J SUPERINTENDENT APPROVED EPOXY PAINT. 11. LIFTING HOLES IN PIPES AND CULVERTS SHALL BE PLUGGED WITH MORTAR, PRECAST TAPERED PLUGS, OR TAPE SURROUNDS OR OTHER APPROVED MEANS PRIOR TO BACKFILL MATERIAL BEING PLACED.

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RG STATUS:

PRELIMINARY, NOT FOR CONSTRUCTION

STORMWATER DRAINAGE (cont.)

13. JOINTS SHALL NOT BE MADE UNDERWATER. THE TRENCH SHALL BE DEMATERED TO FACULTAIN, JOHN MAKING AND INSPECTION. PRECAUTIONS SHALL BE TAKEN TO PREVENT EROSION OF JOINT MATERIAL BY MOWING CURRENTS OF WATER.

PIPELINE GRADING
-LESS THAN 0.6%
-0.6% TO 1%
-GREATER THAN 1% 14. COMPLETED CEMENT MORTAR JOINTS SHALL BE KEPT DAMP AND PROTECTED FROM THE DIRECT RAYS OF SUN UNTIL BACKFILLING TAKES PLACE. 15. DRAINAGE LINES SHALL BE CONSTRUCTED TO THE TOLERANCES AS FOLLOWS

NOT WITHSTANDING THE TOLERANCES ABOVE EACH PIPE SHALL HAVE A MINIMUM FALL (APPROVED BY THE SUPERINTENIDENT) IN THE DIRECTION OF FLOW.

18. BACKTIL MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO PLACING AND COMPACTION. 17. ALI BACKFILL FOR STORMWAITER DRAINAGE WORKS IS TO BE COMPACTED LAYERS NOT EXCEEDING 300mm LOOSE THICKNESS AND COMPACTED WITHOUT DAMAGING OR DISPLACING THE PIPEWORK.

18. BACKTILL FOR STORMWATER PITS AND PIPES SHALL BE COMPACTED TO AT LEAST 85% OF THE MAXMUM DRY DENSITY AND GRADED IN ACCORDANCE WITH

3500 (2003)

18. UNLESS SPECIFIED OTHERWISE ALL DRAINAGE PITS TO BE CAST INSTU. THE GRADE OF CONCRETE TO BE USED SHALL HAVE A MUNICUM 28 DAY COMPRESSIVE STRENGTH OF 32MPA. STEEL REINFORCING BARS SHALL COMPLY WITH THE REQUIREMENTS OF AST302. WELDED WIRE REINFORCING SHALL COMPLY WITH AST304.

20. GALVANISED STEEL STEP IRONS AT SPACINGS OF 0.3m ARE REQUIRED IN ALL DRAINAGE PITS GREATER THAN 1.2m DEEP.

Z1. Unless specified all drainage grates to be calvanised wild steel to as 3996 and class \mathbf{B}_{c}

22. ALL CAST NSTU CONCRETE DRAWAGE PITS SHALL BE CONSTRUCTED TO THE FORMS AND DIMENSIONS SHOWN ON THE DRAWAGES. WHERE THE GROUND IS SOLID THE SUPERNITEMENT MAY PERMIT THAT BLOCK FORMS NEED NOT BE USED IN THE CONSTRUCTION OF PITS, THE CONCRETE BEING POURED AGAINST THE EARTH, WHERE THIS IS DONE, THE THROWNESS OF THE WALLS OF SICK! PITS SHALL BE INCREASED BY A MINIMUM OF SOMM GREATER THAN THE DIMENSION SHOWN ON THE DRAWMICS. ALL COSTS ASSOCIATED WITH THIS INCREASE IN THICKNESS SHALL BE BORNE BY THE CONTRACTOR.

23. ALL PRE-CAST PITS TO BE BOP PRE-CAST (OR APPROVED EQUIVALENT) WITH MINIMUM BASE HEIGHT OF 1150NM (IE. ORDER CODE PTC-1150) AND THE MINIMUM NABER OF RISERS REQUIRED TO MAKE UP THE SPECIFIED PIT DEPTH.

24. LPVC PIPES SHALL CONFORM IN ALL RESPECTS WITH THE REQUIREMENTS OF AS1254. THE CLASS OF PIPES SHALL BE LPVC "STORMWATER HO" DESIGNED FOR SOLVENT WELD SPIGOT AND SOCKET CONNECTION UNLESS NOTED OTHERWISE. 25. UPVC PIPES SHALL BE SUPPLIED WITH SUFFICIENT QUANTITIES OF SOLVENT FOR MAKING OF THE PIPE JOINTS.

28. UPNO PIPE DNDS SHALL BE THOUROUGHLY CLEANED BEFORE THE JOINT IS MADE. JOINTING SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS USING JOINTING SOLVENT AND PRIMER.

27. UPVC PIPES SHALL BE TRANSPORTED, HANDLED AND STACKED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

29. THE UPVC PIPE ENDS SHALL BE THOROUGHLY CLEANED BEFORE THE JOINT IS MADE, JOINTING SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DIRECTIONS USING JOINTING SOLVENT AND PRIMER. 2A. JPVC PIPE LAYING SHALL BEGIN AT THE DOWNSTREAM END OF THE LINE WITH THE SOCKET END OF THE PIPE FACING UPSTREAM, WHEN THE PIPES ARE LAID, THE BARREL OF EACH PIPE SHALL BE IN CONTACT WITH THE BEDDING MATERIAL THROUGHOUT ITS FULL LENGTH.

ATLANTIS DETENTION TANKS

1. ALL ATLANTS PRODUCTS ARE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

2. FILTRATION UNIT TO BE 'ATLANTIS LARGE FILTRATION UNIT (PART No. 8003Å) WITH ALLMINIUM LID AND GEOTEXTILE BASKET.

3. ATLANTIS MATRIX TANK MODULES TO BE EITHER 'DOUBLE MODULE' (PART No. 70004) OR 'TRIPLE MODULE' (PART No. 70005) WITH A MINIMUM CRUSH STRENGTH OF 28.81/m".

8. AT PENETRATIONS THROUGH THE OUTER GEOTEXTILE LAYER, ADDITIONAL GEOTEXTILE TO BE PLACED WITH MINIMUM OVERLAP OF 300MM BETWEEN ATLANTIS CELL & OBVERT OF INCOMING/OUTGOING PIPE. s . Non-woven geotextile to be placed around entire perimeter of finished block of atlantis cells. 4. MINIMUM ATLANTIS CELL BACKFILL COVER IN NON-TRAFFICABLE AREAS IS TO SOOMM 图

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LINE TOLERANCE (mm) LEVEL TOLERANCE (mm) 50 10 50 40 40

9. WHERE EXCAVATED MATERIAL IS TO BE USED FOR FILLING, THE MATERIAL SHALL BE INSPECIED AND APPROVED BY THE SUPERINTENDENT PRIOR TO USE.

ALL WASTE MATERIALS SHALL BE DISPOSED OFF-SITE IN AN APPROPRIATE MANNER.

CONCRETE

卢크리크림프왕덕달양도 카

LENGTH VARIES
COG VARIES
EACH WAY
EACH FACE
SHADE VARIES
SHADE VARIES
BOTTOM RENFORCOMENT - LAID FIRST
BOTTOM RENFORCOMENT - LAID FIRST
TOP RENFORCOMENT - LAID FIRST
TOP RENFORCOMENT - LAID FIRST
TOP AND BOTTOM
ALTERNATING BARS

PROPERTY
EXPOSURE CLASSFICATION
BINUTE SAY COMPRESSIVE STRENGTH 35
CAMENT THE
WATER / BINDER RATIO (MAX.)
CLEAR COVER TO REINFORCEMENT (MIN.)
SURFACE FINISH — UNFORMED

4. THE FINISHED CONCRETE SURFACE SHALL BE FREE OF CRACKS HAVING A CRACK WIDTH EQUAL, TO OR GREATER THAN 0,1 mm AT TIME OF PRACTICAL COMPLETION. IF CRACKING EXCESS THIS LIMIT, THE CONTRACTOR SHALL MAKE GOOD THE CRACKS TO THE SATISFACTION OF THE SUPERINTENDENT WHICH MIGHT COMPRISE REPLACEMENT OF CONCRETE BLEMENT OR SEALING THE CRACKS WITH SILANE/SILICA FUME GEL OR OTHER WORKS.

5. TESTING AND ASSESSMENT FOR COMPLIANCE OF CONCRETE SHALL BE CARRIED OUT THE CONTRACTOR IN ACCORDANCE WITH AS 3600.

6. ALL RENFORCEMENT SHALL BE FIRMLY SUPPORTED ON PLASTIC TIPPED WILD STEEL CHAIRS AT NOT GREATER THAN I'M CENTRES BOTH WAYS, BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.

SUPERINTENDENT SHALL BE GIVEN 24 HOURS NOTICE FOR RENIPORCEMENT ON AND CONCRETE SHALL NOT BE DELIVERED UNTIL FINAL APPROVAL IS

REINFORCEMENTS SYMBOLS:

OLASS N DENOTES GRADE 500 N BARS TO AS/NZS 4871 DUCTILITY CLASS N DENOTES GRADE 250 R HOT ROLLED FLAIN BARS TO AS 1302 DUCTILITY

DENOTES GRADE 500 N DEFORMED WELDED WIRE MESH TO AS/NZS DENOTES GRADE 500 L DEFORMED WELDED WIRE WESH TO AS/NZS 4871 DUCTILITY CLASS I

DENOTES GRADE 500 L DEFORMED

WRE TRENCH MESH TO

AS/NZS

DUCTILITY CLASS N

20 N 7 NUMBER OF BARS IN GROUP BAR GRADE AND TYPE NOMINAL BAR DIAMETER IN mm

1. REINFORCEMENT IS REPRESENTED TRUE PROJECTION. DIAGRAMMATICALLY AND NOT NECESSARILY IN

4. ALL RENFORCEMENT SHALL BE FIRMLY SUPPORTED AT NOT GREATER THAN 1M CENTRES BOTH WAYS, CONCRETE BLOCKS SHALL BE MADE FROM THE SAME CONCRETE TO BE POURED AROUND THE BLOCK, PLASTIC CHAIRS SHALL NOT BE USED, BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.

1. EXCAVATION IN ROCK SHALL BE MINIMISED, WHERE THE DESIGN WOULD REQUIRE EXTENSIVE EXCAVATION IN ROCK, THE SUPERINTENDENT SHALL BE INFORMED PROCEDUNG.

6. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN OR OTHERWISE APPROVED IN WITHING BY THE SUPERINTENDENT. LAPS SHALL BE IN ACCORDANCE WITH AS 300 AND NOT LESS THAN THE DEVELOPHENT LENGTH FOR EACH BAR AND SHALL BE AS FOLLOWS:-

BAR DIA LAP LENGTH

88

REINFORCEMENT (cont.)

7. JOGGES TO BARS SHALL BE 1 BAR DIAMETER OVER A LENGTH OF 12 BAR DIAMETERS.

8. FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50 mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF THE WARE.

9. WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12—400 SPLOED WHERE NECESSARY AND LAP WITH MAIN BARS 400 mm U.N.O.

THE FOLLOWING NOTATIONS MAY HAVE BEEN USED ON THE DRAWINGS:

 $\mathbf{2}_{\cdot}$ all excavation works adjacent to existing structures or in unstable conditions must include shoring.

3. THE CONTRACTOR SHALL OBTAIN CURRENT SERVICE LOCATIONS FROM ALL RELEVANT AUTHORITIES PRIOR TO THE COMMENCEMENT OF WORKS.

4. WHERE EXCAVATION WORK IS REQUIRED IN THE WOINTY OF EXISTING SERVICES, THE CONTRACTOR SHALL LOCATE AND SUPPORT ALL SERVICES DURING THE WORKS.

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS. 2. CONCRETE USED IN THE WORKS SHALL BE EITHER WASS CONCRETE OR REINFORCED CONCRETE AS NOTED ON THE DRAWINGS AND SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:

REINFORCED CONCRETE
B2
B2
B2
B3
B4
GENERAL PURPOSE
0.40
60mm
CLASS 2
WOOD FLOAT MASS CONCRETE
A1
25 MPa
GENERAL PURPOSE
0.40

FORMWORK

3. THE FINISHED CONCRETE SHALL BE DENSE HONOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. CONCRETE SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.

4. DURING CONSTRUCTION, SUPPORT PROPPING WILL BE REQUIRED WHERE LOADS FROM STACKED MATERIALS, FORMWARK AND OTHER SUPPORTED SLABS NOUCE LOADS IN A SLAB OR BEAM WHICH EXCEED THE DESIGN LOAD FOR STRENGTH, OR SERVICE-BUILTY AT THAT AGE. ONCE THE NOMINATED 28 DAY STRENGTH HAS BEEN ATTAINED, THESE LOADS SHALL NOT EXCEED THE DESIGN SUPERIMPOSED LIVE LOADS.

1. THE FORMWORK SHALL NOT BE DESIGNED TO RELY ON RESTRAINT OR SUPPORT FROM THE PERMANENT STRUCTURE WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT.

3. DESIGN AND CONSTRUCTION AND STRIPPING TIMES SHALL COMPLY WITH AS 3610 AND AS 3600 UNLESS OTHERWISE NOTED OR APPROVED BY THE SUPERINTENDENT.

2. THE DESIGN CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF THE FORMWORK AND FALSEWORK IS THE RESPONSIBILITY OF THE CONTRACTOR.

UNLESS NOTED OTHERWISE ALL CONCRETE FORWWORK SHALL BE FOR A CLASS 'Z'

7. CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES COMTINUOUSLY WET FOR A PERIOD OF 7 DAYS, AND PREVENTION OF LOSS OF MOSTURE FOR A TOTAL OF 14 DAYS FOLLOWED BY A GALOUAL DRYING OUT, POLYTHENE SHEETING OR WET HESSAW MAY BE USED IF PROTECTED FROM WIND AND TRAFFIC.

8. THE SUPERINTENDENT SHALL BE GIVEN 24 HOURS NOTICE FOR REINFORCEMENT INSPECTION AND CONCRETE SHALL NOT BE DELIVERED UNTIL FINAL APPROVAL IS OBTAINED.

REINSTATEMENT WORKS

1. UNLESS OTHERWISE SPECIFIED ALL EXCAVATIONS ARE TO BE REINSTATED TO THE EXSTING GROUND SURFACE LEVEL

2. IF FENCES ARE DAMAGED OR REMOVED DURING CONSTRUCTION THEY ARE TO BE REINSTATED AT THE COMPLETION OF THE WORKS AT THE CONTRACTORS EXPENSE.

3. UMLESS OTHERWISE SPECIFIED, ALL SURFACES ARE TO BE REINSTATED TO THE EXISTING SURFACE CONDITION (4.4. ROAD PAVEMENT, KERB AND GUTTER, GRASSED VERGE OR FOOTPATH).

4. ALL PAVEMENT RECONSTRUCTION TO BE IN ACCORDANCE WITH COUNCILS STANDARD SPECIFICATION, AUS—SPEC OR RTA SPECIFICATIONS AS DIRECTED BY THE SUPERINTENDENT.

ALL LEVELS ARE HEIGHT DATUM o T **AUSTRALIAN**

CONTRACTOR SHALL CALL:
DIAL BEFORE
YOU DIG 1100



00 0545/06

PIDWAR CONTOUR CONTE

4670-01-02 W

V, D AND M BUBALO

AND SPECIFICATIONS GENERAL NOTES

ad File

Des'd Dra के क Chk'd 돐 Approved M. TOOKER

CENSSI CENSSI

FOR CC APPROVAL

Details of Issue

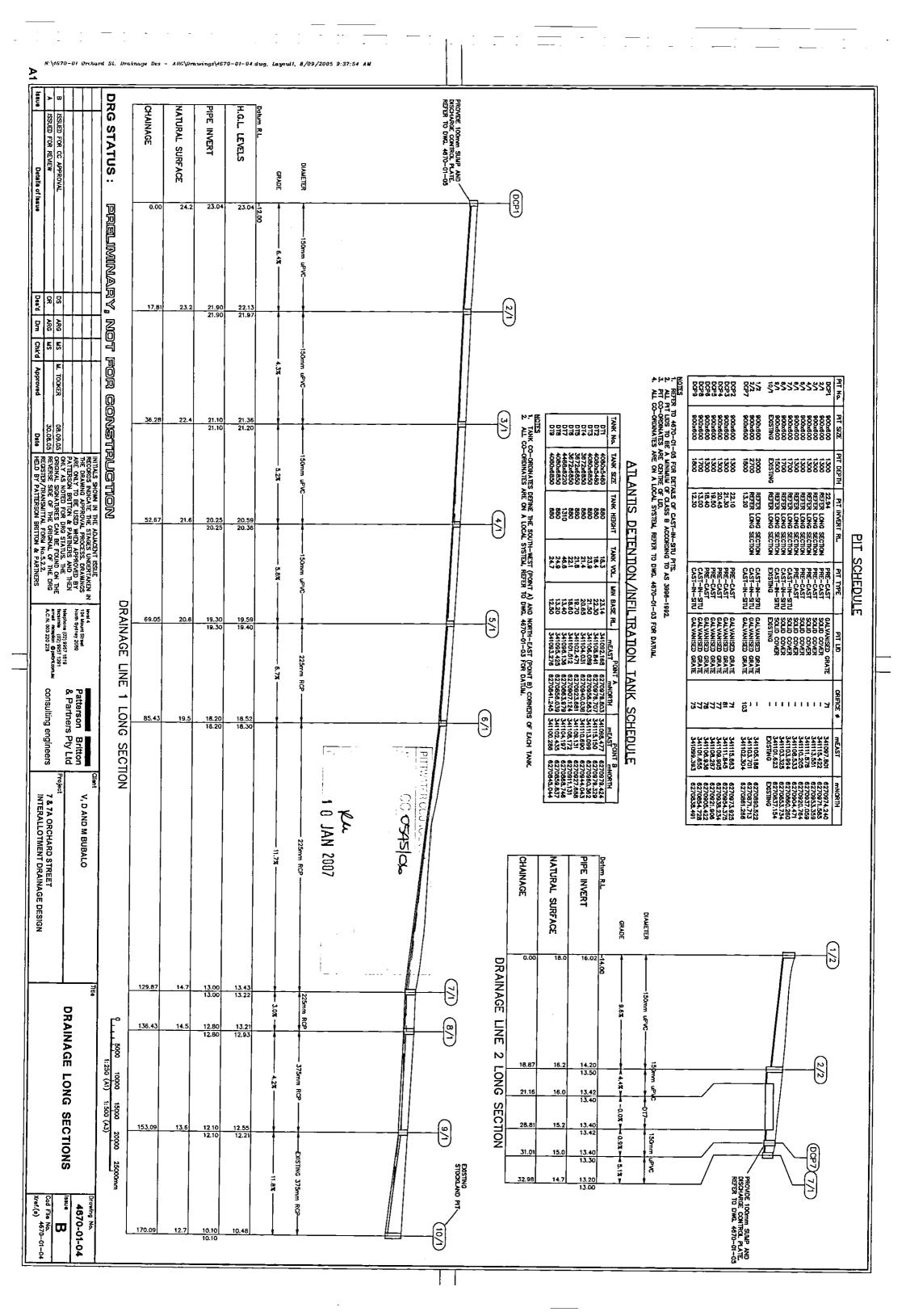
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RECORDS INDICATE THE STAGES UNDERTAKEN IN
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RECORDS INDICATE THE STAGES UNDERTAKEN IN
THE DRAWING APPROVAL PROCESS, DRAWINGS
APPROVAL PROVIDED FOR DRG STATUS. THE
OCHUMAL SIGNATURES CAN BE FOUND ON THE
RECOSTER/TRANSMITTAL FORM No.5.2.2
HELD BY PATTERSON BRITTON & PARTNERS telephone (02) 957 1519 facsimile (02) 957 1251 email receptor @palbri.com.au A.C.N. 003 220 228 levet 4 104 Mount Street North Sydney 2050

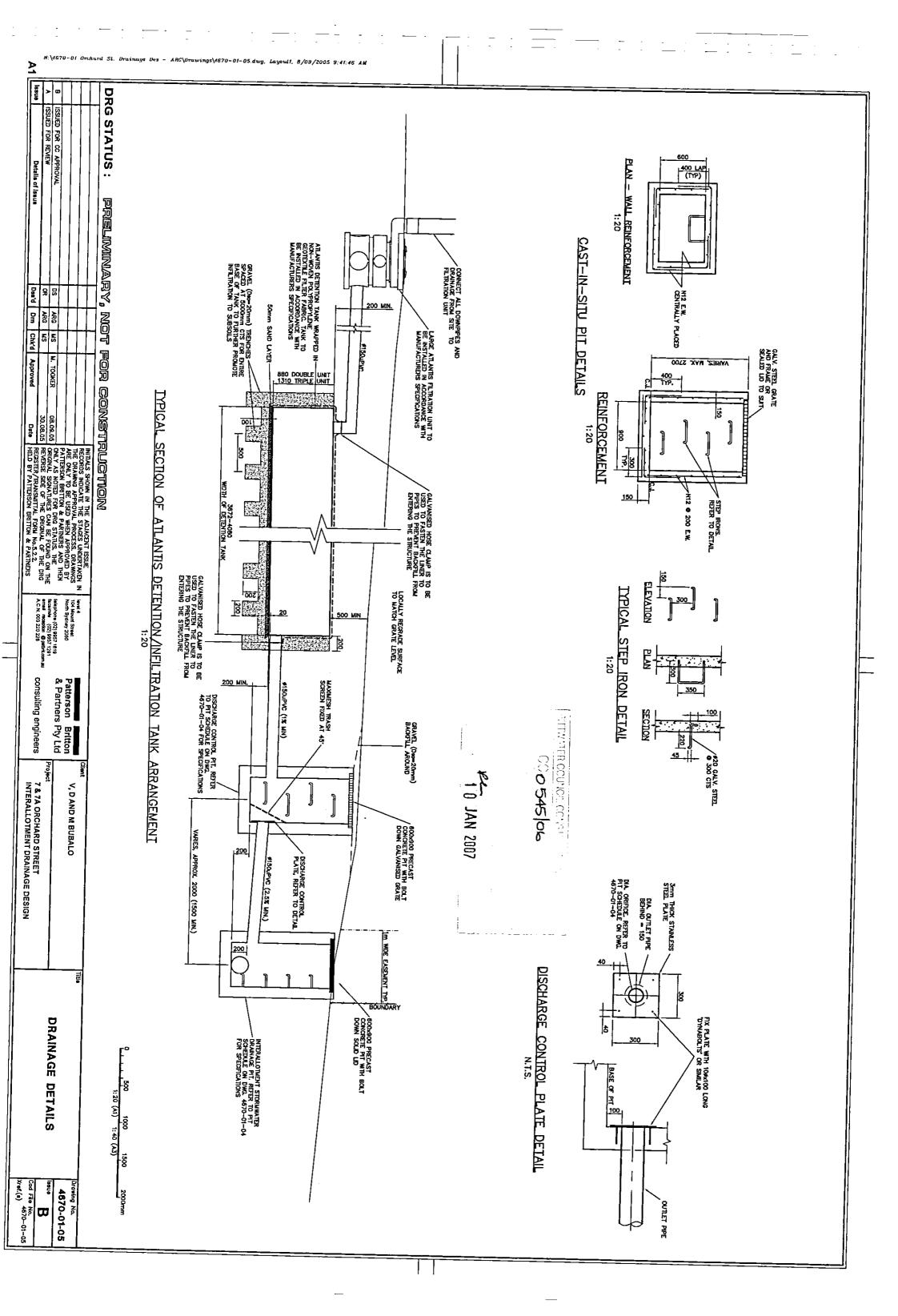
Patterson Britton & Partners Pty Ltd

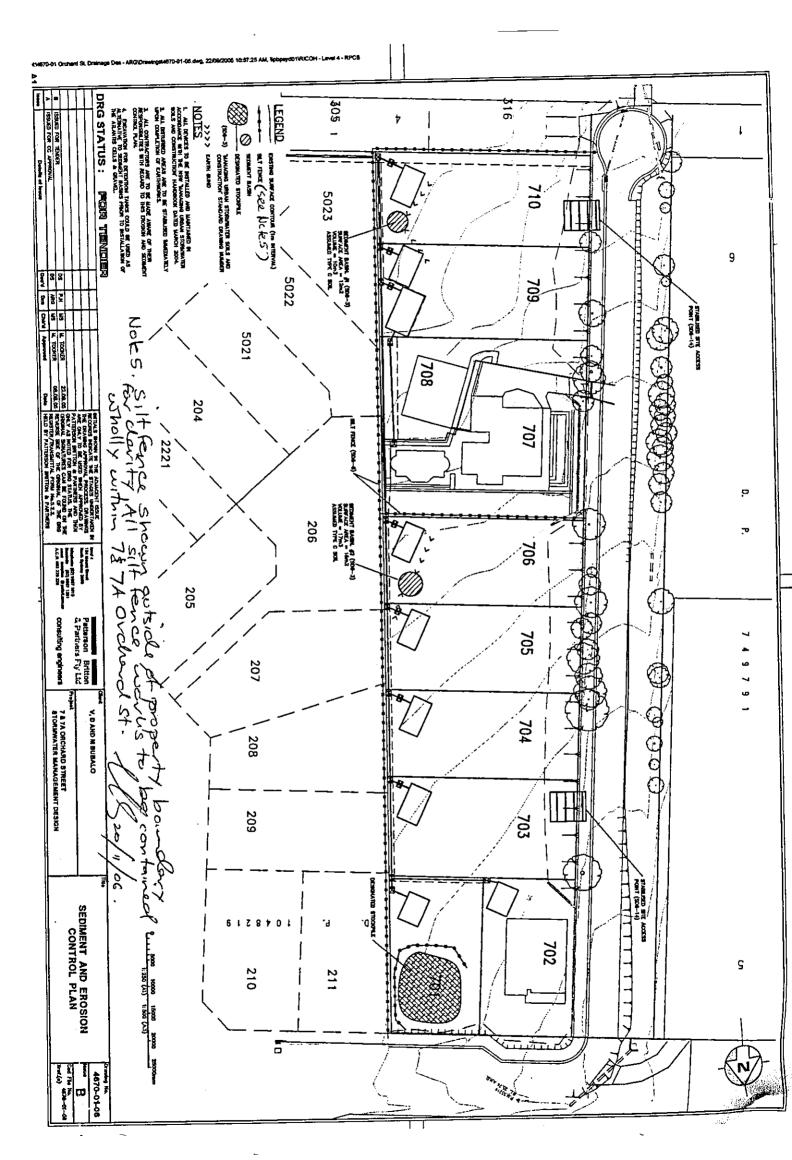
consulting engineers

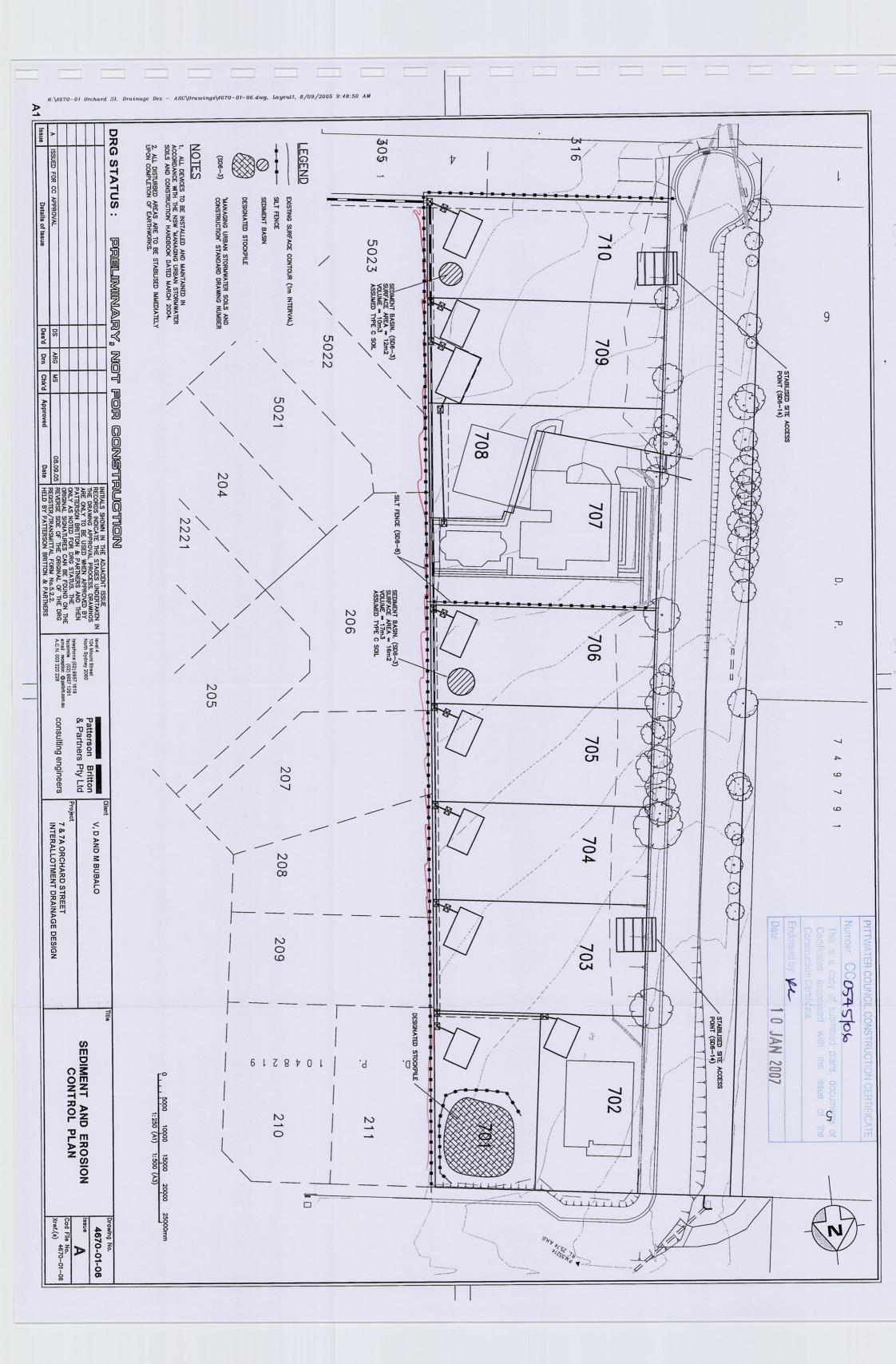
7 & 7A ORCHARD STREET INTERALLOTMENT DRAINAGE DESIGN

Xref.(s) 4670-01-02









Number: CC OSAS OC

This is a copy of submitted plans, documents or Certificates associated with the issue of the Construction Certificate,

Endorsed by PA

Date: 1 0 JAN 2007

FIGURES

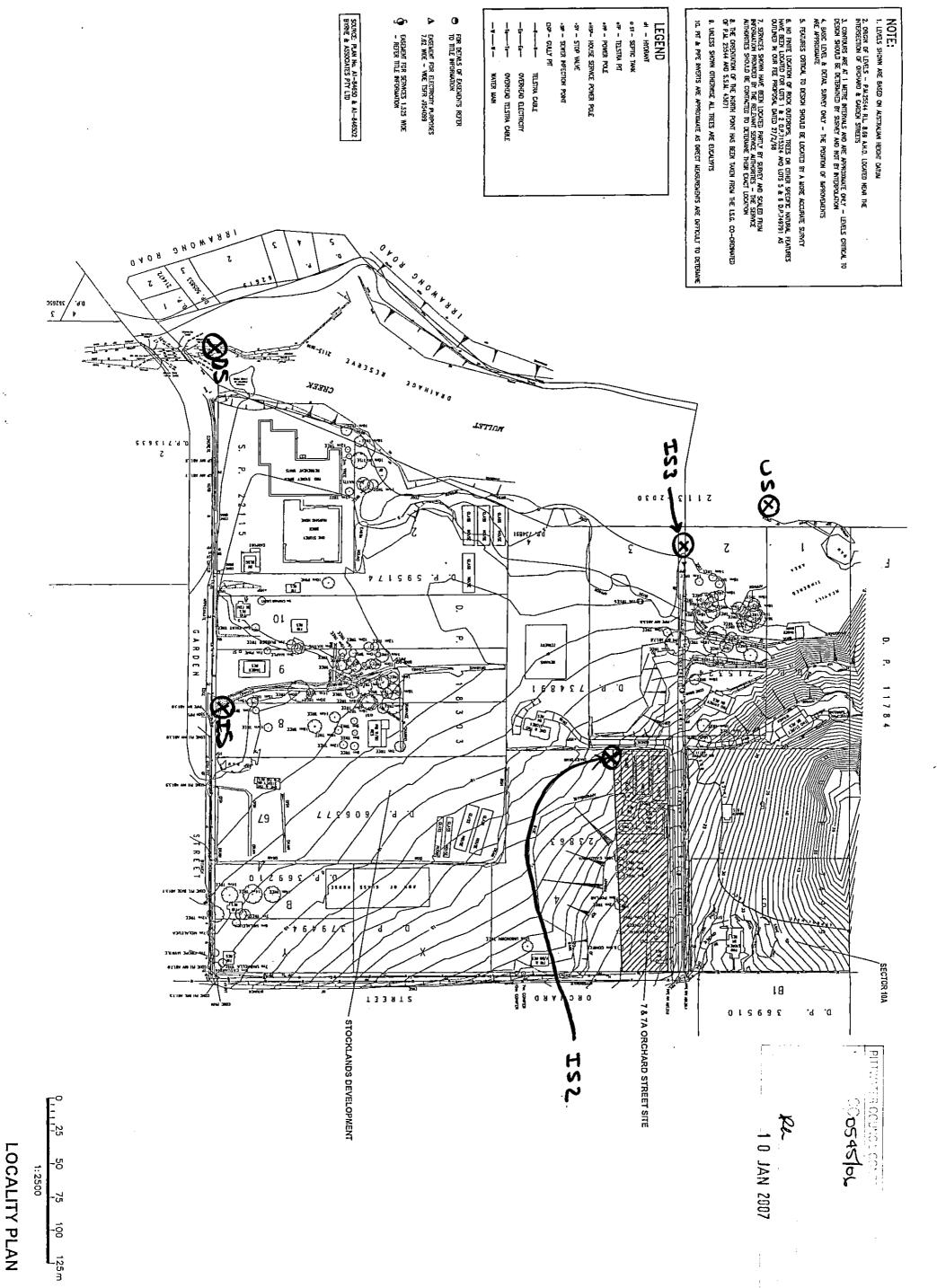
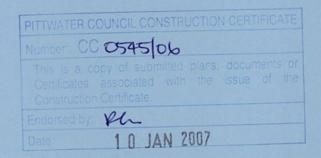


FIGURE 1



APPENDIX A - CC CHECKLIST

Pittwater Council

	PITTWATER COUNCIL CONSTRUCTION CERTIFICATE
l	Number: CC 0545]06 This is a Lawson & Treloar Pty Ltd
	Lawson & Treloar Pty Ltd
Γ	Continued party documents of

DOCUMENTATION CHECKLIST - HANDOVER

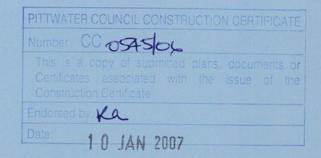
1 0 JAN 2007

(Detach and include with submissions)

Section	Item	Requirement	Check (√)
	Water Cycle Assessment - Water Balance Modelling Pre & Post Development		
	Stream Gauging, infiltration testing and use of local rainfall data for modelling		
4.2.1	Water Quality Monitoring Plan	******	/
4.2.1	Water Quality Monitoring Sites Shown on Plan (at least three)	******	/
4.2.1, 2, C	Water Quality Monitoring Data	*****	/
421.2.C	Assessment and interpretation of water quality monitoring data	*****	/
4.2.1, 2, C	Assessment and interpretation of water quality monitoring data from SQID's		1
4.3	Water Quality Management Assessment - Load Modelling Pre and Post Development		
4.3.1, 3	Justification of assumptions for Event Mean Concentrations	THE THE STATE OF T	
4.3.2	Identification of and details for Stormwater quality facilities		/
	Mosquito Risk Assessment for both Watercourse and Water Quality/Quantity features		/
4.3.6, 4.6.5	Inspection and Cleaning Reports for SQID's and OSD	******	/
4.3.6	Management Plan for Stormwater Quality Improvement Devices	******	/
4.3.5	Environmental Management Plan (Soil and Water Aspects)		
4.3.4	Erosion and Sediment Control Plan		
4.4.3, 4, 5	Existing and Proposed Creek Corridor in plan with cross/long sections with flood levels		
4.4.4	Proposed Creek Corridor Planting Schedule		
4.4.5	Creek Corridor Vegetation Monitoring and Management Plan	◆◆Note 1◆◆	ALI
4.4.5	Vegetation and Creek Maintenance and Monitoring Reports	◆◆Note 1◆◆	NA
4.5	Flood Analysis – existing and design conditions		
4.5.2	Compliance of structures and creek corridor with flood planning levels	4	
4.5.4	Details of Interim Flood Protection Works	******	NA
4.6.3	Design Storm Hydrological Modelling of Site - Pre and Post Development		
4.6.3	On-Site Detention Facilities		
4.6.4	Stormwater Retention Facilities		
4.7	Stormwater Concept Drainage Plan		

	Preliminary Calculations/Assessment Required		Work as Executed Plans
Made of Arrise Specialist	Concept Design Required	*****	Required/Reviewed/Updated
	Detailed Assessment/Calculations/Design		Not required
Note 1 Ever Public Ben- required	n if the works are not to be constructed by the Applicant on t efit Option in the Section 94 Plan, preliminary investigation	the land to be tran- on for Rezoning a	sferred to Council under the Materia and concept design at DA stage is

Completed by Principal Certifier: Organisation:



APPENDIX B - CC ACCESS ROAD DRAWINGS

Patterson Britton & Partners

L:\4670 - 7&7A Orchard St\rp4670dns050907-Bubalo cc wm report.doc

DRG STATUS:

PRELIMINARY, NOT FOR CONSTRUCTION

Details of Issue

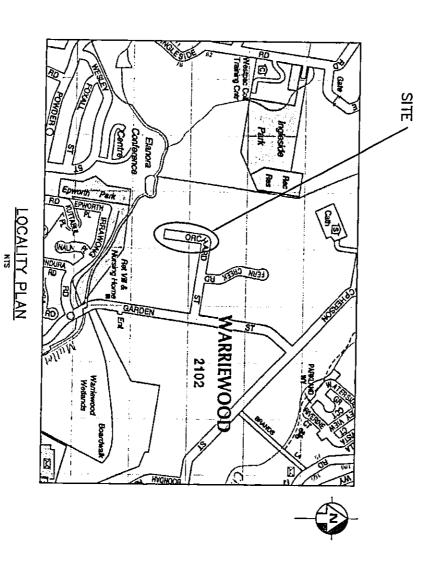
ORCHARD STREET ACCESS WARRIEWOOD

0545)06

CIVIL ROAD DESIGN

for

V, D AND M BUBALO



WING LIST:

4670-01 TITLE SHEET, LOCALITY PLAN AND DRAWING LIST
4670-02 GENERAL NOTES & SPECIFICATIONS (SHEET 1 OF 2)
4670-03 GENERAL NOTES & SPECIFICATIONS (SHEET 2 OF 2)
4670-04 SITE PLAN AND LONGITUDINAL SECTION
4670-05 CUL-DE-SAC KERB DEVELOPMENT AND
ACCESS ROAD TYPICAL SECTION

4670-06

4670--07

ACCESS ROAD DESIGN CROSS SECTIONS SHEET 1 OF 3
ACCESS ROAD DESIGN CROSS SECTIONS SHEET 2 OF 3

SHEET 3 OF 3

PROPOSED SURFACE CONTOURS AND PAVEMENT DESIGN
STORMWATER DRAINAGE PLAN

STORWWATER DRAINAGE LONGITUDINAL SECTIONS EROSION AND SEDIMENT CONTROL PLAN

4670-08 4670-09 4670-10 4670-11 4670-12

Retterson Britton
& Partners Pty Ltd
Project
Consulting engineers
ORCHARD STREET ACCESS ROAD
WARRIEWOOD

TITLE SHEET, LOCALITY PLAN AND DRAWING LIST

ALITY PLAN

G LIST

G LIST

Cod File No.
4570-01

2. THESE DRAWNGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWNGS, SPECIFICATIONS AND WAITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.

4. DURING CONSTRUCTION THE WORKS SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING AND BATTERS SHALL BE PROVIDED BY THE CONTRACTOR TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES. ALL SET OUT DIMENSIONS SHOWN SHALL BE VERIFIED BY THE CONTRACTOR ON E BEFORE WORK COMMENCES. DRAWINGS SHALL NOT BE SCALED FOR

S. ALL MATERIALS AND WORKMANSHIP USED IN THE CONSTRUCTION OF THIS DESIGN SHALL BE IN ACCORDANCE WITH ALL RELEVANT CURRENT AUSTRALIAN STANDARDS.

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE

7. EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLED DATA. THE ACCURACY IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO COMMERCING WORK. ALL CHEARMORES AND EXPROVIALS SHALL ALSO BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF WORK

THE CONTRACTOR SHALL OBTAIN SETOUT CO-ORDINATES FROM THE PERINTENDENT, AND ARRANGE ALL SURVEY SETOUT BY A GISTERED SURVEYOR

ALL NEW AND EXHUMED SERVICES THAT CROSS EXISTING AND FUTURE MASS,PANEURITS WITHIN THE SITE SHALL BE BACKFILLED WITH DOB20 ITENAL TO SUBGRADE LEVEL AND COMPACTED TO 98% STANDARD NSITY RATIO. SUBJECT TO PRIOR APPROVAL FROM RELEVANT THORITY

11. WHERE NEW WORK ABUTS EXISTING, THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE FREE FROM ABRUPT CHANGES, IS OBTANED. 10. ON COMPLETION OF SERVICES INSTALLATION. ALL DISTURBED AREAS SHALL BE RESTORED TO OBJOINAL, INCLUDING KERBS, FOOTBATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.

12 CARE TO BE TAKEN WHEN EXCAVATING NEAR ENERGY AUSTRALIA, INTEGRAL ENERGY, TELSTRA AND AGL SERVICES. NO MECHANICAL EXCAVATION TO BE UNDERTAKEN OVER ENERGY AUSTRALIA. TELSTRA AND AGL SERVICES HAND EXCAVATE IN THESE AREAS. LIAISE WITH RELEVANT AUTHORITY.

13. THE CONTRACTOR SHALL NOT DISTURB ANY EXISTING SURVEY BENCH MARKS OR REFERENCE MARKS (UNILESS INDICATED FOR REMOVAL) MITHOUT LANDS DEPT APPROVAL IN WRITING.

14. THE CONTRACTOR TO FENCE AND SECURE SITE

15. EUBLIC ROAD WORKS

THE CONTRACTOR'S ATTENTION IS DRAWN TO THE REQUIREMENTS OF PITTWATER COUNCIL. WHERE THE WORKS ARE LOCATED IN A ROAD RESERVE OR CROSSES THE PAVENENT OF A PUBLIC ROADWAY OR FOOTWAY. THE CONTRACTOR SHALL OBTAIN A PERMIT COVERING THE RECESSARY WORKS AND COMPLY WITH ALL THE CONDITIONS COVERING THE ISSUE OF SUCH PERMIT, A CHARGE IS MADE FOR PERMITS ISSUED IN RESPECT OF PAVENENT OPENINGS. THE CONTRACTOR SHALL OBTAIN DETAILS FROM COUNCIL. PAY ALL FEES. MEET ALL REQUIREMENTS AND CARRY OUT ALL LUNSON AT NO EXTRA COST. ALL PAVENENT SURFACING 13 TO BE UNDERTAKEN BY THE CONTRACTOR, ALL PAVENENT REINSTATEMENT TO BE UNDERTAKEN BY THE CONTRACTOR. ALL TO PHITWATER COUNCIL'S STANDARDS AND APPROVAL.

18. PAACHENT DESIGN REPORT BY GEOTECHNIQUE, JANUARY 2005 — THE CONTRACTOR SHALL ENSURE THAT THEY ARE FAMILIAR WITH THE CONTENTS OF THIS REPORT.

17. ALL CONSTRUCTION WORK SHALL BE CARRIED OUT SO THAT AT ANY TIME ADJOINING PROPERTY OWNERS ARE NOT DEPRIVED OF AN ALL-WEATHER ACCESS OR SUBLECTED TO ADDITIONAL OR POLLUTED STORM WATER RUNGFF DURING THE PERIOD OF CONSTRUCTION.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGE TO COUNCIL'S INFRASTRUCTURE, SUCH REPAIR OR REINSTATEMENT TO BE CARRIED OUT IMMEDIATELY TO THE SATISFACTION OF COUNCIL

20. SITE SURVEY UPON WHICH DESIGN HAS BEEN BASED PREPARED BY BYRNE & ASSOCIATES, DECEMBER 2004. 19. THE CONTRACTOR IS TO PREPARE AND IMPLEMENT A TRAFFIC MANAGEMENT PLAN TO COUNCIL'S STANDARDS AND APPROVAL FOR ALL WORKS.

T. ATTENTION IS DRAIM TO THE OCCUPATIONAL HEALTH AND SAFETY ACT (2000), WHICH REQUIRES THAT EMPLOYERS ENSURE THE HEALTH, SAFETY AND WELFARE OF THEIR EMPLOYEES.

2. THE CONTRACTOR MUST, AT ALL TIMES, EXERCISE ANY OTHER NECESSARY AND REASONABLE PRECAUTIONS APPROPRIATE TO THE NATURE OF THE WORK AND THE CONTRACT IS TO BE PERFORMED FOR THE SAFETY OF ALL PERSONS ON THE WORK SITE, OR IN THE VICINITY.

QUALITY ASSURANCE

1. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN A QUALITY ASSURANCE SYSTEM MEETING THE REQUIREMENTS OF AS 8002. THE QUALITY SYSTEM SHALL BE SUCH THAT RECORDS ARE KEPT OF ALL ASPECTS AND STAGES OF THE WORK.

2. THE RECORDS FOR EACH CONSTRUCTION TASK SHALL BE STAGED AND ITEMISED TO THE SATISFACTION OF THE CONTRACTOR ADMINISTRATOR, THE PROFORMAS FOR RECORDS SHALL BE SUBMITED TO THE CONTRACTOR ADMINISTRATOR FOR APPROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN

3. DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN ACCURATE AND UP TO DATE RECORDS AND SHALL MAKE SUCH RECORDS AND SHALL MAKE SUCH RECORDS TO ANALLABLE TO THE CONTRACTOR ADMINISTRATOR IF REQUESTED. FALULURE TO MAINTAIN RECORDS AS SPECIFICD WILL RESULT IN THE CONTRACTOR RE-MISPECTING COMPLETED WORKS IF INSTRUCTED TO DO SO BY THE CONTRACTOR ADMINISTRATOR.

4. AT THE COMPLETION OF EACH STAGE OF THE WORKS THE CONTRACTOR SHALL CERTIFY THAT THOSE WORKS HAVE BEEN UNDERTAKEN AND COMPLETED IN ACCORDANCE WITH THE DRAWNOS, SPECIFICATION AND INSTRUCTIONS ISSUED DURING THE COURSE OF THE CONTRACT.

1. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF EXCAVATION AND REJOYAL IF RECURED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY THE WORKS WITHIN THE CONTRACT AREA SERVING ON THE DRAWNING UNLESS DIRECTED OTHERWISE BY THE SUPERINIENDENT. ALL TO REGULATORY AUTHORITY STANDARDS AND APPROVAL

2. WANTAN EXISTING STORMWATER DRAINAGE FLOWS THROUGH THE SITE AT ALL TIMES. WAKE DUE ALLOWANCE FOR ALL SUCH FLOWS AT

4. CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES AS REQUIRED TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURBING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPPRINTENDENT.

I. ALL STORMWATER WORKS ARE TO BE UNDERTAKEN GENERALLY IN ACCORDANCE WITH AS 3500 STORMWATER DRAINAGE

ALL CONNECTIONS TO EXISTING DRAWAGE PITS SHALL BE MADE IN A NOESMAN—LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE INT OF ENTRY SHALL CEMENT RENDERED TO ENSURE A SMOOTH INC.

6. STEP IRONS AT SPACINGS OF 0.3m ARE TO BE PROVIDED IN DRAINAGE PITS MORE THAN 1.2m DEEP. 8. PRECAST PITS SHALL NOT BE USED. ALL DRANAGE PITS TO BE CAST INSTU. UNTELS MAY BE PRECAST TO SUIT PROPOSED PITS.

8. THE EXCAVATED TRENCH WIDTH FOR PIPE LATING MUST BE AT LEAST 300mm WIDER THAN THE OUTER DIAMETER OF THE PIPE PIPES ARE TO BE LAID CENTRALLY WITHIN THE EXCAVATED TRENCH.

ALL PIPES ARE TO BE LAID ON A MINIMUM BEDDING OF 75mm OF SAND AGED IN ACCORDANCE WITH AS 3500.3. BEDDING SHALL BE COMPACTED LEAST 90% OF THE MAXIMUM DRY DENSITY.

11. BACKFILL FOR STORMWATER PITS AND PIPES SHALL BE COMPACTED TO AT (EAST 95% (98% UNER ROADS) OF THE MAXIMUM DRY DENSITY AND GRADED IN ACCORDANCE WITH AS 3500.3.

EXISTING SERVICES AND FEATURES

3. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL FOR HIS PROGRAMME FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES. ALL TIMES.

NITERRUPTION TO SUPPLY OF EXSTING SERVICES SHALL BE DONE SO NOT TO CAUSE ANY INCONVENIENCE OR DAMAGE TO THE ADJACENT SPENCES, CONTRACTOR TO GAIN APPROVAL OF THE SUPERNITENDENT R TIME OF INTERRUPTION.

GENERAL STORMWATER NOTES

2. UNLESS OTHERMSE APPROVED ALL DRAINAGE PIPES SHALL BE CLASS "2" APPROVED SPIGOT AND SOCKET ACP PIPES WITH RUBBER RING JOINTS. CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS JUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION INSTAIL AR PIPEWORK.

7. PROVIDE 3.0M LENGTH OF 100DIA SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK AT UPSTREAM END OF EACH PIT.

8 ALL CONCRETE USED IN DRAINAGE PITS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 40MPC.

12. BACKFILL MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO PLACING AND COMPACTION.

GENERAL STORMWATER NOTES (cont.)

13. THE CONTRACTOR SHALL ENSURE THAT ANY EXISTING STRUCTURES LOCATED ADJACENT TO EXCAVATED TRENGHES ARE SUPPORTED OR PROTECTED TO PREVENT DAMAGE TO OR MOVEMENT OF THESE STRUCTURES

14. UNIESS SPECIFIED ALL DRAINAGE GRATES TO BE HEAVY DUTY GALVANI MILD STEEL TO AS 3996.

GENERAL COMPACTION NOTES

1. FOUNDATION MATERIAL DEDMED BY THE SUPERINTENDENT AS UNSUITABLE TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.

3. SELECT FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200MM LOOSE THICK LAYERS AND COMPACTED AT OPTIMUM MOSTURE CONTENT (+ OR - 23) TO ACHEME A DRY DENSTY DETERMINED IN ACCORDANCE WITH AS1289E3.1 OF NOT LESS THAN THE FOLLOWING STANDARD MAXIMUM DRY DENSTY IN ACCORDANCE WITH AS1289E1.1:

LOCATION STANDARD DRY DENSITY
-AREAS OF SERVICE TRENCHES 98%
-ROAD AND CARPARKS 100%
-LANDSCAPED AREAS 90%

4. THE CONTRACTOR SHALL PROGRAMME THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SCALED OFF TO REMOVE DEPRESSIONS. ROLLER MARKS AND SIMILAR WHICH WOLLD ALLOW WATER TO POND AND PRICIPAL THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT HIS COST.

CONCRETE NOTES

GI. CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH ASSESSO THE SPECIFICATION. KEEP A COPY OF THE DOCUMENTS ON SITE. G2. VERIFY ALL SETTING OUT DIMENSIONS AND/OR THE SURVEYOR, WITH THE SUPERINTENDENT

CI. ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH ASSIGNO CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

C2. CONDRIE USD IN THE WORKS SHALL BE EITHER MASS CONCRETE OR REINFORCED CONCRETE AS NOTED ON THE DRAWNCS AND SHALL COMPLY IT FOR FOLLOWING REQUIREMENTS.

OT 10 10000 1000 100000 100000	MAXIMUM COARSE AGGREGATE SIZE	CLEAR COVER TO REINFORCEMENT (MIN.) SURFACE FINISH — FORMED	WATER / BINDER RATIO (MAX.)	MN 28 DAY COMPRESSIVE STRENGTH CEMENT TYPE	EXPOSURE CLASSIFICATION
	WOOD FLOAT		350kg/m3 0.45	GENERAL PURPOSE	REINFORCED CONCRETE
	WOOD FLOAT	to mm	300kg/m3	32 MPG	MASS CONCRETE

C4. CEMENT TO BE TYPE SI TO AS3972 MAX CONCRETE SHRINKAGE TO BE BOOUN TO AS1012 C3. NO 'BRECCIA' TYPE AGGREGATE IS TO BE USED.

CS. NO ADMIXTURES ARE TO BE USED WITHOUT THE APPROVAL OF THE ENGINEERS.

CS. CURE ALL CONCRETE USING AN APPROVED WETHOD IN ACCORDANCE WITH ACCE SPECIFICATION. CURING COMPOUNDS TO COMPLY WITH ASST99. PVA BASED CURING COMPOUNDS ARE NOT ACCEPTABLE.

13, CHASES SHALL BE FORMED WHERE NECESSARY TO PREVENT SOCKETS, PLANGES OR THE LIKE FROM BEARING ON THE TRENCH BOTTOM OR THE WINDERLAY, Ű

16. MATERIAL SHALL BE PLACED IN THE PIPE SURROUND IN LAYERS NOT MORE THAN 200mm LOOSE THICONESS AND COMPACT WITHOUT DAMAGING OR DISPLACING THE PIPEWORK.

2 UNLESS OTHERWISE APPROVED OR SPECIFIED. ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING.

BY AREA FROM ORGANIC AND PERISHABLE MATTER BY ANXIETY PARTICLE SIZE 75444

C) PLASTICITY UNDEX BETWEEN 2% AND 20%

D) CBR > 10%

C11, NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT.

C10. MAINTAIN COVER TO REINFORCEMENT AT CHAMFERS, DRIP GROOVES, REGLETS, ETC.

29, ALL RENFORCEMENT SHALL BE FRIGLY SUPPORTED ON PLASTIC CHAIRS AT NOT GREATER THAN 1'M CENTRES BOTH WAYS, PLASTIC THPPED MILD STEEL CHAIRS SHALL BE TIED AT ALTERNATE NYTERSECTIONS.

CR. TESTING AND ASSESSMENT FOR COMPILANCE OF CONCRETE SHALL BE CARRIED OUT BY THE CONTRACTOR IN ACCORDANCE WITH AS 3600. SUBMIT ALL RESULTS TO THE SUPERINTENDENT.

C7. THE FINISHED CONCRETE SURFACE SHALL BE FREE OF CRACKS HAVING A CRACK WOTH EQUAL, TO OR GREATER THAN 0.1 mm AT TIME OF PRACTICAL COMPLETION, IF CRACKING BECKEDS THIS LIMIT, THE CONTRACTOR STALL LAKE GOOD THE CRACKS TO THE SATISFACTION OF THE SUPERIMENDENT WHICH MICHT COMPRISE REPLACEMENT OF CONCRETE ELEMENT OR SEALING THE CRACKS WITH SLAWE/SUCA FUME GEL OR OTHER WORKS.

C7. THE FINISHED CONCRETE SHALL BE DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROLIGHLY EMBEDDING THE REINFOROSMENT AND FREE OF STONE POCKETS, CONCRETE SHALL BE COMPACTED WITH MECHANICAL VIBRATORS

CONCRETE NOTES (cont.)

C14. CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES COMMINUOUSLY WET FOR A PERIOD OF 7 DAYS, AND PREVENTION OF LOSS OF MOSTURE FOR A TOTAL OF 14 DAYS FOLLOWED BY A GRADUAL DRYING OUT. POLYTHENE SHEETING OR WET HESSIAM MAY BE USED IF PROTECTED FROM WIND TRAFFIC. DO NOT USE APPLIED CURING AGENTS.

CITA, DURING AND IMAEDIATELY FOLLOWING POURING, THE CONCRETE SHALL BE PROTECTED FROM WHID AND SUN, AWKINGS AND WIND BREAKS ARE TO BE UTILISED FOR THIS PURPOSS. C12. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE SUPERINTENDENT.

C13. THE SUPERINTENDENT SHALL BE GVEN 24 HOURS NOTICE FOR REINFORCEMENT INSPECTION AND CONCRETE SHALL NOT BE DELIVERED UNTIL FINAL APPROVAL IS OBTAINED.

5. COMPACTION CONTROL TESTING SHALL BE CARRIED OUT BY AND AT THE COST OF THE CONTRACTOR TO CONFORM WITH LEVEL 1. AS DEPINED IN AS3788-1898.

FZ. FINAL FINISHING INCLUDES FLOATING AND TEXTURING THE WATER SHEEN PAREMENT AND SHALL COMMENCE ONLY AS SOOM AS THE WATER SHEEN HAS LETT THE PAREMENT SURFACE AND NOT IN ANY AREA WHERE THERE IS FREE SURFACE WATER.

fi, the concrete shall be screeded to the required gross scrion profile free of depressions and high areas to satisfy the requirements of an initial finish.

FM1. UNLESS NOTED OTHERWISE ALL CONCRETE FORWWORK SHALL BE CLASS FINISH

PIAS, DESIGN AND CONSTRUCTION AND STRIPPING TIMES SHALL COMPLY WITH AS 3510 AND AS 3500 UNLESS OTHERWISE NOTED OR APPROVED BY THE SUPERINTENDENT. FIA2. THE DESIGN CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF THE FORMANCE OF THE CONTRACTOR. Ą

FIAL, DURING CONSTRUCTION SUPPORT PROPPING WILL BE REQUIRED WHERE LOADS FROM STACKED MATERIALS, FORMWARK AND OTHER SUPPORT SLABS INDUCE LOADS IN A SLAB OR BEAM WHICH EXCEED THE DESIGN LOAD FOR STRENGTH OR SERVICEABILITY AT THAT AGE. ONCE THE NOMINATED 28 DAY SIRENGTH HAS BEEN ATTAINED THESE LOADS SHALL NOT EXCEED THE DESIGN SUPERIMPOSED LIVE LOADS.

"MIL THE FORMWORK SMALL NOT BE DESIGNED TO RELY ON RESTRAINT OR SUPPORT FROM THE PERMANENT STRUCTURE WITHOUT THE PRIOR APPROVAL OF THE SUPERNITENDENT.

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HELD BY PATTERSON BRITTON & PARTNERS talephone (02) 9657 1819 facsimile (02) 9657 1291 email reception @patori.com.au A.C.N. 003 220 228 leval 4 104 Mount Street North Sydney 2050

Patterson Britton & Partners Pty Ltd

V, D AND M BUBALO

consulting engineers

ORCHARD STREET ACCESS ROAD WARRIEWOOD

GENERAL NOTES & SPECIFICATIONS
SHEET 1 OF 2

Xref.(s) റ

Cad File No. 4670-02

4670-02

ASPHALTIC CONCRETE NOTES

2. MIX PROPORTIONS
A) JOB MIX - 10mm & 14mm (AS SPECIFIED ON DRAWNGS) NOMINAL SIZE ACGREGATE MENUMUM BITUMEN
CONTENT (\$) BY MASS OF TOTAL MASS - 5.1%
B) MIX STABILITY - BETWEEN 18KN AND 36KN AS DETERMINED BY RTA
TEST METHODS 1605 AND 7807.
C) AIR VOIDS IN COMPACTED MIX - BETWEEN 4% AND 7% OF THE VOLUME
OF THE MX.
D) VOIDS FILED IN BINDER - 65-80% OF AIR VOIDS IN THE TOTAL
MINERAL, AGGREGATE FILED BY BINDER IN ACCORDANCE WITH RTA
TEST METHOD 1805 AND 7807.

3. PANEMENT PREPARATION

3.) THE EXISTING SURFACE TO BE SEALED SHALL BE DRY AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF BLL SUPPERFIGAL FOREIGN MATTER.

B) ALL DEPRESSIONS OR UNEVEN MEEAS ARE TO BE TACK—COATED AND BROUGHT UP TO CENERAL LEVEL OF PANEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING OF MAIN COURSE.

B) INTIMA ROLLING SHALL BE COMPLETED BEFORE THE MIX

EMPERATURE FALLS BELOW 105°C.

C) SECONDARY ROLLING SHALL BE COMPLETED BEFORE THE MIX

EMPERATURE FALLS BELOW 80X0 USE PHEMATIC TYRED ROLLER.

D) MINIMUM CHARACTERISTICS VALUE OF RELATIVE COMPACTION OF A

LOT WHEN TESTED IN ACCORDANCE WITH CLAUSE 1.9 — COMPACTION OF

RTA SPECIFICATION 118 "ASPHALT (DENSE AND OPEN GRADED)" SHALL BE 95%. COMPACTION

ALL COMPACTION SHALL BE UNDERTAKEN USING SELF PROPELLED

A FINISHED PANEMENT PROPERTIES

A) FINISHED SURFACES SHALL BE SMOOTH DENSE AND TRUE TO SHAPE

AND SHALL NOT VARY MORE THAN 10MN FROM THE SPECIFIED PLAN

LEVEL AT ANY POINT AND SHALL NOT DENATE FROM THE BOTTOM OF A ORARY

3M STRAIGHT EDGE LAID IN ANY DIRECTION BY MORE THAN 5MM.

1. GENERAL
A) MINERAL AGGREGATES TO COMPLY WITH CLAUSE 2.1 — MATERIALS OF RTA SPECIFICATION R'116 "ASPHALT (DENSE AND OPEN GRADED)".
B) MINERAL FILLER TO COMPLY WITH AS2357-1980 MINERAL FILLERS FOR ASPHALT AND CLAUSE 2.1.2 — FILLER OF RTA SPECIFICATION R'116 "ASPHALT (DENSE AND OPEN GRADED)".
C) BITUMEN BINDER SHALL COMPLY WITH CLAUSE 2.1.3 — BINDER OF RTA SPECIFICATION R'116 — "ASPHALT (DENSE AND OPEN GRADED)".

4. TACK COAT

A) THE WHOLE OF THE AREA TO BE SHEETED WITH ASPHALTIC CONCRETE SHALL BE LIGHTLY AND ENENLY COANED WITH RAPID SETTING BITUREN COMPLYING WITH RTA SECEPICATIONS 3252 3253, 3254, 3258 AND 3268. APPLICATION RAFE FOR RESIDUAL BITUNEN SHALL BE 0.15 TO 0.30 LITRES/SQUARE METRE. APPLICATION SHALL BE BY MEANS OF A MECHANICAL SPRAYER WITH SPRAY BAR.

5. SPREADING
A) ALL ASPHALTIC CONCRETE SHALL BE SPREAD WITH A SELF PROPELLED PANNIG MACHINE.
B) THE ASSHALTIC CONCRETE SHALL BE LAID AT A MIX TEMPERATURE AS SHOWN BELOW.
ROAD SURPACE TEMPERATURE IN SHADE A(OC) MIX TEMPERATURES (OC) 5-10 NOT PERMITTED
10-15 150
15-25 145
OVER 25 140
C) ASSHALTIC CONCRETE SHALL NOT BE LAID WHEN THE ROAD SURFACE IS WET OR WHEN OCLD WINDS CHILL THE MIX TO ADVERSELY AFFECT SPREADING AND COMPACTION.

6. Jon'ts 4) The Minber of Join'ts Both Longitudinal and transverse Shall be Kept to a minimum. B) The density and surface finish at Join'ts Shall be similar to Those of the remainder of the layer,

9. THE PROPOSED 1m WIDE ROAD SHOULDER AT THE WESTERN EDGE OF THE NEW ROAD IS TO BE STABLISED WITH A FLUSH SEAL FINISH.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO THE STANDARD RECOMMENDED BY THE NSW DEPARTMENT OF HOUSING'S BLUE BOOK' TITLE "MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION", 4TH EDITION, MARCH 2004.

2. THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL INFORM THEIR STAFF OF THEIR OBLIGATIONS UNDER THIS EROSION AND SEDIMENT CONTROL SECTION. 3. SILT SOCKS AND GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED AT ALL DRAINAGE INLET PITS.

4. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED PRIOR TO COMMENCEMENT OF CONSTRUCTION.

5. ALL SEDMENT CONTROL STRUCTURES SHALL BE INSPECTED AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO THE APPROPRIATE STOCKPILE.

6. STABILISE ALL COMPLETED ROAD BATTERS WITH HYDROMULCH,

CONSTRUCTION MATERIALS

1. MATERIALS AND WORKMANSHIP SHALL BE THE BEST OF THEIR RESPECTIVE KINDS, AND, UNLESS OTHERWISE SPECIFIED, SHALL CONFORM TO THE RELEVANT AUSTRALIAN STANDARDS.

SUFFICENT NOTICE SHALL BE GIVEN BY THE CONTRACTOR TO THE UIPENNITANDENT TO EMABLE ANY MATERIALS THAT ARE BROUGHT ON THE TIE TO BE EXAMINED. ALL MATERIALS ARE TO BE SUITABLY STACKED TO ACULTATE EXAMINATION.

1. WHERE THE CONTRACTOR SUPPLIES NATERIALS OF A MIXED OR POOR COUNTRY, THE SUPPRINTENENT SHALL HAVE THE POWER TO REQUIRE THE CONTRACTOR TO PICK OUT AND STACK THOSE MATERIALS WHICH IN HIS OPINION ARE SUTTABLE FOR THE WORKS, AND TO HAVE THOSE UNSUITABLE REMOVED FROM THE SITE OF THE WORKS.

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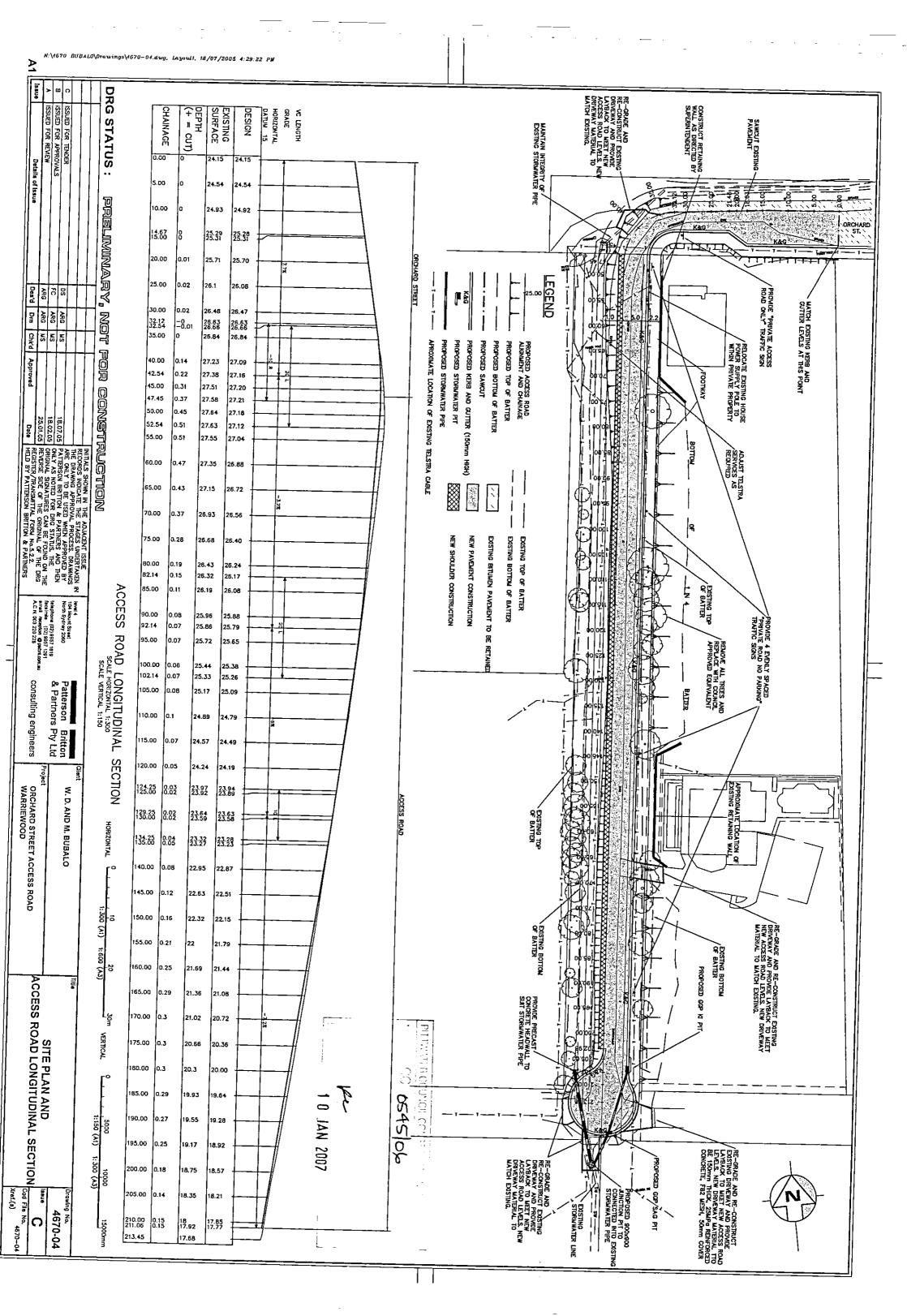
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GENERAL NOTES & SPECIFICATIONS
SHEET 2 OF 2

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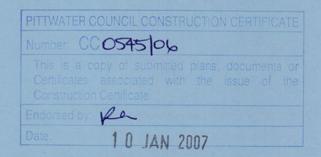
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EXISTING BANK TO MATCH
EXISTING SWALE ALLOHMENT 2 (3) 210.00 level 4
104 Mount Sydney 2000
North Sydney 2000
telephone (02) 8857 1819
fasilinia (02) 9857 1291
umai necesion @ patchcomay
A.C.N. 003 220 228 213.45 DRAINAGE PLAN 1:100 Patterson Britton & Partners Pty Ltd consulting engineers REMOVE AND DISPOSE OF EXISTING STORMWATER PIPE UNDER NEW ROADWAY UP TO PIT 3/1 V, D AND M BUBALO ORCHARD STREET ACCESS ROAD WARRIEWOOD 3 522 2 CONNECTION TO EXECUTE #375 LINE 341050,448 341055,222 341051,083 341049,889 mEAST UNE TO BE TO IN FUTURE AS O FOR SECTOR 10A BIT SCHEDULE 6270846.218 SA3 (MN. 600x600) 6270828.3270 SA5 (MN. 1200x600) 6270828.252 900x800 DRAINAGE JINCTION BOX 6270847.300 HEADWALL MNORTH TYPE (RTA) TO MULLET CREEK STORMWATER DRAINAGE PLAN noste Constitution 1 0-JAN 2007 2000 4000 6000 8000 1:100 (A1) 1:200 (A3) Cod File No. 4570-10

Drawing No. 4670-10



APPENDIX C – SECTOR 10 (STOCKLAND) MONITORING RESULTS SUMMARY

C <u>-</u> vitoring Results

2. Figures in normal case satisfy any short, medium and long-term water quality goals.	1. Long-Term water quality goals are	Chlorophyll A	Hardness	phosphate Pesticides (OP)	Organo	Dhanols (Organo chlorine	Zinc	Mercury	Lead	Copper	Chromium	Arsenic	Temperature (field)	(field)	PH	Nitrogen	Total Kjeldahl	Faecal Coliforms	Turbidity	Suspended Solids	Total Dissolved Solids	Total Phosphorous	Phosphorous	Phosphorous	Filterable	NOT S		Ammonia - N	Total rain over 5 day's preced.	-			Table 1 –
normal case satisfy any short, medium and long-term water quality goal.	ater quali	1/8m	ng/L		ug/L	He la	T/gu	ug/L	1/gu	J∕an	ug/L	1/8H	ug/L	 റീ	:		1	mg/L	cfu/100	NIG		ng/L	т/8ш	1 9	me/L	7/8m		1/gm	1/2m				Units	
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3. Figures underlined achieve the short and medium-term water quality goal.

4. Figures in *stalics* achieve the short-term water quality goal.

5. Figures in Bold do not achieve the short term goal or where SQ is the short term goal
6. Rainfall data obtained from Bureau of Meteorology. Sampling Station – Observatory Hill.
7. NS – Not Specified by Council, SQ – Status Quo, TF – To be forwarded when available (not available at time of report publication), NR = Not Required by Council's WMS for wet weather sampling

40 Julyo

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page 7

Table 2– Construction Stage Water Quality Monitoring Results

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Parameter	Units	During Const.	Short-Term Goal	Medium-Term Goal	Long-Term Goal*		8 Apr-02 ((Dry)	17 Apr -02 4:00PM (rising limb)	18 Apr -02 10:00 AM (falling limb)	28 May-02 1:30PM (rising limb)		limb)		Properties (DRY)	RY)			
						Muller	Mullet Creek	DS of Internal Creek	DS of Internal Creek	DS of Internal Creek	Mullet	Mullet Creek	Mullet Creek	Creek	Mullet Creek	ek	Mullet Creek		DS of Internal
						WSUS100	WSDS100	S12D1US (ds of IS)	200S12US (ds of IS)	202USS12 (ds of IS)	WS500US	WS500 DS	WS600US	WS600 DS	us	DS WS	WS700US WS	WS700DS WS7	WS700IS (ds of IS)
Total rain over 5 days preceding sampling	mm					2.2	2.2	2.2	6.6	13.8	33.6	33.6	47.0	47	0	-			
Ammonia - N	ng/L	NS	Ş	£0 >	£.0>	0.015	0.12	0.26	0.14	0.21	0.024	0.006	0.045	0.021	-		0.19	01.0	0.18
Total Nitrogen	ng/L	<u>^1,6</u>	SQ	\$1.5	1.0	0.5	0.7	12	4.0	7.5	0.67	0.40	E	0.48			0.59	0.54	5.0
Nitrate	ng/L	NS	NS.	SN	NS	0.094	<0.005	6.3	1.8	5.8	0.025	0.018	0.41	0.064	•	•	0.01	<0.005	3.5
Nitrite	ng/L	NS	SN	NS	NS	<0.005	0.008	2.7	0.22	1.2	<0.005	<0.005	0.015	<0.005	-	-			0.071
Filterable Phosphorous	Т⁄Вш	NS	SN	NS	SN	<0.05	0.09	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	•	-	0.027	0.043	<0.02
Non-Filterable	mg/L	NS	NS	SN	SN	<0.05	0.08	0.26	0.49	0.071	<0.05	<0.05	∠ 0.05	<0.05	•				•
Total Phosphorous	mg/L	<u>6</u>	S	<u>6</u> .1	0.04	<0.05	0.17	0.31	0.54	0.076	<0.05	0.053	0.083	0.063	-	•	0.097	0.17	0.043
Phosphate - Ortho as P	1/8ш	NS	NS	NS	NS	0.007	0.021	0.03	0.016	0.009	0.009	0.007	0.014	0.01	•	-	0.014	0.012	<0.005
Total Dissolved Solids	T/gm	NS .	<1000	<1000	<1000	•	•	•		•	•		•	•	,	-	-	•	•
Suspended Solids		<100	SQ	Q	۵	۵	1000	550	570	1.1	6	4	14	4	-	·	7	10	40
Turbidity	DIN	NS	SQ	<50	20	•	•	•	-	•		•	ļ _			-		_	١.
Faecal Coliforms	cfu/100m	<150	<1000	<150	<150	50	40	420	24000	850	<10	<u></u>	2900	120	· 		20	470	<u>^10</u>
Total Kjeldahl Nitrogen	mg/L	NS	NS	NS	NS	0.4	0.7	3.0	2.0	0.5	0.65	0.38	0.68	0.42		-	0.58	0.54	1.4
Hq	pH unit	NS	6.6-8	6.6-8	6.6-8	•	•			•	•	•			7.96	7.2	6.5	6.5	4.9
Dissolved Oxygen (field)	ng/L	NS	DS	<90% sat.	<90%s	•	•		•	•	•	•	,		11.7	2.2	·	 -	
Temperature (field)	ಗೆ	NS	SQ	õ	SQ		•	•	•	•	•		•	•	8.4	9.0			
Conductivity @25deg C		SN				•	•	0.67	0.43	0.56	0.33	0.30	0.31	0.28	-	0.4	0.33	0.37	0.58
Salinity (ppt)		SN			-			•	•	•	•	•	•	•	0.18	0.18	•	•	
ORP (mV)		SN		-				•	•	•	•	•	•	•	110	92	_	•	
Arsenic	ug/L	SN	QS	50%SQ	50	•	•	0.008	NR	NR	NR	NR.	¥	Ą		<u> </u>	△	<u>^</u>	
Chromium	ug/L	SN	SQ	50%SQ	10	•	,	0.016	NR	ŊŖ	Ŋ	Ŗ	Ą	Ŋ		•	Δ	△	
Copper	1/gu	SN	ŞQ	50%SQ	2	•	•	0.018	NR	NR	¥	Ŋ	N.	ă	•	 -	△	^	
Lead	L/gu	SN	SQ	50%SQ	1	•	•	0.048	NR	NR	Ŋ	Ŋ	Ŋ	¥	-	•	۵	△	
Mercury	1/gu	SN	SQ	50%SQ	0.1		•	<0.0001	NR	NR	Ŋ	¥	Ŋ	Ŋ		-	ê	<u>ê</u>	.
Zinc	ug∕L	SN	SQ	50%SQ	50	•	•	0.064	NR	NR	¥	N _R	Ŋ	¥		 -	<u>^</u>	-	
Organo chlorine Pesticides		SN	SQ	50%SQ	SN		-	<0.01 (apart from Dieldrin at 0.051)	NR.	NR	NR	¥.	Ä	NR	,		<0.01	10.02	
Phenois	1/gu	NS	SQ	50%SQ	SN .		•	<2.0	NR	NR	NR	NR	Š	Ŗ		•	۵	۵	
Organo phosphate	1/gu	NS	Š	50%SQ	NS	•	•	6 .1	NR	NR	NR.	NR	¥	NR.		•	<0.1	40.1	
Hardness	7/8m	NS	NS	NS	NS	+	-	200	NR	NR	NR	NR	NR	NR	·	•	89	100	
Chlorophyll A	mg/L	SN	15	15	10		•	<0.001	NR	NR	¥	Ŋ	¥	N _R	<u>'</u>	-			
Oil and Grease	mg/L	SN	SN	SN	SN	•	-	ح.	NR	NR.	Ą	NR	NR.	Ä		 -	\$	â	
1. Long-Term water quality goals are derived from ANZECC, 1992 guidelines and Councils	goals are der	ived from A	NZECC, 1992	guidelines and C	WMS	Table C2 - Feb 2001.	01.				•				<u> </u>				
2. Figures in normal case satisfy any short, medium and long-term water quality goals.	isfy any sho	rt, medium a	nd long-term v	ater quality goal												i			
3. Figures underlined achieve the short and medium-term water quality goal.	e the short as			ity goal.	S.														
4. Figures in ttalics achieve the short-term water quality goal.	he short-terr	nd medium-t	erm water qua		, , ,									Pia					
2 5:		nd medium-t m water qual	ity goal.														֡֝֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜		_

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Post Sub-Division Certificate Water Quality Monitoring Report Sector 10, Warriewood Valley 1st Quarter Post Subdivision Certificate Results (Nov02-Jan03)

Table 3 - First Quarter Water Quality Monitoring Results

arameter	Units	During Const.	Short-Term Goal	Medium-Term Goal	Long-Term Goal		16-1-03 (D	<u> </u>
		CVLSU				Mullet	Creek	New Internal Site
						WSPIUS	WSP1DS	WSP1IS
otal rain over 5 days receding sampling	mm		·			0	0	0
mmonia - N	mg/L	NS	<2.3	<0.3	<0.3	<0.1	0.3	<0.1
otal Nitrogen	mg/L	<1.6	SQ	<1.6	1.0	0.4	27	5.2
itrate	mg/L	NS	NS	NS	NS	0.04	0.09	4.7
itrite	mg/L	NS	NS	NS	NS	<0.005	<0.005	0.09
xidised Nitrogen	mg/L	NS	NS	NS	NS	0.04	0.09	4.8
otal Kjeldahl Nitrogen	mg/L	NS	NS	NS	NS	0.4	27	0.4
ilterable Phosphorous	mg/L	ÑS	NS	NS	NS	<0.05	<0.05	<0.05
lon-Filterable Phosphorous	mg/L	NS	NS	NS	NS	<0.05	0.1	<0.05
otal Phospherous	mg/L	<0.1	SQ	<0.1	0.04	<u><0.05</u>	0.1	<0.05
hosphate - Ortho as P	mg/L	NS	NS	NS	NS	<0.05	<0.05	<0.05
uspended Solids / NFR		<100	SQ	<20	<6	<1	2	4
aecal Coliforms	cfu/100ml	<150	<1000	<150	<150	. 20	150	120
Н	pH unit	NS	6.6-8	6.6-8	6.6-8	•	<u> </u>	<u> </u>
Dissolved Oxygen (field)	mg/L	NS	SQ	<90% sat.	<90% s	<u> </u>	-	<u> </u>
Temperature (field)	°C	NS	SQ	SQ	SQ	<u> </u>	<u> </u>	-
Conductivity @25deg C		NS	NS	NS		T	-	-
Salinity (g/L)		NS	NS	NS		0.1	0.7	0.2
ORP (mV)		NS	NS	NS		1	1	-
Arsenic	ug/L	NS	SQ	50%SQ	50	<1	<1	2
Chromium	ug/L	NS	SQ	50%SQ	10	<1	<1	<1
Copper	ug/L	NS	SQ	50%SQ	2	<1	<1	3
Lead	ug/L	NS	SQ	50%SQ	1	<1	<1	<1
Mercury	ug/L	NS	SQ	50%SQ	0.1	<0.1	<0.1	<0.1
Zinc	ug/L	NS	SQ	50%SQ	50	<1	<1	<1
Organo chlorine Pesticides	ug/L	NS	SQ	50%SQ	NS	<1	<1	<1
Phenols	ug/L	NS	SQ	50%SQ	NS	<1	<1	<1 <1
Organo phosphate Pesticides (OP)	ug/L	NS	ŠQ	50%SQ	NS NS	<1	<1	140
Hardness (CaCO3)	mg/L	NS	NS	NS	_		31	2
Chlorophyll A	ug/L	NS	15	15	10	13	31	3
Oil and Grease	mg/L	NS	NS	NS	NS	<0.02	<0.02	<0.02
Total PAH's	mg/L	NS	NS	NS	NS	380	1500	230
ALGAL ID/Count	Celis/mL		NS	NS NS	NS NS	_		
Long-Term water quality goal Figures in normal case satisfy	any short, me	dium and lo	ong-term water	quality goals.	S WMS I able		·	
3. Figures <u>underlined</u> achieve the				oau.	700	<u> </u>	<u> </u>	<u> </u>
4. Figures in <i>italics</i> achieve the s 5. Figures in Bold do not achiev						0545	<u></u>	
6. Rainfall data obtained from B 7. NS - Not Specified by Council	ureau of Met	eorology.	•					

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2nd Quarter Post Subdivision Certificate Results (Feb03-Apr03)

Table 4 Second Quarter Water Quality Monitoring Results

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Units Durin	_		ium- Lo	ng.		17 February 2003 (W	y 2003 (Wet	et Weather Rising Limb)	ng Limb)			18	February 20)03 (Wet We	18 February 2003 (Wet Weather Falling Limb)	Limb)		21 February Weat	her)	21 marun Wea	ZI March, 2003 (Dry Weather)
2	_		Coallern	1 (202)																	
	_			-	Mullet	Internal		QCP1	W	QCP2		fullet	Internal	\sim	_	10		₩Q.	_	Mmet	THE THE
				WSI		\vdash	 	1—1	+-	WSP22OI		WSP3DS	WSP3IS		-					74/4 7/	_
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+	\dashv	-	_	-	\dashv	7.1	2.4	1.0	1.5	סיד	2.0	2.2	6.1	2.6	0.7	16	1.4	2.0	6.4	╁	╁
\dashv	+	-	\dashv	_	-	6.0	<0.01	0.03	0.13	<0.01	_	\vdash	5.9	<0.01	0.03	0.23	10.05	0.58	2,3	╅╾	十
-	+	-	_	\dashv	\dashv	0.099	<0.005	<0.005	<0.005	\dashv		-	0.11	<0.005	<0.005	0.005	<0.005	0.016	<0.003	+	21.0
\dashv	-	1	_	_	\dashv	05 6.1	<0.005	0.03	0.13	<0.005	lacksquare	 -	6.0	<0.005	0.03	S C	6.65		2 1.0	╁╸	
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\dashv	\dashv	_	-		_	0.2	0.1	0.07	0.05	0.05	0.08	2.2	0.05	0.1	0.05	0.07	0.08	1 0		╬	十
-	-	_		_		<0.1	0.3	<0.1	0.15	0.15	0.12	0.5	0.05	0.3	A0.03	2.5	21.0	į.	, d	┼-	╀
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are derived f	from ANZE	CC, 1992 gui	delines and (AS Table C2 -	Feb								;							
ny short, me	dium and lo	ng-term wate	ਸ quality goa	ıls.									ł								
short and me	dium-term	water quality	goal.						ł												
ort-term wat	er quality go	oal.	:														- 7	Q		1	
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The ship is ship in the ship i	mm mm mg/L ng/L mg/L ng/L al rain over 5 days monia - N mg/L monia - N mg/L mg/L NS rate mg/L N	Const. Term Goal Term Go	Const. Term Goal Jerm Go	Const. Term Goal Term Go	Const. Ierm Coal Ierm Coal Maller Mall	Const. Term Gost Term Go	I term Goal Mullet Internal WSP2US WSP	I term Goal Mullet Internal WSP2US WSP	I term Goal Mullet Internal WSP2US WSP	I term Goal Mullet Internal WSP2US WSP	I term Goal Mullet Internal WSP2US WSP	I term Goal Mullet Internal WSP2US WSP			Marie Mari						

Post Sub-Division Certificate Water Quality Monitoring Report Sector 10, Warriewood Valley

3rd Quarter Post Subdivision Certificate Results (May03-Jul03)

Table 5 – Third Quarter Water Quality Monitoring Results

PHT

able 5 - Third Quart	Units	During		Medium-Term Goal			16-7-03 (D	ry)
		Const.	Goai	Goat	Goal	Mullet	Creek	New Internal Site
						WSP7US	WSP7DS	WSP7IS
otal rain over 5 days receding sampling	mm .							<0.01
mmonia - N	mg/L	NS	<2.3	<0.3	<0.3	<0.01	0.01	4
otal Nitrogen	mg/L	<1.6	SQ	<1.6	1.0	1.2	0.09	3.53
litrate	mg/L	NS	NS	NS	NS	0.61		0.07
litrite	mg/L	NS	NS	NS	NS	0.01	<pql< td=""><td>0.07</td></pql<>	0.07
oxldised Nitrogen	mg/L	NS	NS	NS	NS	<u> </u>	<u> </u>	0.3
Total Kjeldahl Nitrogen	mg/L	NS	NS	NS	NS	0.6	1.2	0.05
literable Phosphorous	mg/L	NS	NS	NS	NS	0.01	0.03	0.03
Non-Filterable Phosphorous	mg/L	NS	NS	NS	NS	<0.01	<0.01	
Cotal Phosphorous	mg/L	<0.1	SQ	<0.1	0.04	0.02	0.04	0.06
Phosphate - Ortho as P	mg/L	NS	NS	NS	NS	-	<u> </u>	-
Suspended Solids	mg/L	<100	SQ	<20	<6	2	5	7
Furbidity (field)	NTU	NS	SQ	50	20	111	74.9	SH
Faecal Coliforms	cfu/100ml	<150	<1000	<150	<150	320	110	20
pH	pH unit	NS	6.6-8	6.6-8	6.6-8	6.66	6,64	SH
Dissolved Oxygen (field)	mg/L	NS	SQ	<90% sat	<90% s	20	15.9	SH
Temperature (field)	°C	NS	SQ	SQ	SQ	11.73	11.98	SH
Conductivity @25deg C	ms/cm	NS	NS	NS	NS	0.4	0.4	SH
Salinity (g/kg)	 	NS	NS	NS	NS	<1	<1	<1
	 	NS	NS	NS	NS	55	57	SH
ORP (mV)	110/	NS	SQ	50%SQ	50	- 2	3	3
Arsenic	ug/L	NS NS	SQ	50%SQ	10	<5	<5	<5
Chromium	ug/L	NS	SQ	50%SQ	2	<5	<5	<5
Copper	ug/L	NS	SQ SQ	50%SQ	 - 	<2	1 2	5
Lead	ug/L		SQ	50%SQ	0.1	<1	- - - -	<1
Mercury	ug/L	NS	SQ	50%SQ		<10	<10	20
Zinc	ug/L	NS	SQ SQ	50%SQ		<1	<1	-
Organo chlorine Pesticides (OC)	ug/L	NS						, <pql< td=""></pql<>
Phenols	ug/L	NS	SQ	50%SQ		<pql< td=""><td></td><td></td></pql<>		
Organo phosphate Pesticides	ug/L	NS	SQ	50%SQ	i	<10	<10 68	150
Hardness (CaCO3)	mg/L	NS	NS	NS	NS	79	<5	
Chlorophyll A	ug/L	NS	15	15	10	<5		12
Oil and Grease	mg/L	NS	NS		NS	<5	6	
Total PAH's	ug/L	NS	NS		NS	<1	<1	
ALGAL ID/Count	Cells/mI				NS	702		

^{1.} Long-Term water quality goals are derived from ANZECC, 1992 guidelines and Councils WMS Table C2 - Feb 2001.

Figures in normal case satisfy any short, medium and long-term water quality goals.

Figures <u>underlined</u> achieve the short and medium-term water quality goal.

^{4.} Figures in italics achieve the short-term water quality goal.

^{5.} Figures in Bold do not achieve the short term goal or where SQ is the short term goal

^{7.} NS - Not Specified by Council, SQ - Status Quo, TF - To be forwarded when available (not available at time of report publication), <PQL = Less than practical quantitation limit, SH - Too Shallow to take readings with equipment

Post Sub-Division Certificate Water Quality Monitoring Report Sector 10, Warriewood Valley 4th Quarter Post Subdivision Certificate Results (Aug03-Oct03)

Table 6 – Fourth Quarter Water Quality Monitoring Results

arameter	Units	Daring Const.	Short-Term Goal	Medium-Term Goal	Long-Term Goal	_	15-10-03 (T)ry)
						Mullet	Creek	New Internal Site
						WSP8US	WSP8DS	WSP8IS
otal rain over 5 days receding sampling	mm				_	32.8	32.8	32.8
mmonia - N	mg/L	NS	<2.3	<0.3	<0.3	0.06	0.07	0.09
otal Nitrogen	mg/L	<1.6	SQ	<1.6	1.0	1.2	0.6	3.8
litrate	mg/L	NS	NS	NS	NS	0.46	<0.01	2.69
litrite	mg/L	NS	NS	NS	NS	0.01	<0.01	0.03
Oxidised Nitrogen	mg/L	NS	NS	NS	NS	•	•	•
Total Kjeldahl Nitrogen	mg/L	NS	NS	NS	NS	0.8	0.6	1.2
Filterable Phosphorous	mg/L	NS	NS	NS	NS	0.14	0.05	0.39
Non-Filterable Phosphorous	mg/L	NS	NS	NS	NS	0.01	<0.01	<0.01
Fotal Phosphorous	mg/L	<0.1	SQ	<0.1	0.04	0.15	0.06	0.40
Phosphate – Ortho as P	mg/L	NS	NS	NS	NS	-	-	-
Suspended Solids	mg/L	<100	SQ	<20	<6	13	4	190
Turbidity (field)	NTU	NS	SQ	50	20	75	6	-
Faecal Coliforms	cfu/100ml	<150	<1000	<150	<150	90	160	370
pH	pH unit	NS	6.6-8	6.6-8	6.6-8	7.85	7.26	-
Dissolved Oxygen (field)	mg/L	NS	SQ	<90% sat.	<90% s	6.62	1.83	•
Temperature (field)	°C	NS	SQ	SQ	SQ	15.2	14.8	-
Conductivity @25deg C	ms/cm	NS	NS	NS	NS	0.233	0.243	•
Salinity (g/kg)		NS	NS	NS	NS	0	0	-
ORP (mV)	-	NS	NS	NS	NS		 	-
Arsenic	ug/L	NS	SQ	50%SQ	50	<2 <	<2	4
Chromium	ug/L	NS	SQ	50%SQ	10	<5	<5	<5
Copper	ug/L	NS	SQ	50%SQ	2	<5	≤5	2
Lead	ug/L	NS	SQ	50%SQ	1	3	≤2	18
Mercury	ug/L	NS	SQ	50%SQ	0.1	<1	<1	<1
Zine	ug/L	NS	SQ	50%SQ	50	<10	<10	160
Organo chlorine Pesticides (OC)	ug/L	NS	SQ	50%SQ	NS	<i< td=""><td><1</td><td><1</td></i<>	<1	<1
Phenols	ug/L	NS	, sQ	50%SQ	NS	<5	<5	<5
Organo phosphate Pesticides (OP)	ug/L	NS	SQ	50%SQ	NS NS	<10	<10	<10
Hardness (CaCO3)	mg/L	NS	NS	NS	NS	75	70	160
Chlorophyll A	ug/L	NS	15	15	10	10	<5	<5
Oil and Grease	mg/L	NS	NS	NS	NS	<3	<3	<3
Total PAH's	ug/L	NS	NS	NS	NS	<1	<1	<1
ALGAL ID/Count	Cells/mL	NS	NS	NS	NS	348	334	134

^{1.} Long-Term water quality goals are derived from ANZECC, 1992 guidelines and Councils WMS Table C2 - Feb 2001.

^{2.} Figures in normal case satisfy any short, medium and long-term water quality goals.

^{3.} Figures underlined achieve the short and medium-term water quality goal.

^{4.} Figures in Italics achieve the short-term water quality goal.

^{5.} Figures in Bold do not achieve the short term goal or where SQ is the short term goal

^{7.} NS - Not Specified by Council, SQ - Status Quo, TF - To be forwarded when available (not available at time of report publication), <PQL = Less than practical quantitation limit, SH - Too Shallow to take readings with equipment

Table 7 - Fifth Quarter Water Quality Monitoring Results

	State Co.	140161	e de die		3	1,000																		
Parameter	Units	During Const.	Short- I	Medium- Term Goal	Term		25	27/11/03 – Wet Weath	et Weather]	er Rising Limb		:		N	28/11/03 – Wet Weather Falling Limb	et Weather	Falling Limi	•			15/1/04 Dry		15/1/04 Dry (Physical Only)	(Physical y)
						WSP9US	WSP9DS	WSP9IS		CP10UT	WSP9WQ CPZIN	WSP9WQ CPZOUT	WSP10US	WSP10US WSP10DS	WSP10IS	WSP10W	WSP10W OCP10UI	WSP10W OCPZIN	WSP10W QCPZOUT	WSP11US	WSP11DS	WSP11IS	WQCP1	OUT TUOW PI
Total rain over 5 days preceding sampling	mm					75.6	75.6	75.6	75.6		75.6		49.2	49.2	49.2		49.2	49.2	49.2	8.0	0.8	0.8	0.8	0.8
Ammonia - N	ng/L	NS	۵	<0.3	\$0.3	0.04	0.02	0.05	0.38	<0.01	<0.01	<0.01	0.02	0.04	0.03	0.39	<0.01	0.02	0.01	0.07	0.10	0.02	•	•
Total Nitrogen	mg/L	6.1	Ø	\$1.6	1.0	0.6	0.9	2.6	1.4	0.6	0.5	0.3	1.0	0.7	4.4	2.2	0.8	0.8	0.7	0.6	1.2	5.2		
Nitrate	mg/L	NS	NS	NS	SN	0.01	0.28	2.14	0.27	<0.01	<0.01	<0.01	0.17	<0.01	3.28	0.2	10.0>	<0.01	<0.01	<0.01	0.01	5.09		•
Nitrite	1/gm	NS	ß	NS	NS	10.0	<0.01	0.05	0.03	<0.01	10.0>	<0.01	<0.01	<0.01	0.07	0.03	<0.01	<0.01	<0.01	10.0>	<0.01	0.08	•	
Total Kjeldahl Nitrogen	1/8m	NS	ß	SN	SN	0.6	0.6	0.5	1.2	0.6	2.0	0.3	0.9	0.7	1.0	2.0	8.0	0.8	0.7	9.0	1.2	0.1	•	•
Filterable Phosphorous	1/gm	NS	8	NS	NS	0.08	0.13	0.08	0.20	0	0.14	0.07	0.08	0.08	0.05	0.21	0.28	0.12	0.11	0.05	0.18	0.01		•
Non-Filterable	Т/Яш	NS	SN	NS	NS	0.01	0.04	0.02	0.23	0.18	<0.01	10.0>	0.02	10.01	0.02	0.24	0.02	<0.01	<0.01	<0.01	<0.01	0.01	•	٠
Total Phosphorous	mg/L	<0.1	Sõ	6.1	0.04	0.09	0.17	0.10	0.43	0.18	0.14	0.07	1.0	0.09	0.07	0.45	0.30	0.12	0.11	0.05	0.18	0.02	,	
Suspended Solids	ng/L	<100	8	۵۵	&	5	2	7	Щ	ÐŢ	21	13	5	4	2	15	9	2	10	100	31	2		
Turbidity (field)	DIN	NS	SQ	50	20	42	00		35	35	109	41	16	4	•	31	14	29	89	32	89		#	10
Faccal Coliforms	cfw/100ml	<150	<1000	<150	<150	180	300	440	740	120	570	740	80	400	1100	1200	280	480	7500	100	470	560	•	•
pH	pH unit	NS	8-9.6	6.6-8	6.6-8	7.78	6.36	•	7.36	6.99	7.34	7.09	7.24	6.47		7.38	6.76	7.3	7.13	7.4	5.99		7.05	10.07
Dissolved Oxygen (field)	mg/L	NS	SQ	<90% sat	<90% s	8.14	2.72		4.24	5.12	6.53	5.5	6.76	1.82		4.35	4.0	6.15	5.64	7.6	4.3		3.98	2.01
Temperature (field)	င	SN	SQ	SQ	SQ	16.0	15.9	•	19.9	17.9	20.5	21.3	15.9	16.1	•	19.8	17.9	20.1	20.8	19	18.4		20.1	22.5
Conductivity	ms/cm	NS	SN	NS	NS	0.298	0.226	•	0.168	0.149	0.217	0.194	0.277	0.229	•	0.165	0.153	0.213	0.196	0.302	0.27		0.202	0.312
Salinity (%)		SN	NS	NS	SS	0.01	0	•	0	0	0	0	0.01	0	•	0	0	0	0	0	0	•	0	0.01
Arsenic	T/gu	NS.	ő	50%SQ	50	NR	N.	NR	NR	Ä	Ŋ	NR	NR NR	NR	NR	NR	NR	NR	NR.	۵	۵	۵		
Chromium	J∕an	NS	ő	50%SQ	10	Ŋ	NR	Ą	Ŋ	Ŋ	NR.	NR	NR	NR	NR	NR	NR	NR	NR.	۵	۵	۵	,	
Copper	ug/L	SN	SQ	50%SQ	2	NR	NR	NR	NR	NR	NR	NR	NR	NR	¥	NR	N _R	¥	XX.	۵	۵	۵	•	•
Lead	1/gu	NS	SQ	50%SQ	1	NR	NR	NR	NR	NR	NR.	NR	NR.	N _R	¥	¥	¥	Ŋ	¥	-	_	ļ.	,	
Mercury	1/gu	SN	l ds	50%SQ	0.1	NR	NR	NR	NR	NR	NR	NR	NR	Ŋ	¥	Ä	Ŋ	¥	Ŋ	<0.05	<0.05	<0.05	•	•
Zine	1/gu	NS	ŞQ	50%SQ	50	NR	NR	NR	NR	NR	NR	NR	NR	NR	Ą	Ą	¥	¥	¥	40	ģ	á	,	
Organo chlorine Pesticides (OC)	T/Bn	SN	DS.	50%SQ	NS	NR	NR	NR ·	NR	NR	NR	- NR		NR	¥	∌	¥	¥	×	<u>^</u>	۵	<u> </u>		•
Phenois	1/gu	SN	SQ	50%SQ	NS	NR	NR	NR	NR	NR	NR	NR	NR.	NR.	Ŋ	NR NR	Ŋ	¥	NR NR	ŝ	-So	\$		
Organo phosphate Pesticides (OP)	1/gu	NS	ő	50%SQ	NS	NR	ŊŖ	NR	Ŋ	 ₩	Ŋ	NR	NR.	Ŋ	NR.	NR	NR.	NR NR	¥	<u></u>	<10	<u>^10</u>	,	,
Hardness (CaCO3)	mg/L	SN	ß	NS	NS	NR	NR	Ä	NR	Ą	NF.	NR	NE	NA	NR	NR	NR	NR	NR	87	96	170		
Chlorophyll A	ug∕L	SN	15	15	10	Ŋ	NR	NR.	NR	NA NA	NR	Ŋ	Ą	NR	NR.	NR	NR	NR	NR.	<0.005	0.067	<0.005		
Oil and Grease	т/дт	SN	NS	NS	SN	Ŋ	NR.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	¥	A	¥		•
Total PAH's	1/gu	NS	SN	NS	SN	Ŋ	NR	NR	NR	Ą	NR	NR	NR	NR	NR	NR	NR.	NR.	¥	△	<u></u>	_		•
ALGAL ID/Count	Cells/mL	SN	NS	NS	SN	NA NA	NR	Ä	Ä	NR	NR	NR.	NR	NR	NR	NR	NR	NR	NR	384	0	4		•
1. Long-Term water quality goals are derived from ANZECC, 1992 guidelines	goals are deriv	ed from Al	NZECC, 1	992 guidelin		and Councils WMS	Table C2 - F	Feb 2001.	1			:												
2. Figures in normal case satisfy any short, medium and long-term water quality	sfy any short	medium a	nd long-ter	m water qua	lity goals.																			
3. Figures underlined do not achieve the long term water quality goal.	achieve the lo	ng term wa	ter quality	goal.																				
4. Figures in italics do not achieve the medium-term water quality goal.	hieve the med	lium-term v	vater quali	ity goal.		:																		
5. Figures in Bold do not achieve the short term goal	ieve the short	term goal																						
6. Rainfall for Nov and Dec 2003 is from the Ingleside Rainfall Station, whilst Jan 04 is from Newport Bowling Club.	2003 is from t	the Inglesid	e Rainfall	Station, whil	lst Jan 04 is	from New	ort Bowling	Club.																
7. NS - Not Specified by Council, SQ - Status Quo, TF	uncil, SQ – St	tarus Quo,	IF – To be	- To be forwarded when available (not available at time of report publication), < PQL = Less than practical quantitation limit, SH - Too Shallow to take readings with equipment, NR=Not required by specification in wet weather	vhen availa	ble (not ava	ilable at time	of report po	ublication), <	PQL = Less	than practic	al quantitation	on limit, SH	– Too Shallo	w to take rea	idings with e	quipment, NI	~=Not requir	ed by specific	cation in we	t weather	i		

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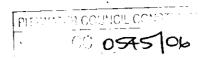


Table 8 - Sixth Quarter Water Quality Monitoring Results 1 0 JAN 2007

Parameter		During Const.	Short- Term Goal	Medium- Term Goal	Long- Term Goal		15/4/04 Dry				Physical O	
						WSP12US	WSP12DS	WSP12IS	WQCP1 IN	WQCP1 OUT	WQCP2 IN	WQCP2 OUT
Total rain over 5 days preceding sampling	mm					0	0	0	0	0	0	0
Ammonia - N	mg/L	NS	<2.3	<0.3	<0.3	0.03	0.07	0.05	-	-	-	•
Total Nitrogen	mg/L	<1.6	SQ	<1.6	1.0	0.7	1.2	5.4	•	-	-	· _
Nitrate	mg/L	NS	NS	NS	NS	0.06	<0.01	5.13	<u> </u>	-	<u> </u>	-
Nitrite	mg/L	NS	NS	NS	NS	<0.01	<0.01	0.07		<u> </u>	-	
Fotal Kjeldahl Nitrogen	mg/L	NS	NS	NS	NS	0.6	1.2	0.1	-		-	-
Filterable Phosphorous	mg/L	NS	NS	NS	NS		<u> </u>		<u> </u>	<u> </u>	ļ ·	ļ <u></u>
Non-Filterable Phosphorous	mg/L	NS	NS	NS	NS	0.01	0.02	<0.01		<u> </u>	ļ ·	<u> </u>
Total Phosphorous	mg/L	<0.1	SQ	<0.1	0.04	0.08	0.15	0.03	<u> </u>	-	-	<u> </u>
Suspended Solids	mg/L	<100	SQ	<20	<6	3	10	<1	<u> </u>		<u> </u>	-
Turbidity (field)	NTU	NS	SQ	50	20	4	8	SH	53	5	25	77
Faecal Coliforms	cfu/100ml	<150	<1000	<150	<150	40	30	60	•	•	-	-
pН	pH unit	NS	6.6-8	6.6-8	6.6-8	6.3	6.0	SH	6.96	6.51	6.99	6.92
Dissolved Oxygen (field)	mg/L	NS	SQ	<90% sat.	<90% sat		0.85	SH	4.11	5.12	5.88	8.31
Temperature (field)	°C	NS	SQ	SQ	SQ	17.8	18.1	SH	21.9	18.5	20.4	22.1
Conductivity	ms/cm	NS	NS	NS	NS	0.273	0.264	SH	0.078	0.117	0.142	0.115
Salinity (%)		NS	NS	NS	NS	0.01	0.01	SH	0	0	0	0
Arsenic	ug/L	NS	SQ	50%SQ	50	<2	4	2	<u> </u>	-	-	-
Chromium	ug/L	NS	SQ	50%SQ	10	<5	<5	<5	-	-	-	-
Copper	ug/L	NS	SQ	50%SQ	2	<2	<2	<2	-	•	-	<u> </u>
Lead	ug/L	NS	SQ	50%SQ	1	<1	<1	4	-	-		-
Mercury	ug/L	NS	SQ	50%SQ	0.1	<0.05	<0.05	<0.05	-	•	•	
Zinc	ug/L	NS	SQ	50%SQ	I	<10	<10	<10		-		-
Organo chlorine Pesticides (OC)	ug/L	NS	SQ	50%SQ		<1	<1	<1	-		-	-
Phenois	ug/L	NS	SQ		· .	<10	<10	<10	-	<u> </u>		-
Organo phosphate Pesticides (OP)	ug/L	NS	`			<10	<10	<10			-	
Hardness (CaCO3)	mg/L	NS	NS	NS	NS	91	93	170	_	-	-	
Chlorophyll A	ug/L	NS	15	15	10	<5	14	<5	-	-	-	
Oil and Grease	mg/L	NS	NS	NS	NS	7	8	6	•	•	•	
Total PAH's	ug/L	NS	NS	NS	NS	<1	<1	<1	-		•	-
ALGAL ID/Count	Cells/mI	L NS	NS	NS	NS	-	•	-	-		•	

^{1.} Long-Term water quality goals are derived from ANZECC, 1992 guidelines and Councils WMS Table C2 - Feb 2001.

Figures in normal case satisfy any short, medium and long-term water quality goals.

Figures underlined do not achieve the long term water quality goal.

^{4.} Figures in italics do not achieve the medium-term water quality goal.

^{5.} Figures in bold do not achieve the short term goal

^{6.} NS - Not Specified by Council, SQ - Status Quo, TF - To be forwarded when available (not available at time of report publication), SH - Too shallow to take readings with equipment

Post Sub-Division Certificate Water Quality Monitoring Report Sector 10, Warriewood Valley Ath Quarter Post Subdivision Certificate Results (Aug04-Nov04)

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Table 9 - Seventh Quarter Water Quality Monitoring Results

arameter	Units	During Const.	Short- Term Goal	Medium- Term Goal	Long- Term Goal		8/7/04 Dry		8 <i>1</i> 77	/U4 Dry (k	hysical Or	шу)
			Guai	Goal	Guar	WSP13US	WSP13DS	WSP13IS	WQCP1 IN	WQCP1 OUT	WQCP2 IN	WQCP: OUT
otal rain over 5 days receding sampling	mm	_				0	0	0	0	0	0	0
mmonia - N	mg/L	NS	<2.3	<0.3	<0.3	0.3	0.07	<0.01		-	•	-
otal Nitrogen	mg/L	<1.6	SQ	<1.6	1.0	0.7	1.0	5.2	•	-	-	<u> </u>
litrate	mg/L	NS	NS	NS	NS	<0.01	<0.01	4.99	-	<u> </u>	<u> • </u>	
litrite	mg/L	NS	NS	NS	NS	<0.01	<0.01	0.04	•	<u> </u>	<u> </u>	<u> </u>
Total Kjeldahl Vitrogen	mg/L	NS	NS	NS	NS	0.7	1.0	<0.1	•	<u> </u>	· ·	
ilterable Phosphorous	mg/L	NS	NS	NS	NS			ļ	<u> </u>	ļ <u> </u>	<u> </u>	<u> -</u>
Non-Filterable Phosphorous	mg/L	NS	NS	NS	NS .	<0.01	0.01	<0.01	<u> </u>	ļ -		-
Total Phosphorous	mg/L	<0.1	SQ	<0.1	0.04	0.06	0.11	0.03	<u> </u>	-	+ -	
Suspended Solids	mg/L	<100	SQ	<20	<6	7	12	2	21	25	10	30
Turbidity (field)	NTU	NS	SQ	50	20	74	70	SH		23	10	
Faecal Coliforms	cfu/100ml	<150	4	<u>i</u>	<150	40	50	160	- 7.03	6.80	6.48	6.4
pH.	pH unit	NS	6.6-8		6.6-8	7.2	6.8	SH	7.02		6.24	7.2
Dissolved Oxygen (field)	mg/L	NS	sQ	<90% sat	<u> </u>		1.32	SH	5.02.	5.15	_	_
Temperature (field)	°C	NS	SQ	SQ	SQ	10.2	10.3	SH	20.1	21.5	20.4	22.
Conductivity	ms/cm	NS	NS	NS	NS	0.234	0.277	SH	0.121	0.102	0.122	0.13
Salinity (%)	 	NS	NS	NS	NS	0.00	0.01	SH	0	0	0	0
Arsenic	ug/L	NS	SQ	50%SQ	50	< <u>2</u>	2	1 2	-	-	-	
Chromium	ug/L	NS	SQ	50%SQ	10	<5	<5	<5	-		-	-
Copper	ug/L	NS	SQ	50%SQ	2	<2	<2	√2	<u> </u>	<u> </u>	-	
Lead	ug/L	NS	SQ	50%SQ	1	<1	<1	6		-	-	
Mercury	ug/L	NS	SQ	50%SQ	0.1	<0.05	<0.05	<0.05	<u> </u>	-		_
Zinc	ug/L	NS	SQ	50%SQ	50	<10	<10	<10	_			
Organo chlorine Pesticides (OC)	ug/L	NS	SQ	50%SQ	<u> </u>	<1	<1	<1	-	•		
Phenois	ug/L	NS	L'		·	<10	<10	<10		<u> </u>	<u> </u>	
Organo phosphate Pesticides (OP)	ug/L	NS	<u> </u>			<10	<10	<10		<u> </u>		_
Hardness (CaCO3)	mg/L	NS			NS	57	85	140			 -	
Chlorophyll A	ug/L	NS NS			10	<5	<5	<5		 	<u> </u>	
Oil and Grease	mg/L	N:			NS	<5	<5	<5				
Total PAH's	ug/L	N	S N	S NS	NS	<1	<1	<1	<u> </u>	_		
ALGAL ID/Count	Cells/m	LN	S N	S NS	NS	-	_		-	<u> </u>	<u> </u>	

^{1.} Long-Term water quality goals are derived from ANZECC, 1992 guidelines and Councils WMS Table C2 - Feb 2001.

^{2.} Figures in normal case satisfy any short, medium and long-term water quality goals.

^{3.} Figures underlined do not achieve the long term water quality goal.

^{4.} Figures in italics do not achieve the medium-term water quality goal.

^{5.} Figures in bold do not achieve the short term goal

^{6.} NS - Not Specified by Council, SQ - Status Quo, TF - To be forwarded when available (not available at time of report publication), SH - Too shallow to take readings with equipment

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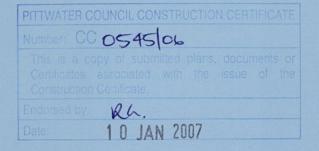
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APPENDIX D - ATLANTIS CELLS

Modular Undeground Tank System

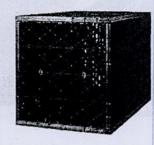
Infiltration

Detention

Rainwater

Harvesting

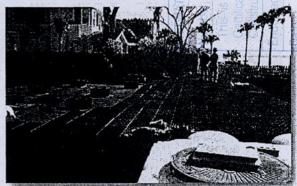
The Atlantis underground tank system is a modular sub surface system that can be constructed to hold any volume required. The sub surface location of the tank frees up space for landscaping or driveway use while also ensuring optimal conditions for retaining water is always maintained. All macro and micro pollutants are completely kept out of the system through an Atlantis Filtration Unit.



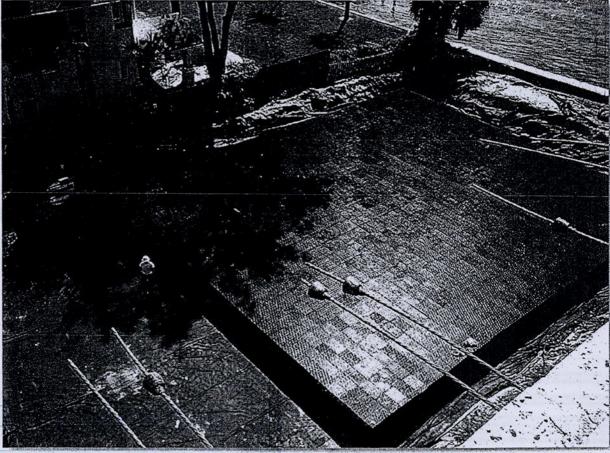
Matrix® tank module



Excavation



Installation of the Matrix® tank modules



This is a copy of submitted plans, documents of Certificates associated with the issue of the Construction Certificate.





Atlantis® Filtration Unit

Pre filters stormwater "at source" allowing clean water to enter the Atlantis® Rainwater Tank system...

The Atlantis® Filtration Unit

The Atlantis Filtration Unit is a pre-filter system specifically designed to capture gross pollutants, dissolved solids and silt from roofs and stormwater surface pits allowing clean water to enter the Atlantis Rainwater Tank system.

How it Works!

The unit features a removable trash screen for easy cleaning, which ensures litter free water enters the tank system.

The unit also contains a filtration system that bioremediates soluble stormwater contaminants. This filtration chamber provides <u>primary macro</u> and <u>secondary biological</u> water remediation. The unit delivers decontaminated water to the Atlantis Rainwater Tank System where <u>tertiary remediation</u> occurs continuously.

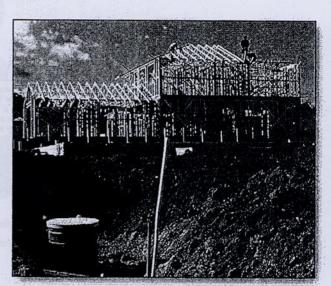
Easy to Use!

The Atlantis Filtration Unit is user friendly, easy to install and provides years of trouble free service requiring low maintenance.



Benefits:

- · Filters stormwater "at source"
- · Easy installation
- · User friendly maintenance



Installation of Atlantis Filtration Unit in Warriewood Sub-Division, Sydney NSW: STRUCTION CERTIFICAT

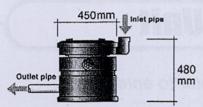
Number: CC 0545/06

Construction Certificate.
Endorsed by Ve

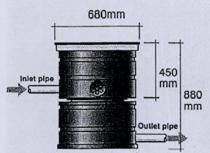
An Atlantis® Filtration Unit installed into the garden area.

www.atlantiscorp.com.au

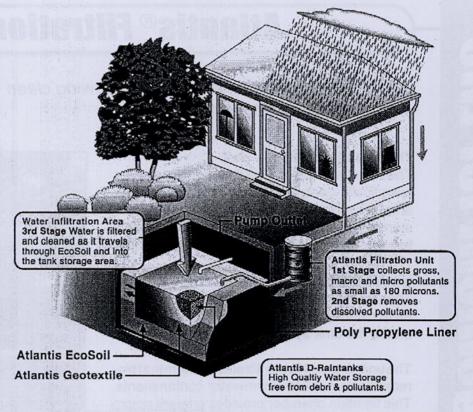




Atlantis Small Filtration Unit

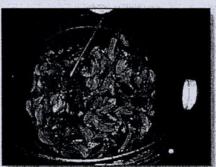


Atlantis Large Filtration Unit





The Large Atlantis Filtration Unit features a lightweight Aluminium lid allowing easy access and long life durability.



The trash screen collects all gross pollutants and micro pollutants as small as 180 microns.



The removable trash screen features a long handle for easy maintenance.

Atlantis® Filtration Units

Item No.	Description	Picture
60002	Small Filtration Unit (Single down Pipe) Suitable for single pipe applications of 12 l/sec. Size (W)480mm x (H)450mm	3
60003	Large Filtration Unit (Multiple down Pipes) Suitable for flow situations of 20 l/sec. (150mm outlet pipe). Size (W)680mm x (H)880mm	

Note: The Atlantis* Matrix* Tank Modules are manufactured from high quality recycled materials, carefully selected and under strict quality control procedures. The strength could vary slightly due to raw material, country of manufacture, manufacturing process and external conditions.

Safety Factors: Engineers, designers and geotechnical engineers should design and calculate safety factors to serviceable limited state to suit specific project. In case of doubt, consult your nearest distributor or Atlantis.

Disclaimer: All information provided in this publication is correct to the best of the Company's Knowledge and is given out in Good Faith. This information is intended only as a general guide, no responsibility can be accepted for any errors, omissions or Incorrect assumption. As each project is unique, and as Rebirth Pty Ltd, Allantis Water Management, Atlantis Corporation Pty Ltd and Its Distributors and Agents World Wide have no direct control over the methods employed by the User in Specifying, Instabiling or Supervising of its products hence no Responsibility is accepted by Rebirth Pty Ltd, Allantis Water Management, Atlantis Corporation Pty Ltd and Its Distributors and Agents World Wide. Users should satisfy themselves as to the suitability of the product for their purpose.

by Rebrith Pty Ltd. Australia.

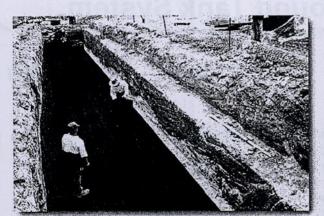
All product designs, and specification are subject to change without further notice. All Atlantis products are tested in appliance of a country of the cou ATA laboratories, and safe allowed tolerance should be practised and belongs to Rebirth Pty Ltd Australia. No part of this brochure hout prior written permission of Rebirth Pty Ltd. Australia. Atlantis

Atlantis Water Management Rebirth Pty Ltd trading as Atlantis Water Management

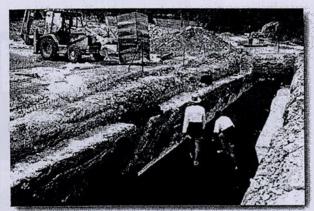
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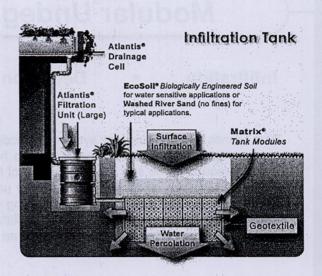
Installing the tank modules.

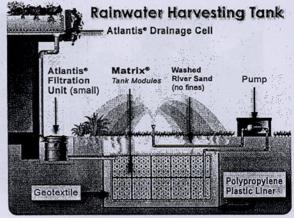


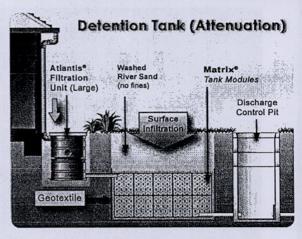
Wrapping the tank in Geotextile.



The completed tank covered with free draining material.







Part No	Size in mm	Units per /m³	Strength	Flow Rate
70003	(L)685 x (H)450 x (W)408	8 boxes /m ³	26.8 t / m ²	2280 I /min
70004	(L)685 x (H)880 x (W)408	4.06 boxes /m ³	26.8 t / m²	4560 I /min
70005	(L)685 x (H)1310 x (W)408	2.73 boxes /m ³	26.8 t / m²	6840 I /min

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Agent