Pittwater Council

ABN 61 340 837 871 **Telephone** (02) 9970 1111 **Facsimile** (02) 9970 7150
Postal Address: P.O. Box 882, Mona Vale NSW 1660, DX 9018 Mona Vale

pittwaterlga.com.au **e-mail:** pittwater_council@pittwater.nsw.gov.au

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

3 August 2006

COPY

Stuart Thor & Andrew van Wensveen
PO Box 806
NARRABEEN NSW 2101

Dear Stuart & Andrew

Re: Construction Certificate CC0355/06
Property: 104 & 106 Wakehurst Parkway, Elanora Heights

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). Please complete this form and return it to Council's Customer Service together with the PCA appointment fee as detailed in the form.

If appointed as the PCA, Council would engage the services of <Council Consultant> 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

Per:

SCANNED
8 AUG 2006
PITTWATER COUNCIL

Pittwater Council

Construction Certificate No: CC 0355/06

Site Details: 104 & 106 Wakehurst Parkway, Elanora Heights

Legal Description: Lot 10 & 11, DP 1014199

Type of Development: Subdivision

Description: Driveways, drainage works, retaining walls & associated landscaping works

COPY

Associated Development Consent No: N0432/04 Dated: 10 January 2006

Building Code of Australia Classification: Class 10b

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

- Working Drawing No CMS TH02 MODEL MAR04 Rev G (24/09/04), CMS PROPOSED SUBDIVISION MAR04 Rev G (24/09/04), CMS TH02 DRIVEWAYDESIGN MAR04 Rev B (02/06/04), 476detail200 Rev A (06/04/04), prepared by C.M.S. Surveyors P/L
- Structural Engineering Details, Drawing No 051149 S01 Rev A (18/07/06), C01 (Mar 06), C02 (Jan 06), C03 (Mar 06), C04 (Mar 06), C05 Rev B (Mar 06), C06 (Mar 06), C07 (Mar 06), C08 Rev A (18/07/06), D01 (Mar 06), D02 (Mar 06), prepared by Northern Beaches Consulting Engineers P/L
- Stormwater Details, Drawing No 051149 D02, prepared by Northern Beaches Consulting Engineers P/L, dated March 2006
- Structural Engineering Certificate on stormwater design prepared by Northern Beaches Consulting Engineers P/L dated 13/04/06
- Landscape Details, Drawing No 63.06 (05)/051, prepared by Ian Jackson Landscape Architects P/L, dated March 2006
- Landscaper Certificate on landscape design prepared by Ian Jackson Landscape Architects P/L dated 16/06/06
- Form No 2 Geotechnical Risk Management, prepared by B.F.Walker, dated 28/06/06
- Driveway Certificate on driveway design prepared by Northern Beaches Consulting Engineers P/L dated 13/04/06
- Erosion & Sediment Design Certificate, prepared by Northern Beaches Consulting Engineers P/L, dated 13/04/06
- Pittwater Council Driveway Levels dated 15/06/05
- Sydney Water Notice of Requirements
- Landscape Specification, prepared by Ian Jackson Landscape Architect P/L, dated October 2005
- Ecological Sustainability Plan, prepared by Hayes Environmental, dated June 2006

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

- The relevant provisions of the Building Code of Australia.
- The relevant conditions of Development Consent No: N0432/04

COPY

Pittwater Council

Construction Certificate No: CC 0355/06

Further that the work, completed in accordance with the Building Code of Australia, all relevant Australian Standards and these plans and specifications, will comply with the requirements of Section 81A(5) of the Environmental Planning and Assessment (Amendment) Act, 1997.

Issued By: Mark Wysman
Accreditation Number: Dept of Planning P0061
Pittwater Council Consultant
Building Surveyor

Date of Endorsement: 3 August 2006

Note: 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.

DIRECTORS

Site Stormwater Management Design Certificate

Date: 13th April 2006 Job No. 051149
Builder: Stuart Thor Engineer: LM

Site: 104 and 106 Wakehurst Parkway Elanora

We hereby certify that the plans prepared by NB Consulting Engineers P/L have been designed and detailed in accordance with Condition B20 of the DA approval.

We trust that this certificate meets with your requirements. Please contact the author if further clarification is required.

0355/06

TCG (NV)
03 AUG 2006

NB CONSULTING ENGINEERS P/L

Per Lucas Molloy
BE CPEng NPER Director

N:\ENG NBC\2005\051149\SC001 SW Design.doc

SCANNED
8 AUG 2006
PITTWATER COUNCIL

Ian Jackson
landscape architect pty ltd

LANDSCAPE ARCHITECT'S CERTIFICATION

PROJECT: Subdivision & Driveway
104 - 106 Wakehurst Parkway
Elanora Heights

DATE: 16 June 2006

PRINCIPAL: Mr S. Thor

This is to certify that the **Landscape Plan Dwg No. 63.06(05)/051** dated March 2006 has been prepared in accordance with Pittwater Council's Development Control Plan No. 23 – Landscape and Vegetation Management. It has also met the conditions of consent for Development Application No. N0432/04 and specifically Condition No.s B45 & B45a 1, 2, 3, 4, 5, 6 & 12..

0355/06

TCG (NV)
03 AUG 2006

Signed: I Jackson

Ian Jackson
Landscape Architect

SCANNED
8 AUG 2006
PITTWATER COUNCIL

postal. 25 bent street lindfield nsw 2070 office. 16/303 pacific highway lindfield
phone. 9416 4290 fax. 9416 4735 mobile. 0411 196 735 email. ijla@ihug.com.au acn. 097 328 580

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER

FORM NO. 2 – To be submitted with detailed design for construction certificate

Development Application for ______________________
Name of Applicant

Address of site 104 & 106 Wakehurst Parkway Elanora

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

I, Lucas Molloy (insert name) on behalf of Northern Beaches Consulting Engineers (trading or company name)

on this the 23rd June 2006 (date)

certify that I am a Structural or Civil Engineer as defined by the Geotechnical Risk Management Policy for Pittwater. I am authorised by the above organization/company to issue this document and to certify that the organization/company has a current professional indemnity policy of at least $2million. I also certify that I have prepared the below listed structural documents in accordance with the recommendations given in the Geotechnical Report for the above development

Geotechnical Report Details:

Report Title: GEOTECHNICAL ASSESSMENT AT 104 & 106 WAKEHURST PARKWAY, NARRABEEN
Report Date: 9/6/04 Ref. No. 18498ZR rpt
Author: PAUL DAVID ROBERTS

Structural Documents list: DRIVEWAY ONLY:
Job #051149 – Dwg # S01, C02, C03, C04, C05, C06, C07, C08, D01, G01

I am also aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified.

Lucas Molloy (name) ______________ (signature)

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

~~I~~ WE prepared and/or technically verified the abovementioned Geotechnical Report as per Form 1 dated 9/6/04 and now certify that ~~I~~ we have viewed the above listed structural documents prepared for the same development. ~~I am~~ We are satisfied that the recommendations given in the Geotechnical Report have been appropriately taken into account by the structural engineer in the preparation of these structural documents, & including comments provided in our letter (Ref. 18498ZRlet2) dated 10/4/06 & Ref. 18498ZRlet dated 27/10/05 covering cliff stabilisation works. ~~I am~~ We are aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk, as indicated in our report.

Signature ....Bruce F Walker.... 28/6/06.

Name .... B F WALKER

Chartered Professional Status.... F.I.E. Aust. C.P. Eng

Membership No. 199312

0355/06

TCG (NV)
03 AUG 2006

Jeffery and Katauskas Pty Ltd

CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
A.B.N. 17 003 550 801 A.C.N. 003 550 801

Principals
B F WALKER BE DIC MSc
P STUBBS BSc MICE FGS
D TREWEEK Dip Tech
E H FLETCHER BSc (Eng) ME

Senior Associates
F A VEGA BSc(Eng) GDE
A ZENON BSc(Eng) GDE
P C WRIGHT BE(Hons) MEngSc
L J SPEECHLEY BE(Hons) MEngSc

Associates
A B WALKER BE(Hons) MEngSc

Consultant
R P JEFFERY BE DIC MSc

39 BUFFALO ROAD
GLADESVILLE
NSW 2111
Tel: 02-9809 7322
02-9807 0200
Fax: 02-9809 7626

10 April 2006
Ref: 18498ZRlet2

Mr Stuart Thor
106 Wakehurst Parkway
NARRABEEN NSW 2101

Dear Stuart

REVIEW OF STRUCTURAL DRAWINGS
104 – 106 WAKEHURST PARKWAY, NARRABEEN

At your request, we have reviewed the supplied structural drawings (Job No. 051149, Drg. Ref. SO1, CO1 to CO8, inclusive and DO1, dated March 2006) prepared by Northern Beaches Consulting Engineers Pty Ltd, for the above site. However, we have not carried out a check of any aspects of the structural design.

We have provided additional hand written notes on the supplied drawings as underlined in red. With the inclusion of the additional notes, we consider that the supplied structural drawings have been completed in accordance with the recommendations presented in our geotechnical report (Ref. 18498ZRrpt) dated 9 June 2004.

Should you require any further information regarding the above please do not hesitate to contact the undersigned.

Yours faithfully

Paul Roberts
Senior Engineering Geologist
For and on behalf of
JEFFERY AND KATAUSKAS PTY LTD

DIRECTORS

Access and Internal Driveway Design Certificate

Date: 13th April 2006 Job No. 051149
Builder: Stuart Thor Engineer: LM

Site: 104 and 106 Wakehurst Parkway Elanora

We hereby certify that the plans prepared by NB Consulting Engineers P/L have been designed and detailed in accordance with Condition B28 of the DA approval.

We trust that this certificate meets with your requirements. Please contact the author if further clarification is required.

0355/06

TCG (NV)
03 AUG 2006

NB CONSULTING ENGINEERS P/L

Per Lucas Molloy
BE CPEng NPER Director

\\NBSBS\COMPANY\ENG NBC\2005\051149\SC002 driveway.doc

DIRECTORS

Erosion Sediment Control Design Certificate

Date: 13th April 2006 Job No. 051149
Builder: Stuart Thor Engineer: LM

Site: 104 and 106 Wakehurst Parkway Elanora

We hereby certify that the plans prepared by NB Consulting Engineers P/L have been designed and detailed in accordance with Condition B29 of the DA approval.

We trust that this certificate meets with your requirements. Please contact the author if further clarification is required.

0355/bc

TCG (NV)

03 AUG 2006

NB CONSULTING ENGINEERS P/L

Per Lucas Molloy
BE CPEng NPER Director

N:\ENG NBC\2005\051149\SC003 Erosion.doc

Attention Lucas.

22/6/05 - NADINE FAXING REVISED RECEIPT WITH $286.00 NOTED

PITTWATER COUNCIL

Unit 9/5 Vuko Place, Warriewood NSW 2102
Telephone 9970 1111

Date: 15-Jun-05
Receipt No: 169572
Amount: ~~$165.00~~ 286.00

Name: Stuart Thor & Andrew Van Wensveen
Postal Address: PO Box 805
Narrabeen 2101

APPROVED ACCESS DRIVEWAY PROFILE AT:

104 & 106 Wakehurst Parkway, Elanora

The future vehicular access profile will be as per the enclosed plan **NH.**

WORK REQUIRED:

Construct: Vehicular access slab 3.6m long x 4.0m wide at gutter crossing to 4.0m wide at the boundary.

Type of Construction: Domestic

Note: ***"G" (see attached diagram) to be 450mm from edge of road and 50mm below edge of road.***

VEHICULAR ACCESS

(a) All work within the road reserve (including excavation) in connection with the above, is to be carried out by authorised contractors only.

(b) Quotations for the work specified above should be obtained from any of the contractors on the list and should be for the whole of the work stated.

(c) Construction of vehicular access will be strictly in accordance with the profile supplied and where the drive within the property is to be constructed first, it shall be the responsibility of the owner to have the work carried out in such a manner as to provide a smooth join and continuity of grading.

Please Note: Council will only permit an absolute maximum gradient of 25% (1 in 4) measured at any point on the driveway and that an ease may be required for access into the car stand area, carport or garage. Refer to relevant attached profile.

Sigi Melderis
ASSETS / RESTORATIONS OFFICER

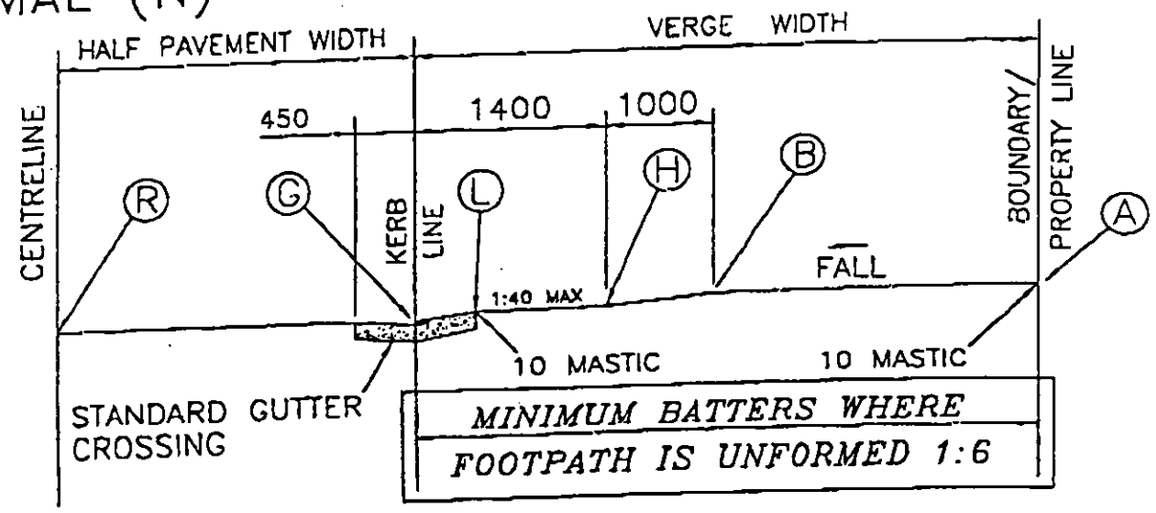
0355/06

TCG (NW)
03 AUG 2006

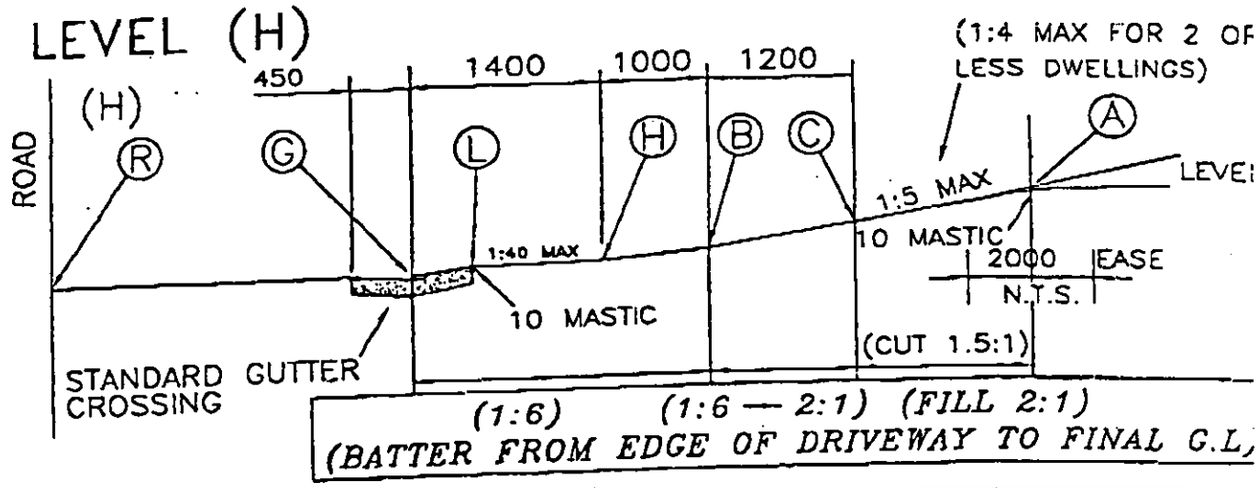
SCANNED
8 AUG 2006
PITTWATER COUNCIL

STANDARD DRIVEWAY PROFILES FOR ALL DEVELOPME

NORMAL (N)



HIGH LEVEL (H)



POINT	REMARKS	LEVELS
R	ROAD CENTRELINE	
G	INVERT OF GUTTER	
L	BACK OF LAYBACK	100 ABOVE "G"
H	1000 FROM BACK OF LAYBACK	130 ABOVE "G"
B	2400 FROM KERB LINE	MAX 200 ABOVE "G"
C	3600 FROM KERB LINE	MAX 400 ABOVE "G"
A	BOUNDARY	EASE REQUIRED AT GRADE CHANGE

1. All construction within the road reserve to be in plain uncoloured 20MPa concrete unless otherwise approved by Council.
2. Single dwellings – 20Mpa concrete 130mm thick.
   – Dual occupancies where the crossing services both dwellings – 20Mpa concrete 150mm thick with F72 reinforcement.
3. The Vehicular crossing and the driveway to 2400 behind the kerbline is to be graded parallel with the road centre line grading.
4. Driveway pavers to be laid on a 100mm concrete base.

PITTWATER COUNCIL

Standard Driveway Profiles

NORMAL TO HIGH

PLAN NH

0355/06

TCG (NV)

03 AUG 2006

Sydney WATER

Case Number: 88028

Stuart Thor
c/- Byrne & Associates Pty Ltd

Dear Applicant

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

Developer:	**Stuart Thor**
Your reference:	**20595**
Development address:	**104 Wakehurst Parkway Elanora Heights (Lot 11 DP 1014199)**
Development description:	**Demolition of existing structures, subdivision of 2 lots into 4 lots & driveway construction.**
Consent No:	432/04 by Pittwater Council of 31 May 2005
Your application:	28 September 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 27 October 2005, 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 and facilitate the construction of the sewer works that you must provide, at your cost, to service your development.

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 will generally 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. **Note water service requirements for your development.**
2. **Engage a Coordinator prior to signing the enclosed Agreement.**
3. **Sign both copies of the enclosed Minor Works Agreement and lodge with a Water Servicing Coordinator.**

(i) inserting junctions into existing VC (see Note) and PVC sewers;
(ii) constructing property connection sewers (formerly called "sidelines") of length not greater than twelve (12) metres excluding any rodding point;
(iii) concrete encasing up to 25 metres of an existing sewer, excluding CI and AC sewers;
(iv) replacing up to 25 metres of existing sewer pipe, normally as a precursor to concrete encasement; and
(v) sealing disused customer sanitary drains at the connection to Sydney Water's sewer.

Note: For purposes of these Requirements, VC includes all types of earthenware and clay-lined pipe.

The Constructor must give Sydney Water at least two (2) working days notice of the intended connection date. The Council for the area must be consulted before any work is carried out in, on or over a public road.

Upon completion of the required works, your Coordinator must submit to Sydney Water a "Work as Constructed" package indicating what was actually constructed.

Sydney Water's specific requirements for your project are:

- A sewerage point of connection within the property boundaries to adequately drain lot 1. Lots 2, 3 & 4 appear to have an existing connection within the property boundaries. Your Water Servicing coordinator can determine whether any further construction of sewer connections are required.

In providing these works to Sydney Water you will need to pay construction **costs directly to your suppliers**. You should consult with your Coordinator in regard to Sydney Water's application and inspection fee (currently $121.00) and the Coordinator's Minor Works management fee.

In addition, if the water main/ 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 completed to Sydney Water's satisfaction **prior to the issue of the Certificate** (see also section on building plan stamping). You must use a Sydney Water authorised Coordinator to make an additional application for approval to undertake the works. For a list of authorised Coordinators please refer to the instructions detailed on page 1 of this Notice.

You must then sign a Major Works Agreement to construct the necessary works at no cost to Sydney Water. After the adjustment/ deviation 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.

5. Developer charges.

Development Servicing Plan (DSP)	Basis of Calculation	Charge ($) for Applicable period (27/10/05-30/06/06)	Charge ($) for Applicable Period (01/07/06-26/10/06) (*CPI adjusted)
Warringah Water DSP Area	**Residential** Development Density 0-20 dwellings per ha band 4 dwellings @ $871 = $3,484 **Less Credit of $1,742 for previous payment/ use plus Upsizing** Development Density 0-20 dwellings per ha band 4 dwellings @ $192 = $768 **Less Credit of $384 for previous payment/ use**	$1,742 $384	**TBA** **TBA**
Warriewood Sewer DSP Area	**Residential** Development Density 0-20 dwellings per ha band 4 dwellings @ $6,765 = $27,060 **Less Credit of $13,530 for previous payment/ use plus Upsizing** Development Density 0-20 dwellings per ha band 4 dwellings @ $89 = $356 **Less Credit of $178 for previous payment/ use**	$13,530 $178	**TBA** **TBA**
Reticulation Recovery	Not applicable	$NIL	**TBA**
DEVELOPER CHARGES TOTAL: *[OFFICE USE- Invoice Charges total- Developer $15,272 and Upsizing $562]* **(*CPI of ?% for 12 months to 31/03/06)**		**$15,834**	**TBA**

Notes:

- 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 February / March 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.
- **The charge(s) quoted above is/are being reviewed based on a new IPART Determination** with new charges to apply from 1 July 2006. **Some charges may significantly decrease, others may increase and new 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 charges have **decreased** you will only have to pay the new lower charges that will automatically be advised to you when you seek to make payment; or
    - If the charges have **increased and/or new charges introduced** then Sydney Water will apply the old lower charges for the remainder of the applicable period of this Notice. After that time, Sydney Water is required to apply the higher charges when you re-apply.

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

Also:

- If you do not pay the charges identified in column 3 of the above table by 30 June, 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 shown in column 4 when the inflation figure is known.
- **DSP charges** are a contribution towards the cost of systems (eg 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. Credit card payments (to a maximum of $1,000) may be made on Bankcard, MasterCard or Visa card only at a Sydney Water Customer Service Centre.
- **You must pay your Developer Charges total before you will be given permission to construct the sewer works and/or connect your development to Sydney Water's water system**
- **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.

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.

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 inspection fees)
- trade waste requirements when constructing a building
- 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
- redress under Sydney Water's Customer Contract.

END OF NOTICE

Ian Jackson
landscape architect pty ltd

Landscape Specification

0355/06

TCG (NV)
03 AUG 2006

Proposed Subdivision
104-106 Wakehurst Parkway
Elanora Heights
October 2005

postal. 25 bent street lindfield nsw 2070 office. 16/303 pacific highway lindfield
phone. 9416 4290 fax. 9416 4735 mobile 0411 196735 email. ijla@netspace.net.au acn. 097 328580

LANDSCAPE SPECIFICATION

This Landscape Specification shall cover all work to be accomplished and materials to be used in the landscape works. It is intended that this landscape specification be read in conjunction with the following documentation dated October 2005:

- Landscape Plan Dwg No. 63.05/153

1. GENERAL CONDITIONS

1.1 GENERAL CONDITIONS

Refer to main architectural specification for all general conditions.

1.2 STAGING OF WORKS

Any contractor asked to submit a tender for the landscape works must examine the program for the building works and develop a program to suit.

1.3 DEFECTS LIABILITY & PLANTING ESTABLISHMENT PERIODS

The landscape contractor shall be held responsible for replacement of any work and/or materials which fail during the first twelve (12) months following the date of issue of a final occupation certificate.

This includes the replacement of all failed plants, including any that are damaged or stolen.

Also refer to Maintenance.

Four (4) weeks before final completion an inspection shall be undertaken to ensure all works are in a satisfactory condition. The contractor shall give two (2) weeks notice of the date and time of this meeting. Any defects requiring rectification shall be issued in writing to the contractor.

A final meeting shall be held on the date of final completion and after a satisfactory inspection the project shall be handed over to the client. This shall be confirmed in writing. All retention monies shall be returned to the contractor at this time (refer to main specification).

Also refer to Council's conditions of development consent.

2. LANDSCAPE WORKS

2.1 SITE PREPARATION

Any minor levelling, either cutting or filling, shall be undertaken by the Landscape Contractor so that areas are left ready for final finishes. Adequate watering points shall be provided to enable the Landscape Contractor to maintain planted area throughout construction and the maintenance period. Weeds are to be sprayed with 'Roundup', or equal, to manufacturers directions and must be dead before being disturbed.

2.2 DEMOLITION WORKS

The following items are to be demolished and removed by the landscape contractor:

- Weeds within proposed planting and lawn areas
- Unwanted planting areas

All demolished material is removed from site (unless indicated otherwise below) and disposed of in accordance with waste management requirements. All demolished material shall be deemed the property of the landscape contractor.

2.3 WORKS BY BUILDER (prior to landscape works)

The following work shall be carried out before the commencement of the landscape works by the builder:

- Tree protection measures;
- Existing trees to be removed (unless otherwise stated below);
- All earthmoving and earthworks required to form the ground levels to the profiles and levels shown on the drawings, ie. to the finished levels to allow for pavements, mulching, topsoiling and turfing (unless stated otherwise below);
- Any required drainage works (unless stated otherwise below);
- Stencil concrete paving;
- Concrete steps;
- Masonry retaining works;
- Replacement boundary fencing;
- Internal fencing & gates;
- Concrete ramps;
- Provision of hose cocks for hand watering;
- Construction zone fencing (see 2.4 below); and
- Soil erosion control measures (see 2.5 below).

2.4 CONSTRUCTION ZONE FENCING

Refer to main architectural specification. By builder.

2.5 SOIL AND WATER MANAGEMENT WORKS

Refer to main architectural specification. By builder.

2.6 PROTECTION OF EXISTING TREES

2.6.1 Generally

There are a number of existing trees adjacent to the construction zone to be retained and protected. All existing trees which are shown on Drawings and/or specified to be retained, shall be adequately protected from damage as described hereafter. Also refer to Pittwater Council's Development Consent requirements.

2.6.2 Tree Protection Fencing

All existing trees indicated that are to be retained on the plans are to be protected during construction. Fencing for tree protection to be comprised from 1.8m high chainwire mesh and galv. tube steel frame. Fencing firmly secured four (4) metres from the trunk of each tree (if possible). All care must be taken to avoid damage to existing trees and adequately protected from damage as described hereafter.

2.6.3 Tree roots

During excavation for service or other excavation, tree roots in excess of 50mm diameter shall not be cut. Hand digging and tunnelling shall be carried out wherever necessary to avoid cutting roots and especially under the branch spread of trees. Where necessary tree roots shall be saw cut back to a clean cut and then treated with an approved bitumen emulsion dressing. Trenches dug under the branch spread of trees shall remain open for as short a time as possible. Backfilling shall remain open for as short a time as possible. Backfilling shall be carefully rammed and watered in around the roots to eliminate voids.

2.6.4 Around trees

Disturbance to existing ground levels beneath branch spread, either by compaction, heavy machinery, piling up materials or cutting away soil, shall not take place unless so specified. If ground has been unavoidably compacted by heavy machinery, the soil shall be loosened by tyning.

Construction materials generally, and particularly oil, paints, waste concrete, cleanings or other deleterious materials shall not be stored or dumped under branch spread. Concrete mixers shall be sited in positions where the deposit of wind-blown cement on the trees is reduced to a minimum. No fires shall be lit under the branch spread or where damage to trees could result.

In the event that oil or other harmful material has been spilt under the trees on the sub-grade or topsoil to be retained, the affected soil is to be excavated and the damaged vegetation removed to the approval and under the direction of the Superintendent. Dispose of soil and replace with soil as specified for mass planted areas.

2.6.5 Tree Pruning
All works to be in accordance with AS 4373-1996 Pruning Amenity Trees, modern arboricultural practices and Workcover's Code of Practice: Amenity Tree Industry - 1998.

2.6.6 Damage
The Contractor shall be responsible for damage to or destruction of any new or existing trees, unless such trees are cut or removed as specified or as directed in writing by the Superintendent.

Partial damage to any tree shall be rectified immediately damage occurs at the Contractor's expense, as specified previously and under the direction of the Superintendent.

In the case of total destruction of a tree or trees, damages shall be assessed by the Superintendent and shall be calculated as the amount necessary to replace and establish in that position a similar tree of a similar species from within a radius of 150km.

2.7 DRAINAGE WORKS

In general the mass planted areas are to be build atop existing levels to improve drainage and to deflect water runoff around the site. Due to the sloping nature of the site it is considered that sub-surface drains are not be required to drain the mass planted areas and lawns.

If the contractor considers that certain other areas require drainage then the Superintendent should be immediately notified for an inspection. Set out below are the requirements for any drainage works.

2.7.1 Materials
Agricultural drains to be 100mm flexible coil & filter sock.
Aggregate to be 10-20mm blue metal.
Connections to be 100mm black polyethylene stormwater pipe.

2.7.2 Installation
Install agricultural drains with a maximum 1:60 gradient and backfill trenches with a minimum 200mm layer of aggregate. Connect into the stormwater system for the buildings.

2.8 MASONRY WALLS

Refer to details by architect and engineer. To be constructed by main building contractor.

2.9 SANDSTONE WALLS

Refer to details by architect and engineer. To be constructed by main building contractor.

2.10 CONCRETE PAVING & STEPS

Refer to details by architect and engineer. To be constructed by main building contractor.

2.11 EXISTING PLANTING TO BE RELOCATED

2.11.1 Generally

The existing commemorative garden is to be relocated to accommodate the proposed covered outdoor area. A number of existing plants are to be removed and temporarily stored for re-use in the finished landscape works. The existing and proposed locations are indicated on the Landscape Plan. This work is to be accomplished by a qualified arborist and in general terms is to:

- Prune roots in a 600mm diameter x 600mm deep 4 - 6 weeks before transplanting and treat area with a suitable hormone powder to encourage regrowth of roots
- Excavate a hole for each palm 2 times the size of the root ball and backfill with a premium quality imported soil mix.
- Transplant on a day not exceeding max. 25 degrees
- Apply a liquid fertiliser and keep well watered for three months
- Stake with 3 x star pickets and rope for each palm. Where ropes are secured to trunk enclose in hessian to prevent bruising or rubbing.

2.12 SANDSTONE BOULDER WALLS

2.12.1 Materials

Stone to be ripped sandstone pieces with 'flattish' tops and bottoms for stability and suitable for sitting upon. It should also be hard and durable.

Some pieces to be a minimum 2 tonne (as drawn on plan) to give the landscape works a sense of scale to relate to the large open surrounding area.

2.12.2 Installation

Install bottom course of boulders on existing excavated ground with a minimum 1/3 of each rock below finished ground levels for stability. Backfill between and behind boulders with crushed sandstone. Stack boulders in a stretcher bond pattern (with each rock overlapping the two below) until desired heights are achieved (maximum 1m high). Boulders are to be machine-placed.

Refer to engineer's details for maximum batter allowances and any special drainage or backfilling requirements.

The Superintendent (or representative) is to be on site during the placement of all boulders.

2.13 PLANTING PREPARATION

2.13.1 Materials

Imported soil mix to be Organic Garden Mix from Australian Native Landscapes or equal. Samples to be shown to Superintendent for approval before installation. Also provide written breakdown of contents, pH and trace elements and suitability for improving existing soil. Soil mix to comply with AS 3743-2003: Potting mixes, AS 4419-2003: Soils for landscaping and garden use & AS 4454-2003: Composts, soil conditioners and mulches.

2.13.2 Installation

Destroy existing grass and weeds (refer above). Excavate to a minimum 350mm below finished levels. Deep rip existing base to a depth of 300mm (avoid existing tree roots) and apply Gypsum at a rate as recommended by the supplier (if required). Install imported soil mix to a depth of 300mm and cultivate into the top 300mm of existing soil to ensure the materials integrate.

2.14 PLANTS AND PLANTING METHODS

2.14.1 Materials

Trees and plants shall be true to name and variety. Substitutes in size or variety shall not be made without the approval. All plants shall be true to size, in well developed healthy condition, free from insect and diseases, with well established root systems.

Samples of each species to be shown to Superintendent prior to installation.

Water crystals to be Garden King Wettasoil Granular deep watering agent from Amgrow or equal product.

2.14.2 Installation

The contractor is to rigidly observe planting positions as shown on plan and planting shall not be carried out in dry soil or in extreme weather conditions.

The root system must be moist before planting to ensure the turgidity. The plants shall be removed from their containers with as little disturbance as possible to the root system. Plants should be planted at the same depth as the plants were in the containers and allow for a shallow saucer of soil to be formed around the plant to aid penetration of water.

Avoid hilling up of top soil around young plant stems. Firm soil around the root ball and thoroughly soak the areas after planting. On completion, cultivate, rake and leave all garden areas in a neat and tidy condition.

Fertilise with an approved 9 months formulation general purpose slow release fertiliser such as "Nutricote" or "Osmocote" that is mixed into the prepared planting space just prior to planting. Fertiliser to be applied at the rate as specified by the manufacturer for the plant size and type. Also apply water crystals around each plant (dug into the soil) in accordance with supplier's recommendations.

Labels shall be removed entirely from the plants. Stake according to the Schedule of Plant Material with 50 x 50 x 1 800mm long hardwood stakes and hessian ties. Stakes to be located outside the rootball of the nominated plant.

Maintain all plants and ties and provide adequate watering for the duration of contract.

2.15 MULCHING

2.15.1 Materials

Mulch to be comprised of maximum 25mm fresh hardwood chips such as Eucalyptus Mulch from Australian Native Landscapes or equal. Samples to be shown to Superintendent for approval before installation. Mulch to comply with AS 4454-2003: Composts, soil conditioners and mulches.

2.15.2 Installation

Mulch shall be applied to all disturbed areas where bare earth is exposed indicated on plan. Following planting, rake all garden areas and tamp lightly to give an even graded surface. Spread 75mm layer of leaf chip mulch over the surface of all new garden beds.

Care shall be taken not to mix soil and mulch together.

2.16 PRACTICAL COMPLETION

Sweep down, clean up and remove all waste landscape material from the site. Hose down paved areas, fences, footpaths, etc. Check plant ties and replace plants which fail. Regularly water and maintain landscaped areas for a six month period from completion to ensure establishment.

2.17 MAINTENANCE

To ensure the rapid establishment and long term success of the landscape works the contractor shall undertake a twelve month maintenance period after Practical Completion. During this time the contractor shall be responsible for the replacement of any failed plants or other materials.

The following general maintenance tasks shall also be undertaken:

- Hand watering of plants on a regular basis equating to four times per week for the first month and two times per week for the next two months (depending on weather conditions & subject to water restrictions).
- Checking of plants, stakes and ties every month
- Spraying of weeds every month
- Replacement of failed plants every three months
- Pruning plants (where applicable) every three months
- Topping up of mulch at the end of six months and at the end of twelve months to maintain a 100mm cover
- Re-application of water crystals around plants after six months and after twelve months
- Analysing soil after twelve months and applying fertiliser in accordance with the recommendations of the soil analysis

4. **Consequent to signing the Agreement, build sewer works required at your cost and pay associated charges.**

5. **Pay a total of $15,834 for the charges identified in Section 5 of this notice.**

Please note:

- **The Developer Charges total will need to be paid before you will be given permission to construct the sewer works and connect into Sydney Water's water system;**
- **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; and**
- **Credit card payments (to a maximum of $1,000) may be made on Bankcard, MasterCard or Visa only at a Sydney Water Customer Service Centre.**

DETAILED REQUIREMENTS

1. **Water service requirements.**
A 100mm water main in Wakehurst Parkway is available to serve your development. Each lot must have a separate connection & meter. Lot 2 & 4 must have the water main constructed within the "Right of Carriageway & Easement for Services". Provide a copy of plan showing easement details to Sydney Water.

2. **Water Servicing Coordinator**

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

3. **Minor Works Agreement**

After you engage a Coordinator, you will need to sign and lodge **both copies** of the enclosed Minor Works Agreement with your nominated Coordinator.

Notes:

(i) If construction must take place on a neighbouring property, written consent on the Sydney Water Permission to Enter form must be obtained from the relevant property owner and tenant by you, or your Coordinator. Your Coordinator has copies of the form(s) (also available on the Internet at the address as above) and can negotiate on your behalf. **This consent must be lodged with the Agreement.**

(ii) The authorisation of the Coordinator must be current at all times throughout the project.

4. **Sewer works.**

The Coordinator will facilitate the engagement of a Sydney Water accredited Constructor of Minor Works (Sewer)/ Sewer Constructor (the Constructor) to build the works.

The Coordinator, in conjunction with the Constructor, shall determine the location of the works that will adequately drain the property. Minor Works (Sewer) relates to gravity sewers of size ≤DN 225 and depth ≤2.5m (measured from the invert of the sewer to the ground surface) and covers the following activities:

104-106 WAKEHURST PARKWAY,

ELANORA HEIGHTS

ECOLOGICAL SUSTAINABILITY PLAN

June 2006

HAYES ENVIRONMENTAL

104-106 WAKEHURST PARKWAY, ELANORA HEIGHTS

ECOLOGICAL SUSTAINABILITY PLAN

HAYES ENVIRONMENTAL

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Table A. Check List

Item	Chapter
Site Preparation Description of: ▪ Tree, vegetation and habitat protection, ▪ Sediment and erosion control for natural features, ▪ Weed control, ▪ Top soil/ litter layer treatment, ▪ Surface treatment and stabilisation (mulch etc), ▪ Site drainage with respect to natural features,	 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6
Weed Removal and Regeneration ▪ List of Noxious and Environmental Weeds ▪ Timeline for removing Noxious Weeds and controlling/removing Environmental Weeds (*for updated weeds list see Dept of Agriculture web page*). Timeline to include the area / number of weed species acceptable as a background level. Cross reference location with Map.	2.2.1 Table 1 2.2.2
Description of Planting (if planting) ▪ Planting aims, e.g. supplementary planting in a regeneration area, or a native vegetation area or planting in a landscape area. ▪ Species list recommended for planting–as appropriate (if the ESP is replacing a Landscaping Plan give details of species to be planted and size range / species). Local native species to be used (for at least 70% of plantings, 80% in Endangered Ecol. Comm.). Identify source of local native, plant stock. Description of areas for bush regeneration, trees to be retained, trees to be planted (and what size), etc A schedule of materials–including elements such as weed matting, mulch, edging, walling, paving and fencing. Description of works meeting minimum requirements of Landscaping Policy (i.e. 50% of development screened in 3 yrs).	2.3.1 Map 1 Map 1 Map 1 Map 1
Long-term Management ▪ Management of habitat features, including protection during construction and for the life of development. Also include the provision of nesting boxes etc as appropriate. Maintenance period for 12 to 24 months after Issue of Occupation Certificate. NB maintenance can be by land occupier. ▪ Indicate areas that are to be maintained as 'bushland' for the life of the development ▪ Description of exclusion areas for domestic animals *as relevant* ▪ Reference to other documents if relevant (e.g. frequency and type of fuel reduction, care for on-site water disposal system)	2.4.1 2.4.2 2.4.3 2.4.4
Check-sheets listing activities to be completed on an on-going basis. ▪ List of Noxious Weeds to be managed/removed (at all times). ▪ List of Environmental Weeds to be managed/removed (all times). ▪ Area of native vegetation and trees to be maintained/retained. ▪ Area from which domestic animals are not permitted.	 Table 1 Table 1 Map 1 2.4.3

R Hayes

Rebecca Hayes
BSc (Environmental Biology) MEngMngt MEIANZ MECA

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104-106 WAKEHURST PARKWAY,

ELANORA HEIGHTS

ECOLOGICAL SUSTAINABILITY PLAN

May 2006

1 INTRODUCTION

1.1 Background

This Ecological Sustainability Plan has been prepared to accompany an application for a Construction Certificate for a proposed subdivision of 104 and 106 Wakehurst Parkway, Elanora Heights, within the Pittwater Local Government Area (LGA).

The purpose of this plan is to document actions to be taken on the site to maximise the long-term sustainability of the site and its ecological processes.

1.2 Existing Environment

1.2.1 General Description

Numbers 104 and 106 Wakehurst Parkway, Elanora Heights (the subject site) are two parallel allotments located on the northern side of the Wakehurst Parkway. The two allotments are together approximately 135m in length by 30.5m in width, thus approximately 4210sqm in size in total.

The southern portion of the site slopes gently up to the north, away from the Wakehurst Parkway. This area of the site has been previously cleared and disturbed, with existing dwellings located on each allotment, and occasional remnant and planted trees.

The central portion of the site slopes upwards relatively steeply, to the base of a natural sandstone escarpment. This portion of the site has also been previously cleared and disturbed, although some remnant native trees and shrubs occurs to the north, and in retained garden beds.

The northern portion of the site, above the sandstone escarpment, slopes moderately up to the rear boundary of the site. This portion of the site supports native vegetation in relatively intact condition, although with some weed-invasion.

1.2.2 Floristic Details

Native vegetation present across the central and northern portions of the site has been identified as Sydney Sandstone Gully Forest (as described by Benson & Howell 1994).

The canopy is fairly sparse, consisting of scattered occurrences of Bangalay *Eucalyptus botryoides* to approximately 20m in height.

The shrub layer, where present, is moderate to dense and dominated by Cheese Tree *Glochidion ferdinandi*, Bastard Rosewood *Synoum glandulosum*, Blueberry Ash *Elaeocarpus reticulatus*, and the exotic weed Small-leaved Privet *Ligustrum sinense*, to approximately 8m in height.

The groundcover, where not consisting of maintained lawn, varies in density from sparse to dense, and includes the following native grasses and herbs: False Bracken Fern *Calochlaena dubia*, Gristle Fern *Blechnum cartilagineum*, Native Sarsaparilla *Smilax glyciphylla* and King Fern *Todea barbara*, to 1.2m in height.

Common exotic weeds present in the groundcover include Japanese Honeysuckle *Lonicera japonica*, Wandering Jew *Tradescantia albiflora*, Crofton Weed *Ageratina adenophora*, Panic Veldt Grass *Ehrharta erecta* and Cape Ivy *Delairea odorata*.

Dense thickets and mats of Lantana and other exotic weeds have been removed from some areas in the central portion of the site.

1.3 Description of the Proposed Development

The proposed subdivision involves creation of two new allotments. One at the rear of number 104 Wakehurst Parkway, and one at the rear of 106 Wakehurst Parkway. A new dwelling would be constructed on each of the two new allotments.

The proposed subdivision has been designed to minimise impacts on native flora and fauna present on the site. However, several trees would need to be removed from the central portion of the site, for construction of new dwellings.

The sandstone escarpment and vegetation to the north of it are to be retained in a natural condition.

2 ACTIONS FOR ECOLOGICAL SUSTAINABILITY

2.1 Site Preparation

2.1.1 Protection of trees and other natural features to be retained

An exclusion fence is to be constructed to be protect existing native vegetation and habitats present across the rear (upslope) portion of the site. The fence would be located approximately 2-5m downslope from the base of the natural sandstone escarpment, see accompanying Map 2.

Where native trees which are to be retained occur close to construction works, protective fencing will be installed around each tree, at a minimum distance of 1 metre outside of the dripline of the tree canopy. In the instance where construction activities are essential beneath the tree canopy, protective fencing will extend as far from the tree trunk as practicable.

A qualified arborist/tree surgeon will be engaged to treat cuts to any significant tree roots encountered during construction activities, and to manage any removal of tree limbs. This measure is intended to maximise tree health and long term viability.

All exposed bushrock and other habitat features present outside of the development footprint will be retained. The majority of these features are located away from the proposed construction zone, and do not require specific protection measures. However, where protection is necessary to avoid accidental damage by machinery or stockpiles, this will consist of fencing as for protection of retained trees.

2.1.2 Sediment and erosion control

Parts of the site not being disturbed directly for construction works are to be retained with existing vegetation cover.

Sediment and erosion control features will be located to minimise impacts on trees and other natural features to be retained on the site, in addition to standard requirements.

2.1.3 Removal of weeds

Weed control prior to construction works is intended to minimise the potential for weed propagules to be spread from the site during construction.

The native bushland present above the sandstone escarpment is in relatively intact condition. Weeds present in this area will be targeted for removal following initial construction works (refer to Chapter 2.2 below).

Weeds present in the area to be directly disturbed by construction activities will be carefully removed from the site by small machinery (*eg* dingo or mini-bobcat) and destroyed prior to construction works. Hand tools will be used in difficult to access areas, and in sensitive areas, such as close to natural rock features and close to trees being retained.

2.1.4 Top soil/litter layer treatment

Construction works on the site do not require extensive excavations. Landscaping of the site does not require extensive excavation works. The majority of the site is to be retained in its natural condition.

Special storage and re-spreading of top soil at this site is not required.

2.1.5 Surface stabilisation

Surfaces across the site are generally to be retained in their existing condition. Those in the vicinity of construction works are mostly lawn, and do not require further stabilisation works. Mulch will be used in areas where mats of Wandering Jew and other groundcover weeds have been removed, if required.

2.1.6 Site Drainage

Virtually all natural features on the site are located upslope of the proposed development, and would not be affected by alteration to site drainage.

2.2 Weed Removal

2.2.1 Existing Weeds

A large number of weeds have been recorded on the site (refer to previous Flora and Fauna Assessment report prepared by Hayes Environmental in June 2004). Many of these are fairly benign garden ornamentals, and do not require targeted removal from the site.

Table 1 below lists weeds that are present on the site, and which are either listed as 'noxious' for the Pittwater area under the *NSW Noxious Weeds Act 1993*, or are regarded as environmental weeds due to their invasive or otherwise destructive nature.

Table 1 Existing noxious and environmental weeds present on the site.

Status	Scientific Name	Common Name
	Shrubs/Trees	
N	*Ochna serrulata*	Mickey Mouse Plant
N	*Ligustrum sinense*	Small-leaved Privet
N	*Lantana camara*	Lantana
	Tall Groundcovers	
N	*Cestrum parqui*	Green Cestrum
N	*Cortaderia sellona*	Pampas Grass
	Conyza albida	Tall Fleabane
	Low Groundcovers	
	Tradescantia fluminensis	Wandering Jew
	Ageratina adenophora	Crofton Weed
	Vines	
N	*Acetosa sagitata*	Turkey Rhubarb
	Lonicera japonica	Japanese Honeysuckle
	Hedera helix	English Ivy
	Ferns	
N	*Protasparagus densiflorus*	Asparagus Fern
	Nephrolepis cordifolia	Fish Bone Fern

N Noxious Weed listed under the *NSW Noxious Weeds Act 1993* for the Pittwater LGA.

2.2.2 Timeframe for Weed Removal

The three shrubs and taller groundcover weeds on the site are generally single plants or clumps. The woody species will be cut and painted with herbicide such as Roundup Bioactive ®, and others will be removed by either small machinery or hand tools, depending on location. Initial control of these weeds will involve removal of all adult individuals from the site, prior to or at the time of occupation of new dwellings[1]. Follow-up control of seedlings of these species will be undertaken as frequently as necessary and possible by the landowner, to prevent re-infestations.

The lower groundcovers, vines and herbs are generally present in low densities amongst the lawn and native groundcover. Where mats of weeds occur in accessible areas close to the construction site, these will be removed by small machinery. Elsewhere, weeds will be removed carefully by hand (including hand tools).

Timing of removal for these weeds is less dependent upon season, and will be undertaken as frequently as necessary and possible by the landowner. With the exception of Fishbone Fern,

[1] Herbicide is generally more effective when applied during the warmer active-growing months of the year. The initial removal of these weeds could be delayed if construction occurs over winter.

Japanese Honeysuckle and English Ivy, which may be retained in small discrete areas as ornamentals, these weeds will gradually (over 2-5 years) be removed completely from the site.

2.3 Revegetation/Landscaping

2.3.1 Objectives

The dual primary purposes of revegetation/landscaping of the site are:

- to replace noxious and environmental weeds on the site with local native plants; and
- to provide screening for visual amenity from the street and for the occupants of the proposed new dwellings.

2.3.2 Details

Details of landscaping such as plant species to be used, sizes, densities, areas of bushland to be retained, and materials (edging, stepping stones, paving, *etc*), are illustrated on the accompanying Landscape Plan prepared by Ian Jackson Landscape Architect P/L, dated March 2006.

2.4 Long-term Management

2.4.1 Management of habitat features

Protection of habitat features during construction works is described in Chapter 2.1.1 above. Much of the sandstone escarpment, and the bushland above it at the rear of the site, is inaccessible from the new development, and therefore does not require on-going specific protection measures.

The proposed development does not involve loss of notable tree-hollows. It is therefore not necessary to impose construction or installation of nesting boxes as an environmental management requirement for the site.

Other areas of habitat such as rock boulders and native vegetation which will be within the backyards of new houses cannot practicably be protected through specific measures.

2.4.2 Areas to be maintained as bushland

The natural bushland present across the rear of the site is to be maintained in its existing condition, as 'bushland', for the life of the development. This area is essentially inaccessible from the developed part of the site, and therefore does not require on-going specific protection measures.

The disturbed bushland area in the central part of the site will be backyards for the two new houses. This area will be retained in a similar 'altered bushland' condition to that currently present, but with removal and control of noxious weeds, and with landscaping to meet asset protection zone requirements. This area does not require on-going specific protection measures.

Native vegetation being retained as bushland will not be subject to gradual introduction of exotic or non locally native ornamental plant species. Pesticides and fertilisers will not be used in these parts of the site, other than when absolutely necessary during establishment of new plantings.

2.4.3 Exclusion areas for domestic animals

Domestic pets will be contained, chained up, or kept indoors at night, to reduce the likelihood of disturbance to, and predation of, native fauna such as the Long-nosed Bandicoot *Perameles nasuta.* The rear of the site, above the sandstone escarpment, is essentially inaccessible to domestic pets from the new development. Domestic pets will be prevented from gaining access to this part of the site.

Boundary fencing will contain openings accessible to ground dwelling native fauna with a minimum dimension of 150mm, to avoid obstructing the passage of wildlife.

2.4.4 Asset Protection Zones

The lower and central parts of the site, up to the base of the sandstone escarpment, are to be managed as an Asset Protection Zone, refer to the accompanying Landscape Plan.

3 RESPONSIBILITY FOR ACTIONS

Responsibility for the actions set out in Chapter 2 above will rest with the owner of the land for the life of the development. Responsibility will transfer to new owner/s if and when the land is sold.

Tenants may be required by the owner to manage certain aspects of the ecological sustainability plan, but will not remove responsibility from the owner.

The owner may rely on advice provided by specialist consultants with regard to tree health and safety, management of ecological values within the native bushland at the rear of the site, care and maintenance of native plant landscaping, and other matters relating to ecological sustainability of the site, at their discretion.

Table B. Check List for attached plans

Map 1 Landscape Plan, also showing existing vegetation.

Map 2 Construction access, material storage and exclusion fencing.

Map 3 Noxious and Environmental Weeds.

Map 4 Native vegetation, regeneration and habitat features.

Item	Plan
All areas of native vegetation	Map 4
Native trees include species, size, condition (e.g. SULE rating)	Arborist report
Accurate survey and describe native trees within 5m of proposed works	Map 1
Trees to be retained and those to be modified/removed	Map 4
Areas with medium to high regeneration potential	Map 4
Areas of native vegetation to be retained	Map 4
Areas of vegetation proposed to be removed	Map 3
Areas of Noxious and Environmental Weeds	Map 4
Areas of habitat features, bushrock (over 2m), caves, termite mounds etc	Map 1
Footprint of house and associated works (fuel reduced zones, waste-water etc)	Map 2
Areas for exclusion fencing–during development/establishment phase	Map 2
Areas appropriate for storage of materials during construction	Map 2
Recommended access ways during construction	Map 1
Areas for bush-regeneration	Map 1
Areas for planting trees (if appropriate)	Map 1
Areas for planting low and or mid strata	Map 1
Areas for landscaping	Map 1
Fuel reduced zone	N/a
Fuel free zone	N/a
Waste-water disposal zone	N/a
Recommended Environmental Protection Zone (EPZ) *if appropriate*	N/a
Areas for managing domestic animals (see requirements of Pittwater Council Control Documents *Pittwater 21*)	
Wildlife Corridors and Core/Fragmented Bushland (as per Pittwater Council Maps)	Map 4

Eclipse Landscapes PTY LTD

23 May, 2004

Wade Chick
798 Barrenjoey Rd
Palm Beach 2108
Phone 9974 2590
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Mobile 0411 821 806
Lic 76588C
A.C.N. 093339505
A.B.N. 42093339505

Tree report

Re: 104 & 106 Wakehurst Parkway Elanora Heights

This report is to be read with plan by C.M.S Surveyors CMS ref 476

Trees to be relocated:

All Livistona australis (cabbage tree palms) in the way of proposed buildings are to be transplanted and relocated on site (tree No 19, 44, 47, 50 and 53). All the affected trees are in good health with no visible disease or ill health. Prior to any demolition or excavation the palms are to be transplanted to appropriate location and protected from all building works. The transplanting of palms is to be done by a qualified tree transplanter and/or arborist. The transplanted palms are to be fenced of 2m from trunk and mulched to a depth of 75mm. The palms are to be inspected at 2 month intervals by qualified arborist to assess health and recommend appropriate treatment.

Trees to be removed:

- Tree No 49 Syzygium oleosum (Lillypilly) Tree is in excellent health with no visible disease or ill health. Recommend to replant 1 Syzygium oleosum in 45 litre container for each proposed development (4 in total to be replanted)

- Tree No 45 Araucaria heterophylla (Norfolk Island Pine) Tree is in good health with no visible disease or ill health. No replanting required as it is not native and is to large for proposed area in consideration with bush fire

- Tree No 43 Eucalyptus pilularis (Blackbutt) Tree is in poor health is suckering at top. With relation to trees health and position considering bushfire and proximity to residence tree should be removed.

- Tree No 32 (mandarin). To be removed introduced species.

Trees to be retained

- Tree No 25,51,52,54, and 55 Livistona australis (Cabbage Tree Palm). Palms are in good health with no visible signs of disease or ill health. Palms are to be fenced off 1m from trunk and native leafmulch spread to a depth of 75mm.

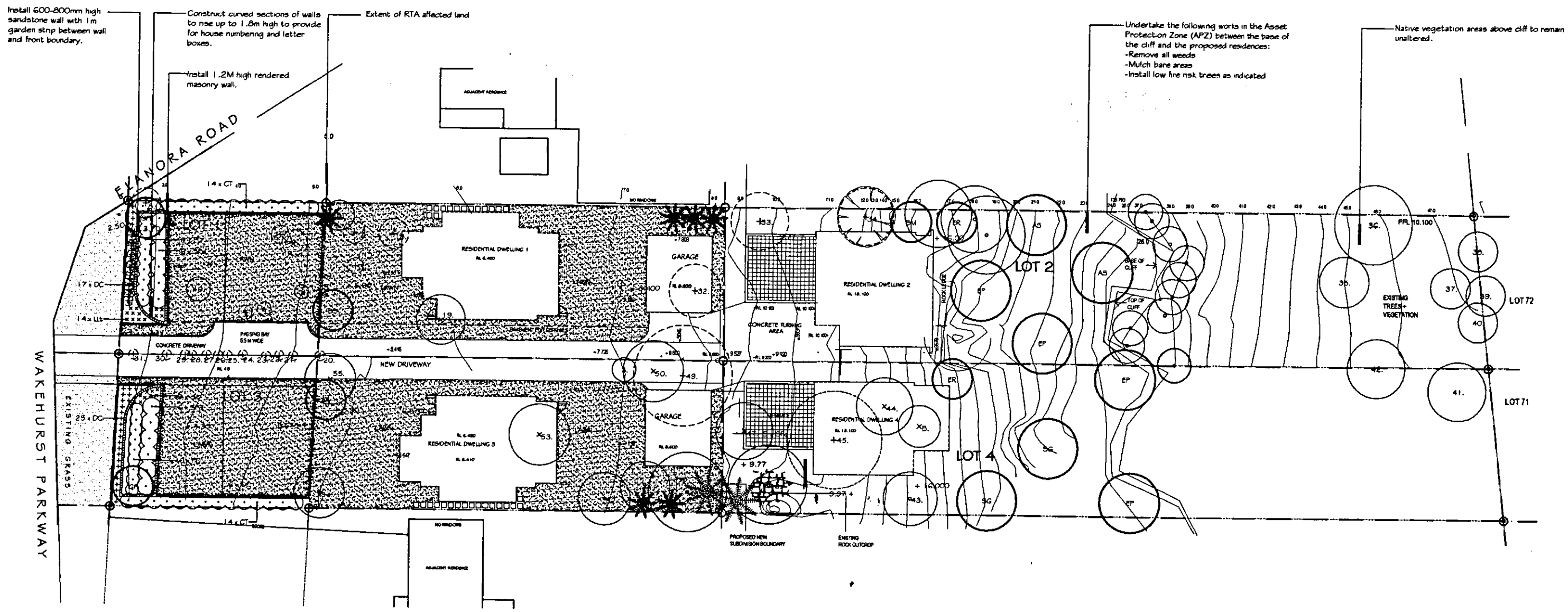
- Tree No 46 Eucalyptus pilularis (Blackbutt). Tree in moderate health, deadwood to be removed. To be fenced off around rock outcrop and native leaf mulch spread 75mm deep.

The overall impact of transplanting removal and replanting of trees for proposed development as listed will in time have a positive effect on the area. There will be more canopy with the replanting of lillypilly on each block and the retention of Cabbage tree palms.

Kind Regards

Wade Chick
Arboriculture 0503U 1991

MAP 1.



LEGEND

- 105.19 — EXISTING LEVELS
- + 105.20 — PROPOSED DESIGN LEVELS
- EXISTING TREES TO BE RETAINED
- EXISTING TREES TO BE REMOVED
- EXISTING PALMS TO BE RELOCATED
- POSITIONS FOR RELOCATED PALMS
- NEW TURF AREAS: COUCH
- BRICK GARDEN EDGING
- 400 x 400 mm UNIT PAVING
- STEPPING STONES
- 1M HIGH SANDSTONE GARDEN WALLS

SCHEDULE OF PLANT MATERIAL

CODE	BOTANICAL NAME	COMMON NAME	QUANTITY	HEIGHT	POT SIZE	STAKES
AS	Acmena smithii #	Lillypilly	2	13m	5 litre	2
BM	Backhousia myrtifolia *	Grey Myrtle	1	7m	25 litre	-
BS	Banksia serrata *	Old Man Banksia	1	3m	5 litre	-
CT	Clerodendrum tomentosum	Hairy Clerodendrum	28	2m	5 litre	-
DC	Dianella caerulea	Blue Flax-Lily	42	0.4m	140mm pot	-
EP	Eucalyptus punctata #	Grey Gum	4	25m	25 litre	2
ER	Elaeocarpus reticulatus *	Blueberry Ash	3	5m	25 litre	2
GF	Glochidion ferdinandi *	Cheese Tree	2	5m	25 litre	-
LLi	Lomandra longifolia 'Tanika'	Lomandra Tanika	23	0.4m	140mm pot	-
PD	Pultenaea daphnoides	Large-leaf Bush-pea	19	1.5m	5 litre	-
SG	Syncarpia glomulifera #	Turpentine	2	25m	25 litre	2
SPd	Syzygium paniculatum Dwarf	Dwarf Scrub Cherry	12	3m	5 litre	-

The majority of the plants in this schedule have been selected from Pittwater Council's list of indigenous plants for Lowlands and Shale Slopes (Closed Forest).

8 Canopy Trees to gain a mature height of 13m or above in accordance with Pittwater Councils guidelines.
* 7 Small trees as discussed with Council's Landscape Officer.

SCHEDULE OF EXISTING TREES

KEY	BOTANICAL NAME	COMMON NAME	HEIGHT X SPREAD
1-8.	Row of Euonymus & Callistemon	Euonymus,Bottlebrush	1 x 1m
9.	Morus indica	Mulberry Tree	8 x 6m
10.	Callistemon sp.	Bottlebrush	3 x 2m
11-13.	Camellia sp.	Camellia	4 x 2m
14.	Prunus x domestica	Plum	3 x 4m
15.	Citrus paradisi	Grapefruit	3 x 4m
16.	Citrus sinensis	Orange	3 x 4m
17.	Citrus sinensis	Orange	3 x 4m
18.	Citrus sinensis	Orange	2 x 2m
19.	Palm sp.	Palm	6 x 4m
20-24.	Camellia sp.	Camellia	3 x 2m
25.	Palm sp.	Palm	3 x 2m
26.	Camellia sp.	Camellia	3 x 2m
27.	Camellia sp.	Camellia	3 x 2m
28.	Hibiscus sp.	Hibiscus	3 x 2m
29.	Rhododendron sp.	Azalea	3 x 2m
30.	Camellia sp.	Camellia	3 x 2m
31.	Acmena smithii	Lilly Pilly	3 x 2m
32.	Citrus reticulata	Mandarin Tree	8 x 5m
33.	Prunus x domestica	Plum Tree	8 x 5m
34.	Morus indica	Mulberry Tree	6 x 6m
35.	Eucalyptus sp.	Gum Tree	5 x 5m
36.	Eucalyptus sp.	Gum Tree	10 x 8m
37.	Eucalyptus sp.	Gum Tree	7 x 4m
38.	Eucalyptus sp.	Gum Tree	7 x 4m
39.	Eucalyptus sp.	Gum Tree	6 x 4m
40.	Eucalyptus sp.	Gum Tree	6 x 4m
41.	Eucalyptus sp.	Gum Tree	7 x 6m
42.	Eucalyptus sp.	Gum Tree	6 x 8m
43.	Eucalyptus sp. #	Gum Tree	15 x 10m
44.	Palm sp.	Palm	15 x 5m
45.	Araucaria heterophylla	Norfolk Island Palm	25 x 10m
46.	Eucalyptus sp.	Gum Tree	7 x 8m
47.	Palm sp.	Palm	7 x 6m
48.	Palm sp.	Palm	7 x 8m
49.	Acmena smithii	Lilly Pilly	15 x 10m
50-55.	Palm sp.	Palm	3 x 2m
A.	Palm sp.	Palm	5 x 2m
B.	Palm sp.	Palm	5 x 2m

The Schedule of Existing Trees was prepared by Eclipse Landscapes.

0 2 4 6 8 10 20

NOTES

This plan is to be read in conjunction with all the documentation prepared by C.M.S Surveyors Pty Limited.

Also refer to the Landscape Specification.

Ian Jackson landscape architect pty ltd
25 bent street
lindfield nsw 2070
ph 9416 4290 fax 9416 4735
A.C.N 097 328 580
email ijla@netspace.net.au

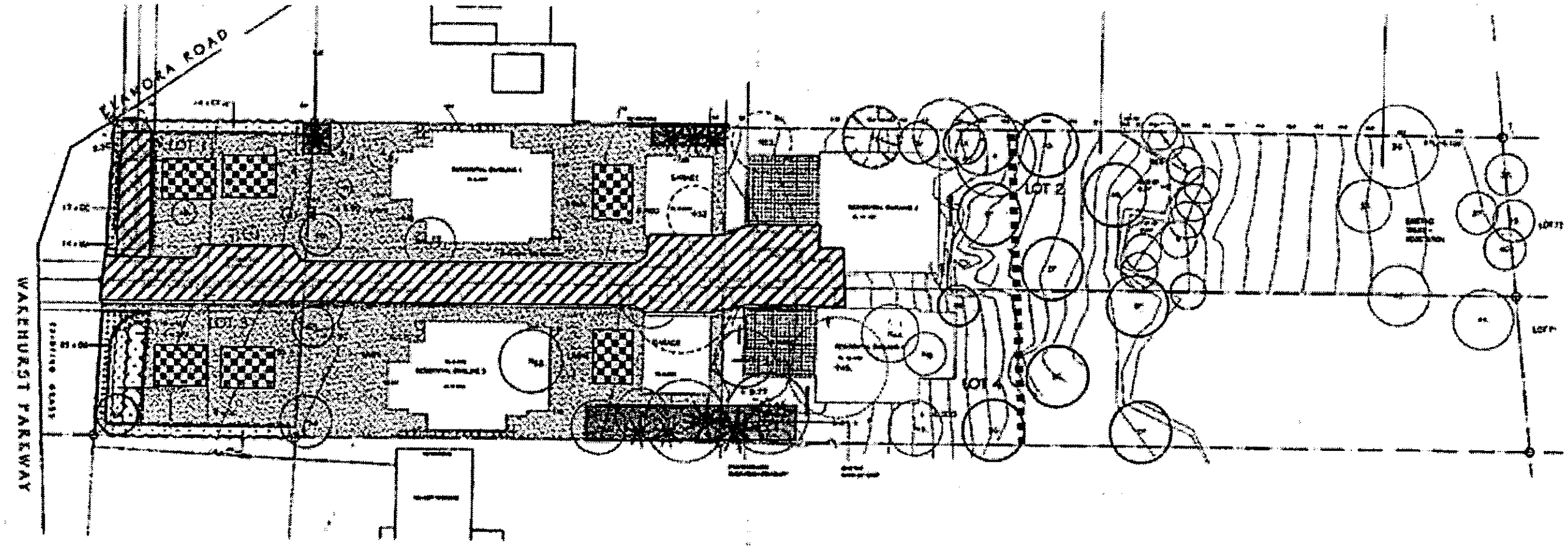
project
Proposed Subdivision
104-106 Wakehurst Parkway, Elanora Heights

drawing
Landscape Plan

client
Mr Stuart Thor

date	scale
March 2006	1:200 @ A1 1:400 @ A3
job.dwg no.	no. in set
63.06 (05)/051	ONE/ONE
designed by	drawn by
IJ	CS

MAP 2.



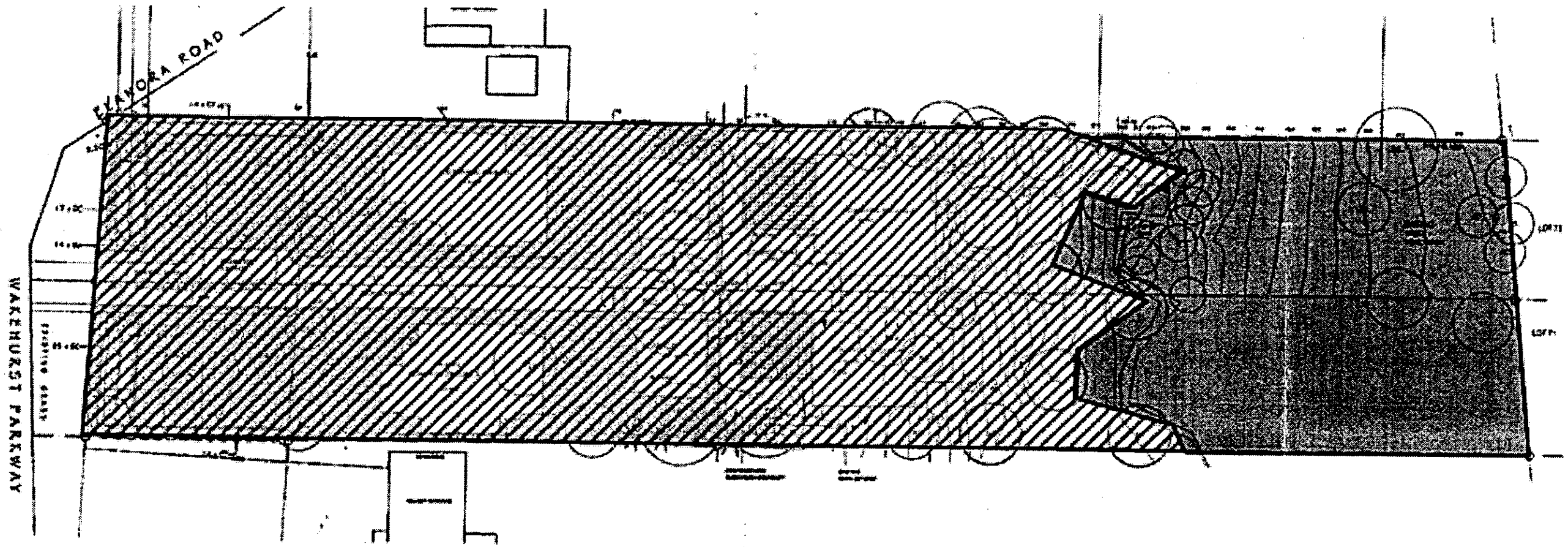
Recommended access ways during construction

Areas for storage of materials during construction

Areas for exclusion during construction

Exclusion fence

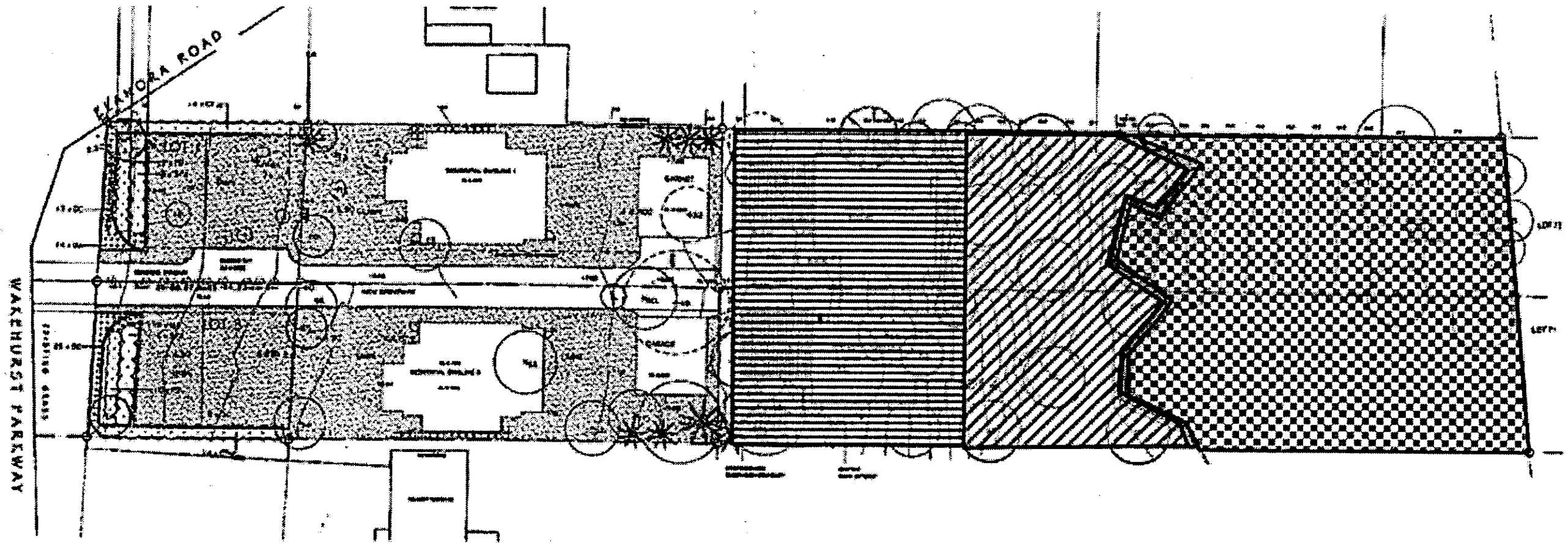
MAP 3



Noxious and environmental weeds scattered throughout this area

Fairly intact bushland, but with occasional scattered weeds

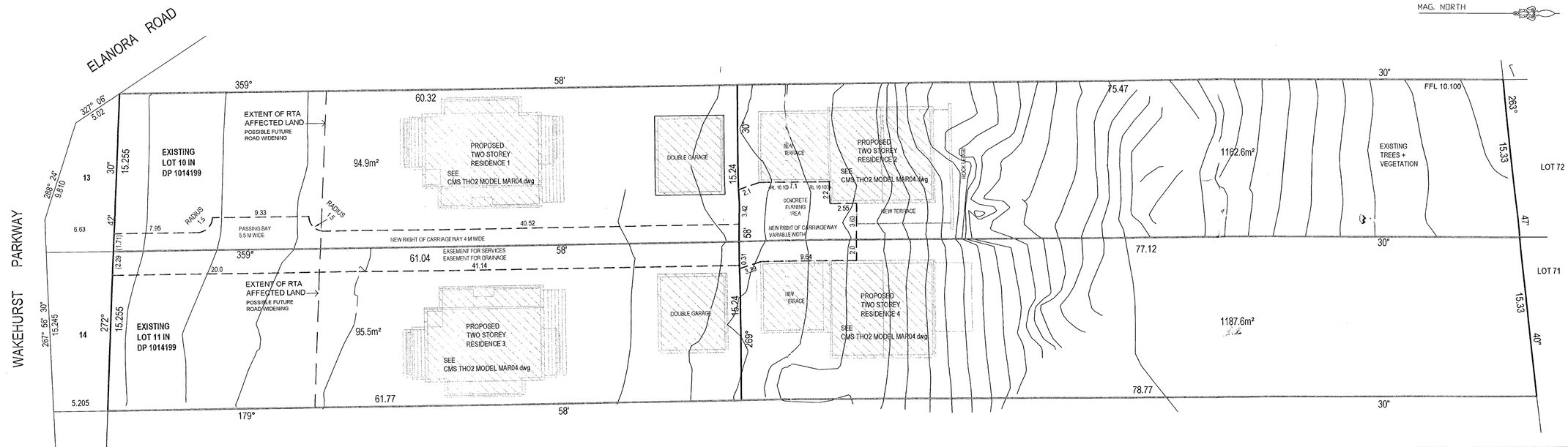
MAP 4.



- Good, relatively intact bushland with high regeneration potential to be retained
- Wildlife corridor or core/fragmented bushland (as per Pittwater Council Maps); degraded bushland with medium regeneration potential to be retained; will be managed as asset protection zone and as backyard
- Areas of habitat features, bushrock (over 2m)
- Degraded bushland to be removed for proposed new dwelling

PITTWATER COUNCIL
APPROVED DEVELOPMENT CONSENT PLANS

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



REV.	AMENDMENTS	DATE
G	ROW AND AREAS AMENDED	24/09/04
F	RESIDENCE NUMBERS AMENDED	2/06/04
E	AMENDED HARD SURFACES	16/04/04
D	PRE DA MEETING ISSUE	02/04/04

0355/06

TCA (NV)
03 AUG 2006

0 5 10 15 20
SCALE 1 :: 200

CLIENT:
STUART THOR
104 & 106 WAKEHURST PARKWAY
ELANORA HEIGHTS, NSW, 2107

PLAN OF PROPOSED SUBDIVISION

C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
10/32 Campbell Avenue, Dee Why NSW 2099
Telephone: (02) 9971 4802
Facsimile: (02) 9971 4822
E-mail: cmssurveyors@bigpond.com

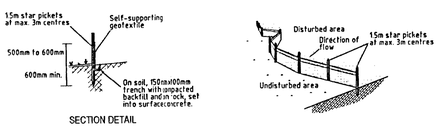
CMS REF.	SCALE	DATE
476	1:200	24/09/04

DRAWING NUMBER: CMS TH02 PROPOSEDSUBDIVISION MAR04.DWG
REV.: G

PITTWATER COUNCIL
APPROVED DEVELOPMENT CONSENT PLANS

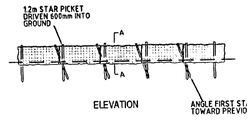
NOTE: THESE PLANS MUST BE READ IN CONJUNCTION WITH THE CONDITIONS OF DEVELOPMENT CONSENT

SEDIMENT FENCE



Construction Notes
1. Construct sediment fence as close as possible to parallel to the contours of the site.
2. Drive 1.5m long star picket into ground, 3m apart.
3. Dig a 150mm deeep trench along the upslope line of the fence forhe bottom of the fabric to be entrenched.
4. Backfill trench over base of fabric.
5. Fix self-supporting geotextile to upslope side of posts with wiretes or as recommended by geotextile manufacturer.
6. Join sections of fabric at a support post with a 150mm overlap.

STRAW BAIL FILTER

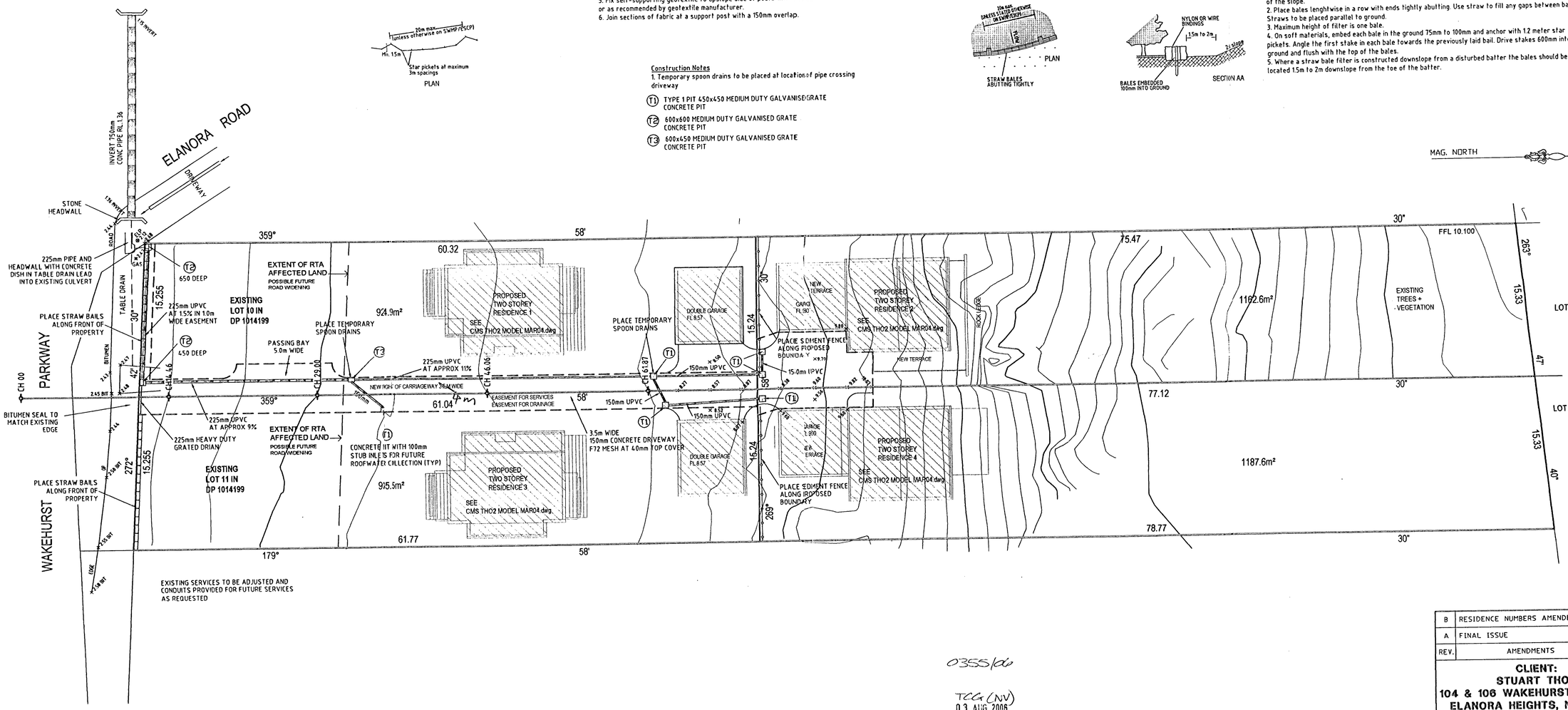


Construction Notes
1. Construct straw bale filter as close as possible to parallel to the contours of the site or at the toe of the slope.
2. Place bales lenghtwise in a row with ends tightly abutting. Use straw to fill any gaps between bales. Straws to be placed parallel to ground.
3. Maximum height of filter is one bale.
4. On soft materials, embed each bale in the ground 75mm to 100mm and anchor with 1.2 meter star pickets. Angle the first stake in each bale towards the previously laid bail. Drive stakes 600mm into the ground and flush with the top of the bales.
5. Where a straw bale filter is constructed downslope from a disturbed batter the bales should be located 1.5m to 2m downslope from the toe of the batter.

Construction Notes
1. Temporary spoon drains to be placed at location of pipe crossing driveway

(T1) TYPE 1 PIT 450x450 MEDIUM DUTY GALVANISED GRATE CONCRETE PIT
(T2) 600x600 MEDIUM DUTY GALVANISED GRATE CONCRETE PIT
(T3) 600x450 MEDIUM DUTY GALVANISED GRATE CONCRETE PIT

MAG. NORTH



EXISTING SERVICES TO BE ADJUSTED AND CONDUITS PROVIDED FOR FUTURE SERVICES AS REQUESTED

0355/06

TCG (NV)
03 AUG 2006

0 5 10 15 20
SCALE 1 : 200

REV.	AMENDMENTS	DATE
B	RESIDENCE NUMBERS AMENDED	2/06/04
A	FINAL ISSUE	6/05/04

CLIENT:
STUART THOR
104 & 106 WAKEHURST PARKWAY
ELANORA HEIGHTS, NSW, 2107

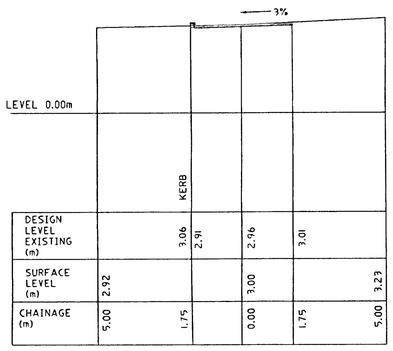
PLAN
OF DRIVEWAY DESIGN FOR
PROPOSED SUBDIVISION D.A.

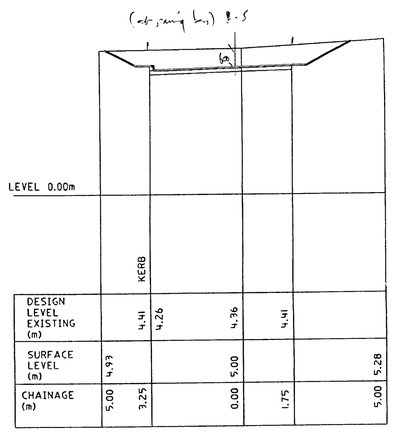
C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
10/32 Campbell Avenue, Dee Why NSW 2099
Telephone: (02) 9971 4802
Facsimile: (02) 9971 4822
E-mail: cmssurveyors@bigpond.com

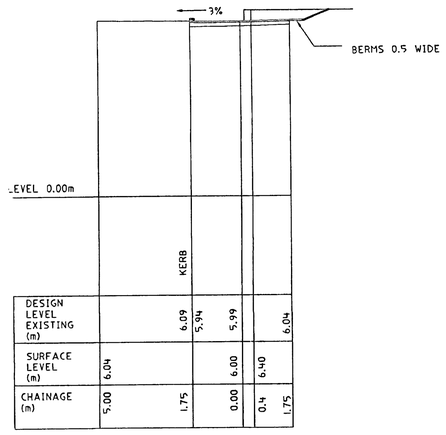
SCANNED
8 AUG 2006
PITTWATER COUNCIL

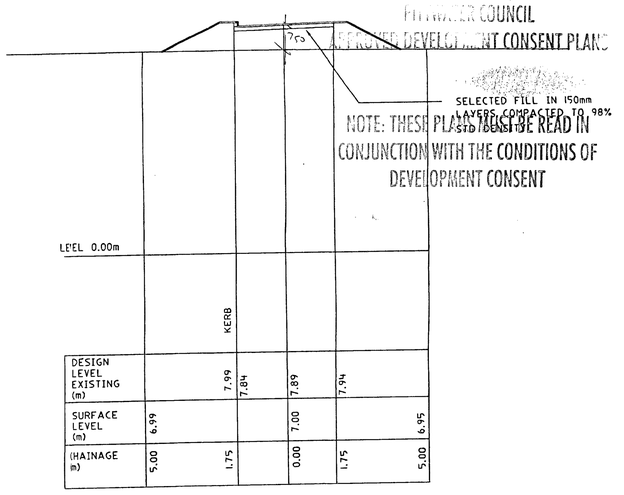
CMS REF.	SCALE	DATE
476	1:200	2/06/04

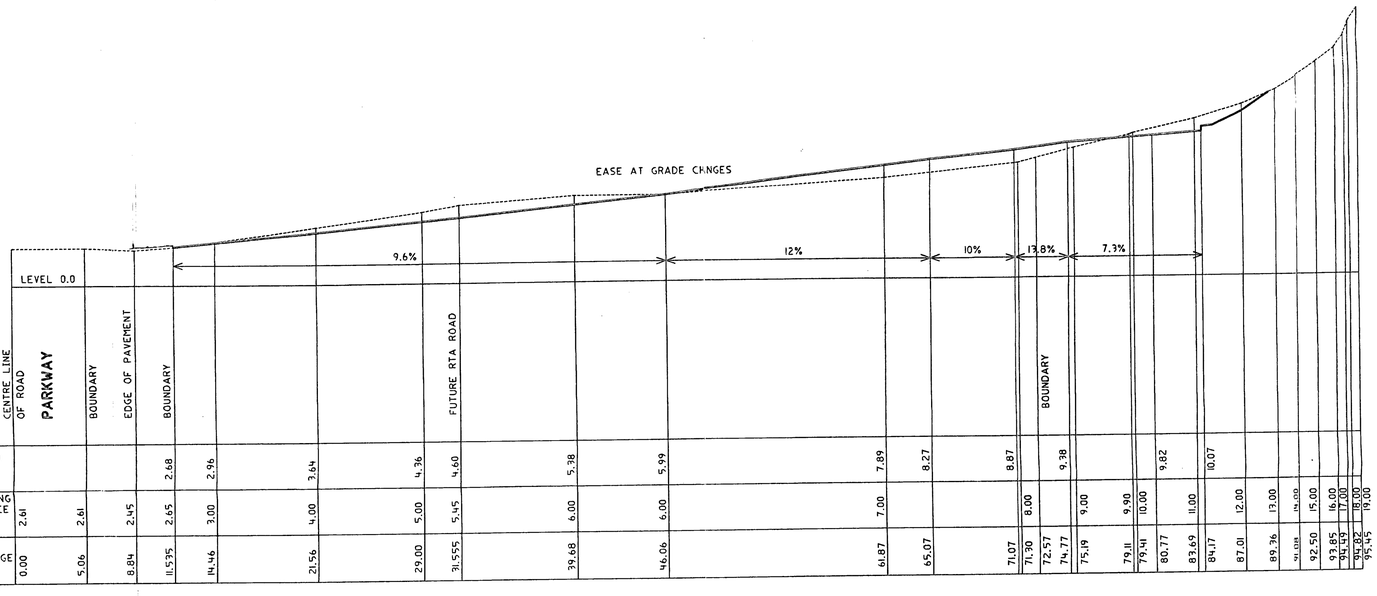
DRAWING NUMBER: CMS TH02 DRIVEWAYDESIGN MAR04.DWG
REV.: B











A1

PITTWATER COUNCIL
APPROVED DEVELOPMENT CONSENT PLANS

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

DESIGN LEVEL EXISTING (m)		3.06	2.91	2.96	3.01	
SURFACE LEVEL (m)	2.92			3.00		3.23
CHAINAGE (m)	5.00	1.75		0.00	1.75	5.00

CH 14.46

SCALE 1:100 NATURAL

DESIGN LEVEL EXISTING (m)		4.41	4.26	4.36	4.41	
SURFACE LEVEL (m)	4.93			5.00		5.28
CHAINAGE (m)	5.00	3.25		0.00	1.75	5.00

CH 29.0

SCALE 1:100 NATURAL

DESIGN LEVEL EXISTING (m)		6.09	5.94	5.99		6.04
SURFACE LEVEL (m)	6.04			6.00	6.40	
CHAINAGE (m)	5.00	1.75		0.00	0.4	1.75

CH 46.06

SCALE 1:100 NATURAL

DESIGN LEVEL EXISTING (m)		7.99	7.84	7.89	7.94	
SURFACE LEVEL (m)	6.99			7.00		6.95
CHAINAGE (m)	5.00	1.75		0.00	1.75	5.00

CH 61.87

SCALE 1:100 NATURAL

DESIGN LEVEL (m)				2.68	2.96	3.64	4.36	4.60	5.38	5.99	7.89	8.27	8.87		
EXISTING SURFACE LEVEL (m)	2.61	2.61	2.45	2.65	3.00	4.00	5.00	5.45	6.00	6.00	7.00			8.00	
CHAINAGE (m)	0.00	5.06	8.84	11.535	14.46	21.56	29.00	31.555	39.68	46.06	61.87	65.07	71.07	71.30	72.57

DESIGN LEVEL (m)	9.38				9.82		10.07								
EXISTING SURFACE LEVEL (m)		9.00	9.90	10.00		11.00		12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00
CHAINAGE (m)	74.77	75.19	79.11	79.41	80.77	83.69	84.17	87.01	89.36	91.08	92.50	93.85	94.49	94.82	95.45

SECTION X - X

SCALE 1:200 NATURL

0355/06

TCG (NV)
03 AUG 2006

SCANNED
8 AUG 2006
PITTWATER COUNCIL

SCALE 1 : 200

REV.	AMENDMENTS	DATE
A	FINAL ISSUE	06/04/04

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: ASSUMED
MARKS ADOPTED:

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: P.M. 8396
R.L. 2.125
SOURCE: S.C.I.M.S.

CLIENT:
S. THOR
106 WAKEHURST PAIKWAY,
NORTH NARRABEEN, NSW, 2101

PLAN
SHOWING LONGSECTION
BETWEEN LOTS 10 & 11 IN D.P. 1014199
104 WAKEHURST PARKWAY,
NORTH NARRABEEN, NSW, 2101

C.M.S. Surveyors
Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
10/32 Campbell Avenue, Dee Why NSW 2099
Telephone: (02) 9971 4802 Facsimile: (02) 9971 4822
E-mail: cmssurveyors@bigpond.com

L.G.A. **WARRINGAH**
SHEET 2 OF 2

SURVEYED	DRAWN	CHECKED	APPROVED
TV	CJR	TV	DL

SURVEY REFERENCE	SCALE	DATE
476	1 : 200	06/04/04

DRAWING NUMBER	REV
476detail200.dwg	A

GENERAL NOTES:

GENERAL

G1. The drawings are to be read together with all Architects drawings and specifications.

G2. Dimensions shall not be obtained by scaling from the drawings. All setting out dimensions shall be verified and discrepancies shall be referred to the Engineer prior to commencement of work.

G3. Care is required during construction so that structural elements are not over stressed and that the works and excavations required therefore are kept stable at all times.

G4. Design, materials and workmanship are to be in accordance with current S.A.A standards and statutory authority regulations except where varied by these documents.

G5. Design live loads are in accordance with AS 1170.1

G6. Builder to ensure stability of existing structures in the vicinity of excavation works.

FOOTINGS

F1. FOUNDATION STRATA IS ASSUMED FOR DESIGN PURPOSES IN ACCORDANCE WITH AS 2870-1996 "RESIDENTIAL SLAB AND FOOTINGS-CONSTRUCTION". SEE FOOTNOTE. CLASSIFICATION TO BE VERIFIED BY A GEOTECHNICAL ENGINEER COMMISSIONED BY THE CLIENT FOR CERTIFICATION OF FOUNDATIONS.

F2. Footings to be constructed and back filled as soon as possible following excavation to avoid softening by rain or drying out by exposure.

F3. Footings must bear into undisturbed natural ground clear of organic material. Refer to details.

F4. If rock or variable bearing strata is encountered during excavation of the footings all footings/piers are to be excavated to similar material of greater bearing capacity.
The Engineer is to be contacted at that time for approval or review.

F5. Footings to be cast in approved material having an allowable capacity as follows: AND AS OUTLINED IN GEOTECHNICAL REPORT (ref 18498Z Rrpt dated: 09-06-04) PREPARED BY ' JEFFERY & KATAUSKAS PTY LTD' (A)

Sand Foundations:

SA1. Required bearing capacity 100 kPa.
SA2. Trenches must be cleaned of all debris and hand compacted prior to placement of reinforcement.

Clay Foundations: (A)

CL1. Required bearing capacity 150 kPa.
CL2. Trenches must be cleaned of all debris. Soft spots must be cut out and filled as per compacted fill notes, prior to placement of reinforcement.

Shale Foundations:

SH1. Required bearing capacity 400 kPa.
SH2. Excavation for footings into shale must be cast or capped with plain concrete on the same day as excavation.

Sandstone Foundations:

SS1. Required bearing capacity 600 kPa. (A)
SS2. Scrape weathered surface to remove cleaved sandstone under footings.

Refer adjacent for assumed Design bearing strata.

F6. Future development of neighboring properties may effect ground water conditions on this site. Consequently, reactivity in subgrade beneath footings may be locally altered therefore putting footing at risk of differential settlement. We recommend that, particularly in clay subgrades, agricultural drainage is installed to the upstream perimeter of the building at a distance from the building which is outside the zone of influence of the footings. The agricultural drain must be installed below the fluctuating seasonal zone which should be identified by geotechnical investigation.

CONCRETE

C1. All workmanship and materials shall be in accordance with AS 3600.

C2. Concrete quality shall be as follows and shall be verified by tests.

C3. All concrete unless otherwise noted shall have a slump of 80mm at point of placement, a max. aggregate size of 20 mm.
No water shall be added to the mix prior to or during placement of concrete. Strength as specified on plans.

C4. Clear concrete cover to reinforcement shall be as follows unless otherwise shown-

ELEMENT	INTERIOR	EXTERIOR	EXTERIOR CAST AGAINST GROUND
FOOTINGS	-	-	50
COLUMNS/PEDESTALS	30 UNO	REFER TO PLAN	-
SLABS/WALLS	25	REFER TO PLAN	40 ON MEMBRANE
BEAMS	25 UNO	REFER TO PLAN	50
BLOCKWORK	55 FROM APPROPRIATE FACE		

C5. Sizes of concrete elements do not include thickness of applied finishes.

C6. All Construction Joints locations shall be approved by the Structural Engineer.

C7. Beam depths are written first and include slab thickness, if any.

C8. No holes or chases other than those shown on the structural drawings shall be made in concrete elements without the prior approval of the engineer.

C9. Shrinkage reducing admixtures such as 'Eclipse' or approved equivalent, if specified, must be added to mix prior to pour.

C10. Water reducing agents, if specified, must be added to mix prior to pour. No extra water is to be added to increase slump.

C11. Where vertical slab/beam surfaces are formed against a masonry (or other) wall, provide 10 mm styrene separation material.

C12. Water must not be added to concrete mix prior to placement of concrete.

C13. Above covers may have to be adjusted if fire rating is a requirement.

REINFORCEMENT

R1. All reinforcement specified is Grade D500 unless noted otherwise.

R2. Reinforcement is represented diagrammatically it is not necessarily shown in true projection.

R3. Top reinforcement is to be continuous over supports.
Bottom reinforcement to be lapped at supports.

R4. Welding of reinforcement shall not be permitted unless shown on the structural drawings.

R5. Pipes or conduits shall not be placed within the zone of concrete cover to the reinforcement without the approval of the engineer.

R6. All reinforcing bars and fabric shall comply with AS 4671-2001.

R7. Reinforcement symbols:
N - Grade 500N deformed bar (D500) Normal Ductility
R - Grade 250N plain round bar (R250) Normal Ductility.
SL - Grade 500L welded deformed ribbed mesh (D500) Square Low Ductility.
RL - Grade 500L welded deformed ribbed mesh (D500) Rectangular Low Ductility.
The number immediately following these symbols is the number of millimeters in the bar diameter.
Example :
8 N12-250, denotes 8, Grade 500N deformed bars, 12 mm diameter at 250 cts.

R8. Fabric reinforcement to be lapped 1 complete square + 25 mm unless noted otherwise.

R9 All reinforcement shall be firmly supported on bar chairs spaced at a maximum of 750 centres both ways under rod and fabric reinforcement. Reinforcement shall be tied at alternate intersections.

FORMWORK

FW1. Formwork must be cleaned of all debris prior to casting of concrete.

FW2. Minimum stripping times for form work shall be as recommended in AS 3610 - 1990 or as directed by the engineer.

FW3. The finished concrete shall be a dense homogeneous mass, completely filling the form work, thoroughly embedding the reinforcement and free of stone pockets. All concrete elements including slabs on ground and footings shall be compacted with mechanical vibrators.

FW4. Curing of all concrete is to be achieved by keeping surfaces continuously wet for a period of 3 days, followed by prevention of loss of moisture for seven days followed by a gradual drying out . Approved sprayed on curing compounds may be used where no floor finishes are proposed. Polythene sheeting or wet hessian may be used if protected from wind and traffic.

BRICKWORK

BR1. Brickwork is to be constructed to AS 3700.

BR2. Two layers of approved greased metal based slip material shall be used over all load bearing walls that support concrete slabs and placed on smooth brickwork or trowelled mortar finish. Non load-bearing walls shall have 10 mm compressible material and ties to the slab soffit.

BR3. No brickwork shall be constructed on suspended slabs until all propping has been removed from the underside of the slab and the concrete has the specified 28 day cylinder strength verified by tests.

BR4. Control joints to be placed at a maximum of 8m centres or in accordance with AS 3700.

BR5. Exposure grade bricks to be used below damp proof course.

BR6. Vertical control joint material where specified on plan between slabs and brick walls shall be: 10 mm Spandex External UNO.
Bitumastic fibreboard internal UNO.

BR7. Provide stainless steel wall ties below DPC to AS 3700. Provide galvanized wall ties above DPC to AS 3700 & Local Council Specifications.

BLOCKWORK

BL1. Concrete blocks shall have a minimum compressive strength of 15 MPa and conform to AS 1500.
Masonry to be constructed to AS 3700.

BL2. Where cores of hollow blocks are to be filled, properly compacted 20MPa concrete with 10 mm aggregate and 230 mm slump shall be used. Clean out openings must be utilized for all cores.

BL3. Location of actual starters is critical to suit block cores, allow 55 mm cover from the outside face of blockwork. All reinforcement lap lengths to conform to AS 3600.

BL4. Control joints to be placed at a maximum of 8 m centres or in accordance with AS 3700.

BL5. Vertical control joint material where specified on plan between slabs and brick walls shall be: 10 mm Spandex External UNO.
Bitumastic fibreboard internal UNO.

BL6. Retaining walls or any reinforced and concrete core filled block walls to be of Double 'U' Block Construction.

BL7. No blockwork shall be constructed on suspended slabs until all propping has been removed from the underside of the slab and the concrete has the specified 28 day cylinder strength verified by tests. unless approved by the Structural Engineer.

BL8. Max. pour height for unrestrained blockwork is 2000.

STEEL:

S1. All Structural steelwork to be Grade 300 or greater.
Design, fabrication and erection to be in accordance with AS 4100.

S2. Materials and workmanship shall comply with AS 1250 - 1981, SAA Steel Structures Code and the specification for Structural Steel.

S3. Rolled steel sections including steel plates shall comply with AS 3678 - 1990.

S4. Cold formed steel sections shall be Grade 450 Zinc coated in accordance with AS 1538-1988.

S5. Welded and seamless steel hollow sections shall comply with AS 1163. Grade 350.

S6. Bolt Designation:
4.6S - Commercial bolts Grade 4.6, snug tightened.
8.8S - High Strength structural bolts Grade 8.8, snug tightened.
8.8TB - High Strength structural bolts Grade 8.8, fully tightened to AS 1511 and acting as a Bearing Joint.
8.8TF - High Strength structural bolts Grade 8.8, fully tensioned to AS 1511 and acting as a Bearing Joint.
Unless noted otherwise, all bolts will be 8.8S.

S7. Unless shown otherwise, minimum connection shall be 2M16 bolts, 10 thick gusset plates, 6mm continuous fillet welds.

S8. Load indicating washers shall be used in all fully tensioned joints. (8.8TF & 8.8TB).

S9. All welding shall be carried out in accordance with AS 1554 SAA Structural Steel Welding Code.

S10. Unless noted otherwise all welds shall be category SP using E41xx Electrodes. All butt. welds shall be complete penetration butt welds category SP.

S11. Grouting of anchor bolt sleeves and base plates shall be completed by the contractor using High Strength, Non-Shrink grout.

S12. Fabrication and erection tolerances for Structural Steelwork shall be in accordance with AS 4100.

S13. Purlin bolts shall be M12 - 4.6S galvanised.

S14. Steelwork shall have one of the following grades of corrosion protection:-

INTERNAL

a. Thoroughly cleaned wire brushing, followed by two coats of zinc phosphate primer equivalent to Dulux Luxoprime applied by hand using brushes to achieve a total dry film thickness of 70 microns.

EXTERNAL ELEMENTS, & ELEMENTS WITHIN EITHER SKIN OF EXTERNAL CAVITY WALLS

b. Preparation Blast clean to a minimum standard Class 2.5 in accordance with AS 1627 Part 4.
Primer 2-pack epoxy phosphate at dft 75 microns (Dulux Durepon P14).
Barrier Coat 2-pack epoxy micaeous iron oxide, dft 100 microns
Finish Coat 2-pack epoxy high gloss acrylic to dft 75 microns (e.g. Dulux Acrathane 1 F) in an approved colour.

c. Hot dipped galvanized to AS 4680.
Where the galvanic (Hot Dip Galvanized) coating is compromised by welding, bolting or damage, inorganic zinc-rich paint (minimum 95% zinc content) is to be applied after wire brushing affected area (use 3 coats minimum). or Hott Metal Spray in accordance with AS 4680.

S15. Workshop drawings shall be prepared and two copies submitted to the engineer for review prior to fabrication commencement.

TIMBER

T1. All workmanship and materials to be in accordance with AS 1684, AS 1720 and as 3959. All soft wood to be Grade F7 unless noted otherwise. All hardwood to be minimum Grade F14 unless otherwise noted. Exposed timber to be CCA treated (to AS 1604) redried after full impregnation, or durability class 1, 2 or 3.
ALL SOFTWOOD TIMBER FRAMING TO HAVE A MINIMUM TREATMENT PROTECTION OF H2 or T2 TREATED FOR TERMITE PROTECTION UNLESS NOTED OTHERWISE.

T2. All joists deeper than 150 to have blocking over support bearers and at a maximum 3000 centres.

T3. Roof trusses to be designed by the manufacturer to the relevant standards. Pre camber to be an amount equal to dead load deflection u.n.o.

T4. All holes for bolts to be exact size. Washers to be used under all heads and nuts and to be at least 2.5 times the bolt diameter. Bolts to be M16 grade 4.6 unless noted otherwise.

T5. Treat all exposed cut ends with Reseal by Protim to manufacturers specification to achieve required Hazard Level Exposure Classification.

T6. Battens for T & G to be Kiln Dried to 12 %.
38mm minimum deep treated pine or as recommended by supplier.
Flooring to be installed no sooner than 28 days after slab pour.

T7. Hot dip galvanized nails/clouts/screws to be used with all timber connections.

T8. Continuous nailing must not be used for any timber connections.

T9. All exposed CCA treated pine to have an application of penetrating sealer to reduce warping and twist of the timber due to varying moisture content in service.

DRAWING SCHEDULE:

S01 - GENERAL NOTES AND DRAWING SCHEDULE

C01 - SITE PLAN
C02 - WORKS TO WAKEHURST PARKWAY FRONTAGE
C03 - WAKEHURST PARKWAY FRONTAGE ROADWORKS SECTIONS AND DETAILS
C04 - DRIVEWAY LAYOUT PLAN
C05 - DRIVEWAY LONGITUDINAL AND CROSS SECTIONS
C06 - DRIVEWAY SLAB PLAN AND DETAILS
C07 - DRIVEWAY SLAB DETAILS SHEET 1
C08 - DRIVEWAY SLAB DETAILS SHEET 2

D01 - EROSION AND SEDIMENT CONTROL PLAN AND DETAILS
D02 - STORMWATER DRAINAGE PLAN AND DETAILS

0355/06

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COMPACTED FILL

CF1. Only to be used with approval Engineer & to be certified by a geotechnical Engineer.
CF2. Clear organic material and topsoil under proposed slabs/footings.
CF3. Filling shall be granular material compacted in not more than 200 mm layers to a minimum dry density ratio (AS 1289/E4.2 1982) of 98 percent.
CF4. During clearing and excavation for slabs and footings cut out soft spots and fill as above.

INSPECTIONS BY ENGINEER

48 HOURS NOTICE IS REQUIRED BEFORE ANY SITE INSPECTION
1. Bearing strata of all footings prior to concrete pour.
2. Any reinforcement prior to concrete pour.
3. Timber and Steel framing prior to cladding or lining.
4. Steel lintels after installation.
5. CONTACT YOUR PCA (Principal Certifying Authority) AS TO REQUIREMENTS FOR MANDATORY CRITICAL STAGE INSPECTIONS IN ACCORDANCE WITH REVISED EP&A ACT REGULATIONS, EFFECTIVE JULY 1, 2004.

SCANNED 8 AUG 006 PITTWATER COUNCIL

ASSUMED FOUNDATION CLASSIFICATION FOR DESIGN PURPOSES - 'A' & 'M'
ASSUMED BEARING STRATA FOR DESIGN PURPOSES - ROCK, 650 kPa. & CLAY, 250 kPa
CONTRACTOR TO ENGAGE GEOTECHNICAL CONSULTANT TO VERIFY FOUNDATION CLASSIFICATION

A1

Date:	Rev:	Amendment:
18-07-06	A	REVISION A

DOCUMENT CERTIFICATION

Date : JULY 06' R. Wray

Lucas Molloy .....
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer.
I hold the following qualifications:
BE(Civil),CPEng,MIEAust.,NPER.
Institute of Engineers Membership No. 788184
I hereby state that this drawing is in compliance with the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

NORTHERN BEACHES Consulting Engineers P/L.
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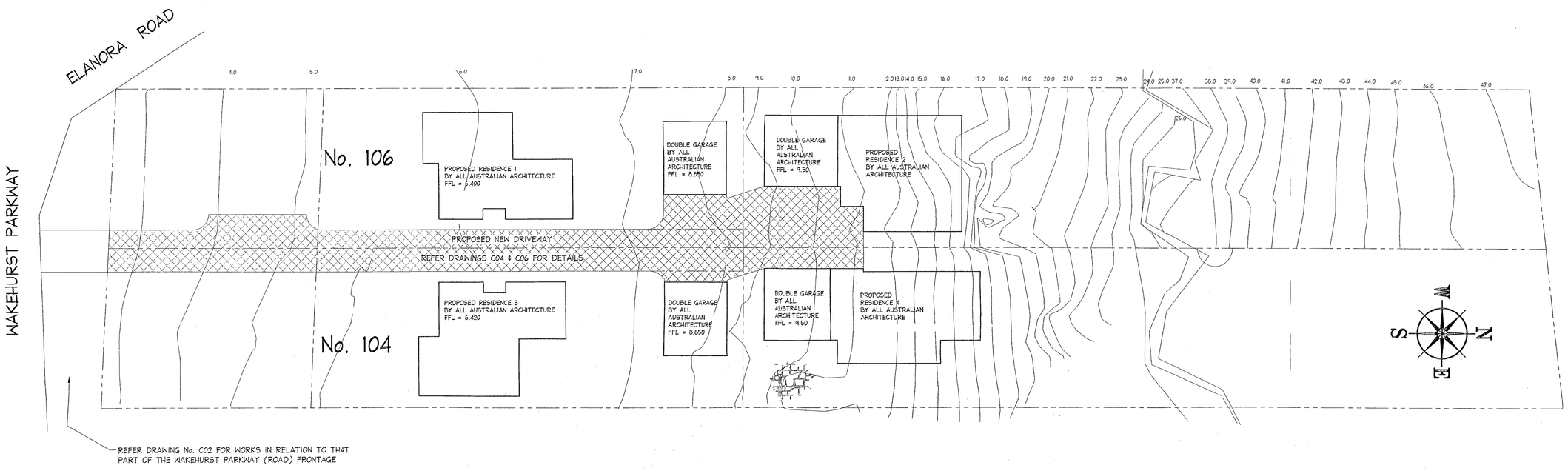
Ph: (02) 9984 7000 Fax: (02) 9984 7444
e-mail : nb@nbconsulting.com.au
web page : www.nbconsulting.com.au

Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

Drawing Title:
GENERAL NOTES AND DRAWING SCHEDULE

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce OMIEAust.	RWW
Job No:		Drawing No:	Rev:
051149		S01	A



REFER DRAWING No. C02 FOR WORKS IN RELATION TO THAT PART OF THE WAKEHURST PARKWAY (ROAD) FRONTAGE

SITE PLAN

SCALE = 1 : 200

0355/06

TCG (NV)
03 AUG 2006

ISSUED FOR CONSTRUCTION CERTIFICATE SUBMISSION ONLY

SCANNED
8 AUG 2006
PITTWATER COUNCIL

NOTES:

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

A1

Date:	Rev:	Amendment:
-	-	-

DOCUMENT CERTIFICATION

Date : MAR'06

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web page : www.nbconsulting.com.au

Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

Drawing Title:
SITE PLAN

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce MIEAust.	RCW

Job No:	Drawing No:	Rev:
051149	C01	-

NOTES:

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TRAFFIC MANAGEMENT PLAN

- PROVISIONS FOR TRAFFIC DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH AS 1742.3 AND BE REVIEWED & APPROVED BY THE RTA & COUNCIL PRIOR TO INSTALLATION & COMMENCEMENT OF WORKS. MEASURES TO INCLUDE (BUT NOT LIMITED TO) THE FOLLOWING:—
  - ROADWORKS 40 km/hr SIGNAGE TO BE DISPLAYED ON EASTERN SIDE OF ELANORA RD & NORTHERN SIDE OF WAKEHURST PARKWAY FOR ALL ON COMING TRAFFIC 50m FROM PROPOSED WORKS.
  - MERGING LANE (FOR TRAFFIC FROM ELANORA RD) ON NORTHERN SIDE OF WAKEHURST PARKWAY TO BE CLOSED BY THE INSTALLATION OF TRAFFIC BARRIERS 1m OFF THE E1 LINE & TRAFFIC DIRECTED TO STOP BEFORE ENTERING WAKEHURST PARKWAY.

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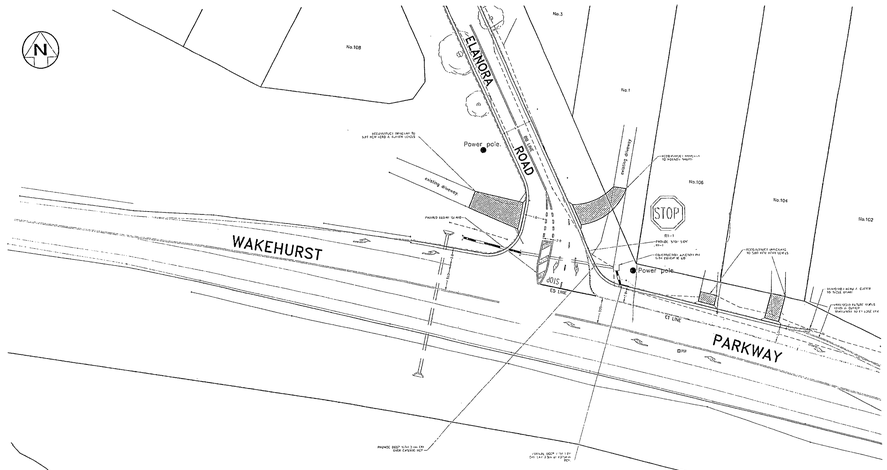
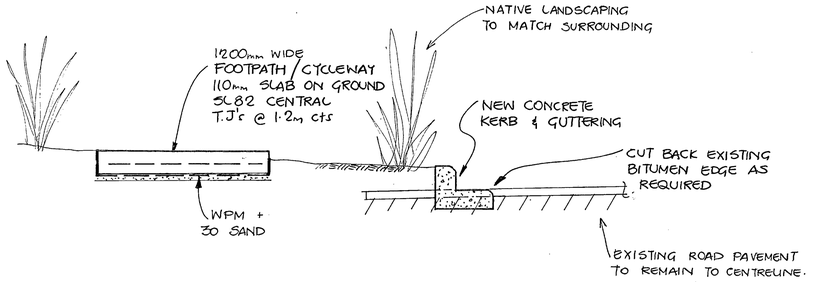
03 AUG 2006

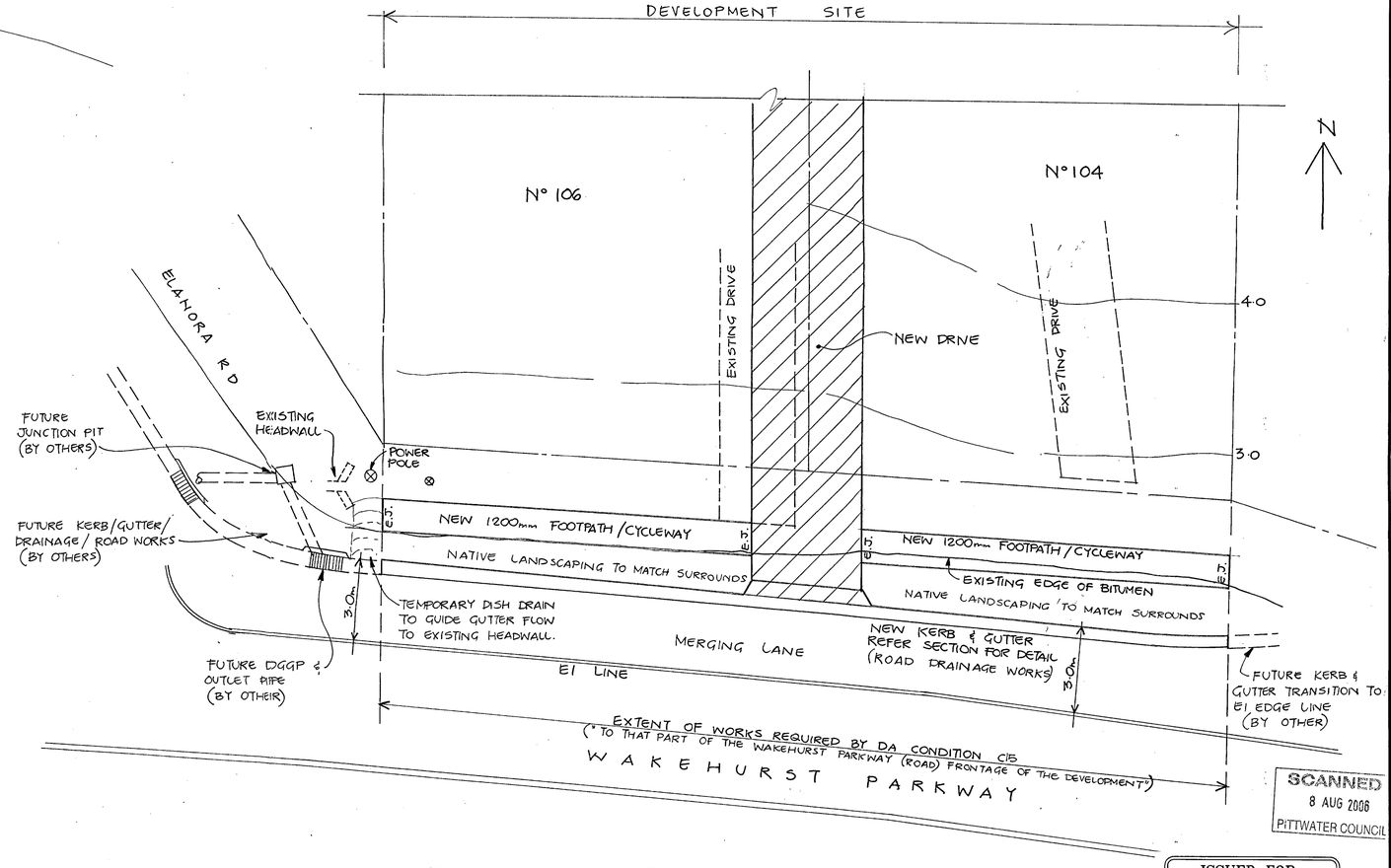


PLAN
1:500

(EXTRACT OF ELANORA RD/WAKEHURST PARKWAY, ELANORA – PROPOSED INTERSECTION LAYOUT PLAN N° 2005-07 NOVEMBER 2005 BY PITTWATER COUNCIL).



TYPICAL SECTION THROUGH PROPOSED WORKS
1:20



PROPOSED WAKEHURST PARKWAY FRONTAGE WORKS
1:100

(WORKS BASED ON THE ELANORA RD/ WAKEHURST PARKWAY ELANORA PROPOSED INTERSECTION LAYOUT BY PITTWATER COUNCIL PLAN N° 2005-07 DATED NOVEMBER 2005)

SCANNED
8 AUG 2006
PITTWATER COUNCIL

ISSUED FOR CONSTRUCTION CERTIFICATE SUBMISSION ONLY

A1

Date:	Rev:	Amendment:

DOCUMENT CERTIFICATION

Date : MAR'06

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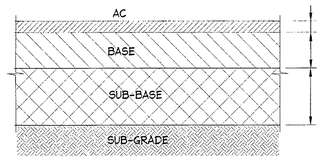
web page : www.nbconsulting.com.au

Project: PROPOSED DEVELOPMENT at: 104 & 106 Wakehurst Parkway ELANORA for: Stuart Thor

Drawing Title: WORKS TO WAKEHURST PARKWAY FRONTAGE

Date:	Design:	Drawn:	Checked:
JAN '06	L.M.	LFC	RGW

Job No:	Drawing No:	Rev:
051149	C02	



40mm ASPHALTIC CONCRETE

150mm DGB20, COMPACTED TO 98% MODIFIED DRY DENSITY

200 CRUSHED SANDSTONE COMPACTED TO 98% MODIFIED DRY DENSITY

SUBGRADE SHALL BE STRIPPED OF ALL TOPSOIL AND DELETERIOUS MATTER. AND COMPACTED TO 100% STANDARD DRY DENSITY.

TYPICAL PAVEMENT DETAIL

SCALE = 1 : 10

PAVEMENT DESIGN

ASSUME: CBR 4 % - GEOTECHNICAL ENGINEER TO CONFIRM
ASSUME ROAD CATEGORY 4 - DISTRIBUTOR/SINGLE BUS

BITUMEN PAVEMENT NOTES:

CONSTRUCTION
SUB-BASE: 200 CRUSHED SANDSTONE

BASE: 150 DGB 20
TO CONFORM WITH THE REQUIREMENTS OF R.T.A FORM No.76 AND COMPACTED TO A DENSITY OF 100% SDD

AC: (AC40)
TO BE PLACED IN ACCORDANCE WITH R.T.A FORM No.612

PRIME AND SPRAY SEAL IN ACCORDANCE WITH R.T.A SPRAYED SEALING GUIDE (OCT 93)

TESTING
TESTING IS TO BE DONE BY NATA REGISTERED TESTING ORGANISATION.

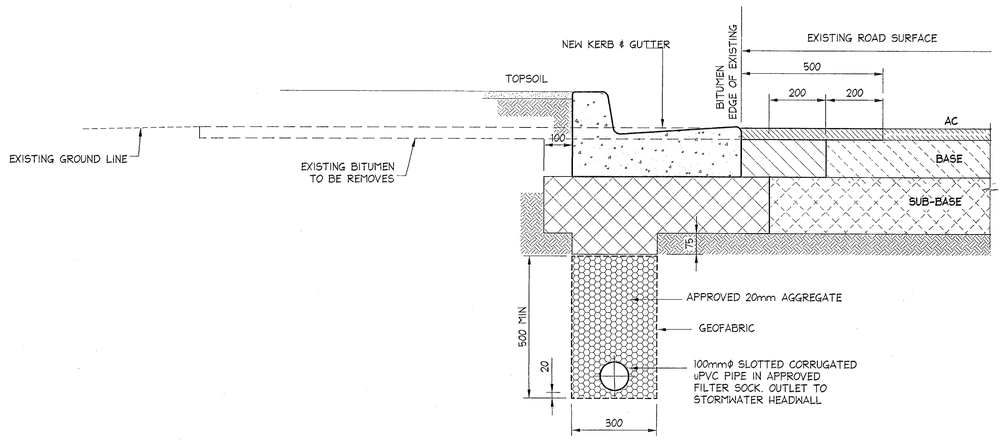
TEST COMPACTION OF SUBGRADE, FILL AND BASE COURSE AT RATE OF TWO (2) FIELD, DENSITY TEST PER LAYER PER 25 LINEAL METRES LOCATED ON A STATISTICAL BASIS.

TEST COMPACTION OF ASPHALTIC CONCRETE IN ACCORDANCE WITH RTA FORM 612 AND AS DIRECTED BY SUPERINTENDENT ALLOW FOR 6 FIELD DENSITY TESTS PER ONE DAYS PRODUCTION

TRAFFIC CONTROL
PROVISIONS FOR TRAFFIC DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH AS1742.3 AND SHALL BE TO THE APPROVAL OF THE RTA.

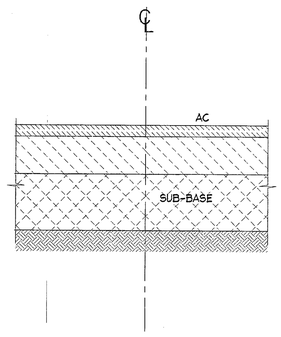
PAVEMENT MARKINGS
PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE RTA'S SPECIFICATION FOR ROADWORKS - PART R PAVEMENT MARKINGS AND RTA DRAWING MD.R60.A01.A

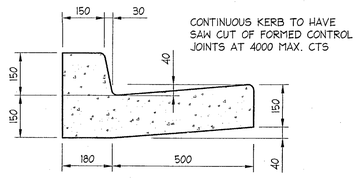
KERB AND GUTTERS
ALL KERBS AND GUTTERS COMPLY WITH RTA SPECIFICATION CONCRETE SHALL BE MINIMUM GRADE N20 80 20 AS PER AS3400



KERB & GUTTER SECTION

SCALE = 1 : 10





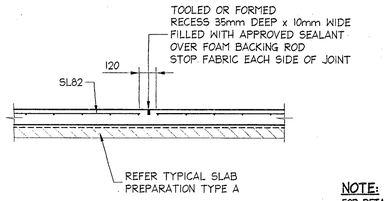
CONTINUOUS KERB TO HAVE SAW CUT OF FORMED CONTROL JOINTS AT 4000 MAX. CTS

KERB & GUTTER DETAIL

SCALE = 1 : 10

0355/a

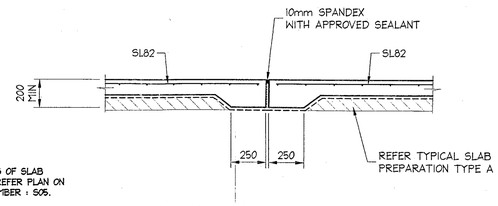
TCG (NV)
03 AUG 2006



TOOLED JOINT DETAIL DENOTED T.J. ON PLAN

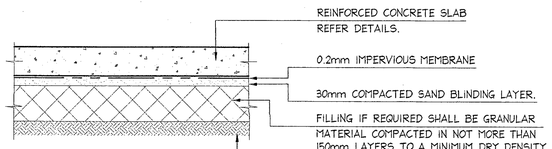
SCALE = 1 : 20

NOTE:
FOR DETAILS OF SLAB THICKNESS REFER PLAN ON DRAWING NUMBER : S05.



EXPANSION JOINT DETAIL DENOTED E.J. ON PLAN

SCALE = 1 : 20



NOTE :
SAND BLINDING, SUB-BASE, FILLING AND SUB GRADE TO BE MECHANICALLY COMPACTED TO A DRY DENSITY RATIO OF NOT LESS THAN 98% MAXIMUM DRY DENSITY TO A.S. 1289/E4.2 1982. ALL AREAS TO BE TESTED BY GEOTECHNICAL ENGINEER AND RESULTS FORWARDED TO STRUCTURAL ENGINEER PRIOR TO POURING CONCRETE.

TYPICAL SLAB PREPARATION TYPE A SLAB ON GRADE

N.T.S.

NOTE: JOINT SEALANT
USE THIOFLEX 600 POURING OR GUN GRADE SEALANT BY PARBURY TECHNOLOGIES OR APPROVED EQUIVALENT. THIOFLEX 600 POURING GRADE IS SUITABLE ONLY FOR HORIZONTAL JOINTS WITH SOUND BACKING. FOR INCLINED OR VERTICAL JOINTS THIOFLEX 600 GUN GRADE SHOULD BE USED. BOTH GRADES OF THIOFLEX 600 SHALL BE INSTALLED OVER A FOAM BACKING ROD AND USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

ISSUED FOR CONSTRUCTION CERTIFICATE SUBMISSION ONLY
SIGNED
8 AUG 2006
PITTWATER COUNCI

NOTES:
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2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

A1

Date:	Rev:	Amendment:
-	-	-

DOCUMENT CERTIFICATION

Date : MAR'06
Lucas Molloy .....
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web page : www.nbconsulting.com.au

Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

Drawing Title:
WAKEHURST PARKWAY
FRONTAGE ROADWORKS
SECTIONS AND DETAILS

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce OMIEAust.	RBW

Job No:	Drawing No:	Rev:
051149	C03	-

NOTE:
REFER DRAWING No. C02 FOR WORKS IN RELATION TO THAT PART OF THE WAKEHURST PARKWAY (ROAD) FRONTAGE

WAKEHURST PARKWAY

No. 106

No. 104

PROPOSED RESIDENCE 1
BY ALL AUSTRALIAN ARCHITECTURE
FFL = 6.400

PROPOSED NEW DRIVEWAY

REFER DRAWING C06 FOR DETAILS

RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES AND DRAINAGE AS PER DRAWINGS PRODUCED BY C.M.S. SURVEYORS PTY LIMITED

PROPOSED RESIDENCE 23
BY ALL AUSTRALIAN ARCHITECTURE
FFL = 6.420

DOUBLE GARAGE
BY ALL AUSTRALIAN ARCHITECTURE
FFL = 8.850

DOUBLE GARAGE
BY ALL AUSTRALIAN ARCHITECTURE
FFL = 9.50

CH 0.00
CH 5.06
CH 7.46
CH 11.535
CH 39.68
CH 64.275
CH 70.57
CH 74.57

DOUBLE GARAGE
BY ALL AUSTRALIAN ARCHITECTURE
FFL = 8.850

DOUBLE GARAGE
BY ALL AUSTRALIAN ARCHITECTURE
FFL = 9.50

RIGHT OF CARRIAGEWAY AND EASEMENT FOR SERVICES AND DRAINAGE AS PER DRAWINGS PRODUCED BY C.M.S. SURVEYORS PTY LIMITED

PROPOSED RESIDENCE 2
BY ALL AUSTRALIAN ARCHITECTURE

CH 70.57
CH 74.57
CH 80.965
CH 84.41

DOUBLE GARAGE
BY ALL AUSTRALIAN ARCHITECTURE
FFL = 8.850

DOUBLE GARAGE
BY ALL AUSTRALIAN ARCHITECTURE
FFL = 9.50

PROPOSED
RESIDENCE 2
BY ALL AUSTRALIAN ARCHITECTURE

0355/06

TCG (NV)
03 AUG 2006

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SCANNED
8 AUG 2006
PITTWATER COUNCIL

DRIVEWAY LAYOUT PLAN

SCALE = 1 : 100

N W S E

NOTES:
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

A1

Date:	Rev:	Amendment:
-	-	-

DOCUMENT CERTIFICATION
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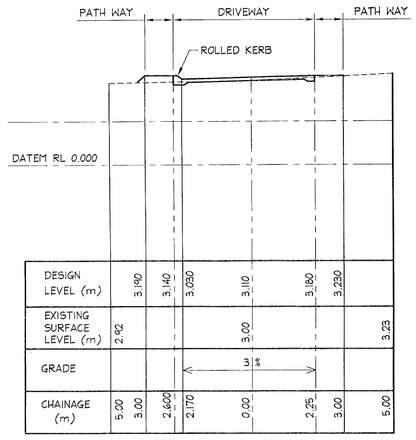
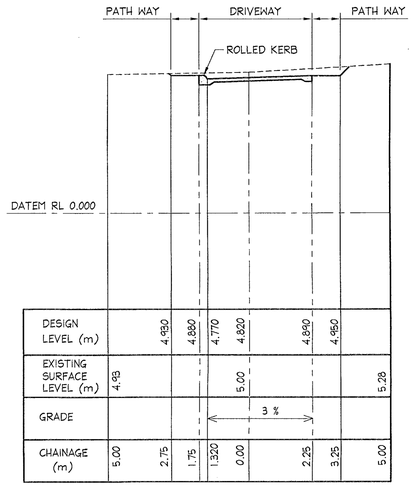
Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

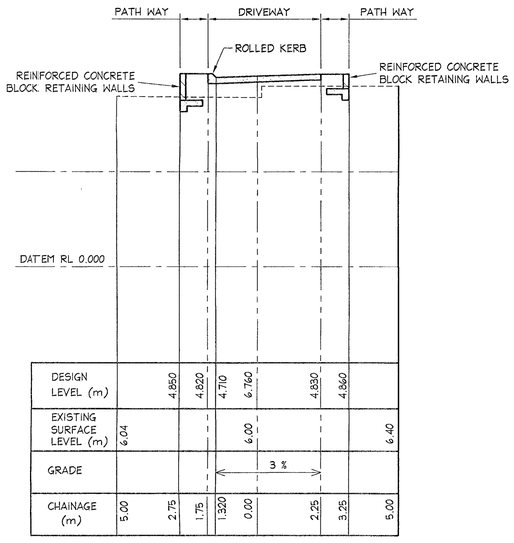
Drawing Title:
DRIVEWAY LAYOUT PLAN

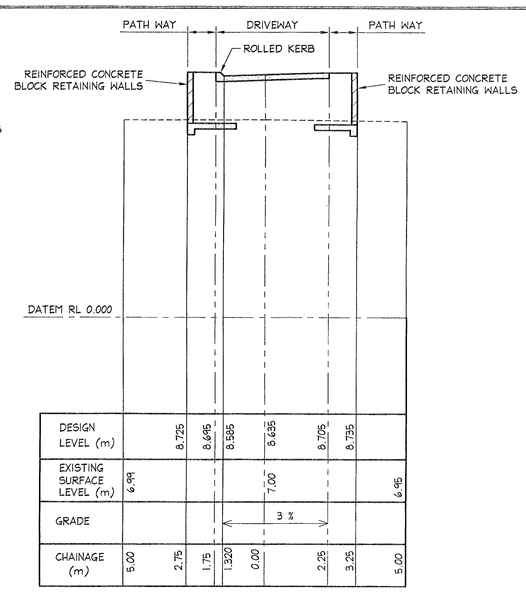
Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce MIEAust.	RPB

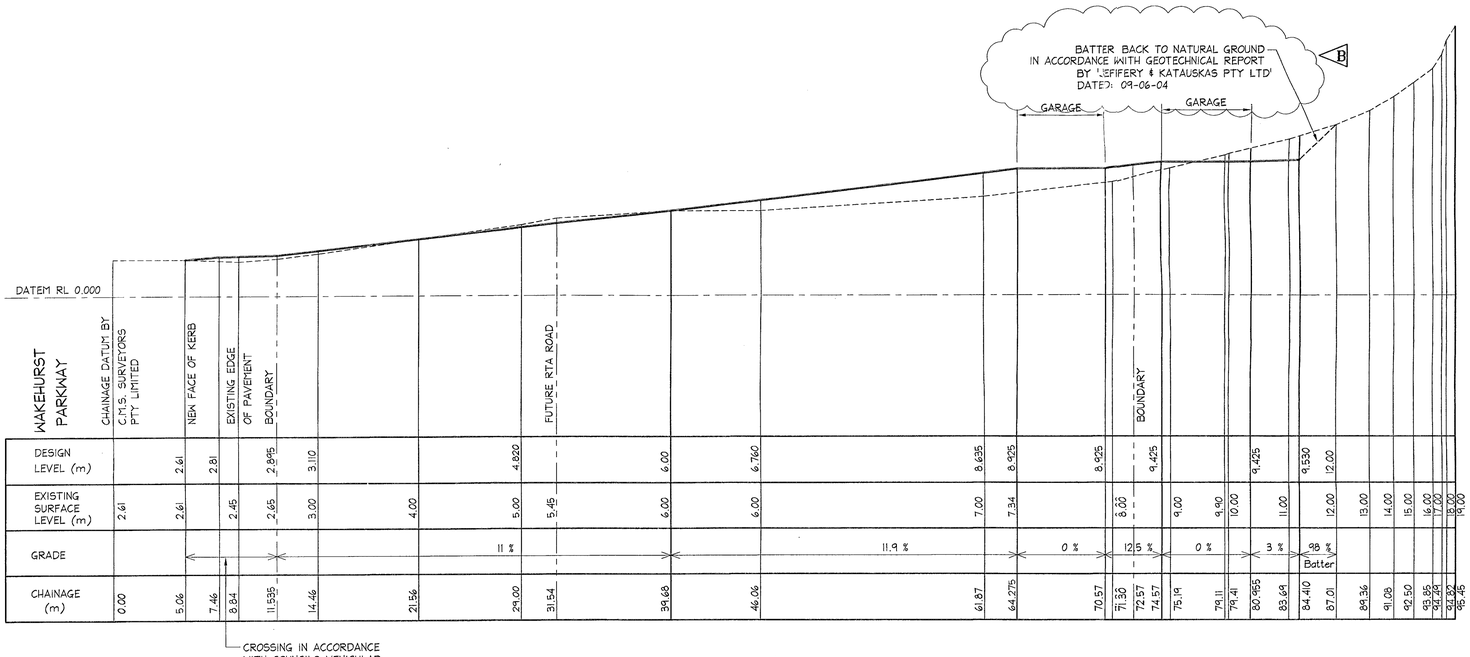
Job No:	Drawing No:	Rev:
051149	C04	-











DESIGN LEVEL (m)		3.190	3.140	3.030	3.110	3.180	3.230	
EXISTING SURFACE LEVEL (m)	2.92				3.00			3.23
GRADE				3 %				
CHAINAGE (m)	5.00	3.00	2.600	2.170	0.00	2.25	3.00	5.00

CROSS SECTION CH 14.460

SCALE = 1 : 100

DESIGN LEVEL (m)		4.930	4.880	4.770	4.820	4.890	4.950	
EXISTING SURFACE LEVEL (m)	4.93				5.00			5.28
GRADE				3 %				
CHAINAGE (m)	5.00	2.75	1.75	1.320	0.00	2.25	3.25	5.00

CROSS SECTION CH 29.00

SCALE = 1 : 100

DESIGN LEVEL (m)		4.850	4.820	4.710	6.760	4.830	4.860	
EXISTING SURFACE LEVEL (m)	6.04				6.00			6.40
GRADE				3 %				
CHAINAGE (m)	5.00	2.75	1.75	1.320	0.00	2.25	3.25	5.00

CROSS SECTION CH 46.06

SCALE = 1 : 100

DESIGN LEVEL (m)		8.725	8.695	8.585	8.635	8.705	8.735	
EXISTING SURFACE LEVEL (m)	6.99				7.00			6.95
GRADE				3 %				
CHAINAGE (m)	5.00	2.75	1.75	1.320	0.00	2.25	3.25	5.00

CROSS SECTION CH 61.87

SCALE = 1 : 100

DESIGN LEVEL (m)		2.61	2.81		2.895	3.110		4.820	
EXISTING SURFACE LEVEL (m)	2.61	2.61		2.45	2.65	3.00	4.00	5.00	5.45
GRADE								11 %	
CHAINAGE (m)	0.00	5.06	7.46	8.84	11.535	14.46	21.56	29.00	31.54

DESIGN LEVEL (m)	6.00	6.760	8.635	8.925	8.925			9.425		
EXISTING SURFACE LEVEL (m)	6.00	6.00	7.00	7.34		8.00			9.00	9.90
GRADE			11.9 %		0 %		12.5 %		0 %	
CHAINAGE (m)	39.68	46.06	61.87	64.275	70.57	71.30	72.57	74.57	75.19	79.11

DESIGN LEVEL (m)		9.425		9.530	12.00							
EXISTING SURFACE LEVEL (m)	10.00		11.00		12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00
GRADE			3 %		98 % Batter							
CHAINAGE (m)	79.41	80.955	83.69	84.410	87.01	89.36	91.08	92.50	93.85	94.49	94.82	95.45

CROSSING IN ACCORDANCE WITH COUNCILS VEHICULAR ACCESS PROFILE PLAN "N"

LONDITUDINAL SECTION

SCALE = 1 : 200

0355/06

TCG (NV)
03 AUG 2006

ISSUED FOR
CONSTRUCTION
CERTIFICATE
SUBMISSION ONLY

SCANNED
8 AUG 200
PITTWATER COUNCIL

NOTES:

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

A1

Date:	Rev:	Amendment:
18-07-06	A	REVISED

DOCUMENT CERTIFICATION

Date : JULY 06' R. Wray.
Lucas Molloy ....
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer.
I hold the following qualifications:
BE(Civil),CPEng,MIEAust.,NPER.
Institute of Engineers Membership No. 788184
I hereby state that this drawing is in compliance with the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

NORTHERN BEACHES
Consulting Engineers P/L.
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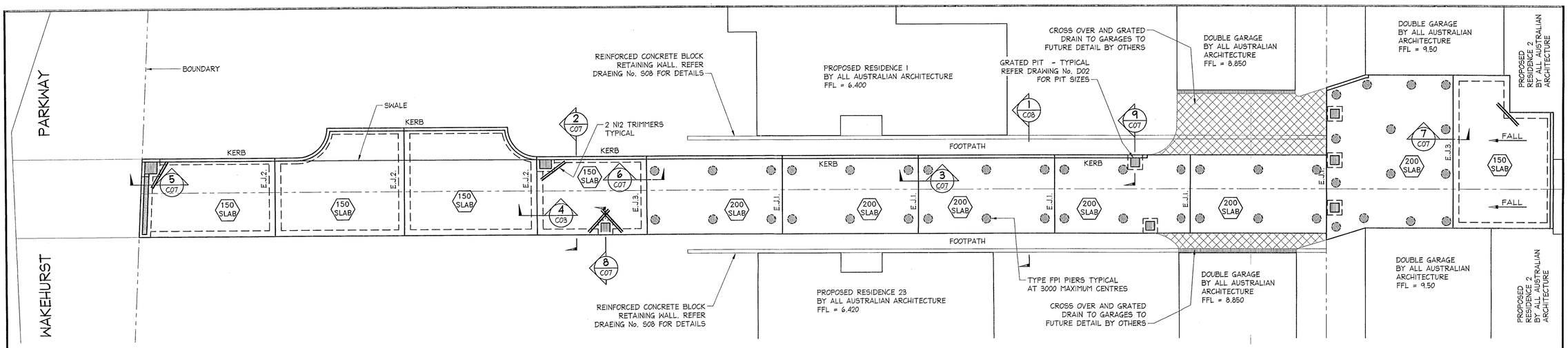
e-mail :: nb@nbconsulting.com.au
web page : www.nbconsulting.com.au

Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

Drawing Title:
DRIVEWAY LONGITUDINAL
AND CROSS SECTIONS

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce OMIEAust.	RW

Job No:	Drawing No:	Rev:
051149	C05	B



150mm THICK SLAB ON GRADE
TO BE REINFORCED WITH SL92 TOP
200mm THICK SUSPENDED SLAB ON LOOSE FORM FILL TO BE REINFORCED WITH N12 AT 200 EACH WAY TOP AND BOTTOM

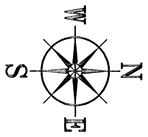
DRIVEWAY SLAB PLAN

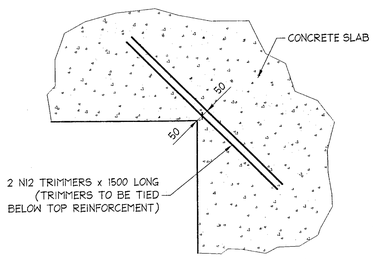
SCALE = 1 : 100

LEGEND: 200 SLAB

DIRECTION OF BARS LAID 1st AND LAST

DIRECTION OF BARS LAID 2nd AND 3rd.





TYPICAL TRIMMER DETAIL

SCALE = 1 : 20

NOTE:

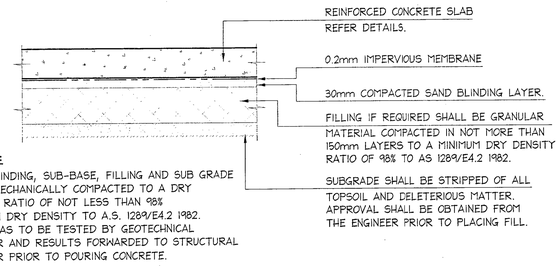
CONCRETE STRENGTH:
EXTERNAL SLABS:
f'c = 40 MPa., COVER = 45 mm

NOTE: JOINT SEALANT

USE THIOFLEX 600 POURING OR GUN GRADE SEALANT BY PARBURY TECHNOLOGIES OR APPROVED EQUIVALENT. THIOFLEX 600 POURING GRADE IS SUITABLE ONLY FOR HORIZONTAL JOINTS WITH SOUND BACKING. FOR INCLINED OR VERTICAL JOINTS THIOFLEX 600 GUN GRADE SHOULD BE USED. BOTH GRADES OF THIOFLEX 600 SHALL BE INSTALLED OVER A FOAM BACKING ROD AND USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

0355/06

TCG (NW) 2006
03 AUG 2006
03 AUG 2006

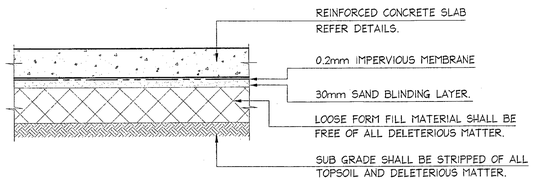


NOTE :

SAND BLINDING, SUB-BASE, FILLING AND SUB GRADE TO BE MECHANICALLY COMPACTED TO A DRY DENSITY RATIO OF NOT LESS THAN 98% MAXIMUM DRY DENSITY TO A.S. 1289/E4.2 1982. ALL AREAS TO BE TESTED BY GEOTECHNICAL ENGINEER AND RESULTS FORWARDED TO STRUCTURAL ENGINEER PRIOR TO POURING CONCRETE.

TYPICAL SLAB PREPARATION TYPE A
SLAB ON GRADE

N.T.S.

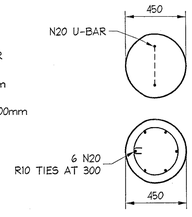


TYPICAL SLAB PREPARATION TYPE B
SUSPENDED SLAB ON LOOSE FORM FILL

N.T.S.

CONCRETE PIERS:

1. PIERS TO BE 450mm DIAMETER FOUNDED IN SOUND ROCK
2. FOR DEPTH LESS THAN 1200mm 1 N20 U-BAR.
3. FOR DEPTH GREATER THAN 1200mm 6 N20, R10 TIES AT 300.



TYPE 'FPI' FOOTING PIER SECTION

SCALE = 1 : 20

NOTE:

FOR DETAILS OF CROSS FALL AND LEVELS OF DRIVEWAY REFER TO DRAWING No's. C04 & C05.

ISSUED FOR CONSTRUCTION CERTIFICATE SUBMISSION ONLY

SCANNED
8 AUG 2006
PITTWATER COUNCIL

NOTES:

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A1

-	-	-
Date:	Rev:	Amendment:

DOCUMENT CERTIFICATION

Date : MAR'06

Lucas Molloy .....
(Director Northern Beaches Consulting Engineers)

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NORTHERN BEACHES Consulting Engineers P/L.
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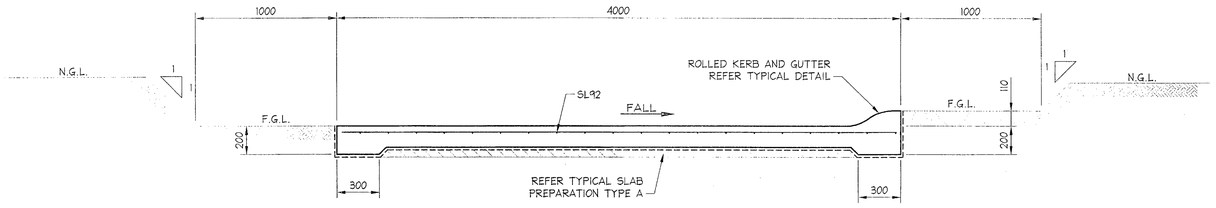
e-mail : nb@nbconsulting.com.au
web page : www.nbconsulting.com.au

Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

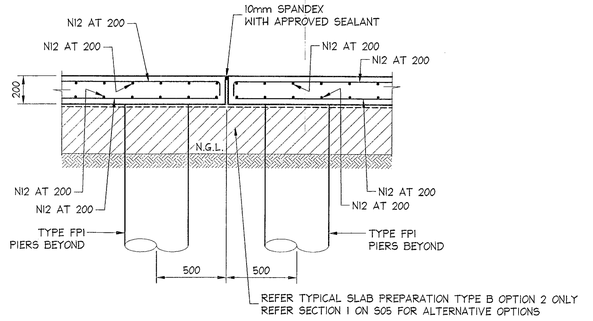
Drawing Title:
DRIVEWAY SLAB PLAN AND DETAILS

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce MIEAust.	RSW

Job No:	Drawing No:	Rev:
051149	C06	-

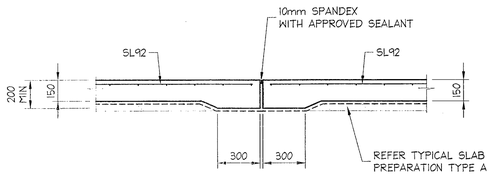


SECTION 2 C06
SCALE = 1:20



EXPANSION JOINT DETAIL
DENOTED E.J.1. ON PLAN

SECTION 3 C06
SCALE = 1:20



EXPANSION JOINT DETAIL
DENOTED E.J.2. ON PLAN

SECTION 4 C06
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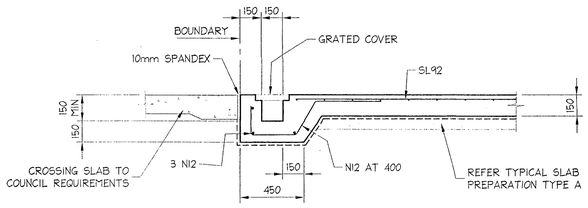

SECTION 5 C06
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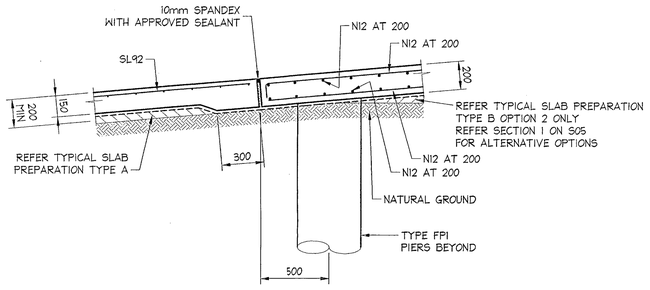
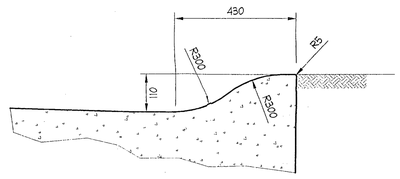
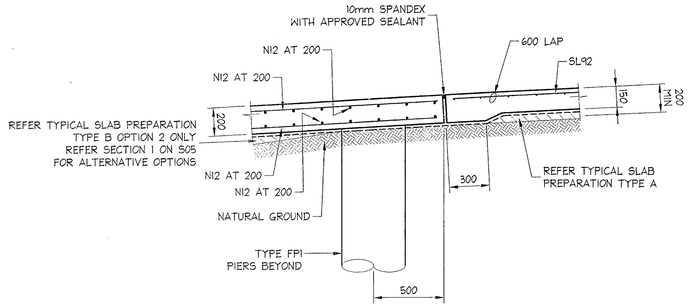


EXPANSION JOINT DETAIL
DENOTED E.J.3. ON PLAN

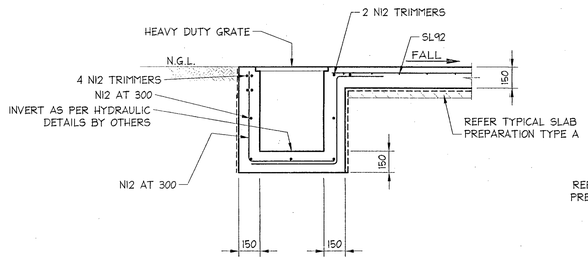
SECTION 6 C06
SCALE = 1:20



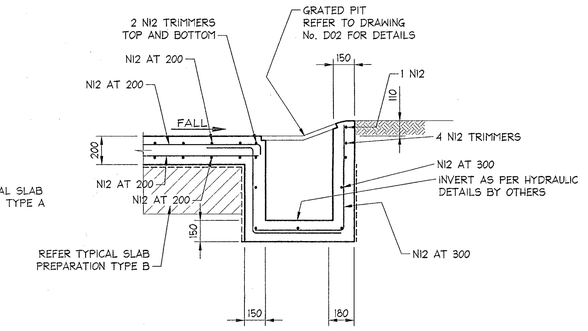
ROLL KERB AND GUTTER DETAIL
SCALE = 1 : 10



SECTION 7 C06
SCALE = 1:20



SECTION 8 C06
SCALE = 1:20



SECTION 9 C06
SCALE = 1:20

NOTE:

FOR DETAILS OF CROSS FALL AND LEVELS OF DRIVEWAY REFER TO DRAWING No's. C04 & C05.

ISSUED FOR CONSTRUCTION CERTIFICATE SUBMISSION ONLY

JOANNED
8 AUG 2006
PITWATER COUNCIL

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0355/06

TCG (NW)
03 AUG 2006

A1

Date:	Rev:	Amendment:
-	-	-

DOCUMENT CERTIFICATION

Date : MAR'06

Lucas Molloy .....
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Consulting Engineers P/L.
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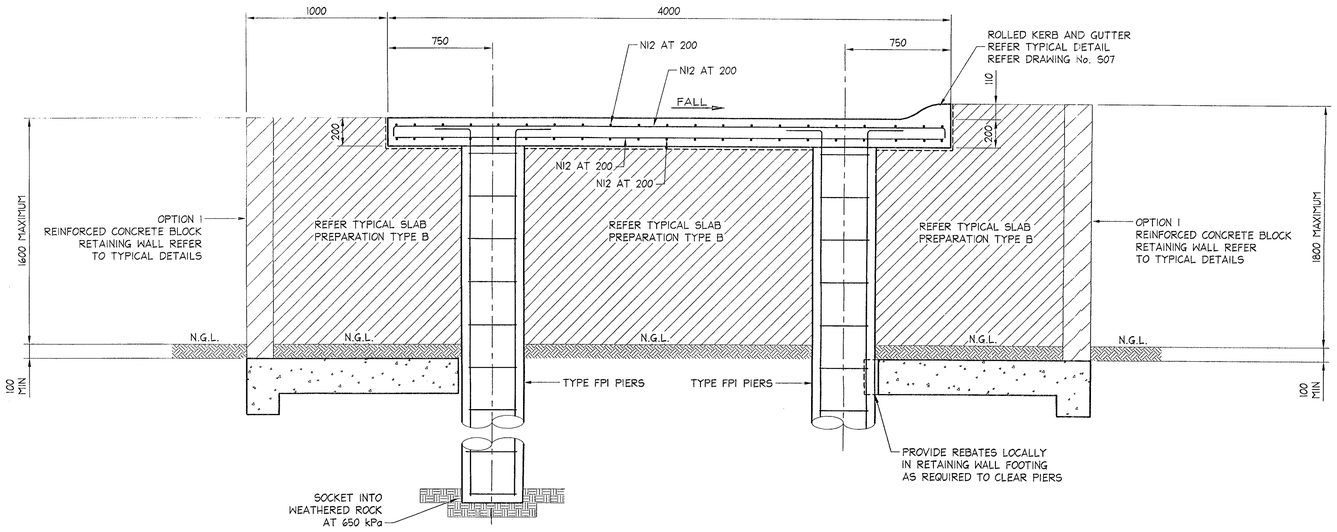
e-mail : nb@nbconsulting.com.au
web page : www.nbconsulting.com.au

Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

Drawing Title:
DRIVEWAY SLAB
DETAILS SHEET 1

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce MIEAust.	RBW

Job No:	Drawing No:	Rev:
051149	C07	-



SECTION 1 / C02

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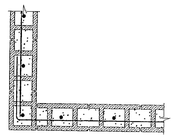
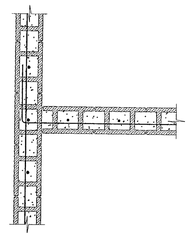


TYPICAL CORNER DETAIL

SCALE = 1 : 20



TYPICAL 'T' INTERSECTION

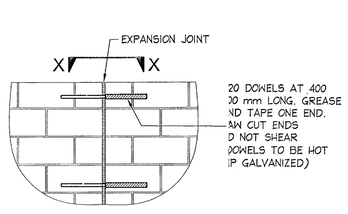
SCALE = 1 : 20

0355/06

TCG (NV)
03 AUG 2006

RETAINING WALL REINFORCEMENT SCHEDULE

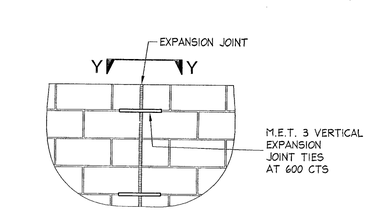
WALL TYPE	TOTAL WALL HEIGHT 'H'	OPTION 1			'V' BARS	OPTION 2	
		'B'	'D'	'W'		'B'	'D'
A	800	600	350	180	N12 AT 400	1100	350
	1000	800	350	180	N12 AT 400	1200	350
	1200	1000	350	180	N12 AT 400	1500	350
B	1400	1200	400	230	N16 AT 400	1400	400
	1600	1400	400	230	N16 AT 400	1600	400
	1800	1600	400	230	N16 AT 400	1800	400
	2000	1800	400	230	N16 AT 200	2000	400



TYPICAL EXPANSION JOINT DETAILS

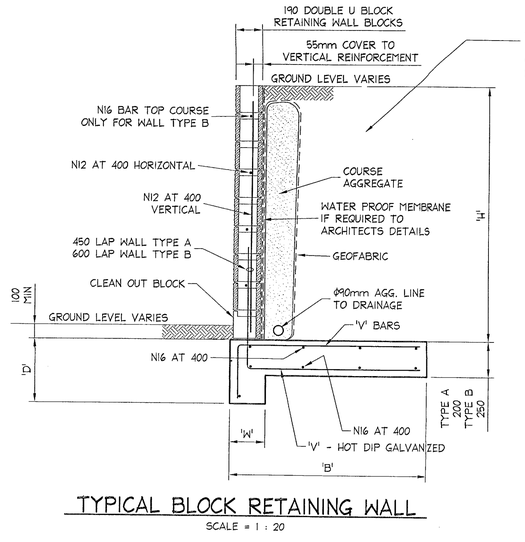
SCALE = 1 : 20

-OR-



TYPICAL EXPANSION JOINT DETAILS

SCALE = 1 : 20



TYPICAL BLOCK RETAINING WALL

SCALE = 1 : 20

NOTE:

FOR DETAILS OF CROSS FALL AND LEVELS OF DRIVEWAY REFER TO DRAWING No's. C04 & C05.

ISSUED FOR CONSTRUCTION CERTIFICATE SUBMISSION ONLY

SCANNED
8 AUG 2006
PITTWATER COUNCIL

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A1

Date:	Rev:	Amendment:
18-07-06	A	REVISED

DOCUMET CERTIFICATION

Date : July'6

Lucas Moll ..... R. Wray

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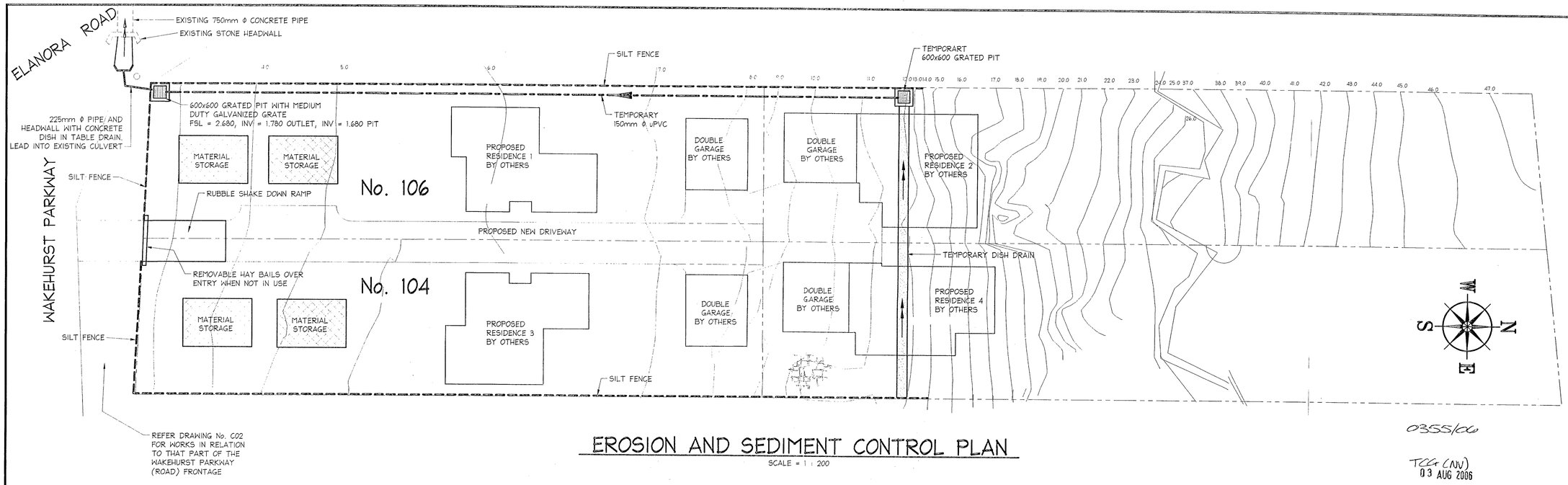
web pagge : www.nbconsulting.com.au

Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

Drawing Title:
DRIVEWAY SLAB
DETAILS SHEET 2

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce MIEAust.	RGW

Job No:	Drawing No:	Rev:
051149	C08	A

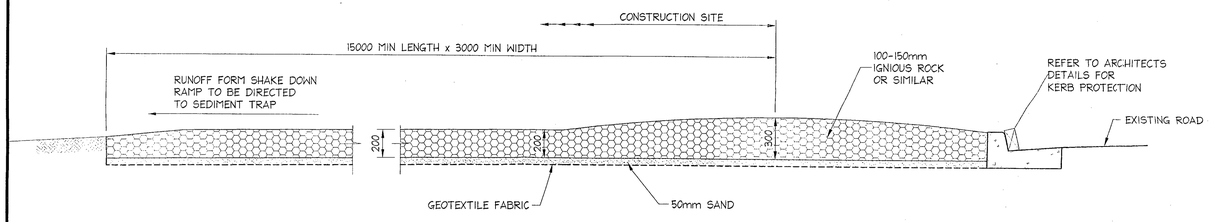


EROSION AND SEDIMENT CONTROL PLAN

SCALE = 1 : 200

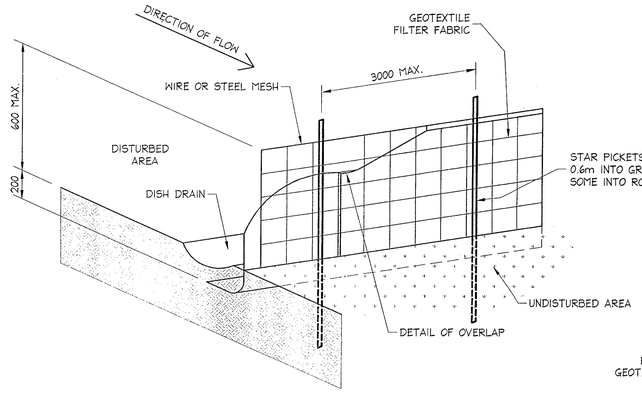
0355/06

TCC (NW)
03 AUG 2006



TYPICAL RUBBLE SHAKE DOWN RAMP LONGITUDINAL SECTION

N.T.S.

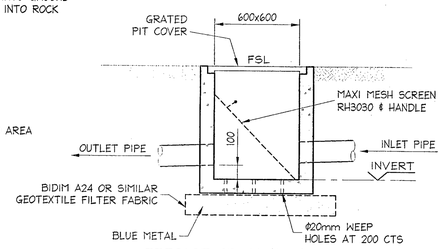


SILT FENCE DETAIL

SCALE = N.T.S.

SEDIMENT CONTROL:

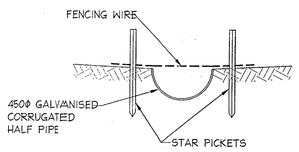
1. INSTALL SEDIMENT CONTROL STRUCTURES IN LOCATIONS INDICATED ON DRAWINGS AND AS OTHERWISE REQUIRED TO CONTROL SEDIMENT DURING ALL EXCAVATIONS AND WHILST AREAS OF THE SITE ARE EXPOSED TO EROSION.
2. CONTROL STRUCTURES TO BE AS DETAILED OR AS OTHERWISE REQUIRED BY CERTIFYING AUTHORITY.
3. REVIEW CONTROL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



PRECAST OR CAST INSITU PIT
REFER STORMWATER NOTES

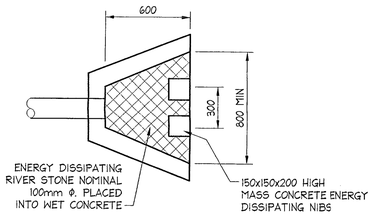
600x600 PIT DETAIL

SCALE = 1 : 20

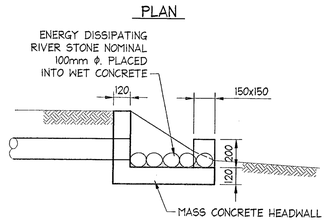


TEMPORARY DISH DRAIN

SCALE = N.T.S.



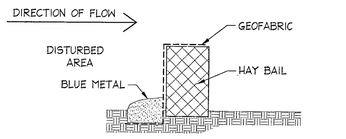
PLAN



SECTION

HEADWALL DETAILS

SCALE = 1 : 20



REMOVABLE HAY BAIL DETAIL

SCALE = N.T.S.

STORMWATER NOTES:

1 - ALL PIPES TO BE 90mm ϕ UNLESS NOTED OTHERWISE.
2 - ALL PIPES TO BE uPVC TO AS 1254-1973 UNLESS NOTED OTHERWISE.
3 - ALL PIPES TO BE LAYED AT 1 % MINIMUM GRADE UNLESS NOTED OTHERWISE.
4 - ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS.
(NO COMPACTION REQUIRED BELOW LANDSCAPING)
COVER TO SURFACE FROM TOP OF PIPE TO BE 300mm MINIMUM.
BACKFILL TO BE ADEQUATELY CONSOLIDATED AROUND PIPES BY METHOD OF RAMMING AND WATERING IN. TRENCHES TO BE FILLED WITH GRANULAR MATERIAL AS SPECIFIED.
5 - ALL DOWN PIPES TO BE 90mm ϕ UNLESS NOTED OTHERWISE.
6 - DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT WITH WORK.
7 - PROVIDE CLEANING EYES AT ALL DOWNPIPES.
8 - ALL PITS TO BE CAST INSITU OR, IF PRECAST, APPROVED BY ENGINEER. CAST INSITU PITS TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH 1 N12 TOP TIE UNLESS NOTED OTHERWISE. CAST INSITU PITS GREATER THAN 1000 DEEP TO BE MINIMUM 900x600 AND TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH N12 AT 300 EACH WAY UNLESS NOTED OTHERWISE.
9 - ALL PITS GREATER THAN 1000mm DEEP SHALL HAVE STEP IRONS AS PER COUNCIL STANDARDS.
10 - ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS.
11 - PRIOR TO COMMENCING ANY SITE WORKS THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES TO EPA GUIDELINES AND COUNCIL SPECIFICATIONS. ALL MEASURES TO REMAIN IN PLACE UNTIL COMPLETION AND STABILIZATION OF THE SITE TO COUNCIL SATISFACTION.
12 - ALL LEVELS SHOWN ARE TO AHD
13 - ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
14 - ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
15 - ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-1990 NATIONAL PLUMBING DRAINAGE CODE PART 3 - STORMWATER DRAINAGE.
16. - 90mm ϕ x 3000 LONG TAIL OUT SUBSOIL LINE TO BE PROVIDED ON THE UPSTREAM SIDE OF ALL PITS. SUBSOIL LINE TO BE COVERED WITH GEOTEXTILE FILTER SOCK FOR THE FULL LENGTH AND END COVERED.

SCANNED
8 AUG 2006
PITTWATER COUNCIL

NOTES:

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

ISSUED FOR CONSTRUCTION CERTIFICATE SUBMISSION ONLY

A1

-	-	-
Date:	Rev:	Amendment:

DOCUMENT CERTIFICATION

Date : MAR'06

Lucas Molloy .....
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer.
I hold the following qualifications:
BE(Civil),CPEng,MIEAust.,NPER.
Institute of Engineers Membership No. 788184
I hereby state that this drawing is in compliance with the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

NORTHERN BEACHES Consulting Engineers P/L.
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Suite 207, 30 FISHER ROAD
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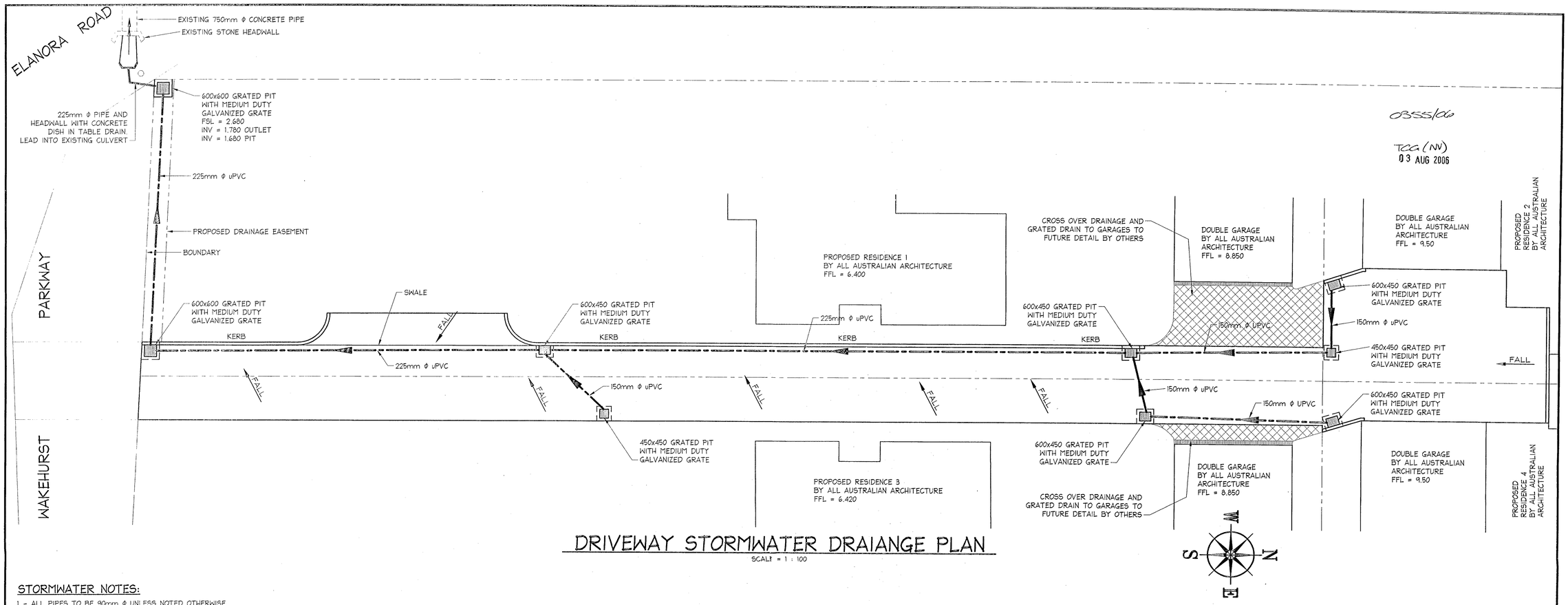
Ph: (02) 9984 7000 Fax: (02) 9984 7444
e-mail : nbc@nbconsulting.com.au
web page : www.nbconsulting.com.au

Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

Drawing Title:
EROSION AND SEDIMENT CONTROL PLAN AND DETAILS

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce MIEAust.	RBW

Job No:	Drawing No:	Rev:
051149	D01	-



DRIVEWAY STORMWATER DRAIANGE PLAN

SCALE = 1 : 100

03555/06

TCC (NV)
03 AUG 2006

STORMWATER NOTES:

1 - ALL PIPES TO BE 90mm ϕ UNLESS NOTED OTHERWISE.
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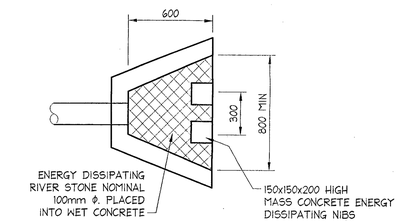
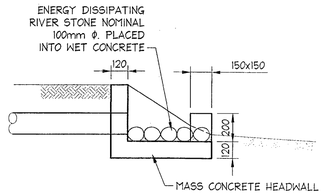


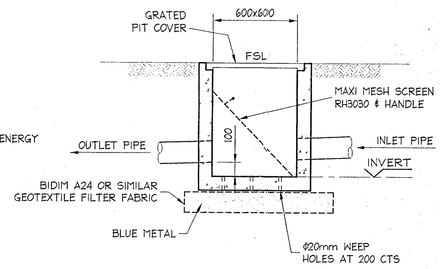
PLAN



SECTION

HEADWALL DETAILS

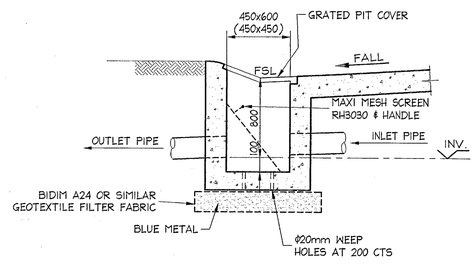
SCALE = 1 : 20



PRECAST OR CAST INSITU PIT
REFER STORMWATER NOTES

600x600 PIT DETAIL

SCALE = 1 : 20

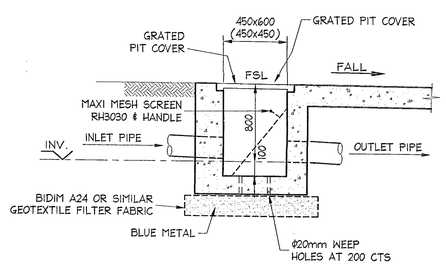


PRECAST OR CAST INSITU PIT
REFER STORMWATER NOTES

450x600 ROLLED KERB INLET PIT DETAIL

450x450 ROLLED KERB INLET PIT DETAILS SIMILAR

SCALE = 1 : 20



PRECAST OR CAST INSITU PIT
REFER STORMWATER NOTES

450x600 DRIVEWAY PIT DETAIL

450x450 DRIVEWAY INLET PIT DETAILS SIMILAR

SCALE = 1 : 20

SCANNED
8 AUG 2006
PITTWATER COUNCIL

ISSUED FOR CONSTRUCTION CERTIFICATE SUBMISSION ONLY

NOTES:

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2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

A1

Date:	Rev.	Amendment:
-	-	-

DOCUMENT CERTIFICATION

Date : MAR'06

Lucas Molloy .....
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer.
I hold the following qualifications:
BE(Civil),CPEng,MIEAust.,NPER.
Institute of Engineers Membership No. 788184
I hereby state that this drawing is in compliance with the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

NORTHERN BEACHES Consulting Engineers P/L.
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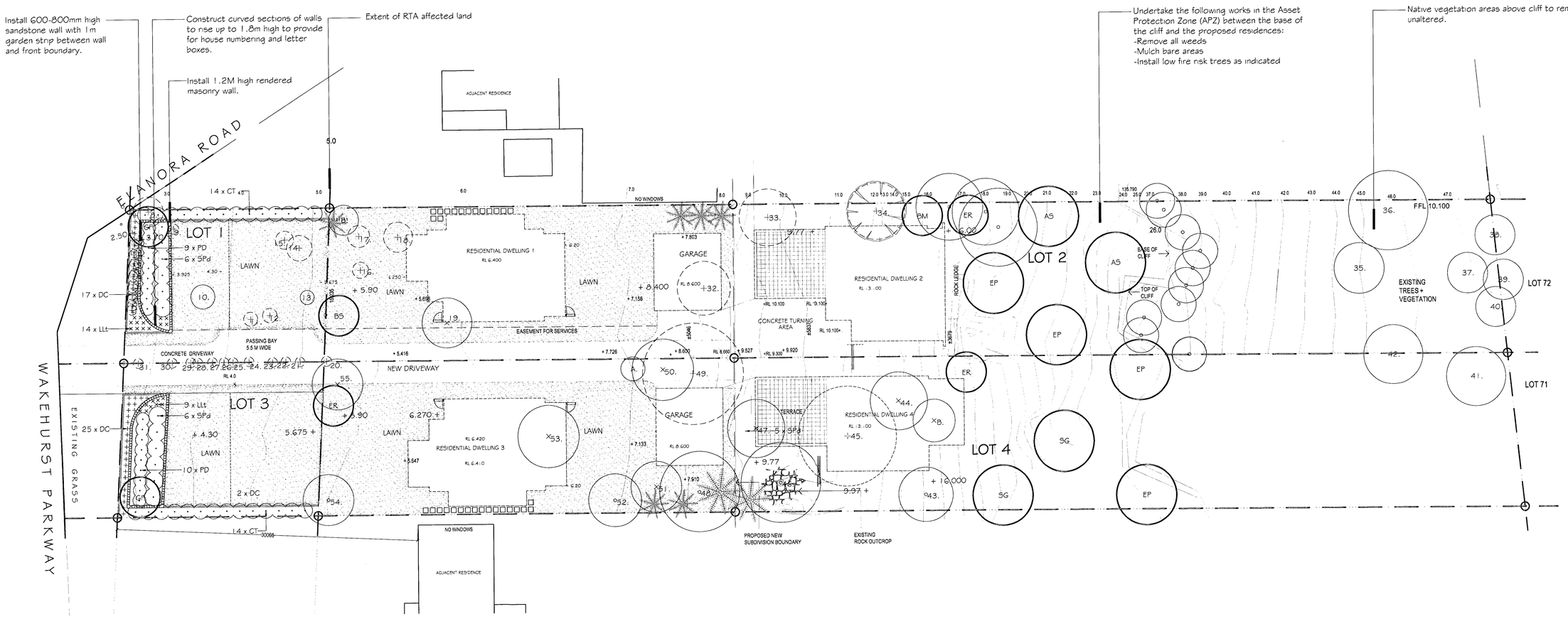
Project:
PROPOSED DEVELOPMENT
at: 104 & 106 Wakehurst Parkway
Elanora
for: Stuart Thor

Drawing Title:
STORMWATER DRAINAGE PLAN AND DETAILS

Date:	Design:	Drawn:	Checked:
Mar 2006	L.M.	Paul R Bruce MIEAust.	RGW

Job No:	Drawing No:	Rev:
051149	D02	-



LEGEND

- EXISTING LEVELS
- + 105.20 PROPOSED DESIGN LEVELS
- EXISTING TREES TO BE RETAINED
- EXISTING TREES TO BE REMOVED
- EXISTING PALMS TO BE RELOCATED
- POSITIONS FOR RELOCATED PALMS
- NEW TURF AREAS: COUCH
- BRICK GARDEN EDGING
- 400 x 400 mm UNIT PAVING
- STEPPING STONES
- 1M HIGH SANDSTONE GARDEN WALLS

SCHEDULE OF PLANT MATERIAL

CODE	BOTANICAL NAME	COMMON NAME	QUANTITY	HEIGHT	POT SIZE	STAKES
AS	Acmena smithii #	Lillypilly	2	13m	5 litre	2
BM	Backhousia myrtifolia *	Grey Myrtle	1	7m	25 litre	-
BS	Banksia serrata *	Old Man Banksia	1	3m	5 litre	-
CT	Clerodendrum tomentosum	Hairy Clerodendrum	28	2m	5 litre	-
DC	Dianella caerulea	Blue Flax-Lily	42	0.4m	140mm pot	-
EP	Eucalyptus punctata #	Grey Gum	4	25m	25 litre	2
ER	Elaeocarpus reticulatus *	Blueberry Ash	3	5m	25 litre	2
GF	Glochidion ferdinandi *	Cheese Tree	2	5m	25 litre	-
LLt	Lomandra longifolia 'Tanika'	Lomandra Tanika	23	0.4m	140mm pot	-
PD	Pultenaea daphnoides	Large-leaf Bush-pea	19	1.5m	5 litre	-
SG	Syncarpia glomulifera #	Turpentine	2	25m	25 litre	2
SPd	Syzygium paniculatum Dwarf	Dwarf Scrub Cherry	12	3m	5 litre	-

The majority of the plants in this schedule have been selected from Pittwater Council's list of indigenous plants for Lowlands and Shale Slopes (Closed Forest).

8 Canopy Trees to gain a mature height of 13m or above in accordance with Pittwater Councils guidelines.
* 7 Small trees as discussed with Council's Landscape Officer.

Comply with Conditions D107, D192 & D193

SCHEDULE OF EXISTING TREES

KEY	BOTANICAL NAME	COMMON NAME	HEIGHT X SPREAD
1-8.	Row of Euonymus & Callistemon	Euonymus,Bottlebrush	1 x 1m
9.	Morus indica	Mulberry Tree	8 x 6m
10.	Callistemon sp.	Bottlebrush	3 x 2m
11-13.	Camellia sp.	Camellia	4 x 2m
14.	Prunus x domestica	Plum	3 x 4m
15.	Citrus paradisi	Grapefruit	3 x 4m
16.	Citrus sinensis	Orange	3 x 4m
17.	Citrus sinensis	Orange	3 x 4m
18.	Citrus sinensis	Orange	2 x 2m
19.	Palm sp.	Palm	6 x 4m
20-24.	Camellia sp.	Camellia	3 x 2m
25.	Palm sp.	Palm	3 x 2m
26.	Camellia sp.	Camellia	3 x 2m
27.	Camellia sp.	Camellia	3 x 2m
28.	Hibiscus sp.	Hibiscus	3 x 2m
29.	Rhododendron sp.	Azalea	3 x 2m
30.	Camellia sp.	Camellia	3 x 2m
31.	Acmena smithii	Lilly Pilly	3 x 2m
32.	Citrus reticulata	Mandarin Tree	8 x 5m
33.	Prunus x domestica	Plum Tree	8 x 5m
34.	Morus indica	Mulberry Tree	6 x 6m
35.	Eucalyptus sp.	Gum Tree	5 x 5m
36.	Eucalyptus sp.	Gum Tree	10 x 8m
37.	Eucalyptus sp.	Gum Tree	7 x 4m
38.	Eucalyptus sp.	Gum Tree	7 x 4m
39.	Eucalyptus sp.	Gum Tree	6 x 4m
40.	Eucalyptus sp.	Gum Tree	6 x 4m
41.	Eucalyptus sp.	Gum Tree	7 x 6m
42.	Eucalyptus sp.	Gum Tree	6 x 6m
43.	Eucalyptus sp. #	Gum Tree	15 x 10m
44.	Palm sp.	Palm	15 x 5m
45.	Araucaria heterophylla	Norfolk Island Palm	25 x 10m
46.	Eucalyptus sp.	Gum Tree	7 x 8m
47.	Palm sp.	Palm	7 x 6m
48.	Palm sp.	Palm	7 x 8m
49.	Acmena smithii	Lilly Pilly	15 x 10m
50-55.	Palm sp.	Palm	3 x 2m
A.	Palm sp.	Palm	5 x 2m
B.	Palm sp.	Palm	5 x 2m

The Schedule of Existing Trees was prepared by Eclipse Landcapes.

0355/06
TCC (NV)
03 AUG 2006

SCANNED
8 AUG 2006
PITTWATER COUNCIL

0 2 4 6 8 10 20

NOTES

This plan is to be read in conjunction with all the documentation prepared by **C.M.S Surveyors Pty Limited.**

Also refer to the Landscape Specification.

Ian Jackson landscape architect pty ltd
25 bent street
lindfield nsw 2070
ph 9416 4290 fax 9416 4735
A.C.N 097 328 580
email ijla@netspace.net.au

project
Proposed Subdivision
104-106 Wakehurst Parkway, Elanora Heights

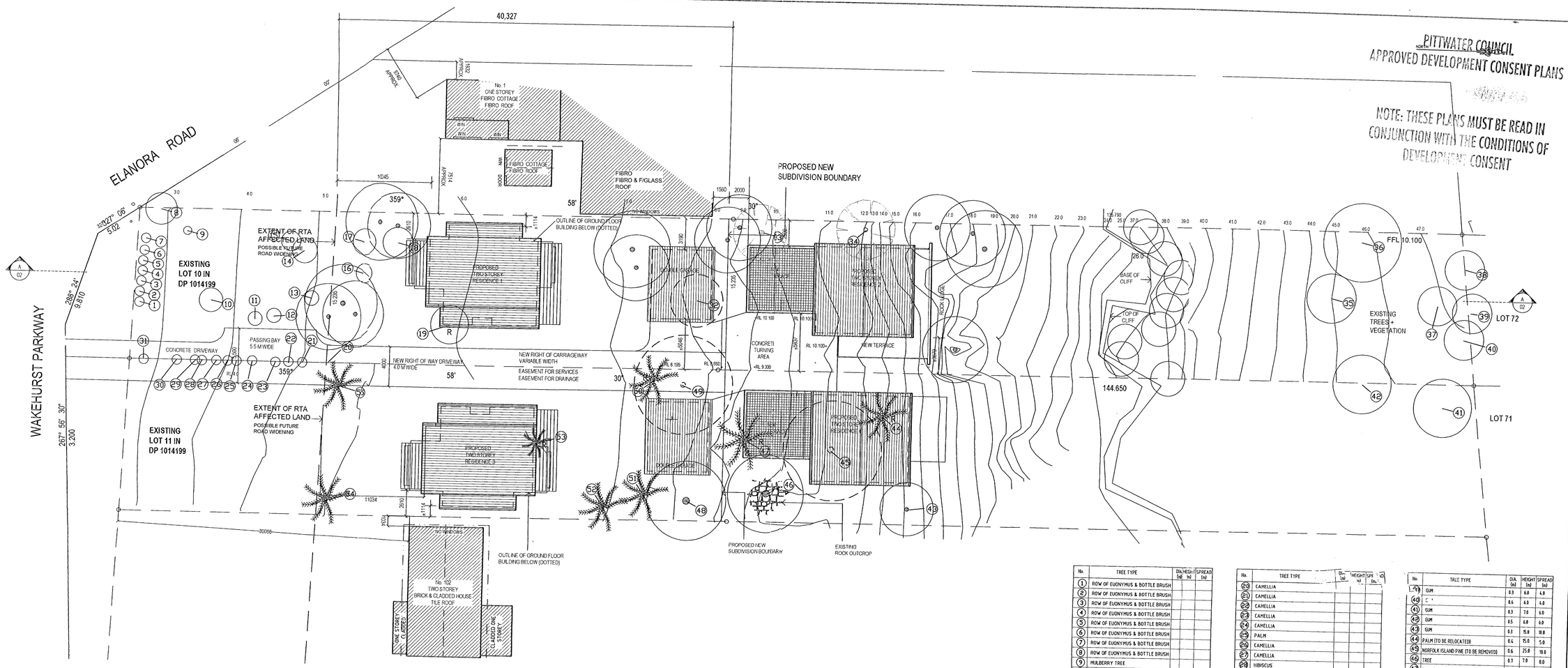
drawing
Landscape Plan

client
Mr Stuart Thor

date	**scale**
March 2006	1:200 @ A1 1:400 @ A3
job.dwg no.	**no. in set**
63.06 (05)/051	ONE/ONE
designed by	**drawn by**
IJ	CS

PITTWATER COUNCIL
APPROVED DEVELOPMENT CONSENT PLANS

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



No.	TREE TYPE	DIA (m)	HEIGHT (m)	SPREAD (m)
1	ROW OF EUONYMUS & BOTTLE BRUSH			
2	ROW OF EUONYMUS & BOTTLE BRUSH			
3	ROW OF EUONYMUS & BOTTLE BRUSH			
4	ROW OF EUONYMUS & BOTTLE BRUSH			
5	ROW OF EUONYMUS & BOTTLE BRUSH			
6	ROW OF EUONYMUS & BOTTLE BRUSH			
7	ROW OF EUONYMUS & BOTTLE BRUSH			
8	ROW OF EUONYMUS & BOTTLE BRUSH			
9	MULBERRY TREE			
10	BOTTLE			
11	CAMELLIA			
12	CAMELLIA			
13	CAMELLIA			
14	PLUM			
15	GRAPEFRUIT			
16	ORANGE			
17	ORANGE			
18	ORANGE			
19	PALM (TO BE RELOCATED)	0.	6.0	4.0

No.	TREE TYPE	DIA (m)	HEIGHT (m)	SPREAD (m)
20	CAMELLIA			
21	CAMELLIA			
22	CAMELLIA			
23	CAMELLIA			
24	CAMELLIA			
25	PALM			
26	CAMELLIA			
27	CAMELLIA			
28	HIBISCUS			
29	AZALEA			
30	CAMELLIA			
31	LILLY PILLY			
32	MANDARIN TREE (TO BE REMOVED)	0.3	8.0	5.0
33	PLUM TREE	0.4	8.0	5.0
34	MULBERRY TREE	0.4	6.0	6.0
35	GUM	0.4	5.0	5.0
36	GUM	0.5	10.0	8.0
37	GUM	0.3	7.0	4.0
38	GUM	0.3	7.0	4.0

No.	TREE TYPE	DIA (m)	HEIGHT (m)	SPREAD (m)
39	GUM	0.3	6.0	4.0
40	GUM	0.4	6.0	4.0
41	GUM	0.3	7.0	6.0
42	GUM	0.5	6.0	6.0
43	GUM	0.3	15.0	10.0
44	PALM (TO BE RELOCATED)	0.4	15.0	5.0
45	NORFOLK ISLAND PINE (TO BE REMOVED)	0.6	25.0	10.0
46	TREE	0.7	7.0	8.0
47	PALM (TO BE RELOCATED)	0.3	7.0	6.0
48	TREE	0.7	7.0	8.0
49	LILLY PILLY (TO BE REMOVED)	0.5	15.0	10.0
50	PALM (TO BE RELOCATED)	0.3	12.0	5.0
51	PALM	0.3	12.0	5.0
52	PALM	0.3	10.0	5.0
53	PALM (TO BE RELOCATED)	0.2	7.0	3.0
54	PALM	0.35	12.0	5.0
55	PALM	0.35	12.0	5.0

0855/06

TCG (NV)
03 AUG 2006

0 5 10 15 20

SCALE 1 : 200

TREE LEGEND

EXISTING TREE TO BE RETAINED

EXISTING TREE TO BE REMOVED

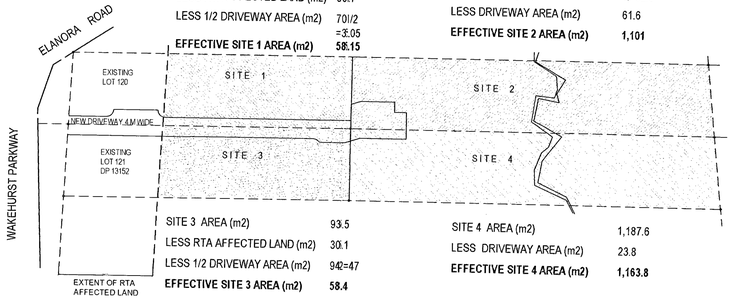
EXISTING TREE TO BE RELOCATED

BUILDING 1	PROPOSED	ALLOWED	
SITE AREA (m2) incl. ROW	620.2		
DWELLING FOOTPRINT (m2)	161.5	-	INCL. GARAGE EXCL. 1ST FLR BALCONY
DWELLING GFA (m2)	304.7	-	INCL. GARAGE
ROW AND DRIVE (m2)	96		
BUILT UPON AREA (m2)	257.5		
BUILT UPON AREA %	41.5%	40% + 6%*	

* 6% ADDITIONAL FUNCTIONAL OUTDOOR LANDSCAPED AREA

BUILDING 3	PROPOSED	ALLOWED	
SITE AREA (m2) incl ROW	630.4		
DWELLING FOOTPRINT m2	161.5	-	INCL. GARAGE EXCL. 1ST FLR BALCONY
DWELLING GFA (m2)	305.1	-	INCL. GARAGE
ROW AND DRIVE (m2)	101.6	-	
BUILT UPON AREA (m2)	263.1	-	
BUILT UPON AREA %	41.7%	40% + 6%*	

* 6% ADDITIONAL FUNCTIONAL OUTDOOR LANDSCAPED AREA



SITE 1 AREA (m2)	92.9
LESS RTA AFFECTED LAND (m2)	30.7
LESS 1/2 DRIVEWAY AREA (m2)	70/2 =35.05
EFFECTIVE SITE 1 AREA (m2)	**58.15**

SITE 2 AREA (m2)	1,162.6
LESS DRIVEWAY AREA (m2)	61.6
EFFECTIVE SITE 2 AREA (m2)	**1,101**

SITE 3 AREA (m2)	93.5
LESS RTA AFFECTED LAND (m2)	30.1
LESS 1/2 DRIVEWAY AREA (m2)	94/2=47
EFFECTIVE SITE 3 AREA (m2)	**58.4**

SITE 4 AREA (m2)	1,187.6
LESS DRIVEWAY AREA (m2)	23.8
EFFECTIVE SITE 4 AREA (m2)	**1,163.8**

BUILDING 2	PROPOSED	ALLOWED	
SITE AREA (m2) incl ROW	1,162		
DWELLING FOOTPRINT (m)	170.8	-	INCL. TERRACE
DWELLING GFA (m2)	285	-	INCL. GARAGE
ROW DRIVE (m2)	63.1		
BUILT UPON AREA (m2)	233.9		
BUILT UPON AREA %	20.1%	40% + 6%*	

* 6% ADDITIONAL FUNCTIONAL OUTDOOR LANDSCAPED AREA

BUILDING 4	PROPOSED	ALLOWED
SITE AREA (m2) incl ROW	1,187.6	
DWELLING FOOTPRINT m	166.1	-
DWELLING GFA (m2)	285	-
ROW DRIVE (m2)	24.5	
BUILT UPON AREA (m2)	190.6	
BUILT UPON AREA %	16%	40% + 6%*

* 6% ADDITIONAL FUNCTIONAL OUTDOOR LANDSCAPED AREA

REV.	AMENDMENTS	DATE
G	ROW & AREAS AMENDED	24/09/04
F	RESIDENCE NUMBERS AMENDED	2/06/04
E	AMENDED HARD SURFACES	16/04/04
D	PRE DA MEETING ISSUE	02/04/04

CLIENT:
STUART THOR
104 & 106 WAKEHURST PARKWAY
ELANORA HEIGHTS, NSW, 2107

PLAN OF SUBDIVISION AND REDEVELOPMENT

C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
10/32 Campbell Avenue, Dee Why NSW 2099
Telephone: (02) 9971 4802
Facsimile: (02) 9971 4822
E-mail: cmssurveyors@bigpond.com

CMS REF.	SCALE	DATE
476	1:200	24/09/04
DRAWING NUMBER		REV.
CMS TH02 MODEL MAR04.dwg		G