COUNCIL COPY

Bernie Cohen & Associates Pty Ltd Trading as
ESSENTIAL CERTIFIERS
ACN : 100386650
ABN : 84047117254

PO Box 208 Casula Mall NSW 2170 ☎ Level 1, 405 Hume Hwy, Liverpool 2170
Telephone: (02) 9612-5000 ☎ Facsimile: (02) 9612-5050

essentialCERTIFIERS

RECEIVED
16 APR 2010
PITTWATER COUNCIL

CONSTRUCTION CERTIFICATE

C.C. No:

CC2010-01196

This certificate is issued by a Private Certifying Authority and verifies that, if the applicant carries out the proposed work in accordance with the plans and specifications that are approved, the work will comply with the Environmental Planning and Assessment Regulation 2000.

COUNCIL: PITTWATER

APPLICANT

Name	Pittwater RSL Club C/- Paynter Dixon Constructions
Address	320 Liverpool Road, ASHFIELD 2131
Contact no (telephone/fax)	97975555

OWNER

Name	Pittwater RSL Club
Address	80-82 MONA VALE ROAD, MONA VALE
Contact no (telephone/fax)	9997 3833

SUBJECT LAND

Address	22 Jubilee Road , MONA VALE 2103 Lot No 27 DP - 5055

DESCRIPTION OF DEVELOPMENT

Type of Work ■ Building work ☐ Subdivision

Description: Construction of six social (three competition) futsal (mini soccer) courts & landscaping

Essential Certifiers Certificate No. CC2010-01196

PRVC $30
REC 278476
16/4/10.

- Landscape Plans by Conzept Landscape Architects
  Drg No. LPDA 09-58/4 Issue D dated March 2010
  Sediment & Erosion Control Plan Issue E dated March 2010
  Levels & Hardscape Plan Issue D dated March 2010
- Structural Plans by Northrop Job No. 08622
  Drg No. S00 & S01 Rev 1 dated 30/3/10
- Civil Plans by Northrop Job No. 08622
  Drg No. C1.01, C2.01, C3.01, C4.01 & C5.01 Rev 5 dated 29/3/10

IMPORTANT NOTE: It is the applicant's responsibility to ensure the mandatory PCA site sign supplied herewith, is displayed at this building site throughout construction.

PLANS AND SPECIFICATIONS APPROVED

List plan no(s) and specifications reference - Nil

RIGHT OF APPEAL

under S109K where the Certifying Authority is a Council an applicant may appeal to the Land and Environmental Court against the refusal to issue a Construction Certificate or imposition of conditions on the consent within 12 months from the date of the decision.

ACCREDITATION BODY

BUILDING PROFESSIONALS BOARD
10 Valentine Street, Parramatta NSW 2150

CERTIFICATE

Certificate Final

I certify that the work if completed in accordance with these plans and specifications (with such modifications verified by the Certifying Authority as may be shown on that documentation) will comply with the requirements of the Environmental Planning and Assessment Regulation 2000 as referred to in Section 81A(5) of the Environmental Planning and Assessment Act 1979.

Essential Certifiers Certificate No. CC2010-01196

Bernie Cohen & Associates Pty Ltd Trading as
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essentialCERTIFIERS

RECORD OF INSPECTION

Cert No:	**CC2010-01196**
COUNCIL:	**PITTWATER**
Type of Inspection	**Pre CC Site Inspection**
Date of Inspection	**7/04/2010**
Applicant Name	Pittwater RSL Club C/- Paynter Dixon Constructions
Owner Name	Pittwater RSL Club
Builder Name	Paynter Dixon Constructions P/L

SUBJECT LAND

Address	22 Jubilee Road , MONA VALE 2103

COUNCIL'S D/A CONSENT

Development Consent No	No123/09
D.A Approval Date	1/02/2010

CERTIFICATE DETERMINATION

Decision	
Date of Decision	

RESULT OF INSPECTION

Result	Satisfactory
Re-Inspection Required	No

CERTIFYING AUTHORITY

Name of Certifying Authority	Essential Certifiers
Name of Accredited Certifier	Bernie Cohen
Accreditation No	BPB0067
Signature	

COUNCIL COPY

Bernie Cohen and Associates Pty Ltd T/As Essential Certifiers Liverpool
ABN: 84047117254

PO Box 208 Casula Mall NSW 2170
Level 1, 405 Hume Highway
Liverpool NSW 2170

P: 02 9612 5000
F: 02 9612 5050
E: info@essentialcertifiers.com.au
www.essentialcertifiers.com.au

essentialCERTIFIERS
LIVERPOOL

CONSTRUCTION CERTIFICATE APPLICATION FORM

Construction Certificate: In accordance with Clause 139, Part 8, Division 2 of the Environmental Planning and Assessment Regulations 2000

PART A – Identification of the Land

Lot No: 27 Street No: 22 DP No: 5055

Street: JUBILEE Suburb: WARRIEWOOD Postcode:

PART B – Owners Details

☐ Mr ☐ Mrs ☐ Miss ☐ Other

Surname/s:

First names/s:

Company/Organisation: PITTWATER RSL CLUB

Full Address of Owner: 80-82 MONA VALE Rd MONA VALE

Phone: 99973833 Mobile:

Fax: 99993535 Email:

PART C – Applicant Details (Person having Benefit of Development Consent) within the meaning and under the EP&A ACT 1979

☐ Mr ☐ Mrs ☐ Miss ☐ Other

Surname/s: FUCILE

First Name/s: ANTHONY

Company/Organisation: PAYNTER DIXON CONSTRUCTIONS

Full Address of Applicant: 320 LIVERPOOL Rd. ASHFIELD.

Phone: 97975555 Mobile: 0408292322

Fax: 97996149 Email:

Owners Declaration

I/we understand that this engagement shall be subject to the Terms and Conditions in the fee proposal (if any).

I/we as owners/applicants of the land to which the application relates. I/we consent to the making of the application. I/we also give consent for officers/certifiers of Essential Certifiers Liverpool to enter the land to carry out inspections relating to this application.

I/we declare that I/we will notify Essential Certifiers Liverpool to carry out any critical stage inspection or make arrangements with the Builder to carry out this function on my/our behalf as a condition of my/our Building contract.

BRUCE SMITH
Name of all owners/tenants

ANTHONY FUCILE
Name of all applicants

X
Signatures of all owners/tenants:

Signatures of all applicants/tenants:

Date:

Date:

PART D – Billing Details

Billing Name: PAYNTER DIXON CONST. ABN:

Billing Address: 320 LIVERPOOL Rd ASHFIELD. LOCKED BAG 9. ASHFIELD.

PART E – Appointment of Agent

As the owner(s) of the above property, I/ we consent to information being provided to the following parties (who act on my/our behalf as an agent) during the course of my/our application:

Name of person(s) /company/organisation of Agent: ANTHONY FUCILE PAYNTER DIXON CONSTRUCTIONS

Agent Address: 320 LIVERPOOL ROAD ASHFIELD

Phone/Fax Agent: 97975555 / 97996149
Email:

Owner(s)/ Tenants Name:

Signatures of all owners/tenants

Date: X

PART F – ☐ **Builders Details** ☐ **Owner Builders Details**

Name: PAYNTER DIXON CONST. License No/ Owner Builder Permit No:

Address 320 LIVERPOOL Rd. ASHFIELD

Phone: 97975555 Mobile: 0408 292322

Fax: 97996149 Email:

PART G – Description of Development

Describe the work to be carried out: SIX SOCIAL (~~THREE~~ COMPETITION) FUTSAL COURTS.

Cost of Development: $ 1,405,464 Your Ref:

Number of Stories: —— Number of Structures: ——

Building Classification: ——

Has development consent been granted for the development?

No ☐
Yes ☑ Consent Number: N0123/09 Date of Determination: 1 Feb. 2010

Council Area: PITTWATER COUNCIL

Has a Section 96 Modification been granted for the development?

No ☑
Yes ☐ Modification Number: Date of Modification:

essentialCERTIFIERS
LIVERPOOL

SCHEDULE OF DETAILS FOR THE AUSTRALIAN BUREAU OF STATISTICS

CONSTRUCTION CERTIFICATE NUMBER:

PARTICULARS OF THE PROPOSAL

All New Buildings

Area of subject site (m²): 39,240m²

Does the site contain dual occupancy? No ~~Yes~~

Current use of existing building/s on the subject site (if vacant, state "vacant"): EXISTING RSL CLUB

Floor area of existing building/s in m² except if being demolished: 7095m²

Gross floor area in m² of proposed addition/s or new building/s. If multiple buildings please itemise:
SPORTING FIELD — 3995m²

Proposed use of all parts of the addition/s or new building/s: SPORTING FIELD

Residential Dwellings Only

Number of pre existing dwellings: ONE	Number of dwellings to be demolished: NIL
Number of proposed new dwellings: NIL	Number of storeys of proposed dwelling: ——

Materials Used in Building

Tick the box alongside which best describes the material/s to be used in the construction of the proposed new work/s.

WALLS		ROOF		FRAME		FLOOR	
Brick Veneer		Aluminium		Timber		Concrete	
Full Brick		Concrete		Steel		Timber	
Single Brick		Concrete Tiles		Other (describe below)		Other (describe below)	✓
Concrete Block	✓	Fibrous Cement				ARTIFICIAL SURFACE (GRASS)	
Concrete/Masonry		Fibreglass					
Concrete		Masonry Shingle					
Steel		Terracotta Shingle					
Fibrous Cement		Tiles – other					
Hardiplank		Slate					
Timber/Weatherboard		Steel					
Cladding/Aluminium		Terracotta Tiles					
Curtain Glass		Other (describe below)					
Other (describe below)							

PITTWATER RSL CLUB

Ref: L4751

3 March 2010

Mr Bernie Cohen
Essential Certifiers Liverpool
405 Hume Highway
LIVERPOOL NSW 2170

Dear Mr Cohen,

Re: Proposed Futsal Courts – DA No. 123/09

This letter serves as confirmation that Paynter Dixon Constructions Limited is authorized to lodge applications with Essential Certifiers Liverpool for the above project on behalf of Pittwater RSL Club Ltd.

Yours sincerely,

BRUCE SMITH JP ACCM
CHIEF EXECUTIVE OFFICER

82 MONA VALE ROAD
MONA VALE NSW 2103
A.C.N. 001 052 802
ABN 31 001 052 802

PLEASE ADDRESS ALL CORRESPONDENCE
TO THE GENERAL MANAGER

http://www.pittwaterrsl.com.au
bruce@pittwaterrsl.com.au

TELEPHONE: (02) 9997 3833
FACSIMILE: (02) 9999 3535

Pittwater Council

OFFICIAL RECEIPT

12/03/2010 Receipt No 277112

To PAYNTER DIXON CONSTRUCTIONS

320 LIVERPOOL ROAD
ASHFIELD NSW 2132

Applic	Reference	Amount
GL Re	QLSL-Buil 1 X N0123/09	$4,919.00

Total:	$4,919.00
Amounts Tendered	
Cash	$0.00
Cheque	$4,919.00
Db/Cr Card	$0.00
Money Order	$0.00
Agency Rec	$0.00
Total	$4,919.00
Rounding	$0.00
Change	$0.00
Nett	$4,919.00

LSL fee

Printed 12/03/2010 11:29:16
Cashier ASherr

QUICK CHECK **Application Lodgement Summary** Sydney WATER

Reference Number 2808633 **Date Requested:** Fri March 5 2010

Agent	Reece Punchbowl, 105 Bonds Road Punchbowl
Applicant	paynter dixon, 320 liverpool road ashfield 2131
Property/Asset	Lot 26 Mona Vale Rd, Mona Vale 2103 (Pittwater Rsl Club) PNum: 3435888 150 mm VC Sewer Main - (2779645)
Product	Building Plan Approval Application

Charge	**Product Cost**	**GST**	**Total**
Building Plan Approval Application Fee	$25.95	$0.00	$25.95

Property Special Conditions

Boundary Trap Required	No
Watercharged/Tidal area	No
Partial Drainage area	Yes
Aggressive Soil area	No
Cast Iron Pipe area	No
Sewer Surcharge area	No
Minimum Gully Height area	No
Sewer Available	Yes
Connection Type	Gravity

You must contact Sydney Water's Plumbing Inspection and Assurance Services on Ph: 1300 889 099 to clarify the property special conditions where the property special conditions are not shown (yes or no), are shown as "unset", "unknown" or "not available" or if the proposed development is being built over more than one existing property.

Please note that boundary traps must be fitted for all commercial and industrial properties and you must ensure that all plumbing/drainage and building works are carried out in accordance with the relevant codes and standards.

A water meter is required to be fitted to the property during construction. You will need to ensure that your licensed plumber carries out this work in accordance to the relevant codes and standards.

PITTWATER RSL CLUB

Ref: L4762

7 April 2010

Mr Bernie Cohen
Essential Certifiers Liverpool
405 Hume Highway
LIVERPOOL NSW 2170

Dear Mr Cohen,

Re: Proposed Futsal Courts – DA No. 123/09

We confirm that as a Plan of Management for the proper service of alcohol, signage will be displayed around the proposed Futsal Courts prohibiting the consumption of alcohol.

This will be carried out in accordance with condition C8 of the Council Conditions of Consent for the works.

Yours sincerely,

BRUCE SMITH JP ACCM
CHIEF EXECUTIVE OFFICER

82 MONA VALE ROAD
MONA VALE NSW 2103
A.C.N. 001 052 802
ABN 31 001 052 802

PLEASE ADDRESS ALL CORRESPONDENCE
TO THE GENERAL MANAGER

http://www.pittwaterrsl.com.au
bruce@pittwaterrsl.com.au

TELEPHONE: (02) 9997 3833
FACSIMILE: (02) 9999 3535

PAYNTER DIXON

Paynter Dixon Constructions Pty Limited
ABN 84 097 120 315

320 Liverpool Road, Ashfield NSW 2131
Telephone (02) 9797 5555
Facsimile (02) 9716 6870
www.paynterdixon.com.au

10 March 2010

Essential Certifiers Liverpool
PO Box 208
Casula Mall NSW 2170

Attention: Bernie Cohen

Dear Sir,

Re: PITTWATER RSL CLUB – DA N01123/09
FUTSAL COURTS

In relation to condition D6 of the approval we confirm that there will be no work on existing road ways therefore there will be no requirement for a Road Opening Permit.

Also in relation to condition D8, a satisfactory construction traffic management plan will be prepared and forwarded to you once the civil contract is awarded.

Yours faithfully
PAYNTER DIXON CONSTRUCTIONS PTY LIMITED

John Nardone
PROJECT MANAGER

Direct Line: 9797 5582
Mobile: 0438 536 246
E-mail: John.Nardone@paynterdixon.com.au
Web: www.paynterdixon.com.au

ACOUSTIC LOGIC CONSULTANCY

noise and vibration consultants

abn 11 068 954 343

Reference: 2009585/0412/R0/MAS
4 December, 2009

Paynter Dixon Construction
320 Liverpool Road
Ashfield NSW 2131

No. Pages: 3
Email: Robert.Clarke@paynterdixon.com.au

ATTN: MR ROBERT CLARKE

FUTSAL COURTS AT PITTWATER RSL CLUB – RESPONSE TO COUNCIL QUERIES

This letter is in response to address the outstanding matters put forth by Pittwater Council relating to the assessment conducted by Acoustic Logic Consultancy *(ALC)* Pty Ltd investigating potential environmental noise impact resulting from the proposed FUTSAL (mini soccer) courts located at Pittwater RSL Club (*report reference: 2009585/0309A/R1/MAS).*

The Council queries relate to the method of analysis and the conclusions drawn from the assessment.

One of the council's queries was related to the use of the referee's whistle during the games and its impact on the nearest resident receivers. The noise data used for this assessment was measure at a FUTSAL competitive match which included the use the whistle. Hence, the noise emission level predicted at the nearest residents takes into account the use of the whistle and its impact.

Secondly the council's query was related to the criteria put forth in our report. An Acoustic review of ALC's assessment criteria was carried out by Graham Atkins of *Atkins Acoustics Pty Ltd.* Graham Atkins was involved in creating the *James Madden Cooper Atkins, Acoustic Planning Report (APR)* on behalf of The Council of the Shire of Warringah (1988). This report (APR) was used as the basis for the Development Control Plan for this project. Mr. Graham's opinion as per the review broadly agrees with the criteria used in ALC's assessment. However, he adopts a more stringent criterion towards the residents at eastern side of Warriewood road and the commercial tenants of Blackmores. In order to comply with the more stringent criteria the barrier heights are to be altered as per the following.

Directors | Matthew Palavidis | Victor Fattoretto | Matthew Carter | Matthew Shields

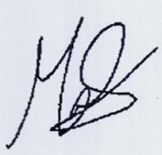
Sydney | Ph 02 8338 9888 | fax 02 8338 8399 | 9 Sarah Street Mascot NSW 2020
Melbourne | Ph 03 9614 3199 | fax 03 9614 3755 | Level 7, 31 Queen Street Melbourne VIC 3000
Brisbane | Ph (07) 3211 5591 | fax (07) 3839 6194 | Level 6, North Point 231 North Quay Brisbane QLD 4000
Canberra | Ph 02 6162 9797 | fax 02 6162 9711 | Unit 14/71 Leichhardt Street Kingston ACT 2604

- Construct a 5m high fence on the Jubilee Avenue property boundary to screen noise from the courts to the nearby residential properties (southern Boundary). The fence must be imperforate, and may be constructed using Double Colorbond, 15mm weatherproof plywood, 6mm fc sheet, masonry, glass or 100% lapped and capped timber. This fence should continue up to the western property boundary and be taken back along the western boundary by 15m. Also this fence should be connected to the carpark embankment/barrier on the eastern boundary of the courts. (Refer to appendix 1 for Mark-up of Acoustic Fence)

- Construct fence a 2.25m high fence on the eastern boundary of the court area running along the car-park to screen noise from the courts to the nearby residential properties. The fence must be imperforate, and may be constructed using minimum 0.6mm steel, 15mm weatherproof plywood or 100% lapped and capped timber. (Refer to Appendix 1 for Mark-up of Acoustic Fence)

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,

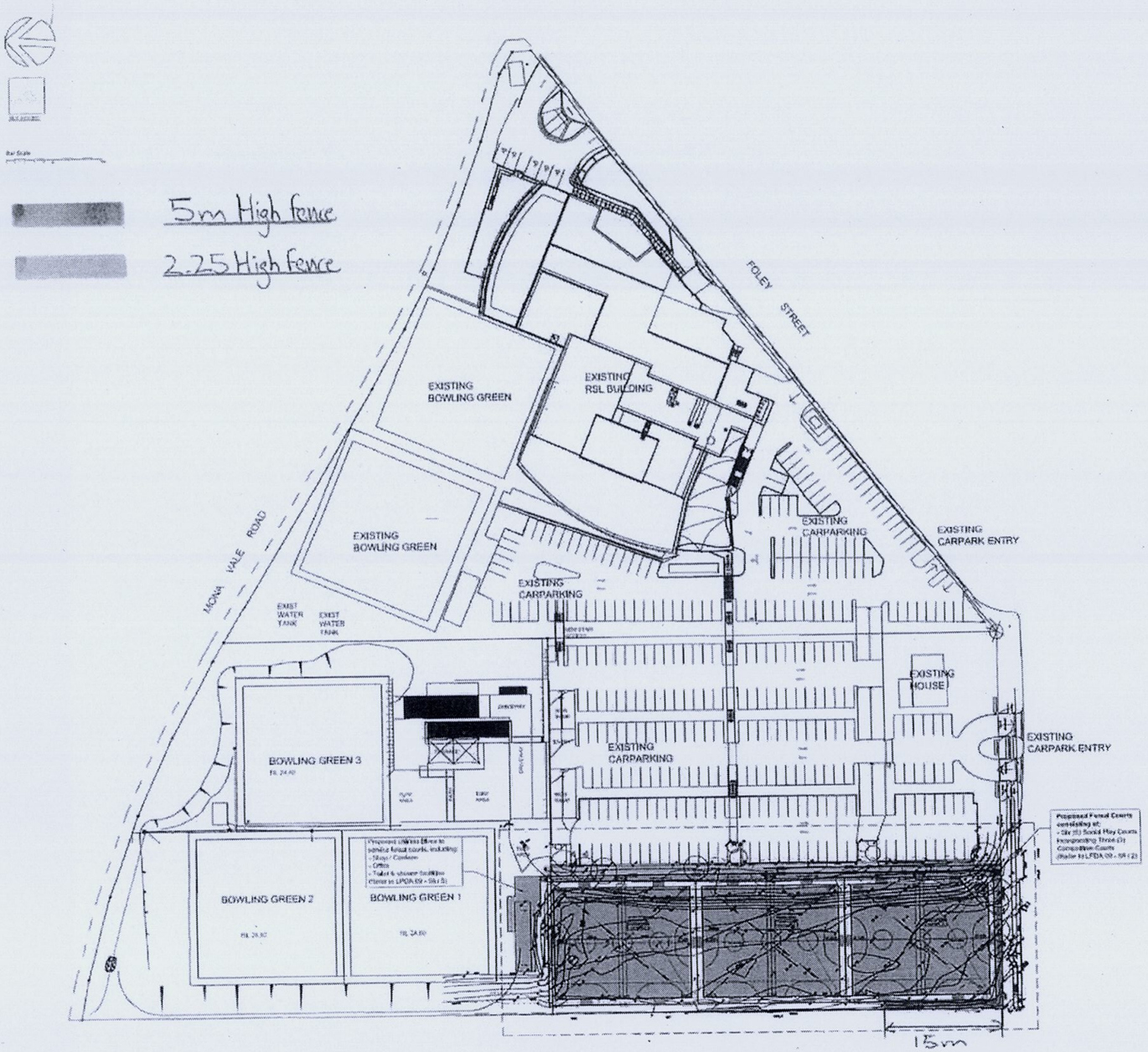


ACOUSTIC LOGIC CONSULTANCY PTY LTD
Muhammad Ahmed Shah

APPENDIX 1

ACOUSTIC FENCE MARK-UP

FOR DEVELOPMENT AP...
AND TENDERING PURPOSES O...
NOT FOR CONSTRUCTION.



LEGEND

Proposed Futsal Courts consisting of;
- Six (6) Social Play Courts incorporating Three (3) Competition Courts
(Refer to LPDA 09 - 58 / 2)

Proposed Utilities Block to service futsal courts, including;
- Shop / Canteen
- Office
- Toilet & shower facilities
(Refer to LPDA 09 - 58 / 5)

Proposed Limit of Works line

Existing trees proposed to be removed and replaced with new trees and landscaping (Refer to plan LPDA 09 - 58 / 4)

Existing trees proposed to be retained and protected

BOUNDARY OF PITTWATTER RSL CLUB

SITE CALCULATIONS

SITE AREA = 39240m2 (3.924 Ha)

AREA OF PROPOSED WORKS = Approximately 5100m2 (13% of the site)

PROPOSED AREA OF HARD / IMPERMEABLE SITE WORKS;
Proposed Utilities Building = 79.0m2
Pathways & Walls = 170.0m2
Patio / Paved areas = 89.0m2

TOTAL = 338.0m2
(Approximately 6.6% of the Areae of Proposed Works)
(Approximately 0.086m2 of the entire site)

Conzept
Landscape Architects
PO Box 416, CHEMSWAK 2088
79 Alexander Street, CROWS NEST
Phone: 9438 1744
Fax: 9438 1766
Mobile: 0413 361 451
www.conzept.com.au

Site Plan
PROPOSED FUTSAL (Mini Soccer) COURTS
Pittwater RSL Club.
MONA VALE
Client: Pittwater RSL Club
Council: Pittwater Council
Scale: 1:500 @ A1
Date: AUGUST 2008
Drawing # LPDA 09 - 58 / 1B

HARON ROBSON
Electrical Consultants and Lighting Designers

Obtrusive Lighting Report

Associated with Proposed Development at

Pittwater RSL Club – Futsal Courts

Pittwater, NSW

OBTRUSIVE LIGHTING REPORT ASSOCIATED WITH PROPOSED DEVELOPMENT AT
PITTWATER RSL CLUB – FUTSAL COURTS

HARON ROBSON
Electrical Consultants and Lighting Designers

TABLE OF CONTENTS

OBTRUSIVE LIGHTING REPORT ASSOCIATED WITH PROPOSED DEVELOPMENT AT PITTWATER RSL CLUB – FUTSAL COURTS

HARON ROBSON
Electrical Consultants and Lighting Designers

INTRODUCTION

The purpose of this report is to assess and advise on the potential obtrusive effects of the outdoor lighting on neighbouring properties associated with the proposed Pittwater RSL Club – Futsal Courts lighting.

The assessment of the lighting installation has been carried out in accordance with Australian Standard AS 4282 "Control of the Obtrusive Effects of Outdoor Lighting". The Obtrusive Lighting Standard provides a standardised basis for assessment of the likely effects of developments that involve the provision of outdoor lighting. It provides guidelines for maximum permissible levels of spill light and glare.

Australian Standard AS 4282 defines obtrusive light as spill light, which because of quantitative and directional attributes in a given context, gives rise to annoyance, discomfort and distraction. Spill light or stray light is further defined as light emitted by a lighting installation which falls outside the boundaries of the property on which the installation is sited. The obtrusive effects of brightly lit surfaces e.g., light reflected from vehicles in the Carpark, are not addressed in the Standard.

We have classified the area type in accordance with AS 4282 as in commercial areas or at the boundary of commercial and residential areas. Our assessment has been based on the lighting operating only during the pre-curfew hours.

The lighting design has been carried out in accordance with:

- Australian Standards AS 4282 "Control of the Obtrusive Effects of Outdoor Lighting".
- Australian Standards AS 2560.2.3 "Sports Lighting – Lighting for Football (All Codes)".

THE REQUIREMENTS OF AS 4282 - THE OBTRUSIVE LIGHTING STANDARD

Australian Standard AS 4282-1997 places limits on three factors that are of primary concern to the limitation of the obtrusive effects of outdoor lighting:

1 Stray light illuminance (lux/spill light).

2 Luminous intensity (cd/glare).

3 Threshold increment (TI/disability glare).

AS 4282 applies to lighting installations operating from dusk to an 11.00pm curfew and within curfew hours from 11.00pm to 6.00am.

The first factor is concerned with spill or stray light where spill light illuminance (lux) is measured or calculated in a vertical plane. Under pre-curfew conditions this factor limits the amount of stray light incident on a relevant property vertical boundary. During curfew hours this factor limits the amount of stray light incident on a relevant property in the plane of the dwelling windows. The maximum permissible illuminance values are assessed with regard to the location of the development and the zoning of the relevant properties. The recommended maximum illuminance values are highest in commercial areas or at the boundary of commercial and residential areas. The recommended maximum illuminance values are significantly lower for residential areas with either light or dark surrounds. Residential areas are considered to be in light surrounds where they abut major roads and to be dark surround where they abut local roads. (For the recommended maximum illuminance values refer to Table 2.1 from AS 4282 - See Appendix A).

The second factor is concerned with luminous intensity emitted by the luminaires or put more simply, the glaring effects of the lighting equipment. This factor is assessed in terms of units of light intensity called candelas. This factor is more difficult to assess and requires analysis of the photometric distribution of light from the luminaires in question. The luminous intensity limits are also subject to pre-curfew and curfew hours limitations.

THE REQUIREMENTS OF AS 4282 - THE OBTRUSIVE LIGHTING STANDARD (CONTINUED)

During pre-curfew hours of operation the maximum luminous intensity must be assessed for each luminaire in the installation. The maximum pre-curfew intensity is to be checked in the principal vertical plane of maximum intensity and depends on the aiming angle / maximum intensity angle and the size of the area being illuminated (Refer to Figure 5.1 from AS 4282 - See Appendix B). The maximum pre-curfew intensity values are subject to the level of glare control required. There are two levels of pre-curfew luminous intensity glare control. Level 1 glare control is for sensitive areas such as residential areas. Level 1 control would typically apply to outdoor carparks and requires the use of low glare full cut-off luminaires with a horizontal lens in order to comply. For smaller areas, less than 25 metres across, the maximum luminous intensity is 2500cd, for areas larger than 25 metres across the maximum luminous intensity is 7500cd. (For maximum pre-curfew luminous intensity refer to Table 2.2 from AS 4282 - See Appendix A). Level 2 glare control is utilised where the lighting installation requires the use of non cut-off luminaires to achieve the required lighting levels, eg sports field flood lighting. The maximum intensity values in these conditions are much higher. For small areas less than 25 metres across the maximum luminous intensity is 25,000cd. For medium size areas 25 metres to 75 metres across the maximum luminous intensity is 50,000cd and for large areas greater than 75 metres across the maximum luminous intensity is 100,000cd. Again these values are in the upper angles of the principal vertical plane depending on the size of the area being lit and the aiming angle. (For maximum pre-curfew luminous intensity refer to Table 2.2 from AS 4282 - See Appendix A).

During curfew hours the maximum luminous intensity limits become much more stringent and would typically require the switching off of sports style floodlights in order to comply. The curfew hours maximum intensity limits apply in the directions where views of bright surfaces of luminaires are likely to be troublesome to residents and from positions where such views are likely to be maintained (Refer to Figure 5.3 from AS 4282 - See Appendix B). Under this condition the exact geometry from the viewer to the luminaire in question has to be ascertained to assess the luminous intensity in that particular direction. The maximum curfew hours intensity is then found depending on the zoning of the development in question. In commercial areas the maximum luminous intensity is 2500cd, in residential areas with light surrounds the maximum luminous intensity is 1000cd and in residential areas with dark surrounds the maximum luminous intensity is 500cd (Refer to Table 2.1 from AS 4282 - See Appendix A).

The third and final factor relates to threshold increment, which is a measure of visibility dependant on the disability glare caused by the luminaire in question and the adaptation of the viewer. These limits only apply to users of transport systems, e.g., where lighting is near road, railway, waterway and air transport etc. The threshold increment is dependent on the adaptation level of the viewer according to the zoning of the area, whether that be commercial or residential with light or dark surrounds. (For the recommended maximum threshold increment refer to table 2.1 from AS 4282 – see Appendix A).

PROPOSED INSTALLATION

The proposed new lighting installation to Pittwater RSL Club – Futsal Courts will illuminate the playing area. This installation will utilise low glare full cut-off area luminaires with a horizontal light-emitting face supported on 12.20m poles (Refer to Typical Carpark Lighting Pole - See Appendix C). The proposed lighting will use concealed fixtures where possible, with luminaires hidden from view by the landscaping elements and plants.

The installation at Pittwater RSL Club – Futsal Courts will be designed such that it complies with AS 4282 to control the obtrusive effects of outdoor lighting.

PROPOSED INSTALLATION (CONTINUED)

We have classified the installation in accordance with AS 4282 Table 2.1 as at the boundary of commercial and residential areas (see Appendix A Column 3) for operation prior to curfew hours only (dusk to 11.00pm). This classification therefore requires a maximum illuminance of 25 lux in the vertical property boundary of nearby residential properties and a maximum luminous intensity of 2,500cd / 7,500cd / 25,000cd / 50,000cd / 100,000cd for each luminaire, in the principle plane, for all angles at and above the control direction.

The illumination levels will be designed in accordance with the following requirements:

- Football Field: AS 2560.2.3 "Sports Lighting – Lighting for Football (All Codes)". This will provide general lighting of an average 260 Lux

CONCLUSION

This report is based on the illuminance values at the residential boundaries, provided by the proposed lighting supplier.

The lighting installation at Pittwater RSL Club – Futsal Courts is correctly designed by the Lighting Supplier to limit the impact of spill light and visible glare. Provided pre-curfew operational hours are adhered to the installation complies with the recommended maximum values of spill light and glare for residential areas, in accordance with AS 4282 "Control of the Obtrusive Effects of Outdoor Lighting". There should, therefore, be no basis for objection to the installation and operation of the proposed lighting scheme.

Should you have any questions on this matter please do not hesitate to contact the undersigned at this office.

Yours faithfully
HARON / ROBSON PTY LTD

Murray Robson MIES
Director

mrobson@haronrobson.com.au

APPENDIX A - AUSTRALIAN STANDARD LIGHTING TECHNICAL PARAMETERS

Extract from Australian Standards AS 4282-1997:

- Table 2.1: Recommended Maximum Values of Lighting Technical Parameters for the Control of Obtrusive Light.
- Table 2.2: Maximum Luminous Intensity per Luminaire for Pre-Curfew Operating Times.

Extract from Australian Standards AS 2560.2.3:

- Table 1: Lighting Criteria for Sports Lighting – Lighting for Football (All Codes).

TABLE 2.1

RECOMMENDED MAXIMUM VALUES OF LIGHT TECHNICAL PARAMETERS FOR THE CONTROL OF OBTRUSIVE LIGHT

(See Clause 2.7)

1	2	3	4	5
Light technical parameter	Application or calculation conditions (see also Figure 2.1 and Section 5)	Recommended maximum values		
		In commercial areas or at boundary of commercial and residential areas*	Residential areas	
			Light surrounds†	Dark surrounds‡
Illuminance in vertical plane (E_v)	*Pre-curfew:* Limits apply at relevant boundaries of nearby residential properties, in a vertical plane parallel to the relevant boundary, to a height commensurate with the height of the potentially affected dwellings. Values given are for the direct component of illuminance	25 lx	10 lx	10 lx
	Curfewed hours: Limits apply in the plane of the windows of habitable rooms of dwellings on nearby residential properties. In the absence of development (i.e. vacant allotment), the limits apply on the potentially affected property, in a vertical plane parallel to the relevant boundary, at the minimum setback permitted for a dwelling, to a height commensurate with land use zoning provisions. Values given are for the direct component of illuminance	4 lx	2 lx	1 lx
Luminous intensity emitted by luminaires (I)	*Pre-curfew:* Limits apply to each luminaire (irrespective of the number on a head frame) in the principal plane, for all angles at and above the control direction, when aimed in accordance with the installation design	Limits as determined from Table 2.2. Alternatively, the limits and method of assessment associated with curfewed hours may be applied, at the discretion of the designer (see Clauses 2.7.1 and 2.7.2)		
	Curfewed hours: Limits apply in directions where views of bright surfaces of luminaires are likely to be troublesome to residents, from positions where such views are likely to be maintained, i.e. not where momentary or short-term viewing is involved	2 500 cd	1 000 cd	500 cd
Threshold increment (TI)	Limits apply at all times where users of transport systems are subject to a reduction in the ability to see essential information. Values given are for relevant positions and viewing directions in the path of travel	20% based on adaptation luminance ($\bar{L}$) of 10 cd/m^2	20% based on adaptation luminance ($\bar{L}$) of 1 cd/m^2	20% based on adaptation luminance ($\bar{L}$) of 0.1 cd/m^2

* Applies to residential accommodation in commercial areas or at the boundary between commercial and residential areas. The term 'commercial' is used as a generic description for zoning which provides for urban uses other than residential.

† Where the affected property abuts roads that are lit to Category V5 or higher in accordance with AS/NZS 1158.1.1.

‡ Where the affected property abuts roads that are lit to Category B1 or lower in accordance with AS 1158.1, or where there is no lighting.

TABLE 2.2

MAXIMUM LUMINOUS INTENSITY PER LUMINAIRE FOR PRE-CURFEW OPERATING TIMES

(See Table 2.1)

1	2	3	4
Area description		Maximum luminous intensity from each luminaire*	
Size of area	Controlling dimension (Figure 5.1)	Level 1 control (Note 1)	Level 2 control (Note 2)
Large	>75 m	7 500 cd	100 000 cd
Medium	≥25 m ≤75 m	7 500 cd	50 000 cd
Small	<25 m	2 500 cd	25 000 cd

* Limits apply to each luminaire (irrespective of the number on a head frame) in the principle plane, for all angles at and above the control direction, when aimed in accordance with the installation design (see Clause 5.3.2.1).

NOTES:

1 Level 1 control is appropriate for development control of environmentally sensitive areas, i.e. where the existing environment is of high quality, where abutting properties are close to the installation, where they are residential in nature, where the existing ambient light levels are low and where the community requires the best available environmental safeguards to be applied.

As the use of Type C cut-off luminaires† is likely to be necessary for Level 1 control, the implementation of this level of control will normally be possible only for lighting applications that require relatively high illuminances over areas that are small to medium in size, e.g. lighting for tennis courts or hockey fields. However, Level 1 control may also be suitable for larger areas where lower illuminances are appropriate, e.g. for car parks and outdoor storage areas.

2 Level 2 control will permit the use of a wide range of currently used lighting techniques but will limit intensities in the control direction to what might reasonably be expected by careful attention to design and the selection and aiming of luminaires, especially for applications involving Type A luminaires†

† See Appendix D for details of these luminaire classifications.

TABLE 1

LIGHTING CRITERIA

Level of play	Maintained horizontal illuminance[1,2] E_{mh}	Minimum horizontal uniformities[3] U_1	U_2	Maximum glare rating GR_{max}	Minimum colour rendering index $R_{a\,min}$	Maximum uniformity gradient
Amateur and semi-professional level						
Ball and physical training	50	0.3	N/A	N/A	20	N/A
Club competition and match practice	100	0.5	0.3	50	65	N/A
Semi-professional competition	200	0.6	0.4	50	65[4]	N/A
Professional level						
Ball and physical training	100	0.5	0.3	50	20	N/A
Match practice	200	0.6	0.4	50	65	N/A
Professional competition	500	0.7	0.5	50	65[4]	20% per 5m

1 For the height above the playing surface at which the illuminance is to be measured, refer to Clause 6.3.1.

2 Values of illuminance measured at the time of commissioning an installation (ie: initial or close to) should be higher than the maintained illuminance values (see Clause 6.2)

3 Being ratios, U_1 and U_2 can be calculated with equal accuracy by using either all initial or all maintained values.

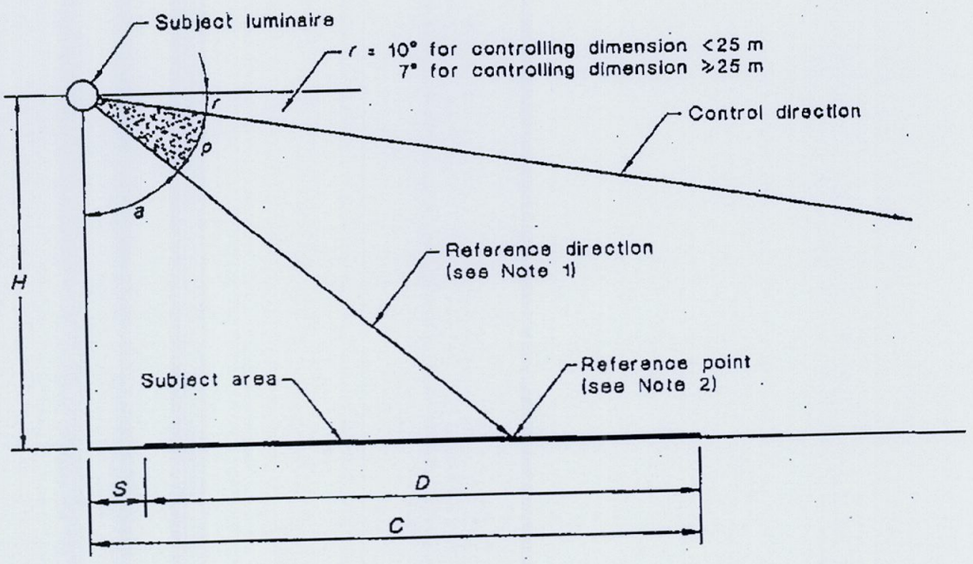
4 If future upgrading to a level suitable for television broadcasting is intended or likely, the selection of light sources with $R_a \geq 90$ should be considered.

NOTE: The above values are chosen to be adequate to provide for the safety of the participants and the level of visual tasks anticipated. Factors such as large crowds (e.g. ≥10000) with consequent longer viewing distances, might require higher values to be chosen than initially indicated above.

APPENDIX B - AUSTRALIAN STANDARD LUMINOUS INTENSITY CHECKING CALCULATIONS

Recommended checking procedure - Extract from Australian Standard AS 4282-1997:

- Figure 5.1: Pre-Curfew Control Direction for Luminous Intensity.
- Figure 5.3: Example of Curfew Hours Luminous Intensity Checking Calculation.



LEGEND:
H = mounting height of the subject luminaire above the plane of the subject area
S = setback of the luminaire from the edge of the subject area, perpendicular to the edge of the subject area (see Figure 5.2)
D = dimension of the subject area, perpendicular to the edge of the subjectarea (see Figure 5.2)
C = controlling dimension, i.e. $D + S$ (see Table 2.2)
a = reference angle (aiming angle, in elevation, of the subject luminaire (see Note 3))
ρ = angular displacement, in elevation, of the control direction from the reference direction
r = angular difference between control direction and the horizontal

NOTES:

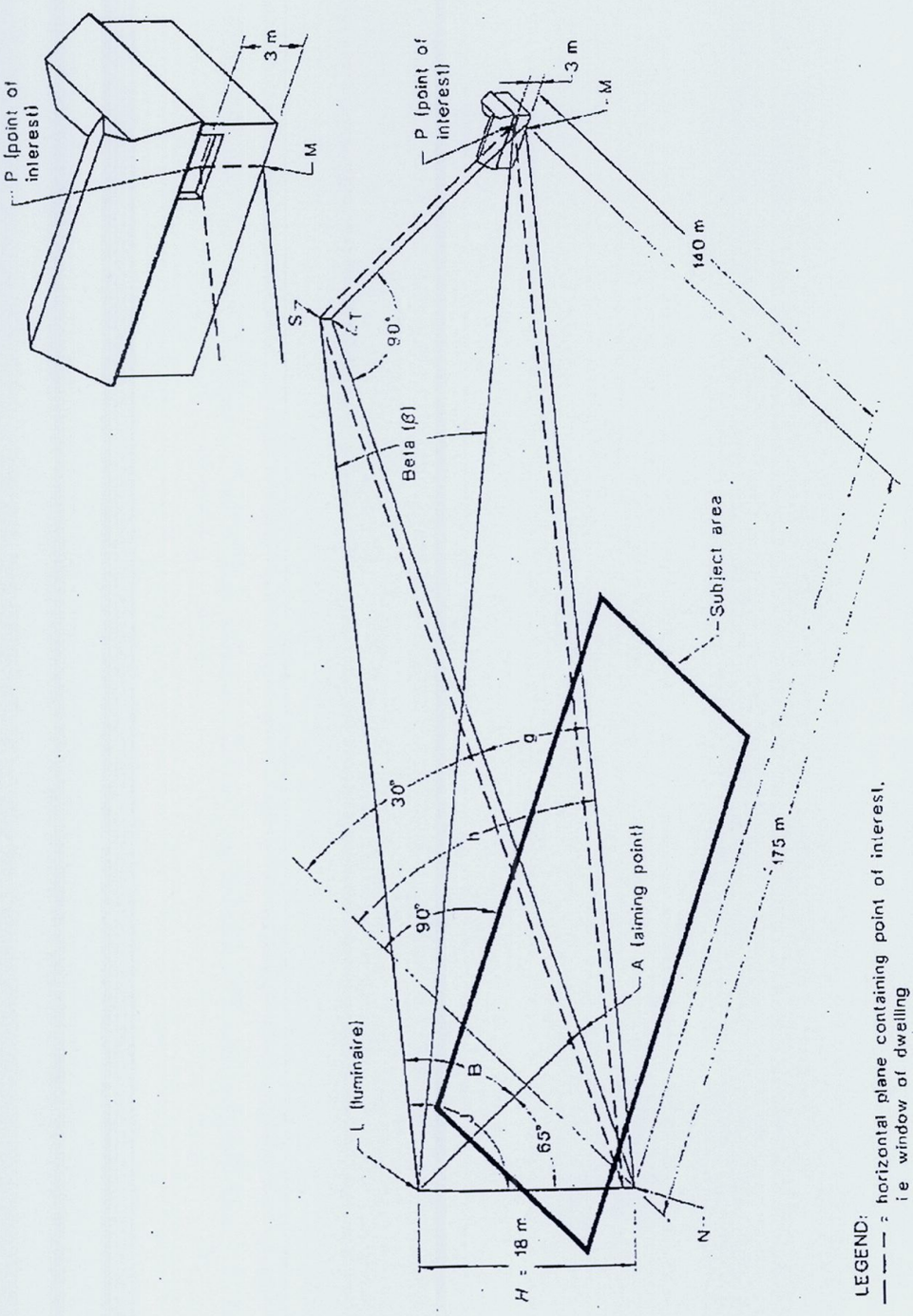
1 The reference direction is the direction of maximum intensity from the floodlight (or the direction of the beam where there is no unique maximum). Most often this is the direction of the origin to which the intensity distribution is referred. The reference and control directions are in the same vertical plane, i.e. the principal plane of the light distribution of the floodlight.

2 The reference point is the point to which the maximum luminous intensity from the floodlight is aimed. Most often this will coincide with the aiming point for the luminaire in the design specification.

3 Angle a will most often be the aiming angle of the floodlight (in elevation) in the design specification, i.e. when the reference direction coincides with origin of the direction of the maximum luminous intensity from the floodlight.

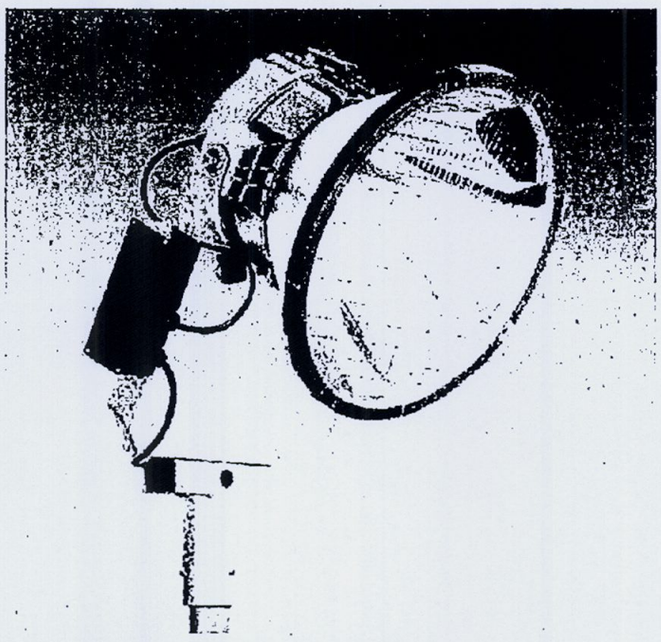
4 See Figure 5.2 for examples illustrating, in plan view, application of the principles of Figure 5.1 to specific areas.

FIGURE 5.1 THE SUBJECT LUMINAIRE AND AREA AND THEIR RELATIONSHIP WITH THE CONTROL AND REFERENCE DIRECTIONS



LEGEND:
— — — = horizontal plane containing point of interest, i.e. window of dwelling

FIGURE 5.3 ILLUSTRATION OF PHYSICAL ARRANGEMENT FOR EXAMPLE 5.3



Typical sports lighting type A floodlight

NORTHROP Bringing people, ideas & engineering together

Level 1 Grafton Bond Store, 60 Hickson Road Sydney NSW 2000
PO Box H171 Australia Square NSW 1215
T (02) 9241 4188 F (02) 9241 4324 E sydney@northrop.com.au
www.northrop.com.au ABN 81 094 433 100

29 March 2010

Job Number: 08622

Pittwater RSL Club
82 Mona Vale Road
Mona Vale NSW 2103

Re: PITTWATER RSL – FUTSAL COURTS
CIVIL DESIGN CERTIFICATE OF COMPLIANCE

Dear Sir,

We, Northrop Engineers, being professional engineers, certify that based on our professional opinion and in accordance with normal engineering practice, the design of the works shown on Northrop's documentation for the civil components of the project has been carried out by qualified engineers and technical staff generally in accordance with:

a) the relevant civil requirements of the following Australian Standards:
   - AS3500.3:2003 Plumbing & Drainage – Part 3: Stormwater Drainage;

b) the relevant development consent conditions relating to stormwater management issued by Pittwater Council, dated 01/02/10;

c) the relevant stormwater drainage requirements of the 'Risk Analysis & Management for Proposed Futsal Courts & Amenities Block at 84 Mona Vale Road, Mona Vale' report prepared by Jack Hodgson Consultants Pty Ltd, dated 11/03/09;

Yours faithfully,

Andrew Dawes
Civil Engineer
Northrop Consulting Engineers
On behalf of Northrop Consulting Engineers Pty Ltd

Stephen Fryer
Senior Civil Engineer
Northrop Consulting Engineers

NORTHROP Bringing people, ideas & engineering together

Level 1 Grafton Bond Store, 60 Hickson Road Sydney NSW 2000
PO Box H171 Australia Square NSW 1215
T (02) 9241 4188 F (02) 9241 4324 E sydney@northrop.com.au
www.northrop.com.au ABN 81 094 433 100

26 March 2010

Job Number: 08622

Pittwater RSL Club
82 Mona Vale Road
Mona Vale, NSW
2103

Re: **Pittwater RSL Futsal Courts**
Structural Design Certification

Dear Tony,

We, Northrop Engineers, being professional engineers, certify that structural drawings numbered: S00 and S01 were based on Conzept Archietct's Setout and Erosion Control drawing, and were prepared,

a) under the supervision of a professional structural engineer certified under NPER; and

b) in accordance with the relevant structural requirements of the Building Code of Australia.

Yours faithfully,

Stephen Maher BEng MIEAust CPEng NPER
Principal, Structural Engineer
NORTHROP ENGINEERS

CONZEPT
LANDSCAPE ARCHITECTS

Landscape Architecture
Urban Design
Horticultural

29.03.2010

PITTWATER COUNCIL
Mark Ferguson
GENERAL MANAGER
PO Box 882,
Mona vale NSW 1660

ATT: Mr Mark Ferguson
Pittwater Council

Complying Component Certificate ***DA No. N 0123 / 09***

Proposed six social (3 competition) Futsal Courts
80 – 82 Mona Vale Rd, Mona Vale (Lot 26 DP 654262), 22 Jubilee Ave, Warriewood (Lot 27 DP 5055), 84 Mona Vale Rd, Mona Vale (Lot 120, DP 135512)

As a qualified Landscape Architect, I certify that the following plans have been prepared in accordance with applicable Pittwater Councils Development Controls, and have been revised to address and comply with the Conditions of Development Consent dated 1 February 2010:

• **Set-Out and Erosion Control**	Issue E	**LPDA 09 – 58 / 2 E**
• **Hardscape Plan**	Issue D	**LPDA 09 – 58 / 3 D**
• **Landscape Plan**	Issue D	**LPDA 09 – 58 / 4 D**

These plans have been modified to address all aspects relating to landscaping, tree protection, court set-out and required set-backs. Materials shall be nominated for fencing and retaining walls in colours, types and finishes to satisfy the DA conditions, as nominated by PWRSL Club.

Plans prepared by Conzept Landscape Architects shall be read in conjunction with other plans and details prepared by others for the Construction Certificate. These plans and reports include:

- Engineers plan package prepared by **Northrop Engineers**
- Acoustic report and details prepared by **Acoustic Logic Consultancy**
- Lighting Plan and details prepared by **Herron Robson Lighting Consultants**
- Geotechnical & Risk Analysis Report prepared by **Jack Hodgson Consultants**

Disclaimer: This certification is based on landscape plans and details prepared by this office to address the conditions of Councils Notice of Determination. It shall be up to the builder and / or landscape contractor to assure these plans are followed as closely as possible during landscape installation to assure Occupancy Certification may be obtained. Any issues or anomalies which may occur on the plans or during construction should be bought to the attention of the landscape architect. Plant quantities to be confirmed on site by the landscape contractor, and any plant substitutes should be reviewed with the landscape architect. All services and drainage shall be located and avoided during landscape construction

Conzept - Landscape Architects, 79 Atchison St., Crows Nest, NSW 2065
Phone: (02) 9438 1744 | **Fax:** (02) 9438 1766 | **Mobile:** 0413 861 351 | enquiries@conzept.net.au | www.conzept.net.au

CONZEPT
LANDSCAPE ARCHITECTS

Landscape Architecture
Urban Design
Horticultural

Plans prepared by Conzept listed above comply with the recommendations of the Risk Analysis Report prepared by Jack Hodgson Consultants date 11th March 2009.

If you have any questions, please call at your convenience.

Best regards,

Robert Frew.

Robert Frew BLA Cert. IV Hort AILA RLA
(Director)

Disclaimer: This certification is based on landscape plans and details prepared by this office to address the conditions of Councils Notice of Determination. It shall be up to the builder and / or landscape contractor to assure these plans are followed as closely as possible during landscape installation to assure Occupancy Certification may be obtained. Any issues or anomalies which may occur on the plans or during construction should be bought to the attention of the landscape architect. Plant quantities to be confirmed on site by the landscape contractor, and any plant substitutes should be reviewed with the landscape architect. All services and drainage shall be located and avoided during landscape construction

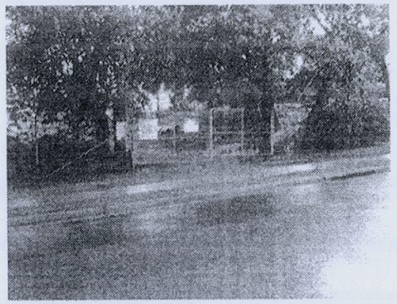
Conzept - Landscape Architects, 79 Atchison St., Crows Nest, NSW 2065

Phone: (02) 9438 1744 | **Fax:** (02) 9438 1766 | **Mobile:** 0413 861 351 | enquiries@conzept.net.au | www.conzept.net.au

CLEARWATER SERVICES

Access Route for all Vehicles

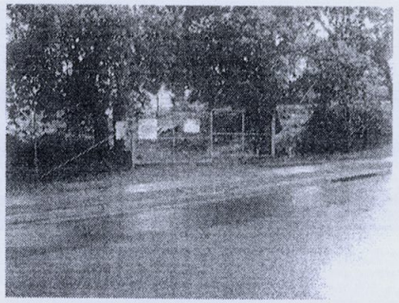
Egress Route for all Vehicles



Client	Plan No :	1727-1	Date	Plan Drawn By	Red Ticket	Notes
Paynter Dixon			01/04/10	Danny Betts	*2452030321*	*All Drivers must comply with Speed limits around site and abide by all road rules*
Location Of Work	Type Of Closure	Vehicle Movement Plan	UBD REF		Orange Ticket	
Jubilee Ave MONA VALE	On Site Contact	John 0438 536 246	138 C5	9605 2333 or 0430 338 436	*2163008821*	

N

CLEARWATER SERVICES



Authorised traffic controllers will provide a stop/go situation to maintain flow of traffic and ensure the safety of pedestrians

Truck Movements		
TYPES	Per Day	Total
Spoil Removal	15	200
Gravel and Sand	10	100
Concrete	Various	30 trucks
Blocks	Various	10 trucks

Client	Plan No :	1727	Date	Plan Drawn By	Red Ticket	Taper Lengths		Traffic Cones		Signs	
Paynter Dixon	Type Of Closure	Stop Go	1/4/10	Danny Betts	2452030321	Merge Taper	2Dm	Spacing (60-80kph)	12m	Size	"B"
Location Of Work			UBD REF		Orange Ticket	Lateral Shift Taper	Dm	Spacing (Over 80kph)	15m	spacing	DM
Jubilee Ave MONA VALE	On Site Contact	John 0438 536 246	138 C5	9605 2333 or 0430 338 436	2163008821	Attended (Stop Slow)	30m	Merge Taper (60-80kph)	9m	ADVANCED WARNING AREA TO TRANSITION AREA	2DM
								Lateral Shift (60-80kph)	12m	Max class 2 reflective signs for day work & Class 1 reflective signs for night work. Signs may be duplicated accross the road way for better visibility	
								Traffic cones should have reflective collar for night use. One = Speed Limit			

N

PROPOSED FUTSAL COURTS PITTWATER RSL CLUB
MONA VALE

DRAWING INDEX

GENERAL

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH SPECIFICATIONS, OTHER CONSULTANT'S DRAWINGS AND WITH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.
G2. ALL DISCREPANCIES SHALL BE REFERRED TO THE SUPERINTENDENT AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
G3. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
G4. ALL WORKMANSHIP, TESTING, MATERIALS AND SUPERVISION ARE TO BE IN ACCORDANCE WITH THESE SPECIFICATIONS, THE OCCUPATIONAL HEALTH AND SAFETY ACT 2000 ENFORCED BY THE WORKCOVER AUTHORITY AND CURRENT RELEVANT AUSTRALIAN STANDARDS.
G5. PROPRIETARY ITEMS SPECIFIED SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS. DO NOT VARY SPECIFIED PROPRIETARY PRODUCTS WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.
G6. THESE DRAWINGS AND ISSUED WRITTEN INSTRUCTIONS DURING THE COURSE OF THE CONTRACT DEPICT THE COMPLETE STRUCTURE. THEY DO NOT DESCRIBE A WORK METHOD. THE ARRANGEMENT, DESIGN AND INSTALLATION OF TEMPORARY WORKS REMAIN THE RESPONSIBILITY OF THE CONTRACTOR. (REFER ALSO TEMPORARY WORKS NOTES)
G7. THE DETERMINATION OF A SAFE WORK METHOD REMAINS THE RESPONSIBILITY OF THE CONTRACTOR. ANY ELEMENT OF THE PROJECT THAT POSES AN UNACCEPTABLE SAFETY RISK TO CONSTRUCT SHALL BE REFERRED TO THE ENGINEER.
G8. NOTES ON ANY DRAWING APPLY TO ALL DRAWINGS IN THE SET U.N.O.
G9. ALL ARCHITECTURAL FITMENTS SUCH AS GLAZING, PARTITIONS, CEILINGS ETC. SHOULD ALLOW FOR THE SHORT AND LONG TERM MOVEMENT OF STRUCTURAL ELEMENTS. FOR BEAMS AND SLABS SPANNING LESS THAN 8m AN ALLOWANCE OF AT LEAST 20mm SHOULD BE MADE (CONSULT SPEC. OR ENGINEER WHERE SPANS EXCEED 8m).
G10. THE BUILDER SHALL PROVIDE CERTIFICATION OF ANY DESIGN AND CONSTRUCT COMPONENT BY A CHARTERED (NPER) ENGINEER.
G11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL SERVICES IN THE VICINITY OF THE WORKS. ANY SERVICES SHOWN ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL SERVICES PRIOR TO COMMENCING AND SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO SERVICES, AS WELL AS ANY LOSS INCURRED AS A RESULT OF THE DAMAGE TO ANY SERVICE.
G12. DESIGN CRITERIA:

* DESIGN LOADS	
–SURCHARGE TO WALLS	= 5 kPa.
–BULK DENSITY FOR LATERAL EARTH PRESSURES (DRAINED)	= 18 kPa.

CONCRETE

C1. CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH AS3600 AND NATSPEC CONCRETE STANDARDS.
C2. CONCRETE PROPERTIES:

ELEMENT	STRENGTH GRADE	MAX 56 DAY DRYING SHRINKAGE
– STRIP FOOTINGS	N25MPa	

MAXIMUM AGGREGATE SIZE = 20mm U.N.O.
SLUMP = 75mm.
C3. CONCRETE PROPERTIES FOR SLABS AND BEAMS SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS:
– MINIMUM CEMENT CONTENT 250kg/m3.
– MAXIMUM 56 DAY SHRINKAGE STRAIN = AS NOMINATED ABOVE.
– PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT AS EVIDENCE THAT SPECIFIED DRYING SHRINKAGE LIMITS CAN BE ACHIEVED USING NORMAL MIX DESIGN.
C4. CONSOLIDATE BY VIBRATION.
C5. CONSTRUCTION JOINTS NOT SHOWN REQUIRE WRITTEN APPROVAL FROM THE ENGINEER.
C6. SUBMIT FOR APPROVAL THE FOLLOWING TO THE ENGINEER:
– CURING PROCEDURE (PVA MEMBRANES NOT PERMITTED).
– STRIPPING PROCEDURE.
– DETAILS AND LOCATION OF CAST IN SERVICES,
– CONDUITS, PENETRATIONS AND CONSTRUCTION JOINT LOCATIONS.
C7. FOR TENDER PURPOSES ASSUME MINIMUM STRIPPING TIMES AND EXTENT OF BACK PROPPING AS PER AS 3610–1995 SECTION 5.0.
C8. ALL REINFORCEMENT LAPS AS PER SECTION 13, AS3600.
C9. HOLD DOWN BOLTS SHALL BE HOT DIPPED GALVANISED.
C10. U.N.O., ALL MASONRY ANCHORS INTO CONCRETE SHALL BE RAMSET TRUEBOLTS (LONGEST VERSION) OR APPROVED EQUIVALENT. BOLTS SHALL BE GRADE 316 STAINLESS STEEL WHERE THEY ARE EXPOSED TO THE WEATHER AND ADJOINING NON FERROUS OR PREPAINTED MEMBERS.
C11. U.N.O. CLEAR CONCRETE COVERS SHALL BE:

ENVIRONMENT	COVER
– SURFACES OF MEMBERS CAST AGAINST, AND IN CONTACT WITH THE GROUND	50mm
– SURFACES OF MEMBERS CAST AGAINST, AND IN CONTACT WITH THE GROUND SEPARATED BY MEMBRANE	30mm
– SURFACES OF MEMBERS IN ABOVE GROUND EXTERIOR ENVIRONMENTS	40mm
– SURFACES OF MEMBERS IN INTERIOR ENVIRONMENTS	20mm
– SURFACES OF MEMBERS IN WATER	??mm

FOR CONCRETE COVER TO COLUMNS AND WALLS SEE SEPARATE SCHEDULE.
C12. ALL PENETRATIONS TO HAVE 2/N12 TRIMMER BARS TOP AND BOTTOM TO EACH FACE U.N.O. EXTEND TRIMMERS 700 BEYOND PENETRATION.
C13. SETDOWNS OR FALLS IN FLOOR SURFACES ARE NOT PERMITTED UNLESS SHOWN ON DRAWINGS.
C14. FORMWORK:

ELEMENT	FORMWORK CLASS (AS3600)
– INGROUND FOOTINGS	5
– RETAINING WALLS	5 EARTH FACE
– RETAINING WALLS	3 EXPOSED FACE
– COLUMNS	2
– LIFT WALLS	2
– BEAMS AND SLABS	2
– STAIRS	2
– GRANO TREATED SURFACES	3

C15. PROVIDE UPWARD CAMBER TO FORMWORK OF REINFORCED CONCRETE CANTILEVERS OF 5mm PER 1000 PROJECTION BEYOND COLUMN OR WALL FACE.
C16. SURFACE FINISHES:

– COLUMNS AND WALLS	OFF FORM.
– FLOOR SLABS (UNO)	MACHINE FLOAT.
– SLABS TO BE TILED	WOOD FLOAT.
– STAIRS	STEEL TROWEL.

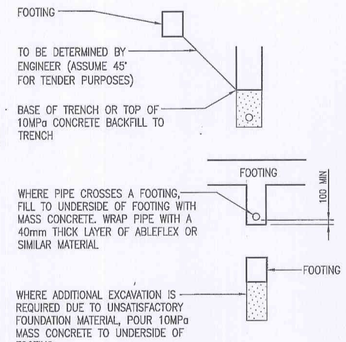
C17. REINFORCEMENT SYMBOLS:
S = STRUCTURAL GRADE DEFORMED BAR TO AS1302 (250MPa).
R = STRUCTURAL GRADE ROUND BAR (250MPa).
N = HOT ROLLED DEFORMED BAR TO AS/NZS 4671 (500MPa).
SL = LOW DUCTILITY SQUARE MESH (500 MPa).
RL = LOW DUCTILITY RECTANGULAR MESH (500 MPa).
L = LOW DUCTILITY TRENCH MESH (500 MPa).
THE NUMBER FOLLOWING THE SYMBOL IS THE NOMINAL BAR DIAMETER IN MILLIMETRES CLASS L REINFORCEMENT SHALL NOT BE USED U.N.O.

CLAY BRICK MASONRY

CB1. MASONRY CONSTRUCTION IS TO CONFORM TO AS3700:
– MORTAR CLASSIFICATION = M3.
– DURABILITY CLASSIFICATION OF BUILT IN COMPONENTS = R3.
– DURABILITY GRADE OF EXTERNAL MASONRY UNITS = GENERAL PURPOSE.
CB2. THE CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH OF THE MASONRY UNITS SHALL BE A MINIMUM OF 20 MPa.
CB3. BED UNITS IN FRESHLY PREPARED MORTAR, UNIFORMLY MIXED CEMENT, LIME AND SAND IN THE RATIO OF 1:1:6, CONFORMING TO AS 3700.
CB4. NO CUTTING, CHASING OR RAKING OF JOINTS IN EXCESS OF 5mm UNLESS AUTHORISED BY THE ENGINEER FOR EVERY LOCATION.
CB5. EXPANSION/CONTRACTION JOINTS SHALL BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BCA, BUT GENERALLY AT A MAXIMUM SPACING OF 5m (ONLY IF BRICKWORK IS REQUIRED TO BE "ARTICULATED", OTHERWISE PROVIDE AT MAXIMUM OF 8–10m) AND 2.5m FROM A CORNER. U.N.O.
CB6. MASONRY TIES SHALL BE GALVANISED WITH A MINIMUM COATING MASS OF 470g/m2 PER SIDE OR GRADE 316 STAINLESS STEEL AND OF MEDIUM DUTY CLASSIFICATION U.N.O. AND APPROPRIATE FOR CAVITY WIDTH. ANY FACE FIXED TIE SHALL BE FIXED USING A SCREW TYPE FIXING AND SHALL NOT BE NAILED. TIES TO STEEL SHALL BE ABBEY TREMOR TIES OR APPROVED EQUIVALENT.
CB7. SPACING OF MASONRY TIES:
– ADJACENT TO WINDOWS AND RETURN WALLS.
– 300mm VERTICAL AND HORIZONTAL.
– SOLID MASONRY, 400mm VERTICAL AND HORIZONTAL.
– OTHERWISE, 600mm VERTICAL AND HORIZONTAL.
CB8. WHERE MASONRY ADJOINS STRUCTURAL STEEL, OR PASSES A RETURN WALL ON THE INNER SKIN PROVIDE MEDIUM DUTY TIES AT 300 MAX. CENTRES. SHOT FIX TIES TO STEELWORK, ENSURE NAILS WILL BE CONCEALED.
CB9. LOADBEARING WALLS SHALL BE TOPPED WITH M.E.T. GRAPHITE GREASED SLIP JOINT OVER TOP COURSE OF BRICKWORK.
CB10. NON–LOADBEARING WALLS SHALL FINISH 20mm SHORT OF SLAB SOFFIT AND SHALL BE FASTENED TO THE SLAB SOFFIT USING BRUNSWICK MFA – 4 SLIDING TIES OR APPROVED EQUIVALENT AT 460mm CENTRES.
CB11. U.N.O. ALL MASONRY ANCHORS INTO CLAY MASONRY SHALL BE HILTI HIT–HY20 CHEMICAL INJECTION ANCHORS OR APPROVED EQUIVALENT & ANCHORS EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANISED STEEL OR GRADE 316 STAINLESS STEEL.
CB12. ALL LINTELS SUPPORTING BRICKWORK ARE TO BE HOT DIP GALVANISED WITH MINIMUM COATING MASS OF 600g/m2.
CB13. NO AIR ENTRAINING AGENTS (BYCOL, ETC) ARE TO BE USED WITHOUT PRIOR WRITTEN PERMISSION FROM NORTHROP ENGINEERS.
CB14. DEPARTMENT OF COMMERCE AMENDMENT. MASONRY TIES IN FULL MASONRY CONSTRUCTION SHALL BE GRADE 316 STAINLESS STEEL.

FOUNDATIONS

F1. ASSUMED ALLOWABLE BEARING CAPACITY:
– STRIP FOOTINGS = 100kPa.
F2. A GEOTECHNICAL REPORT HAS/HAS NOT BEEN CARRIED OUT, REFER TO REPORT No. ?.
F3. THE SLAB AND FOOTINGS HAVE BEEN DESIGNED USING AS2870 AS A REFERENCE GUIDE. CLASS ? HAS BEEN ADOPTED. ENGINEER TO BE CONTACTED DURING EXCAVATION TO CONFIRM.
F4. OBTAIN ENGINEER'S WRITTEN APPROVAL OF FOUNDING MATERIAL BEFORE PLACING CONCRETE OR THE CONTRACTOR IS TO ENGAGE A QUALIFIED (NPER) GEOTECHNICAL ENGINEER TO APPROVE THE FOUNDATION MATERIAL. SUBMIT CERTIFICATE IN WRITING TO THE CONSULTING ENGINEER PRIOR TO CONCRETING FOUNDATIONS.
F5. ENSURE STABILITY OF ADJACENT BUILDINGS IS MAINTAINED DURING ALL STAGES OF CONSTRUCTION.
F6. DO NOT ALLOW EXCAVATED MATERIAL TO STOCKPILE STAND WITHIN 1500mm OF FOOTING TRENCHES OR PITS. NO EARTH OR DETRITUS IS TO FALL INTO THE FOOTING TRENCHES BEFORE OR DURING CONCRETE PLACEMENT.
F7. THE UNDERSIDE OF FOUNDATIONS SHALL CONFORM TO THE FOLLOWING REGARDLESS OF NOMINATED LEVELS:



STEELWORK

S1. FABRICATE AND ERECT STRUCTURAL STEELWORK IN ACCORDANCE WITH AS4100.
S2. PROVIDE HOLES, CLEATS AND FIXING FOR TIMBER FRAMING, FINISHES, ETC. SHOWN ON ARCHITECTURAL DRAWINGS.
S3. FABRICATOR SHALL PREPARE SHOP DRAWINGS AND SUBMIT THEM TO THE BUILDER FOR HIS APPROVAL. BUILDER SHALL LODGE TWO HARD COPIES OF APPROVED DRAWINGS TO NORTHROP ENGINEERS PTY LTD FOR REVIEW AND COMMENT PRIOR TO FABRICATION.
S4. UNLESS NOTED OTHERWISE, USE:
– 10mm GUSSET, FIN AND END PLATES.
– M20 8.8/S BOLTS.
– 6mm CONTINUOUS FILLET WELDS MADE WITH E48XX MILD STEEL ELECTRODES.
– ALL WELDS SP CATEGORY.
S5. NO PAINT ON MATING SURFACES WITH TF OR TB BOLTING UNLESS APPROVED BY ENGINEER.
S6. BOLTS TO BE INSTALLED WITH ONE HARDENED WASHER UNDER THE TURNED PART.
S7. TF AND TB BOLTING BY "PART TURN" METHOD WITH LOAD INDICATING WASHERS.
S8. ALL BOLTS, SCREWS, HOLD DOWN BOLTS, MASONRY ANCHORS SHALL BE HOT DIP GALVANISED TO AS1214.
S9. MINIMUM YIELD STRESS:
– HOT ROLLED SECTIONS = 300MPa.
– SQUARE HOLLOW SECTIONS = 350MPa.
– RECTANGULAR HOLLOW SECTIONS = 350MPa.
– CIRCULAR HOLLOW SECTION = 250MPa.
– PLATE = 250MPa.
S10. COLD FORMED SECTIONS TO CONFORM WITH:
– AS/NZS4600, AS1397, AS1594 AND AS1595.
– MINIMUM YIELD STRESSES.
– PURLINS AND GIRTS 450MPa, OTHER SECTIONS 350MPa.
– SURFACE TREATMENT – HOT DIPPED ZINC COATING, AT LEAST 600g/sqm (ONLY IF EXPOSED TO ATMOSPHERE) U.N.O.
– LAPS, BRIDGING, BRACKETS AND PURLIN BOLTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
S11. SURFACE TREATMENT UNLESS NOTED OTHERWISE:
– PROTECTED FROM WEATHER – AS/NZZ312–IZS2.
– EXPOSED TO WEATHER – AS/NZZ312–HDG600 OR PUR5 OR ACC6.
– BUILT INTO AN EXTERNAL MASONRY WALL – AS/NZZ312–HDG600 OR EHB5 OR ACC6.
S12. UNLESS OTHERWISE DETAILED FABRICATOR SHALL PROVIDE C10015 TRIMMER PURLINS ALONG WITH GENERAL PURPOSE BRACKETS TO SUPPORT EDGE OF ROOF SHEETING AT ALL HIPS, VALLEYS AND PENETRATIONS.
S13. FIX CROSS BRACING TO PURLINS AT 3000 MAXIMUM CTS WITH M12 BOLTS OR M6 HOOKS.
S14. ALL BURIED STEELWORK TO BE ENCASED IN CONCRETE WITH A MINIMUM COVER OF 50mm TO STEELWORK.
S15. BOLT SYMBOLS:
– 8.8/S – SNUG FIT.
– 8.8/TF – FULLY TENSIONED FRICTION TYPE (USE LOAD INDICATOR WASHERS).
– 8.8/TB – FULLY TENSIONED BEARING TYPE (USE LOAD INDICATOR WASHERS).
S16. HIGH STRENGTH BOLTS (8.8) ARE NOT TO BE WELDED.
S17. STEELWORK TO BE CONCRETE ENCASED SHALL BE FREE FROM ALL LOOSE RUST, LOOSE MILL SCALE, DIRT, OIL, GREASE, ETC. AND REINFORCED WITH F41 FABRIC OR EQUIVALENT BLACK IRON WIRE, 3mm DIA.
S18. THE BUILDER IS TO PROVIDE CERTIFICATION TO THE ENGINEER THAT ALL HIGH STRENGTH BOLTS (GRADE 8.8) COMPLY WITH THE REQUIREMENTS OF AS1252.

ESSENTIAL CERTIFIERS LIVERPOOL
Structural Details C.C. No: 10/11/96
WARNING: A comprehensive check of the Structural Design has not been carried out & the approval of the drawings by Essential Certifiers does not relieve the Structural Engineer of their responsibility to ensure the structural adequacy of the project.

Registered Professional Engineer 2866430
Mr Stephen Maher
MIEAust CPEng
N P E R
Signature ..... Date 30.03.10
Registered on the NPER in the Area of practice of Structural
National Professional Engineers Register

C.C ISSUE

DRAWN: Abraham NEHRA ..... DESIGNED: Jonathan LOWE ..... JOB MANAGER: Stephen MAHER ..... VERIFIER: .....

ISSUE	AMENDMENT	VERIFIED	APPROVED	DATE
1	CONSTRUCTION CERTIFICATE ISSUE		S.M	30.03.10

CLIENT: Pittwater RSL Club
ARCHITECT: Conzepts Landscape Architects
•Drawing not to be used for construction unless verification signature has been added
•The copyright of this drawing remains with Northrop consulting engineers pty ltd.
AWARDS FOR EXCELLENCE WINNER BRISBANE 2009
•All dimensions to be verified on site before making any shop drawings or commencing any work

NORTHROP
Bringing people, ideas & engineering together
Sydney
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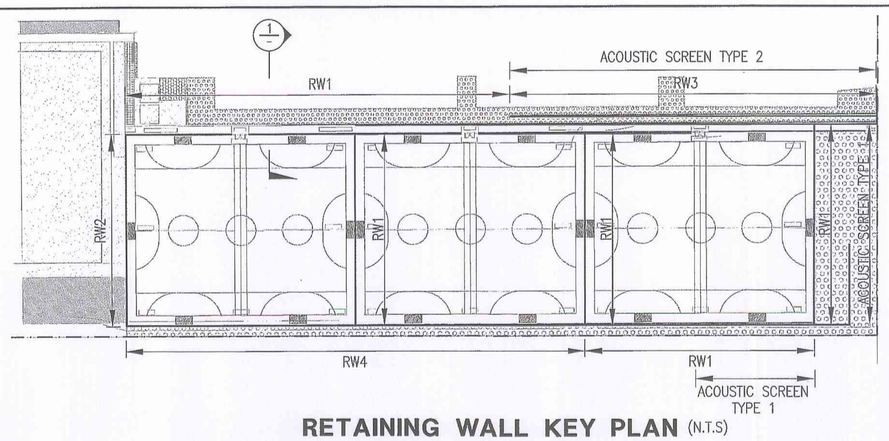
Ph (02) 9241 4188 Fax (02) 9241 4324 Email sydney@northrop.com.au
P.O. Box H171 Australia Square, N.S.W. 1215 ABN 81 094 433 100

PROJECT: PROPOSED FUTSAL COURTS PITTWATER RSL CLUB MONA VALE
DRAWING TITLE: DRAWING INDEX AND DRAWING SPECIFICATION
JOB NUMBER: 08622
DRAWING NUMBER: S00
REVISION: 1
DRAWING SHEET SIZE = A1

COUNCIL COPY

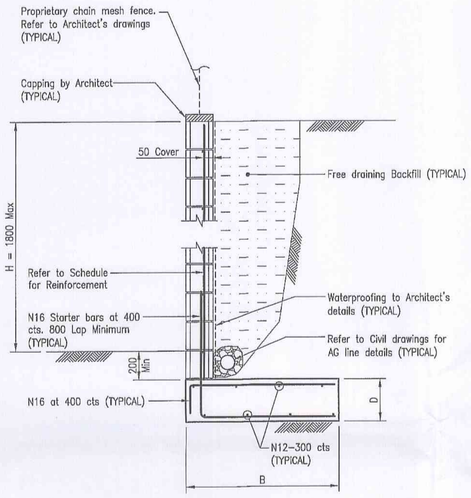


RETAINING WALL KEY PLAN (N.T.S)

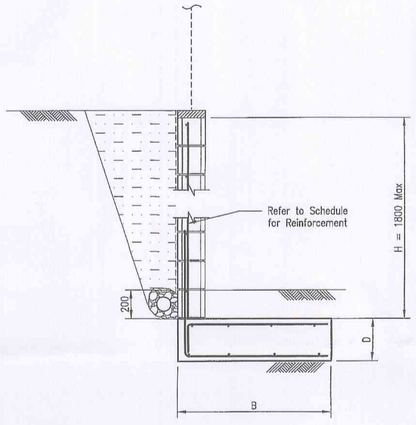
NOTE: REFER TO ARCHITECTS DRAWINGS FOR EXACT EXTENT OF ACOUSTIC SCREENS

RETAINING WALL SCHEDULE

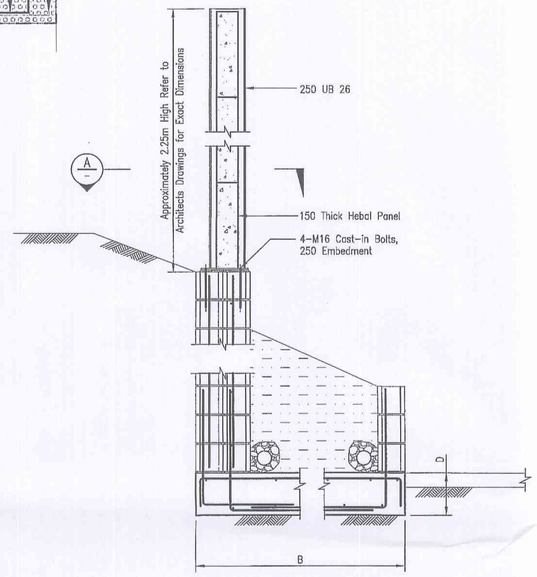
BASE		WALL			
Width "B"	Heel Depth "D"	Height "H"	Vertical Bars	Horizontal Bars	Comments
400	300	< 400	N12–400	N12–400	190 Blockwork
600	300	< 600	N12–400	N12–400	190 Blockwork
800	300	< 800	N12–400	N12–400	190 Blockwork
1000	300	< 1000	N16–400	N12–400	190 Blockwork
1000	300	< 1200	N16–400	N12–400	190 Blockwork
1000	300	< 1400	N16–400	N12–400	190 Blockwork
1200	300	< 1600	N16–200	N12–400	190 Blockwork



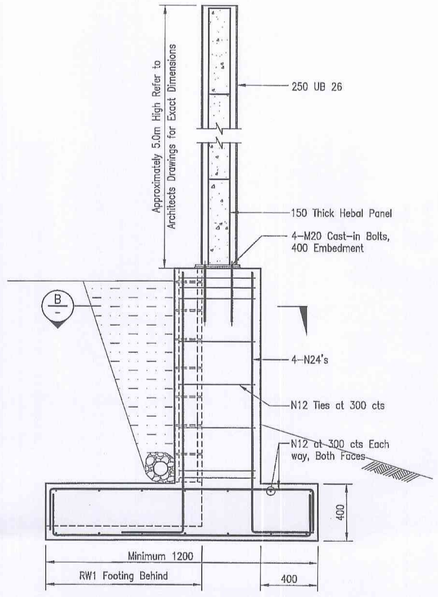
TYPICAL RETAINING WALL (RW1) DETAIL



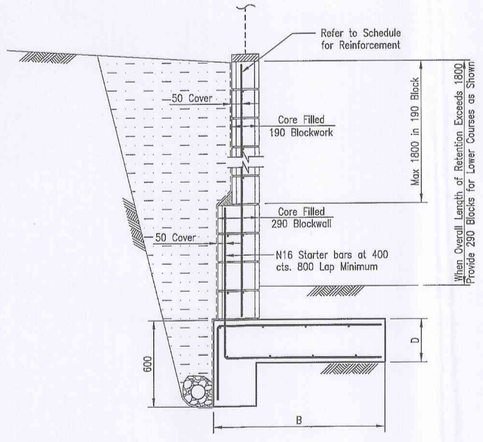
TYPICAL RETAINING WALL (RW2) DETAIL



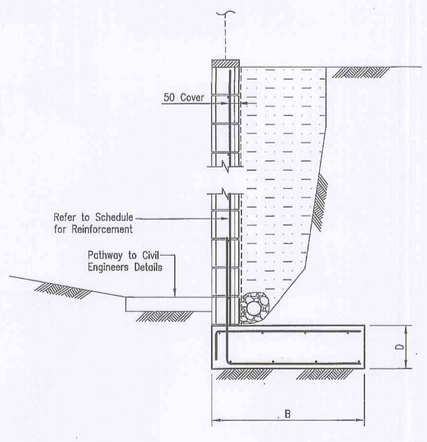
TYPICAL ACOUSTIC SCREEN TYPE 2 + TYPICAL RETAINING WALL (RW3) DETAIL



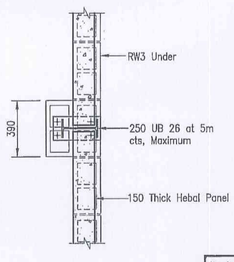
TYPICAL ACOUSTIC SCREEN TYPE 1



TYPICAL RETAINING WALL (RW4) DETAIL

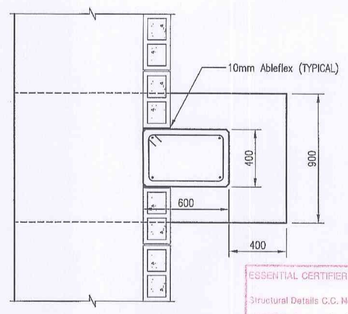


SECTION 1



VIEW A

Registered Professional Engineer 2866430
Mr Stephen Maher
MIEAust CPEng
NPER
Signature ..... Date 30/03/10
Registered on the NPER in the area of practice of Structural
National Professional Engineers Register



VIEW B

ESSENTIAL CERTIFIERS LIVERPOOL
Structural Details C.C. No. 10/1146
WARNING: A comprehensive check of the Structural Design has not been carried out & the approval of the drawings by Essential Certifiers does not relieve the Structural Designer of their responsibility to ensure the structural adequacy of the project.

C.C ISSUE

DRAWN: Abraham KEMRA DESIGNED: Jonathan LOWE JOB MANAGER: Stephen MAHER VERIFIER:

ISSUE	AMENDMENT	VERIFIED	APPROVED	DATE
1	CONSTRUCTION CERTIFICATE ISSUE		S.M	30.03.10

CLIENT: Pittwater RSL Club

ARCHITECT: Conzepts Landscape Architects

AWARDS FOR EXCELLENCE WINNER BRISBANE 2008

DETAILS 1:20 0 200 400 600 800 1000

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P.O. Box H171 Australia Square, N.S.W. 1215 ABN 81 094 433 100

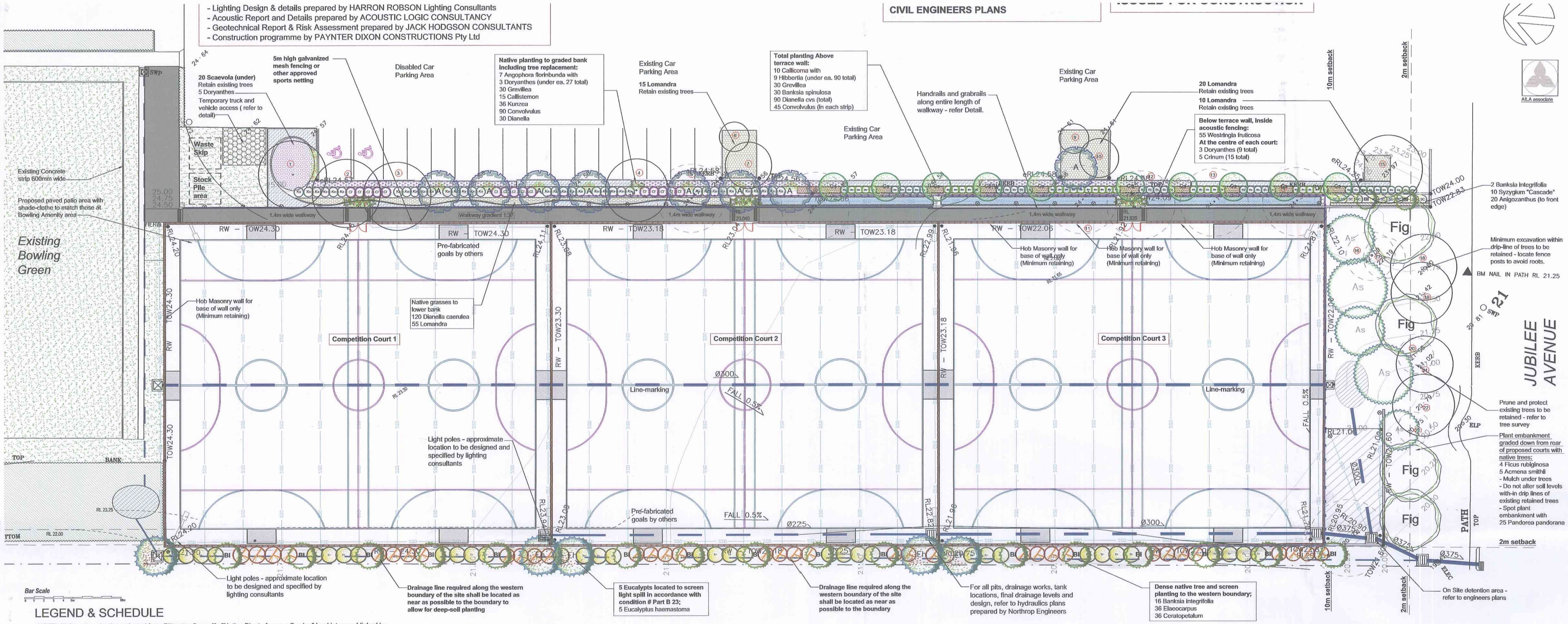
PROJECT: PROPOSED FUTSAL COURTS PITTWATER RSL CLUB MONA VALE

DRAWING TITLE: RETAINING WALL KEYPLAN AND DETAILS

JOB NUMBER: 08622

DRAWING NUMBER: S01 REVISION: 1

DRAWING SHEET SIZE = A1



- Lighting Design & details prepared by HARRON ROBSON Lighting Consultants
- Acoustic Report and Details prepared by ACOUSTIC LOGIC CONSULTANCY
- Geotechnical Report & Risk Assessment prepared by JACK HODGSON CONSULTANTS
- Construction programme by PAYNTER DIXON CONSTRUCTIONS Pty Ltd
CIVIL ENGINEERS PLANS
AILA associate
Existing Concrete strip 600mm wide
Proposed paved patio area with shade-clothe to match those at Bowling Amenity area
Existing Bowling Green
20 Scaevola (under)
Retain existing trees
5 Doryanthes
Temporary truck and vehicle access (refer to detail)
Waste Skip
Stock Pile area
5m high galvanized mesh fencing or other approved sports netting
Disabled Car Parking Area
Native planting to graded bank including tree replacement:
7 Angophora florinbunda with
3 Doryanthes (under ea. 27 total)
30 Grevillea
15 Callistemon
36 Kunzea
90 Convolvulus
30 Dianella
Existing Car Parking Area
15 Lomandra
Retain existing trees
Total planting Above terrace wall:
10 Callicoma with
9 Hibbertia (under ea. 90 total)
30 Grevillea
30 Banksia spinulosa
90 Dianella cvs (total)
45 Convolvulus (in each strip)
Existing Car Parking Area
Handrails and grabrails along entire length of walkway - refer Detail.
Existing Car Parking Area
20 Lomandra
Retain existing trees
10 Lomandra
Retain existing trees
Below terrace wall, inside acoustic fencing:
55 Westringia fruticosa
At the centre of each court:
3 Doryanthes (9 total)
5 Crinum (15 total)
10m setback
2m setback
1.4m wide walkway
Walkway gradient 1:37
RW - TOW24.30
RW - TOW23.18
RW - TOW22.06
Pre-fabricated goals by others
Hob Masonry wall for base of wall only (Minimum retaining)
Native grasses to lower bank
120 Dianella caerulea
55 Lomandra
Competition Court 1
Competition Court 2
Competition Court 3
Line-marking
Ø300
FALL 0.5%
Ø225
Light poles - approximate location to be designed and specified by lighting consultants
TOP
BANK
BOTTOM
RL 22.00
RL 23.25
2 Banksia integrifolia
10 Syzygium "Cascade"
20 Anigozanthus (to front edge)
Fig
As
Minimum excavation within drip-line of trees to be retained - locate fence posts to avoid roots.
BM NAIL IN PATH RL 21.25
SWP
21
JUBILEE AVENUE
KERB
Prune and protect existing trees to be retained - refer to tree survey
Plant embankment graded down from rear of proposed courts with native trees:
4 Ficus rubiginosa
5 Acmena smithii
- Mulch under trees
- Do not alter soil levels with-in drip lines of existing retained trees
- Spot plant embankment with 25 Pandorea pandorana
PATH
TOP
ELP
2m setback
Ø375
ELEC
On Site detention area - refer to engineers plans
Light poles - approximate location to be designed and specified by lighting consultants
Drainage line required along the western boundary of the site shall be located as near as possible to the boundary to allow for deep-soil planting
5 Eucalypts located to screen light spill in accordance with condition # Part B 23;
5 Eucalyptus haematoma
Drainage line required along the western boundary of the site shall be located as near as possible to the boundary
For all pits, drainage works, tank locations, final drainage levels and design, refer to hydraulics plans prepared by Northrop Engineers
Dense native tree and screen planting to the western boundary;
16 Banksia integrifolia
36 Elaeocarpus
36 Ceratopetalum
Bar Scale

LEGEND & SCHEDULE

***NOTE:** (*) Denotes planting selected from Pittwater Council's "Native Plants for your Garden" booklet as published by Pittwater Council. Otherwise planting specified from other Endemic Planting sources for the Pittwater area*

Canopy Trees

(*) Acmena smithii (75Lt Pots)
Lilly Pilly (Native)
(Mature size: 10-20m x 10m)
Qty Required: **5**

Angophora flouribunda (75Lt Pots)
Rough Barked Apple (Native)
(approx: 10-15m x 6m)
Qty Required: **8**

(*) Ficus rubiginosa (100Lt Pots)
Port Jackson Fig (Native)
(Mature size approx: 25m x 15m)
Qty Required: **4**

(*) Eucalyptus haemastoma (45Lt Pots)
Scribbly Gum (Native)
(Mature size approx: 15m x 8m)
Qty Required: **5**
As required in Condition # 3 Part C

Small Native Trees

(*) Banksia integrifolia (300mm Pots)
Coastal Banksia (Native)
(Mature size approx: 5-7m x 4m)
Qty Required: **18**

Callicoma serratifolia (75Lt Pots)
Black Wattle (Native)
(approx: 4-6m x 5m)
Qty Required: **10**

(*) Elaeocarpus reticulatus (250mm Pots)
Blueberry Ash (Native)
(Mature size approx: 5-8m x 4m)
Qty Required: **36**

(*)Ceratopetalum gummiferum (250mm Pots)
NSW Christmas Bush (Native)
(Mature size approx: 4-5m x 3m)
Qty Required: **36**

Grasses / Groundcovers

(*) Lomandra "Tanika" (100mm pots)
Dwarf Mat Rush (Native)
(approx: 700mm x 700mm)
Qty Required: **100**

Scaevola ramosissima (100mm pots)
Purple Fan Flower (Native)

Grasses / Ground covers

Anigozanthos cultivars (100mm pots)
Kangaroo Paw (Native)
(Mature Size: 500mm x 500mm)
Qty Required: **20**

Dianella cearulea (100mm pots)
Blue Flax Lilly (Native)
(Mature Size: 500mm)
Qty Required: **240**

Shrubs

Syzygium "Cascade" (200mm Pots)
Cascade Lillypilly (Native)
(Mature Size: 2m x 2-3m)
Qty Required: **10**

(*) Grevillea sericea (200mm Pots)
Pink Spider Flower (Native)
(approx. 2-4m x 2m)
Qty Required: **30**

(*) Banksia spinulosa (200mm Pots)
Hairpin Banksia (Native)
(Mature size approx: 1-2m x 1-2m)
Qty Required: **30**

(*) Kunzea ambigua (200mm Pots)
Tick Bush (Native)
(Mature size approx: 1.5m x 1m)
Qty Required: **36**

(*) Callistemon linearifolius (200mm Pots)
Narrow-leafed Bottle Brush (Native)
(Mature size approx: 2m x 1.5m)
Qty Required: **15**

Feature Plants

Doryanthes excelsa (250mm pots)
Gymea Lilly (Native)
(Mature size approx: 1m x 1m)
Qty Required: **42**

(*) Crinum pedunculatum (200mm pots)
Swamp Lilly (Native)
(Mature size approx: 1m x 1m)
Qty Required: **15**

Climbers / Creepers

Convolvulus mauritanicus (100mm)
Morning Glory (Native)
(Mature size: 300mm x 500mm)
Qty Required: **135**

Hibbertia scandens (100mm)
Snake Vine (Native)

Hedges

Westringia fruticosa (200mm pots)
Coastal Rosemary (Native)
(Mature size approx: 2m x 1m)
Qty Required: **55**

Other Landscape Items

Specified turf to graded & drained open areas

TIMBER GARDEN EDGING

RETAINING WALLS - Final style & materials determined by client, Final heights determined on site

Existing trees proposed to be removed and replaced with new landscaping

Existing trees proposed to be retained and protected - refer Tree Survey

LANDSCAPE MAINTENANCE SCHEDULE

After a landscape compliance certificate has been issued to the Principal Certifying Authority approving the correct installation of landscape construction works and Practical Completion, the maintenance period shall begin.

Consolidation & landscape maintenance shall mean the care and maintence of the contracted landscape works using acceptable horticultural practices, ensuring that all plants and planting areas experience the optimum growing conditions and are in excellent appearance at all times, as well as the rectification of defects which have resulted from regular use.

The landscape maintenance period shall be a minimum of **12 months (1 year) or as required by Council**, or requested by client, from the certificate date, and shall include, but not be limited to the following maintenance works;

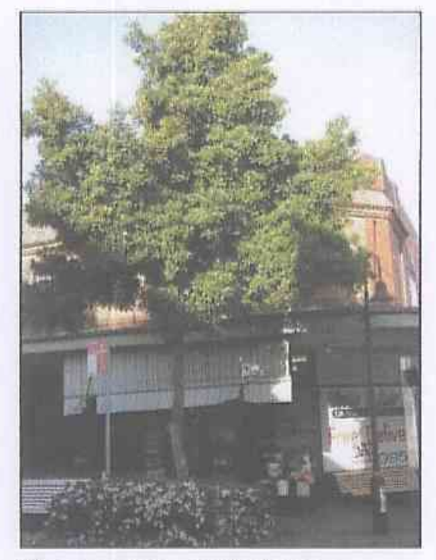
- Replacement of dead, damaged, stolen, unhealthy or diseased plants (at the reasonable discretion of client / landscape architect)
- Watering all garden areas as required by hand to ensure plant establishment without loss / irrigation maintenance (monitor soil moisture)
- Clearing litter and other debris from landscaped & lawn areas
- Monitoring for pests and disease & treat as required
- Fertilizing with approved fertilizer at rates applicable to plant species
- Adjusting stakes and ties / removing as tree mature
- Mowing lawn areas, watering, edging and weeding as required (Mowing at period of 18 days during summer & 21 during winter)
- Topping up mulch areas and keeping beds free or weeds
- Making good areas of soil subsistance or erosion & repair problem
- Maintaining all hard and semi permeable areas including toping /


Angophora flouribunda


Acmena smithii


Banksia integrifolia


Ceratopetalum gummiferum


Elaeocarpus reticulatus


Grevillea sericea


Callistemon linearifolius


Correa reflexa

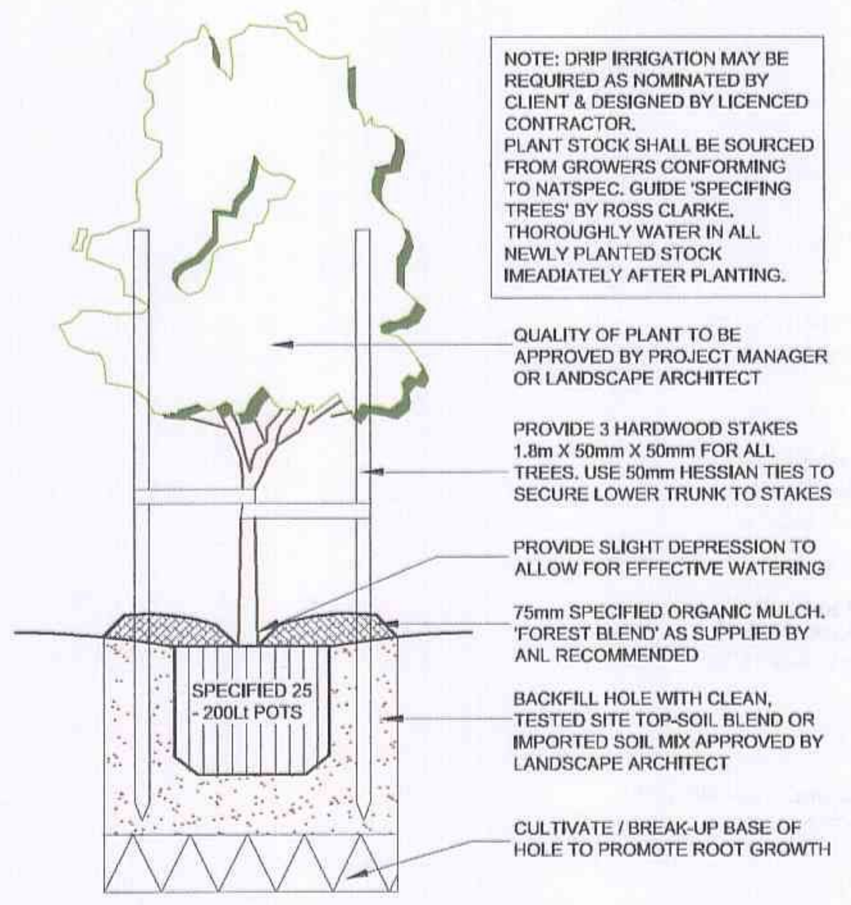

Banksia spinulosa


Dodonaea spp.


Syzygium "Cascade"

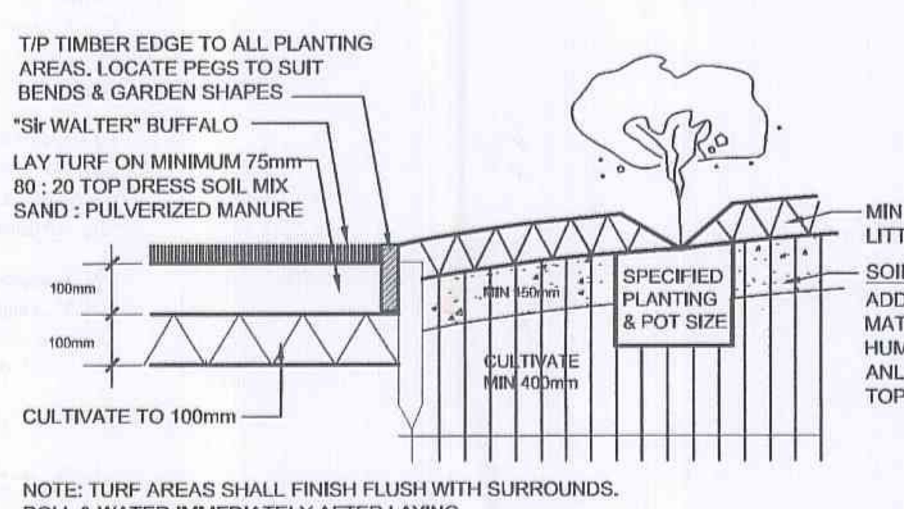

Dianella cultivars


Lomandra cultivars



NOTE: DRIP IRRIGATION MAY BE REQUIRED AS NOMINATED BY CLIENT & DESIGNED BY LICENCED CONTRACTOR.
PLANT STOCK SHALL BE SOURCED FROM GROWERS CONFORMING TO NATSPEC. GUIDE 'SPECIFING TREES' BY ROSS CLARKE.
THOROUGHLY WATER IN ALL NEWLY PLANTED STOCK IMEADIATELY AFTER PLANTING.
QUALITY OF PLANT TO BE APPROVED BY PROJECT MANAGER OR LANDSCAPE ARCHITECT
PROVIDE 3 HARDWOOD STAKES 1.8m X 50mm X 50mm FOR ALL TREES. USE 50mm HESSIAN TIES TO SECURE LOWER TRUNK TO STAKES
PROVIDE SLIGHT DEPRESSION TO ALLOW FOR EFFECTIVE WATERING
75mm SPECIFIED ORGANIC MULCH. 'FOREST BLEND' AS SUPPLIED BY ANL RECOMMENDED
SPECIFIED 25 - 200Lt POTS
BACKFILL HOLE WITH CLEAN, TESTED SITE TOP-SOIL BLEND OR IMPORTED SOIL MIX APPROVED BY LANDSCAPE ARCHITECT
CULTIVATE / BREAK-UP BASE OF HOLE TO PROMOTE ROOT GROWTH

INDIVIDUAL TREE PLANTING DETAIL



T/P TIMBER EDGE TO ALL PLANTING AREAS. LOCATE PEGS TO SUIT BENDS & GARDEN SHAPES
"Sir WALTER" BUFFALO
LAY TURF ON MINIMUM 75mm 80 : 20 TOP DRESS SOIL MIX SAND : PULVERIZED MANURE
100mm
100mm
CULTIVATE TO 100mm
MIN 150mm
CULTIVATE MIN 400mm
SPECIFIED PLANTING & POT SIZE
MIN 75mm OF LEAF LITTER MULCH
SOIL CONDITIONER :
ADD 150mm OF ORGANIC MATTER EQUAL TO "BOTANY HUMUS MIX" AS SUPPLIED BY ANL. CULTIVATE INTO THE TOP 400mm OF GARDEN BED
NOTE: TURF AREAS SHALL FINISH FLUSH WITH SURROUNDS. ROLL & WATER IMMEDIATELY AFTER LAYING

TYPICAL TURFING & GARDEN AREA PREPARATION WITH TIMBER EDGE

IRRIGATION

The client may choose to have an approved automated drip-irrigation system installed to garden bed areas prior to planting. This system shall be designed and installed by a qualified, licensed irrigation specialist to suit the garden layouts and planting species nominated in the design. Note that endemic and native planting will not require significant watering once established, and that a longer maintenance period should be considered in lieu of irrigation.

Irrigation systems to garden areas around the proposed Futsal courts shall be linked to the re-cycled grey water system and OSD tanks as designed by the civil's / hydraulic engineers.

Irrigation systems shall be installed in accordance to the latest Sydney Water Irrigation regulations and times, and shall consist of the necessary componants to ensure safe, efficient opporation. Such components shall include a back-flow prevention valve and moisture sensor to prevent watering during wet periods. The irrigation shall be tested and approved upon completion, and monitored / maintained at 6

Bar Scale

ISSUE D: Revised Engineers plans Mar '10
ISSUE C: Revised for CC March 2010
ISSUE B: Walkway widths and gradients revised and handrails added JUNE '09

Conzept
Landscape Architects

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79 Atchison Street,
CROWS NEST
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www.conzept.net.au
enquiries@conzept.net.au

Landscape Plan

PROPOSED FUTSAL (Mini Soccer) COURTS
Pittwater RSL Club,
MONA VALE

Client: Pittwater RSL Club
Council: Pittwater Council
Scale: 1:200 @ A1
Date: Feb 2009
Drawing # LPDA 09 - 58 / 4 D

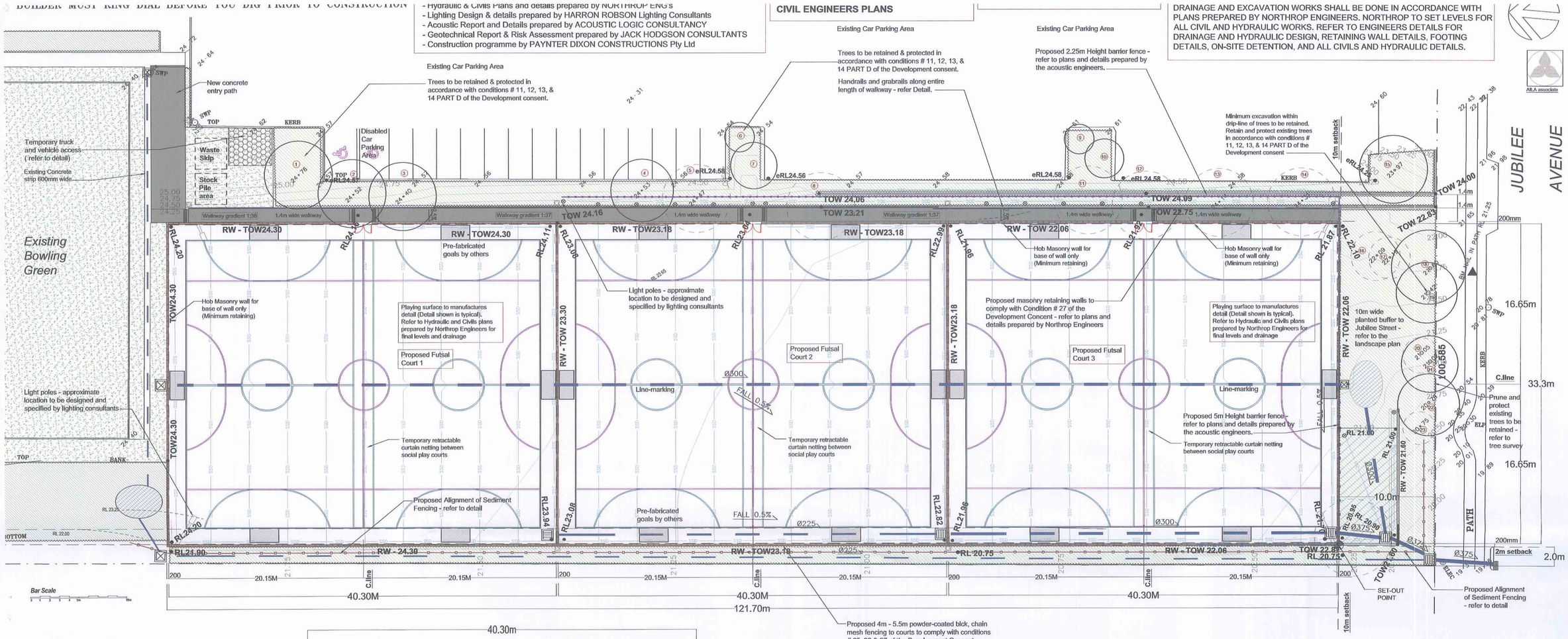
COUNCIL CO

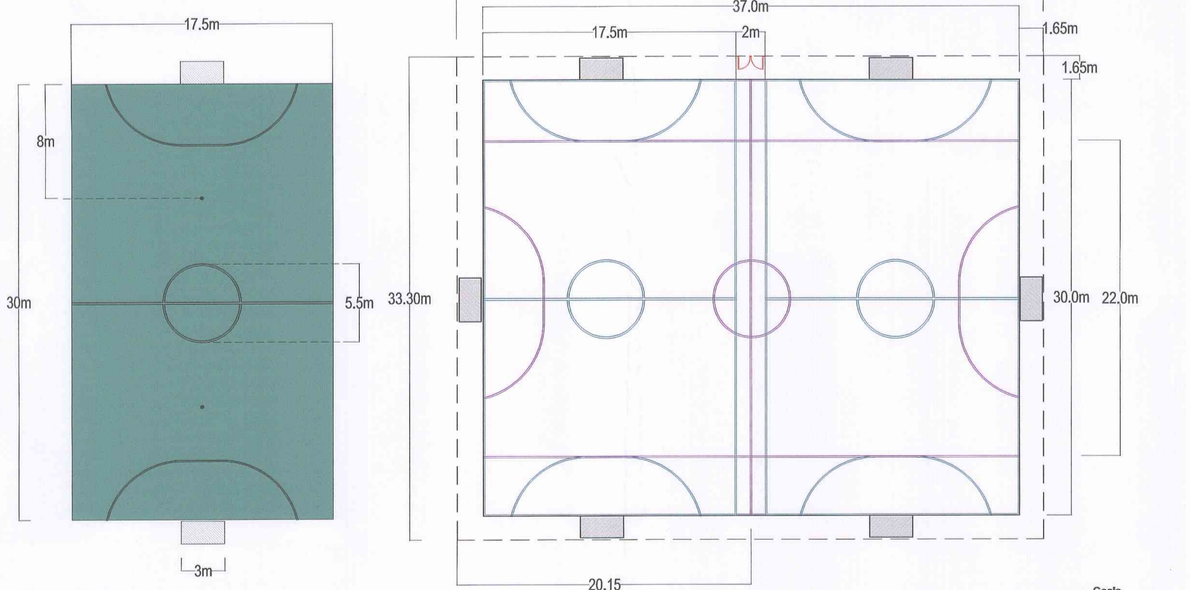
BUILDER MUST RING DIAL BEFORE YOU DIG PRIOR TO CONSTRUCTION

- Hydraulic & Civils Plans and details prepared by NORTHROP ENG'S
- Lighting Design & details prepared by HARRON ROBSON Lighting Consultants
- Acoustic Report and Details prepared by ACOUSTIC LOGIC CONSULTANCY
- Geotechnical Report & Risk Assessment prepared by JACK HODGSON CONSULTANTS
- Construction programme by PAYNTER DIXON CONSTRUCTIONS Pty Ltd

CIVIL ENGINEERS PLANS

DRAINAGE AND EXCAVATION WORKS SHALL BE DONE IN ACCORDANCE WITH PLANS PREPARED BY NORTHROP ENGINEERS. NORTHROP TO SET LEVELS FOR ALL CIVIL AND HYDRAULIC WORKS. REFER TO ENGINEERS DETAILS FOR DRAINAGE AND HYDRAULIC DESIGN, RETAINING WALL DETAILS, FOOTING DETAILS, ON-SITE DETENTION, AND ALL CIVILS AND HYDRAULIC DETAILS.





COURT SETOUTS

Social Play / Training

International / Professional

FUTSAL COURT LAYOUT

Social Play

Length: Minimum 25m - Maximum 42m
Width: Minimum 15m - Maximum 25m

International Games

Length: Minimum 38m - Maximum 42m
Width: Minimum 18m - Maximum 22m

Proposed Courts - Line Marking

Social Play / Training
W 17.5m x L 30m (plus goals)

International / Professional
W 22.0m x L 37.0m (plus goals)

KEY

- Waste Skip — Commercial Skip for Waste material to be tipped
- Stock Pile — Proposed Stockpiling area - Note, Cut and fill to be balanced on site
- SET-OUT POINT

LIGHTING

- Light poles - approximate location to be designed and specified by lighting consultants. Refer to lighting plans prepared by Haron Robson & Associates to accompany this set.
- Proposed Setback lines
- Proposed Alignment of Sediment Fencing - refer to detail
- New Garden Areas - refer to landscape plan
- Temporary truck and vehicle access (refer to detail)

ACOUSTIC FENCING & COURT FENCING

- Proposed 5m Height barrier fence - refer to plans and details prepared by the acoustic engineers.
- Proposed 2.25m Height barrier fence - refer to plans and details prepared by the acoustic engineers.
- Proposed 4m - 5.5m powder-coated black, chain mesh fencing to courts to comply with conditions # 25, 26 & 27 of the Development Consent.

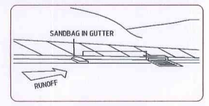
NB: All fencing to be made passable by wildlife, as described in condition # 9 of the Development Consent.

ENGINEERING & DETAILS

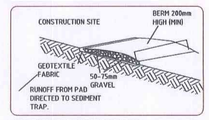
- Proposed masonry retaining walls to comply with Condition # 27 of the Development Concent - refer to plans and details prepared by Northrop Engineers
- Proposed handrails & grab rails associated with the accessible ramps, to comply with AS 1428.1 - 2001 & condition # 16, to constrution detail
- Proposed pit and drainage works - refer to drainage and hydraulic plans and details

Proposed spot levels as determined by Northrop Engineers

Erosion Control Measures



SANDBAG KERB SEDIMENT TRAP



TEMPORARY KERB CROSSING

DESIGN FOR ACCESS AND MOBILITY (AS 1428.1 - 2001) COMPLIANCE TABLE

WALKWAYS

Definition - Any accessway with a gradient not steeper than 1 in 20. **Complies** - Gradients provided are from 1:30 to 1:37.

Standard - An unobstructed width of not less than 1m.
Complies - Walkways provided with 1.4m width for entire length.

Standard - An unobstructed vertical clearance of not less than 2m.
Complies - No structures overhang walkway.

Standard - The gradient of walkways between landing to be constant.
Complies - Constant gradient between landings provided. (Landings are not required where walkway gradients are flatter than 1 in 33)

Standard - Length of landings shall be not less than 1.2m.
- Landings provided are 2m to 3m in length.

Note: Walkways shall comply with the External Pavement Slip Resistance AS 1428.1, Tactile ground surface Indicators to be located as indicated on the Hardscape Plan LPDA 09 - 58 / 3 and to comply with AS 1428.4 - 2001.

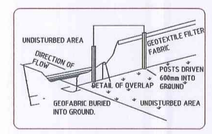
HANDRAILS AND GRABRAILS
(refer Details on Hardscape Plan LPDA 09 - 58 / 3)

Standard - Handrail cross-section shall be circular and shall be not less than 30mm and not more than 50mm in Diameter.
Compliles - 50mm diameter circular handrail provided.

Standard - Top of handrails shall be between 865 and 1000mm above the finished FFL of the walkway and shall be consistent through the walkways and landings.
Compliles - Consistent 1m high handrail provided.

Standard - Grabrail cross-section shall be circular and shall be not less than 30mm and not more than 40mm in Diameter.
Compliles - 40mm diameter circular grabrail provided.

Standard - Clearance between grabrail and adjacent wall shall not be less than 50mm and not more than 60mm.
Compliles - 60mmm clearance provided from grabrail to wall.



SEDIMENT FENCE DETAIL

ISSUE E: Co-ordinated with revised Civil plans March 2010
ISSUE D: amended for CC March 2010
ISSUE C: Court setout revised FEB '10
ISSUE B: Walkway widths and gradients revised and handrails added JUNE '09

Set-out & Erosion Control Plan

PROPOSED FUTSAL COURTS
Pittwater RSL Club,
MONA VALE

Client: Pittwater RSL Club
Council: Pittwater Council
Scale: 1:200 @ A1
Date: Feb 2009

Conzept Landscape Architects
PO Box 416, CREMORNE 2090
79 Atchison Street, CROWS NEST
Phone: 9438 1744
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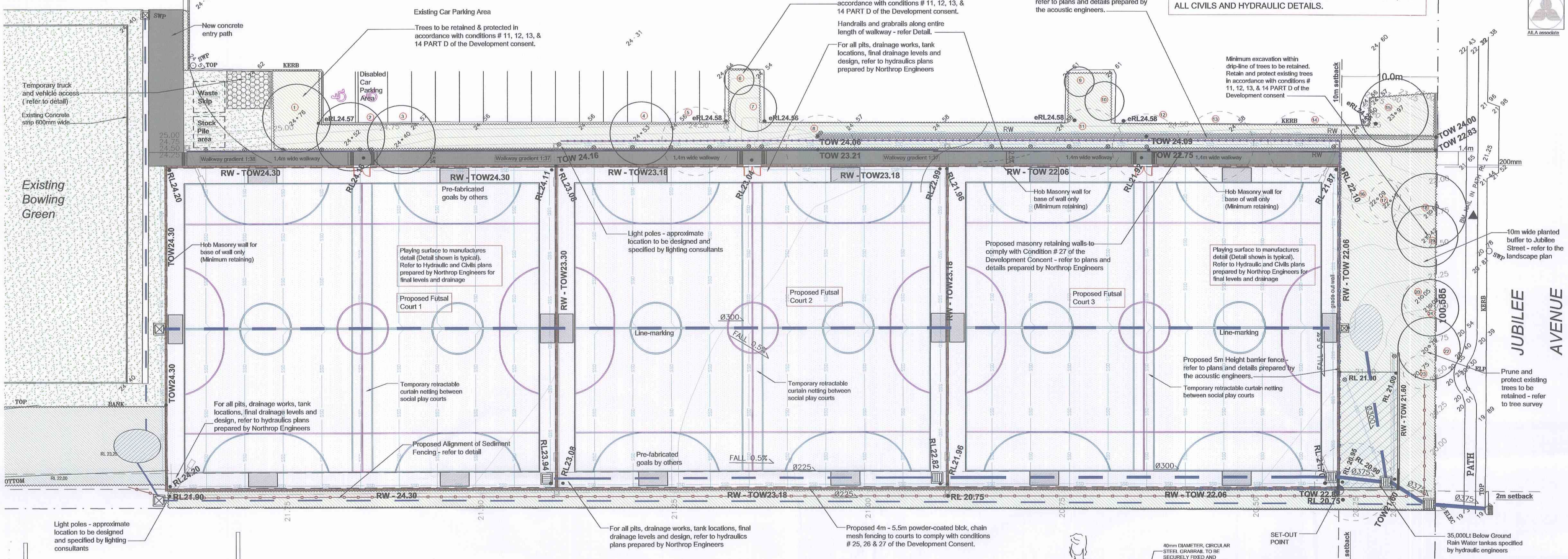
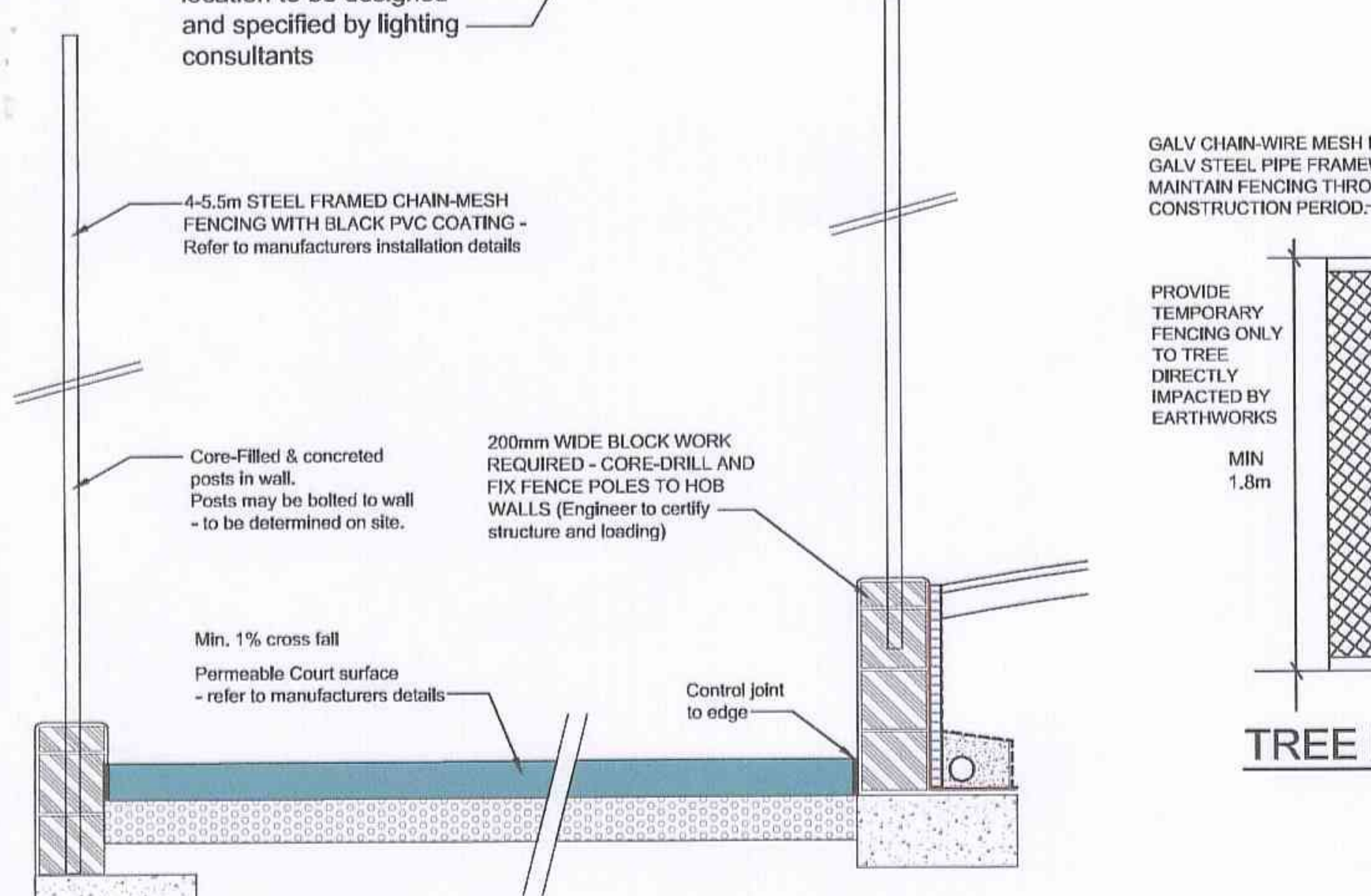
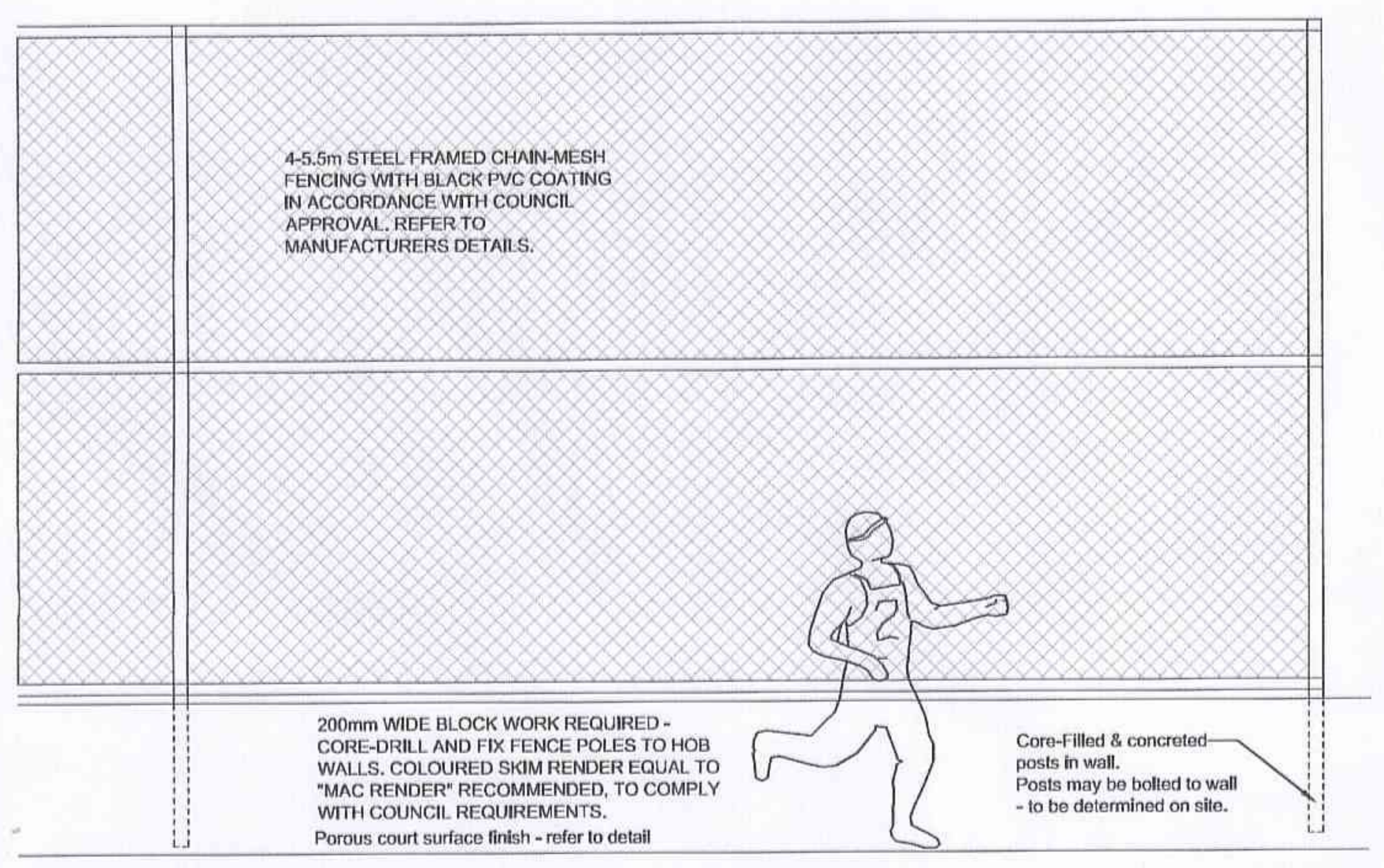
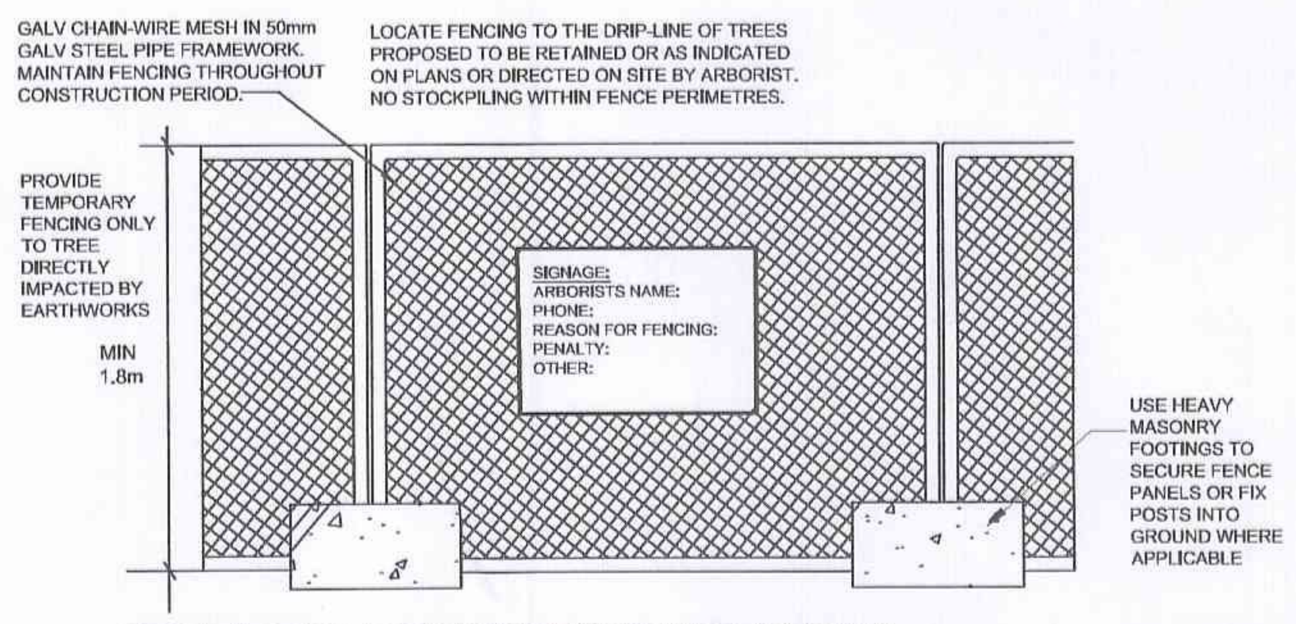
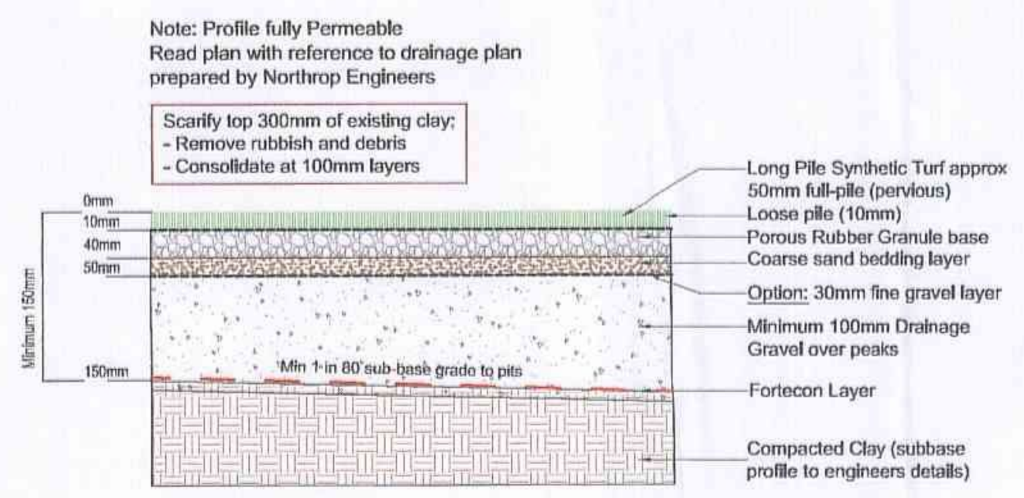






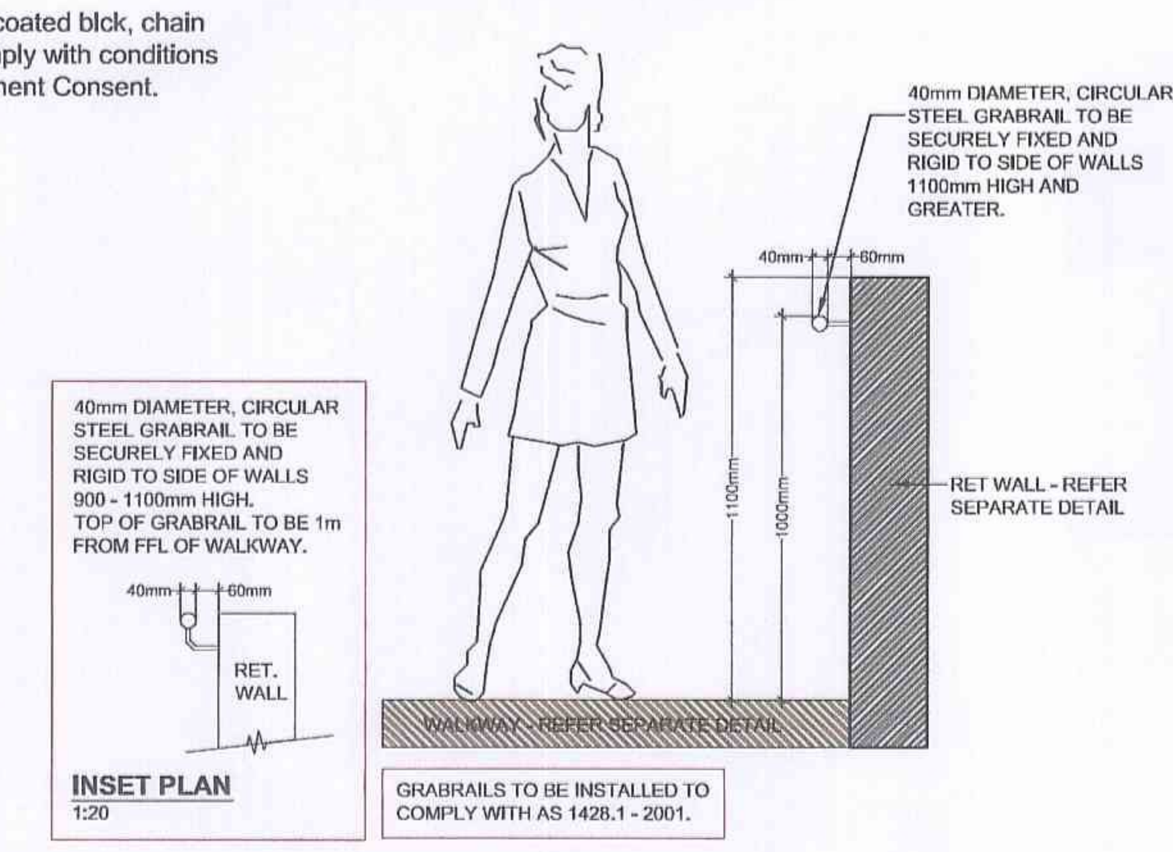


TREE PROTECTION FENCING DETAIL approx 1:10



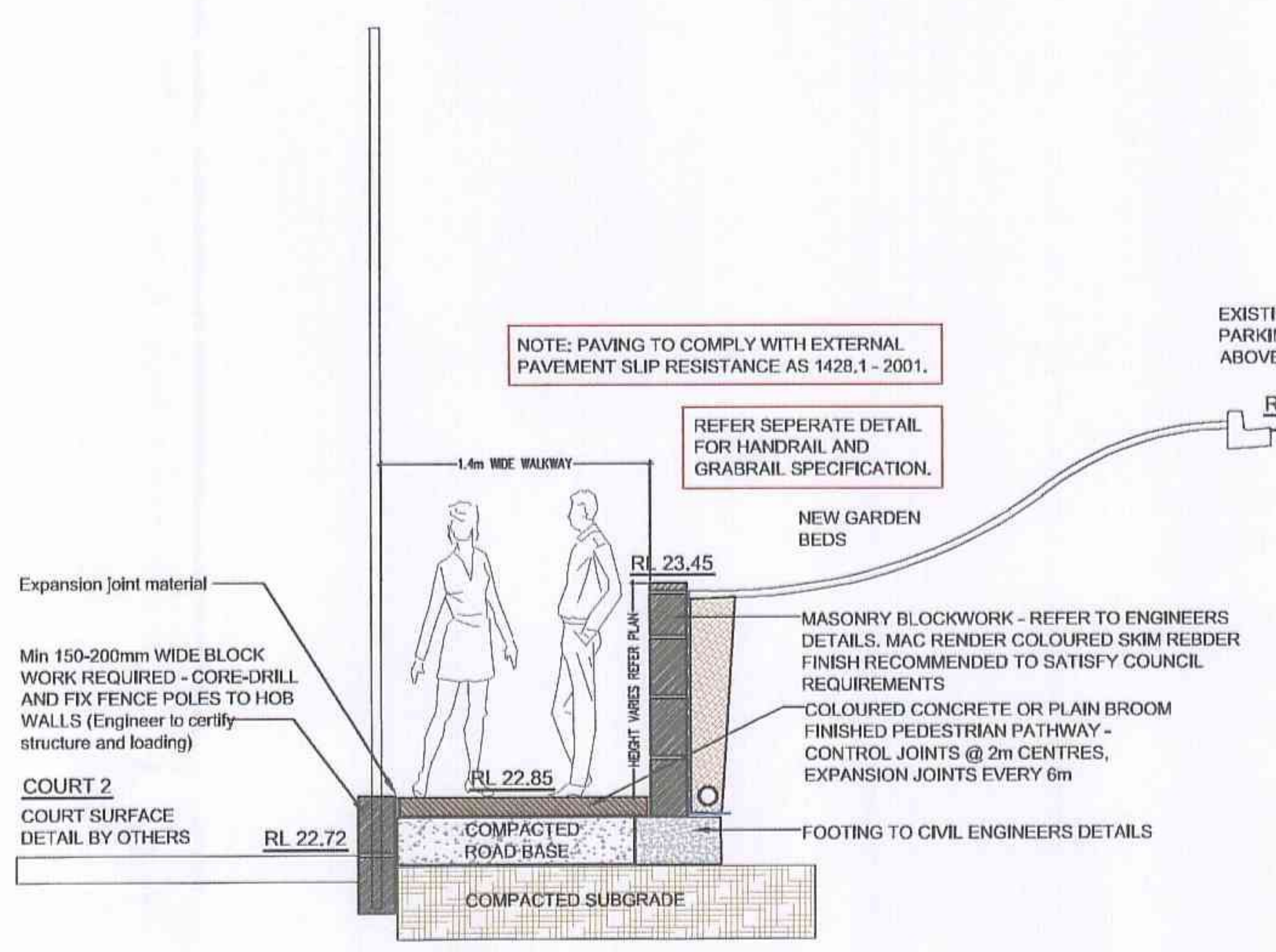
TYPICAL FUTSAL COURT SURFACE PROFILE

approx 1:10

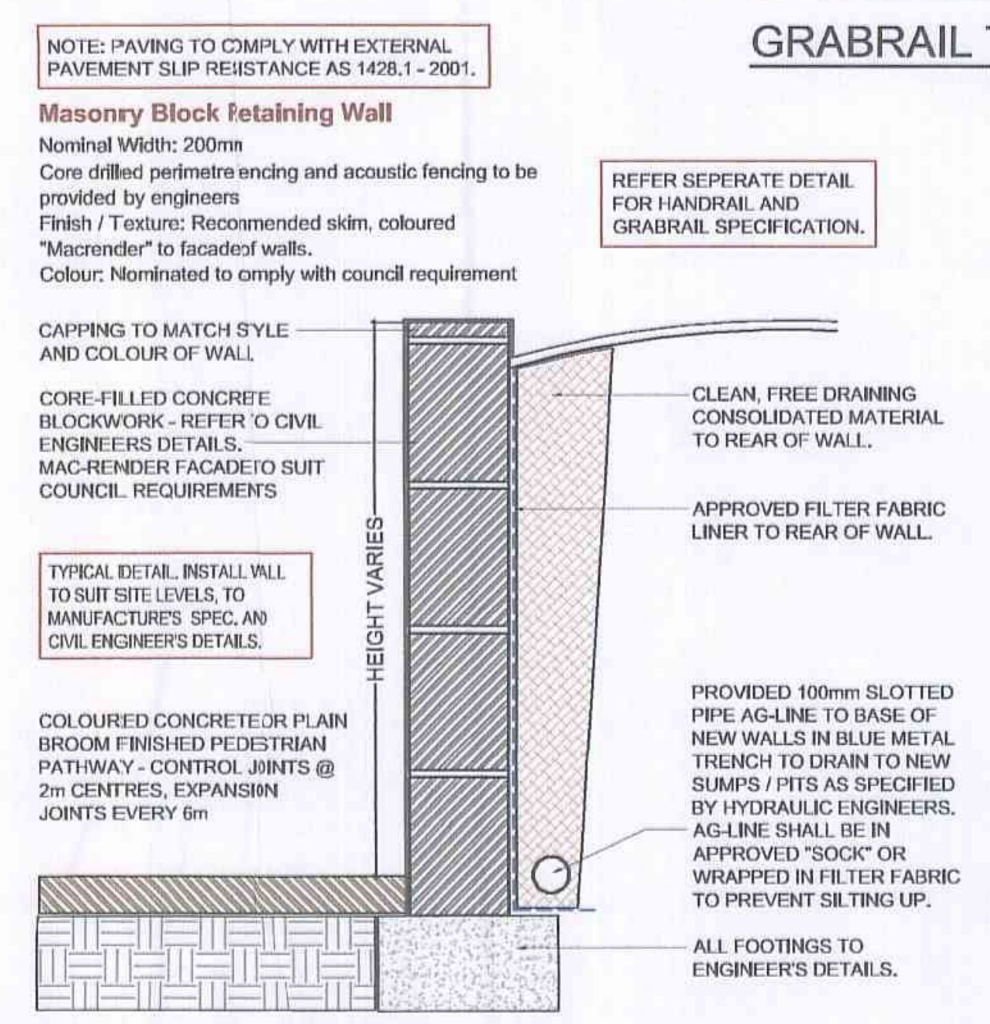


GRABRAIL TO SIDE OF WALL DETAIL

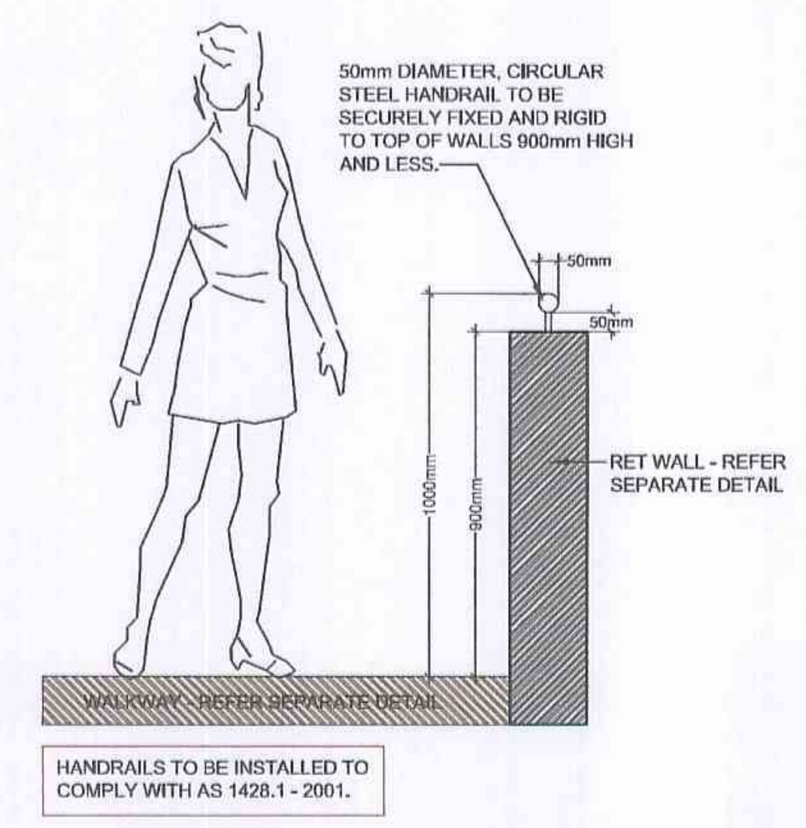
approx 1:20



TYPICAL SECTION ADJACENT COURT 2



TYPICAL MASONRY RETAINING WALL DETAIL



HANDRAIL TO TOP OF WALL

LEGEND

Proposed Material Finishes

- Specified turf to graded & drained open areas to match turf used around greens
- Timber Garden Edge - Refer to detail
- Existing trees proposed to be removed & replaced with new landscaping
- Existing trees proposed to be retained and protected - refer to tree survey.
- Existing gardens to be retained
- Proposed new garden areas - refer to landscape plan
- 1.2m - 1.5m Plain or coloured concrete pedestrian path with broom finish.
- New Futsal Court surface treatment as nominated by the client, installed as per the manufacterers product specification
- Handrail and grabrails. To be designed and installled to comply with AS 1428.1 - 2001.
- Tactile ground surface indicators. To be designed and installed to comply with AS 1428.4 - 2001.

ACOUSTIC FENCING & COURT FENCING

- Proposed 5m Height barrier fence - refer to plans and details prepared by the acoustic engineers.
- Proposed 2.25m Height barrier fence - refer to plans and details prepared by the acoustic engineers.
- Proposed 5.5m powder-coated black, chain mesh fencing to courts to comply with conditions # 25, 26 & 27 of Dev. Consent.

NB: All fencing to be made passable by wildlife, as described in condition # 9 of the Development Consent.

ACOUSTIC FENCING

- Light poles - approximate location to be designed and specified by lighting consultants. Refer to lighting plans prepared by Haron Robson & Associates to accompany this set.

ENGINEERING & DETAILS

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- Proposed pit and drainage works - refer to drainage and hydraulic plans and details prepared by Northrop Engineers

Bar Scale 0 1 2 3 4 5m 10m

ISSUE D: Revised to suit civil plans March 201
ISSUE C: Plans Revised for CC March 2010
ISSUE B: Walkway widths and gradients revised and handrails added JUNE '09

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Fax: 9438 1766
Mobile: 0413 861 351

Levels & Hardscape
PROPOSED FUTSAL (Mini Soccer) COURTS
Pittwater RSL Club,
MONA VALE
Client: Pittwater RSL Club
Council: Pittwater Council
Scale: 1:200 @ A1
Date: Feb 2009
Drawing # LPDA 09 - 58 / 3 D

PROPOSED FUTSAL COURTS

PROPOSED FUTSAL COURTS
PITTWATER RSL CLUB
MONA VALE
SITEWORKS & STORMWATER MANAGEMENT

SITE WORKS

1. ALL WORKS TO BE IN ACCORDANCE WITH LOCAL RELEVANT COUNCIL REQUIREMENTS, SPECIFICATIONS, AUSTRALIAN STANDARDS. CONFLICTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR DIRECTION.

2. THE CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES DURING CONSTRUCTION IN ACCORDANCE WITH RTA AND LOCAL COUNCIL REGULATIONS AND REQUIREMENTS

3. THE CONTRACTOR IS TO OBTAIN ALL AUTHORITY APPROVALS AS REQUIRED.

4. RESTORE ALL PAVED, COVERED, GRASSED AND LANDSCAPED AREAS TO THEIR ORIGINAL CONDITION ON COMPLETION OF WORKS. WHERE PLANTING OF NEW GRASS IS NECESSARY REFER TO LANDSCAPE ARCHITECT DOCUMENTATION.

5. ON COMPLETION OF ANY TRENCHING WORKS, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AREAS AND ROAD PAVEMENTS.

6. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.

7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO LODGMENT OF TENDER AND ON SITE WORKS. THE PRICE AS TENDERED SHALL BE INCLUSIVE OF ALL WORKS SHOWN ON THE TENDER PROJECT DRAWINGS. ADDITIONAL PAYMENTS FOR WORKS SHOWN ON THE TENDER PROJECT DRAWINGS WILL NOT BE APPROVED.

8. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS, AND ANY OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED RELATING TO DEVELOPMENT OF THE SUBJECT SITE.

9. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
   - A) PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE;
   - B) ENSURING THAT NOTHING IS NAILED TO THEM;
   - C) PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS;
     - i) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS GREATER.
     - ii) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH.
     - iii) CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

10. DO NOT OBTAIN DIMENSIONS BY SCALING THE DRAWINGS.

11. IN CASE OF DOUBT OR DISCREPANCY REFER TO SUPERINTENDENT FOR CLARIFICATION OR CONFIRMATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

12. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.

13. MAKE SMOOTH TRANSITION TO EXISTING FEATURES AND MAKE GOOD WHERE JOINED.

14. THESE PLANS SHALL BE READ IN CONJUNCTION WITH ALL APPROVED DRAWINGS AND SPECIFICATIONS PREPARED BY OTHER PROJECT CONSULTANTS.

15. TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MIN 50mm IN BITUMINOUS PAVING.

16. ALL CIVIL ENGINEERING DESIGN HAS BEEN DOCUMENTED UNDER THE ASSUMPTION THAT ALL NECESSARY SITE CONTAMINATION REMEDIATION WORKS HAVE BEEN SATISFACTORILY COMPLETED (IF APPLICABLE) AND THAT THE SITE IS NOT AFFECTED BY ANY SOIL STRATA OR GROUNDWATER TABLE CONTAMINATION.

EXISTING SERVICES

1. ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.

2. CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER COMMUNICATION, GAS OR ELECTRICAL SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.

3. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING SERVICES THAT ARE TO BE RETAINED IN THE VICINITY OF THE PROPOSED WORKS. ANY AND ALL DAMAGE TO THESE SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT, AND AT NO EXTRA COST.

4. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.

5. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF EXISTING SERVICES IN AREA AFFECTED BY WORKS UNLESS DIRCTED OTHERWISE ON THE DRAWINGS OR BY THE SUPERINTENDENT.

6. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.

7. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF THE PROGRAM FOR THE RELOCATION AND/OR CONSTRUCTION OF TEMPORARY SERVICES AND FOR ANY ASSOCIATED INTERRUPTION OF SUPPLY.

8. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.

EARTHWORKS

1. AT THE COMMENCEMENT OF THE FILLING OPERATION FOR BULK EARTHWORKS A GEOTECHNICAL ENGINEER IS TO VISIT THE SITE & CONFIRM THE SUITABILITY OF THE METHODOLOGY OF ACHIEVING THE REQUIRED BUILDING PLATFORMS AND COMPACTION REQUIREMENTS. SUBSEQUENTLY, THE HEAD CONTRACTOR IS TO CONFIRM, IN WRITING TO THE DESIGNING CIVIL & STRUCTURAL ENGINEERS, THAT THE METHODOLOGY APPROVED AT THE TIME OF THE GEOTECHNICAL ENGINEERS VISIT WAS MAINTAINED DURING ALL THE BULK EARTHWORKS PROCESS.

2. STRIP TOPSOIL, VEGETABLE MATTER AND RUBBLE TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT.

3. WHERE FILLING IS REQUIRED TO ACHIEVE DESIGN SUBGRADE, PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF TEN PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT.

4. ALL SOFT, WET OR UNSUITABLE MATERIAL IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.

5. PROVIDE CERTIFICATES VERIFYING THE QUALITY OF IMPORTED MATERIAL FOR THE SUPERINTENDENTS APPROVAL.

6. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289 E3.1 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY IN ACCORDANCE WITH AS1289 E1.1:

LOCATION	COMPACTION REQUIREMENT
UNDER BUILDING SLABS	98% SMDD
LANDSCAPED AREAS	95% SMDD
ROADS & PAVED AREAS	98% SMDD

7. TESTING OF THE SUBGRADE FOR BUILDINGS SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY AND IN ACCORDANCE WITH THE LATEST VERSION OF AS3798 - FOR BUILDING TYPE 1 OPERATIONS.

8. ALLOW THE FOLLOWING COMPACTION TESTING BY NATA REGISTERED LABORATORY FOR PLATFORMS AND FILL LAYERS. IN ACCORDANCE WITH THE LATEST VERSION OF AS3798 - FOR TYPE 1 OPERATIONS. (MINIMUM 3 TESTS PER LAYER).

9. WHERE TEST RESULTS ARE BELOW THE SPECIFIED COMPACTION, RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION STANDARD IS ACHIEVED.

10. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND U.N.O. NO ADDITIONAL PAYMENTS WILL BE MADE FOR EXCAVATION IN WET OR HARD GROUND.

11. WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR SUBGRADE REPLACEMENT, THE CONTRACTOR IS TO ALLOW TO IMPORT FILL. IMPORTED FILL SHALL COMPLY WITH THE FOLLOWING:
   - A) MAXIMUM SIZE 50mm. PASSING 75 MICRON SIEVE (<25%).
   - B) PLASTICITY INDEX BETWEEN 2-15% AND CBR>8.
   - C) FREE FROM ORGANIC AND PERISHABLE MATTER.

12. REFER TO THE <GEOTECHNICAL REPORT> FOR GENERAL REQUIREMENTS ON SITE PREPARATION AND RE-USE OF EXISTING SITE MATERIAL AS ENGINEERED FILL.

13. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED AT THEIR COST.

14. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE AND MAINTAIN THE INTEGRITY OF ALL SERVICES, CONDUITS AND PIPES DURING CONSTRUCTION, SPECIFICALLY DURING THE BACKFILLING AND COMPACTION PROCEDURE. ANY AND ALL DAMAGE TO NEW OR EXISTING SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXTRA COST.

15. PROTECT FINAL SURFACE WITH EITHER A TEMPORARY LOOSE SOIL LAYER OR A GRANULAR SUB-BASE LAYER TO PREVENT DRYING OUT PRIOR TO ON-GROUND SLAB CONSTRUCTION.

16. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.

SERVICES TRENCHES

17. BACK FILL ALL TRENCHES UNDER NEW ROADS, PAVEMENTS, PATHS AND BUILDINGS WITH DGS40 SUBBASE MATERIAL COMPACTED TO 98% SMDD TO SUBGRADE LEVEL (UNO).

18. SAWCUT EXISTING SURFACES PRIOR TO EXCAVATION. BACK FILL ALL TRENCHES UNDER EXISTING ROADS, PAVEMENTS AND PATHS WITH STABILISED SAND 5% CEMENT OR DGS40 MATERIAL (5% CEMENT) COMPACTED IN 200mm THICK LAYERS TO 95% MMDD, (TOP 150mm COMPACTED TO 98% MMDD TO UNDERSIDE OF PAVEMENT).

19. BACKFILL ALL TRENCHES NOT UNDER ROADS, PAVEMENTS, PATHS AND BUILDINGS WITH APPROVED EXCAVATED OR IMPORTED MATERIAL COMPACTED TO 95% SMDD.

ACCESS & SAFETY

1. THE CONTRACTOR SHALL COMPLY WITH ALL STATUTORY AND INDUSTRIAL REQUIREMENTS FOR PROVISION OF A SAFE WORKING ENVIRONMENT INCLUDING TRAFFIC CONTROL

2. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES ACCESS TO ALL BUILDINGS ADJACENT THE WORKS IS NOT DISRUPTED.

3. WHERE NECESSARY THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE OF VEHICLES AND/OR PEDESTRIANS THROUGH OR BY THE SITE.

SEDIMENT & EROSION

1. THE CONTRACTOR SHALL INSTIGATE ALL SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH STATUTORY REQUIREMENTS AND IN PARTICULAR THE "BLUE BOOK" (MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION, PRODUCED BY THE DEPARTMENT OF HOUSING). THESE MEASURES ARE TO BE REGULARLY INSPECTED AND MAINTAINED.

2. THE SITE SUPERINTENDENT SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS INSTRUCTED IN THE DRAWINGS.

3. INFORM ALL CONTRACTORS OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.

4. THE SEDIMENT & EROSION CONTROL PLAN PRESENTS CONCEPTS ONLY. THE CONTRACTOR SHALL AT ALL TIMES BE RESPONSIBLE FOR THE ESTABLISHMENT & MANAGEMENT OF A DETAILED SCHEME MEETING COUNCIL'S DESIGN, AND ALL OTHER REGULATORY AUTHORITY REQUIREMENTS. PAY ALL FEES.

5. THE FOLLOWING STANDARD DRAWINGS SHALL BE USED IN CONJUNCTION WITH THIS PLAN;

   SD5-5 EARTH DIVERSION SWALE
   SD6-14 STABILISED SITE ACCESS
   SD6-8 SEDIMENT FENCE
   SD6-11 MESH & GRAVEL INLET FILTER
   SD6-12 GEOTEXTILE INLET FILTER

6. SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THIS PLAN ARE PREPARED AS A GUIDE FOR CONSTRUCTION APPROVAL BY COUNCIL. IT DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO PLAN AND IMPLEMENT ENVIRONMENTAL PROTECTION MEASURES REQUIRED BY LAW, THE COUNCIL AND CONTRACT THROUGHOUT THE WORKS.

7. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHALL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:

   A) INSTALL ALL TEMPORARY SEDIMENT FENCES AND BARRIER FENCES. WHERE FENCES ARE ADJACENT TO EACH OTHER THE SEDIMENT FENCE CAN BE INCORPORATED INTO THE BARRIER FENCE.

   B) CONSTRUCT TEMPORARY STABISUED SITE ACCESS. INCLUDING SHAKE DOWN AND WASH PAD.

   C) INSTALL SEDIMENT CONTROL MEASURES AS OUTLINED ON THE APPROVED PLANS.

8. UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.

9. MAINTAIN AND MANAGE ENVIRONMENTAL PROTECTION MEASURES THROUGHOUT CONTRACT.

10. AT ALL TIMES AND IN PARTICULAR DURING WINDY AND DRY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.

11. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) SHALL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.

12. WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN STABILISED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED OUT.

13. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED / REHABILITATED.

14. ALLOW FOR GRASS STABILISATION OF EXPOSED AREAS, OPEN CHANNELS AND ROCK BATTERS.

15. ALLOW FOR THE ESTABLISHMENT OF OTHER EROSION PROTECTION MEASURES.

16. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED TO ENSURE THAT THEY OPERATE EFFECTIVELY. REPAIRS AND/OR MAINTENANCE SHALL BE UNDERTAKEN REGULARLY AND AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

17. ACCEPTABLE RECEPTORS SHALL BE USED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.

18. RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER SHALL BE DISPOSED OF IN ACCORDANCE WITH REGULATORY AUTHORITY REQUIREMENTS. PAY ALL FEES AND PROVIDE EVIDENCE OF SAFE DISPOSAL.

DRAWING SCHEDULE

STORMWATER DRAINAGE

1. ALL PIPES LESS THAN OR EQUAL TO ø225mm ARE TO BE SOLVENT WELD-JOINTED SEWER GRADE uPVC CLASS SH, OR (min) CLASS 2 RUBBER-RING JOINTED RCP (UNO).

2. WHERE uPVC STORMWATER LINES PASS UNDER FLOOR SLABS SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.

3. PIPES GREATER THAN OR EQUAL TO ø300mm ARE TO BE (min) CLASS 2 RUBBER-RING JOINTED RCP (UNO).

4. FRC PIPES EQUIVALENT TO THE STEEL REINFORCED CONCRETE PIPE CLASS SPECIFIED ON THE DRAWINGS MAY BE USED - OBTAIN SUPERINTENDENTS APPROVAL.

5. ALL PIPES ARE TO BE LAID AT (min) 1.0% GRADE (UNO)

6. THE USE OF PRE-CAST STORMWATER DRAINAGE PITS IS NOT ACCEPTED WITHOUT CONFIRMATION BETWEEN NORTHROP ENGINEERS AND THE CONTRACTOR REGARDING QUALITY CONTROL, AND CERTIFICATION OF FINISHES.

7. COVERS
   - A) USE HOT DIPPED GALVANISED COVERS AND GRATES COMPLYING WITH RELEVANT AUSTRALIAN AND COUNCIL STANDARDS.
   - B) ALL COVERS AND GRATES TO BE FITTED WITH POSITIVE COVER LIFTING KEYS.
   - C) OBTAIN SUPERINTENDENT'S APPROVAL FOR THE USE OF CAST IRON SOLID COVERS AND GRATES. CAST IRON SOLID COVERS (IF APPROVED) TO CONSIST OF CROSS-WEBBED, CELLULAR CONSTRUCTION WITH THE RIBS UPPERMOST TO ALLOW INFILLING WITH CONCRETE. INSTALL POSITIVE COVER LIFTING KEYS AND PLASTIC PLUGS.
   - D) UNLESS DETAILED OR SPECIFIED OTHERWISE COVERS AND GRATES TO BE CLASS "C" IN VEHICULAR PAVEMENTS AND CLASS "B" ELSEWHERE.

8. ALL PIPE BENDS, JUNCTIONS, ETC. ARE TO BE PROVIDED USING PURPOSE MADE FITTINGS OR STORMWATER PITS.

9. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT PIPE PENETRATIONS SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.

10. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTERS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.

11. U.N.O. MATERIAL USED FOR BEDDING OF PIPES SHALL BE APPROVED NON-COHESIVE GRANULAR MATERIAL HAVING HIGH PERMEABILITY AND HIGH STABILITY WHEN SATURATED AND FREE OF ORGANIC AND CLAY MATERIAL.

12. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED (OR 75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK.

13. BEDDING SHALL BE (UNO) TYPE HS2 UNDER ROADS; H2 GENERAL AREAS, IN ACCORDANCE WITH CURRENT RELEVANT INDUSTRY STANDARDS AND GUIDELINES.

14. THE CONTRACTOR SHALL ENSURE AND PROTECT THE INTEGRITY OF ALL STORMWATER PIPES DURING CONSTRUCTION. ANY AND ALL DAMAGE TO THESE PIPES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT, AND AT NO EXTRA COST.

15. NOTE THAT THE PIT COVER LEVEL NOMINATED IN GUTTERS ARE TO THE INVERT OF THE GUTTER WHICH ARE 40mm LOWER THAN THE PAVEMENT LEVEL AT LIP OF GUTTER.

16. ø100mm SUB-SOIL DRAINAGE LINES WITH NON-WOVEN GEOTEXTILE SOCK SURROUND SHALL BE CONNECTED TO A STORMWATER DRAINAGE PIT (AT min. 1% LONGITUDINAL GRADE) AND PROVIDED IN THE FOLLOWING LOCATIONS:
   - A) THE HIGH SIDE OF PROPOSED TRAFFICKED AND CARPARK PAVEMENT AREAS.
   - B) ALL PLANTER AND TREE BEDS PROPOSED ADJACENT TO PAVEMENT AREAS.
   - C) BEHIND RETAINING WALLS (IN ACCORDANCE WITH DRAWINGS)
   - D) ALL OTHER AREAS SHOWN ON THE DRAWINGS.

17. THE CONTRACTOR SHALL INSTALL INSPECTION OPENINGS TO ALL SUBSOIL DRAINAGE LINES AND DOWNPIPE LINES AS SPECIFIED ON DRAWINGS, AT MAXIMUM 60m CENTERS AND AT ALL UPSTREAM ENDPOINTS.

18. WHERE SUBSOIL DRAINAGE LINES PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS SEALED uPVC SEWER GRADE PIPE SHALL BE USED.

19. PROVIDE 3.0m LENGTH OF ø100 SUBSOIL DRAINAGE PIPE WRAPPED IN A NON-WOVEN GEOTEXTILE FABRIC, TO THE UPSTREAM SIDE OF STORMWATER PITS, LAID IN STORMWATER PIPE TRENCHES AND CONNECTED TO THE DRAINAGE PIT.

20. ALL RECTANGULAR HOLLOW SECTIONS (RHS) SPECIFIED AS STORMWATER CONDUITS TO BE HOT DIPPED GALVANISED AND HAVE (MINIMUM) 5mm WALL THICKNESS.

CONCRETE

1. THIS SECTION SPECIFIES MISCELLANEOUS MINOR CONCRETE WORKS AND DOES NOT APPLY TO BUILDINGS OR BRIDGES.

2. CONFORM TO THE REQUIREMENTS OF ALL AUSTRALIAN AND INDUSTRY ACCEPTED STANDARDS TO THE EXTENT THAT THEY ARE RELEVANT AND THAT THEY ARE NOT EXCEEDED BY THIS SPECIFICATION.

3. PROVIDE MANUFACTURER'S TEST CERTIFICATES FOR QUALITY OF CEMENT, AGGREGATE AND REINFORCEMENT IF REQUESTED.

4. UNLESS SHOWN OR SPECIFIED OTHERWISE SUPPLY CONCRETE WITH THE FOLLOWING PROPERTIES;

COMPRESSIVE STRENGTH:	N25
AGGREGATE SIZE:	20mm
SLUMP	80mm + OR - 15mm

   CONDUCT SLUMP TESTING ON SITE FOR EACH AND EVERY TRUCK.

5. FORMWORK
   - DESIGN AND CONSTRUCT FORMS SO THAT THEY ARE MORTAR TIGHT AND CAN BE REMOVED WITHOUT DAMAGING THE CONCRETE.
   - BUILD FORMS TRUE TO LINE AND BRACED IN A SUBSTANTIAL NON-YIELDING MANNER.
   - DO NOT PLACE CONCRETE UNTIL FORMWORK HAS BEEN INSPECTED BY THE SUPERINTENDENT.
   - FORMWORK TO BE CLASS 5 (AS3600).

6. U.N.O. CLEAR CONCRETE COVERS SHALL BE;

ENVIRONMENT	COVER
- SURFACES OF MEMBERS CAST AGAINST, AND IN CONTACT WITH THE GROUND.	50mm
- SURFACES OF MEMBERS CAST AGAINST, AND IN CONTACT WITH THE GROUND SEPARATED BY MEMBRANE	30mm
- SURFACES OF MEMBERS IN ABOVE GROUND EXTERIOR ENVIRONMENTS	40mm

7. PLACING OF CONCRETE

CONC. TEMP. AT TIME OF PLACING	MAXIMUM TIME (MIN.)
25°C - 28°C	75
28°C - 32°C	60
32°C - 35°C	45

   - PLACE CONCRETE IN A CONTINOUS OPERATION BETWEEN CONSTRUCTION JOINTS SO THAT THE FACE OF THE CONCRETE IS IN A PLASTIC STATE WHEN SUCCEEDING CONCRETE IS PLACED AGAINST IT.
   - DO NOT ALLOW CONCRETE TO FREE-FALL FROM A HEIGHT GREATER THAN 1.5 METRES.
   - PLACE ALL CONCRETE IN DRY WEATHER UNLESS OTHERWISE APPROVED.
   - FOR EACH TRUCK OF PREMIXED CONCRETE AN IDENTIFICATION CERTIFICATE ON DELIVERY LISTING THE INFORMATION REQUIRED BY AS 1379 AND ANY OTHER PARTICULAR REQUIREMENTS FOR SPECIAL CLASS CONCRETE.
   - CONSTRUCT KERBS AND GUTTERS AS INTEGRAL UNITS.

8. SURFACE FINISHES
   - FINISH SURFACES TO A SMOOTH AND EVEN COLOUR
   - REMOVE FREE SURFACE WATER DURING FINAL SCREEDING OF UNFORMED SURFACES.
   - ROUND OFF EXPOSED EDGES AND CORNERS.
   - PROTECT EXPOSED SURFACES FROM RAIN UNTIL FINAL SET HAS OCCURED.

9. ALL SLABS ARE TO BE CURED FOR A MINIMUM OF SEVEN (7) DAYS. CURING OPERATIONS SHALL INCLUDE PLACEMENT OF MOIST HESSIAN OVER WET CONCRETE IMMEDIATELY AFTER FINISHING WORKS HAVE BEEN COMPLETED. THE HESSIAN SHALL BE OVERLAYED BY PLASTIC SHEET. THE HESSIAN SHALL BE CONTINUOUSLY AND CONSISTENTLY MOIST DURING THE CURING PERIOD. PVA MEMBRANES ARE NOT PERMITTED.

10. REMOVE AND REPLACE RAIN DAMAGED CONCRETE.

11. CONFORM TO;

- FINISHED LEVEL	+ OR - 15mm FROM THE SPECIFIED LEVEL
- INVERT LEVEL	+ OR - 5mm FROM THE SPECIFIED LEVEL
- STRAIGHT EDGE	3mm MAXIMUM IN 3m
- DEVIATION OF SURFACE	6mm MAXIMUM IN 15m
- CHANNGE AT VEHICLE CROSSING	+ OR - 150mm
- WIDTH OF VEHICULAR CROSSING	+ OR - 25mm

12. DEFECTIVE CONCRETE & MATERIALS
   - CONCRETE WHICH IS NOT PLACED, CURED OR FINISHED AS SPECIFIED, DOES NOT HAVE THE SPECIFIED STRENGTH OR OTHER SPECIFIED PROPERTIES, IS NOT SOUND, DENSE, DURABLE OR CRACK-FREE WILL BE CONSIDERED DEFECTIVE
   - BEAR ALL COST AND DELAYS RESULTING FROM THE REJECTION OF CONCRETE AND SUBSEQUENT RECTIFICATION.
   - REMOVE THE CONCRETE TO A POINT AGREED WITH THE SUPERINTENDENT AT WHICH VISUALLY AND STRUCTURALLY ACCEPTABLE CONSTRUCTION JOINT CAN BE MADE, AND THE DEFECTIVE ELEMENT REBUILT.
   - REPAIR DEFECTIVE SURFACE FINISHES IF APPROVED BY THE SUPERINTENDENT. APPROVAL WILL NOT BE GIVEN IF THE DEFECTIVE AREA IS TOO EXTENSIVE OR THE TECHNIQUES PROPOSED ARE NOT ADEQUATE TO ENSURE A VISUALLY ACCEPTABLE AND DURABLE REPAIR.

FOR CONSTRUCTION

ISSUE	AMENDMENT	VERIFIED	APPROVED	DATE
1	PRELIMINARY ISSUE		A.D.	08.03.10
2	ISSUED FOR CONSTRUCTION CERTIFICATE		A.D.	18.03.10
3	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	19.03.10
4	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	24.03.10
5	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	29.03.10

CLIENT: PITTWATER RSL CLUB

ARCHITECT: Conzept Landscape Architects

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PROJECT: PITTWATER RSL CLUB FUTSAL COURTS

DRAWING TITLE: COVER SHEET

JOB NUMBER: 08622

DRAWING NUMBER: C1.01

REVISION: 5

DRAWING SHEET SIZE = A1

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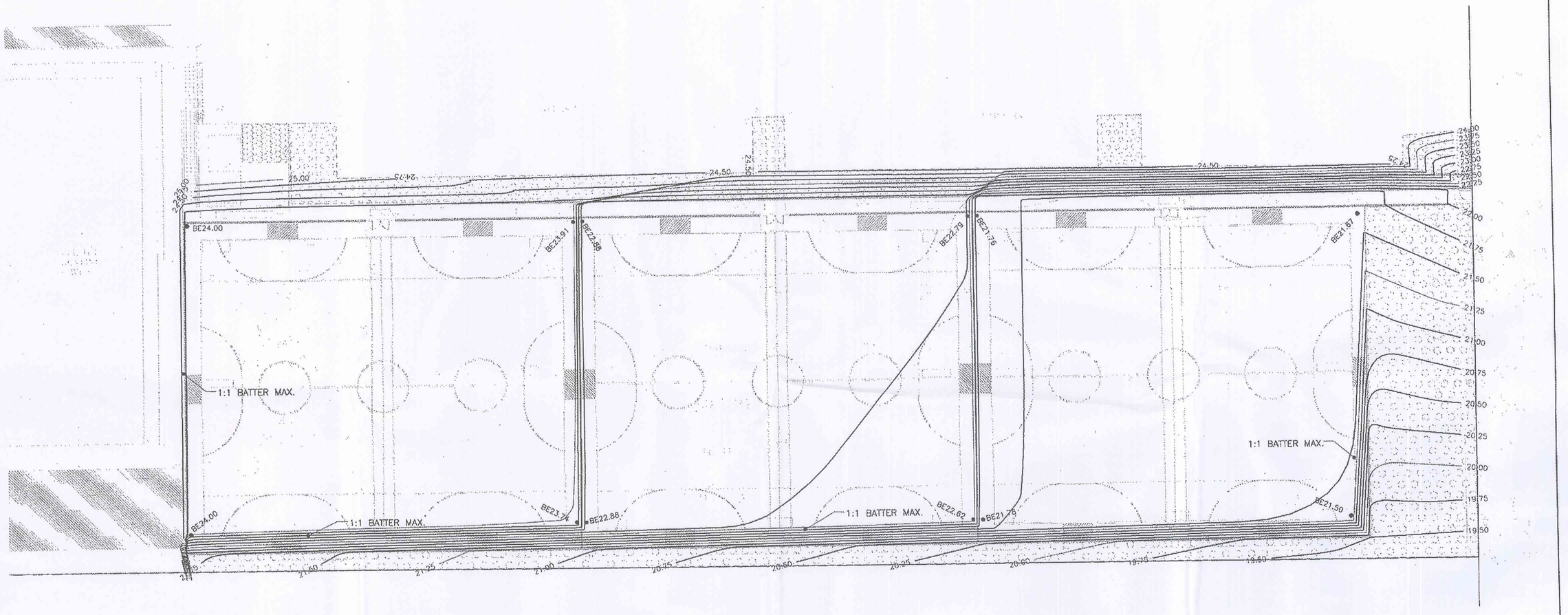

FOR CONSTRUCTION

ISSUE	AMENDMENT	VERIFIED	APPROVED	DATE
1	PRELIMINARY ISSUE		A.D.	08.03.10
2	ISSUED FOR CONSTRUCTION CERTIFICATE		A.D.	16.03.10
3	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	19.03.10
4	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	24.03.10
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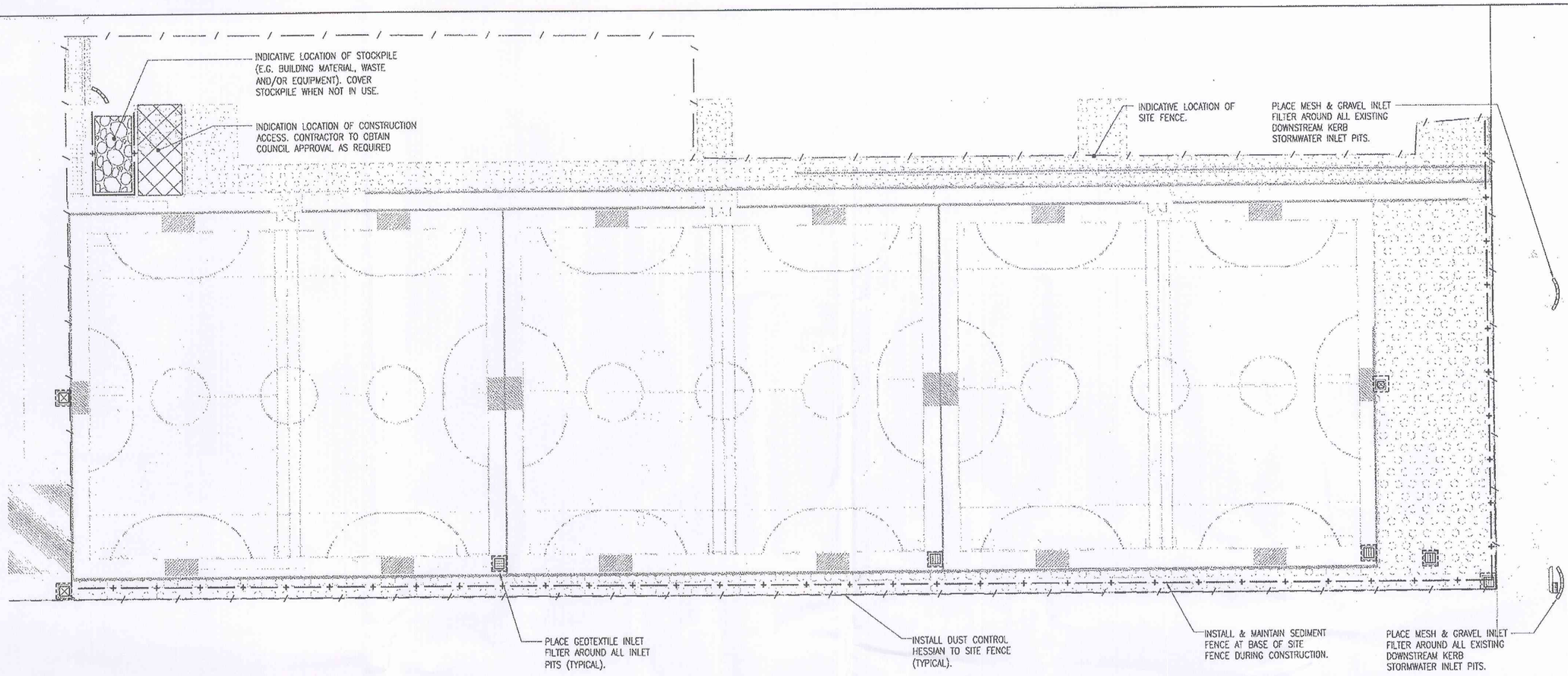
PROJECT
PITTWATER RSL CLUB
FUTSAL COURTS

DRAWING TITLE
BULK EARTHWORKS PLAN

JOB NUMBER 08622
DRAWING NUMBER C2.01
REVISION 5
DRAWING SHEET SIZE = A1

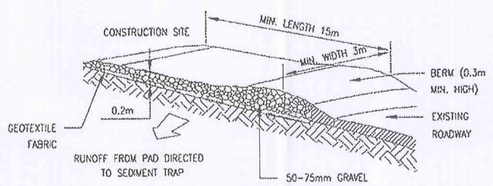


NOTES

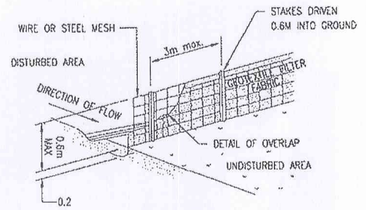
1. ALL SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE "BLUE BOOK".
2. PROTECT ALL INLETS TO STORMWATER DRAINAGE SYSTEM FOR THE DURATION OF CONSTRUCTION
3. KEEP DISTURBED AREAS TO A MINIMUM ALLOW TO DIVERT UPSTREAM RUNOFF AROUND ANY DISTURBED AREAS THROUGHOUT CONSTRUCTION.
4. SEDIMENT & EROSION CONTROL MEASURES SHOWN INDICATIVE ONLY & ARE TO BE CONFIRMED BY CONTRACTOR. MEASURES TO BE STAGED ACCORDINGLY.
5. TEMPORARY CONSTRUCTION ACCESS & CATTLE GRID TO BE LOCATED AT ENTRY TO SITE. PROVIDE PROTECTION TO PUBLIC UTILITY SERVICES & COUNCIL ASSETS AS REQUIRED.

LEGEND

- GEOTEXTILE INLET FILTER
- STOCKPILE
- SITE FENCE
- SEDIMENT FENCE
- STORMWATER INLET PIT
- EXISTING STORMWATER PIT



TEMPORARY CONSTRUCTION EXIT
NOT TO SCALE
RUNOFF DIRECTED TO PERIMETER BANK.



SEDIMENT FENCE
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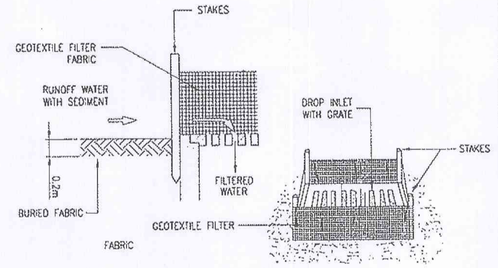

GEOTEXTILE INLET FILTER
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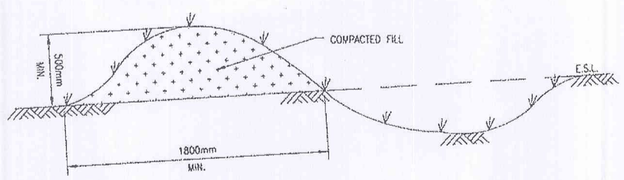

DIVERSION BANK
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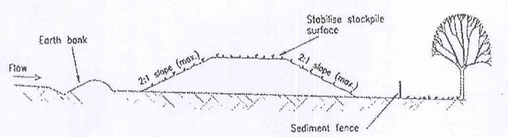
NOTE: DIVERSION BANK TO BE TURFED



STOCKPILES
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FOR CONSTRUCTION

ISSUE	AMENDMENT	VERIFIED	APPROVED	DATE
1	PRELIMINARY ISSUE		A.D	08.03.10
2	ISSUED FOR CONSTRUCTION CERTIFICATE		A.D	18.03.10
3	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F	A.D	19.03.10
4	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F	A.D.	24.03.10
5	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F	A.D	29.03.10

CLIENT: PITTWATER RSL CLUB

ARCHITECT: Conzept Landscape Architects

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PROJECT: PITTWATER RSL CLUB FUTSAL COURTS

DRAWING TITLE: SEDIMENT AND EROSION PLAN

JOB NUMBER: 08622
DRAWING NUMBER: C3.01
REVISION: 5
DRAWING SHEET SIZE = A1

LEGEND

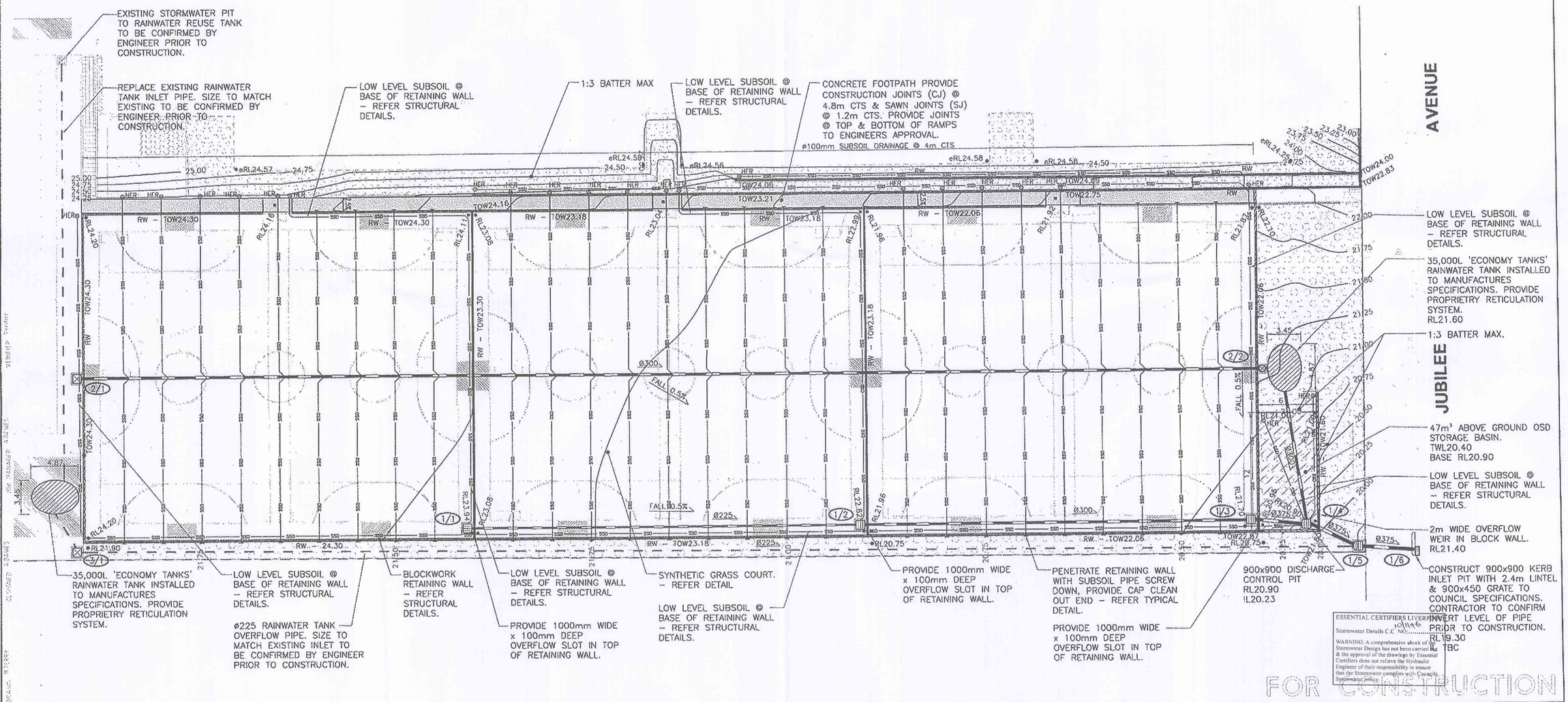
- STORMWATER PIPE
- STORMWATER INLET PIT WITH GRATE
- ø150 — PIPE SIZE AND DIRECTION
- •RL10.00 — REDUCED LEVEL
- •eRL10.00 — EXISTING LEVEL
- •TOW10.00 — TOP OF WALL
- RETAINING WALL
- CONCRETE FOOTPATH
- ⊙HER — HIGH END RISER
- —— SSD —— SUBSOIL DRAINAGE LINE
- —— SSD —|— SUBSOIL CLEANOUT
- 22.00 — CONTOUR LINE
- FALL 0.5% — SURFACE FALL

NOTES:

1. PROVIDE SUBSOIL DRAINAGE TO THE BASE OF ALL RETAINING WALLS – REFER STRUCTURAL DETAILS. DISCHARGE TO STORMWATER DRAINAGE SYSTEM.

PIT SCHEDULE

PIT No.	PIT SIZE	PIT TYPE	RL	IL
1/1	900X900	SURFACE INLET PIT	23.94	22.48
1/2	900X900	SURFACE INLET PIT	22.82	21.36
1/3	900X900	SURFACE INLET PIT	21.70	20.25
1/4	900X900	DISCHARGE CONTROL PIT	20.90	20.23
1/5	900X900	STROMWATER INLET PIT	19.50	18.65
1/6	900X900	KERB INLET PIT WITH 2.4m LINTEL & 900x450 GRATE	19.30	TBC
2/1	900X900	SURFACE INLET PIT	24.30	23.60
2/2	600X600	JUNCTION PIT	21.30	20.65
3/1	600X600	JUNCTION PIT	21.90	20.35



ISSUE	AMENDMENT	VERIFIED	APPROVED	DATE
1	PRELIMINARY ISSUE		A.D.	08.03.10
2	ISSUED FOR CONSTRUCTION CERTIFICATE		A.D.	18.03.10
3	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	19.03.10
4	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	24.03.10
5	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	29.03.10

CLIENT: PITTWATER RSL CLUB

ARCHITECT: Conzept Landscape Architects

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PROJECT: PITTWATER RSL CLUB FUTSAL COURTS

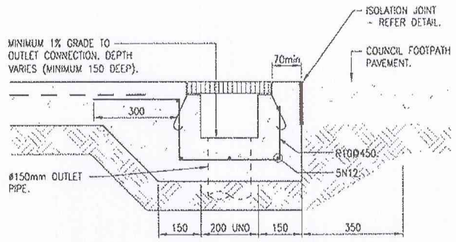
DRAWING TITLE: SITERWORKS & STORMWATER LAYOUT PLAN

JOB NUMBER: 08622

DRAWING NUMBER: C4.01

REVISION: 5

DRAWING SHEET SIZE : A1



GRATED TRENCH DRAIN
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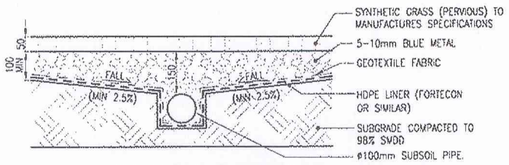

COURT PROFILE
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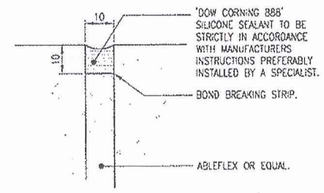

DETAIL B
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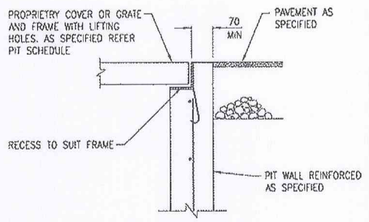

DETAIL 'A'
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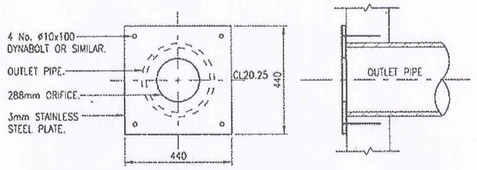

ORIFICE PLATE DETAIL
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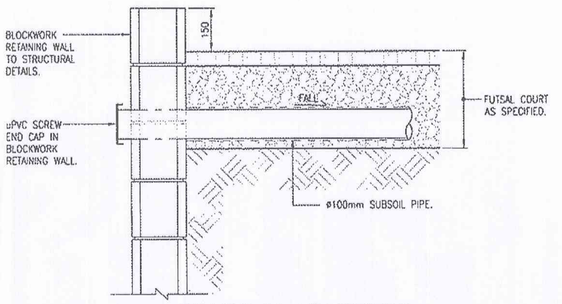
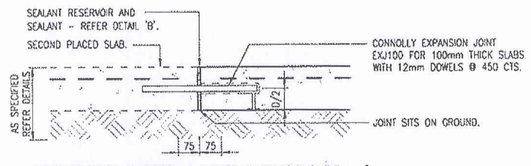
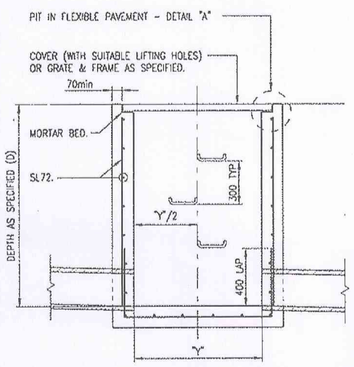


TYPICAL SUBSOIL CLEANOUT DETAIL
SCALE 1:10



FOOTPATH EXPANSION / CONSTRUCTION JOINT (CJ)
SCALE 1:10

NOTE - SHOULD BE USED AS A 'STOP WORK' JOINT
- MAXIMUM CONTINUOUS POUR = 12m
- UNO PROVIDE CJ AT 4.8m MAX. CTS



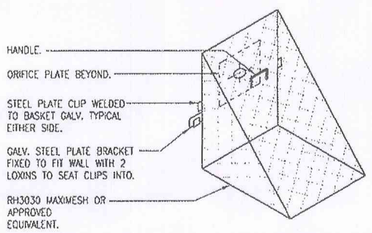
SECTION 1/—

PLAN

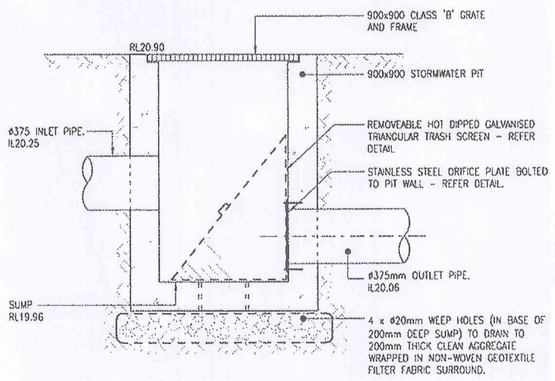
PIT STRUCTURE TO BE 150 THICK UNLESS NOTED OTHERWISE.

SURFACE INLET / JUNCTION PIT
NOT TO SCALE

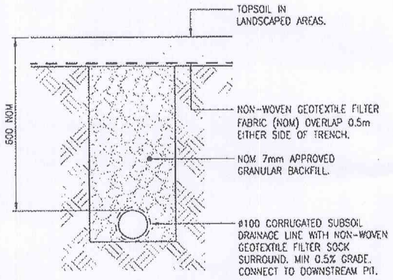
- PIT STRUCTURE TO BE 150 THICK UNLESS NOTED OTHERWISE.
- PROVIDE STEP IRONS IF PIT DEEPER THAN 900mm IN ACCORDANCE WITH AUSTRALIAN STANDARDS.



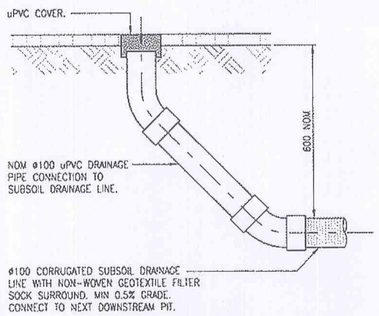
TRASH SCREEN DETAIL
NOT TO SCALE



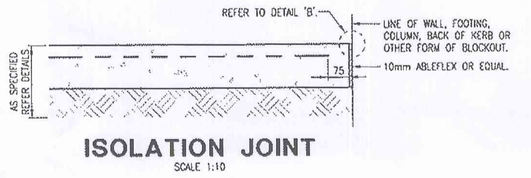
DISCHARGE CONTROL PIT
NOT TO SCALE



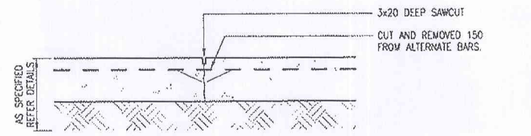
SUBSOIL IN LANDSCAPING
SCALE 1:10



HIGH END RISER (HER)
SCALE 1:10

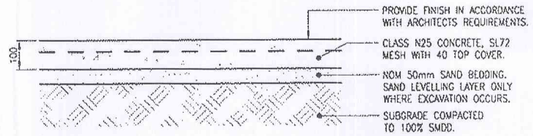


ISOLATION JOINT
SCALE 1:10



FOOTPATH SAWN JOINT (SJ)
SCALE 1:10

- JOINT TO BE SAWN AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY THAT IT WILL NOT BE DAMAGED BY SAWING (MAX 24HRS).
- UNO PROVIDE SJ AT 1.2m MAX. CTS.



CONCRETE FOOTPATH
SCALE 1:10

ESSENTIAL CERTIFIERS LIVERPOOL
Structural Details C.C. No. 1c/1196
WARNING: A comprehensive check of the Structural Design has not been carried out & the approval of the drawings by Essential Certifiers does not relieve the Structural Engineer of their responsibility to ensure the structural adequacy of the project.

FOR CONSTRUCTION

ISSUE	AMENDMENT	VERIFIED	APPROVED	DATE
1	PRELIMINARY ISSUE		A.D.	08.03.10
2	ISSUED FOR CONSTRUCTION CERTIFICATE		A.D.	18.03.10
3	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	19.03.10
4	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	24.03.10
5	REISSUED FOR CONSTRUCTION CERTIFICATE	S.F.	A.D.	29.03.10

CLIENT: PITTWATER RSL CLUB

ARCHITECT: Conzept Landscape Architects

AWARDS FOR EXCELLENCE WINNER BRISBANE 2009

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PROJECT: PITTWATER RSL CLUB FUTSAL COURTS

DRAWING TITLE: DETAILS SHEET

JOB NUMBER: 08622
DRAWING NUMBER: C5.01
REVISION: 5
DRAWING SHEET SIZE = A1