Mona Vale General Cemetery Plan of Management Attachments

Adopted by Pittwater Council: 2 April 2012

Adopted by the Dept. of Primary Industries: 13 September 2013

NSW GOVERNMENT | Department of Primary Industries Catchments & Lands

PITTWATER COUNCIL

ATTACHMENTS – VOLUME 2

ATTACHMENT 1 – CORRESPONDENCE BETWEEN PITTWATER COUNCIL & LPMA REGARDING PREPARATION OF POM

- Land and Property Management Authority - 26 October 2009
- Pittwater Council – 29 September 2009

Land and Property Management Authority

James Payne
Pittwater Council
PO Box 882
Mona Vale NSW 1660

Sydney Metropolitan Office,
Crown Lands Division
10 Valentine Street,
Parramatta NSW 2150
PO Box 3935, Parramatta
NSW 2124
Telephone 8836 5300,
Facsimile 8836 5365
www lands nsw gov au

File ref 09/15259

Dear James

Re Mona Vale (Turimetta) General Cemetery, Mona Vale - Draft Plan of Management.

Thank you for your recent letter notifying the Minister that Pittwater Council intends to prepare a draft plan of management for Mona Vale (Turimetta) General Cemetery

Pursuant to section 112 (2) of the Crown Lands Act 1989, I consent as the Minister's delegate, to the preparation of a draft plan of management over the Crown reserve listed below and other lands (coloured yellow with red border on map) which are being transferred to the Crown and added to D500520

Mona Vale Cemetery

Reserve	Lot & DP	Public Purpose	Management
Reserve D500520*	2/1124862	General Cemetery	Mona Vale General Cemetery (D500520) Reserve Trust Pittwater Council manages affairs of trust
State of NSW	8/1124862	TBA	LPMA Transferred to Crown and to be added to D500520
Local road	Pt local road adjacent Lot 8/1124862	TBA	Pittwater Ccl Local road (Walana Rd) to be transferred to Crown and added to D500520
Pittwater Ccl	4/350940	TBA	Pittwater Ccl To be transferred to Crown and added to D500520
Pittwater Ccl	3/350940	TBA	Pittwater Ccl To be transferred to Crown and added to D500520
*Reserve excludes strip of land excised on northern boundary in 2009			

RECEIVED
2 9 OCT 2009
PITTWATER COUNCIL

The attached table outlines matters that should be addressed in the draft plan A reserve profile and departmental map are attached for information
When completed the draft plan should be sent to the department for comment

Mona Vale (Turimetta) General Cemetery at Mona Vale is an important community resource and I fully support Council's initiative in preparing a plan of management

If you require further information or assistance please contact Ian Ferguson on 8836 5312 or email ian ferguson@lands nsw gov au

Yours sincerely

26/10/07

Andrew McAnespie
Regional Manager
Crown Lands Division
Sydney

Crown Lands Act 1989

Statutory provisions that should be addressed in DPOM		
s 10	Objects of Act	
s 11	Principles of Crown land management	
s 87	Power of Minister to reserve land - the public purpose	
s 92-5	Reserve trusts	
s 102	Consent of Minister to sale, lease easement, licence or mortgage	
s 106	Proceeds	
s 112	Preparing a draft plan of management including an "additional purpose" – Minister's consent required	
s 113	Referral of draft plans	
s 114	Adoption of plan	
s 108	Temporary licences	
s 122	Reports by reserve trusts – Refer Cl 32 of CL Regulation 2006 *	
Also	**Crown Lands Regulation 2006**	

The draft plan should include the cost of preparation and how the plan was funded For example, was it funded from the reserve trust account, council budget or external grants/loans? If the department funded preparation of the plan (whole or part) this should be acknowledged in the Forward

* The draft plan should include an abbreviated Reserve Trust Report for the last financial year as per s 122 of the CLA 89 and Cl 32 of the CLA Regulation 2006

Type	**Dedication 500520**	**Gazetted**	18 Oct 1905
Name	Turimetta General Cemetery	**Revoked**	
Office	Metropolitan	**Location**	Mona Vale
Management Type	Reserve Trust		

Trust

Name	Mona Vale General Cemetery (D500520) Reserve Trust	**Appointed**	16 Jul 2004

Management

Council Manager	Pittwater Council	16 Jul 2004

Purpose (1,1)

General Cemetery	18 Oct 1905

Area (1,1)

4 047ha	TOTAL	18 Oct 1905

Lot (2,4)

WH 5//1124862	1640m2	08 May 2008
WH 2//1124862	3 859ha	08 May 2008

Reference (4)

MN83R114	CREATION	
MN83R91	TRUSTEE	
MS0512516	CREATION	LOT 7099
RJS (CLIB)	VALIDATION STATUS	GAZ 18/10/1905

Related Account (0,0)

No data for this item

Correspondence (0,0)

No data for this item

Administrative Boundary (11,13)

Parish	Narrabeen	Cumberland
County	Cumberland	
Land District	Metropolitan	
Lands Office	Metropolitan	
LGA	Pittwater	
Aboriginal Land Council	Sydney Newcastle	
RLPB District	Moss Vale	
Suburb	Mona Vale	
Electorate	Pittwater	
Federal Electorate	Mackellar	
Cma	Hawkesbury-Nepean	

Step Display (3,7)

Account Maintenance Re Lot Subdivision	Complete	04 Sep 2008	04 Sep 2008
Ad Hoc File Notes	Complete	15 Aug 2007	15 Aug 2007
Crown Conversion Account Progress Tracking	Active	26 Mar 2007	12 Nov 2008
Data Quality Team Maintenance	Active	04 Sep 2008	04 Sep 2008
Data Verification	Active	19 Jul 2004	19 Jul 2004
Smg Workflow	Complete	29 Jul 2008	04 Sep 2008
Smg Workflow	Complete	04 Sep 2008	11 Nov 2008

Description (1,1)

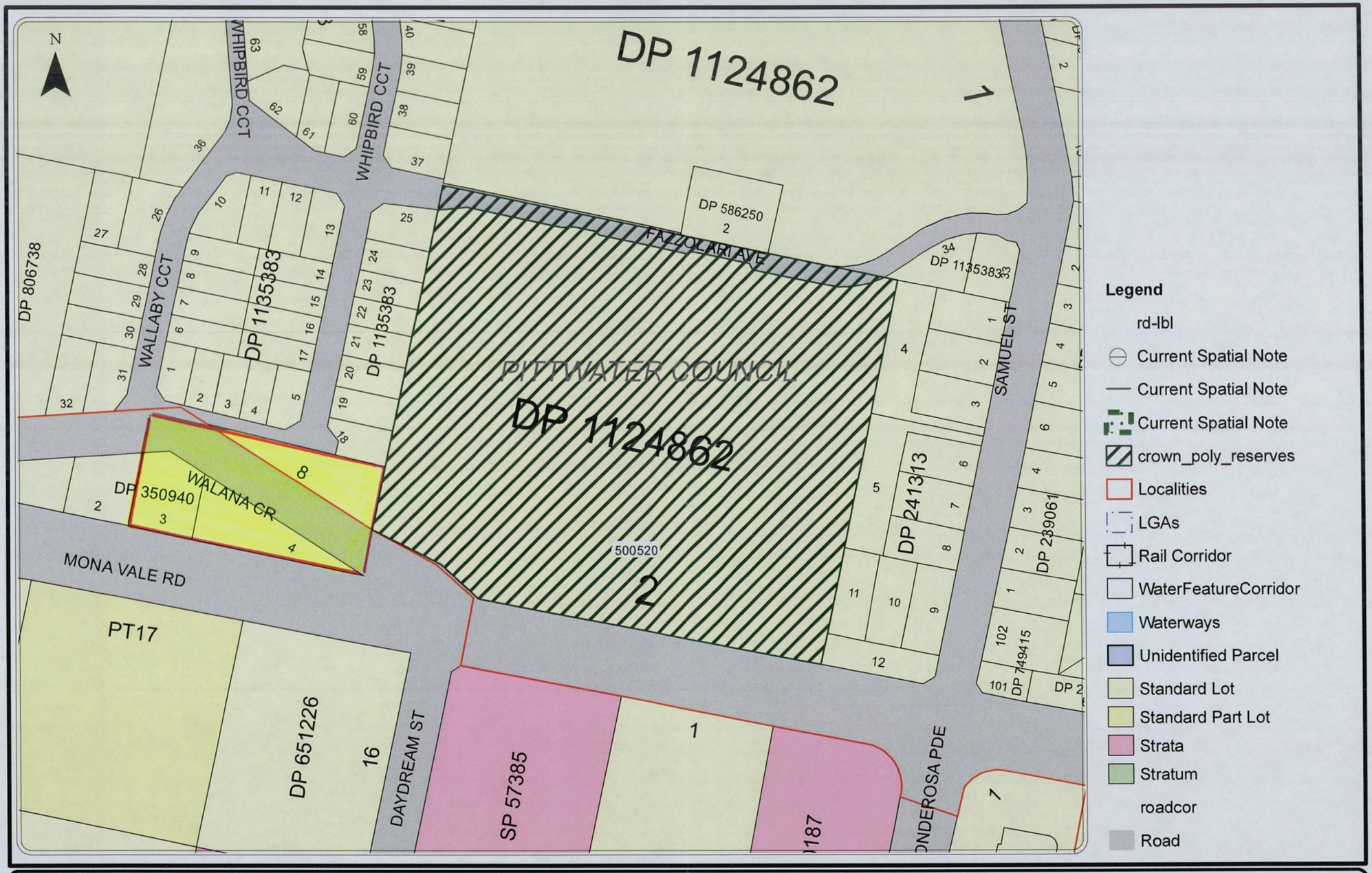
See also plan 2318-3000	01 Jan 1900

Classification

SMS CLASSIFICATIONS	PUBLIC OR COMMUNITY BUILDING OR FACILITY	PRIMARY

Reserve Financial Detail

No data for this item



DISCLAIMER
The Crown information shown has not been validated and may contain errors and omissions. Verification of Crown information should be made through the Land NSW office displayed. This is a diagramatic representation only.

Printed By: Ian Ferguson
Date Printed: 20/10/2009
Land NSW Office: METROPOLITAN
Telephone: (02) 8836 5300

Scale 1:2,216
20 0 20 40 60
Metres

PARISH: NARRABEEN
COUNTY: CUMBERLAND
LGA: PITTWATER
SUBURB: MONA VALE

Department of Lands

www.lands.nsw.gov.au

Nadine Phipps, Administration Officer/Cemetery Supervisor
Phone 9970 1341 Mobile 0404 842 408

29 September 2009

Mr John Filocamo
NSW Land & Property Management Authority
Crown Lands section
PO Box 3935
Level 12, 10 Valentine Avenue
PARRAMATTA NSW 2124

Dear Mr Filocamo

Re: Mona Vale (Turimetta) General Cemetery

Pittwater Council is seeking permission to develop a Plan of Management for the Mona Vale General Cemetery as specified under Section 112 of the Crown Lands Act, 1989.

The study area for the Plan of Management is to consist of two components (see attached diagram):
PART A – Existing Cemetery, and
PART B – Proposed Additional Cemetery Lands, as follows:

PART A – Existing Mona Vale (Turimetta) General Cemetery

Lot 2 – DP 1124862 - 3.867 ha Crown Land Zone 5(a) Special Purposes – Cemetery

Trustee – Pittwater Council

Note: As part of the recent land transactions a 1688 sqm strip was excised from the northern boundary.

PART B – Proposed Additional Cemetery Lands

Lot 8 – DP 1124862 - 1295 sqm Department of Lands Zone 1(a)

Road Reserve Walana Crescent approx. 2286 sqm (Crown Road Reserve)

Lot 4 – DP 350940 - 1292 sqm Pittwater Council – Zone 6(a)

Lot 3 – DP 350940 - 1080 sqm Pittwater Council – Zone 6(a)

Lot 2 – DP 350940 *(*see note)* 940 sqm Pittwater Council – Zone 6(a)

Approximate total area - 6930 sqm

** Council is currently proposing to also add the adjoining Lot 2 DP 350940 (940 sqm) to the proposed additional lands.*

The above lots are currently subject to land dealings for amalgamation, and rezoning for cemetery purposes.

The existing cemetery area requires redesign through a Landscape Master Plan incorporated into the Plan of Management to facilitate:

- Redesign of the internal road functions to provide new gates and vehicular access from Fazzolari Avenue off Samuel Street with the required closure of the current access to Mona Vale Road.

- Redesign and extension of the grave plot layout to extend the availability of plots currently estimated at 2 years out to 12 to 15 years.

- Redesign and extension of the bushland garden niches to provide an extended availability for the placement of cremated ash remains.

- Redesign and extension of the landscaping throughout the cemetery.

The proposed additional lands require design through a Landscape Master Plan incorporated into the Plan of Management to facilitate

- Design of the proposed use of the land for bushland garden niches and lawn cemetery
- Design of the landscape treatment for the additional lands

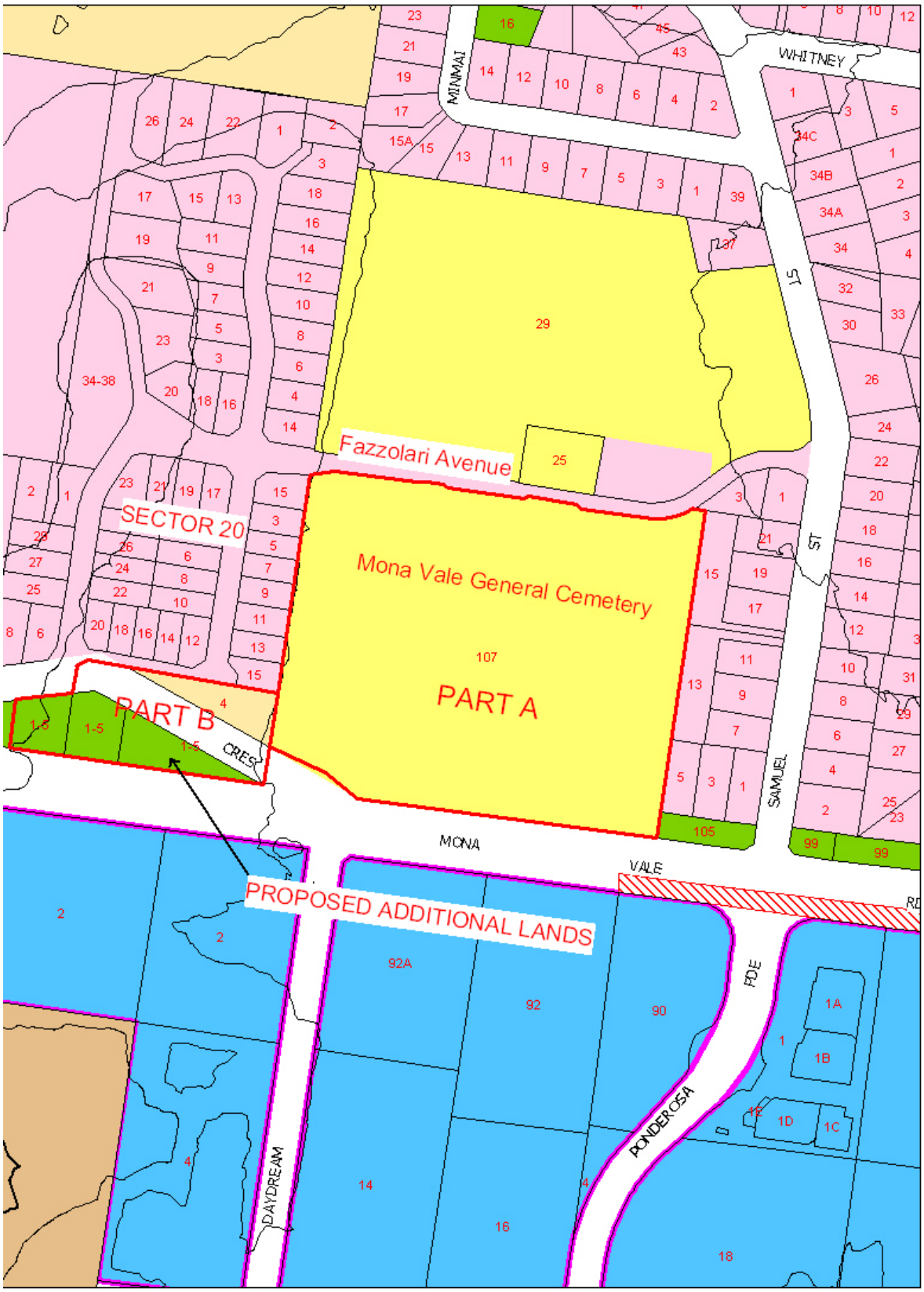
Although it is not envisaged that the cemetery will extend to the additional lands for a period of say 5 to 10 years, the land area requires improvements to maintain the area in good condition with fencing and a landscape buffer treatment to the perimeter.

It would be appreciated if the Department would support this request from Council as Trustee of the Cemetery to prepare a draft Plan of Management and provide written approval to that effect.

For further information, please contact James Payne, Manager – Urban Infrastructure on 9970 1188 or Glenn Davis, Principal Officer – Commercial on 9970 1290.

Yours faithfully

James Payne
MANAGER – URBAN INFRASTRUCTURE



Study Area – Mona Vale General Cemetery

ATTACHMENT 2 – CORRESPONDENCE BETWEEN PITTWATER COUNCIL & DEPARTMENT OF LANDS REGARDING LAND TRANSFERS

- Department of Lands – 17 December 2004
- Pittwater Council – 11 June 2007
- Department of Lands – 10 September 2007

22 12 2004

Department of Lands

Land Administration & Management
Property & Spatial Information

Your Ref: [Click here and type]
Our Ref: 03R114
Contact: Mr John Fitocamo
Phone: (02) 9895 6254
Email: camo@lands.nsw.gov.au

The General Manager
Pittwater Council
Po Box 882
Mona Vale NSW 1660

17 December 2004

Attention: Chris Hunt

Dear Chris

Re: Mona Vale Cemetery – Sector 20 Development

Reference is made to previous emails and discussions in relation to the exchanges of land within the Mona Vale Cemetery, Crown reserve dedicated 18 October 1905, which Council is the reserve trust manager.

The proposal is understood to be as follows,

a) The land coloured yellow on attached diagram A1& A2 being dedicated Crown Cemetery land required for legal road access to proposed subdivision by Villaworld. The area of land being 1687.7m^2.
b) Villaworld proposes to provide enhancement to the proposed reserve boundary and new entrance and amenities shown by perspective drawings tagged B.
c) Council proposes to obtain title to land (1321m^2) from Villaworld shown by orange Colour on diagram A1.
d) Council proposes to close Wilana Crescent, a Public Road shown by blue colour on diagram A1.
e) Council currently has title to the lands between Wilana Crescent and Mona Vale Road shown by green colour on diagram A1.
f) It is proposed that the existing easement for electricity purposes, in favour Energy Australia located on Villaworld land is to be relocated as an underground line within the Crown reserve cemetery as shown on diagram A1 & A2.
g) A consolidation of lands described in c, d and e above, shown by red edge on diagram A1, approximately 50 x 117 metres, is being offered wholly or partly, depending valuation, in exchange for land described in (a), yellow coloured area in diagram A, and as compensation of the easement for electricity purposes described in f above.

The department would request that Council undertake all land exchanges based on valuation and actions being undertaken by Council using the provisions of the *Land Acquisition (Just Terms) Compensation Act* undertaking the valuation using the Valuer General. Council should seek

Sydney Metropolitan Office – Crown Lands NSW
Level 12, 10 Valentine Street, Parramatta NSW 2124
PO Box 3935, Parramatta NSW 2124
Telephone: 9895 7657 Facsimile: 9895 6227
www.lands.nsw.gov.au

- the value of Lands (Mona Vale Cemetery) site required for access to Villa World, (yellow coloured on diagram A1& A2) referencing the value of the proposed subdivision, and the value-add of this access, as the only available legal access to the proposed subdivision, which is indicated as not being able to proceed without the exchange site, proposed to be used for safe vehicular access to the Villa World subdivision, as supported by Council.

- to have fencing of a suitable nature (and agreed by the department), reinstated along the whole of the new cemetery boundaries.

- the value of the compensatable interest and blot on title to the Crown for the relocation of the easement for electricity easement through the Crown reserve Mona Vale Cemetery.

- the value of the land shown by red edge, as proposed for exchange with the intention to add these lands to the Crown reserve Mona Vale Cemetery, at no cost to the Crown, to compensate for the access and the lands to be acquired by Council shown by yellow colour and the relocation of the easement for electricity onto the Crown reserve Mona Vale Cemetery.

- The, value, (i.e. compensation value to the Crown, for the acquisition of the yellow coloured area, plus the relocation and blot on title compensation for the electricity easement area) should be determined by a valuer as the value for the land within the area edged red, which is to be dedicated at no cost to the Crown, plus a cash settlement, to create an equal value exchange for the Crown

Throughout the negotiations of this matter, the Department has indicated that there should be a significant net benefit to the Cemetery site as a result of this proposed exchange.

Given that there is a critical shortage of cemetery space in the Sydney region the exchange proposal will result in a significant community benefit. The provision of extra land to the cemetery reserve will provide Council as the trust manager of the reserve continued and enhanced cemetery related business opportunities.

The above should form the basis of brief to a valuer. Copies of all valuation reports should be provided to the department as part of the *Land acquisition (Just Terms) Compensation Act* process, acquisition by agreement. (Sec 29(4))

If you wish to discuss this matter further please ring me on 9895 6254

Yours Faithfully

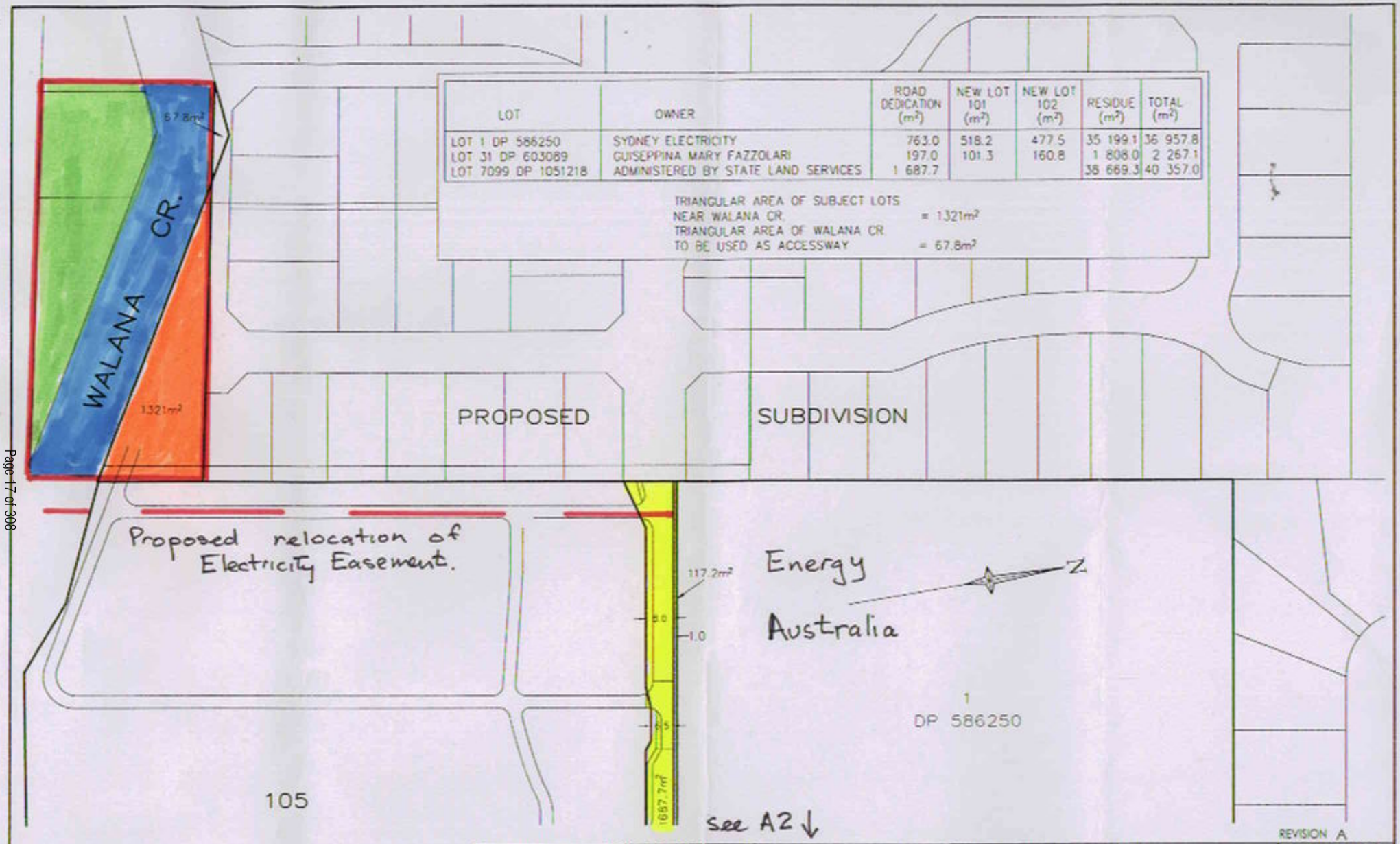
John Filocamo

John Filocamo
Manager, Land Management and Planning
Sydney Metropolitan Office

A1

LOT	OWNER	ROAD DEDICATION (m^2)	NEW LOT 101 (m^2)	NEW LOT 102 (m^2)	RESIDUE (m^2)	TOTAL (m^2)
LOT 1 DP 586250	SYDNEY ELECTRICITY	763.0	518.2	477.5	35 199.1	36 957.8
LOT 31 DP 603089	GUISEPPINA MARY FAZZOLARI	197.0	101.3	160.8	1 808.0	2 267.1
LOT 7099 DP 1051218	ADMINISTERED BY STATE LAND SERVICES	1 687.7			38 669.3	40 357.0

TRIANGULAR AREA OF SUBJECT LOTS NEAR WALANA CR. = 1321m^2
TRIANGULAR AREA OF WALANA CR. TO BE USED AS ACCESSWAY = 67.8m^2



0 20 40 60 80 100
1:1000

THIS IS THE PLAN REFERRED TO IN MY LETTER
DATED: 2-09-04
Registered Surveyor NSW

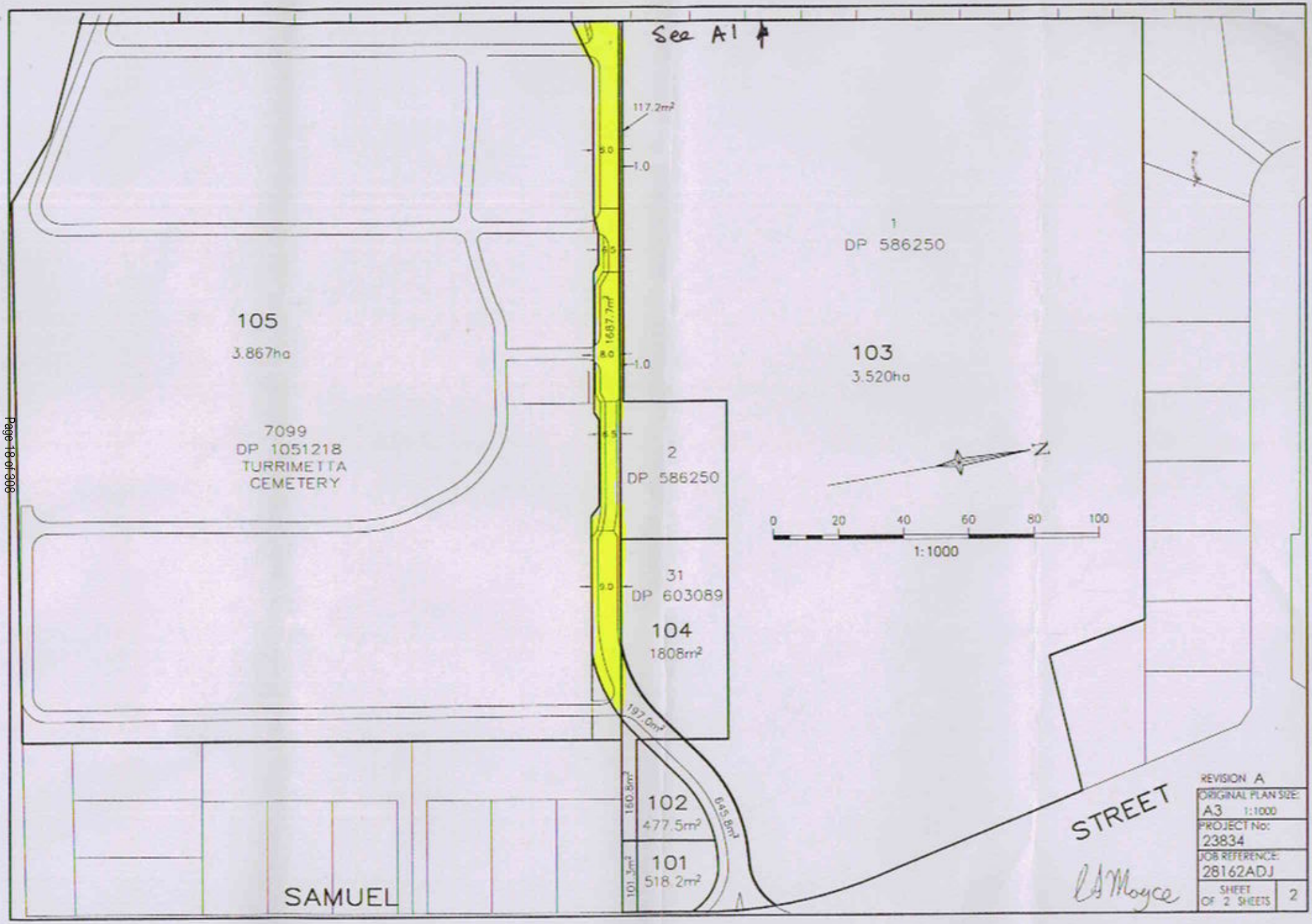
DATE OF SURVEY: 2-09-04
DATUM: -
SITE AREA: -

LOCKLEY LAND TITLE SOLUTIONS
Registered Surveyors NSW
19 Massey Street Gladesville NSW 2111
PO BOX 400 Gladesville NSW 1675
ph:(02) 9879 6077 fax:(02) 9879 7143

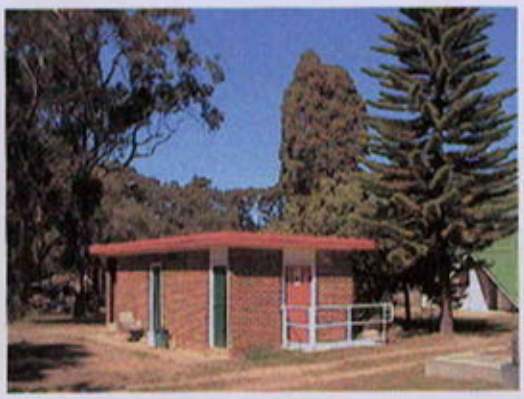
CLIENT: VILLA WORLD LIMITED
PLAN OF NEW BOUNDARIES OF LOTS NEXT TO SECTOR 20 AT MONA VALE ROAD, MONA VALE.
LGA:PITTWATER

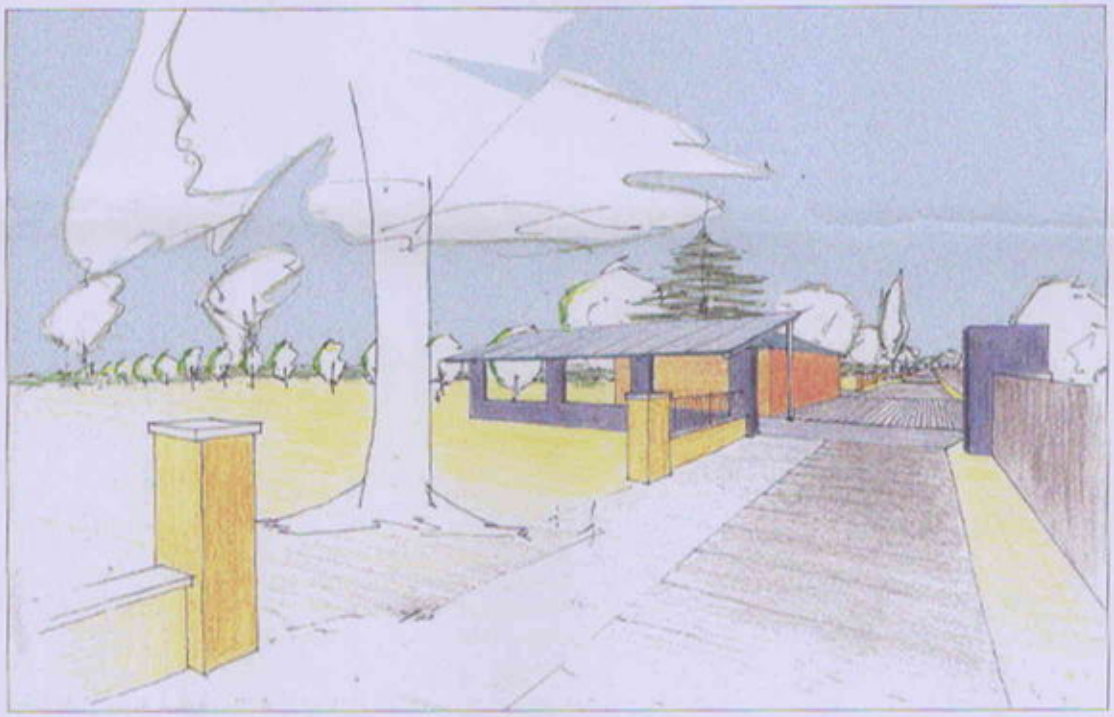
REVISION A
ORIGINAL PLAN SIZE: A3 1:1000
PROJECT No: 23834
JOB REFERENCE: 28162ADJ
SHEET 1 OF 2 SHEETS

A2


See A1
117.2m²
5.0
1.0
6.5
1687.7m²
8.0
1.0
6.5
9.0
105
3.867ha
7099
DP 1051218
TURRIMETTA
CEMETERY
1
DP 586250
103
3.520ha
2
DP 586250
31
DP 603089
104
1808m²
197.0m²
180.8m²
102
477.5m²
645.8m²
101.3m²
101
518.2m²
SAMUEL
STREET
N
0 20 40 60 80 100
1:1000
REVISION A
ORIGINAL PLAN SIZE:
A3 1:1000
PROJECT No:
23834
JOB REFERENCE:
28162ADJ
SHEET
OF 2 SHEETS
2

B1





- To create a sense of Place
- To create a Gateway
- Turn the Axis
- Provide Amenities
- Signage and Information

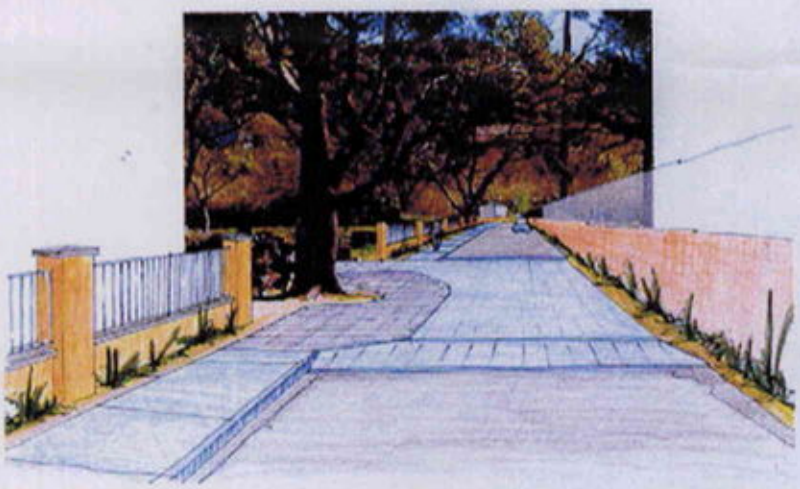
Annand Alcock Urban Design
Level 3 15-17 Wentworth St Sydney 2000
Ph: (02) 9267 0683 Fax: (02) 9283 6759
PO Box 63 Darlinghurst NSW 1300

CEMETERY ENTRY CONCEPT

Sector 20, Warriewood

October 2004

B2



Annand Alcock Urban Design
Level 3 15-17 Wentworth St Sydney 2000
Ph: (02) 9267 0683 Fax: (02) 9283 6759
PO Box 63 Darlinghurst NSW 1300

PROPOSED ACCESS ROAD

October 2004

Sector 20, Warriewood

Department of Lands

Land Administration & Management
Property & Spatial Information

RECEIVED
13 SEP 2007
PITTWATER COUNCIL

Your Ref:
Our Ref: MN83R91&Mn83R114
Contact Officer: John Filocamo
Telephone: (02) 8836 5313
email: john.filocamo@lands.nsw.gov.au

The General Manager
Pittwater Council
PO Box 882
Mona Vale
NSW
1660

10 September 2007

Attention: Mark Ferguson

Dear Mark

Re: Reserve Trust sale of part Mona Vale Cemetery

I refer to your letter of 11 July 2007 in relation to the proposed sale of part of the Mona Vale Cemetery by the *Mona Vale General Cemetery (D500520) Reserve Trust* to Villa World Limited.

The Minister for Lands has now completed the statutory advertising for the sale and approved the sale of the land. Further, the Minister has also given directions on how the proceeds from the sale are to be disbursed.

The following are the recommendations approved by the Minister.

1. The Minister, pursuant to S.102 of the Crown Lands Act 1989, consent to the Mona Vale General Cemetery (D5OO520) Reserve Trust:
   (i) selling the orange coloured area on diagram "B" to Villa World Limited', and
   (ii) granting two electricity easements to Energy Australia (one within the proximity of the western boundary of the cemetery and the other within approximately 50 metres of the western boundary of the cemetery, along the alignment of the existing gravel track/roadway within the cemetery grounds) for the sum of $500,000 plus GST, if required, provided that Villa World Limited:
   (a) transfers the light blue coloured area (of 1321m^2) on diagram "B" to the Trust';
   (b) connects all internal cemetery roads to its proposed subdivision's new access road within the orange coloured area; and
   (c) undertakes improvements to the cemetery including fencing the boundary of the new access road and gate all entrances to the cemetery from this new road.

2 The Minister, pursuant to S.105 of the Crown Lands Act 1989, appoint Mark Ferguson, General Manager of Pittwater Council, to execute all conveyances and instruments and do all such other things as may be necessary to complete the sale in 1 (above).

3 The Minister, pursuant to S.106 of the Crown Lands Act 1989, direct that the proceeds of the sale in 1 (above) be applied as follows:
   - $300,000 be used by the Trust to acquire the red and green coloured areas on diagram "B" from Pittwater Council for addition to the cemetery;
   - $50,000 be paid into the Public Reserves Management Fund (PRMF);

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Level 12, 10 Valentine Ave, Parramatta NSW 2124
PO Box 3935, Parramatta NSW 2124
Telephone: 8836 5300 Facsimile: 8836 5365
www.lands.nsw.gov.au

New South Wales Government

- $12,500 be paid to Crown Lands Division of the Department of Lands to recover legal costs for defending the S.88K Conveyancing Act court action; and
- the balance of $137,500 to be used by the Trust to refurbish identified cemetery buildings and establish a new car park adjacent to the new cemetery entry.

This approval now clears the way forward for the transfer of the land as per the previous negotiations between Council, Villa World and the Department. The Department is of view that $300,000 is sufficient to pay for the areas coloured red and green for addition to Cemetery Crown reserve. The Department is not prepared to commit any further funds for these purchases.

Council should now commence action to undertake the necessary road closing of that part of Walana Crescent (red colour diagram B) for the subsequent transfer of this and the green coloured area shown on diagram B to the Trust.

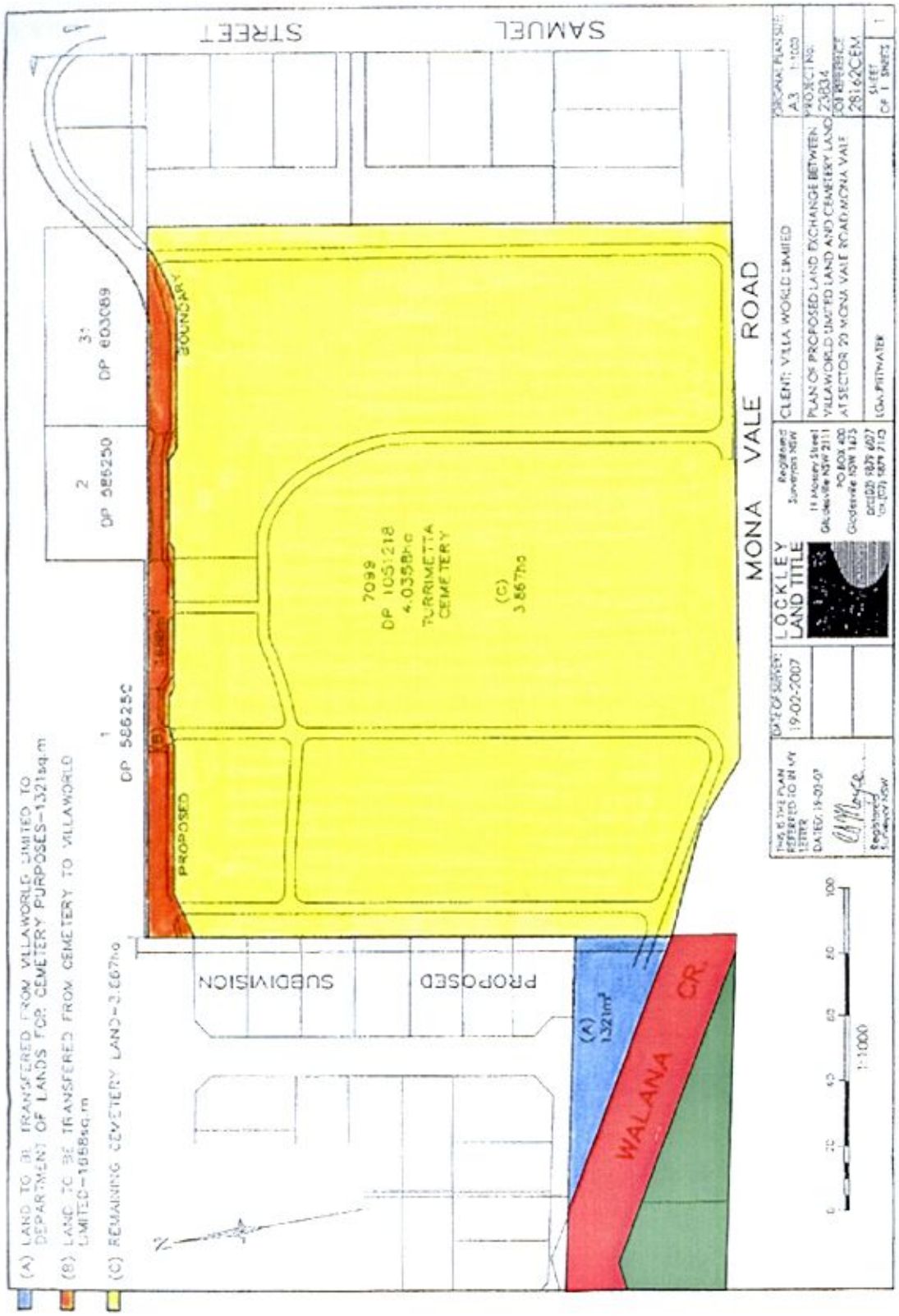
If you wish to clarify this matter further please ring me on 8836 5313.

Yours Faithfully

John Filocamo

John Filocamo
Program Manager, Land Administration
Sydney Hunter Region

'B'



Red Colour: Closed Road
Green Colour: Lands owned by Pittwater Council

Ian Dreghorn, Principal Property Officer
8am to 5:30pm Mon - Thurs, 8am to 5pm Fri
Phone 9970 1248 Mobile 0417 045 643

11 July 2007

Mr John Filocamo
Program Manager, Land Administration
Sydney Hunter Region
Department of Lands - Crown Lands NSW
Sydney Metropolitan Office
PO Box 3935
PARRAMATTA NSW 2124

Dear Sir

Re: Proposed sale of part of Crown Reserve D500520

At its meeting held on 18 June 2007, Pittwater Council, in its capacity as Reserve Trust Manager of the Mona Vale General Cemetery (D500520) resolved as follows:

"1. That the proposed commercial transaction generally in accordance with that outlined below be endorsed by the Council as Reserve Trust Manager of the Mona Vale General Cemetery (D500520) Reserve Trust:

(a) that part of the land owned by Villa World Limited (Villa World) marked (A) on the plan marked Annexure A be transferred to the Mona Vale General Cemetary (D500520) Reserve Trust for cemetery purposes in exchange for rights of access and construction on the northern boundary of the cemetery as shown on the attached plan and marked (B) to become the public access road to the proposed development and to eventually be dedicated as public road reserve in favour of Council;

(b) the grant of electricity easements in favour of Energy Australia across the cemetery, one within the proximity of the western boundary of the cemetery, the other to be granted within the location of approximately 50 metres of the said western boundary, along the alignment of the existing gravel track/roadway within the cemetery grounds (as shaded on the plan marked Annexure B);

(c) that as part of the construction by Villa World of the access road as referred to in point (a) above, that Villa World connect all internal cemetery roads to such access road (as referred to on the plan marked Annexure A); and

(d) that in exchange for the above, Villa World will pay the Mona Vale General Cemetery (D500520) Reserve Trust the sum of $500,000 (plus GST, if applicable).

2. That the statutory notification and other procedures set out in paragraph 2.2 of the report be implemented.

3. That the General Manager be authorised to execute all necessary documents to effect this transaction."

Following this resolution a public notice of the Trust's intention to sell, the land was placed in the Manly Daily on Tuesday 26 June 2007 setting out the date and terms and conditions of the Trust's decision together with the location of the land. A copy of the advertisement is enclosed for your records.

No submissions have been received in response to the public notice following the 14 day period.

As previously noted it is also proposed to create two easements for Electricity in favour of Energy Australia over what will become both parcels of land at the time of drafting the subdivision.

The proposed sale and the creation of the proposed easements are now forwarded to your office for Ministerial Consent and completion of all necessary matters to conclude the sale.

Further to the above under Section 105 of the CLA 1989 it is requested that the Minister appoint Council to execute conveyances and instruments and all such other things that may be necessary for the due exercise of these functions on behalf of the Reserve Trust , Mona Vale General Cemetery (D500520).

Please contact me should you require any further actions by the Reserve Trust to conclude this matter.

Yours faithfully

Ian Dreghorn
PRINCIPAL PROPERTY OFFICER

Encl.

cc: Trudy Sheehan – Mallesons Stephens and Jaques

THE Manly Daily

Classified Ads – Public Notices Tuesday 26 June 2007

Public notices

PITTWATER COUNCIL

NOTICE OF INTENTION FOR THE SALE OF A PORTION OF CROWN RESERVE - MONA VALE (TURIMETTA) CEMETERY 107 MONA VALE ROAD, MONA VALE

Pittwater Council, as Reserve Trust Manager of the Mona Vale General Cemetery (D500520), notified in the Government Gazette of 18 October 1905 and 16 July 2006, resolved on 18 June 2007 to recommend to the Minister administering the Crown Lands Act, the sale of a narrow strip of cemetery land on the northern boundary of the Mona Vale (Turimetta) Cemetery being approximately 1688m2 to Villa World Limited.

It is intended that the 1688m2 strip of land be sold to Villa World Limited and then be subsequently dedicated to the Council as a public road for general public access.

In exchange for the above, Villa World Limited will pay the Mona Vale General Cemetery (D500520) Reserve Trust the sum of $500,000 (plus GST, if applicable).

In addition to the above, it is also intended that a 1321 m2 triangular piece of land to the west of the Cemetery fronting Walana Crescent, Mona Vale, currently owned by Villa World Limited, be transferred to the Mona Vale General Cemetery (D500520) Reserve Trust for cemetery purposes.

As part of the construction of the access road by Villa World Limited, Villa World Limited will connect all internal cemetery roads to such access road.

It is also intended to grant electricity easements in favour of Energy Australia across the cemetery, one within the proximity of the western boundary of the cemetery, the other to be granted within the location of approximately 50 metres of the said western boundary, along the alignment of the existing gravel track/roadway within the cemetery grounds.

Any person wishing to make a submission to the Council on this proposed sale/arrangement should do so in writing, addressed to the General Manager, Pittwater Council, PO Box 882, Mona Vale NSW 1660 within 14 days of this Notice.

Any enquiries in relation to this matter should be referred to Ian Dreghorn, Principal Property Officer at Pittwater Council on 9970 1248.

Mark Ferguson
GENERAL MANAGER

ATTACHMENT

MFS
DIVERSIFIED GROUP

6 June 2007

9 Ouyan Street
Bundall QLD 4217

PO Box 7720 GCMC
Bundall QLD 9726

Ph. (07) 5588 8888
Fax. (07) 5588 8800

www.mfsdiversified.com.au
info@mfsdg.com.au

Ian_Dreghorn/Pittwater_Council@pittwater.nsw.gov.au

The Manager
Pittwater Council
PO Box 882
MONA VALE NSW 1660

Attention: Ian Dreghorn

INCORPORATING
VILLAWORLD
MODA

Dear Ian

WITHOUT PREJUDICE

PROPERTY: WARRIEWOOD VALLEY URBAN RELEASE – 29 SAMUEL STREET AND 4-14 WALANA CRESCENT, MONA VALE

We refer to the Land and Environment Court Proceedings No 10677 of 2006 – DA No 352/05 with respect to the above property.

We have met with representatives of the Department of Lands and, with a view to expediting the resolution of this matter, set out the parties "in principle" agreement so that works on the site may commence forthwith following Council's approval.

The "in principle" agreement is as follows:

1 that part of the land owned by Villa World Limited (Villa World) marked (A) on the plan marked Annexure A be transferred to the Department of Lands for cemetery purposes in exchange for rights of access and construction on the northern boundary of the cemetery as shown on the attached plan and marked (B) to become the access road to our proposed development and to eventually be dedicated as public road reserve in favour of Council;

2 the grant of electricity easements in favour of Energy Australia across the cemetery, one within the proximity of the western boundary of the cemetery, the other to be granted within the location of approximately 50 meters of the said western boundary, along the alignment of the existing gravel track/roadway within the cemetery grounds (as shaded on the plan marked Annexure B);

3 that as part of the construction by Villa World of the access road as referred to in point 1 above, that Villa World connect all internal cemetery roads to such access road (as referred to on the plan marked Annexure A); and

4 that in exchange for the above, Villa World will pay the Department of Lands the sum of $500,000 (plus GST, if applicable).

This "in principle" agreement is to secure the grant by the Department of Lands of a licence in favour of Villa World to allow Villa World to gain access to the above sites to commence works within the period of approximately two weeks from the date of this letter, as well as to expedite the necessary processes and procedures so as to give effect to the registration of the relevant subdivisional plan by no later than the end of September 2007.

In the event of any delays to the timeframes referred to in the previous paragraph, Villa World, together with the Department of Lands have agreed that the payment outlined in item 4 above will reduce at the rate of $20,000 (plus GST, if applicable) per week.

We therefore respectfully request that Council give its assistance to and support for our proposal as set out above, so as to avoid any further and unnecessary delays to our proposed development.

All parties are willing to cooperate and are fully committed to achieving these outcomes within the shortest possible timeframe.

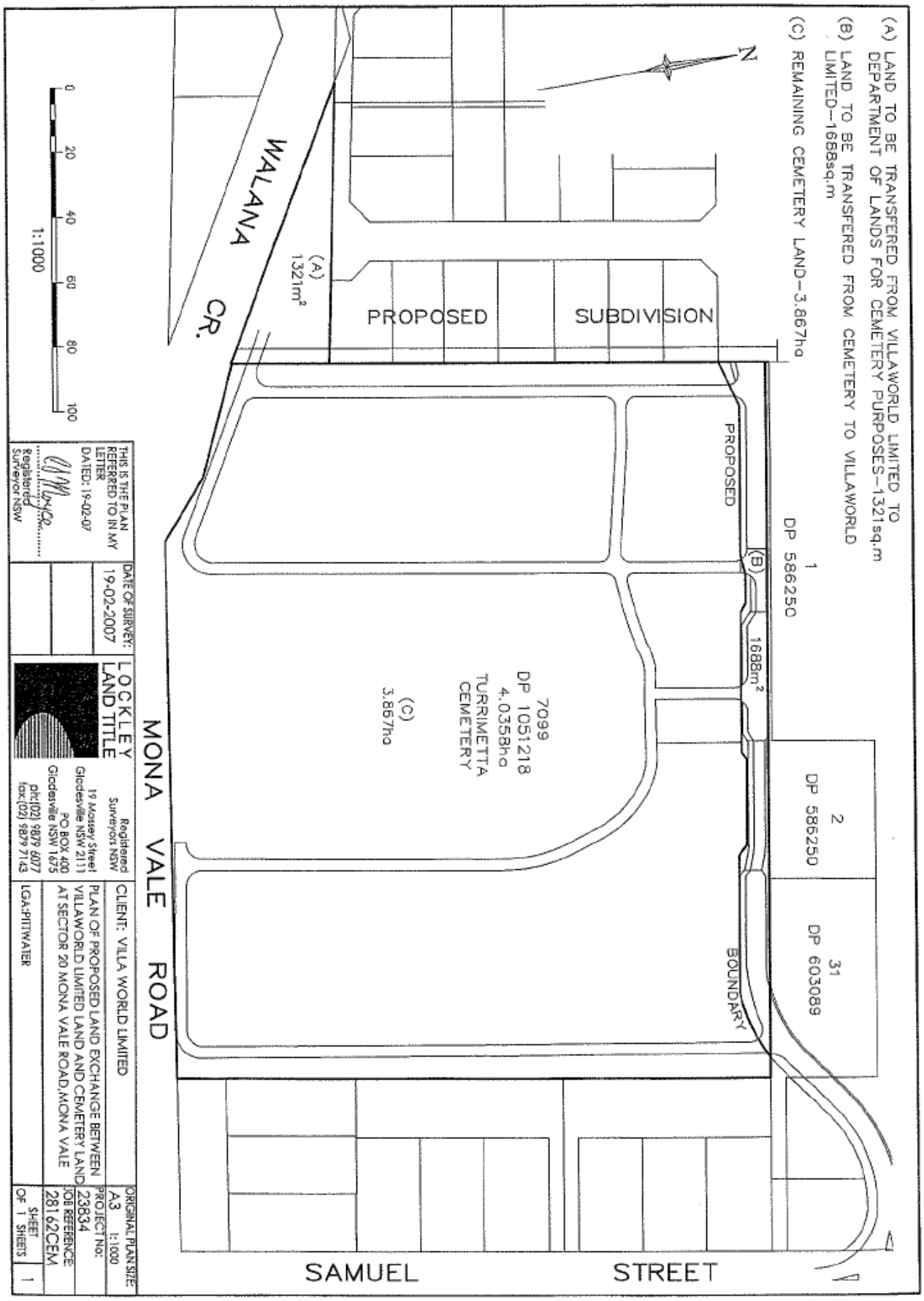
Your urgent attention and response would be greatly appreciated.

Yours sincerely

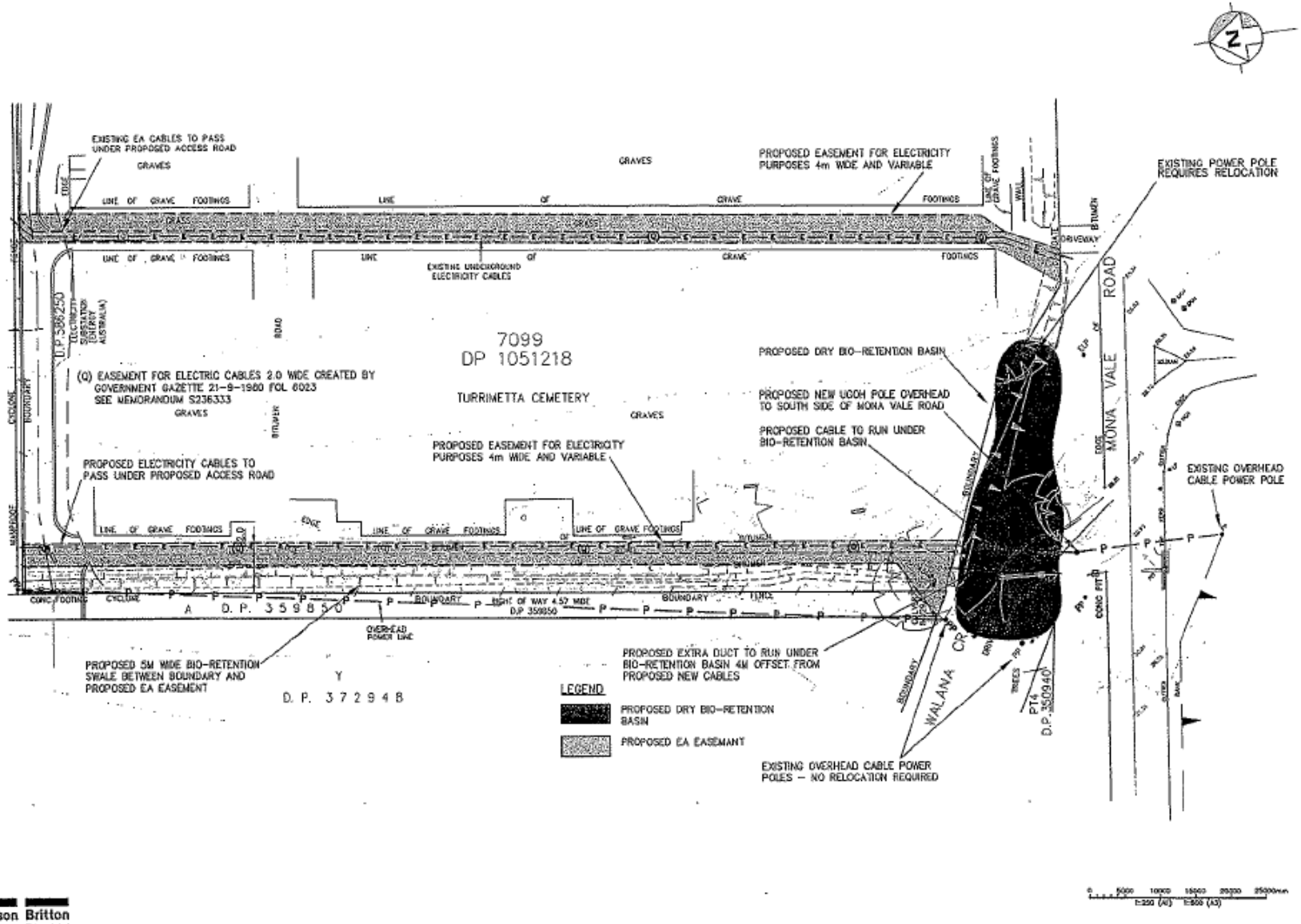
Rob Bosiljevac
In House Solicitor
MFS Diversified Group
Phone: (07) 5588 8818
Fax: (07) 5588 8800
Email: rbosiljevac@mfsdg.com.au

copy: dwayne.scholz@lands.nsw.gov.au

ANNEXURE H


(A) LAND TO BE TRANSFERED FROM VILLAWORLD LIMITED TO DEPARTMENT OF LANDS FOR CEMETERY PURPOSES-1321sq.m
(B) LAND TO BE TRANSFERED FROM CEMETERY TO VILLAWORLD LIMITED-168sq.m
(C) REMAINING CEMETERY LAND-3.867ha
N
WALANA CR.
(A) 1321m²
PROPOSED SUBDIVISION
PROPOSED
(B)
168m²
1 DP 586250
2 DP 586250
31 DP 603089
7099 DP 1051218 4.0358ha TURRIMETTA CEMETERY
(C) 3.867ha
BOUNDARY
MONA VALE ROAD
SAMUEL STREET
0 20 40 60 80 100
1:1000
THIS IS THE PLAN REFERRED TO IN MY LETTER DATED: 19-02-07
Registered Surveyor NSW
DATE OF SURVEY: 19-02-2007
LOCKLEY LAND TITLE
Registered Surveyors NSW
19 Massey Street Glebeville NSW 2111
PO BOX 400 Glebeville NSW 1675
ph:(02) 9879 4077 fax:(02) 9879 7143
CLIENT: VILLA WORLD LIMITED
PLAN OF PROPOSED LAND EXCHANGE BETWEEN VILLAWORLD LIMITED LAND AND CEMETERY LAND AT SECTOR 20 MONA VALE ROAD, MONA VALE
LGA: PITTWATER
ORIGINAL PLAN SIZE: A3 1:1000
PROJECT No: 23834
JOB REFERENCE: 28162CEM
SHEET 1 OF 1 SHEETS

ANNEXURE "B"



Patterson Britton & Partners Pty Ltd

consulting engineers

WALANA CRESCENT, MONA VALE
PROPOSD ELECTRICITY ARRANGEMENT

ATTACHMENT 3 – PITTWATER HERITAGE INVENTORY

- Mona Vale Cemetery
- Mona Vale Cemetery Gateposts

Pittwater Heritage Inventory

Item Name	**Mona Vale Cemetery**	SHI Number	**2270088**
Other Names/s	Turimetta Cemetery		
Group Name			
Location	Mona Vale Road Mona Vale 2103 Pittwater	Assessed Significance	**Local**

Item Type Archaeological-Terrestrial

Group Cemeteries and Burial Sites

Category Cemetery/Graveyard/Burial Ground

Themes

National	State	Local
9. Phases of Life	Birth and Death	(none)

Owner

Current Use

Former Use

Statement of Significance

This cemetery is important for the historical evidence recorded on gravestones concerning the residents of Mona Vale and its surrounding area. It is also significant as example of twentieth century burial practices for a number of different religious and cultural groups.

Years 1905 **Circa** No

Designer

Builder

Physical Condition

Modification Dates original avenue antrance roadway is now being used for burial sites

Further Comments

Physical Description

Mona Vale Cemetery is a 10 acre (4.047 hectares) monumental cemetery with close to 5,600 graves, 275 garden niches and 1199 wall niches, which cater for the interment of cremation ashes. The cemetery caters for a number of religious denominations as well as a non-sectarian area for those with no religious affiliation. The first entrance roadway ran south to north along the centre of the cemetery between the two rows of cypress pine trees. This area is now being used as an extension to the Church of England section. At the end of this avenue on Mona Vale Road are the stone gateposts erected by James Booth for 12 pounds in 1929. The cemetery is bordered by a wide buffer zone of trees on the eastern boundary and to the north lies Warriewood Electricity substation. Power cables run underground through the cemetery from the substation to Mona Vale Road. A row of trees appears to have been lost along the western boundary when the driveway was extended there. In 2003 work started to create a road around the cemetery perimeter which resulted in the loss of a number of trees. The area taken by the current access road will be used for burials.(Pauling.14-17)

Historical Notes

The ten acres (4.047 ha) of land for the cemetery was dedicated on the 18th October 1905. It was part of an 80 acre grant to Thomas Collins in 1859 and was divided into sections for Church of England, Methodist, Congregational, Roman Catholic, Presbyterian, Unsectarian and Jewish burials with a section unallocated. Over the years some sections have been reallocated to provide for the burial of Uniting Church, Baptist, Baha'i and Latter Day Saints believers. There is now no Jewish section.The earliest marked grave is dated 1914. The cemetery was administerd by trustees representing various churches of that time. However by 1926 it was neglected and local people were urging Warringah Shire to take over its management. After the trustees had been consulted, Council took management from 31 May 1929 and the cemetery was surveyed and sectors allocated for each denomination.(Pittwater Council) The Church of England trustees appointed in 1906 were John Blackwood, Cornwallis Wade Browne, Samuel Stringer, Stuart Greig and William Boulton. The earliest burials were in the Church of England and Methodist sections. The oldest surviving headstone in the cemetery is for Percy Johnson who died in 1914 aged 2 years. The cemetery was originally the responsibility of the Lands Department but was handed over to Warringah Council in 1929. Until 1984 the Catholic Church administered burials in their section but then they too handed that responsibility, along with a record of the previous burials, to

State Heritage Inventory

Pittwater Heritage Inventory

Item Name	**Mona Vale Cemetery**	SHI Number	**2270088**
Other Names/s	Turimetta Cemetery		
Group Name			
Location	Mona Vale Road Mona Vale 2103 Pittwater	Assessed Significance	**Local**

Images

Listings

Name	Number	Date
Potential Heritage Item		
Heritage study		

References

Author	Title	Year
Bob Pauling	"History of Turimetta Cemetery, Mona Vale" in Mona Vale Cemetery	2004
Nan Bosler	Turimetta Cemetery	1990
Virginia Macleod	Mona Vale Cemetery in www.pittwaterlga.com.au	2003

Studies

Assessment Degree Criteria

SHR Criteria f)

SHR Criteria g)

Representativeof type and period.

Intactness / Integrity

Most of the cemetery monuments are in reasonable condition

Recommended management

Assessment Criteria

SHR Criteria a) This cemetery is important for the historical evidence concerning the residents of Mona Vale and its surrounding area recorded on gravestones.It is significant as example of twentieth century burial practices for a number of different religious and cultural groups

SHR Criteria b) Has been and remains the primary burial ground for the Pittwater area.

SHR Criteria c) Aesthetically the cemetery has the appeal of a traditional graveyard complemented by symbolic landscape and tree plantings.

SHR Criteria d) This cemetery is still used and revered by the local community.

SHR Criteria e) Family and local history

State Heritage Inventory

Date: 28/03/2011 Date First Entered: 06/06/1997 Date Updated: 24/03/2005 Data Entry Status: Basic *Page: 2*

Pittwater Heritage Inventory

Item Name	**Mona Vale Cemetery Gateposts**	SHI Number	**2270327**
Other Names/s	Turimetta Cemetery	Study Number	
Group Name			
Location	Mona Vale Road Mona Vale 2103 Pittwater	Assessed Significance	**Local**

Item Type Built

Group Parks, Gardens and Trees

Category Other - Cemeteries/Burial Sites

Themes

National	State	Local
8. Culture	Religion	(none)
9. Phases of Life	Birth and Death	(none)

Owner Local Government

Current Use Not in use as gateway. Engravings still mark the cemetery

Former Use Entrance gate supports and signiage

Statement of Significance

Local significance and association with pioneer stonemason in first part of twentieth century.

Years 1929 **Circa** No

Designer

Builder

Physical Condition Fine

Modification Dates Not known when they were first painted

Further Comments

Physical Description

Sandstone gateposts erected by local stonemason James Booth. Framed original entrance to cemetery. Above ground each post is comprised of four rough hewn blocks, square about 30cm height. Left side engraved -MONA VALE, right side CEMETERY. Painted white

Historical Notes

Gateposts were constructed by local stonemason James Booth. On 11 May 1929 he wrote offering to build them and 12 pounds was allocated by Warringah Council subject to Council assuming control of the cemetery. (Warringah Shire Minutes 27/5/1929 Letter 40.) Booth lived and worked in Pittwater from c 1890. He also ran the store at Church Point and was a boat builder.. Booth has a memorial on the family grave in this cemetery although he was buried at Wilton NSW. Other works include, Dungarvon , Mona Vale; Red House , Rocky Point;: St John Church, Mona Vale; Pittwater dance hall (demolished).

State Heritage Inventory

Pittwater Heritage Inventory

Item Name	**Mona Vale Cemetery Gateposts**	SHI Number	**2270327**
Other Names/s	Turimetta Cemetery	Study Number	
Group Name			
Location	Mona Vale Road Mona Vale 2103 Pittwater	Assessed Significance	**Local**

Images

Listings

Name	Number	Date
Potential Heritage Item		
Heritage study		

References

Author	Title	Year
	Warringah Shire Minutes 27/5/1929	
McDonald Charles	Manly Warringah Stories of the Peninsula	1979

Studies

Author	Title	Number	Year

Assessment Degree Criteria

SHR Criteria f)

SHR Criteria g)

Intactness / Integrity

Good condition- painted

Recommended management

Assessment Criteria

SHR Criteria a) The gate posts have local historical significanceas the entrance to the first cemetery to be gazetted in this area (1905). Stone quarried locally at Foley's Hill

SHR Criteria b) James Booth has strong local connection having built a number of items locally using stone. He and his family were also local residents for many years.

SHR Criteria c)

SHR Criteria d) Built by local resident who was closely involved in the community

SHR Criteria e)

State Heritage Inventory

ATTACHMENT 4 – OVERFLOW CAR PARKING ON ENERGY AUSTRALIA SUBSTATION SITE

The following email was received from Energy Australia in response to Council's enquiry about using a portion of the substation site for overflow car parking during large funeral services at the cemetery. The following sketch plan Figure 4.1 shows the area of land, which is to the east of the substation itself.

From: Grant Greene-Smith <ggreenes@energy.com.au> Sent: 24/09/2010 03:15:03 PM
To: Glenn_Davis@pittwater.nsw.gov.au
CC: Rod Funnell <rfunnell@energy.com.au>;Robert Sloan <rsloan@energy.com.au>;Peter Chin <pchin@energy.com.au>;nadine_phipps@pittwater.nsw.gov.au;james_payne@ pittwater.nsw.gov.au

Subject: Request to utilise part of EnergyAustralia's Substation at Mona Vale for overflow cemetery parking. -

Dear Glenn

I refer to your attached request of 14/9/10. In accordance with the enclosed sketch plan it is possible that we may be able to make an area of land available to Council via a lease for the requested purpose. If this satisfies your requirements please contact me next week on the number below.

Yours Grant Greene-Smith Manager Property Portfolio 9269 2169

Forwarded by Peter Chin/NetSouth/energyAustralia/AU on 14/09/2010 12:26 ----

Attention: Peter Chin

Dear Peter

Thanks for your time on the phone the other day I am wanting to explore the scope for possibly utilising part of your substation site at Mona Vale (Samuel Street facility), which adjoins our Mona Vale Cemetery, for over-flow parking during services at the Cemetery. As I mentioned, the internal road network within our Cemetery site is greatly constrained, to the extent that parking during funeral services can not be handled on-site and leads to unsafe parking practices on nearby roads. Parking also greatly restricts internal circulation for other users of the Cemetery when large servies are being conducted. We are looking for solutions alleviate the parking situation. I am keen to explore whether or not or adjoining site might provide us with a possible over-flow parking solution. The attached plan shows the location of the Cemetery and its relationship to your site. I'd like to gauge the potential for utilising both the eastern and western buffer areas to your facility for over-flow parking At this stage, I am not looking for any commitment, merely an in-principle agreement to the acceptability or otherwise of this proposal. I'd be grateful if you were able to consider this request and advise if we have some grounds for further, more detailed discussions.

Thanks in advance Regards Glenn Glenn Davis Principal Officer - Commercial
Pittwater Council: 9970 1290 e: glenn_davis@pittwater.nsw.gov.au -

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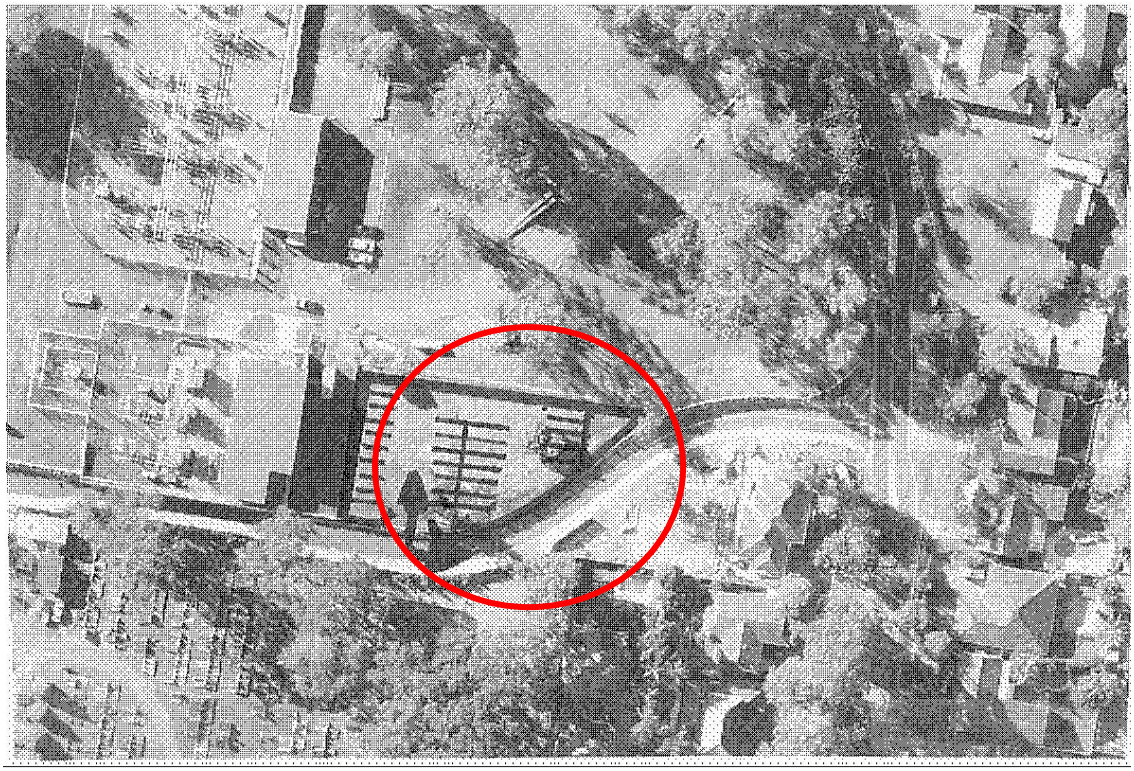

Figure 4.1 – Proposed overflow car parking area north of the cemetery on Energy Australia substation site

ATTACHMENT 5 – WIDENING OF MONA VALE ROAD

The following email regarding the possible widening of Mona Vale Road in front of the cemetery was received from the Roads and Traffic Authority.

From:	*STEELE Russell B <Russell_STEELE@rta.nsw.gov.au>*
To:	*"Glenn_Davis@pittwater.nsw.gov.au" <Glenn_Davis@pittwater.nsw.gov.au>*
Date:	*15/12/2010 03:26 PM*
Subject:	*RE: Mona Vale Cemetery - Mona Vale Road - property enquiry*

Glenn, It is confirmed that the Roads and Traffic Authority (RTA) does not have any proposal which would require any land from Mona Vale Cemetery for road purposes. A proposal to widen Mona Vale Road is still under investigation. This proposal involves possible widening along the northern side of Mona Vale Road between Laurel Road and Powder Works Road, Ingleside and possible widening along the southern side of Mona Vale Road between Daydream Street, Mona Vale and Powder Works Road, Ingleside.

Thanks,
Russell Steele
Manager, Property Inquiries Sydney Region

ATTACHMENT 6 – LEGISLATION, GUIDELINES & DISCUSSION PAPERS

Crown Lands (General Reserves) Amendment (Sustainable Burials) By-laws 2011

On 3 March 2011 the Crown Lands (General Reserves) Amendment (Sustainable Burials) By-laws 2011 commenced and these amendments are relevant to the management and administration of the cemetery. The attached letter received 31 March 2011 details the key features of the amendment and includes a copy of the amendment itself. The Regulations for the Mona Vale General Cemetery (see Attachment 7) have been updated to reflect these changes to the By-laws.

Crown Cemeteries Advisory Committee

The Minister for Lands has established the Crown Cemeteries Advisory Committee under Section 12 (2) of the Crown Lands Act 1989 to provide advice on matters affecting the management of Crown cemeteries in NSW.

The CCAC comprises members drawn from government, industry and the community including the National Trust, the Heritage Branch of the Department of Planning, the Department of Health, Council managed Crown reserve cemeteries, Crown reserve cemeteries and the Office of Australian War Graves. The Minister has also invited a representative from the Funeral Directors Association (NSW and ACT division) and the Cemeteries and Crematoria Association of NSW.

The CCAC will perform a number of functions, including:

- preparing advice to the Minister for Lands by Crown Cemeteries to enhance the sustainability of their operations
- preparing advice for the Minister on appeals against the decisions of individual Crown Cemeteries
- preparing draft documents and information packages on matters pertaining to cemetery management and the rights and responsibilities of holders of burial rights within Crown cemeteries.
- investigating areas of future reform in NSW burial policy
- liaising with industry wide stakeholders on matters affecting cemetery management

NSW Department of Health

The NSW Department of Health also publishes a range of guidelines but they do not give direction on the management or operation of cemeteries or crematoria. Those most relevant to MVGC include:

NSW Health - Guidelines for the Funeral Industry

Based on Public Health (Disposal of Bodies) Regulation 2002

- Chapter 5 – Burials
- Chapter 10 - Registers

The Public Health (Disposal of Bodies) Regulation 2002 was remade under the Subordinate Legislation Act 1989. The Regulation came into effect on 1 September 2002 and replaced previous similar

legislation. These guidelines refer to Clause 51 of that Regulation. The primary goal of the Regulation is to ensure that human bodies are managed in a safe and hygienic way after death so that they do not pose any health risk to the public. The main group affected by the Regulation is the funeral industry. Others who may need to be aware of parts of the Regulations are hospital staff, local government authorities and the general public.

(former) Department of Lands

Sustainable Burials in the Sydney Greater Metropolitan Area

Discussion Paper – (former) Department of Lands – April 2008

This discussion paper was prepared to invite submissions on the options available to the Government to address the problems associated with management of burial space in the Greater Metropolitan Area. The document can be found following or at the following web address:

http://www.lpma.nsw.gov.au/__data/assets/pdf_file/0020/115526/10214_Burial_Space_for_web.pdf

Some of the options that were discussed included:

- Revocation of unused burial rights
- More intensive use of family graves (lift and deepen)
- Renewable tenure
- Extinction of tenure for old graves
- Cemetery renewal
- Reopening of closed or abandoned cemeteries
- Increased use of community mausoleums
- Encouraging the adoption of alternative interment practices such as cremation or "green burial"
- Changes to the sale of burial space

Community Forum on Sustainable Burials in NSW.

The New South Wales Government recently concluded an online discussion forum to consult with the community on the issue of sustainable burial practices with a particular emphasis on the concept of limited or renewable tenure.

Renewable tenure involves the purchase of grave sites for an initial set period (e.g. 25 or 50 years). At the end of the tenure period, the holder (usually a family member) is contacted and has the option to renew the tenure again. If the tenure is not renewed, the "right of burial" reverts to the cemetery for reuse at some time in the future.

There are a range of principles and conditions that would govern the practice to protect the interest of families, accommodate specific religious considerations and sensitivities, ensure appropriate re-use practices and protect war graves and graves of historical and cultural significance.

People will have a choice between limited/renewable and permanent tenure and the initiative will only be applied to new release areas within existing cemeteries or new cemeteries. Currently the only cemetery in New South Wales that is using renewable tenure is Waverley Cemetery, which has a tenure period of 25 years.

Land & Property Management Authority
Crown Lands

Doc. No:11/031035

The General Manager
Pittwater Council
PO Box 882
MONA VALE NSW 1660

Dear Sir/Madam,

Re Crown Lands (General Reserves) Amendment (Sustainable Burials) By-laws 2011

On the 3 March 2011 the Crown Lands (General Reserves) Amendment (Sustainable Burials) By-laws 2011 commenced. A copy of the amendments is attached. As the Crown Reserve Trust Manager of the Mona Vale Cemetery these amendments are relevant to your management and administration of this land.

The amendments are in response to the looming burial shortages, particularly in the Greater Sydney Metropolitan Area and provide for more sustainable management of Crown Cemeteries.

The key features of the proposed amendments to the By-laws include.

a. allow, after consultation with the community and with the approval of the Minister for Lands, reserve trusts that manage cemeteries to revoke burial licences where the holder of the burial licence does not object to facilitate cemetery renewal schemes, and

b. limit the granting of burial licences to no more than 2 burial places per cemetery reserve per person without the Minister's approval, and

c. reduce the period required before reserve trusts may revoke burial licences from 60 years to 50 years, and

d. extend the application of the provisions of the By-Law to all cemeteries for which a reserve trust has been established, and

e. update the language of the By-Law to clarify its intent and reflect terminology used in the industry.

1 Prince Albert Road
Queens Square
Sydney NSW 2000
AUSTRALIA

GPO Box 15
Sydney NSW 2001
AUSTRALIA
T (612) 88365313
F (612) 9236 7632
ABN 33 537 762 019 | www.lpma.nsw.gov.au

The By-Law will not hinder the right of a person to appeal to the Minister on all matters relating to Crown reserve trusts. The Heritage Act 1977 will apply to prevent any cemetery renewal scheme applying to land subject to Heritage Act listing or order under the Act, notwithstanding anything in the By-Law.

The amendments to the By-laws are seen as a precursor to the introduction of limited and renewable tenure policies for burials in Crown Cemeteries. As such, the By-law does not allow the removal of any human remains from a grave for tenure renewal purposes.

LPMA and the Crown Cemeteries Advisory Committee is continuing to work on the development of Limited and Renewable Tenure burials policy for government to consider in future legalisation.

Yours Faithfully

John Filocamo

John Filocamo
Manager, Crown Cemeteries Policy

New South Wales

PARLIAMENTARY COUNSEL

Opinion

Crown Lands Act 1989
Proposed Crown Lands (General Reserves) Amendment (Sustainable Burials) By-law 2011

Your ref: Andrew Simpson
Our ref: DG s2009-427-d30

In my opinion the attached draft By-law may legally be made.

(D COLAGIURI)
Parliamentary Counsel
25 February 2011

The Chief Executive
Land and Property Management Authority

New South Wales

Crown Lands (General Reserves) Amendment (Sustainable Burials) By-law 2011

under the

Crown Lands Act 1989

Her Excellency the Governor, with the advice of the Executive Council, has made the following By-law under the *Crown Lands Act 1989*.

Minister for Lands

Explanatory note

The object of this By-law is to amend the *Crown Lands (General Reserves) By-law 2006*:

(a) to allow, after consultation with the community and with the approval of the Minister for Lands, reserve trusts that manage cemeteries to revoke burial licences to facilitate cemetery renewal schemes, and

(b) to limit the granting of burial licences to no more than 2 burial places per person, and

(c) to reduce the period required before reserve trusts may revoke burial licences from 60 years to 50 years, and

(d) to extend the application of the provisions of the By-law to all cemeteries for which a reserve trust has been established, and

(e) to update the language of the By-law to clarify its intent and reflect terminology used in the industry.

This By-law is made under the *Crown Lands Act 1989*, including section 128 (the general by-law making power) and in particular section 128 (1) (p1) and (p2).

Crown Lands (General Reserves) Amendment (Sustainable Burials) By-law 2011

under the

Crown Lands Act 1989

1 Name of By-law

This By-law is the *Crown Lands (General Reserves) Amendment (Sustainable Burials) By-law 2011*.

2 Commencement

This By-law commences on the day on which it is published on the NSW legislation website.

Schedule 1 Amendment of Crown Lands (General Reserves) By-law 2006

[1] Part 3, Division 2, Subdivision 1

Insert the following heading before clause 23:

Subdivision 1 Preliminary

[2] Clause 23 Application of this Division

Omit clause 23 (1). Insert instead:

(1) This Division applies to a crematorium, cemetery or portion of a cemetery that is a reserve for which a reserve trust has been established.

[3] Clause 24 Definitions

Omit the definitions of ***exclusive right of burial*** and ***holder***.

[4] Clause 24

Insert the following definitions in alphabetical order:

burial licence means a licence granted by a reserve trust that confers an exclusive right to bury the remains of one or more persons in a burial place.

Crown Cemeteries Advisory Committee means the advisory committee established by the Minister under section 12 of the Act to give information and recommendations about matters affecting the management of cemeteries.

holder, in relation to a burial licence, means the person recorded in the register kept by the reserve trust as the holder of the burial licence.

renewal scheme has the meaning given by clause 34A.

[5] Part 3, Division 2, Subdivision 2

Insert the following heading before clause 25:

Subdivision 2 Planning, conduct and maintenance

[6] Part 3, Division 2, Subdivision 3

Omit clauses 27–31. Insert instead:

Subdivision 3 Burial licences

27 Grant of burial licence

(1) A reserve trust may grant a burial licence in respect of a burial place in the cemetery.

(2) An application for burial licence must be in the form approved by the reserve trust and accompanied by the appropriate fee.

(3) A burial licence may be granted to one person or to two or more persons as joint holders.

(4) A reserve trust cannot, without the Minister's approval, grant a burial licence to a person if the granting of the licence will result in the person holding (including jointly holding) burial licences in respect of more than 2 burial places in the cemetery for which the reserve trust is trustee.

(5) A burial licence entitles the person or persons to whom it is granted the exclusive right of burial of the remains of a person in the burial place in respect of which it is granted.

28 Transfer of burial licence to person other than reserve trust

(1) A reserve trust may, on application, transfer a burial licence from one person or two or more persons as joint holders to one person or two or more other persons as joint holders.

(2) An application under subclause (1) may be made only by the holder of the burial licence concerned or, if the burial licence is held by joint holders, by all the joint holders.

(3) An application for the transfer of a burial licence must be in the form approved by the reserve trust and accompanied by the appropriate fee.

29 Transfer of burial licence to reserve trust

A reserve trust may enter into arrangements with the holder of a burial licence for the transfer of the burial licence to the reserve trust.

30 Grant or transfer of burial licence may be refused

A reserve trust may refuse to grant or transfer a burial licence if, in the trust's opinion, the grant or transfer would tend to create a monopoly or encourage dealing in burial licences.

31 Burial licence to pass to surviving joint holder

On the death of a joint holder of a burial licence, the remaining joint holder is, or joint holders are, entitled to the burial licence.

[7] Clause 32 Exclusive rights of burial may be bequeathed

Omit "an exclusive rights of burial" from clause 32 (1), (2) and (3) wherever occurring.

Insert instead "a burial licence".

[8] Clauses 32 (1), (2) and (3), 33 (1), (2) and (3) and 36 (1) (a) and (2)

Omit "the right" wherever occurring. Insert instead "the licence".

[9] Clause 33 Rules of intestacy to apply to burial licences not bequeathed

Omit "an exclusive right of burial" from clause 33 (1), (2) and (3) wherever occurring.

Insert instead "a burial licence".

[10] Clause 33A

Insert after clause 33:

33A Reserve trust may determine holder of burial licences

(1) This clause applies if there is a dispute or other doubt about who holds the burial licence for a particular burial place in a cemetery.

(2) A person who believes he or she is the holder of the burial licence may apply to the reserve trust for the cemetery for a decision that the person holds the burial licence.

(3) As soon as practicable after receiving the application the trust must make a decision about whether the person holds or does not hold the burial licence for the burial place.

(4) However, the reserve trust may make a decision that the person holds the burial licence for the burial place only if:

(a) at least 28 days before making the decision, the trust:

(i) displays a notice about its intention to make the decision in a prominent position at the cemetery, and

(ii) publishes a notice about its intention to make the decision in at least one newspaper circulating throughout the State, and

(iii) takes any other steps it considers reasonable in the circumstances to determine who holds the burial licence for the burial place, or

(b) in the reasonable opinion of the trust it is not possible to follow the procedure in paragraph (a) because it is necessary to make an urgent decision due to the imminent burial of a person who was related by blood or marriage to, or who was in a domestic relationship with:

(i) the applicant, or

(ii) a person buried in the burial place.

(5) If the reserve trust decides that the person holds the burial licence for the burial place, the trust is taken to have revoked any other burial licence for the burial place.

[11] Clause 34 Revocation of burial licences

Omit "any exclusive right of burial" from clause 34 (1) and (2) wherever occurring.

Insert instead "a burial licence".

[12] Clause 34 (1)

Omit "that right". Insert instead "the right conferred by the licence"

[13] Clause 34 (1)

Omit "60 years". Insert instead "50 years".

[14] Clause 34 (2), (4) and (6) (a) and (b)

Omit "that right" wherever occurring. Insert instead "the burial licence".

[15] Clause 34 (6)

Omit "the exclusive right of burial" wherever occurring.

Insert instead "the burial licence".

[16] Part 3, Division 2, Subdivision 4

Insert after clause 34:

Subdivision 4 Renewal schemes

34A Implementation of renewal scheme

(1) A reserve trust may, with the Minister's approval, implement a scheme (a ***renewal scheme***) for the renewal of a portion of the

cemetery that has been used for burials to enable further burial places to be located in the portion.

(2) A renewal scheme does not authorise a reserve trust:

(a) to remove the remains of a deceased person from a burial place in respect of which a burial licence had been granted to the person, or

(b) to otherwise disturb the remains of a deceased person in the portion of the cemetery subject to the renewal scheme.

(3) A reserve trust may, in a portion of the cemetery that is subject to a renewal scheme:

(a) revoke a burial licence, and

(b) remove, relocate or dispose of a memorialisation placed on the burial place to which the burial licence relates, and

(c) erect in that portion of the cemetery a memorial recording the names and dates of death of persons buried in the portion.

34B Proposed renewal scheme to be submitted to Minister for approval to carry out consultation

(1) After preparing a proposed renewal scheme, a reserve trust must submit the scheme to the Minister for approval to carry out consultation about the scheme.

(2) After considering the proposed renewal scheme, the Minister may decide:

(a) to approve the release of the scheme for consultation, with or without changes, or

(b) to return the scheme to the reserve trust for changes and resubmission to the Minister.

(3) The Minister may also decide that the reserve trust must consult with the following about the proposed renewal scheme:

(a) the Heritage Council if the scheme affects a local heritage item,

(b) any other Commonwealth or State authority.

34C Consultation about proposed renewal scheme

(1) If the Minister approves the release of a proposed renewal scheme for consultation, the reserve trust must:

(a) prepare and make available for public inspection a plan that shows:

(i) the portion of the cemetery that is subject to the proposed renewal scheme, and

(ii) all existing used and unused burial plots within the portion, and

(iii) details of the removal and relocation of any memorialisation placed on burial places within the portion, and

(iv) the proposed layout and landscaping of the renewed portion, and

(b) send a notice to each holder of burial licences in the portion subject to the proposed renewal scheme, at any address recorded for the holder in the reserve trust's register of burial places, informing the holder of the proposed scheme, and

(c) not less than 12 months before the date the proposed renewal scheme is to commence, place in a prominent position in the portion of the cemetery subject to the renewal scheme, a notice that states the following:

(i) that the reserve trust proposes to renew the portion of the cemetery,

(ii) where plans of the proposed renewal scheme may be inspected,

(iii) that written submissions may be made to the reserve trust about the proposed renewal scheme by the date, and in the way, specified in the notice, and

(d) not less than 3 months before the date the proposed renewal scheme is to commence, publish at least once in a newspaper circulating nationally and another newspaper circulating in the locality of the cemetery a notice about the proposed renewal scheme that states the following:

(i) that the reserve trust proposes to renew the portion of the cemetery,

(ii) where plans of the proposed renewal scheme may be inspected,

(iii) that written submissions may be made to the reserve trust about the proposed renewal scheme by the date, and in the way, specified in the notice, and

(e) if the Minister has decided the reserve trust must consult with the Heritage Council, prepare a statement of heritage impact for the proposed renewal scheme and refer it to the Heritage Council.

(2) In this clause:

statement of heritage impact, in relation to a proposed renewal scheme that affects a local heritage item, means a statement that:

(a) identifies the local heritage item and its significance, and

(b) assesses and justifies the impact the proposed renewal scheme will have on the significance of the heritage item.

34D Submissions

(1) A submission about the proposed renewal scheme may be made by any person by the date, and in the way, specified in the notice placed in the cemetery or published in the newspaper.

(2) The holder of a burial licence for a burial place may, in a submission, object to the proposed renewal scheme concerned (***a formal objection***) if it:

(a) provides for the revocation of the holder's burial licence, or

(b) provides for the removal, relocation or disposal of a memorialisation placed on the burial place.

(3) The reserve trust must consider each submission made under subclause (1).

(4) After considering any submissions, including formal objections, the reserve trust must decide:

(a) to proceed with the proposed renewal scheme, with or without modifications, or

(b) not to proceed with the proposed renewal scheme.

(5) The reserve trust must not proceed with a proposed renewal scheme in respect of which a formal objection has been made unless:

(a) the objection has been withdrawn, or

(b) the proposed renewal scheme has been modified so that it does not provide for the revocation of the burial licence, or provide for the removal, relocation or disposal of a

memorialisation placed on the burial place, that was the subject of the formal objection.

34E Submission of renewal scheme to Minister

(1) If the reserve trust decides to proceed with the proposed renewal scheme, the reserve trust must submit the renewal scheme to the Minister for approval.

(2) The proposed renewal scheme must:

(a) be accompanied by any written submissions received by the reserve trust about the renewal scheme, and

(b) indicate what modifications, if any, have been made to the renewal scheme after the reserve trust's consideration of the written submissions.

(3) Before making a decision about the proposed renewal scheme, the Minister must obtain advice about the renewal scheme from:

(a) the Crown Cemeteries Advisory Committee, and

(b) the Minister administering the *Heritage Act 1977*.

(4) For the purposes of providing advice under subclause (3) (a), the Crown Cemeteries Advisory Committee may refer the proposal to any person or body the Committee considers appropriate including, for example, the New South Wales Aboriginal Land Council constituted under the *Aboriginal Land Rights Act 1983*.

34F Minister's decision about renewal scheme

After considering any advice received from the Crown Cemeteries Advisory Committee and the Minister administering the *Heritage Act 1977*, the Minister may decide to:

(a) approve the proposed renewal scheme, or

(b) approve the proposed renewal scheme with any modifications the Minister considers appropriate, or

(c) reject the proposed renewal scheme.

[17] Part 3, Division 2, Subdivision 5

Insert before clause 35:

Subdivision 5 Compensation

[18] Clause 35 Compensation

Omit "the exclusive right of burial" from clause 35 (1) and (2) wherever occurring.

Insert instead "the burial licence".

[19] Clause 35 (1), (5) and (9)

Omit "that right" wherever occurring. Insert instead "that licence".

[20] Clauses 35 (1) (a) and (b) and (2) and 38 (1)

Omit "an exclusive right of burial" wherever occurring.

Insert instead "a burial licence".

[21] Clause 35 (1) (a) (ii) and (b) (ii)

Omit "original exclusive right of burial" wherever occurring.

Insert instead "original burial licence".

[22] Clause 35 (3)

Omit "exclusive rights of burial". Insert instead "burial licences".

[23] Clause 35 (4), (6), (7) (c) and (9)

Omit "exclusive right of burial" wherever occurring.

Insert instead "burial licence".

[24] Clause 35 (5)

Omit "exclusive right of burial is granted an exclusive right of burial".

Insert instead "burial licence is granted a burial licence".

[25] Part 3, Division 2, Subdivision 6

Insert before clause 36:

Subdivision 6 Effect of burial licences

[26] Clause 36 Burials in burial places in respect of which burial licenses have been granted

Omit "an exclusive right of burial" from clause 36 (1), (2) and (3) wherever occurring.

Insert instead "a burial licence".

[27] Part 3, Division 2, Subdivision 7

Insert before clause 37:

Subdivision 7 Miscellaneous

[28] Clause 37 Register of burial places

Omit "burial rights" from clause 37 (3) and (4) wherever occurring.

Insert instead "burial licences".

[29] Clause 37 (4)

Omit "burial right". Insert instead "burial licence".

[30] Clause 38 Certificates for burial licences

Omit "certificate of exclusive right of burial" from clause 38 (1).

Insert instead "certificate stating that the holder holds a current burial licence".

[31] Clause 45

Insert after clause 44:

45 Transitional provision consequent on Crown Lands (General Reserves) Amendment (Sustainable Burials) By-law 2011

An exclusive right of burial granted before the commencement of the *Crown Lands (General Reserves) Amendment (Sustainable Burials) By-law 2011* is taken, after the commencement, to be a burial licence.

[32] Schedule 1 Reserves to which this By-law applies

Omit "(Clauses 3 and 23)".

[33] Schedule 1, Part 2

Omit the Part.

NSW HEALTH

Guidelines for the Funeral Industry

based on the *Public Health (Disposal of Bodies) Regulation 2002*

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- Funeral Directors Association of NSW
- Social Work Department, Liverpool Hospital
- Combined Pensioners & Superannuants Association of NSW
- Australian Institute of Embalmers
- TJ Andrews Funerals
- Health Services Union
- Funeral and Allied Industries Union
- Service Corporation International
- Ethnic Communities Council of NSW
- Woronora Crematorium.

List of abbreviations

ACCA
Australian Cemeteries and Crematoria Association.

AQIS
Australian Quarantine Inspection Service. AQIS is part of the Commonwealth Agriculture, Forestry and Fisheries Authority.

CJD
Creutzfeldt-Jakob disease is a rare and fatal brain disease in humans. It is a type of disease known as a transmissible spongiform encephalopathy (TSE) because it causes characteristic spongy breakdown of the brain and it can be transmitted.

DEC
Department of Environment and Conservation (NSW) formerly known as the Environment Protection Authority (EPA).

DTP vaccine
Diphtheria, tetanus and pertussis vaccine.

EHO
Environmental Health Officer. These officers are employed either by local councils or area health services and have gazetted powers under the *NSW Public Health Act 1992*.

HIV
Human immunodeficiency virus.

NNDD
National Notifiable Diseases Database. All state and territory departments of health routinely collect data on a range of communicable diseases.

PHU
Public Health Unit. The units are part of Area Health Services.

PVC
Polyvinyl chloride.

TB
Tuberculosis.

WHO
World Health Organisation.

Definitions

Definitions as applied in the *Public Health (Disposal of Bodies) Regulation 2002*

Attending practitioner
In relation to a dead person, means a medical practitioner who attended the person immediately before, or during the illness terminating in, the death of the person.

Body
Means a body of a dead person.

Body preparation room
Means that part of a mortuary that is used for the preparation of bodies for burial or cremation.

Burial
Includes putting in a vault.

Cemetery authority
Means the person or body of persons (including a council) by whom the cemetery's operations are directed.

Chief Executive Officer
In relation to a hospital, means the person responsible for the day to day administration of the affairs of the hospital.

Coroner
Means a person who exercises or performs the functions of a coroner in accordance with the *Coroners Act 1980*.

Cremation authority
In relation to a crematory, means the person or body of persons by whom the crematory's operations are directed.

Dead person
Includes a still-born child.

Death Certificate
Means a certificate given by a medical practitioner as to the cause of death.

Disinfectant
Means a hospital grade disinfectant as defined in Clause 2 of the *Therapeutic Goods Regulations 1990* of the Commonwealth. Disinfectant means a substance:

a) that is recommended by its manufacturer for application to an inanimate object to kill micro-organisms

b) that it is not represented by the manufacturer to be suitable for internal use.

Embalming
Means the process of preserving a body by means of the removal of body fluids and arterially injecting the body with embalming fluids, or other means approved by the Director-General.

Exhumation
Means the removal of the remains of a dead person from a grave or vault but does not include the removal of remains from a vault in a cemetery for immediate transfer to another vault in the same cemetery.

Funeral director
Means a person (other than the operator of a mortuary transport service) who, in the conduct of the person's business, engages, for the purpose of burial, cremation or transport, in the collection, transport, storage, preparation or embalming of bodies or engages in the conduct of exhumations.

Holding room
Means a room that includes refrigerated body storage facilities for at least two adult bodies but does not include a body preparation room.

Hospital
Means:

a) a public hospital within the meaning of the *Health Services Act 1997,* or

b) a hospital, or health care agency, within the meaning of the *Mental Health Act 1990*, or

c) an establishment within the meaning of the *Private Hospitals and Day Procedure Centres Act 1988,* or

d) a nursing home within the meaning of the *Nursing Homes Act 1988*, or

e) any other institution prescribed by the regulations as a hospital for the purposes of Division 2 of Part 7 of the *Act.*

List A
Disease means any one or more of the following conditions:

- Creutzfeldt-Jakob disease (CJD).
- Hepatitis C.
- Human immunodeficiency virus infection (HIV infection).

List B
Disease means any one or more of the following diseases:

- Diphtheria (DTP vaccine).
- Plague.
- Respiratory Anthrax.
- Smallpox.
- Tuberculosis (TB).
- Any viral haemorrhagic fever (including Lassa, Marburg, Ebola and Congo-Crimean fevers).

Medical referee
Means a person qualified or appointed under Clause 42 to be a medical referee.

Mortuary
Means that part of premises that is used, or intended to be used, for the preparation or storage of bodies before their burial or cremation.

Mortuary transport service
Means a service that, for fee, gain or reward, transports bodies for funeral directors.

Nearest surviving relative
Means:

a) In relation to a still-born child – a parent, or sibling at or above the age of 16 years, of the child.

b) In relation to a dead person who is not a still-born child – the spouse of the dead person, a person with whom the dead person had a de facto relationship (within the meaning of the *Property (Relationships) Act 1984*) immediately before death, a parent of the dead person, a child at or above the age of 16 years of the dead person or any relative of the dead person who was residing with the dead person when he or she died.

Refrigerated body storage facility
Means a storage facility for bodies maintained at between 1 and 5 degrees Celsius.

The Act
Means *the Public Health Act 1991*.

Contents

Appendices

Introduction

Background

The *Public Health (Disposal of Bodies) Regulation 2002* was remade under the *Subordinate Legislation Act 1989.* The Regulation came into effect on 1 September 2002 and replaced previous similar legislation. These guidelines refer to Clause 51 of that Regulation. The primary goal of the Regulation is to ensure that human bodies are managed in a safe and hygienic way after death so that they do not pose any health risk to the public. The main group affected by the Regulation is the funeral industry. Others who may need to be aware of parts of the Regulation are hospital staff, local government authorities and the general public.

As part of the Regulatory Impact Statement process in drafting the Regulation, submissions and representations from specific agencies and from the general public were made to NSW Health. These submissions demonstrated a concern and interest about overall aspects of funerals and management of bodies that were not limited to public health and safety. There is not one comprehensive Regulation for the funeral industry. In common with other businesses, there are many pieces of legislation with which the funeral industry must comply. For example, the *Occupational Health and Safety Act 2000* will influence certain standards and practices for employees and employers; the *Coroners Act 1980* determines some activities of funeral directors; and business practices may be the subject of Regulation and review by the NSW Department of Commerce (previously the Department of Fair Trading). NSW is the only state in Australia with regulations specific to the handling of bodies by the funeral industry.

Purpose of the guidelines

The primary goal of the guidelines is to assist the funeral industry, health services and local government to understand and to comply with the *Public Health (Disposal of Bodies) Regulation 2002*. In general consumers rely on funeral directors to manage most aspects of the disposal of bodies and to advise them of options available. By the funeral industry being well informed on the content and intent of the Regulation, they can in turn be of great assistance to consumers.

The guidelines are not intended to be a manual on how to conduct a funeral or how to manage and dispose of a body. However the guidelines will assist the funeral industry and the public to determine what is legal, what is illegal and what approvals may be required for the safe and hygienic handling and management of bodies.

Appendix 1 on Issues Not In the Regulation should assist consumers in particular by explaining related issues and directing them to other sources of information and advice.

There are several publications from a variety of sources, including funeral directors and consumer organisations, aimed at assisting consumers in arranging a funeral. Some of these are listed under References in Appendix 2. However, readers should also note that the Regulation postdates some of these documents so while they may helpful on some aspects of understanding funerals and legal issues related to death, they may not be up to date on the handling and management of bodies as covered by this Regulation.

Overview of the Regulation

In summary the *Public Health (Disposal of Bodies) Regulation 2002* covers the following issues:

- Facilities – premises and vehicles for the handling of bodies.
- Handling of bodies – retention, embalming and preparation, coffins and body bags, viewing.
- Burials and register of burials.
- Exhumations – applications and approvals.
- Crematories – cleanliness and closing of crematories.
- Cremation – documentation, applications, timing, medical referees, register of cremations.
- Register of mortuaries and crematories.
- Inspection of facilities.

Respect for the deceased, grieving families and different cultural practices

The *Public Health (Disposal of Bodies) Regulation 2002* is just that – legislation which sets out standards that will minimise any public health risks associated with the handling and disposal of bodies. In writing these guidelines based on the Regulation there is no intention to be insensitive or disrespectful to the dead or their families. There is a need to be clear and explicit about the handling of bodies so that the funeral industry and other key people are able to understand and comply with the detail of the Regulation.

The Regulation makes no distinctions between religions, cultures or traditions. Similarly these guidelines do not set out to canvas issues or complexities in the different ways that religious or cultural groups deal with death and the deceased. The standards of public health in Australia are different to those of other countries. Some people who have recently arrived in Australia from other countries may find that their expectations and practices around death are modified by the standards prevailing in Australia. Other people may be looking from a practical or spiritual perspective to create new and innovative ways of managing death and the deceased. Similarly they may find their ideas are modified by the Regulation.

The funeral industry has an important role in providing information to people about the public health requirements for the disposal of bodies in NSW and to integrate old and new traditions and practices around death. NSW Health, through the Regulation and policies developed under the Regulation, does have the capacity to be responsive to emerging need in the community, whether that is, for example, around a new religious practice or an innovation in embalming technology.

Notes on reading the guidelines

These guidelines should be read in conjunction with the *Public Health (Disposal of Bodies) Regulation 2002*. It is available on the NSW Health website: www.health.nsw.gov.au/public-health/ehb/general/funera/funeral.html or www.legislation.nsw.gov.au. Any reference to 'the Regulation' in this document refers specifically to the *Public Health (Disposal of Bodies) Regulation 2002*.

There are several clauses in the Regulation where the Director-General of the NSW Department of Health has the power to grant exemptions or variations. In practice the authority to do this may be delegated to other officers in the department. All initial enquiries about the Regulation and any applications for exemptions and approvals should be directed to the Environmental Health Officer (EHO) in the local Public Health Unit (PHU). Every area health service in NSW has its own PHU. Contact details for each PHU are listed in Appendix 3. In the guidelines therefore, reference is made to the EHO or the PHU rather than to the Director-General.

There are several issues in the Regulation where a more developed policy statement or a dedicated application form would assist PHUs and local government when assessing applications for approvals or exceptional circumstances. Such policies will be made available to PHUs and local government as they become available.

Where an explanation of, or reference to, a particular clause in the Regulation is made in the guidelines, the number of that clause is noted at the end of the sentence so that the reader can refer back to the Regulation. For example 'Clause 10.1' means 'sub clause (1) of Clause 10: Retention of bodies by a funeral director'.

Some clauses in the Regulation are specific to 'a funeral director' while others describe what 'a person' may or may not do. This is an important distinction and one that is sustained in these guidelines. 'A person' refers to anybody, ie a member of the public, a funeral director, manager of a crematorium, cemetery worker, relative of the deceased, employee of a transport company etc. For example, 'A funeral director must not retain a body other than in a mortuary or a holding room' and '...a person must not bury or cremate a body unless the body has been placed in a coffin and the lid of the coffin has been securely sealed'. In addition, there are some clauses in the Regulation that are specific to 'a person who is not a funeral director'. The standards set down in the Regulation for some aspects of handling bodies are different for funeral directors than for others. This is not inconsistent with the community's expectation that professionals be held to the highest standards of practice and conduct in their areas of expertise.

Facilities for handling bodies

1

1.1 Overview

The Regulation sets out standards for premises for handling bodies, the basic design and equipment for body preparation rooms, waste management and the use of vehicles for transporting bodies. The underlying principles in the standards for facilities are that they should have the capacity for easy and thorough cleaning and that there should be no potential for cross contamination between bodies and other goods or substances. The details for mortuary standards form part of the *Local Government Act 1993* and *Local Government (Orders) Regulation, 1999,* and are not part of this Regulation.

1.2 Premises for handling bodies

A body must be embalmed and/or prepared for burial or cremation (Clause 5), and placed in a coffin only in a mortuary that has been approved under the *Local Government Act 1993* (Clause 5.1). A hospital mortuary for example may not be a mortuary approved under the *Local Government Act 1993*. Although it may be referred to as the mortuary, the hospital facilities may be that of a holding room. The implication of Clause 5.1 is that a body cannot be placed into a coffin in a holding room. The body must be moved from a holding room to an approved mortuary before it can be removed from the body bag or wrapping and placed in a coffin. The PHU could approve an exception to Clause 5.1 for a particular case. See Hypothetical Case No. 1. Note that there is no suggestion here that the PHU will approve the application. The example only illustrates the funeral director giving correct information based on the Regulation to the community member.

Hypothetical Case No. 1

Over the last 20 years about ten families who all belong to a small religious/spiritual group from Southern India have migrated to Australia and settled in Western Sydney. Their custom has been for the family to prepare the body at home, to transport the body direct from the home to the place of cremation and for cremation to take place within three days of death. One of their community leaders has approached the Excellent Funeral Company located in Parramatta to discuss their options for funerals in Sydney.

Their preferred option would be for the funeral director to make all the arrangements with the crematorium and to transport the body to the crematorium. However the community would like to retain the body at home until the day of the funeral, do the preparation of the body, including the wrapping and placing of the body in the coffin. The funeral director advises them that under the current NSW Health Regulation the preparation of the body and the placement of the body in the coffin must be carried out in a mortuary. However if they wish to seek approval for the family to carry out some or all of these tasks, they must make their case to the EHO at their local PHU. The funeral director provides contact details for the PHU.

Only a holding room (see Definitions on page iii) or a mortuary can be used for the storage of bodies for burial or cremation because these rooms have refrigeration facilities. A vehicle must not be used for storage of a body. Even if the vehicle is refrigerated, as could be the case for a mortuary transport service vehicle, it can only be used for transporting the body and not for storing it. This may be of particular relevance to mortuary transport services and to families wishing to transport a body. The journey needs to be carefully planned so there is no delay between transport and transfer to a holding room, mortuary or place of burial or cremation.

A holding room must not be used for any purpose other than the storage of bodies. This means that nothing else can be stored in the refrigerated compartments and no preparation of the body or placing of the body in a coffin can take place in the holding room. A body may not be kept refrigerated in a holding room for more than 48 hours (Clause 17).

Except for the removal of bodies of persons who died in the hospital, the facilities of a hospital cannot be used for the business of a funeral director or the business of a mortuary transport service. This means that a funeral director cannot, for instance, prepare or embalm a body in a hospital mortuary. There is the possibility for the PHU to approve an exception to a particular hospital mortuary.

A person who operates a mortuary must maintain a register of bodies and keep it up to date in accordance with Clause 18.

1.3 Facilities of body preparation rooms

A body preparation room must have all the following features (Clause 6):

- A vehicle reception area adjacent to it and designed so that it is possible to transfer an uncoffined body from the vehicle to the preparation room and vice versa so it is screened from public view.
- At least one hand wash basin with taps that are hands-free, elbow operated or foot operated. There must be an adequate hot and cold water supply to the basin.
- One or more impervious waste containers each with a close fitting lid that is elbow or foot operated. The waste containers should receive and store all solid wastes from the preparation of bodies and all screenings from floor drains.
- Sufficient slabs, tables and other fittings for the preparation of bodies that are constructed of smooth impervious material that are easily and effectively drained and cleaned.
- Refrigerated body storage facilities to hold two adult bodies. This refrigerated storage must only be used for bodies.

1.4 Waste disposal

All solid waste (Clause 7) arising from body preparation is considered to be contaminated (clinical) waste. (The Regulation refers to 'contaminated' waste but recent NSW Health policy has changed the terms used so that within hospital and health facilities contaminated waste is now referred to as 'clinical' waste.) There are separate regulations set down by the Department of Environment and Conservation (DEC, formerly the EPA, Environment Protection Authority) which apply to the disposal of clinical waste. Funeral directors should seek further information or advice on disposal of clinical waste from the DEC. Relevant information of interest to the funeral industry may be found in the NSW Health Circular No. 98/89 Waste Management Guidelines for Health Care Facilities, August 1998 and in *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes,* EPA 1999.

1.5 Vehicles

A funeral director must provide (Clause10) as least one hearse and one body collection vehicle for use in the funeral director's business. However it is acceptable for the funeral director to use a mortuary transport service or a public vehicle operated by a freight carrier for body collection rather than, or in addition to, their own body collection vehicle.

There are several clauses in this part of the Regulation that aim to ensure the cleanliness of all body transport vehicles and emphasise the importance of carrying bodies separately from any other goods or people. Two clauses mention cleaning or removing 'body exudates'. The *Macquarie Dictionary* definitions are 'to exude: to come out gradually in drops like sweat through pores or small openings; exudates: a substance exuded'. Hence body exudates may be quite small in volume and may not seem significant but they could be a source of a build up of bacteria and fungi and create an unhygienic environment in the vehicle.

The part of a vehicle that a funeral director or a mortuary transport service uses for transporting bodies must be used exclusively for that purpose. For example, a van may be divided into compartments with one main compartment fitted to carry bodies and another smaller section to transport parcels and paperwork. It is not permissible to transport these types of general parcels in the body compartment of the van or vice versa.

A person must not use, or permit the use of, that part of a vehicle that has been used to transport a body, for the transport of another body until it has been cleaned of any exudates from the first body. If a vehicle has been used to transport a body, the vehicle must be cleaned to remove any traces of the body exudates before the owner or user can dispose of the vehicle. This applies to anyone who transports a body, not only a funeral director.

1.6 Transport of an unembalmed body

Many factors will influence a family's decision on whether to embalm before transporting a body. Mode of transport, time and distances involved, prevailing weather conditions and costs may all influence the decision. Most funeral directors would probably recommend embalming of bodies if they are to be transported long distances. A body may arrive in better condition if it is embalmed and this might be important especially if the body is to be viewed by family at its destination.

The Regulation gives two conditions under which an unembalmed body may be transported. One condition is that the body be transported so it is refrigerated at a continuous temperature of less than 10 degrees Celsius. The other is that the body can be transported without refrigeration as long as the journey takes eight hours or less and the person has reason to believe that transporting the body without refrigeration will not prejudice public health or amenity. See Hypothetical Case No.2 for an example that is within the Regulation for the transport of unembalmed bodies. See Appendix 1 for information on transport of bodies by airlines and international transport of bodies.

Hypothetical Case No. 2

A 50 year-old man who has had a long struggle with kidney disease dies in June in a Sydney hospital. He had been staying with relatives in Blacktown when his health worsened and he was admitted to hospital. His home is in Wellington in the mid-west of NSW. Members of his family decide they will drive his body back to his home town for burial. The family contracts a funeral director to collect his body from the hospital and store the body in refrigeration until they are able to collect it. They do not want his body to be embalmed. Family members in Wellington arrange with the local funeral director that he will accept the body in his holding room on arrival in Wellington and that he will assist with the funeral and burial. Three days after his death, the family collects the body which has been placed in a coffin, from the funeral director at 9.00am. Two family members travel with the body in the back of a borrowed station-wagon to Wellington. With a stop under a shady tree for a picnic lunch they make it to Wellington by 4.00pm. The body is in the holding room of the local funeral director by 4.30pm.

Case discussion

In this journey which was undertaken in cool weather and with all going to plan, the body is out of refrigeration for just under eight hours which is acceptable. If the journey was to be undertaken in hot weather or in a car that may be unreliable, then the family may need to consider what the alternatives or back-up plan could be.

The owner or driver of a vehicle not being a hearse or body collection vehicle, must be informed (Clause 21) if the body is infected with an infectious disease. In the case of a mortuary transport service, the funeral director must inform of a List B disease and enclose the body in a watertight coffin.

Retention of bodies 2

2.1 Overview

This section of the Regulation sets out different standards in the management of bodies for funeral directors and the general public. The intention is that there be some flexibility and sensitivity for members of the community who may have a range of different needs in relation to grief and ritual around the death of a family or community member. The standards set for funeral directors are more restrictive in some respects given the need to ensure public health and confidence in the routine handling, storage and preparation of a number of bodies at one time.

2.2 Retention of bodies by a person who is not a funeral director

If a person dies at home, it is possible for the family to keep the body at home for up to five straight days (Clause 9.1). This may be important for some people whose religious or traditional mourning practices centre on having the deceased present for some time after death. For example it allows the parents of a stillborn baby to have time with the baby at home if that is their choice. However other clauses in the Regulation do place some important limitations on what can be done in the home. For instance, the body cannot be prepared for burial or cremation in the home and cannot be placed in a coffin in the home. These activities must be carried out in a mortuary.

Most people will choose to have the body removed from the home fairly promptly by a funeral director. However those who choose to retain a body at home for some time will still need to have completed the basic procedure of having a doctor attend to confirm death. See Appendix 1 on procedures when some one dies. Families may also seek advice from the doctor or funeral director on retaining the body at home as significant body changes will occur rapidly in the first three days after death and in warm weather it may not be advisable to keep the body out of refrigeration for any length of time.

There are also two important exceptions to Clause 9.1 which allows a person to retain a body for up to five days. The first is when the deceased has donated their body to a university or research facility (premises licensed under the *Anatomy Act 1977*). For research purposes, the body needs to be preserved quickly after death so there should be minimum delay in transferring the body to the research facility. The second exception is when the person has died in suspicious circumstances, the cause of death is not clear, or there is another reason that makes the death the subject of an inquest by the coroner. This means that the body will be removed as soon as possible for examination by the coroner. See Appendix 1 for an explanation of coroner's cases.

The situations discussed above also apply to hospitals. In most cases when a person dies in hospital (provided it is not a coroner's case, or a situation where the body has been donated to a research facility or a university), the family would choose a funeral director and the funeral director would remove the body from the hospital mortuary to the funeral director's premises while the funeral is arranged. However some people who die in hospital may have no family or friends able to make immediate funeral arrangements or there may be a delay in locating family or executors to make decisions about funerals and therefore the body needs to be kept in the hospital mortuary (holding room).

A person who is not a funeral director (usually a hospital but it could apply to a family) must seek approval from the PHU to retain a body for longer than five days. The PHU will assess the situation based on the public health risk. They may give approval subject to certain conditions or they may refuse permission for the body to be retained.

2.3 Retention of bodies by a funeral director

A funeral director must keep a body either in a mortuary or in a holding room (Clause 10). It cannot be kept in any other part of the premises. If a body is retained for more than 48 hours, it must be held in a refrigerated body storage facility.

A body can be removed from refrigerated storage for a period of up to eight hours a day (Clause 10.3), to allow for embalming or other preparation of the body or for viewing by family and friends (Clause 16). (See Hypothetical Case No. 3.) The body may also be removed from refrigeration for the purpose of transporting to another mortuary or to the place of burial, interment or cremation.

Hypothetical Case No. 3

Jane Smith wants her children and grandchildren, who all live interstate, to have plenty of time to say goodbye to their grandmother and great-grandmother Elsie who died in a nursing home. She asks the funeral director to bring Elsie's body to her home in Strathfield for the day before the funeral. The funeral director explains the eight-hour limit to Jane. They allow one hour each way for driving and transfers from the mortuary to Jane's home so there is a six-hour period when Elsie's body can actually be in Jane's house. Jane and the funeral director negotiate when the six-hour period should start and finish. Jane would quite like Elsie to be there from 2.00pm to 7.00pm so they can have a sherry with her. However when she realises this will cost more for the funeral directors to provide this service out of hours, she settles on 10.00am to 4.00pm and decides they will have lunch and the afternoon with Elsie present.

2.4 Retention of embalmed and unembalmed bodies by a funeral director

A funeral director may retain a body that has not been embalmed (Clause 10.4) for up to seven (7) working days after the issue either of the death certificate or the burial or cremation permit issued by the coroner. However, if there is a need to retain a body that has not been embalmed for longer than seven (7) working days, the funeral director must apply to the local PHU for approval (Clause 10.5).

A body that has been embalmed may be retained for longer than seven (7) working days by a funeral director. A maximum time limit has not been specified for funeral directors to retain an embalmed body. This may be necessary when a funeral service is delayed because relatives have to travel from overseas or because they are repatriating the body to an overseas country and more time is needed to complete transport arrangements.

Embalming of bodies 3

3.1 Overview

Embalming means the process of preserving a body by means of removing the body fluids and injecting the arteries with embalming fluids. The embalming products essentially prevent deterioration of the body by inhibiting the growth of bacteria. This is a very ancient tradition in some cultures and has led to discoveries of bodies in very well preserved states centuries after death. In Australia there is generally not a strong tradition of embalming bodies. However it is common practice for some religious and cultural groups. A body does not have to be embalmed to be available for viewing prior to burial or cremation. Funeral directors trained in mortuary techniques can carry out basic procedures to make a body acceptable for viewing. Refrigeration is an acceptable and effective way of holding the body until burial or cremation.

3.2 When embalming is essential

Embalming is only essential if the body is to be permanently placed in a vault (an above ground tomb) or it is to be transported overseas.

There is no requirement in this Regulation for a body to be embalmed before it is air freighted within Australia. The airlines have their own policies on accepting embalmed or unembalmed bodies. See Appendix 1.

3.3 Proficiency of embalmers

People who prepare bodies for viewing and for burial or cremation have usually trained in mortuary techniques and skills on the job or through short courses run by the Australian Institute of Embalmers. Full embalming of a body requires a higher level of skill. Most embalmers working in Australia have trained on the job in Australia with supervision and tuition from a member of the Australian Institute of Embalmers. Some embalmers have trained overseas.

A person who embalms a body must have a certificate of proficiency from an institute approved by the Director-General of NSW Health (Clause11). The certificate must be equivalent to a Certificate IV standard. See Background to Certificate IV.

Background to Certificate IV

A new workplace framework for training and recognition of skills acquired on the job was introduced on a national basis in Australia in the early 1990s. The aim was that training and qualifications at certificate levels should be standardised and should be transferable across workplaces and across states. This system means that certain competencies must be achieved for certain certificate levels. It also means that organisations offering certificates have to be accredited to offer training and issue certificates.

Within the national training framework, most institutes or training organisations are accredited by VETAB (Vocational and Educational Training Accreditation Board). They are known as RTOs (Registered Training Organisations). When the Regulation was written, the standard of Certificate IV was included to reflect the levels within the national training framework. This clause specifies that the institute which issues the certificates must be approved by the Director-General of NSW Health (not by VETAB). Hence this situation is an exception to the usual VETAB process and sits outside the VETAB framework. At the time of writing, one institute, (which is based in Victoria) has been approved by the Director-General. Contact NSW Health for further details.

Handling of bodies 4

4.1 Bodies to be placed in body bags

There are three main issues to be considered before a body is moved (Clauses 13 and 14). The first is to ensure that the body is bagged or wrapped securely in high quality material so that there is no risk to public health and hygiene from the body. The second is to ensure that the body is clearly identified. Thirdly, if the deceased had any disease which could be infectious or pose a risk to people handling the body, then warning labels must also be attached to the bagged body.

The Regulation specifies the material to be used for the bag or wrapping and its dimensions. A body bag or wrapping must be made of low density polyethylene film of not less than 150 micrometres in thickness. This standard has been set to ensure that the bag or wrapping will cope with the weight/strain of the body when lifting and moving, will not permit body fluids to soak through the material and will resist moisture from refrigeration or other sources from coming into contact with the body. A bag for an adult must measure at least 2.4 metres in length and 1 metre in width. A bag for a child must be at least 1.5 metres in length. If wrapping is used for an adult it must be at least 2.4 metres in length when open and flat and 2 metres in width. Wrapping for a child must be at least 1.5 metres in length.

The name of the dead person, or some other identification of the person, must be written clearly and indelibly on the top outer surface of the bag or wrapping. The responsibility for correctly bagging and labelling the body lies with the hospital when the body is at a hospital. (The definition of hospital as used in the Regulation includes nursing homes, private hospitals, day procedure centres and institutions under the *Mental Health Act 1990*.) The Regulation states that the chief executive officer is responsible for compliance with bagging of bodies. In practice, hospital CEOs will delegate to responsible staff. The funeral director may actually complete this task for the hospital but the hospital CEO remains responsible to ensure that the task has been done. In any other place or premise, the funeral director or other person removing the body is responsible for complying with correct bagging and labelling of the body.

An additional responsibility for the person bagging and labelling the body is to ensure the correct labelling when there is reason to believe that the body is infected with a List A or List B disease. In this situation the bag or wrapping must also be clearly and indelibly marked with the appropriate words either **'INFECTIOUS DISEASE – LIST A – HANDLE WITH CARE'** or **'INFECTIOUS DISEASE – LIST B – HANDLE WITH CARE'**. Should the original bag or wrapping be replaced for any reason, then these words must be written on the new bagging or wrapping.

Hypothetical Case No. 4

For many years the Truly Excellent Funeral Company has advertised in the gay press in Sydney and they have built a reputation for providing sensitive and respectful services. On several occasions they have been called to remove the body of a man who has died at home from an AIDS-related illness. If family and friends want to remain in the room while the body is wrapped and prepared for transfer then the funeral directors are careful to explain what they are obliged to do while wearing protective clothing and labelling the wrapped or bagged body.

The funeral directors prefer that the family and friends should leave them in privacy to do these tasks. They also prefer that no family or friends see the labelling of the body bag with the required words for a List A disease. Once the labelling is done they completely cover the bagged or wrapped body with a plain coloured sheet and possibly a stretcher cover as well so that no labelling can be seen as they carry the body from the room, out of the home and into the vehicle.

4.2 Removal of bodies from body bags

A body for which there is no reason to believe has infection with a List A or List B disease can be removed from a body bag for the purpose of embalming the body, preparing the body for viewing, transport, burial or cremation, or transferring the body to a coffin (Clause 15).

Once a funeral director has embalmed or prepared a body it must be placed in a coffin or in a new body bag. The body bag must meet the standard set out in Clause 13.2. The intention here is to ensure that all bodies are either bagged or in a coffin while being stored, transferred, buried or cremated.

Burials

5

5.1 Burial of bodies

Bodies must be buried or cremated in coffins unless approval has been granted in a specific instance by the PHU or for a particular religion by the Director-General (Clause 19). See Appendix 1 for a discussion on coffin standards as this is not regulated.

A person who buries a body contained in a coffin must place the coffin so that its upper surface is not less than 900 millimetres below the natural surface level of the soil where it is buried (Clause 20). The basic intent here is that burial should be at such a depth as to avoid remains being easily disturbed either by people or by animals. There is also the need to contain the odours of decomposition. An exception may be approved following discussion with the local PHU. In the past some cemetery authorities have come up with innovative solutions that have been approved by the local PHU to ensure a grave is sealed and not accessible when the situation has prevented the minimal soil depth requirement from being met.

5.2 Burials in certain areas prohibited

A body must not be buried in a grave or vault unless that grave or vault is located in a public cemetery or a private cemetery or another place that has been approved by the local authority for the purpose of burial (Clause 22). It is permissible to bury a body on private land provided the landholding is five hectares or more and the location has been approved for that purpose by the local authority. NSW Health has an advisory policy to assist local authorities when considering such applications. A body must not be buried in or on any land if to do so would risk contamination of a drinking water supply or a domestic water supply.

5.3 Burials in vaults

When burial takes place above ground it is important from a public health perspective to prevent any leakage of body fluids or odours. Before being placed in a vault, a body must be embalmed (Clause 23). The body must also be hermetically enclosed with material approved by the PHU, without any viewing panel in the enclosure. The body and the enclosure must then be placed in a coffin and the lid secured. Currently the most commonly used approved material for hermetic enclosure is titanium zinc. However the Regulation provides the flexibility for new materials to be submitted for approval in the future. Hermetically sealed means airtight or not subject to any external conditions.

Understanding List A and List B diseases 6

6.1 Transmission of disease and standard precautions

Bacteria and viruses which cause disease are carried on the skin and in the blood and other body fluids. Some bacteria and viruses can still be active in the body after death. This means that if any of the infected body's fluids come into contact with a person and find a way to enter their body, eg through a break in the skin or through the mouth or nasal cavity then there is the possibility of causing infection in that person. For most blood borne diseases (like hepatitis C or HIV) this risk is extremely small as the viruses are quite fragile and blood carrying infectious particles has to quickly enter the bloodstream before it could cause infection.

It is always possible that a person may have had a blood borne disease such as hepatitis C or HIV that was never diagnosed or recognised when they were alive. Hospitals and other settings where there is any risk of occupational transmission of infection from living people operate under the same basic principle which is to assume that everyone is potentially infectious. Therefore when carrying out any invasive procedures or exposing workers to another person's body fluids, standard precautions for infection control are followed.

Even though the risk is not large in the first instance in handling the body of a person who may have died with an infectious disease, the risk of transmitting infection can be almost entirely eliminated by following the standard precautions for infection control. Such standard precautions in the handling of all bodies, alive or dead, are a requirement under occupational health and safety legislation. The precautions include practices like wearing gloves and other protective clothing and carefully managing waste. Detailed information is available in the NSW Health Department Circular No. 2002/45: Infection Control Policy.

For the purpose of the Regulation, infectious diseases which could pose some risk to people handling and preparing bodies have been divided into List A and List B diseases. List B diseases will be discussed first as they are rare diseases in Australia and the management of bodies with List B diseases is quite straightforward.

6.2 List B diseases

There are some diseases which are highly infectious and fairly easily transmitted between living people. Most of these diseases do not occur in Australia. If a case was to occur in Australia it would most likely have been contracted by the person while they were staying in a overseas country. For the purpose of this Regulation these diseases have been grouped as List B diseases. If anyone in Australia was diagnosed with one of these conditions, the case would be reported through the local Public Health Unit and then through the National Notifiable Disease Surveillance System (NNDSS). Quarantine of the person would be imposed when the health authorities thought it necessary.

One of the features that List B diseases have in common is the potential for airborne transmission. This means that infected particles from an infected body could be breathed in by a person in close contact with the body, particularly if they are manipulating the body in such a way as to expel air from the lungs.

List B diseases are:

- Diphtheria.
- Plague.
- Respiratory anthrax.
- Smallpox.
- Tuberculosis.
- Any viral haemorrhagic fever (including Lassa, Marburg, Ebola and Congo-Crimean fevers).

The NNDSS most recent reports show that there have been no cases of plague, anthrax, smallpox or viral haemorrhagic fevers in Australia since at least 1991. (There may have been no cases for many years prior to 1991, but this was the start of the most recent reporting period and the period for which there is the best data because of the establishment of the NNDSS.)

6.3 Background on List B diseases

Diphtheria

In Australia universal infant immunisation programs over several generations have made diphtheria a very rare condition. There have been no cases of diphtheria in Australia since 1993. In 1992 there was a small outbreak in a remote community in the Northern Territory. By the time children are eight-years-old they will have received four doses of the DTP vaccine which prevents the spread of diphtheria, tetanus and pertussis (whooping cough). Whenever adults receive an immunisation against tetanus they also receive a vaccine against diphtheria.

Plague

Plague is spread by fleas from infected rodents infecting humans, usually through bites. Plague occurs occasionally in countries in Africa, Asia and North America where there are wild rodent populations (including ground squirrels) that may carry the bacteria and pass it on to humans.

Respiratory anthrax

Anthrax is caused by bacteria which give rise to three forms of the disease: cutaneous anthrax which occurs on the skin, intestinal anthrax and respiratory anthrax. Cutaneous anthrax is the most common form and is transmitted to humans by the handling of animal products like hides, hair and bone. Historically cases of cutaneous anthrax have been reported in Australia in abattoir workers. Respiratory anthrax is the only form of the disease that can be spread by airborne transmission.

Smallpox

The World Health Organisation (WHO) officially declared that smallpox had been eradicated from the globe in 1981. This was the result of years of extensive immunisation programs. It is a theoretical possibility that the virus could recur and therefore smallpox continues to be included in any relevant public health law.

Tuberculosis

Between 1992 and 2002 an average of 452 tuberculosis (TB) cases per year were recorded in NSW. People with TB are well monitored in Australia and receive long term treatment for the condition. Nearly all cases of TB will be completely cured. Appropriate and ongoing treatment has ensured the death rate from TB is extremely low in Australia.

Viral haemorrhagic fevers

Viral haemorrhagic fevers are highly infectious and often fatal. However this group of viral diseases is rare and small outbreaks have mostly occurred in Africa. Initial infection is usually from contact with infected animals such as rodents or monkeys.

6.4 Background on List A diseases

List A diseases are:

- Creutzfeld-Jacob disease (CJD).
- Hepatitis C.
- Human immunodeficiency virus infection (HIV).

These three diseases are grouped as List A diseases because the bodies of people known to have died with these conditions should be handled with caution and care. The actual risk of the transmission of virus after death is extremely small and is manageable by following standard precautions.

Creutzfeld-Jacob disease

CJD is a rare condition that is characterised by progressive dementia. CJD occurs at the rate of one person per million per year. The actual infectious agents in CJD are still being researched. Cases have occurred in people who received injections of growth hormone made from human pituitary products and in people who received corneal transplants.

The body fluids of a person with CJD are thought to be potentially infectious and therefore require cautious handling. This is the reason that CJD, although so rare, is included as a List A disease. See *NSW Health Information Bulletin No. 2000/13,* issued 27 June 2000.

Human immunodeficiency virus

In Australia the primary mode of transmission of HIV is sexual intercourse. There have been very few cases of transmission of HIV in the workplace through needlestick injury or other modes of blood to blood contact. From a peak in 1988 when 1,693 new cases of HIV were reported in Australia, the number of new cases has been declining. In 2001 there were 778 new cases of HIV reported in Australia.

Hepatitis C

Hepatitis C has spread rapidly in Australia through the 1990s. The main mode of transmission has been through the sharing of needles and syringes by injecting drug users. About 70 per cent of cases occur in the 20 to 50 year age group. Australia-wide in 2002 there were 15,981 known cases of hepatitis C. Most people who carry the virus will remain well. However about 10 per cent of cases will go on to develop liver disease as a result of the virus.

6.5 General management of bodies with infectious diseases

There are other infectious diseases which do not appear as List A or List B diseases. Some of them are potentially more infectious than the List A diseases. Both hepatitis B and hepatitis A are infectious. However immunisation is available against both these forms of hepatitis. Again the prevalence of these types of infections in the community is the reason to practice standard precautions when handling all bodies.

Protective clothing

When a person is placing in a bag, or wrapping, a body that they have reason to believe has an infectious disease, the person must wear protective clothing. The Regulation (Clause 14) stipulates a clean outer garment such as a gown, overalls or jumpsuit; a clean pair of disposable gloves, a disposable mask and appropriate eye protection. Immediately after use, the wearer is responsible for ensuring that all the items are placed in a clean plastic bag. They must then be laundered as soon as practicable or if they are disposable items, they must be disposed of promptly as contaminated (clinical) waste.

Informing vehicle driver

If for some reason a body is to be transported by a vehicle other than a hearse or a body collection vehicle, the owner or driver of the vehicle must be informed if there is reason to believe that the body is infected with an infectious disease (Clause 21). If the body has been bagged or wrapped well (in accordance with Clause 13) then there should be no risk of leakage of body fluids and therefore no public health risk to the vehicle driver or anyone else. However the intention here is that the owner or driver of the vehicle should be well-informed about the circumstances so that if there is any associated risk they can take informed action or seek advice.

6.6 Management of bodies with List B diseases

The Regulation states that bodies believed to be infected with a List B disease must have the bagging or wrapping marked indelibly with **'INFECTIOUS DISEASE – LIST B – HANDLE WITH CARE'** (Clause 13).

A person must not remove from a body bag a body that is believed to be infected with a List B disease (Clause 15).

A body with a List B disease must not be made available for viewing and it must not be embalmed (Clause 16).

6.7 Management of bodies with List A diseases

The Regulation puts no restriction on viewing bodies of people who have had List A infections.

When embalming a body with a List A disease or when carrying out more minor procedures to prepare the body for viewing, standard precautions should be followed in the same way as they would be in handling or doing invasive procedures on every body.

However in recognition of some concern in the funeral industry about the handling of bodies with List A diseases, the Regulation does stipulate that a person who carries out an invasive procedure (one in which the dermis is cut) must have completed certain training. They must have completed a training course, or series of courses, in mortuary practice, infection control procedures and occupational health and safety and these courses must have been approved by the PHU (Clause 12). There is a NSW Health policy in place on approval for these courses. Funeral directors should contact their local PHU to find out about the availability of approved courses.

Bodies believed to be infected with a List A disease must have the bagging or wrapping marked indelibly with **'INFECTIOUS DISEASE – LIST A – HANDLE WITH CARE'** (Clause 13). Refer to Section 4 of this document on handling of bodies.

Viewings where there is a history of List A disease

Under the previous Public Health Regulation funeral directors could use their discretion in allowing viewings of bodies with HIV or hepatitis C. This situation led to many distressing occasions for families and friends. They had been able to touch, kiss and hold their relative or friend when they were alive but found they were denied even a final look at their body let alone the opportunity to touch or kiss them goodbye. *C-Change*, a comprehensive report from the Anti-Discrimination Board on discrimination related to hepatitis C, documented these cases.

This was a difficult situation for the funeral directors who were acting according to the regulations and believed that they were taking appropriate precautions both to protect the health of their own staff and the friends and family involved.

It is important to understand that under the new Regulation (Clause 16) there is no restriction on viewing bodies with HIV or hepatitis C. There is also no discretion for the funeral director to refuse a viewing on the basis of possible infection with a List A disease.

Exhumations 7

The basic intent of this part of the Regulation is to prohibit the exhumation of remains except by approval on a case-by-case basis. When an exhumation does take place, the Regulation ensures the presence of an EHO or an officer of the NSW Department of Health to monitor the situation and prevent any risk to public health in the handling of remains (Clause 28). The officer has the power to order the exhumation to stop.

An exhumation can only be ordered by the coroner or approved by the PHU. An example of an exhumation ordered by the coroner might be if an inquest into a suspicious death produced new evidence that suggested further examination of the remains would help to determine the exact circumstances of death.

An application can be made to the PHU to exhume the remains of a body. The application may be approved, subject to certain conditions, or it may be refused. If the application is approved, the approval lapses after three months from the date of the approval unless the PHU has agreed to a longer time period.

An application can be made to the PHU by the executor of the estate of the dead person or by the nearest surviving relative of the dead person (Clause 26). If neither of these people is available to make an application, then a person who the PHU considers to be a proper person can make an application. The application has to be made on the approved form and has to be accompanied by a certified copy of the death certificate and a statutory declaration as to the relationship of the applicant to the dead person. The statutory declaration must include the dead person's wishes, so far as any such wishes are known to the applicant, regarding the disposal of his or her body. There is an application fee.

The NSW Health policy on applying for approval for exhumation outlines a number of other requirements. The application must be accompanied by a plan of management for the exhumation which needs to be worked out between the person applying for cremation, the cemetery and the funeral director. The plan is an effective tool for all involved to consider each step of the process and to make the ultimate decision to apply for exhumation. The plan also ensures that all key relatives of the deceased have been consulted and consent to the exhumation. The policy prohibits relatives of the deceased from attending the exhumation. Exhumations may be extremely unpleasant for those involved. Once the cemetery workers have excavated to the level of the coffin, the funeral director must remove the remains from the grave and place them in a new coffin or container for transport or re-burial. Funeral directors may be reluctant to apply for exhumations and they can be very expensive. The cemetery authority must also give their approval for an exhumation to proceed.

Hypothetical Case No. 5

A woman aged 32 died within weeks of being diagnosed with advanced cervical cancer. Her husband was completely distraught by her death and allowed his brother-in-law to make all the funeral arrangements. Four weeks after her burial he applied for an exhumation as he was deeply unhappy with the plot and location in the cemetery that his brother-in-law had chosen and wanted his wife buried in the same cemetery but in a different location. The application was approved. The exhumation proved extremely difficult and unpleasant as days of heavy rain preceded the day of the exhumation and the body was in an advanced state of decomposition.

Hypothetical Case No. 6

The Green Pastures Cemetery is expanding and putting in a new section for mausoleums. The new construction requires drainage works that will encroach on three graves in the old part of the cemetery. The manager of the cemetery applies to the PHU to exhume the remains from these three graves for reburial in another part of the cemetery. All the deaths occurred before 1900 and there are no current relatives holding burial rights to the graves. The application was approved. (Note that there may be relevant heritage issues in this case and it would be up to the cemetery authority to consult with their local council regarding heritage considerations.)

Crematories 8

8.1 Overview

A crematory is a purpose built facility for the disposal of bodies by incineration. Cremators are designed usually as gas or oil fired and burn at temperatures of up to 1,000 degrees Celsius. Crematories may be owned and run by private companies or by public institutions such as local councils. Approval to build or open a crematory comes under local government regulations. However before a cremation authority can install a new cremator, it must be approved by NSW Health under the *Public Health Act*. The Department of Environment and Conservation, (DEC formerly the EPA), does not require approval of crematory equipment.

While this Regulation does not cover the building or opening of crematories, it does give the Minister for Health the authority to order the closing of a crematory (Clause 30). The criteria by which a decision would be made to close a crematory are not detailed in the Regulation. However the intention is to prevent the operation of a facility that poses a demonstrated public health risk. The Regulation defines a cremation authority as a person or body of persons by whom the crematory's operations are directed.

A cremation authority must keep a crematory clean, tidy and in good working order (Clause 29). The Regulation does not set out any standard by which to judge what is 'clean, tidy and in good working order'. An authorised person carrying out an inspection will use their own judgement in this assessment.

8.2 Closing of crematories

The NSW Minister for Health may, on giving 28 days notice in writing to a cremation authority, order the closing of a crematory (Clause 30). If the Minister has issued an order to close a crematory, the cremation authority cannot re-open that crematory until the order has been revoked by the Minister.

Clause 30.3 refers to circumstances when a crematory authority intends to close a crematory for reasons other than being ordered to do so under Clause 30.1. For example the operator may wish to renovate the premises or sell the premises or have some other reason for needing to close the crematory either on a temporary or permanent basis. In these situations the crematory authority must advertise its intentions to close not less than 28 days before the closing date. This must happen in three ways:

1. A notice of the intended closure must be sent to the Minister.
2. A notice giving details of the intended closure must be published in the newspaper that circulates in the district where the crematory is located.
3. A copy of the notice of intended closure must be displayed in a prominent position at the entrance of the crematory.

The Minister must give approval for a crematory to re-open. Even where the crematory may have been closed for reasons suggested previously such as renovation or upgrading, a person must not re-open the crematory without the approval of the Minister.

8.3 Approval of equipment for a crematory

The requirement that a crematory must first be approved by NSW Health is set out in Section 52 of the *Public Health Act 1991* and not in this Regulation. However the fee that is payable when an application is made for approval is included in the Regulation (Clause 46). The fee for approval of a new cremator is greater than the fee for application for a variation on a previous approval. Anyone seeking approvals under this part of the Regulation should contact their local PHU in the first instance.

Cremation 9

9.1 Overview

This section of the Regulation mainly deals with the need to ensure that all documentation for cremation is in order so that all cremations carried out are lawful. The aim of the documentation is to confirm the identity of the body to be cremated, to confirm the cause of death and to ensure that a coroner's investigation has been conducted if necessary. The requirement to have an application for cremation considered by a medical referee, who is a doctor other than the doctor who has completed the cause of death certificate, is another safeguard which ensures all correct processes have been completed prior to cremation.

There is the potential for great uncertainty and misunderstanding about the cremation process because the public rarely views the operation of a crematory and because there is such emotional investment in the situation. This section also aims to ensure a standard of practice that reassures the public that bodies are promptly cremated after delivery to the crematory and that bodies are cremated one at a time so that the public is guaranteed to receive only the ashes of their family member.

9.2 No refusal to cremate

A cremation authority must not, without lawful excuse, refuse to accept a body for cremation (Clause 31). An example of a lawful excuse would be the lack of a cremation certificate to accompany the body, or outstanding payments owed by a funeral director to the cremation authority.

9.3 One body at a time

A person must not cremate more than one body in the same crematory retort at any one time, except with the approval of the PHU (Clause 32). There may be situations where a family requests that bodies be cremated together. Examples could be two children who died in a road accident, a woman who died in childbirth along with her baby, or premature stillborn twins. If the family prefers that the two bodies be placed together in the one retort, then permission will need to be sought from the local PHU. It would be best if the funeral director has discussed these options with the family and the crematory at the time of arranging the funeral so that there is some lead time for the case to be considered by the PHU. Generally two adult sized coffins will not fit, or burn safely, in one crematory retort. A funeral director would need to find out from the cremation authority whether this is an option before seeking approval from the PHU to cremate two adult bodies in the one retort.

9.4 Cremation within four hours

A cremation authority must commence cremating a body within four hours of the delivery of the body to the crematory unless the body is placed under refrigeration in a holding room (Clause 33). This clause is in line with others in the Regulation which does not allow a body to be out of refrigeration for more than eight hours in any one day. It can be assumed that if the body has come to the crematorium following a funeral service then it may already have been out of refrigeration for some hours. Hence there is a need to cremate within four hours or to return the body to cold storage.

9.5 No cremation against dead person's wishes

A person must not cremate the body of a dead person if informed that the latter has left a written direction that his or her body was not to be cremated or that it was to be disposed of by some other means (Clause 34).

9.6 Medical referees

Under Part 6 of the Regulation there are a number of procedures in relation to cremation which can only be completed by a medical referee. A medical referee may be a medical practitioner who has been appointed by the Director-General (or the PHU when this authority has been delegated) to carry out the specific functions of considering cremation applications and issuing cremation permits (Clause 42). Most funeral directors will have access to a number of medical referees in their area. Medical referees may also be practicing as general practitioners (GPs) or be in another form of medical practice.

Under the Regulation the functions of a medical referee may also be carried out by a medical superintendent of a public hospital (within the meaning of the *Health Services Act 1997*) or by a medical officer of health. (A medical officer of health is usually a senior doctor in an area health service who has specific responsibilities in relation to public health.)

9.7 No cremation without documentation

A person must not cremate the remains of a body that has not been identified (Clause 35). Crematoria will have their own systems that ensure each requirement for identification is met before a body is cremated. For example they will have checklists for documentation, and for the papers to match the nameplate on the coffin.

There are basically three different documents required by the cremation authority before a cremation can take place:

1. The application for cremation which is completed by the family of the deceased.
2. The cremation certificate which is completed by the attending doctor.
3. The cremation permit which is completed by the medical referee or the coroner.

There are different cremation application forms and cremation permits specifically for stillborn children.

9.8 Cremation application

An application for cremation of a person other than a stillborn child can be made by the executor of the estate of the deceased or by the nearest surviving relative (Clause 36). If neither of these people is available, then the medical referee or the coroner, (whoever the application has been made to), will accept an application from a person that they judge to be a proper person in the circumstances. A statutory declaration may be needed to support some of the information in the application.

9.9 Cremation application – stillborn children

A stillborn child is 'a child that exhibits no sign of respiration or heartbeat or other sign of life, after birth and that:

a) is of at least 20 weeks gestation, or

b) if it cannot be reliably established whether the period of gestation is more or less than 20 weeks, has a body mass of at least 400 grams at birth'.

This definition comes from the *Births, Deaths and Marriages Registration Act 1995*, Section 4. This *Act* requires that the birth of the child should be registered in the usual way. Stillborn babies must be buried or cremated. It is the choice of the parents whether they attend the burial or cremation.

An application for cremation of a stillborn child has to be completed in the approved form and submitted to a medical referee (Clause 37). The application can be made by a nearest surviving relative of the child. If there is no such relative available to make the application, then the medical referee will accept an application from a person who in their opinion is a proper person in the circumstances. A statutory declaration may be needed to support information supplied in the application.

On receipt of an application made under Clause 37, a medical referee may issue a cremation permit in the approved form. However a medical referee must not issue a cremation permit for the body of a stillborn child unless the child has been certified to be stillborn by the medical practitioner who was in attendance at the delivery of the child, or the medical referee is satisfied, after making such inquiries as they think necessary, that the child was stillborn.

When a foetus is delivered at less than 20 weeks gestation or 400 grams weight, it is not a stillbirth but is considered to be a non-viable foetus. This situation is not covered by the Regulation. Refer to Appendix 1 for information about funerals for a non-viable foetus.

9.10 Cremation certificate

A cremation certificate can be issued either by the medical practitioner who attended the person immediately prior to or after death or by the medical practitioner who has carried out a post-mortem examination of the body (Clause 38). In both cases the doctor must complete the certificate in the approved form and they must ensure that the person's death is not examinable by a coroner under the *Coroners Act 1980*. Where an attending practitioner issues a cremation certificate, they must be able to certify definitely the cause of death.

A cremation certificate that has been issued under the relevant legislation of another State or Territory, by a medical practitioner registered in that State or Territory, is acceptable in NSW (Clause 38).

9.11 Medical referee's cremation permit

A medical referee may issue a cremation permit in the approved form (for a person other than a stillborn child) (Clause 39) once they have received an application for cremation made under Clause 36 and a cremation certificate issued under Clause 38.

A medical referee must not issue a cremation permit when any of the following situations apply:

- The death of the person is examinable under the *Coroners Act 1980* by a coroner.
- The person left a written direction that his or her body was not to be cremated or that it was to be disposed of by some other means.
- The medical referee has not made an external examination of the body.
- The medical referee is not satisfied that the identity of the body has been correctly disclosed in the application for cremation or in the cremation certificate.
- The medical referee is not satisfied that the cause of death has been correctly disclosed in the cremation certificate.
- The application for cremation or the cremation certificate appears to the medical referee to be otherwise incorrect or incomplete.
- The same medical referee issued a cremation certificate in respect of the body.

9.12 Coroner's cremation permit

A coroner who receives an application for cremation of the body of a person whose death is examinable under the *Coroners Act 1980* may issue a cremation permit in the approved form (Clause 40). However, if the application for cremation appears to the coroner to be incorrect or incomplete, or if the person left written direction that his or her body was not to be cremated or that it was to be disposed of by other means, then the coroner must not issue a cremation permit for the body.

A cremation permit issued by a coroner, or a person who performs the functions of a coroner, in another State or Territory, under the relevant legislation of that State or Territory, is acceptable as a cremation permit in NSW (Clause 40).

9.13 Ashes

Under Clause 43 the cremation authority (according to the reasonable directions of the applicant or deceased) must either:

- give the ashes to the applicant; or
- place the ashes in a burial ground or adjacent dedicated land; or
- retain the ashes; or
- where the applicant has not claimed the ashes within a reasonable time, the cremation authority, after giving 14 days notice to the applicant, may dispose of the ashes.

Registers 10

The Regulation stipulates three different registers that must be kept on the disposal of bodies. They are the:

1. register of bodies prepared in a mortuary
2. register of burials
3. register of cremations.

In addition, NSW Health is to keep a register of mortuaries and crematories.

10.1 Mortuary register

A person who operates a mortuary must maintain a register of all bodies prepared in the mortuary (Clause 18). An entry in the register must be made immediately after each body is prepared.

Each entry must include the following information:

- Name, age and last address of the person whose body was prepared.
- Their date of death.
- The date the body was received at the mortuary.
- The date the body was removed from the mortuary.
- The name of the cemetery or crematory to which the body was delivered or the name of the person to whom the body was delivered.

10.2 Register of burials

A cemetery authority must keep a register of all burials carried out in the cemetery that it operates (Clause 24). An entry in the register must be made immediately after each body is buried.

Each entry must include the following information:

- Name, age and last address of the person whose body or remains was buried.
- Their date of death.
- The date of burial.
- The section and allotment of the burial.
- The name of any person who continues to hold any right of burial in that allotment.
- The name of the funeral director who transported the body to the cemetery.
- The fees paid to the cemetery authority for the burial.

The cemetery authority must allow members of the public to inspect the register of burials during the normal business hours and without charge (Clause 50). The authority is obliged to provide copies of any entries in the register at the request of members of the public but they may charge the public the reasonable cost of providing such copies.

If the cemetery authority ceases to exist, the person who was the last chief executive officer has the responsibility to send the register to the PHU or to dispose of the register as directed by the PHU.

10.3 Register of cremations

A cremation authority must maintain a register of all cremations carried out by it (Clause 44). The register must be in the approved form. The approved form is under review at the time writing and will be available on the NSW Health website. An entry in the register must be made immediately after each cremation has taken place and in addition an entry must be made in relation to the disposal ashes once this has occurred.

The cremation authority must allow members of the public to inspect the register of cremations during the normal business hours and without charge (Clause 50). The authority is obliged to provide copies of any entries in the register at the request of members of the public but they may charge the public the reasonable cost of providing such copies.

A cremation authority must keep all applications, certificates, permits and other documents relating to any cremation and mark them with a number corresponding to the number of the cremation as entered in the cremation register (Clause 44). These documents (but not the actual register or any part of it) may be destroyed 15 years from the date of the cremation. It is acceptable for the records to be kept in an electronic format.

In the event of the crematory closing, the cremation authority must send all registers and documents relating to the cremations that have taken place to the local PHU or otherwise dispose of them as directed by the PHU.

10.4 Register of mortuaries and crematories

The NSW Department of Health is to maintain a register of mortuaries and crematories (Clause 47). In practice each public health unit will keep the register for all the mortuaries and crematories within the boundaries of their area health service. From the 1 January 2003, a person who operates a mortuary or a crematory must notify their local PHU of the following information for inclusion on the register:

- The name and location of the mortuary or crematory.
- The name and address of the person who operates the mortuary or crematory.
- The telephone number of the mortuary or crematory or of the person who operates the mortuary or crematory.
- In the case of a mortuary, the name and address of any funeral director who has access to the mortuary.

For the notification to be complete in the case of a mortuary it must be accompanied by a copy of the approval under section 68 of the *Local Government Act 1993* and there is a fee.

Any changes to the details notified by a mortuary or crematory must be sent to the PHU within 28 days of the change. There is no fee charged for these changes in information.

General aspects 11

11.1 Inspections and penalties

The people who are empowered to ensure compliance with the Regulation are environmental health officers (Clause 49). These may be EHOs employed by PHUs or by local government. Failure to comply with the Regulation may make individuals or companies liable to penalties. Each clause of the Regulation which carries a penalty has the maximum penalty stated after the clause. The penalty is written as penalty units which equates one unit to a dollar amount which may be varied over time. For example, the maximum penalty for failure to comply with Clause 31, a cremation authority must not, without lawful excuse, refuse to accept a body for cremation, is 10 penalty units, which at the time of writing is equivalent to $1,100 (1 unit = $110). Under the current system, the EHO prepares a report for the NSW Department of Health and a decision is made on whether to prosecute.

The Regulation empowers an EHO to enter and inspect:

- a mortuary or a premises that the officer has reason to believe is a mortuary
- a crematory and any part of the equipment or apparatus at the crematory
- a cemetery and any part of the cemetery
- any premises used by a mortuary transport service and any records, equipment and apparatus used by the mortuary transport service.

An EHO may inspect any register or other record or document at a mortuary, crematory or cemetery. The EHO may also take copies of extracts from the register, record or document. The intention of this part of the Regulation is to ensure that the EHOs have access to relevant information should they need to investigate a complaint or attempt to assess whether some aspect of practice has met the standards set down in the Regulation.

Funeral industry personnel should ensure that any EHO presenting to conduct an inspection has the authority to do so by checking either with their local council or PHU.

Guidelines as defence

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Clause 51 of the Regulation states 'It is a defence to a prosecution for an offence against this Regulation if the defendant satisfies the court that the act or omission constituting the offence was done in compliance with any guidelines published by the NSW Department of Health'. Hence complying with guidance as set out in this document would be a defence should a prosecution proceed under the Regulation.

Appendix 1– Issues not included in the *Public Health (Disposal of Bodies) Regulation 2002*

Issues not included in the *Public Health (Disposal of Bodies) Regulation 2002*

The *Public Health (Disposal of Bodies) Regulation 2002* is limited in its scope to public health issues related to the management of bodies prior to burial or cremation and to exhumations. There is a much broader range of knowledge and expertise within the funeral industry and the general public which is relevant to the management of funerals, burials and cremation. In writing this document certain knowledge on the part of the funeral industry and the general public has been assumed. However there are certain issues about which it may be useful to provide more information as background to understanding the Regulation and the guidelines.

Procedures when a person dies

When a person dies at home a doctor should be called to formally pronounce the person dead and to issue the Medical Certificate of Cause of Death (PR315). (The section on the coroner lists situations where the doctor may not be able to issue this form.) If it is known (or likely) that the deceased will be cremated, it is a good idea to request a cremation certificate at the same time. See 9.10 in the guidelines. Once the doctor has visited, and the death is not considered a coroner's case, then a funeral director can be contacted and can remove the body to the funeral home.

When a person dies in hospital and the PR315 has been issued, until the family engages a funeral director, the body will be held in the hospital morgue. Nursing homes may not have their own morgue or holding room so they may request families to engage a funeral director fairly promptly so that the body can be transferred to the funeral director's facilities.

Death certificate

Usually it is the doctor or the funeral director who forwards the Medical Certificate of Cause of Death (PR315) to the Registrar of Births, Deaths and Marriages. (In coroners cases the coroner forwards the appropriate form.) The next of kin can then apply (and pay a fee) to the Registrar to issue a Death Certificate. The Death Certificate is often necessary as proof of death when dealing with the estate of the deceased, eg banks, Centrelink, real estate agents, insurance companies may need to sight the death certificate.

The Coroner

The Coroners Act 1980 requires that certain procedures be followed in the event of death. Whenever a death occurs, a medical practitioner is required to examine the body, assess the cause of death and complete and sign a form called the Medical Certificate of Cause of Death (PR315). Once this form is signed, the family can proceed with funeral arrangements and a funeral director can remove the body.

The medical practitioner cannot sign the form, and must report the death to the police or the coroner, if in their opinion the following has occurred:

a) The person has died a violent or unnatural death.

b) The person has died a sudden death, the cause of which is unknown.

c) The person has died under suspicious or unnatural circumstances.

d) The person has died having not been attended by a medical practitioner within the last three months prior to death.

e) The death has occurred while the person was under, or as a result of, or within 24 hours after administration of an anaesthetic, administered in the course of a medical, surgical or dental procedure, or an operation or procedure of a like nature. (This does not include a local anaesthetic administered solely for the purpose of facilitating a resuscitation procedure to prevent an impending or apparent death.)

f) The person died within a year and a day after the date of any accident to which the cause of his or her death is, or may be, attributable.

g) The person died while they were in or temporarily absent from a hospital within the meaning of the *Mental Health Act 1990*, and while the person was resident in the hospital for the purpose of receiving care, treatment or assistance.

h) The person was a person in custody and died in any of the following circumstances:

1. While in the custody of a police officer or in other lawful custody, or while escaping or attempting to escape from police custody or other lawful custody.
2. As a result of or in the course of police operations.
3. While in, or temporarily absent from, a detention center within the meaning of the *Children (Detention Centres) Act 1987*, a correctional center within the meaning of the *Crimes (Administration of Sentences) Act 1999,* or a lock-up, and of which the person was an inmate.
4. While proceeding to an institution referred to in paragraph (3), for the purpose of being admitted as an inmate of the institution and while in the company of a police officer of other official charged with the person's care or custody.

The *Community Services Legislation Amendment Act 2002* contains additional requirements for reporting a death to the Coroner. These are:

- children in care
- children notified to the Department of Community Services (DoCS) within three years of their death
- children who are siblings of a child notified to DoCS within three years of their death
- children who may have died from abuse or neglect or in suspicious circumstances
- children who were in detention at the time of their death
- people with a disability who at the time of their death were living in, or temporarily absent from, a residential care service authorised or funded under the *Disability Services Act 1993* or a residential centre for handicapped persons (a licensed boarding house).

For more detail on procedures in Coroners cases (which is most relevant for hospital and health service staff) refer to NSW Health Circular No. 2003/62. Issued 16 September 2003. *Coroners' Cases and Amendments to the Coroners Act 1980* and *Arranging a Funeral: A Resource Book for professionals to resource their clients* by Trudy Coffey, Chief Social Worker, Liverpool Hospital.

Standards for coffins

The Regulation does not specify standards for coffins other than requiring that they have a securely fitting lid. The Regulation spells out the requirements for body bags – type of material, thickness, size of bag. Body bags are used to transport the body from the place of death to the mortuary or funeral directors premises and to store the body. In initial handling, it is the body bag which is important from a public health point of view in containing the body and preventing any leakage of fluids. Once a body has been transferred to a coffin it will generally not again be handled.

The main concern for the funeral industry and consumers about standards for coffins relate to the strength of the materials used to stand up to handling and the weight of the body. The other main concern from the funeral industry is about preventing injury to workers who carry and handle coffins. They are therefore concerned about the number, strength and adequacy of handles and that there should be no sharp edges or other features which would have potential for injury. Funeral directors and their staff may refuse to handle a coffin if they consider it to be unsafe. One of the work conditions covering funeral industry union members is that they will not carry a coffin above waist height. For a coffin without handles they would usually use a trolley for transferring the coffin.

Hence a family that is interested in making their own coffin or purchasing a coffin from someone other than the funeral director needs to determine whether the funeral director who will be handling the coffin is satisfied that it causes no occupational health or safety risk. The family should consider their own risks and capacities in lifting and generally handling the coffin if they wish to make their own. They also need to consider each step of the journey and whether it is actually feasible for them to handle the body at every stage in the burial/cremation process, should the funeral director not agree to handle the coffin.

Coffin manufacturers usually submit their designs to members of the funeral industry for approval. If the designs are acceptable to the industry then the manufacturers treat their designs and specifications as commercial in confidence. So there is not a basic standard available to guide the public who may wish to make their own coffin or casket in accordance with

standards that are acceptable to the funeral industry. For instance, consumers may be interested in using cardboard coffins but unless such a coffin is acceptable to the industry they will find it difficult to find a supplier and/or difficult to find a funeral director who will handle cardboard coffins.

Hypothetical Case No. 8

When a master builder died, two of his sons decided that they wanted to make the coffin for their father. They both had carpentry skills learnt from their father. They made the coffin at home from timber they had on hand. It was simple but beautiful in design – a simple casket rather than a coffin shape with no handles. The sons discussed their plans with the funeral director who had no objections once assured of the quality and style of the casket that would be made. The funeral director collected the casket from the house, transported the body to the service and then to the crematorium.

The Australian Cemeteries and Crematoria Association (ACCA) have adopted guidelines regarding the content of coffins delivered for cremation. As part of these guidelines, the ACCA notes that their members 'will not accept for cremation any coffin which is not constructed principally of timber and/or wood derivatives, so as to be both satisfactory to relevant Health and Environment Protection agencies and combustible to the satisfaction of the cremation authority'. They also make explicit that 'any coffin constructed of metal or having a metal internal liner, or other metal insert, is not acceptable for cremation'. In terms of any trimmings or linings for the coffin, the ACCA guidelines state that no materials containing polyvinyl chloride (PVC) or latex-based rubber should be used. Materials containing polyvinyl acetate are acceptable.

Contents of coffins for cremation

Most people will seek advice from the funeral director when requesting that certain items be placed in a coffin with the body. The ACCA have compiled guidelines on what they consider are acceptable items to have in coffins and funeral directors should be familiar with these guidelines. They are based on safety concerns and the potential for unacceptable temperatures, emissions or residues to result from combustion of certain materials. In summary, acceptable routine items are clothing, shrouds and footwear. However garments or footwear made mainly of latex-based rubber or plastic are not acceptable, eg wet weather gear, gumboots, military boots. Personal effects such as spectacles, jewellery and handbags are acceptable but not recommended (and in the case of handbags there is a maximum size set and they must not be made of PVC).

Some surgical implants must be removed prior to cremation. These include battery powered cardiac pacemakers and defibrillators, irradiated metal pellets and drug infusion pumps. However there is no problem in cremating a body with silicon implants or metal pins, plates or joints in place. The ACCA guidelines advise funeral directors to discuss with the crematorium any cases where prosthetic limbs, calipers or plaster casts may be included in the coffin. Metal walking sticks are not acceptable.

Photographs are acceptable in a coffin but there should be no frames or glass accompanying them. Fluid in any container (such as a bottle of alcohol) is not acceptable, nor are batteries or pressurised spray cans. The ACCA guidelines should be consulted for more detailed information.

Families assisting with preparation of bodies

Some families may wish to be involved with the preparation of the body of their family member once the body is in the care of the funeral director. For example, some people may wish to dress or wrap the body for burial or cremation. These situations need to be negotiated with the funeral director. The funeral director may have some concerns about public liability or other insurance aspects of family involvement but this is not an aspect of the funeral industry that is covered by this Regulation.

Management of foetuses that are less than 20 weeks

A foetus delivered at less than 20 weeks gestation is considered to be a non-viable foetus. It is not defined as a stillbirth and therefore there is no requirement to register the birth or to formally bury or cremate the body.

However some parents who are grieving for the loss may choose to think of the foetus as a stillbirth and to request a funeral service and cremation or burial. There is nothing in the Regulation to prevent this.

Most of the large maternity hospitals will have their own policies and procedures for dealing sensitively with parents' wishes when there is a non-viable foetus. Hospital policies will take account of the *Human Tissue Act 2001* and procedures followed may be different depending upon the hospital and the individual situation. (For example, once human tissue has been removed from a person's body, that person has no legal right to the tissue. A hospital can refuse to give the tissue to the person from whom it was removed.)

If parents choose cremation or burial in a cemetery for a non-viable foetus then a letter from the attending medical officer is usually acceptable to the funeral director and the cremation authority. The cremation authority may also request that an application for cremation form be completed (see 9.9 of the guidelines) but this is really in lieu of a letter providing basic information and a formal request to cremate. Most hospitals will have a policy under which the attending doctor will seek to ensure that there will be no public health risk before they release the foetus to the parents. This is important in situations where parents may be considering burial at home or some other form of disposal of the foetus.

From the hospital's perspective, if the parents have no wish to retain the foetus, the hospital's responsibility is to classify a non-viable foetus as clinical waste and dispose of it in this way.

Air transport of bodies in Australia

Bodies may be transported by passenger aircraft through the domestic airlines or by air freight companies on aircraft used only for freight. Each company has its own policy which is based on *The Air Cargo Tariff (TACT) Rules Manual* which contains the international standards. Some freight companies choose not to transport bodies. In general, the airlines and freight companies will only deal with funeral directors as the shippers. They have to complete a statutory declaration which identities the deceased and attests to the fact that the body is contained and sealed to the airline minimum standards. Unembalmed remains are accepted for domestic freighting by some companies.

Transport of bodies to other countries from Australia

The country that is to receive the body basically sets the Regulations as to what is required for them to receive a body. Funeral directors have access to an international directory which outlines the basic requirements for most countries. In general, embalming is required before a body can be transported internationally, although there may be exceptions to this depending on the age and state of the remains.

Transport of bodies to Australia from other countries

For bodies to be accepted into Australia for burial or cremation, they have to meet the quarantine requirements of the Australian Quarantine and Inspection Service (AQIS).

The main requirements are that the body must be accompanied by an official certificate of death, or an extract of an entry in an official register, in respect of the person, showing the date, place and cause of death and that the body should be accompanied by a certificate of embalming.

Bodies must be in an outer coffin or crate and a hermetically sealed inner container made of lead, bronze, zinc or steel. Hermetic sealing in polythene plastic sheeting with a minimum thickness of 0.26mm where all the excess air has been removed and both ends sealed with double welds is also acceptable as the inner container.

Non-embalmed bodies may be accepted in exceptional circumstances but not where the cause of death was a quarantinable disease. For more details see the AQIS website www.aqis.gov.au

Burials or cremations for deceased people with no money or assets

NSW Health has a policy on Cremation or Burial of Deceased Destitute Persons, Circular No. 2002/17 issued in January 2002, to give direction to health services in managing these situations. Basically the NSW State Contracts Control Board manages the tendering and contract process for funeral directors to provide services in cases where people die with insufficient means for their burial or cremation. The policy outlines the basic responsibilities of the contractors and the police and the procedures for PHUs to follow.

Among other responsibilities, the contractor is required to inform relatives of the deceased of the funeral arrangements and to arrange for viewing of the body if requested by relatives or friends.

Disposal of body parts from living people

This Regulation is about the disposal of bodies. It does not cover issues related to the disposal of body parts from people who are living. The *Human Tissue Act 2001* is the relevant legislation. Crematoria may have different policies and procedures regarding the cremation of body tissue and parts. The ACCA has a policy on this for its members.

Hypothetical Case No. 9

A forty-year-old man sustained severe leg injuries in a motorbike accident. The man agreed to have his leg amputated but he could not cope with the thought of his leg disappearing altogether. He wanted his leg to be cremated so that he could keep the ashes. The orthopaedic surgeon rang two crematoria and found one that agreed to cremate the leg provided that documents of authorisation came from the patient and the hospital. (Under hospital guidelines for the release of tissue to patients, the hospital should complete a Tissue Release Form and a letter that certifies that the person travelling with human tissue in their possession is doing so with authority from the hospital.)

Appendix 2 – References

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Appendix 3 – Area Health Service (AHS) Public Health Units (PHUs)

Unit and street address	Local government areas in Area Health Service	Postal address	Tel/fax numbers
Central Coast AHS **Central Coast PHU** Newcastle University Ourimbah Campus Brush Road Ourimbah NSW 2258	Gosford, Wyong.	PO Box 361 Gosford NSW 2250	Tel. (02) 4349 4845 Fax. (02) 4349 4850
Central Sydney AHS **Central Sydney PHU** Level 9 KGV Building Missenden Road Camperdown NSW 2050	Ashfield, Burwood, Canterbury, Canada Bay, Leichhardt, Marrickville, South Sydney (part), Strathfield, Sydney (part).	PO Box 374 Camperdown NSW 2050	Tel. (02) 9515 9420 Fax. (02) 9515 9440
Corrections Health Service PHU Long Bay Correctional Centre Anzac Parade Malabar NSW 2036		PO Box 150 Matraville NSW 2036	Tel. (02) 9289 2977 Fax. (02) 9311 3005
Far West AHS **Far West PHU** Broken Hill NSW 2880	Balranald, Brewarrina, Central Darling, Unincorporated Area, Walgett, Wentworth.	PO Box 457 Broken Hill NSW 2880	Tel. (08) 8080 1219 Fax. (08) 8080 1683
Greater Murray AHS **Greater Murray Centre for Public Health** 605 Olive Street Albury NSW 2640	Albury, Berrigan, Bland, Carrathool, Coolamon, Cootamundra, Conargo, Corowa, Culcairn, Deniliquin, Griffith, Gundagai, Hay, Holbrook, Hume, Jerilderie, Junee, Leeton, Lockhart, Murray, Murrumbidgee, Narrandera, Temora, Tumbarumba, Tumut, Urana, Wakool, Wagga Wagga.	PO Box 3095 Albury NSW 2640	Tel. (02) 6021 4799 Fax. (02) 6021 4899
Hunter AHS **Hunter PHU** Ground Floor Booth Building Wallsend Health Service Longworth Avenue Wallsend NSW 2287	Cessnock, Dungog, Lake Macquarie, Maitland, Merriwa, Murrurundi, Muswellbrook, Newcastle, Port Stephens, Scone, Singleton.	LMB 119 Wallsend NSW 2287	Tel. (02) 4924 6477 Fax. (02) 4924 6490

Unit and street address	Local government areas in Area Health Service	Postal address	Tel/fax numbers
Illawarra AHS **Illawarra PHU** Suite 3D 145-149 King Street Warrawong NSW 2502	Kiama, Shellharbour, Shoalhaven, Wollongong.	Locked Bag 9 Unanderra Delivery Centre NSW 2526	Tel. (02) 4255 2200 Fax. (02) 4255 2222
Macquarie AHS **Centre for Population Health** 23 Hawthorn Street Dubbo NSW 2830	Bogan, Cobar, Coolah, Coonabarabran, Coonamble, Dubbo, Gilgandra, Mudgee, Narromine, Warrern, Wellington.	PO Box M61 Dubbo NSW 2830	Tel. (02) 6841 2216 Fax. (02) 6884 7223
Mid North Coast HS **Mid North Coast PHU** Port Macquarie Health Centre Morton Street Port Macquarie NSW 2444	Bellingen, Coffs Harbour, Gloucester, Greater Taree, Great Lakes, Hastings, Kempsey, Nambucca.	PO Box 126 Port Macquarie NSW 2444	Tel. (02) 6588 2750 Fax. (02) 6588 2837
Mid Western AHS **Mid-Western PHU** Webb's Chambers 175 George Street Bathurst NSW 2795	Bathurst, Blayney, Cabonne, Cowra, Evans, Forbes, Lachlan, Lithgow, Oberon, Orange, Parkers, Rylestone, Weddin.	PO Box 143 Bathurst NSW 2795	Tel. (02) 6339 5500 Fax. (02) 6339 5555
New England AHS **New England PHU** Suite 7, 2nd Floor Parry Shire Building 470 Peel Street Tamworth NSW 2340	Armidale/Dumaresq, Barraba, Bingara, Glen Innes, Gunnedah, Guyra, Inverell, Manilla, Moree, Narrabri, Nundle, Parry, Quirindi, Severn, Tenterfield, Uralla, Walcha, Yalleroi.	PO Box 597 Tamworth NSW 2340	Tel. (02) 6766 2288 Fax. (02) 6766 3003
Northern Rivers AHS **Northern Rivers Division of Population Health and Research** 31 Uralba Street Lismore NSW 2480	Ballina, Byron, Copmanhurst Grafton, Kyogle, Lismore, Maclean, Pristine Waters, Richmond Valley, Tweed Heads.	PO Box 498 Lismore NSW 2480	Tel. (02) 6620 7500 Fax. (02) 6622 2151
Northern Sydney AHS **Northern Sydney PHU** c/- Hornsby Ku-ring-gai Hospital Palmerston Road Hornsby NSW 2077	Hornsby, Ku-ring-gai, Lane Cove, Manly, North Sydney, Ryde, Warringah, Willoughby, Hunter's Hill, Mosman, Pittwater.	c/- Hornsby Ku-ring-gai Hospital Palmerston Road Hornsby NSW 2077	Tel. (02) 9477 9400 Fax. (02) 9482 1650

Unit and street address	Local government areas in Area Health Service	Postal address	Tel/fax numbers
South Eastern Sydney AHS **South Eastern Sydney PHU** Hut U, Easy Street Prince of Wales Hospital Campus Randwick NSW 2031	Botany, Hurstville, Kogarah, Randwick, Rockdale, South Sydney (eastern part), Sydney (city and eastern part), Waverley, Woollahra, Sutherland.	Locked Bag 88 Randwick NSW 2031	Tel. (02) 9382 8333 Fax. (02) 9382 8334
Southern AHS **Southern NSW PHU** 3rd Floor 34 Lowe Street Queanbeyan NSW 2620	Bega Valley, Boorowa, Bombala, Cooma-Monaro, Crookwell, Eurobodalla, Gunning, Goulburn, Harden, Mulwaree, Queanbeyan, Snowy River, Tallaganda, Yarrowlumla, Yass, Young and Koziusko National Park.	PO Box 1845 Queanbeyan NSW 2620	Tel. (02) 6124 9942 Fax. (02) 6299 6363
South Western Sydney AHS **South Western Sydney PHU** Hugh Jardine Building Liverpool Hospital Eastern Campus Elizabeth Street Liverpool NSW 2170	Bankstown, Camden, Campbelltown, Fairfield, Liverpool, Wollondilly, Wingercarribee.	Locked Mail Bag 7017 Liverpool BC NSW 1871	Tel. (02) 9828 5944 Fax. (02) 9828 5955
Western Sydney AHS **Western Sector PHU** 5 Fleet Street Gungarra Building Cumberland Hospital North Parramatta NSW 2151	Auburn, Baulkham, Blacktown, Holroyd, Parramatta.	Locked Mail Bag 7118 Parramatta BC NSW 2150	Tel. (02) 9840 3603 Fax. (02) 9840 3608
Wentworth AHS **Wentworth PHU** Nepean Hospital Great Western Highway Kingswood NSW 2750	Blue Mountains, Hawkesbury, Penrith.	Nepean Hospital PO Box 63 Penrith NSW 2751	Tel. (02) 4734 2022 Fax. (02) 4734 3300

Appendix 4

Appendix 4 consists of the following forms:

Mortuary – Schedule 4 audit tool
***Local Government (Orders) Regulation 1999* – Schedule 4**

Mortuary – Audit tool
***Public Health (Disposal of Bodies) Regulation 2002* – Part 2 – Facilities**

NSW HEALTH

Mortuary – Schedule 4 audit tool

Local Government (Orders) Regulation 1999 – Schedule 4

Council _____

A. Mortuary premises details

Premises name _____

Address _____

Suburb _____ **Postcode** _____

Owner name _____ **Occupier name** _____

Council approval identification details _____

Health registration number _____ **Registration details complete** ☐ **Yes** ☐ **No**

Registration details match with council approval? ☐ **Yes** ☐ **No**

B. Audit details

1. Water supply and sewerage (Clause 1)

- Connected to permanent reticulated water supply? (1) ☐ Yes ☐ No
- Backflow prevention device fitted? (2) ☐ Yes ☐ No
- Connected to reticulated sewer? (3) ☐ Yes ☐ No

2. Closet and ablution facilities (Clause 2)

- Separate WCs at the rate of 1:20 employees of each sex? (1) (a) ☐ Yes ☐ No
- Shower facilities with hot and cold water available? (1) (b) ☐ Yes ☐ No
- Hand wash basin adjacent to each WC with hot and cold water? (1) (c) ☐ Yes ☐ No
- Air lock between sanitary facilities and remainder of mortuary? (2) ☐ Yes ☐ No

3. Construction (Clause 3)

- Physical separation of mortuary from remainder of the building? (1) ☐ Yes ☐ No
- Body preparation room capable of being sealed off? (2) ☐ Yes ☐ No

Body preparation room

- Floor area ≥ 9.3m^2? (3) (a) ☐ Yes ☐ No
- Ceiling height ≥ 2.4m above finished floor? (3) (b) ☐ Yes ☐ No
- Floor of impervious material, unbroken, graded and drained? (3) (c) ☐ Yes ☐ No
- Floor drain screen fitted? (3) (d) ☐ Yes ☐ No
- Walls and partitions impervious and capable of being cleaned? (3) (e) ☐ Yes ☐ No
- All joints sealed with impervious material to facilitate cleaning? (3) (f) ☐ Yes ☐ No
- All joints cover to 75mm? (3) (g) ☐ Yes ☐ No
- External windows fitted with fly proof screens (3) (h) ☐ Yes ☐ No
- External doors fitted with self-closing fly screen doors? (3) (i) ☐ Yes ☐ No
- If constructed after 1 July 1993, walls and partitions of brick or masonry? (4) ☐ Yes ☐ No

C. Recommendations

D. Action taken

Environmental Health Officer

Signature **Date** / /

NB: ☐ Yes = Compliance ☐ No = Breach

NSW HEALTH

Mortuary – Audit tool

Public Health (Disposal of Bodies) Regulation 2002 – Part 2 – Facilities

Council _____

A. Mortuary premises details

Premises name _____

Address _____

Suburb _____ **Postcode** _____

Owner name _____ **Occupier name** _____

Council approval identification details _____

Health registration number _____ **Registration details complete** ☐ **Yes** ☐ **No**

Registration details match with council approval? ☐ **Yes** ☐ **No**

B. Audit details

1. Premises generally (Clause 5)

- Only approved mortuary being used for body preparation? (1) ☐ Yes ☐ No
- Only approved mortuary being used for body storage? (2) ☐ Yes ☐ No
- Bodies not stored in a vehicle? (3) ☐ Yes ☐ No
- Holding room being used for body storage only? (4) ☐ Yes ☐ No
- Bodies not stored in hospital? (5) ☐ Yes ☐ No

2. Facilities for body preparations rooms (Clause 6)

- Vehicle reception area adjacent to body preparation room? (1) (a) ☐ Yes ☐ No
- Vehicle reception area screen from public view? (1) (a) ☐ Yes ☐ No
- Hand wash basin with adequate hot and cold water and hands free operation? (1) (b) ☐ Yes ☐ No
- Sufficient slabs, tables and fittings? ☐ Yes ☐ No
- Slabs, tables and fittings impervious and drained for cleaning? (1) (c) ☐ Yes ☐ No
- Refrigerated body storage facilities for at least two adults? (1) (d) ☐ Yes ☐ No
- Temperature: _____ ºC. Less than 5 ºC? ☐ Yes ☐ No
- Impervious containers with lids; hands free operation for solid wastes? (1) (e) ☐ Yes ☐ No
- Only bodies stored in body refrigerator? (2) ☐ Yes ☐ No

3. Waste disposal (Clause 7)

- Solid waste disposed as contaminated (clinical) waste? ☐ Yes ☐ No
- Waste observed in container: _____
- Name of clinical waste contractor: _____

4. Vehicles (Clause 8)

- Hearse: Make, model and registration (1) (a) ☐ Yes ☐ No _____
- Collection vehicle: Make, model and registration (1) (b) ☐ Yes ☐ No _____
- Mortuary transport service or freight carrier? (2) ☐ Yes ☐ No
- Bodies placed only in vehicle body area? (3) ☐ Yes ☐ No
- Vehicle body area not used for other purposes? (4) ☐ Yes ☐ No
- Vehicle clean of exudates? (5) ☐ Yes ☐ No
- Unembalmed bodies transported less than eight hours? (7) ☐ Yes ☐ No
- Body bags supplied in vehicle? (Cl 13) ☐ Yes ☐ No
- Protective clothing in vehicle? (Cl 14) ☐ Yes ☐ No

5. Mortuary register of body preparation (Clause 18)

- Register sighted? (1)
- Entries complete for disposed bodies? (3) ☐ Yes ☐ No
- Entries reconciled with each body prepared? (2 and 3) ☐ Yes ☐ No

6. Retention of bodies (Clause 10)

- All bodies held in a mortuary or holding room? (1) ☐ Yes ☐ No
- All bodies kept under refrigeration? (2) ☐ Yes ☐ No
- Reason for any body not in refrigeration. (3)

_____

_____

- All unembalmed bodies being kept less than seven working days after certificate? (4) ☐ Yes ☐ No

7. Embalming of bodies (Clause 11 and 12)

- Any embalmed bodies on premises? (*) ☐ Yes ☐ No
- Name and qualification of embalmer (11,1) Qualification approved? ☐ Yes ☐ No

_____

- Any body with List B disease embalmed? (11,2) ☐ Yes ☐ No
- Any body with List A disease pierced by unqualified person? (12) ☐ Yes ☐ No

8. Body bags (Clause 13)

- All bodies in body bags and identified? (1) ☐ Yes ☐ No

C. Recommendations

_____

_____

_____

_____

_____

D. Action taken

_____

_____

_____

_____

Environmental Health Officer

_____

Signature **Date** / /

_____

NB: ☐ Yes = Compliance ☐ No = Breach (*) =Not a legislative requirement

Sustainable burials in the Sydney Greater Metropolitan Area

Discussion Paper

Closing date for submissions: Monday, 30 June 2008

Department of Lands

New South Wales Government

Foreword

New South Wales has a long and proud history of providing public burial places for its people. Since the early days of the colony, significant areas of land have been set aside for public cemeteries. Today as in the past, these cemeteries continue to provide burial and cremation services for the general community. Privately operated cemeteries complement the role of public cemeteries.

As the population of New South Wales has grown, so has the demand for the state's finite land resources. As a result, land available for new burial sites is limited, particularly in the metropolitan areas of Sydney, Wollongong, Newcastle and the Central Coast.

While enough burial space exists to meet the short and medium term burial needs of most sections of the community, without action the general community within the Sydney Greater Metropolitan Area (GMA) will be faced with fewer burial choices in future years.

These problems are not unique to New South Wales. Other communities within Australia and abroad have also been confronted with shortages of land for burial, and have developed appropriate strategies to manage the limited burial land available.

The purpose of this discussion paper is to explore issues and promote discussion within the community on the available options. Some of the options involve a shift from current, more 'traditional' burial practices and may not suit all sections of the community.

The discussion paper seeks comments and suggestions on the options available to the Government to address the problems associated with management of burial space in the GMA.

The Government recognises that various religions and cultures have specific burial requirements and traditions, and remains strongly committed to ensuring that these are respected and accommodated. The Government is opposed to the introduction of alternative burial practices in a way which impinges upon the basic beliefs of any religion or culture. All options are put forward with this fundamental principle in mind.

In addition, the protection and conservation of our heritage is an important consideration in exploring strategies to better manage cemeteries and crematoria.

I look forward to the community's participation in the discussion on these initiatives, and would welcome your comments as to the best way that we can ensure more sustainable cemeteries in the future.

Yours sincerely

Tony Kelly, MLC
Minister for Lands

Contents

1. Introduction

The establishment of public cemeteries on both Crown and local government land within the Sydney Greater Metropolitan Area (GMA) in the 19th and early 20th centuries has ensured that most sections of the community have had access to affordable, conveniently located land for burial. The GMA includes the Sydney, Newcastle/Lower Hunter, Central Coast and Wollongong regions.

Public cemeteries are generally managed by community trusts or local councils. In addition, the private sector is playing an increasing role in providing land for burial.

As the GMA has expanded, priority has been placed on utilising available land for other purposes such as housing, industrial infrastructure, open space for recreation and essential public facilities such as schools and hospitals. In addition, rising land values have increased the cost of acquiring large sites for cemeteries.

The lack of new conveniently located land for burial in the GMA is exacerbated by the fact that the available land is not being used in the most sustainable manner. Burial practices which extend the life of cemeteries and which are used in other states of Australia and overseas are not generally practised in New South Wales.

If no action is taken, metropolitan public cemeteries will eventually run out of burial space. The available options, although new to New South Wales, need to be considered and discussed now, before there is a crisis in burial land availability, as some of the options would take considerable time to have effect. Provision for long term maintenance of cemeteries is also required.

Slowing the reduction in available burial space and promoting the more sustainable use of cemeteries will require a mix of policy measures and practices.

The purpose of this paper is to explore the options available and seek community comments and suggestions.

The Government has consulted with the funeral industry and members have indicated a high level of support for the options outlined in this discussion paper. Indeed, a number of managers of Crown cemeteries in Sydney are actively pressing the Government to make changes so that they can continue to operate the cemeteries they are responsible for in the long term.

The options outlined here take account of the recommendations of the inquiry of the Social Issues Committee of the NSW Legislative Council into the funeral industry (Funeral Industry Inquiry), as reported in December 2005. The relevant recommendations of the inquiry are set out in Appendix 1 of this discussion paper and the full report of the Inquiry may be found at http://www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/2F5226F286BEEB5CCA2570D2000646B6.

Prior to implementing the recommendations of the Funeral Industry Inquiry with respect to burial practices, the Government committed to undertaking this public consultation.

Your comments by 30 June 2008 are vital to the Government making informed decisions regarding changes that may be required to the way cemeteries are currently managed. A template which may be used for responses together with details on how responses should be lodged can be found at the back of this discussion paper.

The Government is mindful that treatment of deceased persons is a sensitive matter. It is because of this the Government is seeking feedback from the community on all options outlined in the discussion paper, to assist it in establishing a formal Government policy for the future.

It is anticipated that a report on the feedback from the community on this important issue will be provided to the Government in late 2008. Should the Government then decide that one or more of the options presented in this paper should be adopted, legislation may need to be amended.

2. Cemeteries and crematoria in the Sydney Greater Metropolitan Area (GMA)

Cemeteries and crematoria are spread throughout the GMA.

Public cemeteries and crematoria are either Crown cemeteries managed by Crown reserve trusts; or local government cemeteries either on Crown land or land owned by local government councils.

There are nine Crown cemeteries within the GMA, four of which contain public crematoria (Botany, Woronora, Macquarie Park Cemeteries and the Catholic cemetery at Rookwood) and around 100 local government cemeteries. There are approximately 300,000 public burial spaces available in the GMA.

Private cemeteries and crematoria are primarily located on freehold land (the privately operated Rookwood Crematorium is on Crown Land).

There are eight private cemeteries in the GMA providing approximately 380,000 unused burial spaces; and ten private crematoria.

Church and family cemeteries are associated with places of worship or family owned private land. Church cemeteries are normally the responsibility of the relevant diocese, parish councils or equivalent authorities. The number of burial sites of this type remaining is not known but is not believed to be significant.

3. Diminishing burial space in the GMA

Approximately one quarter of Australia's population live in the GMA, and it has been estimated that over 245,000 grave sites will be required by 2020. This figure is based on ABS (Australian Bureau of Statistics) projected population and death rates in the GMA and assumes that the proportion of

cremations to the number of deaths (approximately two-thirds) will remain constant over the period.

It has been estimated (based on a survey in 2002) some 680,000 grave sites were available in the GMA. This means that more than a third of the currently available grave sites are likely to be used by about 2020 and all of the currently available grave sites may be used by 2050, if not before.

The survey also revealed that:

- available burial space varies widely within the GMA
  - some of the operational cemeteries or sections within them are nearing exhaustion
  - many have burial space for less than 20 years and
  - others contain sufficient burial space to meet burial demands for several generations
- a large number of cemeteries within the GMA are closed for burials.

Land available for new cemeteries within the GMA is scarce. The growing population within the GMA means that there are strong and competing demands for land for new housing, commercial and industrial infrastructure, major public facilities, open space areas, transport networks and primary production.

In addition, past experience suggests that communities prefer to have some separation of cemeteries from residential areas.

Establishing sufficiently large and accessible new sites for cemeteries has become increasingly difficult.

4. The Government's role in the provision of burial services

Government has had a long-standing involvement in various aspects of burial, as follows.

4.1 The provision and maintenance of public land for burial and cremation

Burial space has been provided by the Government in metropolitan cemeteries for over 200 years, although no significant new cemetery in the GMA has been established since 1937.

4.2 Planning for land uses

State and local government undertake land use planning and designate broad land use zones. Competing interests for land can make cemeteries and crematoria development less competitive than other uses within close proximity to urban areas.

4.3 The administration of statutes governing cemeteries, including health standards

Government legislation administering cemeteries and crematoria includes the *Crown Lands Act 1989*, the *Local Government Act 1993*, the *Necropolis Act 1901*, the *Occupational Health and Safety Act 2000*, the *Public Health Act 1991*, the *Environmental Planning and Assessment Act 1979* and the regulations associated with these Acts.

4.4 The provision of affordable interment, including the interment of deceased, destitute persons

Government has played a role in the provision of affordable interment by providing land for burial purposes; through management by volunteer trusts and the provision of funds for interment of deceased destitute persons.

4.5 Recent Government action to extend the life of some Crown cemeteries in the GMA

The *Cemeteries Legislation Amendment (Unused Burial Rights) Act, 2001* authorises certain Crown cemetery trusts in the GMA to revoke exclusive rights of burial for grave sites that have never been used and were allocated over 60 years ago, and provides for compensation to a previous owner if burial rights are revoked.

5. Options to address the shortage of burial space

There are limited options for future burial space in the GMA, i.e.

1. use existing cemeteries more sustainably, and/or
2. open new cemeteries at high cost and at increasing distances from the city nodes.

Given that travelling long distances to burial sites is not ideal and suitable land for cemeteries is in short supply, it is clear that, while some people may find it difficult to accept changes to traditional burial practices, the options available to use existing cemeteries more sustainably need to be given serious consideration.

These options include:

i. take up of unused burial rights

ii. more intensive use of family graves

iii. renewable tenure for graves

iv. extinction of tenure for old graves

v. cemetery renewal

vi. reopening of closed or abandoned cemeteries

vii. increased use of mausoleums

viii. adoption of alternative interment practices such as cremation and green burial

ix. changes to the sale of burial space.

More sustainable burial practices would take some time to be effective. Provision of adequate future burial space may therefore also require:

x. consideration of cemeteries in land use planning

xi. identification of public land that could be used for additional cemeteries and crematoria.

POINT OF INTEREST

Closed cemeteries re-used for other purposes

In New South Wales, numerous cemeteries have been closed and re-used for other purposes e.g. the Cleveland Street/ Devonshire Street Cemetery (now Central Railway Station) and the George Street Cemetery near the present site of the Sydney Town Hall. The new use for the sites required some remains to be removed and reburied in other cemeteries such as Botany. Cemeteries (or parts of cemeteries) have been converted to parks at a number of locations including Camperdown, Gosford, Liverpool, Campbelltown, Parramatta, Wollongong, and Gladesville.

The Conversion of Cemeteries Act 1974 allows local councils to recover cemetery lands for public parks following public consultation, with the approval of the Minister, and in line with any conditions made.

5.1 Unused burial rights

Burial rights are generally sold as an exclusive right to the particular grave. The holder of the burial right may be one person or two or more people as joint holders.

Many burial sites remain unused as the holders may have been cremated or buried elsewhere. In other situations, the burial rights have devolved to someone else but the current holder is unaware that they hold the burial right.

Greater opportunities may exist for the use of unused burial rights by other members of the family or, if no family members can be found, the rights could be reused.

Better landscaping of old sections of a cemetery may be required to make these sections more attractive to use.

i. Increased use of burial rights

Where it is known that an existing burial right will not be used because the holder is buried elsewhere or cremated, other members of the family may wish to use the burial right.

The owner of a burial right may bequeath the right as part of their personal estate. Where the owner of the burial right has not bequeathed the burial right the right passes in the same way as intestate personal property.

It is likely that many family members are unaware that they have a right to a burial space because it was not specifically mentioned in a will.

Option 1

Provide the general public with more information on the ownership of burial rights, particularly when the right is acquired as part of an estate or will.

Option 2

Where the owner of the right of burial cannot be determined, cemetery managers to be given the discretion to determine which person is entitled to exercise the burial right.

ii. Revocation of unused burial rights

Unused burial rights sold more than 60 years ago can be revoked in certain Crown cemeteries in Sydney and Newcastle (as discussed in section 4.5). This will allow the life of these cemeteries to be extended by perhaps 5-10 years.

There are similarly unused sites in privately run and local government managed cemeteries in the GMA, as well as at all types of cemeteries outside the GMA that will never be used unless revocation action is undertaken.

The right to revoke unused burial rights, according to specific criteria, could be extended to all cemetery managers. The conditions for revoking the burial rights could reflect the existing legislation e.g. the right was granted more than a specified number of years ago (the current period specified for certain Crown cemeteries is 60 years, although this period could be less, say 30 or 40 years); and there is a requirement to attempt to contact the last known holder.

The Funeral Industry Inquiry supports the revocation of unused burial rights (see Appendix 1).

Option 3

The right to revoke unused burial rights, according to specific criteria, to be extended to all cemetery managers.

5.2. Family graves

i. Graves dug for more than one person

The use of burial sites by only one person seems an inappropriate use of this increasingly scarce resource.

Many cemeteries already dig graves to accommodate two or more burials. Most graves at the Catholic Cemetery at Rookwood, for example, are initially dug to accommodate three interments. The Jewish religion, which doesn't allow renewable tenure (see 5.3) is overcoming the shortage of burial land in Israel by having multiple burials in the one grave site.

The initial excavation of all new graves to the maximum depth easily allowed by the environmental conditions would be a relatively easy method of increasing the supply of burial spaces.

'Occupants' of the burial site could be limited to family or friends of the burial right owner.

Even though current purchasers of burial rights may not be aware of other family members wanting to use the grave site, perhaps future generations of the family may wish to use the site.

> Option 4
> All new graves to be initially excavated to enable at least two burials to occur.

ii. Reuse of family graves

While many grave sites in New South Wales already contain two or more members of the same family, it could be made much easier for families to continue to use the burial plot. This could be achieved using the 'lift and deepen' method where the remains of previous burials are re-boxed and remain within the gravesite.

POINT OF INTEREST

Lift and deepen method

In South Australia and Western Australia additional space is provided in family graves using the 'lift and deepen' method, i.e. when required, the old grave is excavated to its greatest depth, and all remains are boxed and reburied at a lower depth. This allows additional burials to take place in the upper levels of the grave.

Handling of remains within a grave during the lift and deepen process is only allowed after a minimum time has passed since the last burial, e.g. 25 years or more, to ensure sufficient decomposition of remains within the grave.

Lift and deepen is a common cemetery practice in many countries of the world.

There is effectively no limit to the number of burials which can take place in any one grave provided the coffin's upper surface is no less than 900 millimetres below the level of the soil surface. Currently, once a burial site is 'full', it is very difficult for more family members to be buried with their deceased forebears in the same gravesite.

Family graves have several potential advantages such as:

- allowing members of a family to be buried together (including the burial of cremated remains)
- providing a family resting place across the generations
- decreasing the demand for new grave sites, and
- supporting enhanced maintenance of grave sites by families.

Reuse of family graves, once they are full, in New South Wales currently occurs in a limited way only, since the family must first apply to the

Department of Health to exhume the remains. The additional paper work, the time taken to gain approval, the high cost involved and lack of knowledge about the option currently means that reuse of family graves through the lift and deepen method is rare in New South Wales.

If more intensive use of family graves is supported by the community, regulations and processes associated with exhumation relating to family graves could be simplified and fees reduced.

A simple approach may be to allow cemetery managers to authorise further burials of family members in a grave using the lift and deepen method after a suitable period of time such as 25 years or more has elapsed (or less time if mutually agreed by cemetery manager and family). In other words, the current rules relating to exhumation would not apply where the remains of previous burials are to remain within the gravesite (suitably re-boxed) and where the permission of the family has been given.

The criteria for assessing eligibility of family members to secure a burial right for the site would need to be established.

More extensive reuse of family graves is consistent with the recommendations of the Funeral Industry Inquiry (see Appendix 1).

Option 5

Family graves to be introduced whereby, 25 years after a grave is 'full' (or less time if mutually agreed by cemetery manager and family), cemetery managers are able to authorise further burials of family members in the grave using the lift and deepen method.

5.3 Renewable tenure

Renewable tenure involves the purchase of grave sites for an initial set period (e.g. 25 or 50 years). At the end of the tenure period, the holder (usually a family member) would be contacted and have the option to renew the tenure again. If the tenure was not renewed, the 'right of burial' would revert to the cemetery authority for reuse at some time in the future.

Those people in the community who never want their remains disturbed could be confident that this would be the case, perhaps by allocating funds to be held in trust for this purpose.

Renewable tenure also allows cemeteries to continue operating in the longer term. As with family graves, the lift and deepen method could be used for renewable tenure. (A description of the lift and deepen method is found in the box on page 14.)

POINT OF INTEREST

Centennial Park Cemetery, South Australia

Centennial Park Cemetery predicts that the number of expiring licences in the cemetery becoming available for third party re-use between now and 2020 is likely to exceed the need for first-use burial sites.

As a result, despite Centennial Park being an active cemetery expecting between 1,100 and 1,500 burials each year until 2020, it is estimated that at that time it will be utilising only 70 per cent of its potential burial capacity. Renewable tenure is providing the public with accessible burial space close to the city and enough funds to maintain its grounds indefinitely.

The level of support for renewable tenure from those working in the industry is high since it has become evident that sustainable use of our existing cemeteries will be difficult to achieve without it.

In South Australia limited tenure for graves and memorial sites has been in place for more than 60 years. The maximum term for a gravesite is 99 years but is generally 50 years for the main metropolitan cemeteries because of a shortage of existing space and high ongoing maintenance costs. A shorter term is being considered. Graves are reused using the 'lift and deepen' method where the remains of previous burials are re-boxed and buried deeper in the gravesite.

Western Australia has limited initial burial rights to 25 years since 1986.

In addition, renewable tenure is common in Europe, with tenure periods usually being 50 years or less. For example, renewable tenure is practiced in Denmark, France, Germany, Greece, Italy and Sweden.

In countries such as Bangladesh where there is very little space left for burial, at some of the common burial areas in Dhaka city the graves have to be reused in 2-3 years and sometimes in as little time as one year.

POINT OF INTEREST

European experiences

France

French laws regulate reuse of graves after a set time period (5 years to 30 years and 50 years). The lease can be renewed at the family's request but failing renewal the plot is resumed and the remains buried anonymously in a common grave.

Leases in perpetuity may be resumed after 75 years upon certification that the grave is dilapidated, and after other formalities. The bones remaining are placed in special compartments in the ossuary where they are identified by name plates.

Greece

Greek Orthodox tradition practices exhumation of remains in order to reuse the graves. It is customary to exhume the dead after one, three or seven years, with the remains either re-interred or cremated.

Italy

The 19th century monumental cemeteries are northern Italy's legacy to the world but there is also a tradition of urban wall cemeteries. Single interment graves have a term of 10 to 30 years and then the remains are exhumed and, if not claimed by the next of kin, placed in a common graveyard. Monumental or vault sections have annual leases to ensure continued tenure. The ossario, a tradition dating back to the first centuries has prevailed - wall upon wall of individual niches to bury bodies or ashes.

Basic principles and conditions that could apply to the renewable tenure of graves in NSW

1. Any interested party should have the right to extend the tenure period of any grave.
2. War graves and graves of historical/cultural significance would be exempt from renewable tenure.
3. Upon expiry of a tenure period for a gravesite, a two-year period of grace should be applied before any steps are taken to prepare the gravesite for reuse.

4. Upon expiry of a tenure period for a gravesite, the cemetery authority would be required to make all reasonable attempts to contact the holder of the certificate of tenure to determine whether the holder wished to renew the tenure of the grave.
5. A portion of cemeteries would be available for memorials contained on graves for which the tenure period is not renewed. Where this is not possible, the cemetery authority would be required to ensure that the historical records contained on all headstones and memorials continue to be available into the future e.g. through photographs.

Current legislation covering major Crown cemeteries allows a reserve trust to grant an exclusive right of burial for a grave site to one or more persons. This is currently the accepted practice at all Crown cemeteries as well as most other cemeteries in the GMA. Legislative change would be required for renewable tenure to be adopted in New South Wales.

Option 6

Renewable tenure to be adopted as normal practice in public cemeteries.

5.4 Extinction of tenure for old graves

Another option, is that the tenure of existing graves of a certain age (say 100 years old or more) could be extinguished in certain circumstances, such as when the grave is unmarked, or where the cemetery manager is unable to identify descendents with an interest in the grave and a heritage assessment has been conducted.

POINT OF INTEREST

HERITAGE AND CONSERVATION

Many cemeteries provide a rich social history that needs to be preserved for future generations.

Wherever changes are proposed to the use or layout of a cemetery, it is important to first make an assessment of the heritage values of the cemetery and develop strategies for maintaining or documenting them. Heritage items may include:

- gravestones
- war graves
- memorials
- craftsmanship and materials
- rare and threatened species of plants or animals
- the contribution to the development of Australia by the people buried
- landscape planting
- the setting of the cemetery.

Option 7

Tenure to be extinguished on very old and unmarked graves at the discretion of the cemetery manager.

5.5 Cemetery renewal

Cemetery renewal is the redevelopment of existing cemetery burial areas to accommodate new grave sites and memorial locations. New graves are

located alongside and between old graves and within areas previously used as walkways and roads. There is significant remodelling of the surface, resulting in landscaped memorial gardens incorporating new and retained headstones.

Thus cemetery renewal allows the reuse of cemeteries without the use of the 'lift and deepen' method i.e. without disturbing (as far as possible) the existing remains.

Official monuments and war graves are generally not affected by renewal programs and all existing headstones would be assessed across a range of criteria such as stonemasonry craft and historical significance to determine when and how they should be retained.

Options for the introduction of cemetery renewal in New South Wales include:

a) in circumstances where the disturbance of existing grave sites is precluded by religious beliefs but where the tenure of the graves had been extinguished or there is no apparent interest by relatives and friends in attending and maintaining the grave sites

b) at the discretion of the cemetery manager.

POINT OF INTEREST

Cemetery renewal in Western Australia

Karrakatta is Western Australia's premier cemetery dating from 1899. Karrakatta faced a lack of burial space and closure so since the 1970s has adopted cemetery renewal. Key activities include:

Deciding on areas for cemetery renewal

Renewal is only undertaken in areas of the cemetery where the grants of burial rights have expired. Many of the headstones in such areas are in a state of disrepair and are rarely (if at all) visited.

All grants of burial right at Karrakatta are now issued for 25 years with the option to renew for a further 25 years. The renewal of tenure by family members is encouraged so that graves can be reused by families over many generations. Official monuments are not affected by renewal programs.

Historical research and analysis

All existing headstones are assessed across a range of criteria such as stonemasonry craft, historical significance of the persons buried and the cause of death.

Community consultation

Given the sensitive nature of cemetery renewal, Karrakatta undertakes a 12-month consultation period which includes:

- high profile site signage
- letters and information sent to families who have registered their contact details
- press advertising
- placement of information on graves during periods of high visitation e.g. Mother's Day and Christmas Day
- information sessions for those affected during the consultation period
- assessment of submissions received.

Implementation of cemetery renewal

- Prior to removal, every headstone is digitally photographed and the subsequent image and inscription are permanently stored.
- All official war grave monuments are maintained in their original grave position.
- Headstones removed from the site are retained for a further 12 months and if not claimed by a family member are recycled.

- A publicly accessible special memorial book is maintained for each section renewed detailing the names of the deceased, their ages and date of birth.
- New graves have minimal impact on and encroachment on existing graves.

Option 8

Cemetery managers to be encouraged to undertake cemetery renewal programs, generally where the tenure of the graves has been extinguished or where there is no apparent interest by relatives and friends in attending and maintaining the grave sites.

5.6 Reopening of closed or abandoned cemeteries

Many old cemeteries have been closed. If some of these areas were reopened for burials, additional burial space would be available to local communities. The reopening of these cemeteries would, however, require the use of cemetery renewal practices; the extinction of tenure for the graves or renewable tenure.

The advantages of reopening closed cemeteries include an ongoing income stream for maintenance of the old cemetery and the ability for future generations to be buried with family members.

The reopening of old cemeteries would also allow cremated remains of relatives to be buried in existing graves.

The conservation of heritage items is a principle that would underpin any change to burial practices made.

Option 9

If family graves (as well as other options such as extinction of tenure on old graves) are introduced, closed cemeteries could be reopened for burial.

5.7 Community mausolea

A community mausoleum is simply a large building designed to provide above-ground entombment for a number of people. Sharing the costs of the mausoleum with other individuals makes it more affordable than a private mausoleum. Family vaults and crypts do not generally increase the capacity of a cemetery unless they are more than about four tiers high.

Increased use could be made of community mausolea and renewable tenure for mausolea could be introduced.

Mausolea could be built on land unsuitable for burials in existing cemeteries because of the high water table. Mausolea use less space than cemeteries and reduce the possibility of ground-water pollution.

Mausolea may be more sustainable if the niches are periodically reused, otherwise the space problem is simply relocated above ground. Therefore it may be appropriate to apply renewable tenure to mausolea to make them more affordable in the longer term and ensure their maintenance and repair.

Mausoleum costs are higher since they include the costs of embalming and a sealed coffin. If current embalming requirements are used, the length of time required between the reuse of niches in a mausoleum would be longer than for graves because the embalming slows the process of decomposition. It should be noted that embalming does not prevent the remains of the deceased from deteriorating.

An option that could be considered is that embalming would not be required if the remains are to be entombed in a crypt or mausoleum that has been designed and built to accommodate this. Renewable tenure could then apply as for burials in the ground.

Victoria does not require embalming for above ground entombment.

Option 10

If introduced, renewable tenure would apply to mausolea in public cemeteries.

Option 11

Embalming or partial embalming of bodies for all burials to only be performed if specifically requested by the family or required for health and safety reasons.

5.8 Encouraging the adoption of alternative interment practices

i. Cremation

In Australia, cremation is a widely chosen option for either personal, cultural or religious reasons. Many religions allow cremations. Some religious groups, however, do not accept cremation.

Since cremation is not an option for some groups there will always be a demand for burial space. Greater use of cremation will, however, extend the life of existing cemeteries.

Cremation could be encouraged through:

- the wider provision of information
- the provision of niche walls and other memorials for cremated remains
- burial of cremated remains in family plots, and
- lower pricing in relation to burial (based on the actual costs of cremation).

The Funeral Industry Inquiry recommended that cremations be encouraged (see Appendix 1).

Option 12

The use of cremation to be encouraged.

POINT OF INTEREST

Ecological funerals

A new system of allowing the body of the deceased to quickly decompose in an environmentally-friendly way is being developed in Europe in response to new European Union pollution laws.

The method involves the following three steps.

1. The body of the deceased is reduced to a fine powder by submerging it in liquid nitrogen (this makes the remains so brittle that it shatters as the result of a slight vibration). The remains are then dried, reducing them to around 30% of the original body weight. Later decomposition is then aerobic.
2. Metals are removed and recycled.
3. The powder is deposited shallowly in a biodegradable casket.

The volume of remains left by this procedure is about three times that left by a cremation, but the claimed advantages include the avoidance of the release of pollutants into the atmosphere, such as mercury vapour from dental fillings, and the rapid degradation of the remains after the procedure (6-12 months).

ii. Green burial

Green burial (also known as natural or woodland burial) is increasingly being practised in England and parts of Europe and uses land in a less formal and obtrusive manner than conventional burial practice. Green burial involves the use of natural open space, limits the use of chemicals and encourages biodegradable burial materials instead of concrete and metals.

Green burial is already practised in a limited way in NSW with participants organising the burial on private land. This is permitted if the guidelines are met and it is approved by the local council (see www.health.nsw.gov.au/public-health/ehb/general/funeral/funeral.html).

Biodegradable caskets, such as those made from recycled cardboard, that comply with Australia health and safety standards are available for purchase.

Graves within green burial sites are usually marked by a newly planted tree or small boulders. Small plaques may be located near to the grave marker to commemorate the deceased.

The first eco-cemetery was created at Carlisle Cemetery in the UK in 1993 and was called woodland burial. More than 200 natural burial sites have now been created in the UK.

Prior to a site being assessed as suitable for green burial, a range of environmental and other community and heritage issues would need to be considered, e.g. the potential impact on threatened species and endangered communities.

Experience in England shows that advocates of green burials prefer natural bush settings. It may be however that if parts of degraded areas such as disused quarries and closed waste depots are initially landscaped and screened, they may be more attractive for green burial and the funds received from green burial could help fund the further rehabilitation of these degraded sites.

Green burial does not by itself reduce the space required for burial but its introduction could be used as part of a strategy to:

- use areas within existing cemeteries where environmental issues including threatened species, preclude more formal burial practices
- utilise areas not currently available for burials using traditional methods, thereby reducing the pressure on existing burial sites and
- provide an option for people wanting to have a more 'natural' burial.

As a way of providing more opportunities for future burial space, green or woodland burial could be trialled in New South Wales.

The Funeral Industry Inquiry recommended that alternative interment practices be encouraged (see Appendix 1).

POINT OF INTEREST

Bushland Burials, Tasmania

Kingston Cemetery in Tasmania is the first in Australia to offer bushland burials. The introduction of the bushland burial site was in response to increasing public interest for a natural, ecologically sustainable burial choice. In keeping with the eco-friendly focus, coffins and ash boxes used are made of biodegradable material. The planting of a native shrub instead of conventional headstones and walking tracks rather than roads are all features designed to ensure the peace and tranquillity of the area.

Option 13

The Government to give in principle support to proposals to establish a cemetery (or section of a cemetery) for 'green burial'.

5.9 The sale of burial space

A number of the current practices with respect to the sale of burial space encourage the burial land to be used in an unsustainable way. Some of the options that could be considered to change this situation are as follows.

i. The price of graves

The Government has, in the past, made land available for burial and since 2006 cemeteries on Crown land must take into account, when setting fees and charges, the costs of developing the land to be used for burial or cremation, future maintenance, the number of intended interments or cremations, and the infrastructure costs. In many cases until recently, particularly in monumental grave sites as distinct from lawn cemeteries, the current pricing of grave sites has not adequately covered the cost of long term care and cremations may subsidise the cost of cemetery maintenance.

The cost of the burial site is only a part of the cost of a funeral. If a standard minimum grave price were to be introduced, detailed analysis of the various factors affecting price in different locations and circumstances would need to be undertaken. It is also important that burial land is priced to maximise the use of the land. In this way the cost of larger graves and pathways is also factored into the price. A practical approach may be to require that a number of cost factors such as size of grave, associated size of land in area not used for grave, the cost of the land, long term maintenance costs of the site (which vary according to the type of grave e.g. lawn or monumental) are taken into account (and published) in setting the price.

The main advantages of this approach are that:

a) more sustainable burial practices would be encouraged

b) it is likely that the cost of cremation would be reduced (in relative terms) if the price of burial sites accurately reflects the long term cost

c) it is in line with the 'user pays' philosophy.

Option 14

Fully cost reflective prices for burial land are to be set for Crown cemeteries in the Sydney Greater Metropolitan area.

ii. Sale of burial rights as lease

The current sale of burial rights gives the impression that the owner of the burial right 'owns' the plot of land. Perhaps it should be made clearer to purchasers that they are 'leasing' the plot. An option to be considered is that the sale of all burial rights should include information that the right to be buried is being purchased but not the land.

Option 15

Future burial rights are not to be sold so as to give a perception that burial is on a perpetual basis.

iii. Discouraging pre-purchase of additional burial sites

Currently it is possible to purchase numerous burial sites for extended family burial in the one area of a cemetery. These large areas are usually not fully utilised and will remain unused unless the surplus burial rights are revoked (in situations where the purchaser of the burial rights is deceased

and there are no other family members wishing to use the plot).

Should measures to reuse family graves be introduced, the requirement for large burial areas should be diminished. An option to be considered is that a person's right to purchase burial space is limited to one site. In that way a married couple with two children could purchase four sites. Such a practice would discourage the trading in burial sites for profit.

In order to minimise trading in burial sites, another option for consideration is that the sale of burial sites could be restricted to cemetery managers. Those people or their beneficiaries no longer requiring a burial site that has previously been purchased could sell it back to the cemetery managers for the amount paid or swap it for another site.

Option 16

Purchases of public burial space on Crown land to be limited to one per person.

iv. Better record keeping

A related option is to encourage better and up-to-date record keeping by cemeteries of the details of persons who have pre-purchased graves.

An option to be considered is the introduction of a requirement whereby it is the responsibility of purchasers or beneficiaries of burial rights to keep their contact details up-to-date. Such a requirement would be clearly explained at the time of purchase. The procedure could be similar to that for updating other details such as change of address for bank accounts and could be undertaken on-line. In this way, the current owner of burial plots would always be known and could always be contacted.

Should a cemetery manager not be able to contact the purchaser over a five year period, the purchase could be rendered invalid. In cases where the original purchaser wanted to use the burial space after it had been on-sold,

arrangements could be made to offer the person an equivalent burial site or the best similar site available.

> **Option 17**
> People who pre-purchase burial space are required to update their details. The inability of the cemetery manager to contact the purchaser over a five year period will render the site allocation (but not the purchase) invalid.

5.10 Land use planning

Traditionally, it appears that burial has generally taken place in relatively close proximity to the place where the person lived, although when many of the now more central cemeteries in the GMA were established they were generally considered to be outside of the town/city limits and sometimes a significant bus or train ride away.

Our society is changing and travel of more than one hour to work, social functions and specialised shopping is now common. Increasingly, the people attending funerals live in diverse locations around the Sydney GMA and further afield including overseas.

Land suitable for urban development in the GMA is in relatively short supply and because of the economic, environmental and social costs of urban expansion, the sustainable use of existing and new urban land and infrastructure is required. Within the more central city areas of the Sydney GMA there would be very few sites available or suitable for a 'traditional' cemetery.

Greater provision of land for cemeteries could be achieved through a focus on provision for future cemetery needs in all strategic urban planning, including for major new land release strategies, and through advice that

councils should consider the need to plan for cemeteries and crematoria when preparing local environmental plans.

The Government has agreed with Recommendation 8 of the Funeral Industry Inquiry that space for new cemeteries and crematoria is included in future planning strategies, such as the Sydney Metropolitan Strategy.

For this approach to be effective, the funeral industry would need to identify the criteria for selection of a site such as the minimum area required, desirable and unacceptable physical characteristics, topography, soil type/characteristics, extent of vegetation coverage, need for buffering (e.g. noise), visual screening, compatibility with other land uses, accessibility and proximity.

Land use controls could allow cemeteries and crematoria as permissible uses in certain zones or areas. This may not, however, result in the land being used for cemetery purposes. Subject to the public consultation processes of the planning legislation, a site acquired for a cemetery or a crematorium could be specifically zoned for that purpose.

The land use planning process could also be used to secure land for future development of public cemeteries and crematoria through reservation in the same way provision is made in the planning of new urban areas for schools and other community infrastructure. This would require government commitment, however, to purchase the land when requested by the landowner, and this may be at the expense of other key government services such as health and education.

5.11 Provision of additional land for burial

The reallocation of existing State-owned land for burial purposes needs to be considered. Given the high value of land in Sydney, and the scarcity of unallocated land, the opportunity costs of using public land for burial purposes need to be considered. Any public land used for burial could no longer be used, for example, for health, educational, recreational, commercial or affordable housing purposes.

The option of purchasing additional land for burial purposes by the Government is hampered by the high cost of land, the lack of large areas in the GMA of appropriate undeveloped land and the competing uses of land. Should the Government provide additional land for burial, the cost of using the land for burial rather than other public purposes must be reflected in the price of the burial sites.

Most cemeteries in Sydney do not currently specifically cater for cultural or religious differences. Three Crown cemeteries (Rookwood Necropolis, Liverpool and Field of Mars) provide for these differences.

In recent years private cemetery operators have assumed an expanding role in providing additional land for burial. Private cemeteries have been developed in Sydney at locations such as Rouse Hill (Castlebrook Memorial Park), Minchinbury (Pinegrove Memorial Park) and Leppington (Forest Lawn Memorial Park). There may be scope for private cemeteries to cater for religious or cultural differences.

It may be preferable for private industry to develop additional land for burial than using the Government's resources for this purpose. Moreover, should the Government continue to provide land for burial purposes, it may negatively impact on the potential for private cemetery operators to develop more land for burial.

Religious or other groups with specific needs with respect to burial have the option of acquiring land for this purpose.

Some of the impediments to the use of existing or potential land sites for burial include:

- proximity to a residential area
- the degraded nature of the site or location e.g. closed waste depot, industrial area
- proximity to water catchment
- poor drainage and soil condition

- impact on native vegetation (the Native Vegetation Act)
- impact on threatened species (the Threatened Species Act).

It should be noted that if degraded sites such as waste depots were landscaped and beautified prior to the sale of any burial sites, they may make excellent locations for cemeteries since leachate collection and appropriate drainage are likely to be already installed.

Option 18

Despite the scarcity of land in Sydney for this purpose and the likely increased burial costs, the Government and/or the private sector may consider providing more land for burial.

6. The maintenance of cemeteries

It is important to ensure that cemeteries are maintained both while they are operational and after they are full when there is no longer an income stream from new burials.

There is currently no requirement relating to long term maintenance of cemeteries, although cemetery managers are likely to be making some provision for this. Where the price charged for burials does not cover long term maintenance, cemeteries may fall into disrepair, health and safety issues may arise if structures become unstable and Government funds may ultimately be needed to ensure adequate maintenance.

Public and private cemetery administrators could be required to set funds aside for the future maintenance of cemeteries. This is consistent with recommendations made in the Funeral Industry Inquiry (see Appendix 1).

Option 19

Public and private cemetery administrators to be required to set funds aside for the future maintenance of their cemeteries and/or develop a business plan which indicates how the cemetery can be sustainably maintained in the long term.

Appendix 1

Recommendations of funeral industry inquiry

The options outlined in this discussion paper take account of the following recommendations of the Inquiry of the Social Issues Committee of the NSW Legislative Council into the funeral industry (Funeral Industry Inquiry).

The full report of the Inquiry may be found at www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/2F5226F286BEEB5CCA2570D2000646B6.

Recommendation 5

That legislation be amended or new legislation be introduced to allow intensive reuse of family graves, and reuse of family graves be promoted as an option among the funeral industry and the public.

Recommendation 6

That the existing legislation be amended to allow for renewable tenure, and that community education be undertaken to ensure there is a clear understanding that a gravesite is not held in perpetuity and that if permanent occupancy is required, tenure must be renewed at specified intervals.

Recommendation 7

That the current legislation for the revocation of unused burial rights in Crown cemeteries, as set out in the Crown Lands (General Reserves) By-law 2001, be extended to other cemeteries in NSW and the legislation be amended to allow the advertising of unused burial rights to be done on a group basis as opposed to an individual basis. The community should be made more aware of unused burial rights by cemetery administrators ensuring older areas are well maintained and considering offering those graves at a cheaper cost.

Recommendation 8

That space for new cemeteries and crematoria be included in future planning strategies, such as the Sydney Metropolitan Strategy.

Recommendation 9

That cremations be encouraged as a way for the community to reduce the cost of a funeral and reduce the land needed for burials.

Recommendation 10

That the funeral industry promote alternative interment practices to the community as a way of alleviating pressures on burial space in the greater metropolitan area of NSW.

Recommendation 11

That legislation be developed and implemented to ensure cemeteries put aside sufficient funds to provide income to cover the costs of perpetual care of cemeteries.

Have your say

It is clear that within the GMA there is an emerging shortage of available land to cater for the community's need for burials.

This discussion paper has introduced the main options available to address this issue, with some options likely to be more appealing than others. All options should therefore be carefully considered.

The Government is aware that the issues involved in this area are sensitive and complex, and that there are many different viewpoints to consider in developing solutions to the problem.

This discussion paper is NOT recommending options but rather is seeking comments and suggestions on how the problems with respect to the provision of burial space can be solved.

For this reason, you are encouraged to make a submission on any matter related to the more sustainable use of cemeteries.

The information contained in the document has been provided in good faith to be as accurate as possible. The identification of any incorrect information or additional information would be appreciated.

It is preferable, although not essential, that responses are made on the survey attached since use of the form will greatly assist in the collation of responses.

Responses should be sent by mail, fax or email.

Mail	Fax	Email
Cemeteries IDC GPO Box 15 Sydney 2001	Cemeteries IDC (02) 8236 7030	burials@lands.nsw.gov.au

Your submission is requested by 30 June 2008. If you require any further information, email burials@lands.nsw.gov.au.

Have your say by completing this survey

This survey seeks your response to the 19 options presented in this discussion paper.

Completing it is easy and can be done in writing or online at www.lands.nsw.gov.au.

All options bear in mind one fundamental principle:

The Government is opposed to the introduction of any practices that impinge upon the basic beliefs of any religion or culture. The protection and conservation of our heritage is also an extremely important consideration.

Read each question and consider your response. Before you start you will need your copy of the discussion paper with you while you complete the survey.

To complete/commence the survey, indicate your response by marking one of the options offered.

Once completed, either:

- mail the survey to Cemeteries IDC, GPO Box 15, Sydney 2001
- fax the survey to (02) 8236 7030
- online surveys are automatically submitted.

Remember, these are options only. They are designed to gauge your thoughts and help the NSW Government make a well-informed decision on how to better manage public cemeteries and crematoria into the future.

All responses remain confidential. If we need to clarify any of your responses, we may take the opportunity of calling you.

Many thanks for taking the time to let us know your thoughts and opinions.

Survey response to sustainable burials in the Sydney Greater Metropolitan Area

Send completed form to:

Mail
Cemeteries IDC
GPO Box 15
Sydney 2001

Fax
Cemeteries IDC
(02) 8236 7030

Name (to be kept confidential and used only to assist in the compilation of survey results)

_____

Group associated with (if any)_____

Contact telephone number if clarification required_____

Please mark ONLY one box for each of the following options.

*** Page number refers to the corresponding page within the discussion paper**

		Yes	No	Undecided	Not relevant to me
Option 1 *Page 11	Provide the general public with more information on the ownership of burial rights, particularly when the right is acquired as part of an estate or will.	☐	☐	☐	☐
Option 2 Page 12	Where the owner of the right of burial cannot be determined, cemetery managers to be given the discretion to determine which person is entitled to exercise the burial right.	☐	☐	☐	☐
Option 3 Page 12	The right to revoke unused burial rights, according to specific criteria, to be extended to all cemetery managers.	☐	☐	☐	☐
Option 4 Page 13	All new graves to be initially excavated to enable at least two burials to occur.	☐	☐	☐	☐
Option 5 Page 15	Family graves to be introduced whereby, 25 years after a grave is 'full' (or less time if mutually agreed by cemetery manager and family), cemetery managers are able to authorise further burials of family members in the grave using the lift and deepen method.	☐	☐	☐	☐
Option 6 Page 19	Renewable tenure to be adopted as normal practice in public cemeteries.	☐	☐	☐	☐
Option 7 Page 20	Tenure to be extinguished on very old and unmarked graves at the discretion of the cemetery manager.	☐	☐	☐	☐
Option 8 Page 23	Cemetery managers to be encouraged to undertake cemetery renewal programs, generally where the tenure of the graves has been extinguished or where there is no apparent interest by relatives and friends in attending and maintaining the grave sites.	☐	☐	☐	☐
Option 9 Page 24	If family graves (as well as other options such as extinction of tenure on old graves) are introduced, closed cemeteries could be reopened for burial.	☐	☐	☐	☐

		Yes	No	Undecided	Not relevant to me
Option 10 Page 25	If introduced, renewable tenure would apply to mausolea in public cemeteries.	☐	☐	☐	☐
Option 11 Page 25	Embalming or partial embalming of bodies for all burials to only be performed if specifically requested by the family or required for health and safety reasons.	☐	☐	☐	☐
Option 12 Page 26	The use of cremation will be encouraged.	☐	☐	☐	☐
Option 13 Page 29	The Government to give in principle support to proposals to establish a cemetery (or section of a cemetery) for 'green burial'.	☐	☐	☐	☐
Option 14 Page 30	Fully cost reflective prices for burial land are to be set for Crown cemeteries in the Sydney Greater Metropolitan Area.	☐	☐	☐	☐
Option 15 Page 30	Future burial rights are not to be sold so as to give a perception that burial is on a perpetual basis.	☐	☐	☐	☐
Option 16 Page 31	Purchases of public burial space on Crown land to be limited to one per person.	☐	☐	☐	☐
Option 17 Page 32	People who pre-purchase burial space are required to update their details. The inability of the cemetery manager to contact the purchaser over a five-year period will render the site allocation (but not the purchase) invalid.	☐	☐	☐	☐
Option 18 Page 35	Despite the scarcity of land in Sydney for this purpose and the likely increased burial costs, the Government and/or the private sector may consider providing more land for burial.	☐	☐	☐	☐
Option 19 Page 36	Public and private cemetery administrators to be required to set funds aside for the future maintenance of their cemeteries and/or develop a business plan which indicates how the cemetery can be sustainably maintained in the long term.	☐	☐	☐	☐

Provision of the following information is entirely voluntary and will remain confidential but will assist in understanding whether the views of the whole community have been canvassed.

What is your religion?

☐ Buddhism ☐ Christianity ☐ Hinduism ☐ Islam ☐ Judaism ☐ No religion ☐ Other religion (specify) _____

What is your age group?

☐ 0-14 ☐ 15-24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ 65-74 ☐ 75 and over

What is your postcode? ☐☐☐☐

When you die would you like to be

☐ Buried ☐ Cremated ☐ Not sure ☐ Don't care

What factors did you consider in making your decision?

☐ Religious/cultural beliefs ☐ Personal beliefs ☐ Family tradition ☐ Cost
☐ Environmental sustainability ☐ Placement of my remains ☐ Not sure
☐ Other (specify) _____

Thank you for providing your views on burial.

NSW Department of Lands
Head office
1 Prince Albert Road
Queens Square
SYDNEY NSW 2000

T 13000 LANDS
61 2 9228 6666
F 61 2 9233 4357

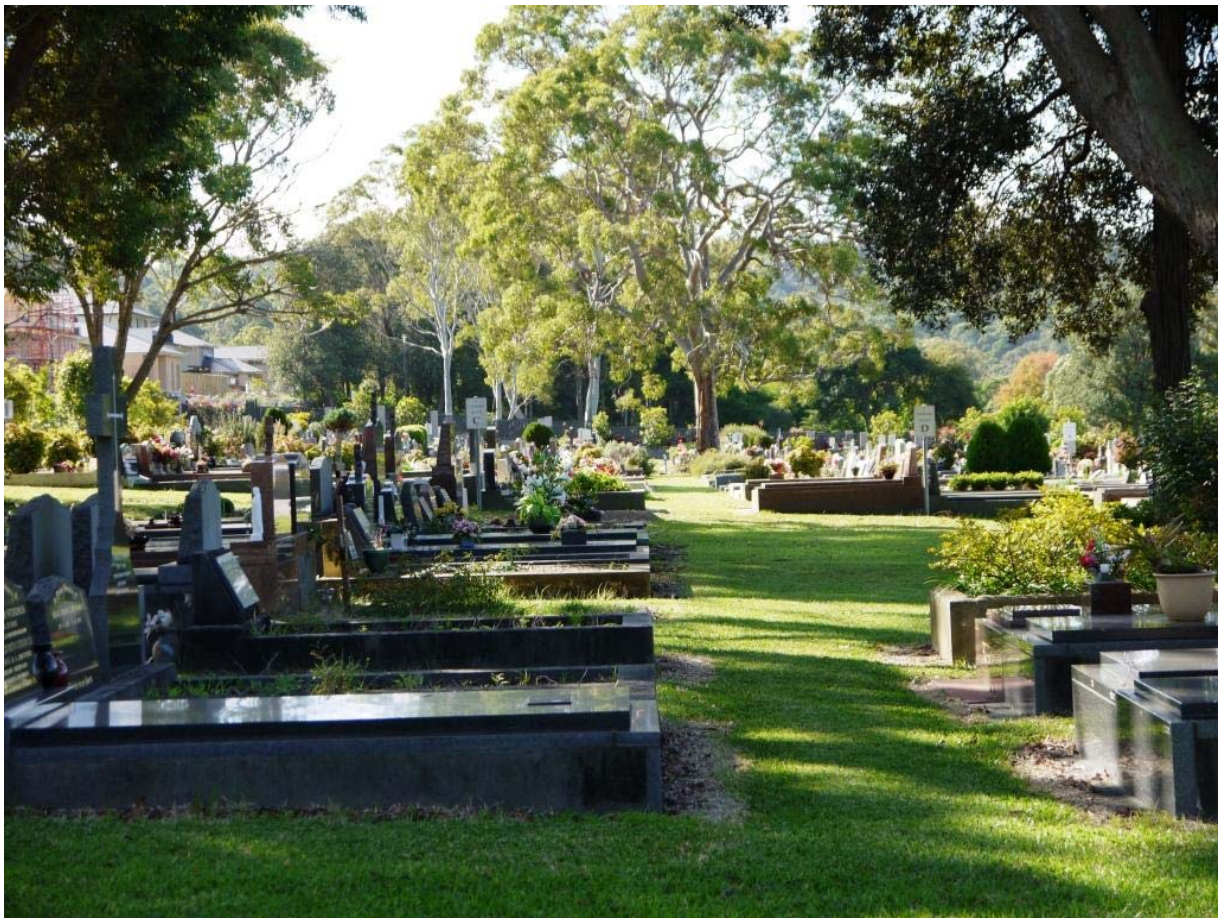
E burials@lands.nsw.gov.au

www.lands.nsw.gov.au

ATTACHMENT 7 – CEMETERY REGULATIONS

MONA VALE GENERAL CEMETERY

A FACILITY OF PITTWATER COUNCIL



Cemetery Regulations
March 2011

GENERAL INFORMATION

History

Mona Vale General Cemetery (hereafter referred to as "the cemetery) is a monumental cemetery (as opposed to a lawn cemetery) located at Mona Vale on the Northern Beaches of Sydney. The land upon which the cemetery stands was dedicated by the Crown as the "Turimetta General Cemetery" on the 18th October 1905. It has operated without pause ever since. There have been over 7000 interments to date (including the placement of ash remains).

The Cemetery covers approximately 4 hectares and has over 6000 burial sites. The Cemetery also has the S.O. Reynolds Wall Columbarium of just under 1100 positions and a number of Memorial Garden sites of over 1000 positions for the placement of Cremation Ashes.

Location

The Cemetery is located at 107 Mona Vale Road, Mona Vale, near the corner of Samuel Street, UBD map reference 138 – B3. The entrance to the cemetery has been relocated to via Fazzolari Avenue,–off Samuel Street, Mona Vale.

Bus Route L185 or 185 will take you closest to the cemetery – alternatively you may wish to walk (20 minutes from Mona Vale shops), or catch a taxi from Mona Vale cab rank next to the newsagent on Pittwater Road.

Opening times

The cemetery is open all year round and the Caretaker is on site Monday to Thursday and every alternate Friday from 8am to 4pm. Telephone enquiries should be made to Cemetery Customer Relations at Pittwater Council on 02 9970 1341.

Hours of burial

The usual hours of interment are between 8am to 3.00pm Monday to Friday. Burial at other times may be permitted by arrangement with the Cemetery Supervisor.

Fees & charges

The fees and charges for the services provided in respect of the Cemetery are determined and approved by Council by the 1st July every year. The current fees and charges are displayed on Council's website at www.pittwater.nsw.gov.au

Change of address

Please notify Council if your new address has changed to ensure we are able to contact you should the need arise.

Contact us

Address all correspondence to: -	Contact Details
Cemetery Supervisor Pittwater Council PO Box 882 Mona Vale 1660	Phone: 02 9970 1341 Fax: 02 9970 1397 Email: pittwater_council@pittwater.nsw.gov.au Web: www.pittwater.nsw.gov.au/local_services/mona_vale_cemetery
Cemetery Customer Service:	**For payments and other Council matters:**
Pittwater Council Works Depot 1 Boondah Road WARRIEWOOD NSW 2102	Mona Vale Customer Service Centre Village Park, 1 Park Street MONA VALE NSW 2103 or Avalon Customer Service Centre 59a Old Barrenjoey Road AVALON NSW 2107

CEMETERY REGULATIONS

Commencement of regulations

These regulations commence from the 1st March 2011

Applications of regulations

1. These regulations apply to the Mona Vale General Cemetery, hereafter referred to as the cemetery.
2. These regulations do not affect the operation of any current regulations under the current Public Health Act 1991 or any ordinances under the Local Government Act 1919 relating to cemeteries.

DEFINITIONS

In these regulations:

Appropriate fee means a fee determined by Council and listed in the Cemetery Fees and Charges

Ashes/ Ash Remains - the processed remains or residue recovered from the cremation of a body or pathological samples.

Burial Register means the Council's formal repository of data containing all the required details of a burial site, memorial site, interment right or burial right.

Burial site means a grave or plot, or other place for the disposition of human remains, whether cremated or not.

Cemetery or Cemeteries means an area containing one or more burial sites. When used as a generic term it can apply to lone graves, family plots and larger collections, such as those under Council's control.

Cemetery Supervisor means the Pittwater Council officer responsible for the administration and control of the Cemetery.

Coroner means an officer appointed under the Coroners Act (Part 1A & 2)

Council means Pittwater Council.

Crown Land means land owned by government. In NSW the nominal owner is the Minister for Lands. In this context the lands are allocated to Trusts and Local Councils and dedicated as cemeteries.

Burial Licence means the grant by a reserve trust of an exclusive right to bury one or more (human) bodies in a burial place.

Exhumation means the removal of the remains of a dead person or stillborn child from a burial site.

Holder in relation to a burial or niche licence, means the person recorded, in the register kept by Council, as the holder of the burial or niche licence.

Monument means any structure, plaque, headstone, masonry, metal work, casting or item placed over, in or around a burial site.

Monumental Mason - a tradesman, mason or person possessing the skills to carry out Monumental Mason work.

Monumental Graves - a fully or partially enclosed burial site with a substantial headstone.

Niche – the smaller spaces for interment of cremated remains. The niche can be freestanding, such as a wall niche, incorporated into a building, or into the ground, such as a garden niche area.

Reservations/Pre-purchase of Burial Licence means a burial licence granted prior to need.

Reserve Trust refers to Pittwater Council as Trust Manager for the Mona Vale General Cemetery Reserve Trust

Plot Grantee in relation to a burial licence means the original purchaser and person recorded, in the register kept by the Council, as the person entitled to the burial licence. The holder of the burial licence is that person(s), or corporation(s) currently entered in the cemetery's register.

Burial Grantee the person recorded, in the register kept by the Council, as the person who signed the official "Burial Instructions" form to authorise the opening of a burial site for interment.

Transfer of Burial Licence The Holder for the time being may transfer the burial licence in accordance with the by laws or rules of the Cemetery. The transfer takes place when payment is made and the burial register is updated.

Register means the register kept by Council noting details of reservations, interments and ashes placements at the cemetery.

MANAGEMENT OF THE CEMETERY

Planning, conduct & maintenance of the cemetery

The Council may make such provisions as it considers necessary for the following:-

a) The setting aside of sections for different types and classes of burials.

b) The size, multiple use and locations of burial sites.

c) The improvement and maintenance of the cemetery

d) The conduct of religious or other ceremonies of burial, disposition or commemoration.

e) The supply of goods and services incidental to the conduct of burials and other matters relating to the cemetery.

f) The establishment of standards of construction and design for monuments and structures.

g) The carrying out of work by monumental masons and other contractors.

h) The qualifications required by, and the security deposits to be lodged by, monumental masons and other contractors.

i) The removal, replacement and maintenance of structures.

j) The placing of vases, statuettes, jars, bottles or other items of embellishment on or near burial sites, monuments or garden niches and the removal of same.

k) The making of arrangements for the care of burial sites on an annual (or longer term) basis.

l) The disposition and memorialisation of cremated human remains.

m) Landscaping and setbacks from stormwater and drainage canals and similar watercourses and structures.

n) The destruction in the cemetery of any noxious weed or feral or pest animal.

o) The promotion and interpretation of cemeteries through the installation of signage, brochures, and other interpretive materials.

p) Any other matter relating to the management of the cemetery so long as the provision made is consistent with any direction given by the Minister for Lands.

Restrictions on conduct in and use of the cemetery

A person MUST NOT do any of the following within the cemetery:

a) Damage, deface, interfere with, or alter any grave, monument or burial site.

b) Disturb or interrupt any service, procession, cortege, gathering, meeting or assembly.

c) Bury or exhume any human remains, whether cremated or not, without Council permission.

d) Enter or remain at the Cemetery at night, between the hours of sunset and sunrise.

e) Cause or permit an animal that is under the person's control to enter or remain in the cemetery.

f) Take part in any gathering, meeting or assembly, except for the purpose of a religious or other ceremony of burial or commemoration.

g) Engage in trade or commerce.

h) Distribute any circular, advertisement, paper or other printed, drawn, written or photographic matter.

i) Drive a vehicle, or ride a horse, except on a road provided for that purpose.

j) Drive a vehicle at a speed or more than 20 kms per hour.

k) Park a motor vehicle on any burial site or in a manner that is likely to impede traffic, or detract from the sanctity of the cemetery.

l) Teach, learn or practise driving a motor vehicle.

m) Camp or reside on any land in the cemetery.

n) Possess or drink an alcoholic or intoxicating beverage.

o) Urinate or defecate.

p) Bring into or leave in the cemetery any rubbish, refuse, scrap metal (including any car or car part), rock, soil, sand, stone or other such substance.

q) Plant any tree, shrub or other herbage or plant in any place unless written permission has been obtained from Council.

r) Kill, capture or in any way interfere with any animal or bird or other fauna, whether native or introduced.

- *This clause does not prohibit a blind person from being accompanied by a guide dog while the person is in the cemetery.*
- *A person is not guilty of an offence under this regulation if the person establishes that the act, giving rise to the offence, was done with the written consent of the Council.*

Penalty for breach of any of the aforementioned restrictions: Offenders may be prosecuted under Common Law, Statute Law, The Heritage Act, The current Health Act (NSW) and The Criminal Code.

Restrictions on burial practices

The following practises are not permitted at the cemetery:-

a) Hand filling of burial sites

b) Lowering of coffins by people other than trained Funeral Director's staff.

c) Carrying of coffins by people other than trained Funeral Director's staff.

d) Entering an open burial site at any time.

Upon request, cemetery staff will provide a bucket of sand and a small shovel at the burial site to enable a ceremonial fill-in to be enacted. Please note that staff will immediately carry out filling of the site once mourners leave the site. Machinery is used to fill the site.

Placing of objects on or near burial sites

The following objects are not to be placed on or near a burial site, monument or niche in the cemetery:

a) Ceramic or glass objects that are fragile or breakable,

b) Metal objects, or any other objects, that are likely to cause a risk to health or safety or visitors or workers at the cemetery,

c) Any item that extends beyond the boundaries of the burial site, monument or niche, including pot plants, flower holders or live plants.

Removal of trespassers

The Council may remove any person trespassing or causing annoyance, interference or nuisance or otherwise committing a breach of these Regulations.

Hours of burial, interment & exhumation

Burials, interments and exhumations shall take place only during the hours approved by Council.

BURIAL LICENCES

General

The commonly used statement "I have bought a grave" or "we own a grave at" – is not a correct description of what someone owns at the cemetery. What purchasers do buy is a *burial licence.*.

That is, a licence to have themselves or any other person they nominate buried in that portion of land (burial site) over which they are the registered owner of the *licence.* Furthermore, the owner of the burial licence is the only person who can authorise the placement of a memorial of any type on that burial site.

Should the person being interred be the holder of the burial licence, then the licence becomes part of his or her estate, to be administered by his or her Executor. The burial licence is treated the same as other real property in the estate. If there is no Executor, then the next of kin may apply to assume the licence although they will still have to provide evidence to support their claim.

The burial licence is a valuable item of one's estate and as such can be transferred or bequeathed to another person. However, this is not legally complete until such time as the register of the cemetery concerned has been amended to indicate that fact. It is necessary to supply relevant information such as a will, statutory declaration or evidence of identity to transfer the ownership of a burial site or memorial niche.

1. Grant of burial licence

a) Council may grant a burial licence in respect of a burial site in the cemetery.

b) An application for the burial licence must be in the form approved by the Council and accompanied by the appropriate fee.

c) A burial licence may be granted to one person or to two or more persons as joint holders.

d) Council cannot, without the Minister's approval, grant a burial licence to a person if the granting of the licence will result in the person holding (including jointly holding) more than 2 burial sites in the cemetery.

e) A burial licence entitles the person or persons to whom it is granted the burial licence in the burial site in respect of which it is granted.

2. Burial licence certificate

a) Council will issue to the owner of a burial licence a "Burial Licence Certificate" in relation to the burial site concerned.

b) An application for such a Certificate must be in the form approved by the Council and accompanied by the appropriate fee.

c) A Certificate under this clause is to be in such form as the Council may from time to time determine.

3. Transfer of a burial licence to person other than the cemetery reserve trust

a) The Council may, on application, transfer a burial licence from one or more persons to one or more persons as joint holders.

b) An application for the transfer of a burial licence may only be made by the holder of the burial licence concerned, or it the burial licence is held by joint holders, by all of the joint holders.

c) If the original holder has deceased, the application may only be made by the Executor of the estate of the deceased holder or their Authorised Legal Representative.

d) The application must state the name & address of the person/s to whom the burial licence is to be transferred, and must include the appropriate fee plus a copy of the relevant legal documents supporting the application, such as a will or letters of administration.

e) If the estate has not been settled, the Executor or Authorised Legal Representative shall be known as the "Holder for the time being". The register will be updated with the details of the correct holder when further information has been provided.

4. Transfer of burial licence to cemetery reserve trust

a) Council may enter into arrangements with the holder of a burial licence for the sale of the licence back to the Council.

b) The amount that Council will pay to buy back burial rights will be determined by Council and listed in the Annual Fees and Charges

5. Grant or transfer of burial licence may be refused

a) The Council may refuse to grant a burial licence to any person if, in the opinion of the Council, the grant would create a monopoly or encourage dealing in burial licences.

6. Burial licence to pass to surviving joint holder

a) On the death of a joint holder of a burial licence, the remaining joint holder is, or joint holders are, entitled to the burial licence.

7. Burial licence may be bequeathed

a) The holder of a burial licence may bequeath the right as if it were part of the holder's personal estate.

b) A person to whom a burial licence devolves as a result of a bequest does not become the holder of the licence until the register is amended to indicate that fact.

c) On application made by a person to whom a burial licence has devolved as a result of a bequest, Council must amend the register so as to indicate that the person has become the holder of the right.

d) An application under this clause must be in the form approved by Council and accompanied by the appropriate fee.

8. Revocation of burial licence

a) Council may revoke any burial licence it, or any previous reserve trust for the cemetery concerned, has granted if that right is not exercised within 50 years after it is granted.

b) Before revoking any burial licence under this clause, the Council must cause notice of its intention to do so to be sent, by registered post, to the person (if any) shown in the register of burial sites as the holder of that right.

c) If no response to the notice is received within 28 days after the date on which it is sent, a second notice of the Council's intention is to be given by means of an advertisement, identifying the burial site and name of the holder:

a) Displayed in a prominent position at the cemetery, and

b) Published in at least one national and one local newspaper

d) If no response to the second notice is received within 6 months after the date on which it is advertised, final notice of the Council's intention is to be sent, by registered post, to the person (if any) shown in the register as the holder of that right allowing the holder 28 days from the date of the notice within which to enter into negotiations of the kind referred to in clause 6.

e) If the Council has insufficient information to properly address the notice referred to in clause 2 or 4 above, the Council is not required to send that notice but may in that case begin the notification process by means of the notice referred to in sub clause 3 and may take other notification action it considers appropriate.

f) At any time before the expiry of the period for responding to the final notice referred to in clause 4 (or in the circumstances referred to in clause 5, within 28 days after the last date on which an advertisement referred to in clause 3b is published), the holder of the burial licence concerned may enter into negotiations with the Council for:

i) the sale of that burial licence back to the trust, or

ii) the retention of the burial licence.

iii) any notice required to be displayed or published under this clause may relate to more than one burial site.

9. Compensation

a) If Council revokes the burial licence for a burial site, whether granted before or after the commencement of this clause, the former holder of the burial licence is entitled:

i) to be granted a burial licence:

i) for an alternative burial site in the same cemetery (and, if available, in the same general location) as the original burial site, and

ii) for an equivalent period to that which the burial licence was originally granted, or

b) to be paid by the Council, by way of compensation, an amount equal to half of the fee payable (as provided by the Council's current fees and charges) for the granting of a burial licence:

i) for an alternative burial site in the same cemetery (and, if available, in the same general location) as the original burial site, and

ii) for an equivalent period to that which the burial licence was originally granted,

c) If there is no alternative burial site available, or if there is no applicable scale of fees, the amount of compensation referred to in sub clause (1b) is to be half of the fee payable for the granting of a burial licence under the most recent applicable scale of fees, varied in proportion to any variation in the Consumer Price Index (All Groups Index) for Sydney that has occurred between the date on which that scale was established and the date of revocation of the burial licence.

d) Council must ensure that any report on its accounts contains an estimate of its contingent liability with respect to any burial licences it has revoked.

e) The Council may elect whether the former holder of the revoked burial licence is to be granted an alternative burial site or be paid compensation.

f) If the former holder of the burial licence is granted a burial licence for an alternative burial site, that right may not be transferred by the former holder within 5 years after the date on which it was granted.

g) A former holder of a revoked burial licence may apply to the Minister for a review of any election of the relevant trust under this section.

h) An application for an entitlement under this clause:

i) Must be in the form approved by Council, and

ii) Must be accompanied by the appropriate fee, and

iii) Must be lodged with the Council within 6 years after the date on which the relevant burial licence was revoked.

NB: The fee referred to in paragraph 7b above is subject to variation or disallowance by the Minister.

10. Burials in a burial site in respect of which burial licences have been granted

a) The remains of a deceased person may not be buried in a burial site in respect of which a burial licence has been granted unless:

i) The person was the holder of the right immediately before he or she died, or the holder of the right gives written consent to the person's remains being buried in a burial site, and

ii) Where another person is buried in the burial site, the burial site has been dug to a depth to accommodate the remains of another deceased person.

b) On the death of a spouse or a child of the holder of the burial licence, the remains of the spouse or child may be buried in the burial site to which the right relates without the written consent of the holder of the right of burial if the Council is satisfied:

i) That the holder is not available to give consent to the burial, and

ii) That consent to the burial would be given if the holder were available, and

iii) Where another person is already buried in the burial site, the burial site has been dug to a depth to accommodate the remains of another deceased person.

c) The only compensation that the Council is liable to pay to the holder of a burial licence in the event that it permits the holder's spouse or child to be buried in the burial site without the consent of the holder is an amount equivalent to the fee currently charged by the trust for the grant of a burial licence in respect to a comparable burial site.

11. Burials in a burial site without the consent of the holder of the burial right

a) On request of a person other than the holder of a burial licence, the remains of the deceased may be interred in the burial site to which the right relates without written consent of the holder of the right, if the Council is satisfied:-

a) That the holder is not available to give consent to the burial

b) That the person making the request demonstrates clear legal entitlement to do so.

c) That consent to the burial would be given if the holder were available.

b) The only compensation that the Council is liable to pay to the holder of a burial licence in the event that it permits the deceased to be buried in the burial site without the consent of the holder is an amount equivalent to the fee currently charged by the trust for the grant of a burial licence in respect to a comparable burial site.

12. Council may determine holder of burial licence/s

a) This clause applies if there is a dispute or other doubt about who holds the burial licence for a particular burial place in a cemetery.

b) A person who believes he or she is the holder of the burial licence may apply to the Council for a decision that the person holds the burial licence.

c) As soon as practicable after receiving the application the trust must make a decision about whether the person holds or does not hold the burial licence for the burial site.

d) However, the Council may make a decision that the person holds the burial licence for the burial place only if:

i) at least 28 days before making the decision, the Council:

i) displays a notice about its intention to make the decision in a prominent position at the cemetery, and

ii) publishes a notice about its intention to make the decision in a prominent position at the cemetery, and

iii) takes any other steps it considers reasonable in the circumstances to determine who holds the burial licence for the burial place, or

ii) in the reasonable opinion of the Council it is not possible to follow the procedure in paragraph (a) because it is necessary to make an urgent decision due to the imminent burial of a person who was related by blood or marriage to, or who was in a domestic relationship with:

i) the applicant, or

ii) a person buried in the burial site

e) If the Council decides that the person holds the burial licence for the burial site, the Council is taken to have revoked any other burial licence for the burial site.

13. Register of Burial Sites

a) A register of burial, as required by the regulations of the current Health Act, must be kept in respect of all burial sites in the cemetery.

b) A register of reserved burial licences must also be maintained.

c) The register may be kept in electronic or written form but in either case the location of each burial site must be indentified on a plan or map that shows sections, rows and burial site numbers or other locations of remains.

d) The register must contain the name and address of the holder of the burial licence granted in relation to a burial site.

e) The Council must, immediately after a burial in a burial site, ensure that it enters in the register, opposite the entry for that burial site, the following information:-

i) The name of the deceased; and

ii) Any other details that are likely to help in the identification of the deceased; and

iii) The date of burial.

f) The Council may amend its register from time to time so as to remove any inaccuracies contained in it and to record any changes to burial licences as a result of transfer, revocation or death of the holder of a burial licence.

g) Council must, on application made by any person, make available to the person a copy of any entry made in the register in relation to a burial site.

h) Such an application must be in the form approved by the Council and accompanied by the appropriate fee.

i) The register can be used as verification in any proceedings requiring evidence of the identity of the holder of a burial licence that has been granted in respect of any burial site.

BURIAL SITES

Requirements for burial sites

a) The size of a burial site at the cemetery shall be 2.44m long x 1.065m wide.

b) All burial sites for the first interment of a coffin or casket shall be excavated to a depth of 2 metres.

c) All burial sites at the cemetery will accommodate two coffins or caskets and up to six ashes containers. A separate fee shall apply for each interment or ashes placement.

d) The maximum permissible size of a coffin or casket shall be 0.72m wide by 2.1m long (outside dimensions). Coffins/Caskets larger than this will not be accepted for burial unless written consent has been received from Council.

e) For the purposes of Part 3 above, where a child is to be interred (child being defined as from 1 year to 7 years old), a burial site may accommodate up to three coffins/caskets.

f) Council will allow cremated ash remains to be placed in a burial site, upon payment of the applicable fee.

Order for burial

Burials are not to take place except at such times as the Council may from time to time determine.

Reservation or pre-purchase of burial site

Burial licences may be pre-purchased for use at a later date. These reservations are limited to licences for two (2) burial sites per person.

Booking a funeral service

a) A booking for a burial can only be accepted from a Funeral Director.

b) An interment fee is payable upon each interment in the cemetery.

c) Council is only able to accommodate a maximum of two (2) funerals per day, and bookings must be made at least 48 hours prior to the desired time.

Exhumations

Exhumations are NOT to take place unless:-

a) Prior written consent has been received from the Director General of the Department of Health (NSW) and Council has issued an order for exhumation.

b) This clause above does not apply if a Court has ordered an exhumation.

c) Any exhumation shall be performed under the direction of NSW Department of Health staff. Council staff may be involved in uncovering the earth to clear the coffin, however they will not be involved in the removal or handling of the remains.

d) A fee is payable for exhumations at the cemetery.

MEMORIAL GARDENS AND S.O. REYNOLDS COLUMBARIUM WALL

Reservation of licence for a Memorial Wall or Garden Niche

a) A licence for use of a site in the memorial wall or garden niche may be pre-purchased for the placement of ash remains at a later date. Reservations are limited to two niches per person.

b) An invoice will be issued to the purchaser, and upon payment, a "Niche Licence Certificate" will be forwarded to the niche licence holder.

c) Ashes may be removed from the Wall or Garden Niche after completion of Removal of Ashes form by the niche licence holder and payment of the applicable fee.

Requirements for Niches – Memorial Wall

a) The ashes shall be delivered in a plastic container, maximum permissible size 19cm long x 10.5cm wide x 8cm deep.

b) The size of an individual memorial wall niche is 19.8cm long by 11cm wide by 8cm high.

c) The size of the plaque for the wall niche shall be 13.7cm x 10.2cm.

d) Generally, the ashes container provided to the family of the deceased will be larger than what can be accommodated in the wall niche. The ashes will be divided and placed into a second container. The licence holder must complete an Application for Placement of Ashes in Wall Niche form indicating what their requirements are in regard to the fate of the second container of ashes.

e) Council will only carry out the interment of ashes in the memorial wall after the applicable fee has been received.

f) Council reserves the right to scatter the contents of the second container in consecrated ground at the cemetery if they have not received written instructions from the licence holder, or if the ashes have not been collected by the holder or their representative, within 30 days of the interment of the first container.

g) The memorial plate shall have the niche number engraved on the bottom right hand corner.

h) No person is permitted to install or place any adornment onto the memorial wall. Council reserves the right to remove any illegal adornment placed on the memorial wall.

i) The only additional adornment permitted (apart from the plaque) is a small, approved metal vase. Metal vases are available through Council or can be sourced from an external supplier. On payment of the prescribed fee, Council will install the vase as directed by the licence holder.

Requirements for niches – Memorial Garden

a) The ashes shall be delivered in a plastic type container of maximum permissible size 26cm long x 12cm wide x 15cm deep.

b) The size of a memorial garden niche is:-

   i) Single position 23cm x 20cm

   ii) Double position 46cm x 20cm

c) The size of the plaque for the garden niche shall be 17.8cm x 10.2cm.

d) The ashes placement fee includes the supply of a cast bronze memorial plaque and the sandstone memorial block, upon which the plate or plaque may be mounted.

e) The licence holder must complete an Application for Placement of Ashes in Garden Niche form.

f) The memorial plaque shall be attached to the sandstone memorial and the garden niche number engraved in the bottom right hand corner of the plate.

g) Council will only carry out the placement of ashes in the memorial garden after the prescribed fee has been received.

h) No person is permitted to install, place or plant any adornment, plant or shrub into the memorial garden unless written permission has been obtained from Council.

i) Cut or artificial flowers are to be placed in containers of a type approved by Council.

j) GLASS JARS are a hazard to cemetery staff and visitors and will be removed if necessary for safety reasons.

MONUMENTS

General

a) A person shall not, in the Cemetery:-

   a) Construct or install any monument, memorial, foundation, headstone, gravestone, kerbing, railing or other structure, unless it is of a material and design and carried out to a standard of workmanship approved by the Cemetery Supervisor.

   b) Carry out any adornment, unless it is approved by the Cemetery Supervisor, and made or carried out to a standard of workmanship approved by the Cemetery Supervisor.

b) Application for the approval of the Cemetery Supervisor in accordance with Item 1 shall:-

   i) Be made on Council's Application for Monumental Work form.

   ii) Be accompanied by sketches, drawings and such other particulars as may be required by the Cemetery Supervisor.

c) The construction and erection of the foundations and/or monuments shall be carried out under the direction and supervision of the Cemetery Supervisor and in accordance with the current Australian Standard AS 4204 - Headstones and Cemetery monuments.

d) The maximum height of a monument shall be 2.0 metres. The kerbing shall not be built at a height that limits or prevents the use of machinery to excavate the burial site.

e) The size of the burial site is 2.44m long by 1.065m wide. The monumental work must not exceed these dimensions.

f) The construction of a concrete step or gutter at the front of the monument does not form part of the burial site and is at the Grantee's risk. Council does not permit the placement of flowers, vases or pot plants on these steps.

Landscaping of Graves

a) A person must not plant any tree, shrub or other herbage or plant unless written permission has been obtained from Council. A list of recommended plants can be found on page 18 in the Appendix.

b) The Grantee must ensure that no tree, shrub or other herbage or plant encroaches onto an adjoining burial site or aisle way.

c) The Council may remove any structure, adornment, trees, shrubs or other vegetation from the Cemetery where, in its opinion, it has not been maintained, is encroaching onto an adjoining burial site, is encroaching into the aisle or road or it is in the interest of the Cemetery to do so.

d) Cut or artificial flowers are to be placed in containers of a type approved by Council. GLASS JARS ARE A HAZARD TO STAFF AND VISITORS and will be removed if necessary for safety reasons.

e) Council will make every effort to contact the Grantee or his/her representative on maintenance issues, but safety of the site and its users will be paramount in any decision made.

Monumental Masons

a) A person shall not carry out any work as a monumental mason within the cemetery unless with the written approval of the Council.

b) Any monumental mason carrying out work in the cemetery must supply Council with a copy of their current public liability insurance policy, the minimum cover being $10 million, as well as a workers compensation policy, if applicable.

c) The Council may issue approval to undertake work as a monumental mason to any person it considers to be suitably qualified and who applies for such approval in writing and who has the appropriate insurance cover.

d) The Council may suspend or cancel approval of any person or company by giving notice in writing.

e) This clause shall not apply to employees of Council while engaged in their employment under the instructions of Council.

Removal of Structures

a) Council may remove, demolish or alter, or require the removal, demolition or alteration of any structure, adornment or plant.

b) Where any work that has been approved to be carried out in the cemetery has not been completed within a reasonable time, Council may remove or demolish such part of the works as has been constructed, installed, made or carried out.

Maintenance of Monuments, Structures or Landscaping

a) The ownership right of monuments or other structures is deemed to be with the person or persons (or their heirs or successors) who caused the monument, structure or plant to be constructed or made.

b) The Council shall not be responsible for the upkeep, maintenance, repair etc, of any monument, structure or landscaping, inclusive of memorial plaques fitted to any Wall or Garden Niche area or to plaques on monuments on burial sites.

c) The owner of the burial licence is responsible for the upkeep, maintenance and repair of any monument, structure or landscaping of the site.

d) The Council may demolish and remove any monument or other structure or landscaping erected or planted on a burial site, which, in their opinion, is or may become dangerous, dilapidated or unsightly.

e) The Council may remove any structure, adornment, trees, shrubs or other vegetation from the Cemetery where, in their opinion, they have not been maintained, are encroaching onto adjoining burial sites, are encroaching into aisle ways, or it is in the interest of the Cemetery to do so.

f) Council will make every effort to contact the Grantee or his/her representative on maintenance issues, but safety of the site and its users will be paramount in any decision made.

Second Interment

a) If a second interment is requested, Council will inspect the burial site to determine whether any monumental work is present. If so, Council may engage the services of a Monumental Mason to remove and replace the monumental work. A fee will apply for this service.

b) Council takes all care but no responsibility for damage to monumental work in the course of normal cemetery operations.

APPENDIX

LIST OF RECOMMENDED PLANTS SUITABLE FOR GRAVE PLANTINGS

Natives – Common Name	Botanical Name
Pink Spider Flower	Grevillea sericea
Flannel Flower	Actinotus helianthi
Blue Flax Lily	Dianella caerulea
Purple Fan Fare	Scaevola aemulea
Crowea	Crowea saligna
Cut-leaf Daisy	Brachycome multifida
Common Correa	Correa reflexa
Knobby Club Rush	Isolepsis nodosa
Pig Face	Carpobrutus glaucescens
Love Creeper	Glycine clandestine
Native Violet	Viola hederacea

Selection of Exotics - Common Name	Botanical Name
Liriope	Liriope muscari
Mondo Grass	Ophiopogon japonicus
Roses	
Dwarf Nandina	Nandina domesticana 'Nana"
Heliotrope	Heliotropium arborescens
Dwarf Gardenia	Gardenia 'Radicans'
Dwarf Agapanthus	Agapanthus orientalis (Dwarf)
Convovulus	Convovulus mauritanicus
Silver Bush	Convovulus cneorum
Geraniums	Pelargonium species
Succulents eg: Goldilocks, Copperstone	Sedum kalanchoe, echeveria species
Cuphea	Cuphea mexicana
Variegated Star Jasmine	Trachelospermum jasminoides
Seaside Daisy	Erigeron karvinskianus
Day Lillies	Hemorocallis species
Autumn Crocus	Zephranthes candida
Begonias	Dipladenia species
Petunias	Gazania species

ATTACHMENT 8 – TREE REPORT & TREE IMPACT ASSESSMENT

Birds Landscape Design & Management Pty.Ltd.
Project Management • Horticultural Consultancy • Landscape Management • Consulting Arborist

Mona Vale Cemetery

TREE REPORT and TREE IMPACT ASSESSMENT

23 February 2010

Prepared for

Pittwater Council

Prepared by

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Executive Summary

This Tree Report has been commissioned in order to provide a pre-development report on the condition of existing trees that may be impacted upon by planned development works for Mona Vale Cemetery.

The issues that were identified as relevant and critical to these proposed works included:

- Condition of a number of existing trees.
- Possible excavation within Tree Protection Zones
- Potential for compaction of soil within the Tree Protection Zones

This report details recommendations as to the proposed method for the proposed development. These recommendations included the retention and removal of existing trees (see 5.1),identification of significant issues that will be required to be considered in the design development for the proposed development.

Drawing L02 has been provided to show the location and sizes of the required Tree Protection Zones (TPZ). These zones are based on the requirements of AS 4970-2009 Protection of trees on Development Sites. These zones should be incorporated into the future design as areas where excavation and potential for soil compaction are excluded. All access to these areas should be prevented during construction or civil works and operations minimised during the operation of the Cemetery.

All existing trees within the boundaries were assessed in detail as outlined in this report and Appendix A. Please note that the avenue of *Chamaecyparis* through the centre of the site was assessed as a whole unit and not individually. This report outlines a number of these *Chamaecyparis* that have significant amounts of deadwood and that should be removed and replaced. The balance of these trees are in reasonable condition however any replacements that are made will be smaller size and will detract from the original avenue planting' We would recommend that during the design development of this project consideration should be made to replacing all of these avenue trees and replacing with more suitable trees.

Contents

Figures

1.0 Scope of Works

This Tree Impact Report has been commissioned by Pittwater Council to report on the condition of existing trees that may be impacted upon by a planned development for Mona Vale Cemetery

This Tree Report will outline the health, condition, stability and viability of these trees and define issues that should be considered during the design development for the proposed development.

This Tree Impact Report is to be read in conjunction with drawings L01, L02 from Birds Landscape Design.

Glenn Bird of Global Consulting attended site and inspected the subject trees from the ground. There was no aerial inspection carried out. We undertook a Visual Tree Assessment (VTA) (Mattheck & Breloer, 1994).

2.0 Site Analysis

2.1 Site

The subject trees are within the boundaries of the subject site. The site is currently operating as a public cemetery.

2.2 Topography

The site is slopes from the western boundary down evenly to a road near the eastern boundary boundary.

2.3 Identification

Trees numbered 1 to 119 as shown on drawing BLDM Tree Position L01 and as identified in the attached inspection forms.

2.4 Soils

The soil material of the easement was found by a simple field texture test to have an A horizon of a sandy loam of an approximate depth of 250mm . No further soil investigation was carried out.

2.5 Existing Trees

The following trees were inspected from the ground and the following items identified. Please refer also to the attached inspection data in appendix A.

2.5.1 Tree 1 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 20m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 700mm at breast height. This tree has mechanical damage to a surface root adjacent to the access road. This tree is significantly crowded by adjacent trees.

Figure 1 - Trees 1, 2, 3

Figure 2 - Damage to cambium Tree 1

2.5.2 Tree 2 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 20m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 700mm at breast height. This tree has mechanical damage to a surface root adjacent to the access road. This tree is significantly crowded by adjacent trees.

2.5.3 Tree 3 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 22m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 800mm at breast height.

2.5.4 Tree 4 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 22m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth however is being suppressed by taller adjacent trees. As a result the canopy is sparse and thinning. There is also a large limb that is rubbing against a limb of an adjacent tree with callous material forming.

Figure 3 - Tree 4 branch rubbing

The trunk of this tree is approximately 700mm at breast height. This tree is significantly crowded by adjacent trees. We would recommend that this tree be removed to encourage the adjacent trees that are better specimens.

2.5.5 Tree 5 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 16m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 700mm at breast height. This tree is being crowded by adjacent trees.

2.5.6 Tree 6 – *Corymbia gummifera*

This tree is a large mature Corymbia gummifera and is approximately 18m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. This tree has a multi stemmed trunk with 3 trunks emanating from a point 1m up the main trunk. The trunk of this tree is approximately 1200mm at breast height. Lines in bark indicate possible previous constriction by vine growing over it. The western most trunk has a branch rubbing with partial occlusion on main trunk.

Figure 4 - Tree 6

Figure 5 - Tree 6 branch rubbing with callous (potential occlusion)

2.5.7 Tree 7 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 12m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 250mm at breast height. This tree is immediately adjacent to a large Corymbia which over time may limit the viability of this tree.

Figure 6 - Trees 6 & 7 close proximity

2.5.8 Tree 8 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 20m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth however has a thinning canopy. This tree has a multi stemmed trunk with 3

trunks emanating from the base. The trunk of this tree is approximately 1000mm at breast height. There is evidence of a bark inclusion at the base junction between two of the main trunks. This bark inclusion will significantly weaken this junction and provide a point of possible future failure.

Figure 7 - Bark inclusion base of Tree 8

2.5.9 Tree 9 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 20m tall. The tree is in fair health and condition with some evidence of instability. There is a cavity in the trunk at a height of approximately 5m as well as possible decay in the main junction. Both may provide points of weakness. There is an infestation of borers in this tree. There is possibly evidence of soil heaving on the tension side of this tree which when viewed in conjunction with exposed surface roots, may indicate instability of this tree.

The trunk of this tree is approximately 1300mm at breast height.

2.5.10 Tree 10 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 10m tall with a trunk diameter at breast height of 450mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. There is a large branch from the adjacent Eucalyptus running through the canopy rubbing on the limbs causing callous reaction wood with a possible occlusion.

2.5.11 Tree 11 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall. The tree is in poor health and condition with suspect stability. The canopy is very sparse with a large amount of deadwood and epicormic growth. The decline of this tree is also evidenced by an infestation of borers. This tree is in a state of decline and should be removed.

2.5.12 Tree 12 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 20m tall. The tree is in fair health and condition with suspect stability and poor branching structure. There is a cavity in the trunk at a height of approximately 6m as well as possible decay in the main junction. There is also a bark inclusion as well as another large cavity at the base with evidence of decay. These defects will provide points of weakness. There is evidence of previous failure at the point of the cavity with the leading trunk having snapped. There is an infestation of borers in this tree.

2.5.13 Tree 13 – *Casuarina spp.*

This tree is a mature *Casuarina* and is approximately 11m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 300mm at breast height. There is a mechanical injury wound with some evidence of decay at a high of 2.4m in the main trunk which appears to be well compartmentalised. There is a saprophytic fig growing in the main junction that should be removed.

2.5.14 Tree 14 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 16m tall with a trunk diameter at breast height of 800mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth.

2.5.15 Tree 15 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 13m tall. The tree is in poor health and condition with suspect stability. The canopy of this tree is sparse and thinning with a large amount of deadwood. There has been a large trunk failure at the base and as a result this tree has an irregular habit.

2.5.16 Tree 16 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 18m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 800mm at breast height.

2.5.17 Tree 17 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 15m tall. The tree is in fair health and condition with a moderate amount of deadwood and epicormic growth. This tree has an infestation of borers.

2.5.18 Tree 18 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall. The tree is in fair health and condition due to crowding by adjacent trees. The canopy of this tree is thinning with a moderate amount of deadwood. This tree has an infestation of borers.

There is a large wound with decay present at a height of 2m. We recommend the removal of the secondary trunk of this tree in order to reduce the lever arm at this weak point.

2.5.19 Tree 19 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 14m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 800mm at breast height. There is some minor damage to surface roots that is presumable caused by mowing.

2.5.20 Tree 20 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 16m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 700mm at breast height.

2.5.21 Tree 21 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 16m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 800mm at breast height.

2.5.22 Tree 22 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 12m tall with a trunk diameter at breast height of 700mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth.

2.5.23 Tree 23 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 14m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 600mm at breast height.

2.5.24 Tree 24 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 14m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 700mm at breast height. This tree is being crowded by adjacent trees.

2.5.25 Tree 25 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. This tree is however being crowded by adjacent trees which is resulting in an

unbalanced canopy. The trunk of this tree is approximately 700mm at breast height. There is a large wound and cavity at a height of 2m.

2.5.26 Tree 26 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. This tree is however being crowded by adjacent trees which is resulting in an unbalanced canopy. The trunk of this tree is approximately 600mm at breast height. There is a large wound and cavity at a height of 1.8m. This tree is recommended for removal.

2.5.27 Tree 27 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 350mm at breast height.

2.5.28 Tree 28 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall with a diameter at breast height of 800mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth. This tree has a cavity and wound at the base with evidence of decay.

2.5.29 Tree 29 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 10m tall with a trunk diameter at breast height of 450mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth.

2.5.30 Tree 30 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 300mm at breast height. This tree is being suppressed by adjacent trees.

2.5.31 Tree 31 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 14m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 700mm at breast height. This tree is being crowded by adjacent trees.

2.5.32 Tree 32 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 500mm at breast height.

2.5.33 Tree 33 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 250mm at breast height. This tree is being suppressed by adjacent trees resulting in a thinning canopy. This tree also has a wound at the base.

2.5.34 Tree 34 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 450mm at breast height.

2.5.35 Tree 35 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 20m tall. The tree is being overshadowed and crowded by adjacent trees and as a result has an unbalanced canopy to the northwest. The trunk of this tree is approximately 1100mm at breast height. There is a cavity in this tree at a height of approximately 6m.

2.5.36 Tree 36 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 10m tall. The tree is generally in good health and condition however it is being suppressed by adjacent trees resulting in a thinning canopy. The trunk of this tree is approximately 450mm at breast height. There is a wound at the base of this tree.

2.5.37 Tree 37 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 13m tall. The tree is generally in good health with minimal dieback and minimal epicormic growth; however this tree is being suppressed and crowded by adjacent trees. There is also a large cavity to a large extent of the trunk at a height of approximately 6m. As a result the stability of this tree is suspect. The trunk of this tree is approximately 350mm at breast height.

2.5.38 Tree 38 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 14m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 600mm at breast height.

The form of this tree is unusual as it has a multi stemmed trunk with three trunks forming from the base. There is a long spiral wound on this tree which may indicate a previous lightning strike.

2.5.39 Tree 39 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall with a diameter at breast height of 1100mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth.

2.5.40 Tree 40 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall with a diameter at breast height of 1100mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth. The form of this tree is unusual as it has a multi stemmed trunk with three trunks forming from the base.

2.5.41 Tree 41 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 1200mm at breast height.

2.5.42 Tree 42 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 7m tall with a diameter at breast height of 500mm. This tree has snapped its main leader and as a result will not grow to a stable a true form.

2.5.43 Tree 43 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 14m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 1000mm at breast height.

There is a long spiral wound on this tree which may indicate a previous lightning strike.

2.5.44 Tree 44 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 14m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth; however this tree is being suppressed and crowded by adjacent trees. The trunk of this tree is approximately 450mm at breast height.

2.5.45 Tree 45 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 14m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth.

2.5.46 Tree 46 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 18m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth; however this tree is being suppressed and crowded by adjacent trees. The trunk of this tree is approximately 630mm at breast height.

2.5.47 Tree 47 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 16m tall with a diameter at breast height of 700mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth however this tree is being crowded by adjacent trees.

2.5.48 Tree 48 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 14m tall with a trunk diameter at breast height of 500mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth however this tree is being crowded by adjacent trees.

2.5.49 Tree 49 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 14m tall with a diameter at breast height of 600mm. The tree is generally in good health with minimal dieback and minimal epicormic growth however this tree is being crowded by adjacent trees. There is also a wound at the base of this tree with evidence of decay.

2.5.50 Tree 50 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 14m tall. This tree is in poor condition and health and suspect stability. The trunk has evidence of decay with deadwood of over 40%. The deadwood is predominantly on one side.

2.5.51 Tree 51 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 14m tall with a diameter at breast height of 1000mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth. There has been a large amount of previous pruning on this tree.

2.5.52 Tree 52 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 11m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth.

2.5.53 Tree 53 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 14m tall with a diameter at breast height of 1000mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth. This tree is being crowded by adjacent trees.

2.5.54 Tree 54 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 12m tall with a diameter at breast height of 600mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth.

2.5.55 Tree 55 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 14m tall with a diameter at breast height of 800mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth.

2.5.56 Tree 56 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 14m tall with a diameter at breast height of 1000mm. The tree is generally in poor health with significant (>50%) dieback and epicormic growth. This tree has a long spiral wound typical of a lightning strike with evidence of decay. This tree is in decline with suspect stability.

2.5.57 Tree 57 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 12m tall with a trunk diameter at breast height of 1200mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. This tree has an unusual form with twin trunks emanating from the base.

2.5.58 Tree 58 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 10m tall with a diameter at breast height of 360mm. The tree is generally in fair health with some dieback and epicormic growth. This tree is overshadowed and suppressed by adjacent trees and has a bark inclusion at a point 3m up the trunk. These two factors significantly impact upon the stability of this tree.

2.5.59 Tree 59 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 10m tall with a diameter at breast height of 350mm. The tree is generally in good health with minimal dieback and minimal epicormic growth however this tree is being crowded and suppressed by adjacent trees

2.5.60 Tree 60 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 8m tall with a diameter at breast height of 250mm. The tree is generally in poor health with moderate dieback and moderate epicormic growth due to the fact that this tree is being crowded and suppressed by adjacent trees. This tree should be removed in favour of more viable trees.

2.5.61 Tree 61 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 12m tall with a diameter at breast height of 700mm. The tree is generally in good health with minimal dieback and minimal epicormic growth however this tree is being crowded and suppressed by adjacent trees.

2.5.62 Tree 62 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 14m tall with a diameter at breast height of 700mm. The tree is generally in good health with minimal dieback and minimal epicormic growth however this tree is being crowded by adjacent trees.

2.5.63 Tree 63 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 10m tall with a diameter at breast height of 250mm. The tree is in fair health with moderate dieback and epicormic growth with a thinning canopy. This trees decline is due to suppression by adjacent trees.

2.5.64 Tree 64 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 12m tall with a diameter at breast height of 600mm. The tree is generally in fair health and condition but is potentially unstable due to a large cavity with decay evident at the base of this trunk. Visibly this decay is in excess of 70% of the trunk. This tree is potentially hazardous.

2.5.65 Tree 65 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 12m tall. The tree is in good health and condition with minimal dieback and epicormic growth. This tree has a prominent lean to the east and care must be taken when removing the adjacent *Angophora* not to destabilise this tree.

2.5.66 Tree 66 – *Eucalyptus paniculata*

This tree is a mature *Eucalyptus paniculata* and is approximately 16m tall with a diameter at breast height of 1000mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth.

2.5.67 Tree 67 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 12m tall with a diameter at breast height of 1000mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth.

2.5.68 Tree 68 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 16m tall with a diameter at breast height of 200mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth. This tree is being suppressed by adjacent trees.

2.5.69 Tree 69 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 12m tall with a diameter at breast height of 1000mm. The tree is in good health with minimal amount of deadwood and epicormic growth. This tree is being crowded by adjacent trees. This tree has an unusual form with twin trunks emanating from the base. There is a bark inclusion at a major junction at a height of 3m that forms a weakness at this point. We recommend that the southern trunk be removed.

2.5.70 Tree 70 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall with a diameter at breast height of 800mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth.

2.5.71 Tree 71 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 14m tall with a diameter at breast height of 600mm. The tree is in good health with minimal amount of deadwood and epicormic growth. This tree has undergone some powerline clearance pruning.

2.5.72 Tree 72 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 12m tall with a diameter at breast height of 800mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth.

2.5.73 Tree 73 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 10m tall with a diameter at breast height of 1200mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth. This tree has a prominent lean to the north.

2.5.74 Tree 74 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 10m tall with a diameter at breast height of 1000mm. The tree is in fair health and condition with minimal amount of deadwood and epicormic growth. This tree has a prominent lean to the north. This tree

has an unusual form with three trunks emanating from the base. This tree is also infested with borers.

2.5.75 Tree 75 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 10m tall. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. This tree is being suppressed by adjacent trees.

2.5.76 Tree 76 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 12m tall with a diameter at breast height of 1100mm. The tree is in good health with minimal amount of deadwood and epicormic growth. This tree is an unusual form with twin trunks at a height of 3m.

2.5.77 Tree 77 – *Angophora costata*

This tree has been previously lopped and consequently has no natural form or habit and the majority of the growth is epicormic which may pose stability concerns in the future. This tree should be removed.

2.5.78 Tree 78 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 6m tall with a diameter at breast height of 200mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth. This tree has previously been pruned for powerline clearance.

2.5.79 Tree 79 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 9m tall with a diameter at breast height of 450mm. The tree is in good health with minimal amount of deadwood and epicormic growth.

2.5.80 Tree 80 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 12m tall with a diameter at breast height of 900mm. The tree is generally in good health with minimal dieback and minimal epicormic growth. This tree has previously been pruned for powerline clearance.

This tree has a large wound and cavity in the base for a height of approximately 1m with evidence of decay including decay fungal fruiting bodies. This decay appears visibly to be greater than 70% of the trunk of the tree. This tree has a slight lean but is leaning over the road which coupled with the weak point provided at the base by significant decay, makes this tree hazardous.

2.5.81 Tree 81 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 7m tall with a diameter at breast height of 350mm. The tree is in poor health. This tree has an unusual form with three trunks emanating from the base, two of which are no longer present. This tree is also infested with borers. There is a large wounds and cavities either side of the base of this tree with decay from an old branch failure. Visibly the decay to this trunk exceeds 70% making this tree unstable.

2.5.82 Tree 82 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 7m tall with a trunk diameter at breast height of 350mm. The tree is generally in good health and condition with minimal dieback and minimal epicormic growth.

2.5.83 Trees 83 - 119 – *Chamaecyparis spp*

These trees form a central avenue planting through site. These trees are generally of similar size and age and are all in reasonable health. There are a large number of these trees with significant sections of deadwood which in these conifers significantly detracts from the aesthetic functionality of these trees. By nature of these species these deadwood are unlikely to regenerate and we would anticipate as these trees age this condition with deteriorate. In this report we have recommended that these trees that have large sections of deadwood by removed and replaced. Please refer to appendix [] and drawings for further details for which trees are designated to be removed.

3.0 Conclusions / Summary of Key Issues

The following issues or conditions of the proposed development were identified as impacting upon the health or condition of the existing trees:

3.1 Mechanical Damage/Wounds/Cavities

A number of trees identified have large wounds that have apparently been caused by an impact with passing vehicles or mowers. When a tree is wounded in this fashion it undergoes compartmentalisation in order to minimise the spread of decay within the tree and to isolate the damage to within the wound. This process, known as Compartmentalisation of Decay within Trees (CODIT) consists of a series of physical and chemical changes within the tree that contains the decay within 4 “walls”. Wall one is formed initially at the time of wounding by the physical plugging of the xylem tracheids and vessels above and below the wound. This is the weakest of the four walls. Wall two is formed by the late summer growth rings that forms a barrier to the spread of decay internally. Wall three is formed by the incomplete walls created by sheets of ray cells and phenolic compounds created. This inhibits the lateral spread of decay. This is the strongest wall formed at the time of wounding. Wall four is the strongest of all walls and

is formed by the vascular cambium and serves to separate new tissue from that existing at the time of the wound.

In the case of these impact wounds, it is likely that these areas have been struck again subsequently to the initial wounding. This could serve to compromise the CODIT wall 4 compartmentalisation and allow the spread of the decay.

Each of these branches that have been wounded in this way has significant and noticeable swelling around the area that has been wounded. This wounding spreads further than the usual “door jambs” of reaction wood that are to be expected on either side of the wound that serve to strengthen the area around the wound. This swelling is indicative of extended decay within the tree (Mattheck & Breloer, 1994, Page 101, 181).

Once the decay or hollow exceeds 70% of the tree diameter, the tree is at an increased risk of failure and would be an unsatisfactory risk. (Mattheck & Breloer, 1994, page 185)

3.2 Damage to Cambium

The majority of the trees inspected have had significant wounds with decay evident in these areas. This damage and subsequent decay reduces the amount of vascular tissue that is available to transport water, nutrients and ATP from roots to leaves and the transport of photosynthates to all parts of the tree. This reduction in vascular transport significantly reduces the health and condition of these trees and in a number of cases is contributing to the decline of these trees. It is noted that the majority of this damage is either at the base on in the first 1.5m to 2m of the trunk which is consistent with damage caused by vehicles or mowing machinery.

Once the decay or hollow exceeds 70% of the tree diameter, the tree is at an increased risk of failure and would be an unsatisfactory risk. (Mattheck & Breloer, 1994, page 185)

3.3 Suppression

It is noted that a large number of trees within this report are being suppressed by adjacent, older and dominant trees. This is a natural process that has resulted in the poor condition of a number of trees. When a tree is suppressed it is starved of essential elements required for the development of the tree, specifically nutrients, water and light. It should be a consideration of the future development whether these suppressed trees should be removed in order to benefit more suitable trees.

3.4 Bark Inclusions

At the point at which large branches meet the trunk of the tree, the vascular cambium between these two limbs meets and in a healthy junction the join in the cambium will push outwards allowing the normal and healthy development of the vascular material below. In a bark inclusion this junction will force the vascular cambium inwards which will inhibit the development and flow within the vascular material. This inwards pressure can also divide the sapwood and reduce the structural integrity of the junction, therefore weakening the joint and increasing the likelihood of a failure at this point.

3.5 Borer infestation

A number of trees have been identified in 2.0 as infested with Borers. There is an abundance of fresh frass indicating that this activity is current. Borers are not usually a cause of declining health but a symptom of poor health, indicating the inability of these trees to produce sufficient kino to control this infestation. The trees that are affected are often being suppressed by overcrowding adjacent trees.

Figure 8 - Borer infestation with fresh frass

4.0 Potential Impacts of Proposed Development on Existing Trees

Based on our briefing of the proposed development of this site, we have identified the following potential impacts upon the existing trees:

4.1 Tree Protection Areas

The tree protection areas required for these subject trees have been taken as a circular area with a radius 12 x the diameter at breast height of the tree. This requirement is in line with Australia Standard AS 4970-2009 *Protection of Trees on Development Sites.* These tree protection zones have been identified on Birds Landscape Design & Management drawing L02.

4.2 Soil Compaction

At the time of preparing this report the extent or design of the proposed redevelopment has not been defined however it is anticipated that as on any development site there will be increased pedestrian, vehicular and plant movements and traffic. This increase in traffic may potential cause soil compaction within the Tree Protection Zones (TPZ) of the existing trees.

Compacted soils have smaller voids between soil peds or particles. This has the effect of reducing the amount of air infiltration and therefore gaseous exchange for the roots of the trees. Additionally, compacted soils, particularly in clay soil have lower water infiltration and therefore reducing the amount of water available to the roots of the trees. (Handreck & Black, 1986, pg 53).

Reduction in gaseous exchange with the roots within the root zone will limit the process of respiration within the roots. Respiration is a crucial process that produces adenosine triphoshate (ATP) which provides usable energy to all cells of the tree and in particular assists in photosynthesis. Photosynthates are then transported back to roots as well as the rest of the plant. These photosynthates including glucose are essential for the root respiration process. Reduction of gaseous exchange and therefore respiration reduces the energy available to the tree and will reduce the vigor and health of the tree.

The reduction of water infiltration within the soil caused by the compacted soils will reduce the amount of water available to the roots. Water is a crucial requirement for all processes of the tree. Any reduction in water infiltration is exacerbated in this situation as the proposed development poses a physical barrier to surface drainage or ground water percolating laterally through the soil.

4.3 Excavation / Root Removal / Root Damage

Due to the nature of the proposed development and the proximity of the subject trees to the potential plot sites, access road and drainage works it is expected that a number of the subject trees will have root zones that are damaged or removed by the excavation required for the proposed development. This removal of root volume will reduce the amount of water and nutrients that the tree will be able to uptake as are necessary for the metabolic processes required for the ongoing health and viability of the tree. In addition the removal of roots reduces the gaseous exchange within the root zone that is necessary for respiration to take place to provide energy for photosynthesis and therefore the ongoing condition of the tree.

The potential removal of roots during the excavation process will also compromise the stability of the trees as it reduces the amount of anchorage within the soil provided by the root material.

4.4 Interruption to Surface and Ground Water

Any proposed roadworks or drainage works in the development potentially will intercept and disrupt any surface drainage or groundwater that would be currently traveling down existing slopes to the tree particularly on the eastern side of the site. This will reduce or eliminate the availability of this water to these trees.

4.5 Surface Sealing or Covering

It is anticipated the any proposed redevelopment will require addition pavements for roadways and pedestrian paths. Sealing or covering the surface with the tree protection zones will limit the amount of gaseous exchange available for the roots which will inhibit the respiration process which will in turn reduce the energy available for the tree and the resultant photosynthates that the trees require as energy for metabolic processes such as expansion growth, extension growth, reproduction and disease resistance. Coupled

with the physical sealing or barrier created by most paving methods, these conventional paving methods will also rely upon a compacted sub-base which will further restrict gaseous exchange as well as water infiltration as explained previously in 4.2.

5.0 Recommendations

In order to best address the issues outlined in 4.0 and reduce the impacts to the existing trees identified in 3.0 we would propose the following:

5.1 Tree Retention, Removal and Replacement

Under the current approved development proposal, we recommend the following for the identified trees. Please refer to Appendix C for further clarification of the Safe Useful Life Expectancy Rating (SULE)

ID	Species	Safe Useful Life Expectancy (SULE)	Recommendation
1	*Corymbia gummifera*	2A	Retain & Protect
2	*Corymbia gummifera*	2C	Retain & Protect
3	*Corymbia gummifera*	2C	Retain & Protect
4	*Corymbia gummifera*	2C	Remove
5	*Corymbia gummifera*	2A	Retain & Protect
6	*Corymbia gummifera*	2C	Prune limb
7	*Angophora costata*	3C	Remove
8	*Eucalyptus piperita*	4C	Remove
9	*Eucalyptus piperita*	4C	Remove
10	*Syncarpia glomulifera*	2C	Prune limb from adjacent Eucalyptus
11	*Eucalyptus piperita*	4A	Remove
12	*Eucalyptus piperita*	4C	Remove
13	*Casuarina spp.*	2B	Retain & Protect
14	*Syncarpia glomulifera*	1A	Retain & Protect
15	*Eucalyptus piperita*	4C	Remove
16	*Angophora costata*	1A	Retain & Protect
17	*Eucalyptus piperita*	2A	Retain & Protect
18	*Eucalyptus piperita*	2D	Prune secondary trunk
19	*Angophora costata*	1A	Retain & Protect
20	*Corymbia gummifera*	1A	Retain & Protect
21	*Angophora costata*	2A	Retain & Protect
22	*Syncarpia glomulifera*	1A	Retain & Protect
23	*Corymbia gummifera*	2A	Retain & Protect
24	*Corymbia gummifera*	1A	Retain & Protect
25	*Corymbia gummifera*	1A	Retain & Protect
26	*Angophora costata*	4C	Remove
27	*Angophora costata*	1A	Retain & Protect
28	*Eucalyptus piperita*	2A	Retain & Protect

29	*Syncarpia glomulifera*	1A	Retain & Protect
30	*Angophora costata*	1A	Retain & Protect
31	*Corymbia gummifera*	1A	Retain & Protect
32	*Angophora costata*	1A	Retain & Protect
33	*Corymbia gummifera*	2B	Retain & Protect
34	*Corymbia gummifera*	1A	Retain & Protect
35	*Eucalyptus piperita*	2A	Retain & Protect
36	*Corymbia gummifera*	4C	Remove
37	*Angophora costata*	4C	Remove
38	*Angophora costata*	1A	Monitor condition
39	*Eucalyptus piperita*	2A	Retain & Protect
40	*Eucalyptus piperita*	1A	Retain & Protect
41	*Angophora costata*	1A	Retain & Protect
42	*Eucalyptus piperita*	4C	Remove
43	*Angophora costata*	4C	Remove
44	*Angophora costata*	1A	Retain & Protect
45	*Corymbia gummifera*	1A	Retain & Protect
46	*Angophora costata*	1A	Retain & Protect
47	*Corymbia gummifera*	1A	Retain & Protect
48	*Syncarpia glomulifera*	1A	Retain & Protect
49	*Corymbia gummifera*	2B	Retain & Protect
50	*Angophora costata*	4A	Remove
51	*Eucalyptus piperita*	2A	Retain & Protect
52	*Angophora costata*	2A	Retain & Protect
53	*Eucalyptus piperita*	2A	Retain & Protect
54	*Angophora costata*	2A	Retain & Protect
55	*Eucalyptus piperita*	2A	Retain & Protect
56	*Corymbia gummifera*	4C	Remove
57	*Syncarpia glomulifera*	2A	Retain & Protect
58	*Corymbia gummifera*	4C	Remove
59	*Corymbia gummifera*	2A	Retain & Protect
60	*Corymbia gummifera*	4E	Remove
61	*Corymbia gummifera*	2A	Retain & Protect
62	*Corymbia gummifera*	2A	Retain & Protect
63	*Corymbia gummifera*	4E	Remove
64	*Angophora costata*	4C	Remove
65	*Corymbia gummifera*	2A	Retain & Protect
66	*Eucalyptus piperita*	2A	Retain & Protect
67	*Corymbia gummifera*	2A	Retain & Protect
68	*Corymbia gummifera*	1A	Retain & Protect
69	*Corymbia gummifera*	2D	Remove southern trunk/branch
70	*Eucalyptus piperita*	2A	Retain & Protect
71	*Corymbia gummifera*	2A	Retain & Protect
72	*Angophora costata*	2A	Retain & Protect
73	*Eucalyptus piperita*	2A	Retain & Protect
74	*Eucalyptus piperita*	2A	Retain & Protect
75	*Angophora costata*	1A	Retain & Protect
76	*Corymbia gummifera*	2A	Retain & Protect
77	*Angophora costata*	4E	Remove
78	*Angophora costata*	2A	Retain & Protect
79	*Corymbia gummifera*	2A	Retain & Protect

80	*Angophora costata*	4C	Remove
81	*Eucalyptus piperita*	4C	Remove
82	*Syncarpia glomulifera*	2A	Retain & Protect
83	*Chamaecyparis spp*	4E	Remove
84	*Chamaecyparis spp*	4E	Remove
85	*Chamaecyparis spp*	2A	Retain & Protect
86	*Chamaecyparis spp*	4E	Remove
87	*Chamaecyparis spp*	4E	Remove
88	*Chamaecyparis spp*	2A	Retain & Protect
89	*Chamaecyparis spp*	4E	Remove
90	*Chamaecyparis spp*	2A	Retain & Protect
91	*Chamaecyparis spp*	2A	Retain & Protect
92	*Chamaecyparis spp*	2A	Retain & Protect
93	*Chamaecyparis spp*	2A	Retain & Protect
94	*Chamaecyparis spp*	2A	Retain & Protect
95	*Chamaecyparis spp*	2A	Retain & Protect
96	*Chamaecyparis spp*	2A	Retain & Protect
97	*Chamaecyparis spp*	2A	Retain & Protect
98	*Chamaecyparis spp*	2A	Retain & Protect
99	*Chamaecyparis spp*	2A	Retain & Protect
100	*Chamaecyparis spp*	2A	Retain & Protect
101	*Chamaecyparis spp*	2A	Retain & Protect
102	*Chamaecyparis spp*	2A	Retain & Protect
103	*Chamaecyparis spp*	2A	Retain & Protect
104	*Chamaecyparis spp*	4E	Remove
105	*Chamaecyparis spp*	4E	Remove
106	*Chamaecyparis spp*	4E	Remove
107	*Chamaecyparis spp*	4E	Remove
108	*Chamaecyparis spp*	2A	Retain & Protect
109	*Chamaecyparis spp*	2A	Retain & Protect
110	*Chamaecyparis spp*	4E	Remove
111	*Chamaecyparis spp*	4E	Remove
112	*Chamaecyparis spp*	2A	Retain & Protect
113	*Chamaecyparis spp*	2A	Retain & Protect
114	*Chamaecyparis spp*	4E	Remove
115	*Chamaecyparis spp*	4E	Remove
116	*Chamaecyparis spp*	2A	Retain & Protect
117	*Chamaecyparis spp*	2A	Retain & Protect
118	*Chamaecyparis spp*	2A	Retain & Protect
119	*Chamaecyparis spp*	2A	Retain & Protect

All trees that are removed are to be replaced by new advanced plantings in a location on site determined by the landscape designer. Replacement plantings are to be of the species as recommended by Pittwater Council

5.2 Design Development Recommendations

No excavation is to be carried out within the tree protection zones of retained trees (see appendix A and drawing L02). Garden or niche areas would be suitable for development within these tree protection areas on the condition that the levels are not significantly increased (not greater than 100-200mm) and that the surfaces within these areas are not sealed.

6.0 Pre-Construction Tree Protection Measures

6.1 General

All tree protection works shall be carried out before excavation, grading and site works commence.

Storage of materials, mixing of materials, vehicle parking, disposal of liquids, machinery repairs and refueling, site office and sheds, and the lighting of fires, stockpiling of soil, rubble or any debris shall not be carried out within the tree protection zone of existing trees. No backfilling shall occur within the tree protection zone of existing trees. Trees shall not be removed or lopped unless specific instruction is given in writing by the Superintendent.

6.2 Identification

All trees to be removed shall be clearly indicated using surveyors marking paint. Tree to be retained are to be marked with tape.

6.3 Protective Fence

Fencing is to be erected around existing trees to be retained. In addition to this protective fencing within the site. This fencing is to be erected prior to any materials being brought on site or before any site, civil works or construction works commence. The fence shall enclose a sufficient area so as to prevent damage to the Tree Protection Zone (TPZ) and trunk where the Tree Protection Zone equals the tree trunk diameter at chest height x 12 and expressed as a radius from the trunk. Refer to Appendix A for TPZ dimensions. Fence to comprise 1800mm high chain wire mesh fixed to 50mm dia. Galvanised steel posts. Panels should be securely fixed top and bottom to avoid separation. No storage of building materials, tools, paint, fuel or contaminants and the like shall occur within the fenced area. This protective fence is to be installed for the duration of any construction or civil works but may be removed for the normal operations of the cemetery. At the completion of the civil and construction works, mark out the tree protection zones with pegs in order to identify these zones throughout the normal operations of the cemetery.

6.4 Mulching

Install mulch to the extent of all tree protection fencing. Use a leaf mulch conforming to AS 4454 which is free of deleterious and extraneous matter such as soil, weeds, sticks and stones and consisting of a minimum of 90% recycled content compliant with AS 4454 (1999) and AS 4419 (1998). All trees marked as to be removed on the proposed development are to be chipped and reused for this purpose. Place mulch evenly and to a depth of 100mm.

7.0 Site Management Issues

7.1 Soil Compaction

Plant and pedestrian traffic during the construction period will cause significant soil compaction. This will be exacerbated by increased water expected on these soils as result of adjacent construction and weather. Compaction of the soil within the Tree Protection Zone will reduce the voids between soil peds or particles therefore will reduce the gaseous exchange capacity of the root system which will slow critical metabolic processes such as respiration which produces Adenosine Triphosphate (ATP) which provides energy for the photosynthesis, which in turn provides photosynthates such as glucose. These photosynthates provide the carbohydrates required for tree extension growth, girth expansion, reproduction and pest and disease resistance.

7.2 Site Access

Sufficient access is required to enable efficient construction. It is essential to delineate access zones or corridors which will provide suitable access without damaging the existing trees to be retained or causing compaction to the root zone.

7.3 Excavation within Tree Protection Area

No excavation is to be carried out within the tree protection zones of retained trees without the permission and supervision of the site arborist (AQF5)

7.4 Possible Contamination / Storage of Materials

The construction site will require the use of many chemicals and materials that are possible contaminants which if not managed will pose a risk to the existing trees. These possible contaminants include fuels, herbicides, solvents and the like. A site specific Environmental Management Plan shall be provided and this specific risk identified and addressed.

8.0 Tree Protection Measures During Construction

8.1 Maintenance of Pre-Construction Tree Protection Measures

The Pre-Construction Tree Protection Measures identified in 6.0 above are to be maintained in good and serviceable condition throughout the development period.

8.1 Possible Contaminants

Do not store or otherwise place bulk materials and harmful materials under or near trees. Do not place spoil from excavations within the tree protection zones. Prevent wind-blown materials such as cement from harming trees. All possible contaminants are to be stored in a designated and appropriate area with secure chemical spill measures such as a

bund in place. It is anticipated that as construction progresses, this storage area may be within the proposed garage.

8.2 Physical Damage

Prevent damage to tree. Do not attach stays, guys and the like to trees. No personnel, plant, machinery or materials are to be allowed with the tree protection fencing.

8.3 Excavation

Do not add or remove topsoil within the tree protection fenced areas. No excavation is to be carried out within the tree protection zones of retained trees without the permission and supervision of the site arborist (AQF5)

8.4 Compaction

No filling or compaction shall occur over tree roots zones within tree protection areas. Where development occurs close to or the Tree Protection Zone of trees to be retained it shall be necessary to install protection to avoid compaction of the ground surface.

8.5 Trenching:

No Trenching should be necessary within the Tree Protection Zones or within tree protection fencing.
Should any further trenching be required within the tree protection zones identified, this work is to be carried out by hand and under the supervision of a qualified Arborist.

8.6 Site Sheds / Amenities/ Storage

Site sheds, site amenities, ablutions and site storage shall be in the area as designated. This area is to be a temporary zone for this purpose. Chemicals and potential contaminants are to be stored appropriately and this storage area is to be enclosed by a chemical spill bund to prevent the potential run off of contaminants in the event of a spillage or accident.

9.0 Tree Protection Measures after Construction

9.1 Garden / Mulching

The proposed landscape plan should incorporate the existing trees within garden or mulched areas. All existing trees should be mulched to an even depth of 75mm in accordance with item 2.4.

10.0 REFERENCES

Handreck, K. & Black, N. 1986, Growing Media for Ornamental Plants & Turf, New South Wales University Press, Kensington,NSW Australia

Mattheck, C. Breloer, K. 1993, The Body Language of Trees: A Handbook for Failure Analysis,
The Stationery Office

Mattheck, C 2004. The Face of Failure,
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(Mattheck & Breloer, 1994, page 185)

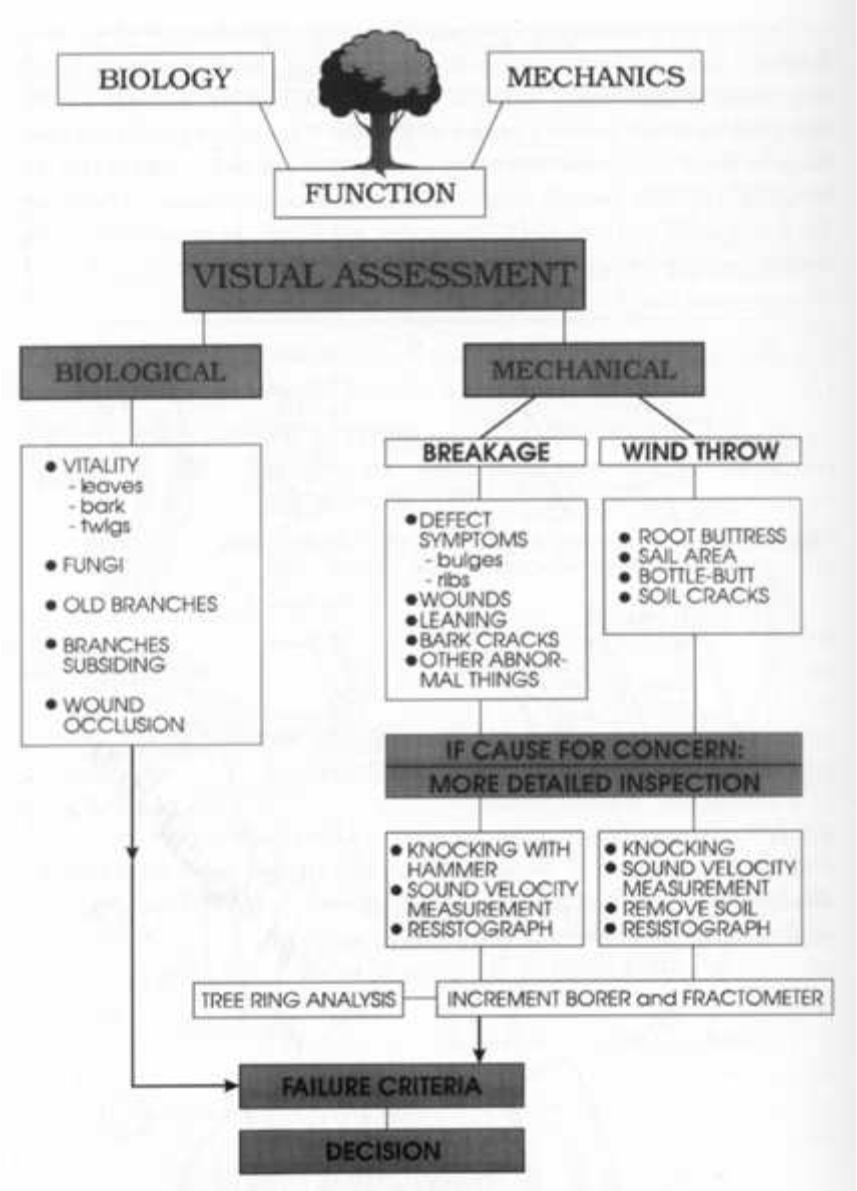
Appendices

Appendix A

Tree Inspection Data

Appendix B

Visual Tree Assessment (VTA) Process from Mattheck & Breloer (1994)



Appendix C

Safe Useful Life Expectancy Classifications and Data Referenced from Barrell, Jeremy (1996)

SULE CATEGORIES AND SUB-CATEGORIES

	1	2	3	4	5
	Long SULE:	Medium SULE:	Short SULE:	Remove:	Small, Young or regularly clipped:
	Trees that appeared to be retainable at the time of assessment for more than 40 years with and acceptable level of risk	Trees that appeared to be retainable at the time of assessment for 15 to 40 years with and acceptable level of risk	Trees that appeared to be retainable at the time of assessment for 5 to 15 years with and acceptable level of risk	Trees that should be removed within the next 5 years	Trees that can be reliably transplanted or replaced
A	Structurally sound trees located in positions that can accommodate future growth	Trees that may only live for between 15 and 40 more years	Trees that may only live for between 5 and 15 more years	Dead, dying, supressed or declining trees through disease or inhospitable conditions	Small trees less than 5 metres in height
B	Trees that could be made suitable for retention in the long term by remedial Care	Trees that may live for more than 40 years, but would need to be removed for safety or nuisance reasons	Trees that may live for more than 15 years, but would need to be removed for safety or nuisance reasons	Dangerous trees through instability or recent losss of adjacent trees	Young trees less than 15 years old but over 5 metres in height
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention	Trees that may live for more than 40 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	Trees that may live for more than 15 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form	Trees that have been regularly pruned to arteficially control growth
D		Trees that could be made suitable for retention in the medium term by remedial Care	Trees that require substantial remedial care and are only suitable for retention in the short term	Damaged trees that are clearly not safe to retain	
E				Trees that may live for more than 5 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	
F				Trees that may cause damage to existing structures within 5 years	
G				Trees that will become dangerous after removal of other trees for reasons given in 1A-1F	

Ref: Barrell, Jeremy (1996)
Pre-development Tree Assessment
Proceedings of the International Conference on Trees and Building Sites (Chicago)

Tree Assessment Survey Summary

Id. No.	Species	Height	Spread	DBH (mm)	Maturity Class	Trunk	Trunk Lean	Form/Crown Shape	Branching Habit	Crown Distribution	Distortion Due	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage size/colour/ext	Deadwood	Pest Infestation	Disease	Epicormic Growth	Approx Age	Life Expectancy	Env & Landsc.Sig.	Retention value	Condition/Comments	Recommendation	Radius of Tree Protection Zone (m)
1	***Corymbia gummifera***	20	14	700	Mature	Single	Nil	Normal	Normal	Balanced	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40	High	High	Damage to Surface roots near access road. This tree is significantly crowded by adjacent trees.	Retain & Protect	8.4
2	***Corymbia gummifera***	10	7	320	Mature	Single	Nil	Normal	Normal	East	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Good	Thinning	Normal	5%	No evidence	No Evidence	Nil	20	15-40	Moderate	Moderate	This smaller tree is being suppressed by adjacent taller trees.	Retain & Protect	3.84
3	***Corymbia gummifera***	22	9	800	Mature	Single	Nil	Normal	Normal	North East	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	20-30	15-40	High	High	Approx 2 m from driveway. This tree is suppressed	Retain & Protect	9.6
4	***Corymbia gummifera***	12	9	350	Mature	Single	Nil	Normal	Normal	North East	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Good	Sparse	Normal	<5%	No evidence	No Evidence	Nil	20-30	15-40	Moderate	Moderate	This smaller tree is being suppressed by adjacent taller trees and is rubbing againt adjacent trees. We would recommend that this tree be removed to encourage better specimens.	Remove	n/a
5	***Corymbia gummifera***	16	16	700	Mature	Single	Nil	Normal	Normal	North East	Crowded	S	S	Nil	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	Nil	20-30	15-40	High	High	This tree is in good health and condition	Retain & Protect	8.4
6	***Corymbia gummifera***	18	16	1200	Mature	3 Multi @ 1m	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Occluded	Mechanical Damage	Good	Normal	Normal	10%	No evidence	No Evidence	Nil	30	15-40	High	High	Lines in bark indicate possible previous constriction by vine growing over it. The western most trunk has a branch rubbing with partial occlusion on main trunk	Prune limb	14.4
7	***Angophora costata***	12	8	250	Mature	Single	Slight East	Normal	Normal	South East	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Thinning	Normal	<5%	No evidence	No Evidence	Nil	15	>40	High	High	This tree is immediately adjacent to a large Corymbia which over time may limit the viability of this tree.	Remove	n/a
8	***Eucalyptus piperita***	20	16	1000	Mature	3 Multi @ base	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Bark inclusion @ base	Nil	Good	Thinning	Normal	10%	No evidence	No Evidence	Nil	30	15-40	High	High	This tree is multi trunked from the base with evidence of a bark inclusion at this junction.	Remove	n/a
9	***Eucalyptus piperita***	20	14	1300	Mature	Single	Slight/Prominent North	Normal	Normal	Balanced	Nil	Suspect / Possible Soil Heaving	Sound	Nil	Cavity @ 5m	Nil	Fair	Sparse	Normal	20%	Borers	No Evidence	20%	>50	5-15y	Hazardous	Low	Exposed roots with mechanical damage on tension side of the trunk may indicate instability. There is possible evidence of some soil heaving on the tension side of the trunk. This tree has a prominent lean to the north. There is a cavity in the main trunk at 5m with othr evidence of decay in the main trunk. We would recommend removal of this tree.	Remove	n/a
10	***Syncarpia glomulifera***	10	8	450	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	has large branch from adjacent Eucalypt through it rubbing on limb causing callous reaction wood and potential occlusion.	Prune limb from adjacent Eucalyptus	5.4
11	***Eucalyptus piperita***	12	8	550	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Suspect	Sound	Nil	Nil	Nil	Poor	Sparse	Normal	60%	Borers	No Evidence	80%	30	<5y	Low	Very low	This tree is in declining health and is almost dead/	Remove	n/a
12	***Eucalyptus piperita***	20	14	800	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Suspect	Poor	Nil	Bark inclusion, cavity at base with evidence of decay	Bark inclusion @ base	Fair	Normal	Normal	5%	Borers	No Evidence	20%	30	5-15y	high	Low	Lareg Cavities with decay evident at large junction at the base with bark inclusion in trunk. There is also evidence of previous failure with a cavity at the point where the leading trunk has failed and snapped.	Remove	n/a
13	***Casuarina spp.***	11	6	300	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Mechanical Damage - Wound 2.4m	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40	High	High	Mechanical wound wih decay @ 2.4m in mian trunk. There is a saprophythic fig growing in the junction. Remove this fig.	Retain & Protect	3.6
14	***Syncarpia glomulifera***	16	14	800	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	9.6
15	***Eucalyptus piperita***	13	10	1100	Mature	4 multi @ 1m	Slight East	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Poor	Sparse	Normal	20%	No evidence	No Evidence	20%	30	5-15y	Low	Low	Large trunk failure at base - irregular habit.	Remove	n/a
16	***Angophora costata***	18	14	800	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	9.6
17	***Eucalyptus piperita***	15	14	1200	Mature	Single	Nil	Normal	Normal	East	Crowded	Stable	Sound	Nil	Nil	Nil	Fair	Normal	Normal	10%	Borers	No Evidence	10%	30	15-40y	High	High	This tree is in good health and condition	Retain & Protect	14.4
18	***Eucalyptus piperita***	20	14	700	Mature	Single	Nil	Normal	Normal	Northwest	Crowded	Stable	Sound	Nil	Cavity @ 2m evidence of decay	Wound @ 2m	Fair	Thinning	Normal	10%	Borers	No Evidence	5%	30	5-15y	High	Low	Large woound with decay at 2m. Recommend removal of secondary trunk to reduce lever arm at tie weak point.	Prune secondary trunk	8.4
19	***Angophora costata***	14	15	800	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	Some mechanical damage to surface roots due to mowing.	Retain & Protect	9.6
20	***Corymbia gummifera***	20	14	700	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	10%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	8.4

Tree Assessment Survey Summary

Id. No.	Species	Height	Spread	DBH (mm)	Maturity Class	Trunk	Trunk Lean	Form/Crown Shape	Branching Habit	Crown Distribution	Distortion Due	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage size/colour/ext	Deadwood	Pest Infestation	Disease	Epicormic Growth	Approx Age	Life Expectancy	Env & Landsc.Sig.	Retention value	Condition/Comments	Recommendation	Radius of Tree Protection Zone (m)
21	*Angophora costata*	16	15	80	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	0.96
22	*Syncarpia glomulifera*	12	7	700	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	8.4
23	*Corymbia gummifera*	12	8	700	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	8.4
24	*Corymbia gummifera*	14	8	700	Mature	Single	Nil	Normal	Normal	Balanced	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	34	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	8.4
25	*Corymbia gummifera*	10	10	700	Mature	Single	Nil	Normal	Normal	North	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	8.4
26	*Angophora costata*	10	8	600	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Wound @1.8m	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	5-15y	Very High	Low	There is a very large wound in this tree at 1.8m with evidence of a lot of decay.	Remove	n/a
27	*Angophora costata*	10	6	350	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	4.2
28	*Eucalyptus piperita*	12	12	800	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Cavity @ base	Wound at base evidence of decay	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good condition despite a cavity at the base of this tree	Retain & Protect	9.6
29	*Syncarpia glomulifera*	10	8	450	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	5.4
30	*Angophora costata*	10	7	300	Mature	Single	Nil	Normal	Normal	Balanced	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	3.6
31	*Corymbia gummifera*	10	8	350	Mature	Single	Nil	Normal	Normal	Balanced	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	4.2
32	*Angophora costata*	10	12	500	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	6
33	*Corymbia gummifera*	10	6	250	Mature	Single	Nil	Normal	Normal	Balanced	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	15%	No evidence	No Evidence	Nil	30	15-40y	high	Moderate	Tree is suppressed and has wound at the base.	Retain & Protect	3
34	*Corymbia gummifera*	10	10	450	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	5.4
35	*Eucalyptus piperita*	12	10	1100	Mature	Single	Nil	Normal	Normal	Northwest	Crowded	Stable	Sound	Nil	Cavity @ 6m	Nil	Good	Normal	Normal	10%	No evidence	No Evidence	<5%	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	13.2
36	*Corymbia gummifera*	10	10	350	Mature	Single	Nil	Normal	Normal	Balanced	Suppressed & Crowding	Stable	Sound	Nil	Nil	Wound at base	Fair	Thinning	Normal	15%	No evidence	No Evidence	<5%	30	15-40y	High	Low	Tree is suppressed and has wound at the base.	Remove	n/a
37	*Angophora costata*	13	10	350	Mature	Single	Nil	Normal	Normal	South East	Suppressed & Crowding	Suspect	Sound	Nil	Cavity @ 8m evidence of decay	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	<5%	15-40y	15-40y	Hazardous	Low	Large cavity to large extent of trunk at 6m	Remove	n/a
38	*Angophora costata*	14	12	600	Mature	3 multi at base	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Possible lightning damage	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	Possible lightning strike with long spiral wound	Monitor condition	7.2
39	*Eucalyptus piperita*	12	12	1100	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	Nil	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	13.2
40	*Eucalyptus piperita*	12	10	900	Mature	3 multi at base	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	10%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	10.8
41	*Angophora costata*	10	12	1200	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	14.4
42	*Eucalyptus piperita*	7	4	500	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Snapped leader	Snapped Leader										0	nil	nil	This tree has a snapped leader	Remove	n/a
43	*Angophora costata*	14	14	1000	Mature	Single	Slight north	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Possible lightning damage	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40y	Very High	Low	Possible lightning strike with long spiral wound	Remove	n/a
44	*Angophora costata*	14	6	450	Mature	Single	Nil	Normal	Normal	Balanced	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	5.4
45	*Corymbia gummifera*	14	10	800	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	9.6

Tree Assessment Survey Summary

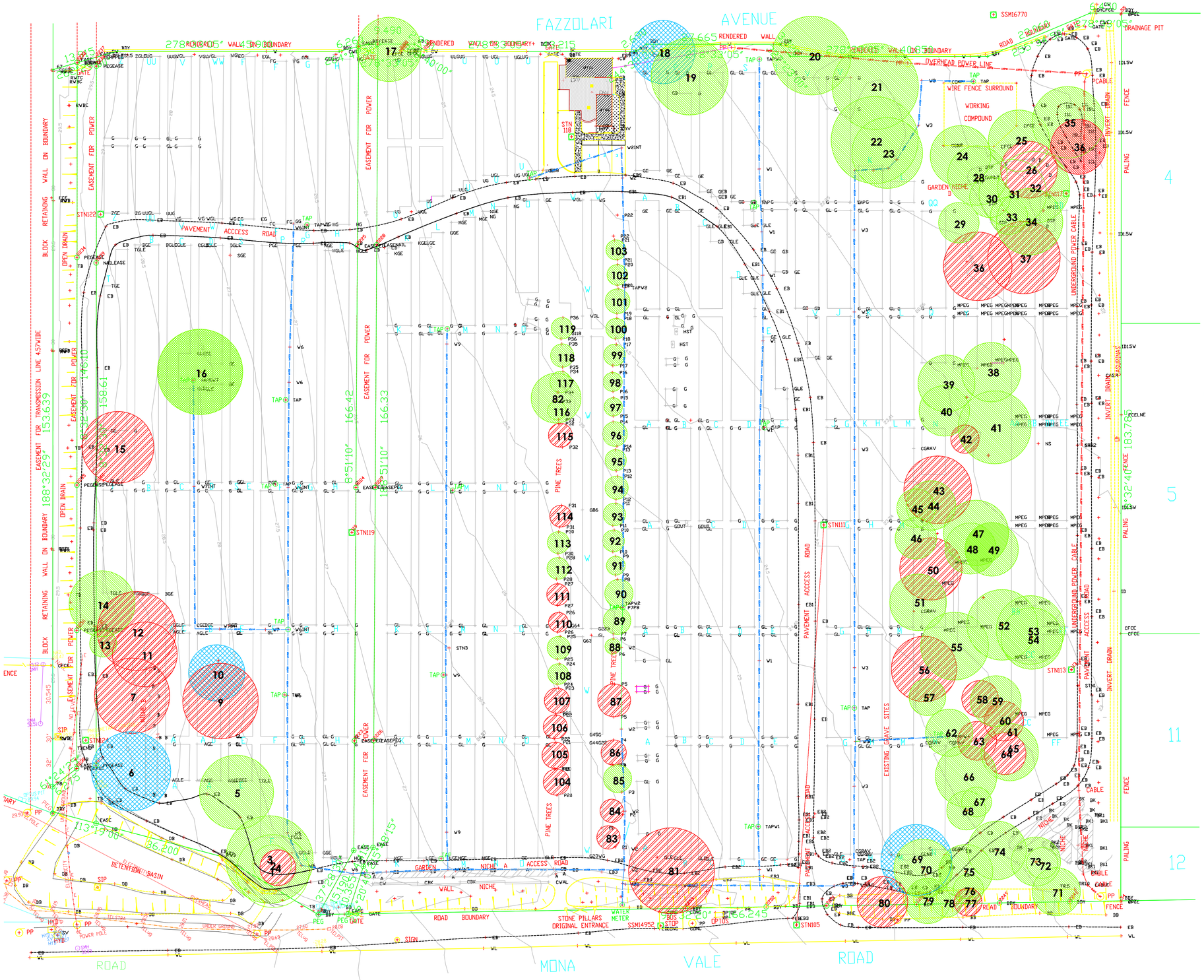
Id. No.	Species	Height	Spread	DBH (mm)	Maturity Class	Trunk	Trunk Lean	Form/Crown Shape	Branching Habit	Crown Distribution	Distortion Due	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage size/colour/ext	Deadwood	Pest Infestation	Disease	Epicormic Growth	Approx Age	Life Expectancy	Env & Landsc.Sig.	Retention value	Condition/Comments	Recommendation	Radius of Tree Protection Zone (m)
46	*Angophora costata*	18	10	630	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	7.56
47	*Corymbia gummifera*	14	12	700	Mature	Single	Nil	Normal	Normal	Balanced	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	8.4
48	*Syncarpia glomulifera*	14	10	500	Mature	Single	Nil	Normal	Normal	Balanced	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	6
49	*Corymbia gummifera*	14	12	600	Mature	Single	Nil	Normal	Normal	Balanced	Crowded	Stable	Sound	Nil	Evidence of decay	Wound @ base	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40y	Very High	High	Crowded with wound at base	Retain & Protect	7.2
50	*Angophora costata*	14	12	800	Mature	Single	Nil	Normal	Normal	Balanced	Overshadowing	Suspect	Sound	Nil	Evidence of decay	Nil	Poor	Thinning	Dieback	40%	No evidence	No Evidence	10%	30	5-15y	High	Low	Lot of deadwood and in decline. Evidence of decay	Remove	n/a
51	*Eucalyptus piperita*	14	20	1000	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Many pruned branches	Nil	Nil	Good	Normal	Normal	10%	No evidence	No Evidence	10%	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	12
52	*Angophora costata*	11	9	450	Mature	Single	Nil	Normal	Normal	North	Nil	Stable	Sound	Nil	Possible occlusion	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	15-40%	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	5.4
53	*Eucalyptus piperita*	12	10	500	Mature	Single	Nil	Normal	Normal	Balanced	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	6
54	*Angophora costata*	12	10	600	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	7.2
55	*Eucalyptus piperita*	14	16	400	Mature	Single	Slight north	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	Nil	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	4.8
56	*Corymbia gummifera*	14	12	1000	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Suspect	Sound	Nil	Evidence of decay	Possible lightning damage	Poor	Sparse	Normal	50%	No evidence	No Evidence	50%	30	<5%	Hazardous	Low	Possible lightning strike with long spiral wound. Lots of epicormic and dead wood	Remove	n/a
57	*Syncarpia glomulifera*	12	12	1200	Mature	Twin at base	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	14.4
58	*Corymbia gummifera*	10	8	360	Mature	Twin at 3m	Nil	Normal	Normal	Balanced	Suppressed & Crowding	Suspect	Bark inclusion at 3m	Nil	Nil	Nil	Fair	Sparse	Normal	20%	No evidence	No Evidence	20%	30	<5y	Low	Low	Bark inclusion and suppressed	Remove	n/a
59	*Corymbia gummifera*	10	12	350	Mature	3 multi @base	Nil	Normal	Normal	North	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	4.2
60	*Corymbia gummifera*	8	4	250	Mature	Single	Nil	Normal	Normal	Balanced	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Poor	Sparse	Normal	20%	No evidence	No Evidence	Nil	30	5-15y%	Moderate	Low	Suppressed by adjacent trees	Remove	n/a
61	*Corymbia gummifera*	14	11	700	Mature	Single	Nil	Normal	Normal	North East	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	15%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	8.4
62	*Corymbia gummifera*	14	15	700	Mature	Single	Nil	Normal	Normal	Nothwest	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	8.4
63	*Corymbia gummifera*	10	10	250	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Fair	Sparse	Normal	15%	No evidence	No Evidence	Nil	10%	15-40Y	Moderate	Low	Suppressed by adjacent trees	Remove	n/a
64	*Angophora costata*	12	12	600	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Unstable	Sound	Nil	Cavity @ base	Evidence of decay	Fair	Thinning	Normal	15%	No evidence	No Evidence	5%	30	5-15y	Hazardous	Low	Large amount of deadwood, large cavity with decay visually greater than 70% of trunk	Remove	n/a
65	*Corymbia gummifera*	12	10	600	Mature	Single	Nil	Normal	Normal	East	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	<5%	30	15-40Y	Very High	High	Care must be taken when removing adjacent Angophora not to destabilise this leaning Corymbia.	Retain & Protect	7.2
66	*Eucalyptus piperita*	16	14	1000	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	5%	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	12
67	*Corymbia gummifera*	16	14	1000	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40y	Very High	High	This tree is in good health and condition	Retain & Protect	12
68	*Corymbia gummifera*	6	6	200	Mature	Single	Nil	Normal	Normal	North	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	>40y	Very High	High	This tree is in good health and condition	Retain & Protect	2.4
69	*Corymbia gummifera*	12	16	1000	Mature	twin at base	Nil	Normal	Normal	North	Crowded	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	Bark inclusion at major junction	Remove southern trunk/branch	12
70	*Eucalyptus piperita*	12	12	800	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	9.6
71	*Corymbia gummifera*	14	10	600	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Power line clearance	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	7.2

Tree Assessment Survey Summary

Id. No.	Species	Height	Spread	DBH (mm)	Maturity Class	Trunk	Trunk Lean	Form/Crown Shape	Branching Habit	Crown Distribution	Distortion Due	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage size/colour/ext	Deadwood	Pest Infestation	Disease	Epicormic Growth	Approx Age	Life Expectancy	Env & Landsc.Sig.	Retention value	Condition/Comments	Recommendation	Radius of Tree Protection Zone (m)
72	*Angophora costata*	12	12	800	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	9.6
73	*Eucalyptus piperita*	10	14	1200	Mature	Single	Prominent north	Normal	Normal	North	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	5%	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	14.4
74	*Eucalyptus piperita*	12	10	600	Mature	3 multi at base	Slight north	Normal	Normal	Balanced	Crowded	Stable	Sound	Nil	Nil	Nil	Fair	Normal	Normal	5%	No evidence	No Evidence	5%	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	7.2
75	*Angophora costata*	10	10	600	Mature	Single	Nil	Normal	Normal	North	Suppressed & Crowding	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	40y	Very High	High	This tree is in good health and condition	Retain & Protect	7.2
76	*Corymbia gummifera*	17	12	1100	Mature	Twin @ 3m	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	5%	No evidence	No Evidence	5%	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	13.2
77	*Angophora costata*	4	4	250	Mature	Single	Nil	Normal	Normal	West	Previous Pruning	Stable	Sound	Lopped at 4m	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40Y	Low	Low	This tree has been lopped and has lost all form	Remove	n/a
78	*Angophora costata*	6	4	250	Mature	Single	Slight north	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	3
79	*Corymbia gummifera*	9	7	450	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	5%	30	15-40Y	Very High	High	This tree is in good health and condition	Retain & Protect	5.4
80	*Angophora costata*	12	10	900	Mature	Single	Slight north	Normal	Normal	North	Previous Pruning	Suspect	Sound	Power line clearance	Cavity @ base	Wound at base	Good	Normal	Normal	5%	No evidence	No Evidence	<5%	30	15-40Y	Hazardous	Very low	Large Wound and cavity at base for 1m with decal including fungal fruiting bodies. There is visibly greater than 70% decay to trunk. This weakened tree is leaning over a roadway	Remove	n/a
81	*Eucalyptus piperita*	9	17	1500	Mature	3 multi at base with 2 trunks missing	Prominent north	Normal	Normal	North	Nil	Suspect	Poor	Nil	Cavity @ base with evidence of decay	Wound at base , fracture at base	Poor	Normal	Normal	5%	Borers/Gall	No Evidence	20%	30	5-15y	Hazardous	Very low	Very large wounds either side of base with decay from old trunk failure. Visibly greater than 70% of trunk	Remove	n/a
82	*Syncarpia glomulifera*	7	6	350	Mature	Single	Nil	Normal	Normal	Balanced	Nil	Stable	Sound	Nil	Nil	Nil	Good	Normal	Normal	<5%	No evidence	No Evidence	Nil	30	15-40y	High	High	This tree is in good health and condition	Retain & Protect	4.2
83	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
84	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
85	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
86	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
87	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
88	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
89	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
90	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
91	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
92	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
93	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
94	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
95	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
96	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
97	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
98	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
99	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
100	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
101	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
102	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
103	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
104	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
105	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
106	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
107	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
108	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
109	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a

Tree Assessment Survey Summary

Id. No.	Species	Height	Spread	DBH (mm)	Maturity Class	Trunk	Trunk Lean	Form/Crown Shape	Branching Habit	Crown Distribution	Distortion Due	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage size/colour/ext	Deadwood	Pest Infestation	Disease	Epicormic Growth	Approx Age	Life Expectancy	Env & Landsc.Sig.	Retention value	Condition/Comments	Recommendation	Radius of Tree Protection Zone (m)
110	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
111	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
112	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
113	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
114	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
115	*Cuppressus spp*																											This tree has large amounts of dieback	Remove	n/a
116	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
117	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
118	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a
119	*Cuppressus spp*																											This tree is in good health and condition	Retain & Protect	n/a



Legend

- Trees to remain and be protected
- Trees requiring action. See three assessment summary
- Trees to be removed
- 65 — Tree number

Date	Amendment	By

GENERAL NOTES

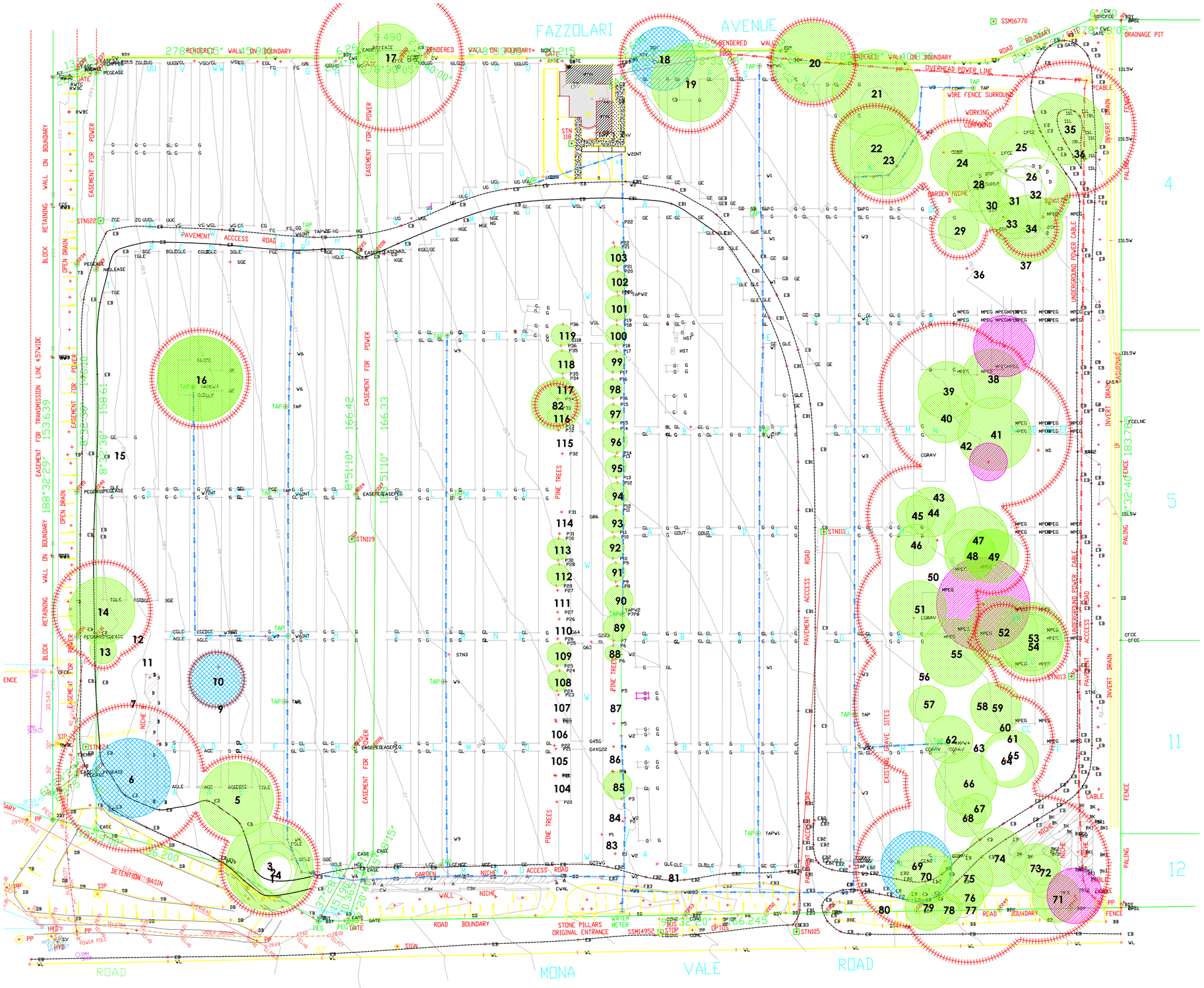
NOTES
Do not scale off the drawing unless otherwise stated and use figures dimensions in preference. All dimensions are to be checked and verified by the CONTRACTOR on the site before the commencement of any work, all dimensions and levels are subject to final survey and set-out. Discrepancies to be reported to designer prior to commencement. No responsibility will be accepted by this firm for any variations in design, builders method of construction or materials used, deviation from specification without permission or acceptedwork practices resulting in inferior construction.

Birds Landscape Design & Management Pty Ltd
P.O. Box 3054, Rouse Hill, 2155. Mobile 0419 992 634 Fax 02 45 736 937

BIRDS LANDSCAPE DESIGN AND MANAGEMENT PTY LTD
LANDSCAPE CONCEPT PLAN
CLIENT: PITTWATER COUNCIL
ADDRESS: MONA VALE CEMETERY

DATE:	24.02.2010	SHEET NO:	1 OF 2
SCALE:	1:400 ON A1	LD1 REV A	
DRAWN BY:	AP	CHECKED BY:	MB

Tree Survey Drawing
Scale 1:400



Legend

- Trees to remain and be protected
- Trees requiring action. See three assessment summary
- Tree protection zones
- 65 — Tree number

Tree Survey Drawing - Tree Protection Zones
Scale 1:400

Date	Amendment	By

GENERAL NOTES

NOTES
Do not scale off the drawing unless otherwise stated and use figures dimensions in preference. All dimensions are to be checked and verified by the CONTRACTOR on the site before the commencement of any work, all dimensions and levels are subject to final survey and set-out. Discrepancies to be reported to designer prior to commencement. No responsibility will be accepted by this firm for any variations in design, builders method of construction or materials used, deviation from specification without permission or acceptedwork practices resulting in inferior construction.

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BIRDS LANDSCAPE DESIGN AND MANAGEMENT PTY LTD
LANDSCAPE CONCEPT PLAN
CLIENT: PITTWATER COUNCIL
ADDRESS: MONA VALE CEMETERY

DATE:	24.02.2010	SHEET NO:	2 OF 2
SCALE:	1:400 ON A1	LO2 REV A	
DRAWN BY:	AP	CHECKED BY:	MB

ATTACHMENT 9 – URBAN BUSHLAND INVENTORY ACTION PLAN – WALANA CRESCENT RESERVE – MONA VALE

Walana Crescent Reserve, Mona Vale

Reserve Number: 0116
Street Address: 1, 3, 5 & 7 Walana Crescent, Mona Vale.

1. Description & Category

1.1 Location and Description

Walana Crescent Reserve is located on Mona Vale Road, west of Mona Vale Cemetery. The narrow reserve occupies 0.46 hectares between Walana Crescent and Mona Vale Road.

1.2 Land Tenure and Property Description

Walana Crescent Reserve is owned by Council and is described as Lots 1, 2, 3 and 4 in DP 350940. The land is zoned 6(a) Open Space - Existing Recreation A.

1.3 Category of Land

Walana Crescent Reserve is community land under the Local Government Act 1993. It is categorised as a natural area and further categorised as bushland. It meets the definition of urban bushland described in State Environmental Planning Policy No 19 - Bushland in Urban Areas.

2. Natural And Cultural Heritage

2.1 Topography, Geology and Soils

Walana Crescent Reserve is at the base of a north south escarpment and has an easterly aspect.

The slope is characterised by geology of the Terrigal Formation of the Narrabeen Group. On the lower slopes, moderately deep to deep yellow podzolic soils have been derived from fine-grained sandstone and claystones. Colluvial inflence of Hawkesbury Sandstone is present.

These soils have a very high soil erosion hazard.

2.2 Hydrology

The reserve is located mid catchment, below Ingleside and Katandra Bushland Sanctuary. There are no permanent natural drainage lines. Seasonal waterlogging is expected to occur as the Reserve is situated on a footslope.

2.3 Vegetation

At Walana Crescent Reserve, the dominant indigenous canopy species indicate that the area lies at an interface between shale and sandstone geology. Colluvial sands from the areas of Hawkesbury Sandstone geology higher up the slopes overly shales of the Narrabeen Group. Native tree species present include Sydney Peppermint (*Eucalyptus piperita*), Turpentine (*Syncarpia glomulifera*), Smooth-barked Apple (*Angophora costata),* Grey Ironbark (*E. paniculata*) and Broad-leaved White Mahogany (*E. umbra).*

The understorey is severely disturbed through much of the area. In the more intact areas the understorey includes small trees of rainforest associated species such as Cheese Tree (*Glochidion ferdinandi*), Hard Corkwood *(Endiandra sieberi),* Blueberry Ash (*Elaeocarpus reticulatis)* and Bastard Rosewood (*Synoum glandulosum*).

Shrubs include Breynia (*Breynia oblongifolia),* Muttonwood (*Rapanea variabilis),* White Spider Flower (*Grevillea linearifolia), Acacia longissima*, Hairy Clerodendrum (*Clerodendrum tomentosum)*, Mock Olive (*Notelaea longifolia)* and Common Hop Bush (*Dodonaea triquetra)*.

Vines include Old Man's Beard (*Clematis aristata)* and Water Vine *(Cissus hypoglauca),* and ground covers (*Lomandra multiflora),* Blady Grass *(Imperata cylindrica),* Kangaroo Grass *(Themeda australis)* and Blue Flax Lily (*Dianella caerulea).*

2.4 Fauna

Due to the adjacent roads, weed invasion and dumping, fauna habitat has been devalued at Walana Crescent. Some canopy trees remain providing habitat for a variety of birds. Bandicoot digging activity has been noted.

Council's Habitat and Wildlife Corridor Conservation Strategy maps the reserve as "Major Habitat - MH " which indicates major habitat areas. This signifies a high degree of diversity within the Reserve in both habitat types and species presently using it.

The reserve is on the edge of extensive bushland areas, mainly private, and association adds to the Reserve's significance.

2.5 Aboriginal and Non-Aboriginal Sites

There are no recorded Aboriginal sites within the Reserve, although there is potential for Aboriginal sites such as axe grinding grooves and engravings to occur in the area.

There are no known European Heritage sites in the Reserve.

3.0 Significance and Objectives

3.1 Statement of Significance

Walana Crescent Reserve is significant because:

- it protects an example of bushland which provides an interface between vegetation characteristic of Hawkesbury Sandstone and Narrabeen shales;
- it is adjacent to an area of major habitat and aids faunal movement throughout the Bayview/ Ingleside area with habitat trees;
- it contributes to the landscape quality of Mona Vale and provides a record of the original landscape and the changes wrought by urban development;
- it acts as a gateway portion of bushland to Mona Vale.

3.2 Management Objectives

The management objectives for Walana Crescent Reserve are:

- to protect the natural features of the Reserve;
- to maintain the natural range of structural and floristic diversity of bushland in the Reserve;
- to adequately manage the bushland in relation to encroachments, weed invasion and fire management;
- to protect life and property from wildfire and to maintain ecological processes by seeking to maintain a near-natural fire regime to conserve native flora and fauna in the Reserve;
- to control introduced animals in the Reserve;
- to encourage community appreciation and neighbourhood participation in bushland management of the Reserve.

4.0 Management Issues

4.1 Weed Invasion and Bush Regeneration

The boundaries of the Reserve have been affected by road construction works and road runoff. A number of terraces have been constructed in the lower two-thirds of the Reserve.

The least weed infested bushland is located at the top of the Reserve, becoming progressively more weed infested in the lower two-thirds. The most common weeds are Lantana, Cassia and Bamboo. Other weed species present include Cotoneaster, Oleander, Camphor Laurel, Crofton Weed, Fishbone Fern and Morning Glory.

Bush regeneration is needed to improve the viability of the remnant native vegetation and should follow these principles and priorities:

1) work from intact good bush, towards the weedier sections downslope.

2) weed control followed by planting indigenous species and mulching the areas along road verges in the lower areas.

4.2 Eucalypt dieback

A number of trees have been affected by roadworks and disturbances to soil levels and water. This is particularly evident along Mona Vale Road.

4.3 Stormwater Management

Roadside runoff affects the southern boundary of the Reserve and accumulates in the eastern corner depositing sediment.

4.4 Fire Regime

Management of the fire regime in the Reserve will be undertaken by the Warringah Pittwater Bush Fire Management Committee in accordance with Circular C10 - Planning for Bush Fire Prone Areas. The Reserve will be regularly monitored for fuel loadings and any hazard reductions required will be undertaken in accordance with the Draft Fuel Management Plan.

Ecological considerations will be assessed by Council Environmental Staff to determine methods of hazard reduction. Rainforest species present should not be burnt.

4.5 Management of Native Fauna and Introduced Predators

Walana Crescent Reserve is adjacent to a significant and large area of bushland and contributes with its diverse plant community and a variety of habitat components. The mature trees with hollows, fibrous bark and mixed understorey encourage diversity of fauna and food availability.

If bush regeneration is initiated, maintaining weed piles to create pockets of habitat would aid the fauna that may occupy the reserve.

A Pittwater-wide public awareness campaign would address the value of bushland as habitat for fauna and how residents can be responsible neighbours by ensuring that domestic cats and dogs do not roam in the Reserve. Compliance signs would assist.

Feral cat and fox predation are issues that need to be addressed through a Pittwater-wide control strategy.

4.6 Access, walking tracks and recreation

The Reserve provides a screen and begins the bushland character of Mona Vale Road as the road leaves Warriewood valley. The Reserve has the potential to become an example to the public of the 'green' attitudes the Pittwater area encourages. This may translate to regeneration of the Reserve as a gateway or display section of bushland. A seating area in the Reserve could be added for visitor use.

5.0 PERFORMANCE

Management Objectives	***Performance Targets (Actions)***	***Responsibility***	***Target Date***	***Capital Cost estimate***	***Recurrent Cost estimate***	***Performance Measures***
Weed Control & Bush Regeneration	Letterbox drop to re-establish volunteer group	Natural Resources	When community demand	Staff time	$1 400pa supervision & materials	Group commenced
Management of native fauna & introduced predators	Public awareness & feral animal program	Natural Resources & Compliance	Feral animal control when funds available	Seek detailed costings	Costed within a Pittwater wide feral animal control program	Fauna populations extant
Fire Management	Maintain appropriate fire regime	Bushfire Services & Natural Resources	Ongoing		Staff time	Fire regime protects property & biodiversity
Access & Use	Establish seating area	Natural Resources	When funds available	$500		Public use

ATTACHMENT 10 – TREE REPORT & TREE IMPACT ASSESSMENT – STAGE 2 LANDS

Birds Tree Consultancy
Project Management • Horticultural Consultancy • Landscape Management • Consulting Arborist

Mona Vale Cemetery
Stage 2

TREE REPORT and
TREE IMPACT ASSESSMENT

23 June 2010

Prepared for

Pittwater Council

Prepared by

Glenn Bird Dip. Hort (Arboriculture) (AQF5)

PO Box 3054 ROUSE HILL NSW 2155 • PH 0438 892 634 • E glenn@birdsdesign.com.au
ABN 31 105 006 657

Executive Summary

This Tree Report has been commissioned in order to provide a pre-development report on the condition of existing trees that may be impacted upon by planned development works for Stage 2 Mona Vale Cemetery.

The issues that were identified as relevant and critical to these proposed works included:

- Condition of a number of existing trees.
- Possible excavation within Tree Protection Zones
- Potential for compaction of soil within the Tree Protection Zones
- Density of current tree planting
- Suppression of suitable tree species due to current densities.

This report details recommendations as to the proposed method for the proposed development. These recommendations included the retention and removal of existing trees (see 5.1), identification of significant issues that will be required to be considered in the design development for the proposed development.

Drawing L03 has been provided to show the location and sizes of the required Tree Protection Zones (TPZ) for trees to be retained. These zones are based on the requirements of AS 4970-2009 Protection of trees on Development Sites. These zones should be incorporated into the future design as areas where excavation and potential for soil compaction are excluded. All access to these areas should be prevented during construction or civil works and operations minimised during the operation of the Cemetery.

All existing trees within the boundaries were assessed in detail as outlined in this report and Appendix A

Contents

Figures

1.0 Scope of Works

This Tree Impact Report has been commissioned by Pittwater Council to report on the condition of existing trees that may be impacted upon by a planned development for Stage 2 of Mona Vale Cemetery

This Tree Report will outline the health, condition, stability and viability of these trees and define issues that should be considered during the design development for the proposed development.

This Tree Impact Report is to be read in conjunction with drawings L01, L02 and L03 from Birds Landscape Design.

Glenn Bird of Global Consulting attended site and inspected the subject trees from the ground. There was no aerial inspection carried out. We undertook a Visual Tree Assessment (VTA) (Mattheck & Breloer, 1994).

2.0 Site Analysis

2.1 Site

The subject trees are within the boundaries of the subject site. The site is currently vacant with an old unused roadway through the centre of the site. The site is adjacent to Mona Vale Road and also the existing Mona Vale Cemetery.

2.2 Topography

The site is slopes from the western boundary down evenly to the boundary of the existing cemetery

2.3 Identification

Trees numbered 1 to 151 as shown on drawing BLDM drawings and as identified in the attached inspection forms.

2.4 Soils

The soil material of the easement was found by a simple field texture test to have an A horizon of a sandy loam of an approximate depth of 350mm. No further soil investigation was carried out. This site has recently had regeneration work carried out. As a result, there is a large amount of recently chipped vegetative material covering the soil. This material is at varying depth between approximately 75mm to 150mm.

2.5 Existing Trees

The following trees were inspected from the ground and the following items identified. Please refer also to the attached inspection data in appendix A.

2.5.1 Tree 1 – *Angophora costata*

This tree is a large mature *Angophora costata* and is approximately 13m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 450mm at breast height. This tree has a prominent lean over Mona Vale Road. 75% of the root zone has been covered by road base or road surface.

2.5.2 Tree 2 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 7m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree has poor habit and form with seven multi stemmed trunks from the base. This tree is considered an environmental pest.

2.5.3 Tree 3 – *Eucalyptus piperita*

This tree is a large mature *Eucalyptus piperita* and is approximately 6m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 450mm at breast height. This tree has a snapped trunk with no live canopy other than epicormic growth. There is evidence of termite and borer infestation. There is also evidence of significant decay. This tree has a prominent lean to the north.

2.5.4 Tree 4 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 6m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree has poor habit and form with four multi stemmed trunks from the base. There is evidence of a bark inclusion in the base of the junction of these trunks. This tree is considered an environmental pest.

2.5.5 Tree 5 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 9m tall. The tree is in poor health and condition due to suppression by adjacent trees. The trunk of this tree is approximately 700mm at breast height. This tree is being crowded by adjacent trees. This tree has a prominent lean to the south.

2.5.6 Tree 6 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 7m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 100mm at breast height.

2.5.7 Tree 7 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall. The tree is in poor health and condition with sparse canopy due to suppression by adjacent trees. There is minimal live canopy other than epicormic growth. The leading trunk has snapped and there is decay evident, including fungal fruiting bodies at approximately 6m. This tree has also been infested by termites.

2.5.8 Tree 8 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 6m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 150mm at breast height. There is mechanical damage at a point approximately 1m up the trunk.

2.5.9 Tree 9 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 6m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree has poor habit and form with four multi stemmed trunks from the base. There is evidence of a bark inclusion in the base of the junction of these trunks. This tree is considered an environmental pest.

2.5.10 Tree 10 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 13m tall. The tree is in fair health and condition with a thinning canopy due to suppression by adjacent trees. The trunk of this tree is approximately 840mm at breast height. This tree is being crowded by adjacent trees. This tree has a twin trunk habit from the base.

2.5.11 Tree 11 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 10m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 220mm at breast height. There is mechanical damage at a point approximately 1m up the trunk.

2.5.12 Tree 12 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall. The tree is in fair health and condition with suspect stability and poor branching structure. There is decay in the main junction at the location of a broken branch. This tree has a prominent lean with a large amount of epicormic growth. The habit of this tree is poor due to

suppression and overshadowing from adjacent trees. There is an infestation of borers in this tree.

2.5.13 Tree 13 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 13m tall. The tree is in poor health and condition with suspect stability and poor branching structure. This tree has twin trunks from the base and there is decay in the southern trunk which overhangs Mona Vale Road. There is a bark inclusion at the base of the twin trunks. This tree has a prominent lean with a large amount of epicormic growth. The habit of this tree is poor due to suppression and overshadowing from adjacent trees. There is an infestation of termites in this tree.

2.5.14 Tree 14 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 14m tall with a trunk diameter at breast height of 500mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree is approximately 2m from Mona Vale Road and as a result has approximately 40% of its root zone sealed by road surface.

2.5.15 Tree 15 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 4.5m tall. This tree is being suppressed by adjacent Syncarpia. The tree is in fair health with a thinning canopy. The trunk of this tree is approximately 110mm at breast height. This tree has three trunks from the base, two of which have been removed.

2.5.16 Tree 16 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and approximately 11m tall. This tree is being suppressed by adjacent Syncarpia and its canopy is growing through that of adjacent Syncarpia and Ficus trees. The tree is in fair health with a thinning canopy. This tree has twin trunks from the base.

2.5.17 Tree 17 – *Ficus macrophylla*

This tree is a very large mature *Ficus macrophylla* and is approximately 18m tall. With multiple trunks from the base, this tree has an aggregate diameter at breast height of approximately 2000mm.The tree is in good health and condition with a minimal amount of deadwood and epicormic growth. This tree has reaction wood present as a thickening on horizontal branches which is typical for this species.

2.5.18 Tree 18 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 14m tall. The tree is in fair health and condition. The trunk of this tree is approximately 800mm at breast height. This tree is being crowded by adjacent trees. This tree has a wound at a point 2m up the trunk with large amount of decay evident. This point is a point of high torsion force which may impact upon the structural stability of this tree.

2.5.19 Tree 19 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 5m tall. This tree is being suppressed by adjacent trees. The tree is in poor health with a sparse canopy. The trunk of this tree is approximately 150mm at breast height. There have been several broken branches and there is decay evident at these locations.

2.5.20 Tree 20 – *Melaleuca quinquenervia*

This tree is a mature *Melaleuca quinquenervia* and is approximately 6m tall. The tree is in poor health with an unusual upright habit due to suppression by adjacent trees. This tree is covered by a dead vine.

2.5.21 Tree 21 – *Pinus spp.*

This tree is a mature *Pinus spp.* and is approximately 11m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 300mm at breast height. This tree has an elevated form due to crowding from adjacent trees

2.5.22 Tree 22 – *Castenospermum australe*

This tree is a mature *Castenospermum australe* and is approximately 6m tall with a trunk diameter at breast height of 200mm. The tree is in fair health and condition with irregular form and habit due to crowding and suppression by adjacent trees. This tree also has a prominent lean to the north east. The canopy is interfering with the adjacent *Pinus spp..* There is a vine growing over this tree.

2.5.23 Tree 23 – *Castenospermum australe*

This tree is a mature *Castenospermum australe* and is approximately 8m tall with a trunk diameter at breast height of 700mm. The tree is in good health and condition with irregular form and habit due previous pruning, possibly pollarded. There is a piece of timber included in the trunk and reaction wood present on branches.

2.5.24 Tree 24 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 9m tall. This tree is being suppressed by adjacent trees which has resulted in an elevated habit. There are twin trunks from a point 2m up the tree. The tree is in poor health with a sparse canopy. The trunk of this tree is approximately 600mm at breast height. There have been several broken branches and there is decay evident at these locations. There is a large amount of decay evident in the main trunk which is visibly greater than 70% of the trunk diameter.

2.5.25 Tree 25 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 10m tall. This tree has twin trunks emanating from 2.5m. The tree is in good health and condition.

2.5.26 Tree 26 – *Ligustrum lucidum*

This tree is a mature *Ligustrum lucidum* and is a class 4 weed declared under section 7 of the *Noxious Weeds Act 1993.* This tree is to be removed in accordance with this declaration and act.

2.5.27 Tree 27 – *Eucalyptus saligna*

This tree is a mature *Eucalyptus saligna* in good heath and condition with no noted structural defects. This tree is approximately 16m tall with a trunk approximately 500mm at breast height.

2.5.28 Tree 28 – *Castenospermum australe*

This tree is a mature *Castenospermum australe* and is approximately 6m tall with a trunk diameter at breast height of 200mm. The tree is in poor health with poor habit due to suppression by larger adjacent trees. There is a bark inclusion at the base of twin leading trunks.

2.5.29 Tree 29 – *Eucalyptus piperita*

This tree is a large mature *Eucalyptus piperita* and is approximately 9m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 280mm at breast height.

2.5.30 Tree 30 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 8m tall. This tree has a bark inclusion at the main branch junction. The tree is in fair health and condition and is being suppressed by larger adjacent trees.

2.5.31 Tree 31 – *Corymbia gummifera*

This tree is a large mature *Corymbia gummifera* and is approximately 15m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 1100mm at breast height. This tree has three trunks emanating from a point 1m from the base with evidence of decay. The canopy of this tree is interfering with an adjacent Angophora.

2.5.32 Tree 32 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 16m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 500mm at breast height. This tree has a longitudinal wound with minimal evidence of decay.

2.5.33 Tree 33 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 14m tall with a trunk diameter at breast height of 300mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree is crowded and interfering with adjacent trees.

2.5.34 Tree 34 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 12m tall with a trunk diameter at breast height of 450mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.35 Tree 35 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 12m tall with a trunk diameter at breast height of 640mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree has twin leading trunks emanating from a junction at the base that shows evidence of a bark inclusion. There is another bark inclusion at the major branch junction at 2.5m

2.5.36 Tree 36 – *Syncarpia glomulifera*

This tree is a semi mature *Syncarpia glomulifera* and is 8m tall with a trunk diameter at breast height of 110mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.37 Tree 37 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 8m tall. This tree has a bark inclusion at the main branch junction. The tree is in fair health and condition and is being suppressed by larger adjacent trees.

2.5.38 Tree 38 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall. The tree is in very poor health and condition and is almost dead with a very prominent lean to the north. This tree has suspect stability.

2.5.39 Tree 39 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 12m tall with a diameter at breast height of 430mm. The tree is in very poor condition with a sparse canopy made up entirely of epicormic growth. This tree has a borer infestation and a long spiral wound that is indicative of a lightning strike.

2.5.40 Tree 40 – *Eucalyptus paniculata*

This tree is a mature *Eucalyptus paniculata* and is approximately 8m tall with a diameter at breast height of 320mm. The tree is in poor health with a sparse canopy almost entirely consisting of epicormic growth. This tree has a borer infestation and has evidence of decay at 4m.

2.5.41 Tree 41 – *Eucalyptus piperita*

This tree is a mature *Eucalyptus piperita* and is approximately 8m tall with a diameter at breast height of 230mm. The tree is in very poor condition with a sparse canopy made up entirely of epicormic growth. This tree has a borer infestation.

2.5.42 Tree 42 – *Eucalyptus paniculata*

This tree is a mature *Eucalyptus paniculata* and is approximately 8m tall with a diameter at breast height of 320mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.43 Tree 43 – *Syncarpia glomulifera*

This tree is a semi mature *Syncarpia glomulifera* and is 17m tall with a trunk diameter at breast height of 500mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.44 Tree 44 – *Camphora cinnamomum*

This tree is an immature *Camphora cinnamomum* and is approximately 4m tall with a diameter at breast height of only 50mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree is considered an environmental pest.

2.5.45 Tree 45 – *Liquidambar styraciflua*

This tree is a mature *Liquidambar styraciflua* and is approximately 14m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree has a thinning canopy due to suppression by larger adjacent trees. This tree has twin leading trunks emanating from a junction at 6m that has a bark inclusion.

2.5.46 Tree 46 – *Eucalyptus paniculata*

This tree is a mature *Eucalyptus paniculata* and is approximately 17m tall with a diameter at breast height of 600mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk has a marked bend in it due to crowding and suppression by adjacent trees.

2.5.47 Tree 47 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 6m tall with a diameter at breast height of 300mm. The tree is suppressed by larger adjacent trees. This tree has three trunks emanating from the base. This tree is considered an environmental pest.

2.5.48 Tree 48 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 14m tall with a trunk diameter at breast height of 600mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth however this tree is being crowded by adjacent trees. This tree has twin trunks emanating from the base.

2.5.49 Tree 49 – *Syncarpia glomulifera*

This tree is a mature Syncarpia glomulifera and is approximately 8m tall with a trunk diameter at breast height of 250mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth however this tree is being crowded and suppressed by adjacent trees.

2.5.50 Tree 50 – *Casuarinas spp.*

This tree is a mature *Casuarina* and is approximately 7m tall. This tree is in poor condition and health and suspect stability. The trunk has evidence of decay with a cavity at the base and at 300mm. This tree has been infested with borers.

2.5.51 Tree 51 – *Corymbia gummifera*

This tree is a large mature Corymbia gummifera and is approximately 22m tall. The tree is in good health and condition with minimal dieback and minimal epicormic growth. The trunk of this tree is approximately 560mm at breast height. This tree has a prominent lean to the west which has been induced by crowding by adjacent trees.

2.5.52 Tree 52 – *Eucalyptus piperita*

This tree is a large mature *Eucalyptus piperita* and is approximately 22m tall. The tree is in good health and condition however has a sparse canopy due to crowding and suppression by adjacent. The trunk of this tree is approximately 500mm at breast height.

2.5.53 Tree 53 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 5m tall with a diameter at breast height of 180mm. This tree has twin leading trunks from the base. The tree is in good health with a sparse canopy due to being suppressed by larger adjacent trees.

2.5.54 Tree 54 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 8m tall with a trunk diameter at breast height of 170mm. The tree is in fair health and condition with a sparse canopy due to being crowded and suppressed by adjacent trees.

2.5.55 Tree 55 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 24m tall with a diameter at breast height of 520mm. The tree is in very good health and condition with minimal amount of deadwood and epicormic growth. This tree has twin leading trunks at 6m.

2.5.56 Tree 56 – *Syncarpia glomulifera*

This tree is a mature Syncarpia glomulifera and is approximately 7m tall with a trunk diameter at breast height of 240mm. The tree is in poor health and condition with a sparse canopy due to being crowded and suppressed by adjacent trees.

2.5.57 Tree 57 – *Eucalyptus piperita*

This tree is a large mature *Eucalyptus piperita* and is approximately 24m tall. The tree is in good health and condition however has an unusual form due to twin leaders at 9m and crowding and suppression by adjacent. The trunk of this tree is approximately 700mm at breast height.

2.5.58 Tree 58 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 8m tall with a trunk diameter at breast height of 250mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.59 Tree 59 – *Acmena smithii*

This tree is a mature *Acmena smithii* and is approximately 8m tall with a diameter at breast height of 105mm. The tree is in fair health with minimal dieback and minimal epicormic growth however this tree is being crowded and suppressed by adjacent trees.

2.5.60 Tree 60 – *Acmena smithii*

This tree is a mature Acmena smithii and is approximately 14m tall with a diameter at breast height of 300mm. The tree is in good health with minimal dieback and minimal epicormic growth.

2.5.61 Tree 61 – *Ligustrum lucidum*

This tree is a mature *Ligustrum lucidum* and is a class 4 weed declared under section 7 of the *Noxious Weeds Act 1993.* This tree is to be removed in accordance with this declaration and act.

2.5.62 Tree 62 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 24m tall with a diameter at breast height of 520mm. The tree is in very good health and condition with minimal amount of deadwood and epicormic growth.

2.5.63 Tree 63 – *Jacaranda mimosifolia*

This tree is a mature *Jacaranda mimosifolia* and is approximately 7m tall with a diameter at breast height of 400mm. The tree is in fair health with a sparse canopy. This trees decline is due to suppression by adjacent trees. This tree has twin leading trunks from the base.

2.5.64 Tree 64 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 18m tall with a diameter at breast height of 600mm. The tree is in good health and condition. This tree has twin leading trunks at a height of 4m and there is evidence of a bark inclusion at this junction. This may impact upon the stability of this junction and this tree should be monitored as well as removing any potential targets from within the canopy.

2.5.65 Tree 65 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 7m tall with a trunk diameter at breast height of 100mm. The tree is in poor health and condition with a sparse canopy due to being crowded and suppressed by adjacent trees.

2.5.66 Tree 66 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 14m tall with a trunk diameter at breast height of 250mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.67 Tree 67 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 8m tall with a trunk diameter at breast height of 340mm. The tree is in poor health and condition with a sparse canopy due to being crowded and suppressed by adjacent trees. This tree has twin leading trunks from the base.

2.5.68 Tree 68 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 17m tall with a diameter at breast height of 450mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth. This tree is being suppressed by adjacent trees.

2.5.69 Tree 69 – *Eucalyptus piperita*

This tree is a large mature *Eucalyptus piperita* and is approximately 20m tall. The tree is in very poor health and condition with deadwood to greater than 50% of the canopy. There is evidence of extensive decay in the trunk.

2.5.70 Tree 70 – *Persea americana*

This tree is a mature *Persea americana* and is approximately 6m tall with a diameter at breast height of 110mm. The tree is in good health and condition with minimal amount of deadwood and epicormic growth.

2.5.71 Tree 71 – *Eucalyptus piperita*

This tree is a large mature *Eucalyptus piperita* and is approximately 21m tall. The tree is in very poor health and condition with deadwood to greater than 50% of the canopy. This tree is senescent and nearly dead and covered in ivy.

2.5.72 Tree 72 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 7m tall with a diameter at breast height of 160mm. The tree is in good health however has a sparse canopy due to this tree is being suppressed by adjacent trees.

2.5.73 Tree 73 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 12m tall with a trunk diameter at breast height of 430mm. The tree is in good health and condition with a sparse canopy due to being crowded and suppressed by adjacent trees. This tree has a wound caused by branch loss.

2.5.74 Tree 74 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 8m tall with a trunk diameter at breast height of 350mm. The tree is in fair health and condition.

2.5.75 Tree 75 – *Araucaria hetrophylla*

This tree is a mature *Araucaria hetrophylla* and is approximately 15m tall with diameter at breast height of 350mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.76 Tree 76 – *Syncarpia glomulifera*

This tree is a mature Syncarpia glomulifera and is approximately 12m tall with a trunk diameter at breast height of 230mm. The tree is in good health and condition.

2.5.77 Tree 77 – *Syncarpia glomulifera*

This tree is a mature Syncarpia glomulifera and is approximately 14m tall with a trunk diameter at breast height of 420mm. The tree is in good health however there is a bark inclusion in a major junction at 1.5m and 3m. This tree has a poor form and is unbalanced.

2.5.78 Tree 78 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 6m tall with a diameter at breast height of 120mm. This tree is considered an environmental pest.

2.5.79 Tree 79 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 6m tall with a diameter at breast height of 200mm. This tree has twin leading trunks from the base. The tree is in good health with suspect bark inclusion at the base.

2.5.80 Tree 80 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 5m tall with a diameter at breast height of 90mm. This tree is considered an environmental pest.

2.5.81 Tree 81 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 5m tall with a diameter at breast height of 100mm. This tree is considered an environmental pest.

2.5.82 Tree 82 – *Syncarpia glomulifera*

This tree is a mature *Syncarpia glomulifera* and is approximately 8m tall with a trunk diameter at breast height of 400mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.83 Tree 83 – 86 Unidentified

These trees have all been previously lopped and as a result have extremely poor habit and large percentages of the live canopy as epicormic growth.

2.5.84 Tree 87 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 4m tall with a diameter at breast height of 100mm. This tree is considered an environmental pest.

2.5.85 Tree 88 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 5m tall with a diameter at breast height of 300mm. This tree is considered an environmental pest.

2.5.86 Tree 89 – *Eucalyptus botryoides*

This tree is a mature Eucalyptus *botryoides* and is approximately 11m tall with a trunk diameter at breast height of 260mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree has mechanical damage at the base of the trunk.

2.5.87 Tree 90 – *Corymbia gummifera*

This tree is a mature *Corymbia gummifera* and is approximately 17m tall with a diameter at breast height of 500mm. The tree is in poor health with a sparse canopy due to this tree is being suppressed by adjacent trees. This tree has been significantly affected by gall.

2.5.88 Tree 91 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 10m tall with a diameter at breast height of 300mm. The tree is in good health and condition. This tree has twin leading trunks at a height of 1.8m and there is evidence of a bark inclusion at this junction. This may impact upon the stability of this junction and this tree should be monitored as well as removing any potential targets from within the canopy. There is further evidence of decay at a height of 4m.

2.5.89 Tree 92 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 9m tall with a diameter at breast height of 280mm. This tree is considered an environmental pest.

2.5.90 Tree 93 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 7m tall with a diameter at breast height of 220mm. This tree is considered an environmental pest.

2.5.91 Tree 94 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 7m tall with a diameter at breast height of 120mm. This tree is considered an environmental pest.

2.5.92 Tree 95 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 7m tall with a diameter at breast height of 220mm. The tree is in good health with a sparse canopy due to being suppressed by larger adjacent trees.

2.5.93 Tree 96 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 7m tall with a diameter at breast height of 120mm. The tree is in poor health with a sparse canopy due to being suppressed by larger adjacent trees.

2.5.94 Tree 97 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 5m tall with a diameter at breast height of 90mm. The tree is in fair condition with a sparse canopy due to being suppressed by larger adjacent trees.

2.5.95 Tree 98 – *Pittosporum undulatum*

This tree is a mature *Pittosporum undulatum* and is approximately 5m tall with a diameter at breast height of 75mm. The tree is in poor health with a sparse canopy due to being suppressed by larger adjacent trees. This species is a native species however not locally endemic. This species is regarded as an environmental pest in many areas.

2.5.96 Tree 99 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 7m tall with a diameter at breast height of 170mm. The tree is in fair condition with a sparse canopy due to being suppressed by larger adjacent trees. This tree has a bark inclusion in a branch junction.

2.5.97 Tree 100 – *Pittosporum undulatum*

This tree is a mature *Pittosporum undulatum* and is approximately 6m tall with a diameter at breast height of 120mm. The tree is in poor health with a sparse canopy due to being suppressed by larger adjacent trees. This species is a native species however not locally endemic. This species is regarded as an environmental pest in many areas.

2.5.98 Tree 101 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 6m tall with a diameter at breast height of 75mm. The tree is in poor condition with a sparse canopy due to being suppressed by larger adjacent trees.

2.5.99 Tree 102 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 9m tall with a diameter at breast height of 200mm. The tree is in good health. This tree has a bark inclusion in a branch junction.

2.5.100 Tree 103 – *Macadamia integrifolia*

This tree is a mature *Macadamia integrifolia* and is approximately 8m tall with a diameter at breast height of 250mm. The tree is in good health despite being crowded by adjacent trees. This tree has three leading trunks emanating from the base.

2.5.101 Tree 104 – *Macadamia integrifolia*

This tree is a mature *Macadamia integrifolia* and is approximately 6m tall with a diameter at breast height of 80mm. The tree is in fair health due to being crowded and suppressed by adjacent trees.

2.5.102 Tree 105 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 6m tall with a diameter at breast height of 150mm. The tree is in good health and condition.

2.5.103 Tree 106 – *Pittosporum undulatum*

This tree is a mature *Pittosporum undulatum* and is approximately 4m tall with a diameter at breast height of 7mm. The tree is in poor health with a sparse canopy due to being suppressed by larger adjacent trees. This species is a native species however not locally endemic. This species is regarded as an environmental pest in many areas.

2.5.104 Tree 107 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 4m tall with a diameter at breast height of 120mm. The tree is in good health and condition.

2.5.105 Tree 108 - Unidentified

This tree is approximately 8m tall with a diameter at breast height of 150mm. The tree is in good health and condition.

2.5.106 Tree 109 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 6m tall with a diameter at breast height of 180mm. This tree is considered an environmental pest.

2.5.107 Tree 110 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 4m tall with a diameter at breast height of 100mm. The tree is in good health and condition. This tree has twin leading trunks with poor form and a bark inclusion at the base.

2.5.108 Tree 111 - Unidentified

This tree is approximately 7m tall with a diameter at breast height of 200mm. The tree is in very poor condition with evidence of decay at 400mm.

2.5.109 Tree 112 – *Eucalyptus botryoides*

This tree is a mature Eucalyptus *botryoides* and is approximately 24m tall with a trunk diameter at breast height of 700mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.110 Tree 113– *Pittosporum undulatum*

This tree is a mature *Pittosporum undulatum* and is approximately 3m tall with a diameter at breast height of 100mm. The tree is in good health & condition. This species is a native species however not locally endemic. This species is regarded as an environmental pest in many areas.

2.5.111 Tree 114 – *Eucalyptus acmeniodes*

This tree is a mature Eucalyptus *acmeniodes* and is approximately 17m tall with a trunk diameter at breast height of 400mm. The tree is in very poor health and condition with a large amount of dieback and epicormic growth.

2.5.112 Tree 115 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 14m tall with a diameter at breast height of 300mm. The tree is in fair health and condition. This tree has two broken dead limbs.

2.5.113 Tree 116 – *Eucalyptus acmeniodes*

This tree is a mature Eucalyptus *acmeniodes* and is approximately 17m tall with a trunk diameter at breast height of 300mm. The tree is in very poor health and condition with a large amount of dieback and epicormic growth due to overshadowing and suppression by adjacent trees.

2.5.114 Tree 117 – *Eucalyptus botryoides*

This tree is a mature Eucalyptus *botryoides* and is approximately 17m tall with a trunk diameter at breast height of 350mm. The tree is essentially dead and infested with termites.

2.5.115 Tree 118 – *Eucalyptus paniculata*

This tree is a mature Eucalyptus *paniculata* and is approximately 23m tall with a trunk diameter at breast height of 900mm. The tree is in fair health and condition with a thinning canopy. This tree has an unusual form with twin trunks from the base. This tree has been infested with borers.

2.5.116 Tree 119 – *Eucalyptus botryoides*

This tree is a mature Eucalyptus *botryoides* and is approximately 17m tall with a trunk diameter at breast height of 350mm. The tree is in very poor condition and suspect stability due to a prominent lean to the north. The only live canopy is epicormic growth.

2.5.117 Tree 120 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 6m tall with a diameter at breast height of 120mm. The tree is in good health and condition.

2.5.118 Tree 121 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 9m tall with a diameter at breast height of 200mm. The tree is in fair health and condition with a thinning canopy.

2.5.119 Tree 122 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 7m tall with a diameter at breast height of 140mm. The tree is in fair health and condition and is being suppressed by adjacent trees.

2.5.120 Tree 123 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 11m tall with a diameter at breast height of 250mm. The tree is in fair health and condition with a thinning canopy. There is a cavity in the trunk at a height of 4m with evidence of decay. This tree has a prominent lean to the north.

2.5.121 Tree 124 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 9m tall with a diameter at breast height of 200mm. The tree is in good health and condition with prominent lean to the north.

2.5.122 Tree 125 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 6m tall with a diameter at breast height of 200mm. The tree is in good health and condition and is being suppressed by adjacent trees however there is a bark inclusion in the main junction.

2.5.123 Tree 126 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 6m tall with a diameter at breast height of 250mm. This tree is considered an environmental pest.

2.5.124 Tree 127 – *Eucalyptus acmeniodes*

This tree is a mature Eucalyptus *acmeniodes* and is approximately 8m tall with a trunk diameter at breast height of 300mm. The tree is in good health and condition.

2.5.125 Tree 128 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 4.5m tall with a diameter at breast height of 100mm. The tree is in good health and condition.

2.5.126 Tree 129 – *Lagerstroemia indica*

This is a cluster of suppressed *Lagerstroemia indica* that are in extremely poor health with poor form and habit.

2.5.127 Tree 130 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 7m tall with a diameter at breast height of 400mm. The tree is in good health and condition.

2.5.128 Tree 131 – *Araucaria hetrophylla*

This tree is a mature *Araucaria hetrophylla* and is approximately 20m tall with diameter at breast height of 550mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth.

2.5.129 Tree 132 – *Camphora cinnamomum*

This tree is a mature *Camphora cinnamomum* and is approximately 5m tall with a diameter at breast height of 100mm. This tree is considered an environmental pest.

2.5.130 Tree 133 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 4m tall with a diameter at breast height of 75mm. The tree is in good health and condition.

2.5.131 Tree 134 – *Ficus macrophylla*

This tree is a very large mature *Ficus macrophylla* and is approximately 16m tall. With multiple trunks (five) from the base, this tree has an aggregate diameter at breast height of approximately 1400mm.The tree is in good health and condition with a minimal amount of deadwood and epicormic growth. This tree has a prominent lean to the northwest.

2.5.132 Tree 135 – *Eucalyptus paniculata*

This tree is a mature Eucalyptus *paniculata* and is approximately 12m tall with a trunk diameter at breast height of 420mm. The tree is in fair health and condition with a thinning canopy. This tree has ivy growing over it.

2.5.133 Tree 136 – *Ficus benjamina var. hillii*

This tree is a very large mature *Ficus benjamina var Hillii* and is approximately 4m tall. With multiple trunks (eight) from the base, this tree has an aggregate diameter at breast height of approximately 500mm. The tree is in poor health and condition with a large amount of deadwood and epicormic growth.

2.5.134 Tree 137 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 8m tall with a diameter at breast height of 300mm. The tree is in good health and condition with some mechanical damage to the base of the trunk.

2.5.135 Tree 138 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 7m tall with a diameter at breast height of 200mm. The tree is in fair health and condition with a thinning canopy and is being suppressed by adjacent trees.

2.5.136 Tree 139 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 7m tall with a diameter at breast height of 200mm. The tree is in fair health and condition with a thinning canopy and is being suppressed by adjacent trees.

2.5.137 Tree 140 – *Glochidion ferdinandii*

This tree is a mature Glochidion ferdinandii and is approximately 7m tall with a diameter at breast height of 280mm. The tree is in fair health and condition with a thinning canopy and is being suppressed by adjacent trees.

2.5.138 Tree 141 – *Angophora costata*

This tree is a mature *Angophora costata* and is approximately 12m tall. This tree has multiple trunks with an aggregate diameter at breast height of 1250mm. The tree is in good health and condition. The base of this tree is not visible and it is possible that there is a bark inclusion at this point.

2.5.139 Tree 142 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 8m tall with a diameter at breast height of 500mm. The tree is in poor health and condition with a sparse canopy and is being suppressed by adjacent trees.

2.5.140 Tree 143 – *Eucalyptus botryoides*

This tree is a mature Eucalyptus *botryoides* and is approximately 10m tall with multiple trunks with an aggregate diameter at breast height of 1400mm. The tree has cavity in the trunk with a long lever arch at a point of high risk. There is evidence of decay and this tree is infested with borers.

2.5.141 Tree 144 Unidentified

This tree has been previously lopped and as a result has an extremely poor habit and large percentage of the live canopy as epicormic growth.

2.5.142 Tree 145 – *Eucalyptus piperita*

This tree is a large mature *Eucalyptus piperita* and is approximately 10m tall with a diameter at breast height of 450mm. The tree is in very poor health and condition with deadwood to greater than 20% of the canopy. This tree has a suspect root structure on the southern side and a cavity on the southern side of the trunk which is the tension side of this tree.

2.5.143 Tree 146 – *Glochidion ferdinandii*

This tree is a mature *Glochidion ferdinandii* and is approximately 8m tall with a diameter at breast height of 520mm. The tree is in fair health and condition with twin trunks from the base.

2.5.144 Tree 147 – *Araucaria columnaris*

This tree is a mature *Araucaria columnaris* and is approximately 17m tall with diameter at breast height of 300mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree has a very prominent lean to the southwest.

2.5.145 Tree 148 Unidentified

This tree has an extremely poor habit and large percentage of the live canopy as epicormic growth.

2.5.146 Tree 149 – *Livistona australis*

This tree is a mature *Livistona australis* and is approximately 6m tall with diameter at breast height of 250mm. The tree is in good health and condition.

2.5.147 Tree 150 – *Araucaria columnaris*

This tree is a mature *Araucaria columnaris* and is approximately 17m tall with diameter at breast height of 250mm. The tree is in good health and condition with minimal dieback and minimal epicormic growth. This tree has a very prominent lean to the west.

2.5.144 Tree 147 – *Livistona australis*

This tree is a mature *Livistona australis* and is approximately 17m tall with diameter at breast height of 250mm. The tree is in good health and condition.

3.0 Conclusions / Summary of Key Issues

The following issues or conditions of the proposed development were identified as impacting upon the health or condition of the existing trees:

3.1 Mechanical Damage/Wounds/Cavities

A number of trees identified have large wounds that have apparently been caused by an impact with passing vehicles or mowers. When a tree is wounded in this fashion it undergoes compartmentalisation in order to minimise the spread of decay within the tree and to isolate the damage to within the wound. This process, known as Compartmentalisation of Decay within Trees (CODIT) consists of a series of physical and chemical changes within the tree that contains the decay within 4 “walls”. Wall one is formed initially at the time of wounding by the physical plugging of the xylem tracheids and vessels above and below the wound. This is the weakest of the four walls. Wall two is formed by the late summer growth rings that forms a barrier to the spread of decay internally. Wall three is formed by the incomplete walls created by sheets of ray cells and phenolic compounds created. This inhibits the lateral spread of decay. This is the strongest wall formed at the time of wounding. Wall four is the strongest of all walls and is formed by the vascular cambium and serves to separate new tissue from that existing at the time of the wound.

In the case of these impact wounds, it is likely that these areas have been struck again subsequently to the initial wounding. This could serve to compromise the CODIT wall 4 compartmentalisation and allow the spread of the decay.

Each of these branches that have been wounded in this way has significant and noticeable swelling around the area that has been wounded. This wounding spreads further than the usual “door jambs” of reaction wood that are to be expected on either side of the wound that serve to strengthen the area around the wound. This swelling is indicative of extended decay within the tree (Mattheck & Breloer, 1994, Page 101, 181).

Once the decay or hollow exceeds 70% of the tree diameter, the tree is at an increased risk of failure and would be an unsatisfactory risk. (Mattheck & Breloer, 1994, page 185)

3.2 Damage to Cambium

A number of the trees inspected have had significant wounds with decay evident in these areas. This damage and subsequent decay reduces the amount of vascular tissue that is available to transport water, nutrients and ATP from roots to leaves and the transport of photosynthates to all parts of the tree. This reduction in vascular transport significantly reduces the health and condition of these trees and in a number of cases is contributing to the decline of these trees. It is noted that the majority of this damage is either at the base on in the first 1.5m to 2m of the trunk which is consistent with damage caused by vehicles or mowing machinery.

Once the decay or hollow exceeds 70% of the tree diameter, the tree is at an increased risk of failure and would be an unsatisfactory risk. (Mattheck & Breloer, 1994, page 185)

3.3 Suppression

It is noted that a large number of trees within this report are being suppressed by adjacent, older and dominant trees. This is a natural process that has resulted in the poor condition of a number of trees. When a tree is suppressed it is starved of essential elements required for the development of the tree, specifically nutrients, water and light. It should be a consideration of the future development whether these suppressed trees should be removed in order to benefit more suitable trees.

3.4 Bark Inclusions

At the point at which large branches meet the trunk of the tree, the vascular cambium between these two limbs meets and in a healthy junction the join in the cambium will push outwards allowing the normal and healthy development of the vascular material below. In a bark inclusion this junction will force the vascular cambium inwards which will inhibit the development and flow within the vascular material. This inwards pressure can also divide the sapwood and reduce the structural integrity of the junction, therefore weakening the joint and increasing the likelihood of a failure at this point.

3.5 Borer infestation

A number of trees have been identified in 2.0 as infested with Borers. There is an abundance of fresh frass indicating that this activity is current. Borers are not usually a cause of declining health but a symptom of poor health, indicating the inability of these trees to produce sufficient kino to control this infestation. The trees that are affected are often being suppressed by overcrowding adjacent trees.

Figure 1 - Borer infestation with fresh frass

4.0 Potential Impacts of Proposed Development on Existing Trees

Based on our briefing of the proposed development of this site, we have identified the following potential impacts upon the existing trees:

4.1 Tree Protection Areas

The tree protection areas required for these subject trees have been taken as a circular area with a radius 12 x the diameter at breast height of the tree. This requirement is in line with Australia Standard AS 4970-2009 *Protection of Trees on Development Sites.* These tree protection zones have been identified on Birds Landscape Design & Management drawing L02.

4.2 Soil Compaction

At the time of preparing this report the extent or design of the proposed redevelopment has not been defined however it is anticipated that as on any development site there will be increased pedestrian, vehicular and plant movements and traffic. This increase in traffic may potential cause soil compaction within the Tree Protection Zones (TPZ) of the existing trees.

Compacted soils have smaller voids between soil peds or particles. This has the effect of reducing the amount of air infiltration and therefore gaseous exchange for the roots of the trees. Additionally, compacted soils, particularly in clay soil have lower water infiltration and therefore reducing the amount of water available to the roots of the trees. (Handreck & Black, 1986, pg 53).

Reduction in gaseous exchange with the roots within the root zone will limit the process of respiration within the roots. Respiration is a crucial process that produces adenosine triphoshate (ATP) which provides usable energy to all cells of the tree and in particular assists in photosynthesis. Photosynthates are then transported back to roots as well as the rest of the plant. These photosynthates including glucose are essential for the root respiration process. Reduction of gaseous exchange and therefore respiration reduces the energy available to the tree and will reduce the vigor and health of the tree.

The reduction of water infiltration within the soil caused by the compacted soils will reduce the amount of water available to the roots. Water is a crucial requirement for all processes of the tree. Any reduction in water infiltration is exacerbated in this situation as the proposed development poses a physical barrier to surface drainage or ground water percolating laterally through the soil.

4.3 Excavation / Root Removal / Root Damage

Due to the nature of the proposed development and the proximity of the subject trees to the potential plot sites, access road and drainage works it is expected that a number of the subject trees will have root zones that are damaged or removed by the excavation required for the proposed development. This removal of root volume will reduce the amount of water and nutrients that the tree will be able to uptake as are necessary for the metabolic processes required for the ongoing health and viability of the tree. In addition the removal of roots reduces the gaseous exchange within the root zone that is necessary for respiration to take place to provide energy for photosynthesis and therefore the ongoing condition of the tree.

The potential removal of roots during the excavation process will also compromise the stability of the trees as it reduces the amount of anchorage within the soil provided by the root material.

4.4 Interruption to Surface and Ground Water

Any proposed roadworks or drainage works in the development potentially will intercept and disrupt any surface drainage or groundwater that would be currently traveling down existing slopes to the tree particularly on the eastern side of the site. This will reduce or eliminate the availability of this water to these trees.

4.5 Surface Sealing or Covering

It is anticipated the any proposed redevelopment will require addition pavements for roadways and pedestrian paths. Sealing or covering the surface with the tree protection zones will limit the amount of gaseous exchange available for the roots which will inhibit the respiration process which will in turn reduce the energy available for the tree and the resultant photosynthates that the trees require as energy for metabolic processes such as expansion growth, extension growth, reproduction and disease resistance. Coupled

with the physical sealing or barrier created by most paving methods, these conventional paving methods will also rely upon a compacted sub-base which will further restrict gaseous exchange as well as water infiltration as explained previously in 4.2.

5.0 Recommendations

In order to best address the issues outlined in 4.0 and reduce the impacts to the existing trees identified in 3.0 we would propose the following:

5.1 Tree Retention, Removal and Replacement

Under the current approved development proposal, we recommend the following for the identified trees.

Tree no	Species	Summary comment	Recommendation
1	Angophora costata	Overhanging Mona vale road. 75% of root zone covered in compacted road base or road surface	Retain & Protect
2	Camphora cinnamomum	Camphor laurel with poor form - recommend removal	Remove
3	Eucalyptus piperita	Snapped trunk. No live canopy other than epicormic. Termites and borers. Evidence of decay. Prominent lean. Recommend for removal.	Remove
4	Camphora cinnamomum	Camphor laurel poor habit recommend for removal	Remove
5	Corymbia gummifera	Tree is suppressed and overshadowed by adjacent trees. Poor habit and prominent lean. Recommend removal replant more suitable	Remove

6	Glochidon ferdinandii	Good health and Condition	Retain & Protect
7	Eucalyptus piperita	Termites. Extensive decay evident including decay fungal fruiting body at 6m. Minimal live canopy excluding epicormic growth. Adjacent to Mona Vale Road. Recommend removal.	Remove
8	Glochidon ferdinandii	Good health and Condition	Retain & Protect
9	Camphora cinnamomum	Camphor laurel poor habit recommend for removal	Remove
10	Corymbia gummifera	Good health and Condition	Retain & Protect
11	Glochidon ferdinandii	Good health and Condition	Retain & Protect
12	Eucalyptus piperita	Evident decay in main junction with old broken branch. Prominent lean, large amount of epicormic growth. Suppressed and overshadowed therefore poor habit.	Remove
13	Eucalyptus piperita	Evident decay in southern trunk. Bark inclusion in main junction. Termite infestation. Recommend removal.	Remove
14	Syncarpia glomulifera	Approx 2m from Mona Vale Rd sealed surface to 40%	Retain & Protect

15	Glochidon ferdinandii	Small suppressed tree immediately adjacent Syncarpia. Recommend removal to prevent interference and competition with Syncarpia.	Remove
16	Glochidon ferdinandii	Large Glochidon suppressed by large adjacent trees. Canopy growing through that of Syncarpia and Ficus. Recommend removal to prevent interference and competition with superior trees.	Remove
17	Ficus macrophylla	Good health and Condition	Retain & Protect
18	Corymbia gummifera	Large wound with decay at bend of trunk. Large torsion force at this point.	Remove
19	Glochidon ferdinandii	Suppressed poor form habit Remove	Remove
20	Melaleuca quinquenervia	Suppressed and covered in dead vines	Remove
21	Pinus spp.	Very elevated form due to overshadowing crowding adjacent trees	Remove
22	Castenospermum australe	Suppressed poor form bent around Pinus. Canopy interfering with Pinus. Recommend removal	Remove

23	Castenospermum australe	Poor form possible pollarded. Piece of timber included in trunk. Ribs reaction wood in trunks and horizontal branches	Remove
24	Glochidon ferdinandii	Any broken branches with decay evident including large amount of decay in main trunk visibly greater than 70%. Recommend removal	Remove
25	Glochidon ferdinandii	Good health and Condition	Retain & Protect
26	Ligustrum spp. Large leaf privet	Weed with major structural damage to trunk. Remove.	Remove
27	Eucalyptus saligna	Good health and Condition	Retain & Protect
28	Castenospermum australe	Suppressed. Poor form. Bark inclusion at base of twin trunk. Recommend removal.	Remove
29	Eucalyptus piperita	Good health and Condition	Retain & Protect
30	Glochidon ferdinandii	Suppressed	Retain & Protect
31	Corymbia gummifera	Interfering with angophora	Retain & Protect

32	Angophora costata	Interfering with adjacent trees	Retain & Protect
33	Syncarpia glomulifera	Crowded and interfering with adjacent trees	Retain & Protect
34	Syncarpia glomulifera	Good health and Condition	Retain & Protect
35	Syncarpia glomulifera	Good health and Condition	Monitor
36	Syncarpia glomulifera	Good health and Condition	Retain & Protect
37	Glochidon ferdinandii	Suppressed	Remove
38	Eucalyptus piperita	Very prominent lean and almost dead tree. Recommend removal	Remove
39	Eucalyptus piperita	Entirely epicormic and crowded suppressed. Recommend removal.	Remove
40	Eucalyptus paniculata	Entirely epicormic. Recommend removal.	Remove
41	Eucalyptus piperita	Epicormic remove	Remove

42	Eucalyptus paniculata	Good health and Condition	Retain & Protect
43	Syncarpia glomulifera	Good health and Condition	Retain & Protect
44	Camphora cinnamomum	Immature camphor laurel. Remove	Remove
45	Liquidambar styraciflua	Suppressed	Remove
46	Eucalyptus paniculata	Crowded with marked bend in trunk due to crowding and suppression	Retain & Protect
47	Camphora cinnamomum	Crowded suppressed recommend removal	Remove
48	Syncarpia glomulifera	Good health and Condition	Retain & Protect
49	Syncarpia glomulifera	Suppressed tree overshadowed. Recommend removal to benefit adjacent better specimens	Remove
50	Casuarina spp.	Suppressed with decay in base. Recommend removal.	Remove
51	Corymbia gummifera	Crowded	Retain & Protect

52	Eucalyptus piperita	Crowded	Remove
53	Glochidon ferdinandii	Suppressed. Recommend removal to benefit adjacent specimens	Remove
54	Syncarpia glomulifera	Suppressed	Retain & Protect
55	Angophora costata	Good health and Condition	Retain & Protect
56	Syncarpia glomulifera	Suppressed. Crowded. Recommend for removal	Remove
57	Eucalyptus piperita	Unusual form due to twin leaders at 9m and suppression.	Retain & Protect
58	Syncarpia glomulifera	Good health and Condition	Retain & Protect
59	Acmena smithii	Suppressed. Recommend removal for superior specimens	Remove
60	Acmena smithii	Good health and Condition	Retain & Protect
61	Ligustrum (large leafed privet)	Noxious weed	Remove

62	Angophora costata	Good health and Condition	Retain & Protect
63	Jacaranda mimosifolia	Suppressed	Remove
64	Angophora costata	Good health and Condition	Retain & Protect
65	Syncarpia glomulifera	Small suppressed. Recommend removal to support better adjacent species	Remove
66	Syncarpia glomulifera	Good health and Condition	Retain & Protect
67	Syncarpia glomulifera	Suppressed	Retain & Protect
68	Corymbia gummifera	Good health and Condition	Retain & Protect
69	Eucalyptus piperita	Senescent tree large decay and deadwood. Recommend removal	Remove
70	Avocado	Good health and Condition	Retain & Protect
71	Eucalyptus piperita	Senescent tree almost dead covered in ivy. Recommend removal	Remove

72	Corymbia gummifera	Suppressed remove	Remove
73	Syncarpia glomulifera	Crowded and suppressed	Retain & Protect
74	Syncarpia glomulifera	Good health and Condition	Retain & Protect
75	Araucaria heterophylla	Good health and Condition	Retain & Protect
76	Syncarpia glomulifera	Suppressed	Retain & Protect
77	Syncarpia glomulifera	Poor form with two bark inclusions and unbalanced. Recommend removal	Remove
78	Camphora cinnamomum	Environmental pest	Remove
79	Glochidon ferdinandii	Suppressed	Remove
80	Camphora cinnamomum	Environmental pest	Remove
81	Camphora cinnamomum	Environmental pest	Remove

82	Syncarpia glomulifera	Good health and Condition	Retain & Protect
83	Unidentified	Poor habit and form	Remove
84	Unidentified	Poor habit. Previously lopped. All epicormic	Remove
85	Unidentified	Decayed. Lopped All epicormic Decay remove	Remove
86	Unidentified	Previously lopped. Poor habit. Remove.	Remove
87	Camphora cinnamomum	Recommend for removal	Remove
88	Camphora cinnamomum	Poor health habit. Decay. Dead trunk. Remove	Remove
89	Eucalyptus botriodes	Good health and Condition	Retain & Protect
90	Corymbia gummifera	Remove	Remove
91	Angophora costata	Good health and Condition	Retain & Protect

92	Camphora cinnamomum	Environmental pest	Remove
93	Camphora cinnamomum	Environmental pest	Remove
94	Camphora cinnamomum	Environmental pest	Remove
95	Glochidon ferdinandii	Good health and Condition	Retain & Protect
96	Glochidon ferdinandii	Suppressed. Recommend removal	Remove
97	Glochidon ferdinandii	Recommend removal to benefit superior adjacent trees	Remove
98	Pittosporum undulatum	Suppressed. Remove	Remove
99	Glochidon ferdinandii	Good health and Condition	Retain & Protect
100	Pittosporum undulatum	Poor condition and environmental pest	Remove
101	Glochidon ferdinandii	Suppressed. Recommend removal for better adjacent	Remove

102	Glochidon ferdinandii	Good health and Condition	Retain & Protect
103	macadamia	Good health and Condition	Retain & Protect
104	macadamia	Suppressed. Recommend removal to benefit adjacent better specimen	Remove
105	Glochidon ferdinandii	Good health and Condition	Retain & Protect
106	Pittosporum undulatum	Recommend removal	Remove
107	Glochidon ferdinandii	Good health and Condition	Retain & Protect
108	Unidentified	Poor habit, suppressed	Retain & Protect
109	Camphora cinnamomum	Environmental pest	Remove
110	Glochidon ferdinandii	Remove due to poor habit and bark inclusion	Remove
111	Unidentified	Recommend removal due to decay and poor condition. Proximity to tree.	Remove

112	Eucalyptus botryoides	Good health and Condition	Retain & Protect
113	Pittosporum undulatum	Environmental pest	Remove
114	Eucalyptus acmeniodes	Poor condition recommend removal	Remove
115	Angophora costata	Two broken dead limbs	Retain & Protect
116	Eucalyptus acmeniodes	Recommend removal due to poor condition. Lean	Remove
117	Eucalyptus botriodes	Dead other than epicormic lean. Remove	Remove
118	Eucalyptus paniculata	Good health and Condition	Retain & Protect
119	Eucalyptus botriodes	Poor condition. Lean. Only live epicormic growth. Recommend removal	Remove
120	Glochidon ferdinandii	Good health and Condition	Retain & Protect
121	Angophora costata	Good health and Condition	Retain & Protect

122	Glochidon ferdinandii	Recommend removal to benefit adj trees	Remove
123	Angophora costata	Recommend removal to benefit adj trees	Remove
124	Angophora costata	Good health and Condition	Retain & Protect
125	Glochidon ferdinandii	Good health and Condition	Retain & Protect
126	Camphora cinnamomum	Removal	Remove
127	Eucalyptus acmeniodes	Good health and Condition	Retain & Protect
128	Glochidon ferdinandii	Good health and Condition	Retain & Protect
129	Lagerstroemia indica	Cluster of lagerstroemia suppressed. Remove.	Remove
130	Glochidon ferdinandii	Good health and Condition	Retain & Protect
131	Araucaria heterophylla	Good health and Condition	Retain & Protect

132	Camphora cinnamomum	Environmental pest	Remove
133	Glochidon ferdinandii	Suppressed	Remove
134	Ficus macrophylla	Good health and Condition	Retain & Protect
135	Eucalyptus paniculata	Good health and Condition	Retain & Protect
136	Ficus Benjamina var Hillii	Poor condition weeping fig. Recommend removal	Remove
137	Glochidon ferdinandii	Good health and Condition	Retain & Protect
138	Glochidon ferdinandii	Suppressed. Recommend removal to benefit adjacent angophora	Remove
139	Glochidon ferdinandii	Suppressed. Recommend removal to benefit adjacent angophora	Remove
140	Glochidon ferdinandii	Suppressed. Recommend removal to benefit adjacent angophora	Remove
141	Angophora costata	Good health and Condition	Retain & Protect

142	Glochidon ferdinandii	Remove to benefit adj angophora	Remove
143	Eucalyptus botryoides	Poor habit. Cavity decay. Long lever arch. Recommend removal	Remove
144	Unidentified	Poor form due to pruning. Remove	Remove
145	Eucalyptus piperita	Recommend removal due to poor health and suspect root structure on tension side of tree	Remove
146	Glochidon ferdinandii	Good health and Condition	Retain & Protect
147	Araucaria columnaris	Prominent lean	Retain & Protect
148	Unidentified	Poor condition and habit. Recommend removal	Remove
149	Livistona australis	Good health and Condition	Retain & Protect
150	Araucaria columnaris	Good health and Condition	Retain & Protect
151	Livistona australis	Good health and Condition	Retain & Protect

All trees that are removed are to be replaced by new advanced plantings in a location on site determined by the landscape designer. Replacement plantings are to be of the species as recommended by Pittwater Council

5.2 Design Development Recommendations

No excavation is to be carried out within the tree protection zones of retained trees (see appendix A and drawing L03). Garden or niche areas would be suitable for development within these tree protection areas on the condition that the levels are not significantly increased (not greater than 100-200mm) and that the surfaces within these areas are not sealed.

6.0 Pre-Construction Tree Protection Measures

6.1 General

All tree protection works shall be carried out before excavation, grading and site works commence.

Storage of materials, mixing of materials, vehicle parking, disposal of liquids, machinery repairs and refueling, site office and sheds, and the lighting of fires, stockpiling of soil, rubble or any debris shall not be carried out within the tree protection zone of existing trees. No backfilling shall occur within the tree protection zone of existing trees. Trees shall not be removed or lopped unless specific instruction is given in writing by the Superintendent.

6.2 Identification

All trees to be removed shall be clearly indicated using surveyors marking paint. Tree to be retained are to be marked with tape.

6.3 Protective Fence

Fencing is to be erected around existing trees to be retained. In addition to this protective fencing within the site. This fencing is to be erected prior to any materials being brought on site or before any site, civil works or construction works commence. The fence shall enclose a sufficient area so as to prevent damage to the Tree Protection Zone (TPZ) and trunk where the Tree Protection Zone equals the tree trunk diameter at chest height x 12 and expressed as a radius from the trunk. Refer to Appendix A for TPZ dimensions. Fence to comprise 1800mm high chain wire mesh fixed to 50mm dia. Galvanised steel posts. Panels should be securely fixed top and bottom to avoid separation. No storage of building materials, tools, paint, fuel or contaminants and the like shall occur within the fenced area. This protective fence is to be installed for the duration of any construction or civil works but may be removed for the normal operations of the cemetery. At the completion of the civil and construction works, mark out the tree protection zones with pegs in order to identify these zones throughout the normal operations of the cemetery.

6.4 Mulching

Install mulch to the extent of all tree protection fencing. Use a leaf mulch conforming to AS 4454 which is free of deleterious and extraneous matter such as soil, weeds, sticks

and stones and consisting of a minimum of 90% recycled content compliant with AS 4454 (1999) and AS 4419 (1998). All trees marked as to be removed on the proposed development are to be chipped and reused for this purpose. Place mulch evenly and to a depth of 100mm.

7.0 Site Management Issues

7.1 Soil Compaction

Plant and pedestrian traffic during the construction period will cause significant soil compaction. This will be exacerbated by increased water expected on these soils as result of adjacent construction and weather. Compaction of the soil within the Tree Protection Zone will reduce the voids between soil peds or particles therefore will reduce the gaseous exchange capacity of the root system which will slow critical metabolic processes such as respiration which produces Adenosine Triphosphate (ATP) which provides energy for the photosynthesis, which in turn provides photosynthates such as glucose. These photosynthates provide the carbohydrates required for tree extension growth, girth expansion, reproduction and pest and disease resistance.

7.2 Site Access

Sufficient access is required to enable efficient construction. It is essential to delineate access zones or corridors which will provide suitable access without damaging the existing trees to be retained or causing compaction to the root zone.

7.3 Excavation within Tree Protection Area

No excavation is to be carried out within the tree protection zones of retained trees without the permission and supervision of the site arborist (AQF5)

7.4 Possible Contamination / Storage of Materials

The construction site will require the use of many chemicals and materials that are possible contaminants which if not managed will pose a risk to the existing trees. These possible contaminants include fuels, herbicides, solvents and the like. A site specific Environmental Management Plan shall be provided and this specific risk identified and addressed.

8.0 Tree Protection Measures During Construction

8.1 Maintenance of Pre-Construction Tree Protection Measures

The Pre-Construction Tree Protection Measures identified in 6.0 above are to be maintained in good and serviceable condition throughout the development period.

8.1 Possible Contaminants

Do not store or otherwise place bulk materials and harmful materials under or near trees. Do not place spoil from excavations within the tree protection zones. Prevent wind-blown materials such as cement from harming trees. All possible contaminants are to be stored in a designated and appropriate area with secure chemical spill measures such as a

bund in place. It is anticipated that as construction progresses, this storage area may be within the proposed garage.

8.2 Physical Damage

Prevent damage to tree. Do not attach stays, guys and the like to trees. No personnel, plant, machinery or materials are to be allowed with the tree protection fencing.

8.3 Excavation

Do not add or remove topsoil within the tree protection fenced areas. No excavation is to be carried out within the tree protection zones of retained trees without the permission and supervision of the site arborist (AQF5)

8.4 Compaction

No filling or compaction shall occur over tree roots zones within tree protection areas. Where development occurs close to or the Tree Protection Zone of trees to be retained it shall be necessary to install protection to avoid compaction of the ground surface.

8.5 Trenching:

No Trenching should be necessary within the Tree Protection Zones or within tree protection fencing.
Should any further trenching be required within the tree protection zones identified, this work is to be carried out by hand and under the supervision of a qualified Arborist.

8.6 Site Sheds / Amenities/ Storage

Site sheds, site amenities, ablutions and site storage shall be in the area as designated. This area is to be a temporary zone for this purpose. Chemicals and potential contaminants are to be stored appropriately and this storage area is to be enclosed by a chemical spill bund to prevent the potential run off of contaminants in the event of a spillage or accident.

9.0 Tree Protection Measures after Construction

9.1 Garden / Mulching

The proposed landscape plan should incorporate the existing trees within garden or mulched areas. All existing trees should be mulched to an even depth of 75mm in accordance with item 2.4.

10.0 REFERENCES

Handreck, K. & Black, N. 1986, Growing Media for Ornamental Plants & Turf, New South Wales University Press, Kensington,NSW Australia

Mattheck, C. Breloer, K. 1993, The Body Language of Trees: A Handbook for Failure Analysis,
The Stationery Office

Mattheck, C 2004. The Face of Failure,
Forschungszentrum Karlsruhe GmbH

(Mattheck & Breloer, 1994, page 185)

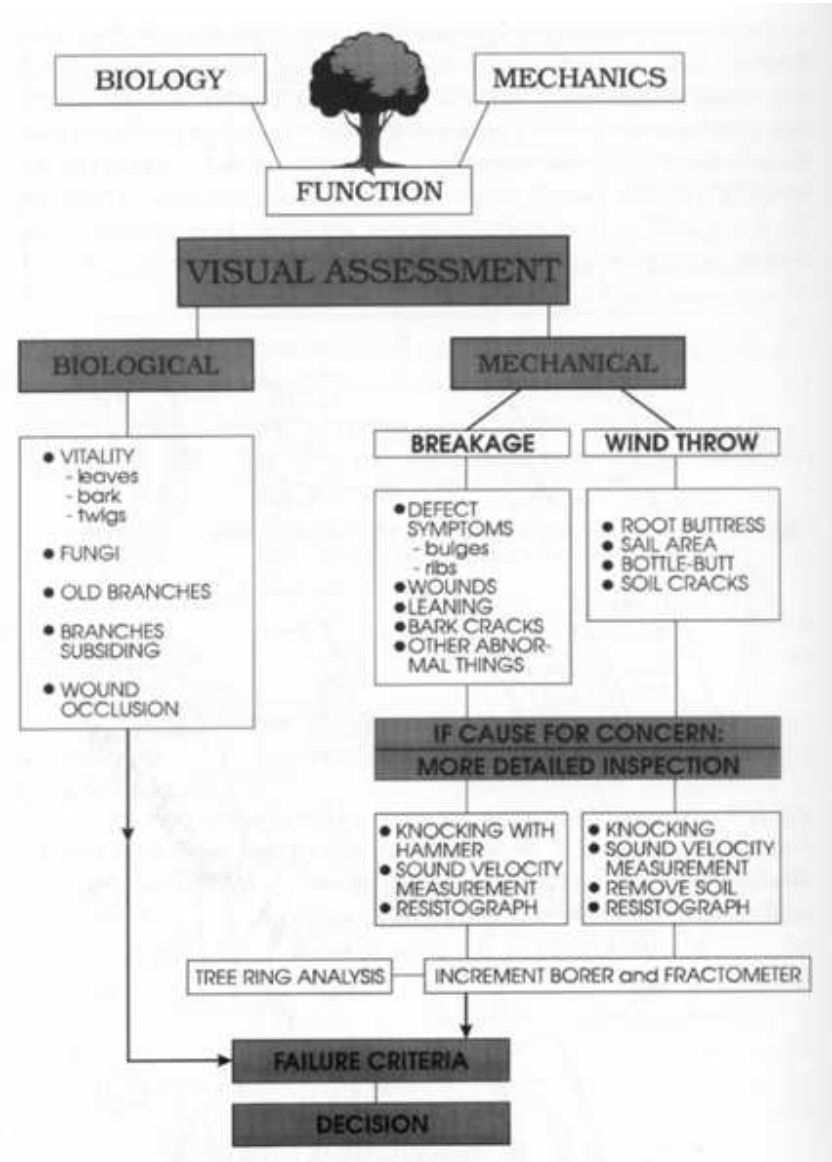
Appendices

Appendix A

Tree Inspection Data

Appendix B

Visual Tree Assessment (VTA) Process from Mattheck & Breloer (1994)



Tree no	Species	Height (m)	Spread(m)	DBH (mm)	Maturity	Trunk (single, twin, multiple @)	Trunk lean	Form/Crown shape	Branching Habit	Crown Distribution	Distortion Due	Stability	Branching Structure	Pruning History	Defects	Defects	Damage	Damage	Overall Health & Vigour	Canopy Density	Foliage	Deadwood	Pest Infestation	Disease	Epicormic Growth	Life expectancy	Env. & Landcape significance	Retention Value	Notes/Comments	Tree Protection Zone (TPZ) radius mm	Recommendation
1	Angophora costata	13	12	450	Mature	Single	Prominent S (over road)	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	<5%	No evidence	No evidence	5%	15-40y	High	High	Overhanging mona vale road. 75% of root zone covered in compacted road base or road surface	5400	Retain & Protect
2	Camphora cinnamomum	7	7	700	Mature	Multiple (7) @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil	Nil	Nil		Good	Normal	Normal	<5%	No evidence	No evidence	5%	>40 y	Low	Environmental pest species	Camphorlaurel with poor form - recommend removal	8400	Remove
3	Eucalyptus piperita	6	4	450	Mature	Single	Very Prominent N	Trunk snapped. No natural form	Epicormic 100% live crown	N/A		Unstable	Suspect (see notes)	No evidence	Evidence of Decay	Trunk snapped	Fracture	Storm Damage	Poor	None	Normal	10%	Termites @ borers	No evidence	100%	<5y	Hazardous	Very low	Snapped trunk. No live canopy other than epicormic. Termites and borers. Evidence of decay. Prominent lean. Recommend for removal.	5400	Remove
4	Camphora cinnamomum	6	4	550	Mature	Multiple (4) @base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Bark inclusion at base in main junction		Nil		Good	Normal	Normal	10%	No evidence	No evidence	<5%	>40 y	Low	Environmental pest species	Camphorlaurel poor habit recommend for removal	6600	Remove
5	Corymbia gummifera	9	4	180	Mature	Single	Prominent S	Elevated	Normal	Balanced	Suppressed	Stable	Stable	No evidence	Nil		Nil		Poor	Sparse	Normal	15%	borer	No evidence	20%	5-15y	Low	Moderate	Tree is suppressed and overshadowed by adjacent trees. Poor habit and prominent lean. Recommend removal replant more suitable	2160	Remove
6	Glochidon ferdinandii	7	4	100	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	<5%	No evidence	No evidence	Nil	15-40y	High	High		1200	Retain & Protect
7	Eucalyptus piperita	12	4	420	Mature	Single	nil	Irregular	Normal	Balanced		Suspect due to decay	Poor	No evidence	Evidence of Decay		Leader trunk snapped		Poor	Sparse	Normal	5%	Termites	No evidence	90%	<5y	Hazardous	Very low	evident including decay fungal fruiting body at 6m. Minimal live canopy excluding epicormic growth. Adjacent to Mona Vale	5040	Remove
8	Glochidon ferdinandii	6	6	150	Mature	Single	nil	Normal	Normal	East	Overshadowing	Stable	Stable	No evidence	Nil		mechanical damage @ 1m		Good	Normal	Normal	<5%	No evidence	No evidence	<5%	15-40y	High	High		1800	Retain & Protect
9	Camphora cinnamomum	6	4	550	Mature	Multiple (4) @base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Bark inclusion		Nil		Good	Normal	Normal	10%	No evidence	No evidence	<5%	>40 y	Low	Environmental pest species	Camphorlaurel poor habit recommend for removal	6600	Remove
10	Corymbia gummifera	13	8	840	Mature	Twin @base	nil	Elevated	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Thinning	Normal	20%	borer	No evidence	5%	5-15y	Moderate	Moderate		10080	Retain & Protect
11	Glochidon ferdinandii	10	6	220	Mature	Single	nil	Normal	Normal	Balanced	Overshadowing	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	<5%	No evidence	No evidence	<5%	15-40y	High	High		2640	Retain & Protect
12	Eucalyptus piperita	12	14	850	Mature	Single	Prominent N	Irregular	Normal	North	Overshadowing	Suspect due to decay evident in main junction	Stable	No evidence	Evidence of Decay in main junction where old branch has broken		Nil		Fair	Thinning	Normal	30%	borer	No evidence	40%	5-15y	Moderate	Moderate	Evident decay in main junction with old broken branch. Prominent lean, large amount of epicormic growth. Suppressed and overshadowed therefore poor habit.	10200	Remove
13	Eucalyptus piperita	18	18	1900	Mature	Twin @ base	Prominent N & s each trunk. Southern trunk over Mona Vale road	Normal	Normal	Balanced	Overshadowing	Termites and evidence of bark inclusion at base	Stable	Some pruning over road	Evidence of Decay in southern trunk where old branch has broken	Bark inclusion	Nil		Poor	Thinning	Normal	20%	Termites	No evidence	10%	5-15y	Hazardous	Very low	Evident decay in southern trunk. Bark inclusion in main junction. Termite infestation. Recommend removal.	22800	Remove
14	Syncarpia glomulifera	14	9	500	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	Minor pruning over Mona Vale Road	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	<5%	>40 y	High	High	Approx 2m from Mona Vale Rd sealed surface to 40%	6000	Retain & Protect
15	Glochidon ferdinandii	4.5	5	110	Mature	Multiple (3) @ base but all but one trunk removed	nil	Normal	Normal	Balanced		Stable	Stable	Multiple trunks removed	Nil		Nil		Fair	Thinning	Normal	10%	No evidence	No evidence	5%	5-15y	Moderate	Moderate	Small suppressed tree immediately adjacent Syncarpia. Recommend removal to prevent interference and competition with Syncarpia.	1320	Remove
16	Glochidon ferdinandii	11	9	520	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Thinning	Normal	5%	No evidence	No evidence	<5%	5-15y	Moderate	Low	Large Glochidon suppressed by large adjacent trees. Canopy growing through that of Syncarpia and ficus. Recommend removal to prevent interference and competition with superior trees.	6240	Remove
17	Ficus macrophylla	18	36	2000	Mature	Multiple @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Thickening on horizontal branch reaction wood				Good	Normal	Normal	5%	No evidence	No evidence	10%	>40 y	High	High		24000	Retain & Protect
18	Corymbia gummifera	14	18	800	Mature	Single	slight SW over Mona Vale Road	Normal	Normal	Southwest	Crowding	Suspect due to decay	Stable	No evidence	Evidence of Decay at 2m at point at which trunk bends		Wound at 2m with decay		Fair	Normal	Normal	5%	borer		5%	15-40y	Hazardous?	Low	Large wound with decay at bend of trunk. Large torsion force at this point.	9600	Remove
19	Glochidon ferdinandii	5	2.5	150	Mature	Single	slight SW	Normal	Normal	Balanced		Stable	Stable	No evidence	Evidence of Decay in broken limbs		Branch loss several		Poor	Sparse	Normal	20%		No evidence	5%	5-15y	Low	Low	Suppressed poor form habit Remove	1800	Remove
20	Melaleuca quinquenervia	6	4	230	Mature	Single	Prominent N	Elevated due to overshadowing suppression	Ascending	Balanced		Stable	Stable	No evidence	Nil				Poor	Sparse	Small	10%	No evidence	Ivy/vines covered dead	<5%	5-15y	Moderate	Low	Suppressed and covered in dead vines	2760	Remove
21	Pinus spp.	11	7	300	Mature	Single	nil	Normal	Horizontal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	10%	No evidence	No evidence	Nil	>40 y	Low	Moderate	Very elevated form due to overshadowing crowding adjacent trees	3600	Remove

22	Castenosperm um australe	6	4	200	Mature	Single	Prominent NE	Irregular due to crowding suppression	Normal	Northeast	Overshad owing crowding	Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	5%	No evidence	Ivy/vines	5%	5-15y	Moderate	Low	Suppressed poor form bent around pinus. Canopy interfering with Pinus. Recommend removal	2400	Remove
23	Castenosperm um australe	8	10	700	Mature	Single	slight N	Irregular Looks like it has previously been pollarded	Normal	Balanced		Suspect due to branching structure	Suspect. May have been previously pollarded and subsequent multiple branching from single point	Topped			Number of split branches		Good	Normal	Normal	10%		No evidence	20%	15-40y	High	Low	Poor form possible pollarded. Piece of timber included in trunk. Ribs reaction wood in trunks and horizontal branches	8400	Remove
24	Glochidon ferdinandii	9	9	600	Mature	Twin @ 2m	slight N	Elevated due to overshadowing	Normal	Northeast	Crowding	Suspect due to decay	Stable	No evidence	Evidence of Decay		Branch loss multiple with decay evident		Poor	Sparse	Normal	40%	No evidence		20%	5-15y	Low	Very low	Any broken branches with decay evident including large amount of decay in main trunk visibly greater than 70%. Recommend removal	7200	Remove
25	Glochidon ferdinandii	10	10	700	Mature	Twin @2.5m	slight N	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	<5%	15-40y	High	High		8400	Retain & Protect
26	Ligustrum spp. Large leaf privet	6	6	120	Mature	Single	nil	Normal	Normal	Balanced		Suspect due to wound in trunk	Stable	No evidence	Evidence of Decay		mechanical damage crushed trunk thickness reduced 50%		Fair	Normal	Normal	10%	borer	No evidence	<5%	5-15y	Hazardous	Noxious	Weed with major structural damage to trunk. Remove.	1440	Remove
27	Eucalyptus saligna	16	8	500	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Very Good	Normal	Normal	10%	No evidence	No evidence	<5%	>40 y	Very high	High		6000	Retain & Protect
28	Castenosperm um australe	6	4	180	Mature	Twin @ base	slight S	Normal	Normal	Balanced		Stable	Stable	No evidence	Bark inclusion at base		Nil		Poor	Normal	Normal	5%	No evidence	No evidence	5%	5-15y	Moderate	Low	Suppressed. Poor form. Bark inclusion at base of twin trunk. Recommend removal.	2160	Remove
29	Eucalyptus piperita	9	6	280	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	<5%	No evidence		<5%	>40 y	High	High		3360	Retain & Protect
30	Glochidon ferdinandii	8	4	90	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Bark inclusion main junction		Nil		Fair	Sparse	Normal	5%	No evidence	No evidence	<5%	15-40y	Moderate	Moderate	Suppressed	1080	Retain & Protect
31	Corymbia gummifera	15	16	1100	Mature	Multiple (3) @ 1m	nil	Normal	Normal	North		Stable	Stable	No evidence	Evidence of Decay				Good	Thinning	Normal	10%		No evidence	<5%	15-40y	High	High	Interfering with amgophora	13200	Retain & Protect
32	Angophora costata	16	12	500	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable		Nil		Wound two longitudinal with minimal evidence of decay		Good	Normal	Normal	5%	No evidence		5%	15-40y	High	High	Interfering with adjacent trees	6000	Retain & Protect
33	Syncarpia glomulifera	14	10	300	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Crowded and interfering with adjacent trees	3600	Retain & Protect
34	Syncarpia glomulifera	12	14	450	Mature	Single	slight NW	Normal	Normal	Northwest	Crowding	Stable	Stable		Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	<5%	>40 y	High	High		5400	Retain & Protect
35	Syncarpia glomulifera	12	14	640	Mature	Twin @ base	nil	Normal	Normal	Northwest	Crowding	Stable	Stable		Bark inclusion possible at base	Bark inclusion base at branch junction @ 2.5m	Nil		Good	Normal	Normal	5%	No evidence	No evidence	<5%	>40 y	High	High		7680	Monitor
36	Syncarpia glomulifera	8	3	110	Semi-mature	Single	nil	Normal	Normal	Balanced	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	Nil	>40 y	High	High		1320	Retain & Protect
37	Glochidon ferdinandii	8	4	90	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Bark inclusion main junction		Nil		Fair	Sparse	Normal	5%	No evidence	No evidence	<5%	15-40y	Moderate	Moderate	Suppressed	1080	Remove
38	Eucalyptus piperita	12	12	400	Mature	Single	Very Prominent N	Normal	Normal	North		Suspect	Stable	No evidence	Nil		Nil		Poor	Sparse	Normal	70%	No evidence	No evidence	20%	<5y	Hazardous	Very low	Very prominent lean and almost dead tree. Recommend removal	4800	Remove
39	Eucalyptus piperita	12	6	430	Mature	Single	nil	Normal	Normal	Balanced	Crowding	Stable	Stable	No evidence	Nil		lightning. Long spiral longitudinal wound		Poor	Sparse	Normal	40%	borer	No evidence	40%	5-15y	Low	Low	Entirely epicormic and crowded suppressed. Recommend removal.	5160	Remove
40	Eucalyptus paniculata	8	4	320	Mature	Single	nil	Normal	Normal	Balanced	Crowding	Stable	Stable	One branch removed interfering with dead trunk	Evidence of Decay at 4m			Nil	Poor	Sparse	Small	60%	borer	No evidence	70%	<5y	Low	Low	Entirely epicormic. Recommend removal.	3840	Remove
41	Eucalyptus piperita	8	4	230	Mature	Single	slight N	Normal	Ascending	Balanced	Crowding	Stable	Stable	No evidence	Nil		Nil		Poor	None	Small	80%	borer	No evidence	30%	<5y	Low	Low	Epicormic remove	2760	Remove
42	Eucalyptus paniculata	16	15	700	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		8400	Retain & Protect
43	Syncarpia glomulifera	17	14	500	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		6000	Retain & Protect
44	Camphora cinnamomum	4	2	50	Immature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	Nil	No evidence	No evidence	Nil	>40 y	Low	Environme ntal pest species	Immature camphor laurel. Remove	600	Remove
45	Liquidambar styraciflua	14	12	560	Mature	Twin @ 6m	nil	Normal	Normal	Northeast	Crowding	Stable	Suspect due to bark inclusion at main junction @6m	No evidence	Bark inclusion @ main junction 6m		Nil		Good	Thinning due to suppressi on	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Suppressed	6720	Remove
46	Eucalyptus paniculata	17	14	600	Mature	Single	nil but unusual marked bend in trunk due to crowding	Irregular	Normal	Balanced	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Thinning	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Crowded witk marked bend in trunk due to crowding and suppression	7200	Retain & Protect

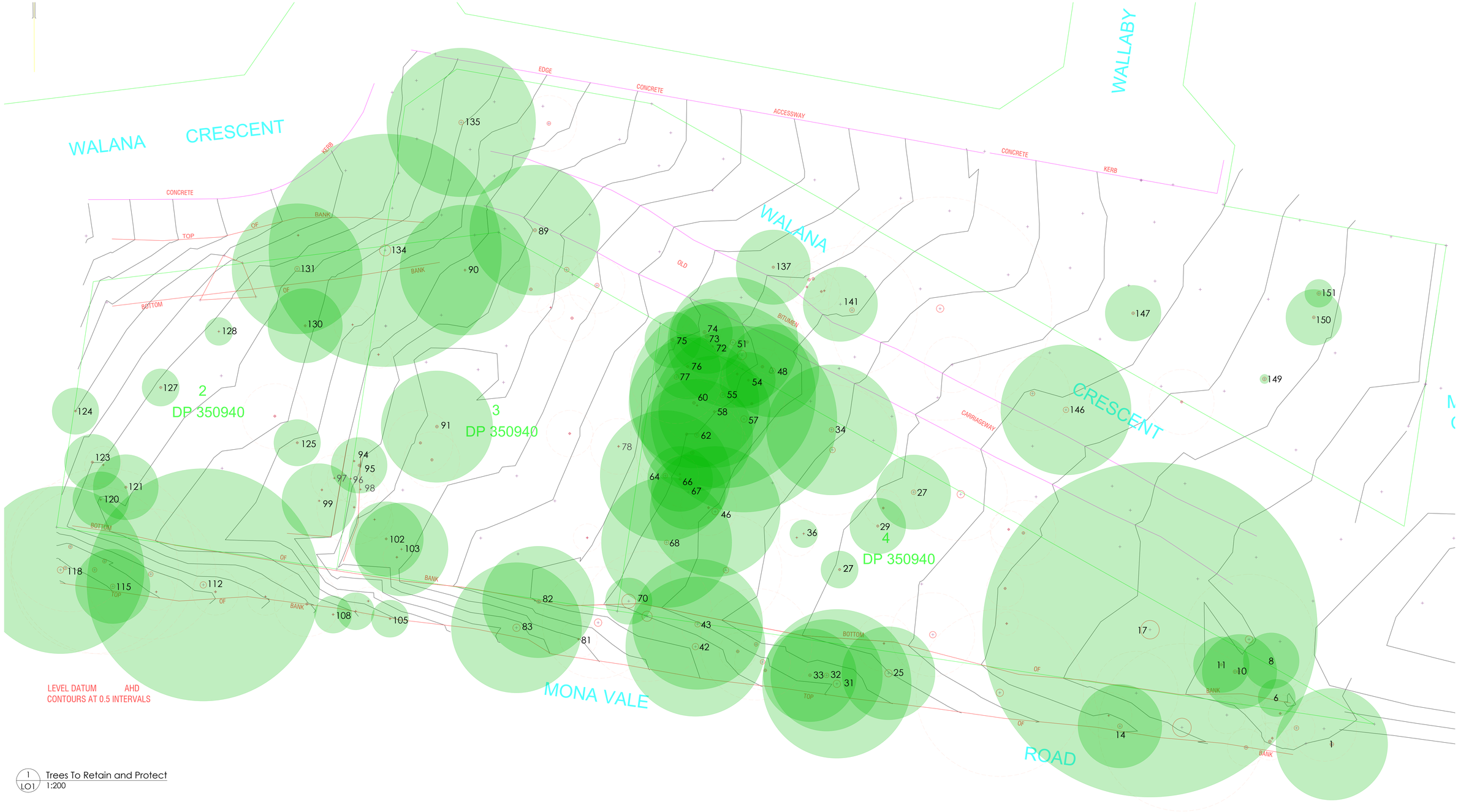
47	Camphora cinnamomum	6	6	300	Mature	Multiple (3) @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Crowded suppressed recommend removal	3600	Remove
48	Syncarpia glomulifera	14	10	600	Mature	Twin @ base	nil	Normal	Normal	East	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		7200	Retain & Protect
49	Syncarpia glomulifera	8	4	250	Mature	Single	nil	Normal	Normal	Balanced	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	20%	No evidence	No evidence	5%	15-40y	Moderate	Low	Suppressed tree overshadowed. Recommend removal to benefit adjacent better specimens	3000	Remove
50	Casuarina spp.	7	6	200	Mature	Single	Very Prominent NE	Normal	Normal	Northeast	Crowding and overshadowing	Stable	Stable	No evidence	Cavity at 300mm	Evidence of Decay at cavity at base	Nil		Poor	Normal	Normal	5%	borer	No evidence	5%	5-15y	Moderate	Low	Suppressed with decay in base. Recommend removal.	2400	Remove
51	Corymbia gummifera	22	14	560	Mature	Single	Prominent W	Normal	Normal	West	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Crowded	6720	Retain & Protect
52	Eucalyptus piperita	22	14	500	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Sparse	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Crowded	6000	Remove
53	Glochidon ferdinandii	5	6	180	Mature	Twin @ base	nil	Normal	Normal	Balanced	Suppressed	Stable	Stable	No evidence	Nil		Nil		Good	Sparse	Normal	30%	No evidence	No evidence	20%	5-15y	Low	Low	Suppressed. Recommend removal to benefit adjacent specimens	2160	Remove
54	Syncarpia glomulifera	8	6	170	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Thinning	Normal	5%	No evidence	No evidence	5%	15-40y	Moderate	Moderate	Suppressed	2040	Retain & Protect
55	Angophora costata	24	20	520	Mature	Twin @6m	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Very Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Very high	High		6240	Retain & Protect
56	Syncarpia glomulifera	7	7	240	Mature	Single	nil	Normal	Normal	East	Suppressed	Stable	Stable	No evidence	Nil		Nil		Poor	Sparse	Normal	20%	No evidence	No evidence	5%	15-40y	Moderate	Moderate	Suppressed. Crowded. Recommend for removal	2880	Remove
57	Eucalyptus piperita	24	20	700	Mature	Twin @ 9m	slight NW	Irregular	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	15%	No evidence	No evidence	5%	15-40y	High	High	Unusual form due to twin leaders at 9m and suppression.	8400	Retain & Protect
58	Syncarpia glomulifera	17	12	250	Mature	Single	nil	Normal	Normal	Balanced	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		3000	Retain & Protect
59	Acmena smithii	8	8	105	Mature	Single	nil	Normal	Normal	Balanced	Crowded and suppressed	Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Moderate	Moderate	Suppressed. Recommend removal for superior specimens	1260	Remove
60	Acmena smithii	14	14	300	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		3600	Retain & Protect
61	Ligustrum (large leafed privet)	7	12	200	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species		2400	Remove
62	Angophora costata	17	12	470	Mature	Single	slight N	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		5640	Retain & Protect
63	Jacaranda mimosifolia	7	12	400	Mature	Twin @ base	slight E	Normal	Normal	East	Crowding	Stable	Stable	No evidence	Nil		Nil		Fair	Sparse	Normal	15%	No evidence	No evidence	<5%	15-40y	Moderate	Moderate	Suppressed	4800	Remove
64	Angophora costata	18	14	600	Mature	Twin @ 4m	nil	Normal	Normal	West	Crowding	Stable	Suspect due to bark inclusion at main junction	No evidence	Bark inclusion at main junction		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		7200	Retain & Protect
65	Syncarpia glomulifera	7	4	100	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Moderate	Moderate	Small suppressed. Recommend removal to support better adjacent species	1200	Remove
66	Syncarpia glomulifera	14	7	250	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		3000	Retain & Protect
67	Syncarpia glomulifera	8	8	340	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Thinning	Normal	5%	No evidence	No evidence	5%	15-40y	Moderate	Moderate	Suppressed	4080	Retain & Protect
68	Corymbia gummifera	17	14	450	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	20%	No evidence	No evidence	20%	15-40y	High	High		5400	Retain & Protect
69	Eucalyptus piperita	20	24	800	Senescent	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Evidence of Decay		Nil		Poor	Normal	Normal	50%	No evidence	No evidence	20%	5-15y	Moderate	Moderate	Senescent tree large decay and deadwood. Recommend removal	9600	Remove
70	Avocado	6	5	110	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Moderate	Moderate		1320	Retain & Protect
71	Eucalyptus piperita	21	12	600	Senescent	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Sparse	Normal	60%	No evidence	Ivy/vines	30%	15-40y	Hazardous	Very low	Senescent tree almost dead covered in ivy. Recommend removal	7200	Remove

72	Corymbia gummifera	7	7	160	Mature	Single	slight NW	Normal	Normal	Northwest	Crowding suppression	Stable	Stable	No evidence	Nil		Nil		Good	Sparse	Normal	5%	No evidence	No evidence	10%	15-40y	Low	Low	Suppressed remove	1920	Remove
73	Syncarpia glomulifera	12	8	430	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Wound (see notes)	Wound fr branch loss	Good	Normal	Normal	20%	No evidence	No evidence	5%	15-40y	High	High	Crowded and suppressed	5160	Retain & Protect
74	Syncarpia glomulifera	8	6	350	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Moderate	Moderate		4200	Retain & Protect
75	Araucaria heterophylla	15	6	250	Mature	Single	slight NW	Normal	Normal	Northwest	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	Nil	15-40y	High	High		3000	Retain & Protect
76	Syncarpia glomulifera	12	7	230	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Suppressed	2760	Retain & Protect
77	Syncarpia glomulifera	14	10	420	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Bark inclusion at both major junctions 1.5 & 3m		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Poor form with two bark inclusions and unbalanced. Recommend removal	5040	Remove
78	Camphora cinnamomum	6	6	120	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	>40 y	Low	Environmental pest species		1440	Remove
79	Glochidon ferdinandii	6	5	200	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Suspect bark inclusion at base	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		2400	Remove
80	Camphora cinnamomum	5	3	90	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		1080	Remove
81	Camphora cinnamomum	5	4	100	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Remove	1200	Remove
82	Syncarpia glomulifera	8	12	400	Mature	Single	nil	Irregular	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	10%	No evidence	No evidence	5%	15-40y	High	High		4800	Retain & Protect
83	Unidentified	17	14	500	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		6000	Retain & Protect
84	Unidentified	4.5	6	530	Mature	Multiple (3) @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Sparse	Normal	5%	No evidence	No evidence	90%	5-15y	Low	Very low	Poor habit. Previously lopped. All epicormic	6360	Remove
85	Unidentified	4	3		Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil	Evidence of Decay	Nil		Poor	Normal	Normal	90%	No evidence	No evidence	5%	<5y	Low	Very low	Decayed. Lopped All epicormic Decay remove	0	Remove
86	Unidentified	5	5	250	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	Lopped	Nil		Nil		Fair	Normal	Normal	20%	No evidence	No evidence	50%	15-40y	High	High	Previously lopped. Poor habit. Remove.	3000	Remove
87	Camphora cinnamomum	4	3	100	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Recommend for removal	1200	Remove
88	Camphora cinnamomum	5	5	300	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Suspect bark inclusion and decay	No evidence	Bark inclusion at base	Evidence of Decay	Nil		Poor	Thinning	Normal	5%	borer	No evidence	5%	<5y	Low	Environmental pest species	Poor health habit. Decay. Dead trunk. Remove	3600	Remove
89	Eucalyptus botriodes	11	14	260	Mature	Single	slight W	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		mechanical damage at base		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		3120	Retain & Protect
90	Corymbia gummifera	17	14	500	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Thinning	Small	50%	psyllids and gall	No evidence	20%	<5y	Low	Low	Remove	6000	Retain & Protect
91	Angophora costata	10	12	300	Mature	Twin @ 1.8	nil	Normal	Normal	Balanced		Suspect	Stable	No evidence	Bark inclusion at main junction	Evidence of Decay at 4m	Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		3600	Retain & Protect
92	Camphora cinnamomum	9	7	280	Mature	Single	nil	Normal	Normal	Northeast	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Remove	3360	Remove
93	Camphora cinnamomum	7	6	220	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Remove	2640	Remove
94	Camphora cinnamomum	7	5	120	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species		1440	Remove
95	Glochidon ferdinandii	7	6	220	Mature	Single	nil	Normal	Normal	Northeast	Crowding	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		2640	Retain & Protect
96	Glochidon ferdinandii	7	5	120	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Low	Suppressed. Recommend removal	1440	Remove
97	Glochidon ferdinandii	5	5	90	Mature	Single	nil	Normal	Normal	Northwest	Crowding	Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Moderate	Moderate	Recommend removal to benefit superior adjacent trees	1080	Remove

98	Pittosporum undulatum	5	4	75	Mature	Single	Prominent NE	Normal	Normal	Northeast	Suppressed	Stable	Stable	No evidence	Nil		Nil		Poor	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Suppressed. Remove	900	Remove
99	Glochidon ferdinandii	7	8	170	Mature	Single	nil	Normal	Normal	Balanced		Stable	Suspect due to bark inclusion	No evidence	Bark inclusion (see notes)		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		2040	Retain & Protect
100	Pittosporum undulatum	6	8	120	Mature	Single	slight N	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species		1440	Remove
101	Glochidon ferdinandii	6	4	75	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Sparse	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Suppressed. Recommend removal for better adjacent	900	Remove
102	Glochidon ferdinandii	9	8	200	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Bark inclusion at main junction 1.7m		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		2400	Retain & Protect
103	macadamia	8	10	250	Mature	Multiple (3) @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Crowded	3000	Retain & Protect
104	macadamia	6	3	80	Mature	Single	nil	Normal	Normal	Northeast	Crowding	Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Low	Suppressed. Recommend removal to benefit adjacent better specimen	960	Remove
105	Glochidon ferdinandii	6	4	150	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		1800	Retain & Protect
106	Pittosporum undulatum	4	3	70	Mature	Single	slight N	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Recommend removal	840	Remove
107	Glochidon ferdinandii	4	4	120	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		1440	Retain & Protect
108	Unidentified	8	4	150	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Long leafed thing	1800	Retain & Protect
109	Camphora cinnamomum	6	7	180	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species		2160	Remove
110	Glochidon ferdinandii	4	4	100	Mature	Twin @ 300mm	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Bark inclusion (see notes)		Nil		Fair	Normal	Normal	5%	No evidence	No evidence	<5%	15-40y	Moderate	Low	Remove due to poor habit and bark inclusion	1200	Remove
111	Unidentified	7	5	200	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Evidence of Decay at 400		Nil		Poor	Sparse	Normal	30%	No evidence	No evidence	<5%	5-15y	Moderate	Low	Recommend removal due to decay and poor condition. Proximity to tree.	2400	Remove
112	Eucalyptus botryoides	24	25	700	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	20%	15-40y	High	High		8400	Retain & Protect
113	Pittosporum undulatum	3	4	100	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Removal	1200	Remove
114	Eucalyptus acmeniodes	17	14	400	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Thinning	Normal	50%	No evidence	No evidence	15%	5-15y	High	Low	Poor condition recommend removal	4800	Remove
115	Angophora costata	14	8	300	Mature	Single	slight S	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Branch loss x 2		Fair	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Two broken dead limbs	3600	Retain & Protect
116	Eucalyptus acmeniodes	17	20	300	Mature	Single	Prominent NW	Normal	Normal	Northwest	Overshadowing	Stable	Stable	No evidence	Nil		Nil		Poor	Thinning	Normal	5%	No evidence	No evidence	30%	15-40y	High	Low	Recommend removal due too poor condition. Lean	3600	Remove
117	Eucalyptus botriodes	17	18	500	Mature	Single	Prominent N	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Dead	Normal	Normal	100%	Termites	No evidence	30%	15-40y	Hazardous	Very low	Dead other than epicormic lean. Remove	6000	Remove
118	Eucalyptus paniculata	23	18	900	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Thinning	Normal	15%	borer	No evidence	5%	15-40y	High	High		10800	Retain & Protect
119	Eucalyptus botriodes	17	14	350	Mature	Single	Very Prominent N	Normal	Normal	Balanced		Suspect	Stable	No evidence	Nil		Nil		Poor	Sparse	Normal	80%	No evidence	No evidence	50%	5-15y	Hazardous	Low	Poor condition. Lean. Only live epicormic growth. Recommend removal	4200	Remove
120	Glochidon ferdinandii	6	6	120	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		1440	Retain & Protect
121	Angophora costata	9	7	200	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Thinning	Normal	5%	No evidence	No evidence	Nil	15-40y	High	High		2400	Retain & Protect
122	Glochidon ferdinandii	7	4	140	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Recommend removal to benefit adj trees	1680	Remove
123	Angophora costata	11	6	250	Mature	Single	Prominent N	Normal	Normal	Balanced		Stable	Stable	No evidence	Cavity at 4m	Evidence of Decay	Nil		Fair	Thinning	Normal	20%	No evidence	Ivy/vines	5%	15-40y	High	High		3000	Retain & Protect

124	Angophora costata	9	5	200	Mature	Single	Prominent N	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Thinning	Normal	15%	No evidence	No evidence	10%	15-40y	High	High		2400	Retain & Protect
125	Glochidon ferdinandii	6	5	200	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil	Bark inclusion x 2	Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		2400	Retain & Protect
126	Camphora cinnamomum	6	7	250	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	10%	No evidence	Ivy/vines	5%	15-40y	Low	Environmental pest species	Removal	3000	Remove
127	Eucalyptus acmeniodes	8	4	300	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	10%	No evidence	No evidence	5%	15-40y	High	High		3600	Retain & Protect
128	Glochidon ferdinandii	4.5	3	100	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		1200	Retain & Protect
129	Lagerstroemia indica																												Cluster of lagerstroemia suppressed. Remove.	6000	Remove
130	Glochidon ferdinandii	7	8	400	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	10%	No evidence	No evidence	<5%	5-15y	High	High		4800	Retain & Protect
131	Araucaria heterophylla	20	14	550	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	<5%	No evidence	No evidence	<5%	15-40y	High	High		6600	Retain & Protect
132	Camphora cinnamomum	5	4	100	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	Low	Environmental pest species	Remove	1200	Remove
133	Glochidon ferdinandii	4	3	75	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Thinning	Normal	20%	No evidence	No evidence	<5%	15-40y	Moderate	Low	Recommend removal	900	Remove
134	Ficus macrophylla	16	25	1400	Mature	Multiple (5) @ base	Prominent NW	Normal	Normal	Northwest	Previous Pruning	Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	<5%	15-40y	High	High		16800	Retain & Protect
135	Eucalyptus paniculata	12	16	420	Mature	Single	Prominent S	Normal	Normal	South	Previous Pruning	Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	15%	No evidence	Ivy/vines	30%	15-40y	High	High		5040	Retain & Protect
136	Ficus Benjamina var Hillii	4	6	500	Mature	Multiple (8) at base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Normal	Chlorotic	15%	No evidence	No evidence	Nil	5-15y	Low	Low	Poor condition weeping fig. Recommend removal	6000	Remove
137	Glochidon ferdinandii	8	8	300	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		mechanical damage at base		Good	Normal	Normal	10%	No evidence	No evidence	5%	5-15y	High	High		3600	Retain & Protect
138	Glochidon ferdinandii	7	4	400	Mature	Multiple (3) @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Thinning	Normal	10%	No evidence	No evidence	5%	5-15y	Moderate	Low	Suppressed. Recommend removal to benefit adjacent angophora	4800	Remove
139	Glochidon ferdinandii	7	4	200	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Thinning	Normal	10%	No evidence	No evidence	5%	5-15y	Moderate	Low	Suppressed. Recommend removal to benefit adjacent angophora	2400	Remove
140	Glochidon ferdinandii	7	4	280	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Fair	Thinning	Normal	10%	No evidence	No evidence	5%	5-15y	Moderate	Low	Suppressed. Recommend removal to benefit adjacent angophora	3360	Remove
141	Angophora costata	12	8	1250	Mature	Multiple (4) @ base	nil	Normal	Normal	Balanced		Stable	Suspect - junction at base not visible	No evidence	Bark inclusion possible		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High		15000	Retain & Protect
142	Glochidon ferdinandii	8	14	500	Senescent	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Sparse	Normal	20%	No evidence	No evidence	10%	5-15y	Moderate	Low	Remove to benefit adj angophora	6000	Remove
143	Eucalyptus botryoides	10	24	1400	Mature	Multiple (3) @ base	nil	Normal	Normal	Balanced		Suspect	Stable	No evidence	Cavity (see notes)	Evidence of Decay	Nil		Poor	Sparse	Normal	20%	borer	No evidence	30%	5-15y	Low	Low	Poor habit. Cavity decay. Long lever arch. Recommend removal	16800	Remove
144	Unidentified	4	6	500	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	Lopped previously	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	40%	15-40y	High	High	Poor form due to pruning. Remove	6000	Remove
145	Eucalyptus piperita	10	8	450	Mature	Single	slight N	Normal	Normal	Balanced		Suspect due to exposed root crown on southern side and cavity on southern base	Stable	No evidence	Nil		Nil		Poor	Thinning	Normal	20%	No evidence	No evidence	15%	5-15y	Moderate	Low	Recommend removal due to poor health and suspect root structure on tension side of tree	5400	Remove
146	Glochidon ferdinandii	8	14	520	Mature	Twin @ base	nil	Normal	Normal	North	Previous Pruning	Stable	Stable	No evidence	Nil		Nil		Fair	Normal	Normal	5%	No evidence	No evidence	Nil	5-15y	Moderate	Moderate		6240	Retain & Protect
147	Araucaria columnaris	17	6	300	Mature	Single	Very Prominent SW	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	5%	No evidence	No evidence	5%	15-40y	High	High	Prominent lean	3600	Retain & Protect
148	Unidentified	5	7	300	Mature	Twin @ base	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Poor	Normal	Normal	50%	No evidence	Ivy/vines	Nil	5-15y	Low	Low	Poor condition and habit. Recommend removal	3600	Remove

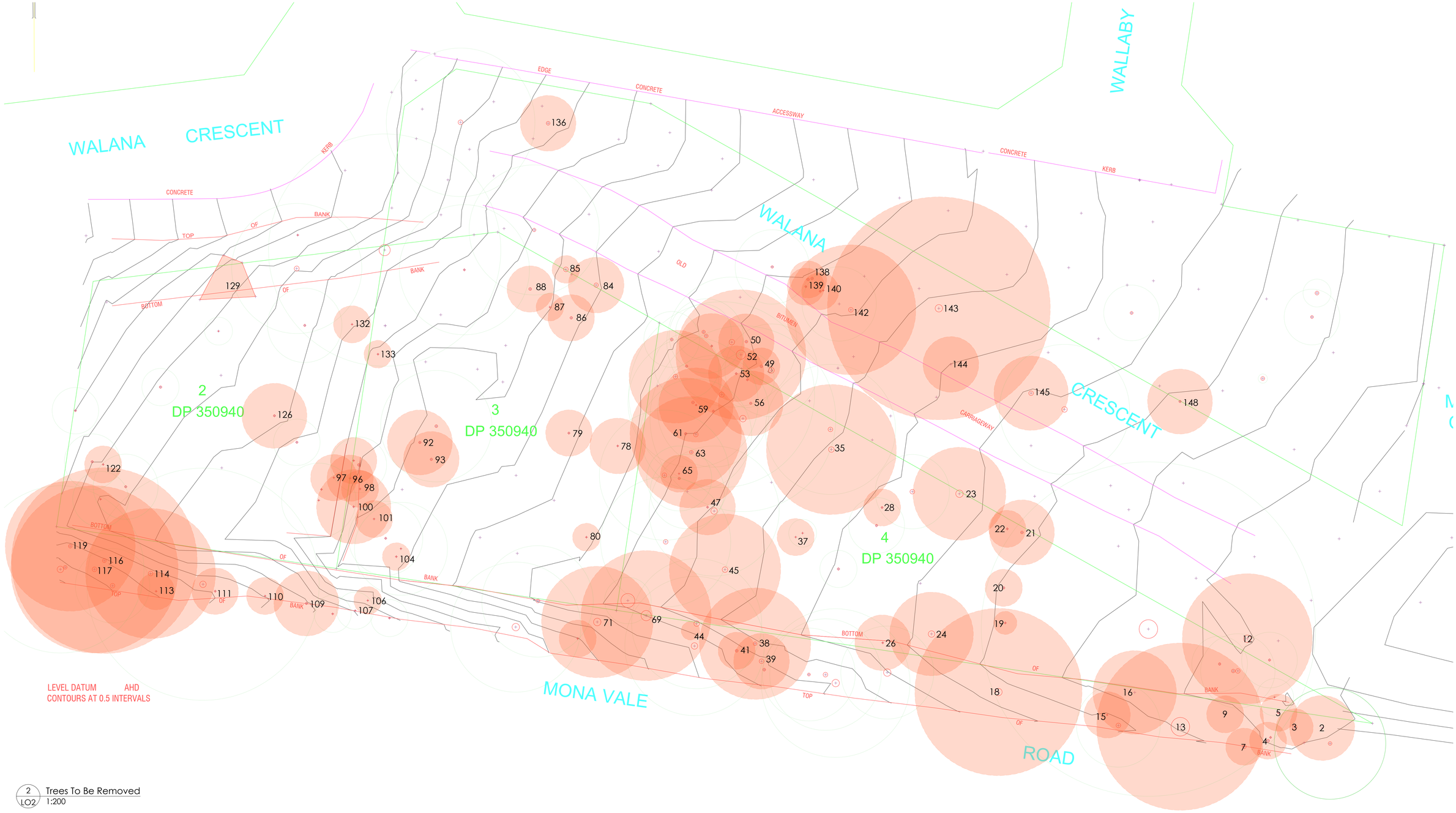
149	Livistona australis	6	1	250	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal		No evidence	No evidence		15-40y	Moderate	Moderate		3000	Retain & Protect
150	Araucaria columnaris	17	6	250	Mature	Single	Prominent W	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal	Nil	No evidence	No evidence	Nil	15-40y	High	High		3000	Retain & Protect
151	Livistona australis	17	3	250	Mature	Single	nil	Normal	Normal	Balanced		Stable	Stable	No evidence	Nil		Nil		Good	Normal	Normal		No evidence	No evidence		15-40y	High	High		3000	Retain & Protect



1 / LO1 Trees To Retain and Protect
1:200

ISSUE	DATE	REVISION	
PROJECT	Mona Vale Cemetry Tree Report		PROJECT #
CLIENT	Pittwater Council	DATE # 17/06/2010	DWG # LO1
		SCALE @ A3 1:100	
DWG	Trees To Be Retained	DRAWN AP	
		CHKD MB, GB	REVISION

Birds Landscape Design & Managment 249 Annangrove Rd, Annangrove. W:www.birdsdesign.com.au
PO Box 3054 Rouse Hill NSW 2155 Australia T:0419 992 634 F:02 9679 0922 E:birds@birdsdesign.com.au



2 / LO2 Trees To Be Removed
1:200

ISSUE	DATE	REVISION

PROJECT	Mona Vale Cemetry Tree Report		PROJECT #
CLIENT	Pittwater Council	DATE # 17/06/2010	DWG #
		SCALE @ A3 1:200	LO2
DWG	Trees To Be Removed	DRAWN AP	
		CHKD MB, GB	REVISION

Birds Landscape Design & Managment 249 Annangrove Rd, Annangrove W:www.birdsdesign.com.au
PO Box 3054 Rouse Hill NSW 2155 Australia T:0419 992 634 F:02 9679 0922 E:birds@birdsdesign.com.au

ATTACHMENT 11 – FLORA & FAUNA ASSESSMENT

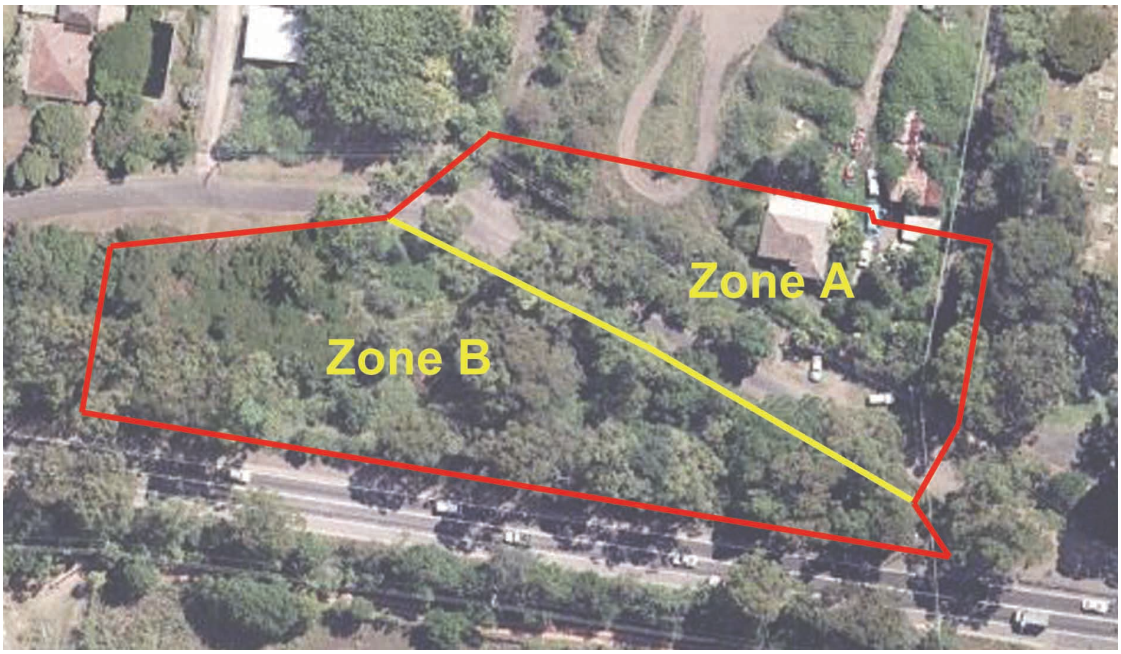
Flora & Fauna Impact Assessment

for

Weed Removal

at

Mona Vale Cemetery



By

Nicholas Skelton, B. Sc. (Hons), M. App. Sc.

February 2010

Prepared for

Pittwater Council

GIS Environmental Consultants

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Nicholas Skelton

Nicholas Skelton, B.Sc. (Hons), M.App. Sc.

Approval Date: 19th February 2010

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NSW National Parks and Wildlife Services, Scientific License: S10749

NSW Department of Primary Industries, Animal Care and Ethics Committee: 01/4291

1 Introduction

1.1 Background

This report describes the flora and fauna that occur on Lots 2, 3, 4 (DP350940) and Lot 8 (DP1124862) in the south-western corner of Mona Vale Cemetery. It also assesses the importance of the land to the conservation of threatened flora and fauna species, populations and ecological communities. The impact the proposed works are likely to have on the conservation values is assessed and discussed. This report also makes recommendations to ameliorate the impact of the development on the environment.

An accurate description of the flora and fauna and the assessment of the impact is required when submitting development applications to assist the assessment of the application in relation to various legislation including the: Environmental Planning and Assessment Act 1979, Rural Fires Act 1997, Fisheries Management Act 1994, Threatened Species Conservation Act 1995 (TSC Act 1995). The information in this report may also be needed to assess the development with respect to other acts, policies and regulations such as the Noxious Weed Act 1993, Native Vegetation Conservation Act 1997, Acid Sulphate Soil Potential regulations, Coastal Wetlands (SEPP 14), Bushland in Urban Areas (SEPP 19), NSW Biodiversity Strategy 1999 and other State and Federal Acts, and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999), REPs, SEPPs and local government controls, orders and policies (eg. LEPs, DCPs).

Throughout this report "threatened" species, populations or ecological communities refers to those biota listed in Schedules 1 and 2 of the *Threatened Species Conservation Act, 1995* as "critically endangered", "endangered" or "vulnerable". A "Noxious weed" is a species of plant listed in the Schedules of the *Noxious Weeds Act 1993*. "Protected Fauna" refers to any native bird, mammal, reptile or frog in NSW.

1.2 Assumptions and Limitations

- This report does not include assessment of soil suitability or European/Aboriginal heritage values.
- This report describes the habitat and species of the site at the time of the field survey. Vegetation and habitat will change over time and so does legislation. Therefore the findings of this report are only relevant for 12 months.
- There may be flora and/or fauna species present at the site that were not recorded because they are seasonal, cryptic and/or have large home ranges. It can never be proven that other threatened species have not, do not or will not use the site as habitat. The conclusions drawn in this report are a result of testing, observation and experience.
- This report does not take into account the cumulative impact of other developments on this property or on adjacent land.
- This report should be read in its entirety and no part should be taken out of context.
- This survey only assesses the impacts of the proposal described in this report and shown on the cited plans.
- This report does not include assessment of the ongoing impacts associated with the use of the land that may cause additional disturbance.

1.3 Description of the Study Area

1.3.1 Location

The site is in the south-western corner of Mona Vale Cemetery, in the suburb of Mona Vale in the Pittwater local government area. The property and the locality are shown on Map 1. The AMG co-ordinates of the site are Easting 341000 and northing 6272400.

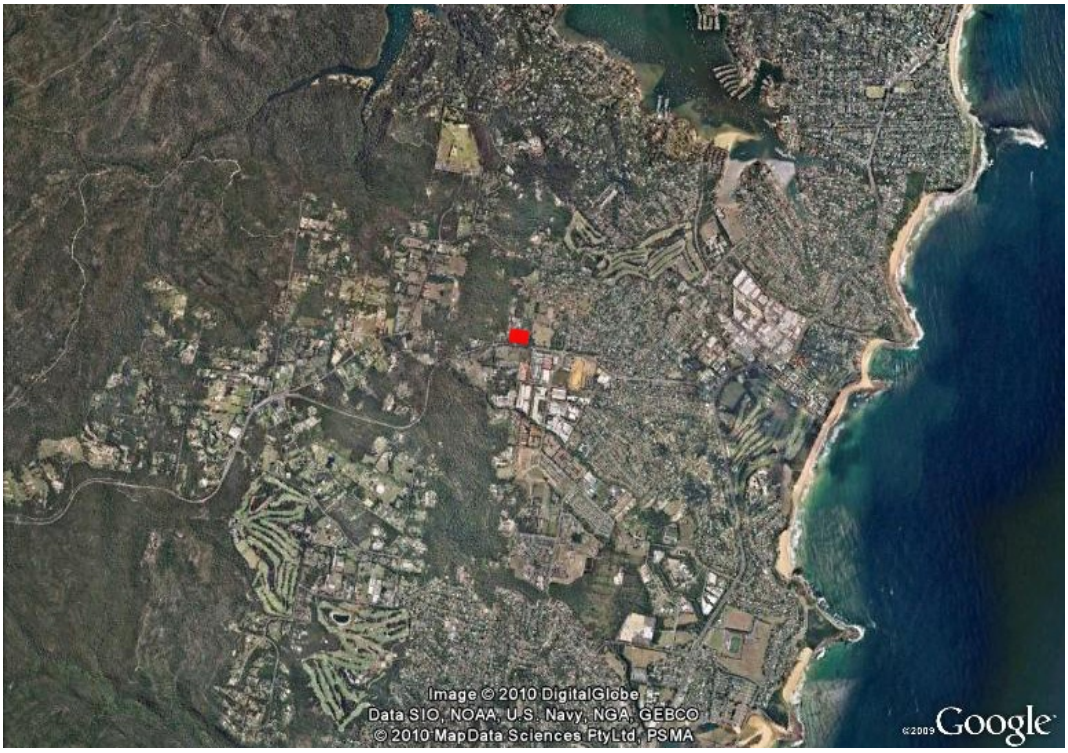
1.3.2 Adjacent Land

The property is surrounded by Mona Vale Cemetery to the east, Mona Vale Road (then a light industrial area) to the south and residential properties to the north and west. There is a strip of native tree cover on the shoulder of Mona Vale Road. The Katandra Bushland Sanctuary is 300m to the west, Ku-ring-gai Chase National Park is 2km to the west and 2km to the north-west. See Map 1.

1.3.3 The Subject Site

The Subject Site is the Study Area which is approximately 6,000m^2 in size and consists of Lots 2, 3, 4 (DP350940), Lot 8 (DP1124862) and the section of the Walana Crescent un-made road reserve that is located between the lots. See Map 2 for details. The site is a very irregular shape, approximately 140m east to west and 50m north to south. It is accessed via Wallaby Circuit from the north or through the cemetry. The study site consists of two distinctly different vegetation types. Zone A is in the northern part of the site (i.e. Walana Crescent and Lot 8), is highly disturbed and covered in exotic grasses, road base, building rubble and weeds. Zone B, the southern part (i.e. Lots 2, 3 and 4) has a native tree canopy cover with a very weedy understorey. The area slopes gently to the east. The geological substrate is Hawkesbury sandstone with shallow sandy/clay soils with low water holding capacity on the higher westerly parts, clay dominates the lower part giving way to alluvial where the existing cemetry is. There are no permanent creeks or drainage lines within the study site, however, an ephemeral drainage line flows along Mona Vale Road and there is an artificial above-ground detention basinon the west edge. The site does not contain any rock crevices, caves, sandstone floaters or culverts.

Map 1: Site Location



1.4 The Proposed Development and Likely Direct Impacts

The proposed activity addressed by this report is: 1. weed removal within the study site, which is necessary in order to conduct a survey and tree survey then 2. Planning and construction of landscaping of the area as a memorial garden.

The proposed works are likely to result in disturbance to the site due to:

- Zone A earthworks outside of the tree canopy area to contour the area.
- Zone B Weed removal to allow survey and planting then, retention of native bushland and the native trees.

2 Methods

2.1 Plans and expert proposal reports used for this Report

- 2009 Aerial Photograph, Google.
- Survey of Mona Vale Cemetery and study site, author unknown, undated, received from Pittwater Council.

2.2 Literature and Database Search

Relevant information was obtained from literature, local knowledge and established sources such as scientific journals, electronic databases and reports. Records gathered in previous nearby reports by this author were also used and data in databases were consulted (NPWS Atlas of NSW Wildlife records issued Feb 2010, Australian Museum specimen records, ROTAP records, Birds Australia Atlas and the Royal Botanic Gardens, Sydney). This information was used to ascertain which threatened species are known to occur within 5 km of the site. The data were then combined with local knowledge and the habitat conditions on the site to compile a list of plant and animals species for specific targeting during the field work. These lists are Tables 1 and 2 respectively.

Table 1: Targeted Threatened Flora Species

Common Name	Scientific Name	TSC Act Status
	Epacris purpurascens var. purpurascens	V
Heart-leaved Stringybark	*Eucalyptus camfieldii*	V
Caley's Grevillea	*Grevillea caleyi*	E
Angus's Onion Orchid	*Microtis angusii*	E
Hairy Geebung	*Persoonia hirsuta*	E
Curved Rice Flower	*Pimelea curviflora var. curviflora*	V
Black-eyed Susan	*Tetratheca glandulosa*	V

V = Vulnerable, E = Endangered, CE = Critically Endangered.

Table 2: Targeted Threatened Fauna Species

Common Name	Scientific Name	TSC Act Status
Amphibians		
Giant Burrowing Frog	*Heleioporus australiacus*	V
Red-crowned Toadlet	*Pseudophryne australis*	V
Birds		
Gang-gang Cockatoo	*Callocephalon fimbriatum*	V
Glossy Black-Cockatoo	*Calyptorhynchus lathami*	V
Swift Parrot	*Lathamus discolour*	E
Barking Owl	*Ninox connivens*	V

Common Name	Scientific Name	TSC Act Status
Powerful Owl	*Ninox strenua*	V
Regent Honeyeater	*Xanthomyza phrygia*	E
Mammals		
Eastern Pygmy-possum	*Cercartetus nanus*	V
Spotted-tailed Quoll	*Dasyurus maculatus*	V
Southern Brown Bandicoot (eastern)	*Isoodon obesulus obesulus*	E
Eastern Bentwing-bat	*Miniopterus schreibersii oceanensis*	V
Eastern Freetail-bat	*Mormopterus norfolkensis*	V
Large-footed Myotis	*Myotis macropus*	V
Koala	*Phascolarctos cinereus*	V
Grey-headed Flying-fox	*Pteropus poliocephalus*	V
Greater Broad-nosed Bat	*Scoteanax rueppellii*	V
Reptiles		
Rosenberg's Goanna	*Varanus rosenbergi*	V

V = Vulnerable, E = Endangered, CE = Critically Endangered.

2.3 Site Survey

The field survey was carried out over 2 days in January and February 2010 by two experienced ecologists over a total of 4 man-hours:

- 17/01/2010: hot and sunny, 28°C
- 08/02/2010: overcast, 26°C, after several days of rain

During the field survey all sections of the study site and some of the surrounding land was traversed on foot. The site was searched for the presence of threatened flora and fauna species and their habitat. Endangered Ecological Communities were assessed for likelihood of occurrence.

The field survey involved the following procedures:

- Initial familiarisation with the site and its extent
- Assessment of the physical characteristics of the site
- Recording of all plant species in each vegetation type
- Identification of fauna through sightings, calls and potential habitat
- Search for scats, remains, nests, dreys, bones, feathers, fur, diggings, scratches, tracks, owl white-wash and food sources
- Examination of trees for scratchings, sap-feeding notches and hollows
- Classification of vegetation into communities according to their structural and floristic attributes
- Assessment of the habitats on the site
- Detailed search for targeted threatened species
- Assessment of the extent of disturbance and weed invasion
- Photography of the site

The search for plant species was conducted by an experienced ecologist walking through all the parts of each vegetation/habitat type randomly until no new plant species are found for 10 minutes (method outlined by Cropper, 1993). Elliott, cage, 'harp' traps or hair tubes were not used in order to reduce any stress to animals. Field notes are available for scrutiny.

2.3.1 Assessment of the Vegetation Types

Each vegetation type on the site was classified using structural and floristic indicators according to Benson and Howell (1994), and was compared with Threatened Ecological Communities listed in the TSC Act 1995.

2.3.2 Identification of all plants species in each vegetation type

The identification of all species in each vegetation type is important for 5 reasons: to help determine if endangered ecological communities occur, to determine the species richness of the site, to allow independent checking of the field survey, to give an indication to Council of how adequate the search for threatened species was and to allow Council to assess the ecological ability of the persons carrying out the survey and professional judgements involved in the assessment of impact.

2.4 Qualifications and Experience of the Field Ecologist and Author

Nicholas Skelton's formal qualifications include a Bachelor of Science with Honours (B. Sc. (Hons) USyd) and a Masters in Applied Science (M. App. Sc. in Vegetation Management UNSW). Nick has been an environmental scientist for 20 years, including a university lecturer, research ecologist and a bush regenerator for 8 years. His work is focused on the Sydney bioregion and he has published many papers in independently reviewed journals on the ecology of Sydney. He has expert knowledge of the local soils, the climate of this area and the local indigenous plants and animals as a result of over 900 ecological surveys. Nick is a member of the relevant professional organisations including: a practising member of the Ecological Consultants Association of NSW, Ecological Society of Australia, AURISA, Royal Zoological Society and Birds Australia. He is licensed by NSW DECCW and NSW Department of Primary Industries to carry out surveys on threatened plants and animals and he is a qualified Biobanking certifier. Further details can be found at www.ecology.net.au.

3 Findings

3.1 Disturbance History and Vegetation Types

The northern-eastern half of the property (Zone A) seemed to have contained a house in the recent past and has a long history of disturbance by clearing, earthworks, landscaping and access. Some recent planting of native species has occurred along a new paling fence in the north-eastern corner. Most of Zone A is rubble, road base or grassland with scattered trees. This area is highly degraded and of low ecological value.

The vegetation in Zone B and in the road reserve along Mona Vale Road is on a Shale/Sandstone soil Transition. It contains species of Turpentine Forest and Sandstone Slopes Forest. Due to a long absence of fire, the site also contains some rainforest species. Zone B contains no ground-cover and a very dense mid-storey of over 70% weeds. The tree canopy is dominated by Turpentine (*Syncarpia glomulifera*) and Sydney Peppermint (*Eucalyptus piperita*). This area suffers greatly from edge effect, i.e. is very weedy along the outskirts and has low ecological value. The land farther to the west towards the Ingleside escarpment contain high quality native forest with high resilience.

See Tables 4, 5 and 6 for native and exotic flora species within the two Zones.

3.2 Threatened Ecological Communities

The NSW Threatened Species Conservation Act 1995, lists Endangered Ecological Communities that are likely to become extinct in nature unless the circumstances and factors threatening their survival cease to operate.

No Endangered Ecological Community was found to exist on this property and no 7-part tests is warranted.

Map 2: Existing Ecological Values and Proposal

3.3 Flora

3.3.1 Native Flora Species Found

This site has a low level of native species richness only 30 native flora species were identified during the survey. These were mostly tree species with only 7 native shrubs, this is due to competition with the weed thicket. None of these species are threatened or rare. Table 4 lists all native flora species found on the property during the survey. A summary of the Families and the types of plant are also given in Table 5.

Table 3: Native Plant Species found during survey

Genus and Species	Common Name	Habit	Zone A	Zone B
Acronychia oblongifolia	Common Acronychia	Shrub		√
Allocasuarina torulosa	Forest She-oak	Tree		√
Angophora costata	Smooth-barked Apple	Tree	√	√
Archontophoenis cunninghamiana	Bangalow Palm	Palm		√
Breynia oblongifolia	Breynia	Shrub	√	√
Cassytha pubescens	Hairy Devil's Twine	Vine		√
Clerodendrum tomentosum	Hairy Clerodendrum	Shrub		√
Dianella caerulea	Blue Flax Lily	Herb	√	
Dodonaea triquetra	Hop Bush	Shrub		√
Endiandra sieberi	Corkwood	Tree		√
Entolasia marginata		Grass		√
Eucalyptus paniculata	Grey Ironbark	Tree		√
Eucalyptus pilularis	Blackbutt	Tree	√	
Eucalyptus piperita	Sydney Peppermint	Tree	√	√
Eucalyptus saligna	Sydney Blue Gum	Tree	√	
Eustrephus latifolius	Wombat Berry	Vine		√
Ficus rubiginosa	Port Jackson Fig	Tree		√
Geitonoplesium cymosum	Scrambling Lily	Vine		√
Glochidion ferdinandi	Cheese Tree	Tree	√	√
Imperata cylindrica	Blady Grass	Grass		√
Jasminum mesneyi	Yellow Jasmine	Shrub		√
Livistona australis	Cabbage Tree Palm	Palm	√	
Lomandra longifolia	Spiny-headed Mat-rush	Herb	√	
Notelaea ovata	Mock Olive	Shrub	√	
Oxalis sp.	Yellow Oxalis	Herb		√
Pittosporum undulatum	Sweet Pittosporum	Tree	√	√
Pteridium esculentum	Bracken	Fern		√
Stephania japonica	Snake Vine	Vine	√	√
Syncarpia glomulifera	Turpentine	Tree		√
Wilkiea huegeliana	Wilkiea	Shrub		√

Table 4: Summary of Plant Species

Family								
	Fern	Grass	Herb	Palm	Shrub	Tree	Vine	Grand Total
ARECACEAE				2				2
CASUARINACEAE						1		1

DENNSTAEDTIACEAE	1							1
EUPHORBIACEAE					1	1		2
LAURACEAE						1	1	2
LOMANDRACEAE			1					1
LUZURIAGACEAE							2	2
MENISPERMACEAE							1	1
MONIMIACEAE					1			1
MORACEAE						1		1
MYRTACEAE						6		6
OLEACEAE					2			2
OXALIDACEAE			1					1
PHORMIACEAE			1					1
PITTOSPORACEAE						1		1
POACEAE		2						2
RUTACEAE					1			1
SAPINDACEAE					1			1
VERBENACEAE					1			1
Grand Total	**1**	**2**	**3**	**2**	**7**	**11**	**4**	**30**

3.3.2 Assessment of Threatened Flora Species

No threatened flora species were found on this study site during this survey.

Table 5: Assessment of Targeted Threatened Flora Species

Scientific Name	Habitat Preference	Likely Occurrence
Epacris purpurascens var. purpurascens	Associated with Sydney Sandstone Gully Forest and wet heath in damp places on sandstone with a strong clay influence.	Low. No suitable habitat occurs on this site. Searched but not found during survey. **No further assessment required.**
Eucalyptus camfieldii	Usually found on shallow sandstone soils bordering coastal heath with laterite influenced soils, often with restricted drainage.	Low. No suitable habitat occurs on this site. Searched but not found during survey. **No further assessment required.**
Grevillea caleyi	Found on laterite soils but largely restricted to deeply eroded Shale.	Low. No suitable habitat occurs on this site. Searched but not found during survey. **No further assessment required.**
Microtis angusii	A terrestrial orchid that is currently only known from one site at Ingleside. Usually occurs on ridgetop lateritic soils.	Low. No suitable habitat occurs on this site. Searched but not found during survey. **No further assessment required.**
Persoonia hirsuta	Usually found in low woodland or scrub/heath on sandstone with a clay influence.	Low. No suitable habitat occurs on this site. Searched but not found during survey. **No further assessment required.**
Pimelea curviflora var. curviflora	Usually found in shale/sandstone transition woodland on sandstone and laterite soils.	Low. No suitable habitat occurs on this site. Searched but not found during survey. **No further assessment required.**
Tetratheca glandulosa	Found in Sydney Sandstone Ridge top Woodland in sandy or rocky heath scrub. Often associated with a sandstone/shale interface where soils have a stronger clay influence.	Low. No suitable habitat occurs on this site. Searched but not found during survey. **No further assessment required.**

3.3.3 Weed Species Found

The site contains a high number (62) of weed species. Table 6 lists weed species found on the site during the survey.

Table 6: Weed species found during survey

Scientific Name	Common Name	Status	Zone A	Zone B
Acacia saligna	Golden Wreath Wattle	EW	√	√
Acetosa sagittata	Turkey Rhubarb	NW-C4		√
Ageratina adenophora	Crofton Weed	EW		√
Anredera cordifolia	Madeira Vine	NW-C4		√
Araucaria heterophylla	Norfolk Island Pine		√	
Araujia sericifera	Mothvine	EW		√
Asparagus aethiopicus	Asparagus Fern	NW-C4	√	√
Asparagus plumosus	Climbing Asparagus Fern	NW-C4		√
Bidens pilosa	Bidens	EW	√	
Calendula sp.	Marigold		√	
Chlorophytum comosum	Spider Plant	EW		√
Cinnamomum camphora	Camphor Laurel	NW-C4	√	√
Conyza bonariensis	Fleabane	EW	√	√
Cotoneaster glaucophyllus	Cotoneaster	EW		√
Cynodon dactylon	Couch			√
Delairea odorata	Cape Ivy	NW-C4	√	
Digitaria sp.	Summer Grass		√	
Ehrharta erecta	Ehrharta	EW		√
Eriobotrya japonica	Loquat			√
Erythrina sykesii	Coral Tree	EW	√	√
Euphorbia pulcherrima	Poinsettia			√
Ficus benjimina	Weeping Fig		√	
Ficus elastica	Rubber Fig			√
Ficus lyrata	Fiddle-leaf Fig		√	
Foeniculum vulgare	Fennel		√	
Hedera helix	English Ivy		√	
Hibiscus sp.	Hibiscus			√
Hypochaeris glabra	Smooth Catsear	EW		√
Ipomoea indica	Morning Glory	NW-C4		√
Jacaranda mimosifolia	Jacaranda			√
Lagerstroemia indica	Crepe Myrtle			√
Lantana camara	Lantana	NW-C4	√	√
Ligustrum sinense	Small-leaved Privet	NW-C4	√	
Liquidambar sp.	American Sweetgum			√
Lonicera japonica	Japanese Honeysuckle	EW		√
Monstera deliciosa	Fruit Salad Plant		√	
Morus alba	Mulberry			√
Musa sp.	Banana Plant			√
Nephrolepis cordifolia	Fishbone Fern	EW		√
Nerium oleander	Oleander			√
Ochna serrulata	Ochna	NW-C4		√
Paspalum dilatatum	Paspalum		√	
Passiflora sp.	Passionfruit			√
Pennisetum clandestinum	Kikuyu Grass		√	
Persea americana	Avocado			√
Phoenix canariensis	Canary Island Date Palm		√	
Phyllostachys sp.	Rhizomatous Bamboo	NW-C4		√

Scientific Name	Common Name	Status	Zone A	Zone B
Pinus radiata	Radiata Pine			√
Pistacia vera	Pistachio			√
Plantago lanceolata	Plantane		√	
Senna pendula	Cassia	EW	√	√
Sida rhombifolia	Paddy's Lucerne		√	
Strelitzia sp.	Strelitzia			√
Tecoma capensis	Cape Honeysuckle			√
Trachelospermum jasminoides	Star Jasmine		√	
Tradescantia albiflora	Wandering Jew	NW-C4		√
Trifolium sp.	Clover		√	
Verbena bonariensis	Purpletop	EW	√	√
Vitis vinifera	Grape		√	
Watsonia meriana	Watsonia	EW	√	
Wisteria floribunda	Wisteria			√
	Bromeliad			√
	Millet		√	

EW = Environmental Weed, NW = Noxious Weeds (Noxious Weeds Act, 1993) (C1 - State prohibited & notifiable weeds, C2 - Regionally Prohibited & notifiable weeds, C3 - Regionally controlled weed, C4 - Locally Controlled Weed, C5 - Restricted & notifiable weed.)

3.4 Fauna

3.4.1 Description of Fauna Habitat

The study site does not contain any permanent waterways, creeks, ponds or wetlands. There are no large caves, culverts or other structures that could be used for roosting by bats. Half of the area is cleared grassland/road and the other half is native bushland. No tree hollows have been found during the survey. However, closer inspection of trees is suggested before any are removed.

Zone A contains some food trees for bats and could be used for foraging by highly mobile species, such as possums and birds. These exposed areas and grasslands could provide habitat for snakes and lizards. Due to the high exposure, degradation and disturbance, it is unlikely that cryptic or shy species use this habitat.

Zone B provides potential nesting habitat for small birds due to its dense mid-storey vegetation. Care needs to be taken when removing large patches of weeds to allow birds to relocate. This area could also provide foraging habitat for small mammals and birds.

3.4.2 Assessment of Threatened Fauna Species

No threatened fauna species were found on this property during this survey.

The site is unlikely to provide good habitat for threatened fauna species; the likelihood of these occurring on the site is assessed in the table below.

Table 7: Assessment of Targeted Threatened Fauna Species

Common Name	Scientific Name	Potential to occur at this site
Amphibians		
Giant Burrowing Frog	*Heleioporus australiacus*	Low. Found in heath, woodland and open forest with sandy soils. Generally travels several hundred metres to creeks to breed. Burrows into deep litter or loose soil, emerging to feed or breed after rain. Diet includes ground-dwelling invertebrates such as ants, beetles and spiders. No suitable habitat occurs on this site. **No further assessment required.**
Red-crowned Toadlet	*Pseudophryne australis*	Low. Occurs in open forests. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter. No suitable habitat occurs on this site. **No further assessment required.**
Birds		
Gang-gang Cockatoo	*Calyptorhynchus lathami*	Low. Inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000 m in which stands of she-oak species, particularly Black She-oak (*Allocasuarina littoralis*), Forest She-oak (*A. torulosa*) or Drooping She-oak (*A. verticillata*) occur. Feeds almost exclusively on the seeds of several species of she-oak, shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites. Some food trees on site. No nesting hollows found during survey. No evidence of species using the site for foraging. **No further assessment required.**
Glossy Black-Cockatoo	*Calyptorhynchus lathami*	Low. Depends on large hollow-bearing Eucalypts for nesting and Black She-oak (*Allocasuarina littoralis*) or Forest She-oak (*A. torulosa*) for feeding. Some food trees on site. No nesting hollows found during survey. No evidence of species using the site for foraging. **No further assessment required.**
Swift Parrot	*Lathamus discolour*	Low. Migrates to the Australian south-east mainland between March and October from Tasmania. Occurs in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoures trees such as Swam Mahogany (*Eucalyptus robusta*), Spotted Gum (*Corymbia maculata*), Red Bloodwood (*C. gummifera*), Mugga Ironbark (*E. sideroxylon*) and White Box (*E. albens*). No food trees on site. No suitable habitat. **No further assessment required.**
Barking Owl	*Ninox connivens*	Low. Nests in large tree hollows. Inhabits eucalypt woodland, open forest, swamp woodlands along watercourses. Roosts along creek lines, usually in tall understorey trees with dense foliage such as *Acacia* and *Casuarina* species, or the dense clumps of canopy leaves in large Eucalypts. Feeds on a variety of prey, with invertebrates predominant for most of the year, and birds and mammals such as smaller gliders, possums, rodents and rabbits becoming important during breeding. Low quality habitat on site. No permanent water or roosting habitat on site. No evidence of roosting or nesting found during survey. **No further assessment required.**

Common Name	Scientific Name	Potential to occur at this site
Powerful Owl	*Ninox strenua*	Low. Nests in large tree hollows. Inhabits large tracts of forest in a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Roosts along creek lines. Feeds on medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. Low quality habitat on site. No permanent water or roosting habitat on site. No evidence of roosting or nesting found during survey. **No further assessment required.**
Regent Honeyeater	*Xanthomyza phrygia*	Low. Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She-oak. Mainly feeds on the nectar from a wide range of eucalypts and mistletoes. When nectar is scarce lerp, honeydew and insects comprise a large proportion of the diet. A shrubby understorey is an important source of insects and nesting material. Low quality habitat on site. None seen or heard during survey. **No further assessment required.**
Mammals		
Eastern Pygmy-possum	*Cercartetus nanus*	Low. Found in a broad range of habitats from rainforest through sclerophyll forest and woodland to heath, but in most areas woodlands and heath appear to be preferred. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes. Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, possum dreys or thickets of vegetation. No suitable habitat on site. No food trees. **No further assessment required.**
Spotted-tailed Quoll	*Dasyurus maculatus*	Low. Uses hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites. Females occupy home ranges up to about 750 hectares and males up to 3500 hectares; usually traverse their ranges along densely vegetated creeklines. No scats or evidence of dens found on site. Possibly part of large home range for foraging. **No further assessment required.**
Southern Brown Bandicoot (eastern)	*Isoodon obesulus obesulus*	Low. Usually found in heath or open forest with a dense understorey on sandy or friable soils. Feeds on a variety of ground-dwelling invertebrates and the fruit-bodies of hypogenous (underground-fruiting) fungi. No suitable habitat on site. No bandicoot diggings found during survey. **No further assessment required.**
Eastern Bentwing-bat	*Miniopterus schreibersii oceanensis*	Low. Maternity roosts are usually in large caves or derelict mines, storm-water tunnels, buildings and other man-made structures. Disperses over 300 km range from roost. No roosts found on site. Only likely to be a small part of a large foraging home range. **No further assessment required.**
Eastern Freetail-bat	*Mormopterus norfolkensis*	Low. Occurs in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in man-made structures. Solitary and probably insectivorous. Low quality habitat on site. Likely to use the site for foraging only. **No further assessment required.**
Large-footed Myotis	*Myotis macropus*	Low. Generally roosts in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, stormwater channels, buildings, under bridges and in dense foliage. Forages over streams and pools catching insects and small fish by raking their feet across the water surface. No permanent water. No suitable habitat on site. **No further assessment required.**
Koala	*Phascolarctos cinereus*	Low. Feeds on the foliage of more than 70 Eucalypt species and 30 other species. No suitable habitat on site. No known local population. Site could be a small part of a large foraging home range. **No further assessment required.**

Common Name	Scientific Name	Potential to occur at this site
Grey-headed Flying-fox	*Pteropus poliocephalus*	Low. Roosting camps are generally located within 20 km of a regular food source and in gullies, close to water, in vegetation with a dense canopy. Feeds on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. No roosts on site. Some food trees on site. Likely to forage or fly over. **No further assessment required.**
Greater Broad-nosed Bat	*Scoteanax rueppellii*	Low. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Usually roosts in tree hollows, rarely in buildings. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m as it searches for beetles and other large, slow-flying insects. No permanent water on site. No suitable habitat. **No further assessment required.**
Reptiles		
Rosenberg's Goanna	*Varanus rosenbergi*	Low. Found in heath, open forest and woodland. Associated with termites; mounds are a critical habitat component. Requires large areas of habitat. Feeds on carrion, birds, eggs, reptiles and small mammals. Shelters in hollow logs, rock crevices and in burrows. No suitable habitat occurs on this site. **No further assessment required.**

3.4.3 Non-Threatened Fauna Found

During the site inspection evidence was found of the following fauna species using the site.

Table 8: Fauna species found during survey

Common Name	Scientific Name	Evidence
Birds		
Laughing Kookaburra	*Dacelo novaeguineae*	Seen & heard
Noisy Miner	*Manorina melanocephala*	Seen & heard

3.5 Impact on Wildlife Corridor

The property is located in a residential/industrial area. It is part of an east-west wildlife corridor connecting large areas of habitat in the peninsular of Pittwater to Ku-ring-gai Chase National Park in the west. Highly mobile species could use the bushland in Zone B and/or the trees in Zone A to move between the Mona Vale Cemetery and the neighbouring properties and bushland further west. This proposal will not significantly fragment or isolate any habitat areas. Recommendations to replant with native species are made.

3.6 Loss of Tree Hollows

Many Australian mammals and birds rely on tree hollows for nesting. The loss of tree hollows is a key threatening process for many native species and should be avoided where possible. No trees with hollows were found during the survey. Due to the density of the weed cover preventing effective observation further hollow search after weed removal is recommended.

4 Threatened Species Impact Assessment

4.1 7-part Tests of Significance

The initial assessment of the impact of this proposal came to the conclusion that no 7-part tests of significance need to be carried out. The study site is too degraded, too isolated or the wrong vegetation type to provide potential for any local threatened species.

5 Biodiversity Impact Conclusions

Based on the information gathered, it is considered that the proposal will not have a significant impact on any threatened species, populations or endangered ecological community. Further assessment in the form of a Species Impact Statement is not recommended in relation to this proposal. Recommendations are made to further reduce the impact of the proposal.

6 Ameliorative Conditions & Recommendations

No native trees are to be removed under this proposal and patches of native shrubs are to be retained if found.

Loss of corridor value should be replaced by planting native species in east west rows and maintaining or replenishing the native trees cover.

All weeds are to be removed and effectively controlled on the whole of the property in the long term using industry standard techniques and qualified bush regenerators.

Tree hollows may have been missed due to the thick weed cover. Additional survey is advised after weed removal.

Changes in soil level near trees will have a negative impact on tree health. Soil level changes should be avoided.

Weed removal of mid-storey vegetation in Zone B is to be done in daily patches in order to allow small birds and mammals to relocate.

Any modification of the bushland for weed removal is to be carried out by hand using bush regeneration techniques. Disturbance to the native vegetation is to be minimised.

There should be no removal of bushrock, bark or large pieces of dead wood as they are important habitat for invertebrates and reptiles.

Zone B provides potential nesting habitat for small birds due to its dense mid-storey vegetation. Care needs to be taken when removing large patches of weeds to allow birds to relocate.

7 Management Guidelines

Replanting of native species in any disturbed areas is essential to reduce erosion, improve fauna habitat and to permanently control weeds. Local indigenous plants grown from seed stock, tube stock or cutting are appropriate.

Any woodchips from the Eucalypts on the site should be retained on site so they can be used on site. Weed species must not be chipped especially the rubber tree.

All machinery is to be cleaned before entering the site. Soil-born pathogens can be a major threat to native flora.

8 References

Benson, D. and Howell, J. 1994. The natural vegetation of the Sydney 1:100 000 map sheet. *Cunninghamia* 3: 667-787.

Cropper, S.C. (1993) Management of Endangered Plants CSIRO Publications, East Melbourne.

Department of Environment and Climate Change NSW (DECC), Threatened Species Web Site, viewed 19/02/2010, http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/index.aspx

Department of the Environment, Water, Heritage and the Arts, Species Profile and Threats Database, Web Site viewed 19/02/2010, http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

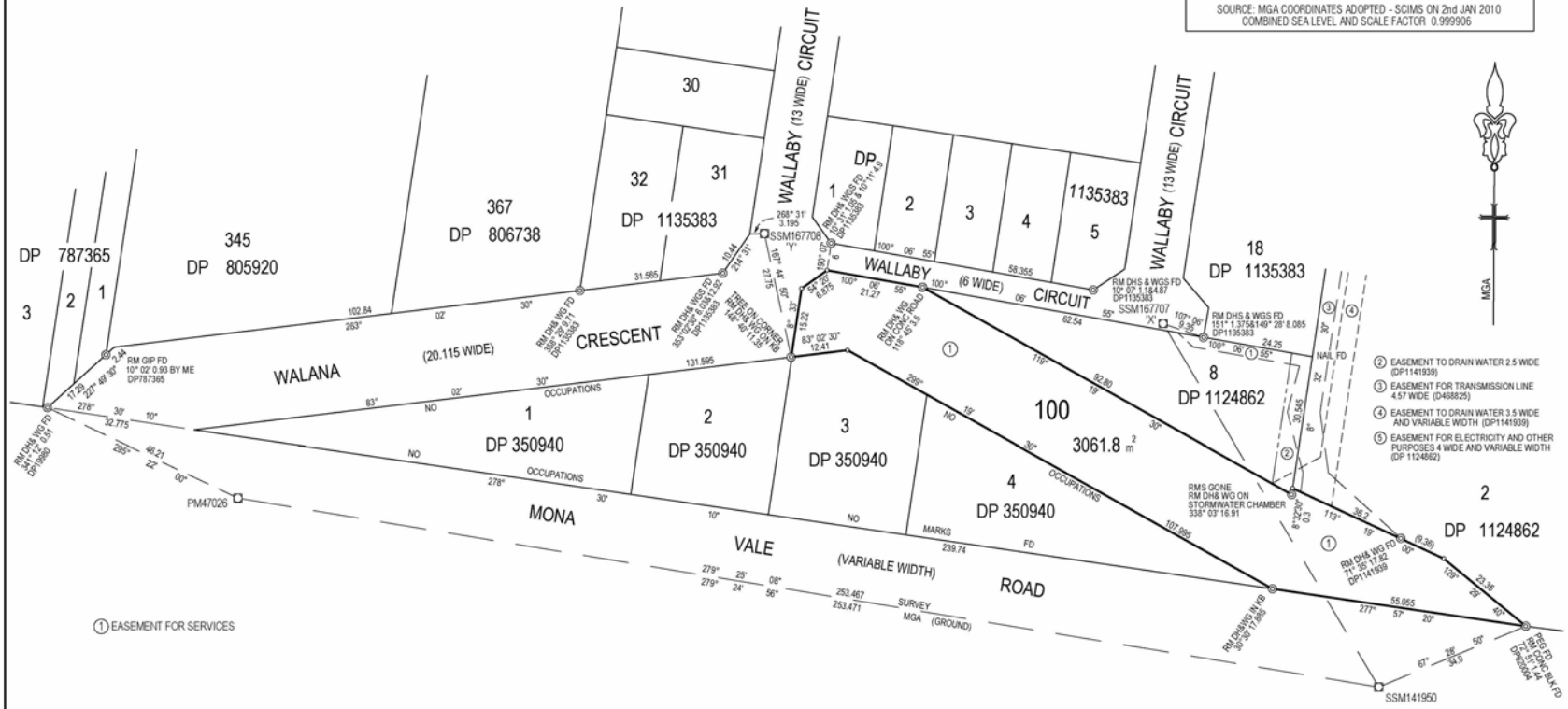
National Parks & Wildlife Services (NPWS), Native Vegetation of the Cumberland Plain 1:100,000 Map, October 2002

Tozer, M., 2003, The native vegetation of the Cumberland Plain, western Sydney: Systematic classification and field identification of communities. Cunninghamia (2003) 8(1): 1–75. A

Pittwater Council Web Site, http://www.pittwater.nsw.gov.au, viewed 19/02/2010

ATTACHMENT 12 – DEPOSITED PLANS

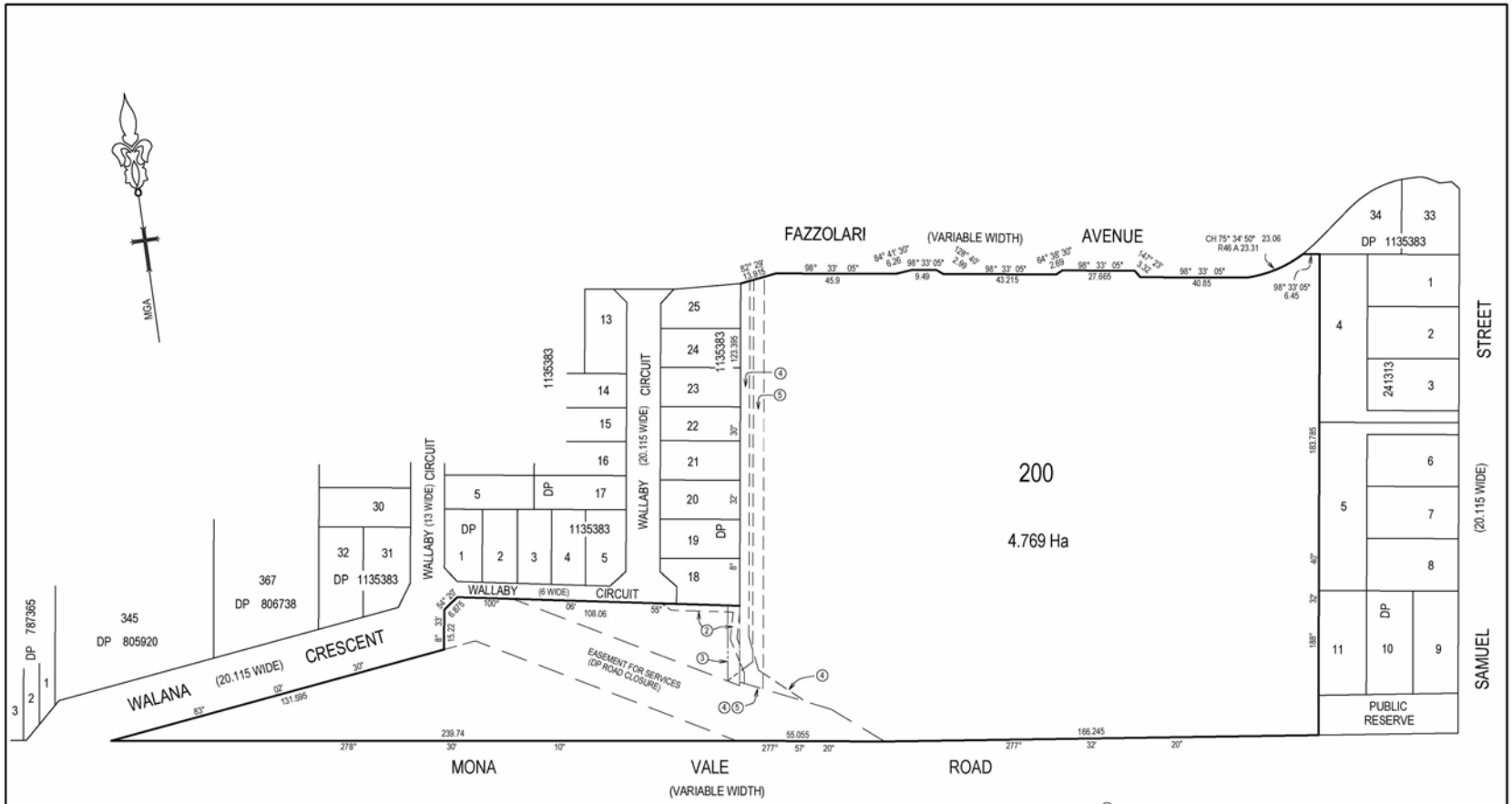
SURVEYING REGULATION 2006 : CLAUSE 35(1)(B) & 61 (2) MGA COORDINATES					
MARK	EAST	NORTH	ZONE	ORDER	CLASS
PM 47026	340 947.514	6 272 517.308	56	3	B
SSM 141950	341 197.547	6 272 475.845	56	2	B
SSM 167707	341 150.194	6 272 555.297	56	4	C
SSM 167708	341 062.891	6 272 575.323	56	4	C
SOURCE: MGA COORDINATES ADOPTED - SCIMS ON 2nd JAN 2010 COMBINED SEA LEVEL AND SCALE FACTOR 0.999906					



CONNECTIONS BETWEEN SSMS

SSM 167707 TO SSM 167708	102°	55'	09"	89.58	SURVEY
	102°	55'	09"	89.579	MGA GROUND
SSM 141950 TO SSM 167707	329°	12'	42"	92.501	SURVEY
	329°	12'	19"	92.501	MGA GROUND

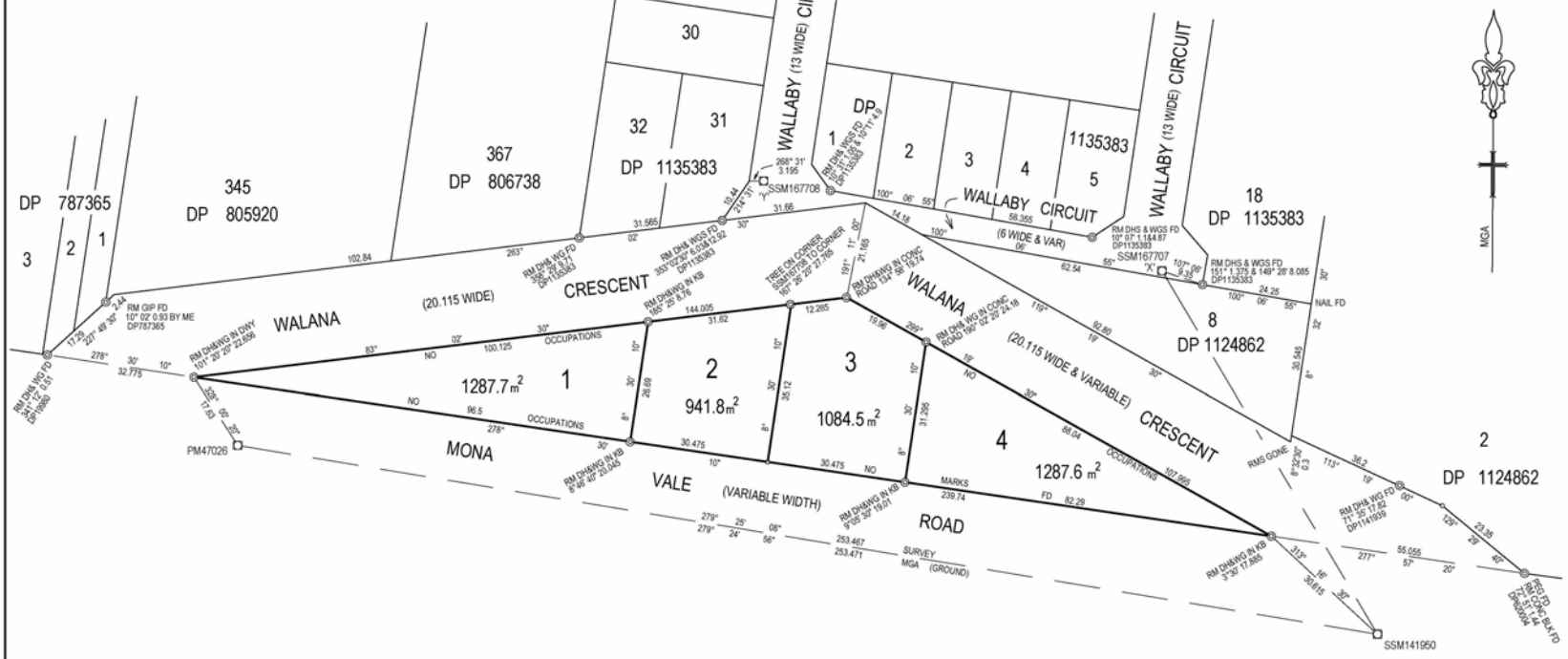
SURVEYOR : STEPHEN JAMES DAVEY DATE OF SURVEY : 15TH APRIL 2010 SURVEYOR'S REF : WALANA CRES ROAD CLOSURE	PLAN OF PART OF WALANA CRESCENT CREATING LOT 100	LGA : PITTWATER LOCALITY : MONA VALE Subdivision No : Lengths are in metres . Reduction Ratio 1: 600	REGISTERED



SURVEYOR : STEPHEN JAMES DAVEY DATE OF SURVEY : 15TH APRIL 2010 SURVEYOR'S REF : WALANA CRES CONSOLIDATION	PLAN OF CONSOLIDATION OF LOTS 2 AND 8 IN DP1124862 LOTS 1,2,3 AND 4 IN DP(REDEFINITION) AND LOT 100 IN DP(ROAD CLOSURE)	LGA : PITTWATER LOCALITY : MONA VALE Subdivision No : Lengths are in metres . Reduction Ratio 1: 1000	REGISTERED

47697.2 m2

SURVEYING REGULATION 2006 : CLAUSE 35(1)(B) & 61 (2) MGA COORDINATES					
MARK	EAST	NORTH	ZONE	ORDER	CLASS
PM 47026	340 947.514	6 272 517.308	56	3	B
SSM 141950	341 197.547	6 272 475.845	56	2	B
SSM 167707	341 150.194	6 272 555.297	56	4	C
SSM 167708	341 062.891	6 272 575.323	56	4	C
SOURCE: MGA COORDINATES ADOPTED - SCIMS ON 2nd JAN 2010 COMBINED SEA LEVEL AND SCALE FACTOR 0.999906					



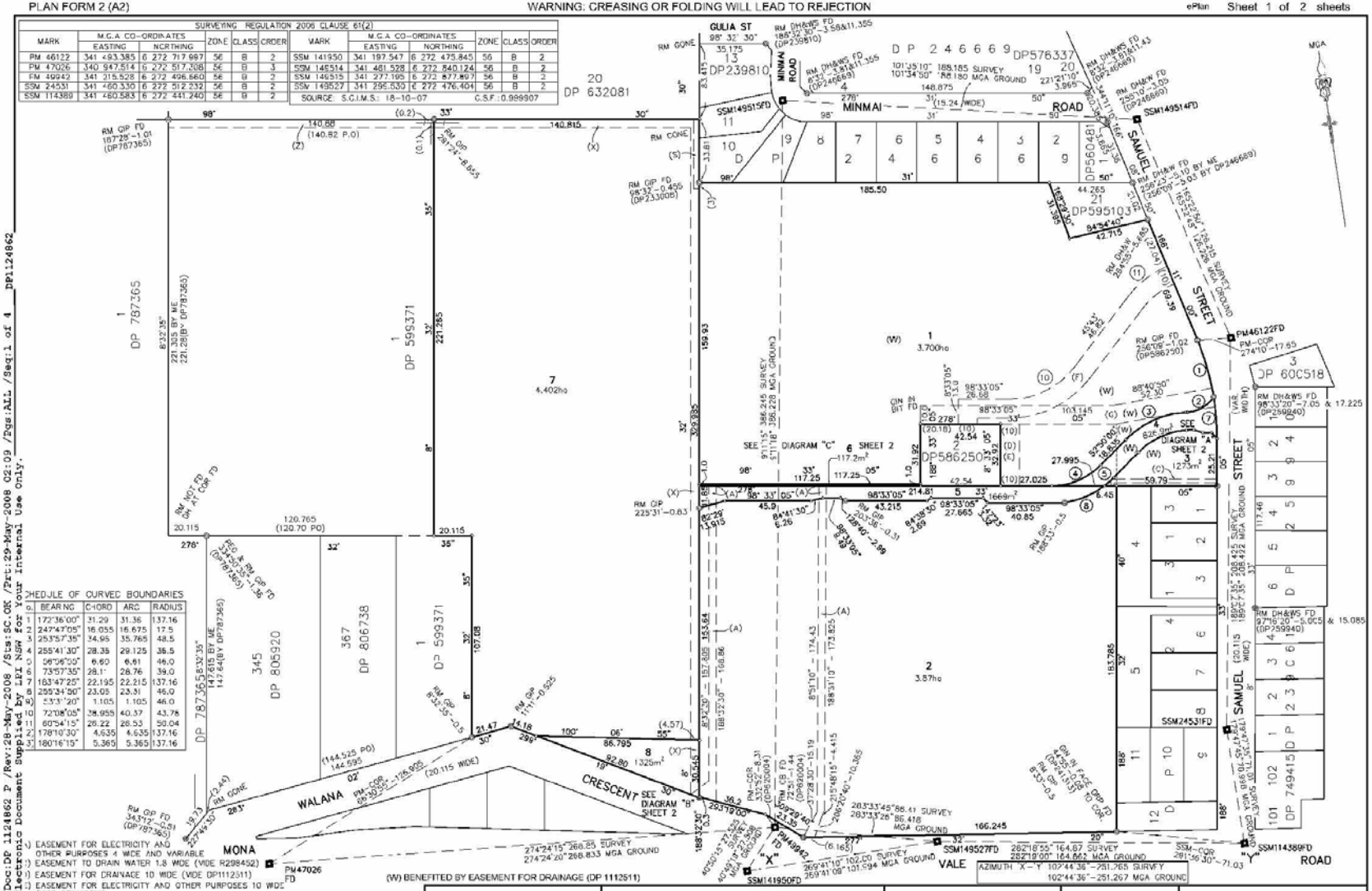
CONNECTIONS BETWEEN SSMS

SSM 167707 TO SSM 167708	102°	55'	09"	89.58	SURVEY
	102°	55'	09"	89.579	MGA GROUND
SSM 141950 TO SSM 167707	329°	12'	42"	92.501	SURVEY
	329°	12'	19"	92.501	MGA GROUND

SURVEYOR : STEPHEN JAMES DAVEY DATE OF SURVEY : 15TH APRIL 2010 SURVEYOR'S REF : WALANA CRES ROAD CLOSURE	PLAN OF REDEFINITION OF LOTS 1, 2, 3 AND 4 IN DP350940	LGA : PITTWATER LOCALITY : MONA VALE Subdivision No : Lengths are in metres . Reduction Ratio 1: 600	REGISTERED	

PLAN FORM 2 (A2) WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION ePlan Sheet 1 of 2 sheets

SURVEYING REGULATION 2006 CLAUSE 61(2)											
MARK	M.G.A CO-ORDINATES		ZONE	CLASS	ORDER	MARK	M.G.A CO-ORDINATES		ZONE	CLASS	ORDER
	EASTING	NORTHING					EASTING	NORTHING			
PM 46122	341 493.385	6 272 717.997	56	B	2	SSM 141950	341 197.547	6 272 475.845	56	B	2
PM 47026	340 947.514	6 272 517.308	56	B	3	SSM 149514	341 461.528	6 272 840.124	56	B	2
PM 49942	341 215.528	6 272 496.660	56	B	2	SSM 149515	341 277.195	6 272 877.897	56	B	2
SSM 24531	341 460.330	6 272 512.232	56	B	2	SSM 149527	341 295.530	6 272 476.404	56	B	2
SSM 114389	341 460.583	6 272 441.240	56	B	2	SOURCE: S.C.I.M.S.: 18-10-07			C.S.F.: 0.999907		



SCHEDULE OF CURVED BOUNDARIES

No.	BEARING	CHORD	ARC	RADIUS
1	172°36'00"	31.29	31.36	137.16
2	247°47'05"	16.055	16.675	17.5
3	253°57'35"	34.95	35.765	48.5
4	255°41'30"	28.35	29.125	36.5
5	56°06'09"	6.60	6.61	46.0
6	73°57'35"	28.1	28.76	39.0
7	183°47'25"	22.195	22.215	137.16
8	255°34'50"	23.05	23.31	46.0
9	53°31'20"	1.105	1.105	46.0
10	72°08'05"	38.955	40.37	43.78
11	60°54'15"	26.22	26.53	50.04
12	178°10'30"	4.635	4.635	137.16
13	180°16'15"	5.365	5.365	137.16

1) EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 4 WIDE AND VARIABLE
2) EASEMENT TO DRAIN WATER 1.8 WIDE (VIDE R298452)
3) EASEMENT FOR DRAINAGE 10 WIDE (VIDE DP1112511)
4) EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 10 WIDE (VIDE DP1112511)
5) RIGHT OF CARRIAGEWAY 10 WIDE (VIDE Q414315)
6) EASEMENT FOR ELECTRICITY PURPOSES 10 WIDE (Q414315)
7) EASEMENT FOR ELECTRICITY PURPOSES 3 WIDE (VIDE X417173)
8) EASEMENT FOR TRANSMISSION LINE 4.57 WIDE (VIDE D468825)
9) EASEMENT FOR TRANSMISSION LINE 4.57 WIDE (VIDE D497656)

WARNING : Electronic Document Supplied by LPI NSW for Your Internal Use Only.

Doc:e-IDS /Doc:DP 1124862 P /Rev:28-May-2008 /Sts:SC.OK /Prt:29-May-2008 02:09 /Pgs:ALL /Seq:1 of 4 DP1124862

Surveyor: CHRISTOPHER MOYCE Date of Survey: 1-11-07 Surveyor's Ref: 23834-30465 "CHECKLIST"	PLAN OF SUBDIVISION OF LOTS X AND Y IN DP 372948, LOT A IN DP 359850, LOT 1 IN DP 586250, LOT 31 IN DP 603089 AND LOT 7099 IN DP 1051218	LGA: PITTWATER Locality: MONA VALE Subdivision No: Lengths are in metres. Reduction Ratio 1:1250	Registered: 8.5.2008	DP1124862

MP RETAINED PERMANENTLY