rain Tree consulting

Arboricultural Management

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TREE ASSESSMENT & IMPACT REPORT

343 to 345 BARRENJOEY ROAD NEWPORT, SYDNEY, NSW

Client:	Fabcot Pty Ltd C/- Habitation David Vago Landscape Architect
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INTRODUCTION

Fabcot Pty Ltd C/- Habitation Landscape Architecture Mr David Vago has commissioned rain*T*ree consulting to assess the Safe Useful Life Expectancy (S.U.L.E) and potential impacts to significant trees in relation to a new development proposal.

The new development consists of constructing a proposed supermarket primarily occupying the rear car parking area of the site formally identified as DP 6248 being 343 to 345 Barrenjoey Road, Newport, Sydney, NSW.

This report includes information regarding the health and condition of trees affected by the development proposal. Recommendations for the retention, remediation or removal of trees are based on their S.U.L.E. category and potential impacts received by the proposal.

Information contained in this Tree Assessment and Impact Report reflects the condition of the trees at the time of inspection. This report is not a detailed hazard assessment, however, recommendations are made if further investigations are required.

Each tree has been referenced by number and maybe located and identified within the provided Tree Assessment Schedule, and Tree Location Plan, Appendices C and D.

The Local Government Authority (LGA) Pittwater Council's Tree Preservation Order (TPO) has been referenced to determine *exempt trees under this proposal.

Trees marked with an asterisk (*) before their number within the Tree Schedule Appendix C, indicate undesirable (exempt) species located on site.

Care has been taken to obtain information from reliable sources.

All data has been verified as far as possible, however, I can neither guarantee nor be responsible for the accuracy of information provided by others.

1.0 METHODOLOGY

1.1 In preparation for this report a limited ground level visual tree assessment (*Mattheck* 1994) was undertaken by the author to identify the health, condition and estimated safe retention period of the trees on Friday 26 June 2009.

1.2 The inspection was limited to visual examination of the subject trees greater than 3m in height without dissection, probing or coring. No aerial (climbing) inspections, woody tissue testing or tree root investigation was undertaken as part of this tree assessment.

1.3 Tree height and canopy spread was estimated and expressed in metres, with trunk diameter measured approximately 1.4 metres above ground level and expressed as DBH (Diameter at Breast Height).

1.4 Root zone terminology used within this report has been referenced from Matheny N. & Clark J. 1998, Trees & Development *'A Technical Guide to Preservation of Trees During Land Development'*

CRZ - Calculated at 5 x the DBH. Soil area around a tree where the foundation (anchoring) roots are located that provides structural support. Disturbance can cause tree instability.

PRZ - Calculated at 10 x the BDH. Soil area around a tree where woody roots are located critical for moisture and nutrient uptake for maintaining good tree vigour.

1.5 Plans received to assist in preparation of this arboricultural assessment include.

Rice Darby Architects

- Preliminary Ground Floor Plan, Dwg No. DA. 05.

Habitation Landscape Architecture

- Landscape Plan, Dwg No. 09-070-Lo1, issue A, dated 6/07/2009.

Bee & Lethbridge P/L

- Site Survey Plan Ref: 13844, Feb 2003

2.0 DISCUSSIONS OF OBSERVATIONS

2.1 General Tree Assessment

2.1.1 Thirty six (36) trees have been assessed under this development proposal which contain a height greater than 3m.

Of the thirty six trees one (1) tree is located within the Council verge fronting Foamcrest Avenue and seven (7) trees are identified as exempt species within Pittwater Councils Exempt Species table of the Tree Preservation Order.

Exempt trees

2.1.2 Trees identified as exempt species located within the site are identified as,

- Trees 6, 18, 19, 20, 22, 35 and 36.

Council verge tree

2.1.3 Tree 1 displays vehicle damage and wounding to the base with a modified one sided canopy due to power line pruning activities. It is possible that the apical stem from approximately the 6m mark is a result of regrowth - being a mature epicormic shoot from past lopping activities.

At the 6m mark swelling is evident indicating a potential defective branch union.

The tree has a modified canopy formation which is not uniform or consistent with natural growth patterns of the species. The tree may be susceptible to wind snap in age progression due to an increased head weight as limited canopy exist mid trunk required to deflect high wind loading pressures.

Site trees

2.1.4 Of the remaining trees assessed those displaying defects or poor condition resulting in short term removal due to hazard values are identified as,

- Trees 3, 26, 27 and 30.

Trees 26, 27 and 30 have been subjected to Critical anchoring Root Zone damage caused by significant excavation works to the east. They express a bio mass to the west indicating a potential for windthrow (failure at or near ground level).

2.1.5 Remaining trees are considered typical for their species type within their location containing no defects which warrant tree removal due to being significantly defective.

2.2 Tree Removal Due to Development Proposal

Exempt trees

2.2.1 The removal of the following exempt / undesirable tree species are permitted under Clause 8 of the Local Government Authority (LGA) Tree Preservation Order (TPO).

- Trees 6, 18, 19, 20, 22, 35 and 36.

Trees which fall within the development footprint

2.2.2 All assessed trees fall within the development footprint and require removal to complete the proposed design.

Council Verge Tree 1 is located where the new proposed Loading Dock entrance is required [Plan DA 05 and Landscape Plan 09-070-Lo1].

3.0 CONCLUSIONS and RECOMMENDATIONS

3.1 This Report formulates a Tree Audit which identifies the tree species affected by the new development proposal. Tree identification, health, condition and remaining Safe Useful Life Expectancy (SULE) of each tree have been identified within the Tree Assessment Schedule Appendix C for referencing.

3.2 All assessed trees require removal to complete the current design as the proposed development footprint covers the entire site, refer Appendix D p 15.

Yours sincerely

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APPENDICES

APPENDIX, A: Notes, references & terminology

Age classes: (I) Immature refers to a well established but juvenile tree. (SM) Semi-mature refers to a tree at growth stages between immaturity/ early semi maturity and full size. (M) Refers to a full size tree with some capacity for future growth.
Health: Refers to a trees vigor exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion and the degree of dieback.
Condition: Refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. Trunk and major branches), including structural defects such as cavities, crooked trunks or week trunk / branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition.
CRZ Calculated at 5 x the DBH. Soil area around a tree where the foundation roots are located that provides stability, disturbance can cause tree instability.
Included Bark: (Inclusion) a genetic weak fault, pattern of development at branch junctions where the bark is turned inwards rather than pushed out, can pose a potential hazard.
Windthrow: tree failure and collapse when a force exerted by wind against the crown and trunk overcomes resistance to that force in the root plate, such that the root plate is lifted from the soil on one side as the tree tips over.
Wind snap: The breaking of a tree's stem by wind.
Safe useful Life expectancy S.U.L.E.
In a planning context, the time a tree can expect to be usefully retained is the most important long-term consideration. SULE is a system designed to classify trees into a number of defined categories so that information regarding tree retention can be concisely communicated in a non-technical manner. SULE categories are easily verifiable by experienced personnel without great disparity. A trees SULE category is the life expectancy of the tree modified first by its age, health, condition, safety and location to give safe life expectancy, then by economics (ie cost of maintenance; retaining trees at an excessive management cost is not normally acceptable), effects on better trees, and sustained amenity (ie establishing a range of age classes in a local population). SULE assessments are not static but may be modified as dictated by changes in trees health and environment. Trees with short SULE may at present be making a contribution to the landscape but their value to the local amenity will decrease rapidly towards the end of this period, prior to their being removed for safety or nuisance reasons.

References:
Barrell J. 1993, 'Preplanning Tree Surveys: Safe useful Life expectancy (SULE) is the Natural Progression", Arboricultural Journal 17: 1, February 1993, pp. 33-46.
Mattheck, C. & Breloer, H.1994 *The Body Language of Trees.* Research for Amenity Trees No.4 the Stationary Office, London.
Matheny N. & Clark J. 1998, Trees & Development *'A Technical Guide to Preservation of Trees During Land Development'* International Society of Arboriculture, Champaign USA.
Pittwater Council – Exempt Tree Species Table, web reference http://www.pittwater.nsw.gov.au/local_services/tree_information/tree_preservation_order/exempt_species_table

DISCLAIMER & LIMITATION ON THE USE OF THIS REPORT
This report is to be utilized in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be use where the whole of the original report (or copy) is referenced in, and directly to that submission, report or presentation.
Unless stated otherwise: Information contained in this report covers only the tree that was examined and reflects the condition of the tree at the time of inspection: and the inspection was limited to visual examination of the subject tree without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject tree/s may not arise in the future.
Arborist cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specific period of time. Trees are a living entity and change continuously, they can be managed but not controlled and to be associated near one involves some degree of risk.

APPENDIX, B: SULE categories (after Barrell 1996, Updated 01/04/01)

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

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

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

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

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

3. Short SULE- Trees appeared to be retainable at the time of assessment for 5 to15 years with an acceptable degree of risk, assuming reasonable maintenance.

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

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

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

5. Small, young or regularly pruned- Trees that can be readily moved or replaced.

- **A.** Small trees less than 5m in height.
- **B.** Young trees less than 15 years old but over 5m in height.
- **C.** Formal hedges and trees intended for regular pruning to artificially control growth.

APPENDIX, C: Tree Assessment Schedule

	Trees located on site being *exempt species from protection under LGA policy.							Trees requiring short term removal due to poor condition reducing mid to long term safe retention values.
Tree No	***Botanical Name*** **COMMON NAME**	**Height x spread (metres)**	**DBH (mm)**	**Age**	**Health**	**Condition**	**S.U. L.E.**	**Comments**
1	*Araucaria heterophylla* NORFLOK ISD PINE	16 x 7	520	SM	Fair / Good	Fair	3B	Council verge tree, vehicle damage at base + wound, one sided canopy & bio mass west, pruned for power lines modifying canopy form, defect at 6m, swelling indicates potential regrowth from past lopped trunk – remaining leader may be poorly attached being result of epicormic growth.
2	*Eucalyptus botryoides* SOUTHERN MAHOGANY	6 x 5	220	SM	Fair / Good	Fair	3	Typical Brown Lace (basket) Lerp *Cardiaspina fiscella* causing minor decline of foliage, low broad spreading canopy, minor stem inclusions developing.
3	*Eucalyptus botryoides* SOUTHERN MAHOGANY	4 x 1.5	100	I	Poor	Poor	4C / 5	Foliage decline, trunk wounding significant, failed central leader, apical stem result of epicormic shoot.
4	*Eucalyptus botryoides* SOUTHERN MAHOGANY	3 x 4	110	I	Fair	Fair / Poor	3B / 5	Contorted form with basal damage + defect = low long term retention values.
5	*Sapium sebiferum* CHINESE TALLOWOOD	7 x 8	280 / 310	M	Fair / Good	Fair	3B	10% epicormic shoots, branch damage @3m east not immediately detrimental, minor stem inclusion at base.
*6	*Schinus terebinthifolius* BRAZILIAN MASTIC TREE	5 x 8	300 / 310	M	Good	Fair	3B	Basal twin stems included with slight separation east, developing reaction wood to support loading, canopy reductions to the west.
7	*Calitris rhomboidea* PORT JACKSON CYPRESS	12 x 4	280	M	Good	Fair	3B	Suppressed canopy, slight basal damage, typical for species type in location.

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Tree No	***Botanical Name* COMMON NAME**	**Height x spread (metres)**	**DBH (mm)**	**Age**	**Health**	**Condition**	**S.U. L.E.**	**Comments**
8	*Eucalyptus robusta* SWAMP MAHOGANY	6 x 5	170	SM	Good	Good	3	Typical for species type in location, one sided canopy + bio mass west with no significant defects.
9	*Eucalyptus robusta* SWAMP MAHOGANY	7 x 6	230	SM	Fair / Good	Good	3	25% decline in canopy, one sided canopy + bio mass east, 10% epicormic growth within canopy.
10	*Eucalyptus robusta* SWAMP MAHOGANY	13 x 12	360	SM	Fair / Good	Fair / Good	3B	15% decline in canopy, one sided canopy + bio mass east, 10% epicormic shoots, cavity + wound @1m south, shallow root plate evident.
11	*Casuarina glauca* SWAMP OAK	15 x 7	300	SM	Good	Good	3	Typical for species type in location with no significant defects
12	*Casuarina glauca* SWAMP OAK	15 x 7	380	SM	Good	Fair / Good	3	Developing stem inclusion between 3 main leaders @3m + branch junction swelling, developing hazard.
13	*Casuarina glauca* SWAMP OAK	15 x 6	360	SM	Good	Good	3	Typical for species type in location with no significant defects
14	*Ficus hillii* HILLS FIG	10 x 12	610 @1m	SM	Good	Fair / Good	3	Minor developing stem inclusion from main trunk, minor wound + cavity @.5m south east, shallow root plate, main trunk lean, may have failed at young age them self optimised.

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	Trees located on site being *exempt species from protection under LGA policy.							
	Trees requiring short term removal due to poor condition reducing mid to long term safe retention values.							

Tree No	***Botanical Name*** **COMMON NAME**	Height x spread (metres)	DBH (mm)	Age	Health	Condition	S.U. L.E.	Comments
15	*Syzygium australe* BUSH CHERRY / LILLY PILLY	4 x 3	100	I	Good	Good	3 / 5	Typical for species type in location with no significant defects, minor trunk wounding not immediately detrimental.
16	*Araucaria heterophylla* NORFLOK ISD PINE	18 x 7	450	SM	Good	Fair	3	Basal vehicle damage east + trunk swelling = indicator of internal wounding.
17	*Melaleuca quinquenervia* BROAD LEAVED PAPERBARK	12 x 14	1010	M	Good	Fair	3	Typical for species type in age class, developing stem inclusion, minor lower branch damage + wounding not immediately detrimental.
***18**	*Cinnamomum camphora* CAMPHOR LAURAL	8 x 8	550	SM	Good	Poor	4C	Significant basal damage + cavity developing, minor CRZ root plate damage south.
***19**	*Harpephyllum caffrum* KAFFIR PLUM	12 x 9	1000 (1m)	M	Fair	Fair	3B	Considerable decline in western canopy, developing inclusions on main lower stems, torsion split to south east, strong lean north = potential root plate failure when young.
***20**	*Harpephyllum caffrum* KAFFIR PLUM	6 x 8	300	SM	Good	Fair / Good	3	Suppressed one sided canopy + bio mass east, CRZ restriction east with no significant defects noted
21	*Macadamia integrifolia* MACADAMIA	6 x 5	Multi 100 average	SM	Good	Fair	3	Multi stemmed tree being potential suckers from removed stump.
***22**	*Liquidambar styraciflua* LIQUIDAMBAR	10 x 9	470 / 180	SM	Good?	Fair	3	Minor stem damage @2 m east, 2x minor developing cavities at base not immediately detrimental.

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	Trees requiring short term removal due to poor condition reducing mid to long term safe retention values.							

Tree No	***Botanical Name*** **COMMON NAME**	**Height x spread (metres)**	**DBH (mm)**	**Age**	**Health**	**Condition**	**S.U. L.E.**	**Comments**
23	*Pinus pinea* STONE PINE	16 x 9	730	SM	Good	Good	3	Typical health and condition for species type with no significant defects noted.
24	*Pinus pinea* STONE PINE	16 x 7	600	SM	Fair / Good	Good	3	Minor decline in lower canopy with no significant defects noted.
25	*Phoenix canariensis* CANARY ISLAND DATE PALM	8 x 6	750	SM	Fair	Fair	3 / 5	Typical for species type in location with no significant defects, slightly contorted trunk, easily relocated specimen.
26 x2	*Eucalyptus robusta* SWAMP MAHOGANY	17 x 6	Multi x3 500 average	M	Fair	Poor	4C	Significant CRZ root damage due to excavations east @1m from trunk, bio mass west, hazardous tree due to anchoring root loss, termite damage + decline in canopy noted.
27	*Eucalyptus robusta* SWAMP MAHOGANY	17 x 8	350 / 470	M	Fair / Good	Fair	4C	Significant CRZ root damage due to excavations east, bio mass west, hazardous tree due to anchoring root loss termites nest, significant wounding at ground level north east.
28	*Eucalyptus robusta* SWAMP MAHOGANY	17 x 6	460	M	Good	Fair	3B	Suppressed canopy, CRZ root damage due to excavations east, termite trails, trunk cavities + wound @2m east.
29 x2	*Phoenix canariensis* CANARY ISLAND DATE PALM	5 x 6 average	800 average	I	Good	Good	3 / 5	Typical for species type in location, easily relocated specimens.

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Tree No	***Botanical Name*** **COMMON NAME**	**Height x spread (metres)**	**DBH (mm)**	**Age**	**Health**	**Condition**	**S.U. L.E.**	**Comments**
30	*Eucalyptus botryoides* SOUTHERN MAHOGANY	17 x 13	480 / 860	M	Fair / Good	Fair / Good	4C	CRZ root damage due to excavations east, hazardous tree due to anchoring root loss, 15% epicormic shoots, termite trails, supportive structural root development @1m west.
31	*Eucalyptus botryoides* SOUTHERN MAHOGANY	8 x 5	200 / 250	SM	Good	Fair / Good	3	Typical for species type in location, termite trails, basal swelling + reaction wood development potentially due to restricted garden bed construction.
32	*Eucalyptus punctata* GREY GUM	9 x 5	210	SM	Good	Good	3	Typical for species type in location with no significant defects.
33	*Eucalyptus punctata* GREY GUM	10 x 5	220	SM	Good	Good	3	Typical for species type in location with no significant defects, minor termite trails evident.
34	*Eucalyptus punctata* GREY GUM	7 x 4	130	SM	Good	Good	3	Typical for species type in location with no significant defects.
*35	*Syagrus romanzoffiana* COCOS PALM	5 x 3	260	SM	Fair	Good	3 / 5	Fronds containing low vigour, reduced trunk size under crown shaft = result of water stress.
*36	*Syagrus romanzoffiana* COCOS PALM	6 x 4	290	SM	Fair / Good	Fair / Good	3 / 5	Typical for species type in location, decline in frond vigour, growing on stilts from poor original planting practice.

APPENDIX D:

Approximate Tree Location Plan and proposed Development Footprint.