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26 September 2013

PLC AQUATIC CENTRE MASTERPLAN

ARBORICULTURAL ASSESSMENT
Tree removal to accommodate Stage 2 design

This report has been requested by pmdl architecture & design for the purpose of modifying Stage 3 tree removal to incorporate removal of the below mentioned trees into Stage 2 removal works. The reason for the modification is due to landscape design works where cut, fill and regrading is proposed adjacent the Mollie Dive Field.

Documentation reviewed to assist in preparation of this report include

pmdl architecture & design

- Playing Field Level Plan 2350 Drawing No: DA103, rev A dated 30/7/2013

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- Arboricultural Assessment & Development Impact Report dated May 2013

Proposed tree removal

Eleven (11) trees are located where new cut, fill and grading is required to alter the landscape in support of the new design proposal.

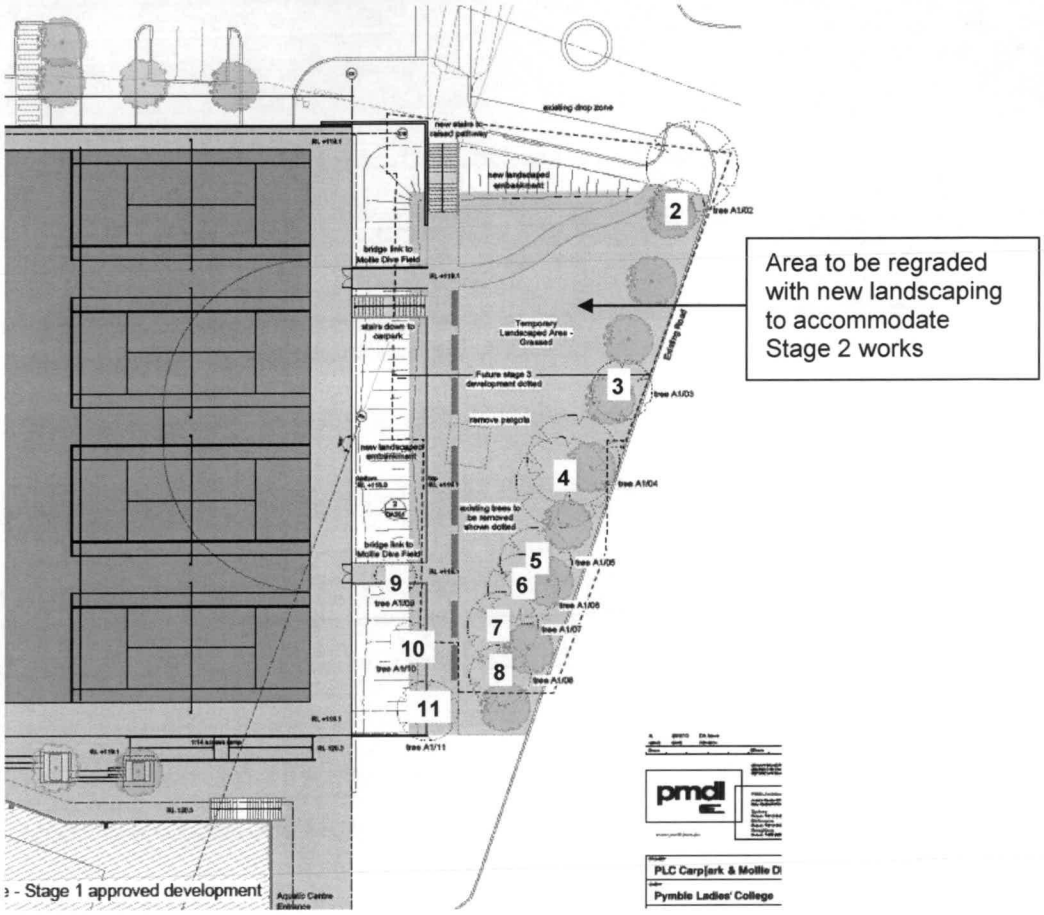
The additional trees to be removed to accommodate Stage 2 works are identified as trees A1/02x2, 3, 4, 5, 6, 7, 8, 9, 10 & 11, where tree A1/02 consists of two (2) trees

Attachment A p2 provides an indicative view of the development area and trees to be removed to accommodate works.

Yours sincerely

Mark Kokot – 0419 250 248
Diploma of Arboriculture (AQFL5), Associate Diploma Parks Management (AQFL4)
Certified Arborist / Tree Surgeon (AQFL3), Registered Consulting Arborist Member:
Arboriculture Australia No.1292, Builders Contract Licence No. 43850C

ATTACHMENT A: Site & tree location plan



May 2013 Tree Assessment Schedule

Tree No	***Botanical Name*** **COMMON NAME**	Height x spread (m)	DBH mm		Tree No	***Botanical Name*** **COMMON NAME**	Height x spread (m)	DBH mm
A1/02 x2	*Elaeocarpus reticulatus* Blueberry Ash	av 8 x 4	av 200		A1/07	*Eucalyptus microcorys* Tallowwood	21 x 12	650, 300
A1/03	*Eucalyptus microcorys* Tallowwood	16 x 8	550		A1/08	*Eucalyptus citriodora* Lemon Scented Gum	21 x 12	400
A1/04	*Eucalyptus saligna* Sydney Blue Gum	12 x 6	300		A1/09	*Jacaranda mimosifolia* Jacaranda	6 x 6	250
A1/05	*Eucalyptus sideroxylon* Red Ironbark	2 x 6	250		A1/10	*Jacaranda mimosifolia* Jacaranda	6 x 6	300 at base
A1/06	*Eucalyptus saligna* Sydney Blue Gum	22 x 12	350, 350		A1/11	*Jacaranda mimosifolia* Jacaranda	8 x 8	300, 250

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APRIL 2013

PYMBLE LADIES COLLEGE
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AQUATIC & FITNESS CENTRE MASTERPLAN

ARBORICULTURAL ASSESSMENT & DEVELOPMENT IMPACT REPORT

Prepared for
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PYMBLE, SYDNEY NSW 2073
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Prepared by
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CONTENTS

	page
Introduction	**3**
Methodology	**4**
1. Summary of Conclusions	**5**
2. Discussions of Observations	**7**
2.1 Stage 1, Aquatic, Fitness Centre & Mollie Dive Field	**7**
Table 1, summary of trees to be removed	**7**
2.2 Stage 2, Millie Dive Field / underground car parking	**8**
Table 2, summary of trees to be removed	**8**
2.3 Stage 3, New Dining Facility	**9**
Table 3, summary of trees to be removed	**9**
2.4 Stage 4, New Health Care Centre	**10**
3. Conclusions & Recommendations	**11**
3.1 Stage 1, Aquatic, Fitness Centre & Mollie Dive Field	**11**
3.2 Stage 2, Millie Dive Field / underground car parking	**12**
3.3 Stage 3, New Dining Facility	**13**
3.4 Stage 4, New Health Care Centre	**13**
4. Tree Management Plan	**14**
APPENDICES	**18**
Appendix A: Terminology & references	19
Appendix B: Tree retention values	20
Appendix C: Tree Assessment Schedule	21
Appendix D: Tree Location Plan *not to scale*	29

INTRODUCTION

This report has been commissioned by Glendinning Minto & Associates P/L to assess the Useful Life Expectancy (U.L.E) and potential impacts that may occur to significant trees in relation to a new staged development proposal.

The new staged development proposal consists of four (4) separate construction proposals located within the subject site of Pymble Ladies College, Avon Road, PYMBLE, SYDNEY NSW.

The four stages of development are identified as Stage 1, the new Aquatic & Fitness centre, Stage 2 modifications of the Mollie Dive Field with new underground car parking, Stage 3 the new Dining Facility and Stage 4 construction of a new Health Care Centre.

This report has been prepared to aid in the assessment of development impacts and includes information regarding the health and condition of the trees assessed. Recommendations for the retention, remediation or removal of the trees are based on their accorded U.L.E. category, the design proposal and potential impacts under the current development design.

Each tree or tree group is referenced by its accorded tree or tree group identification number that corresponds with existing Pymble Ladies College (PLC) Visual Tree Assessment & Tree Management Plan tree numbering. The grounds of PLC consist of eleven (11) separate tree management areas with the development proposal encroaching within four (4) of the eleven areas and their associated subgroups. These areas are identified as Area 1, subgroup Area 1A, Area 3 and Area 2. Each tree is referenced by its corresponding number throughout this report as i.e. Area 1A tree 4, is identified as A1A/T04, with grouped trees identified within their area as tree group 27 within Area A numbered as A1/TG27. Where small stands of trees are located they are identified as tree number A1/T12x5, consisting of five (5) trees within the stand.

The trees may be referenced within the Tree Assessment Schedule and Tree Location Plan Appendices C and D.

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.

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 used 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/s that were examined and reflects the condition of the trees 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.

METHODOLOGY

i In preparation for this report a revision of the trees health and condition based on a limited site and ground level Visual Tree Assessment (VTA) was conducted by the author of this report on Tuesday 8th August 2012. The principles of VTA were adopted from *Mattheck & Breloer* 1994 '*The Body Language of Trees*.' The inspection included assessment of the overall health and vigour of the trees, tree form, structure and structural condition commencing from near the lower trunk to the upper first order branch divisions.

ii The inspection was limited to a Visual Tree Assessment (VTA) only without dissection, probing or coring. No aerial (climbing) inspections, woody tissue testing or tree root investigation was undertaken as part of this tree assessment. Tree height and canopy spread was estimated and expressed in metres with trunk diameters approximately measured 1.4 metres above ground level, rounded off to the nearest 50mm and expressed as DBH (Diameter at Breast Height).

Unless specified otherwise all distances and development offsets within this report are taken from the centre of the tree.

iii This report acknowledges the current Australian Standards 'Protection of Trees on Development Sites' AS 4970 – 2009 with reference to the Tree Protection Zone (TPZ): the principle means of protecting trees on development sites being a combination of the root and crown area requiring protection. The TPZ takes into consideration the Structural Root Zone (SRZ): The area required for tree stability. Determined by AS4970 - 2009 Figure 1, Table of determining the SRZ, section 3.3.5 of the standards. No works are permitted within the radial SRZ unless approved within this report specifying the appropriate work methodology to be undertaken.

A 10% TPZ encroachment by development is determined as a minor encroachment (AS 3.3.2) with greater than 10% TPZ encroachment considered a major encroachment (AS 3.3.3) under the standards.

iv Plans and/or documentation received to assist in preparation of this assessment include:

pmdl architecture Masterplan Phase 2

- Aquatic Centre Site Plan DA100 [Jan/12], Ground Floor Plan DA101 [Jan/12], Upper level DA102 [Jan/102], Lower Ground Floor Plan DA103 [Jan/12], Roof Plan DA104 [Jan/12], Overall Site Elevations DA020 & DA200 [26/8/11] & Sections DA030 & DA300 [22/11/11] rev (not included).
- Overall Staging Plans DA007 [Jan/12], Overall Ground Level Site Plan DA010 [Jan/12], Overall Upper level Site Plan DA011 [Jan/12] and Overall Lower Level Site Plan DA012 [Jan/12] rev (not included).
- Overall Site Analysis 1, Dwg DA003 & Overall Site Analysis 2 DA004 [Jan/12] rev (not included).

1.0 SUMMARY OF CONCLUSIONS

1.1 General overview

1.1.1 The new PLC Aquatic Centre proposal consists of an extensive building footprint where new infrastructure, structural buildings and landscape requirements to complement the new design require the removal of sixty four (64) trees.

Twenty two (22) trees are exotic specimens, forty two (42) are native trees with nine (9) of the 64 trees containing faults and defects which have resulted in trees of low retention values. The 64 trees are summarised as follows:

1.1.2 *Exotic trees*: In total twenty two (22) exotic trees require removal. They are identified as trees A1/T09, T10, T11, T12x5, T13, T16, T17, T19, eight (8) trees located within group TG27 and two (2) trees within group TG28.

1.1.3 *Local or native trees*: In total forty two (42) trees have been identified for removal. They are identified as, two (2) trees within TG27, 17 trees with TG28, T02x2, T03, T04, T05, T06, T07, T08, T12ax2, T14, T15, T18, T20x4, T21, T22, T23, A3/T04, A3/T06, A3/T10,

1.1.4 *Low retention value trees*: Of the trees to be removed nine (9) trees being native or exotic specimens have been identified as containing defects or faults which have reduces their useful life expectancy and retention values.

The nine trees are identified as trees T14, T18, T23, one (1) tree within group TG28, one (1) tree of A1/T02x2, A1/T05, A3/T04, A3/T06 and A3/T10. Their condition may be referenced within the Tree Assessment Schedule Appendix C.

1.1.5 Within each four stages of the development proposal discussed within this report, the specific trees may be identified within the Tree Summary Tables specific to the staged development.

1.2 Stage 1, New Aquatic, Fitness Centre & Mollie Dive Field

1.2.1 Fifty (50) trees require removal to accommodate the new proposal which includes modification of the Mollie Dive Field, associated infrastructure and new landscaping works.

The fifty trees are identified as trees: A1/T12x5, T12ax2, T13, T14, T15, T16, T17, T18, T19, T20x4, T21, T22 & T23 and includes two (2) large tree groups or stands of trees, groups A1/TG27 and A1/TG28 consisting of ten (10) exotic trees and nineteen (19) native or local native trees.

1.2.2 Remaining trees assessed are to be protected as per the recommendations provided within the Tree Management Plan (TMP) section 4.0 of this report. Given the trees locations to the new proposal, the remaining trees will not be adversely affected by works.

1.3 Stage 2, Mollie Dive Field & underground parking

1.3.1 Trees affected by works and the underground parking proposal are to be removed within Stage 1 allowing for development. These trees are tree groups A1/TG27 and A1/TG28.

1.3.2 *Trees to be retained.* Three (3) memorial trees, trees A1/24, A1/25 & A1/26 are to be retained and require a 6m tree protection zone to be adequately protected. Tree Protection Fencing (TPF) acting as a development exclusion zone is to be constructed at the 6m radial setback prior to any works occurring and is to remain in place until development completion.

1.3.3 Area 2 tree group 29 (A2/TG29), trees located west of the existing lower car park are protected by default having asphalt road acting as root protection and are protected by existing boundary fence lines. The trees will not be adversely affected by the proposal given their location.

1.4 Stage 3, New Dining Facility

1.4.1 Fourteen (14) trees have been identified for removal to accommodate the new Dining Facility and associated infrastructure. The trees are identified as trees: A1/T02x2, T03, T04, T05, T06, T07, T08, T09, T10 & T11 within Area 1, and trees A3/T04, T06 & T10 within Area 3.

1.4.2 Seven (7) trees located adjacent Marden, Hammond and Lang House's are considered viable to retain. Their root system is protected by existing road infrastructure. The trees require TPF construction prior to works commencing. Where new access stairs are proposed between the trees, further assessment of detailed stair access drawings and section plans are required, with no works recommended within the SRZ offsets as identified within section 2.3.9 p10.

1.5 Stage 4, New Health Care Centre

1.5.1 No trees are located within the direct impact or construction area of the new Health Care Centre. Tree protection may only be required where construction vehicle access may conflict with tree or tree canopies during material deliveries.

The protection of these trees has been identified within section 3.4.

2.0 DISCUSSIONS OF OBSERVATIONS

2.1 Stage 1, Aquatic, Fitness Centre & Mollie Dive Field

2.1.1 *Tree removal to accommodate proposal.* The Overall Site Analysis 2 Plan Dwg DA003 dated Jan/2012 and subsequent works for the Mollie Dive Field identifies fifty (50) trees to be removed to accommodate the new Aquatic & Fitness Centre and associated infrastructure which includes new landscaping works.

The fifty trees are all located within PLC Area 1 and are identified as trees: A1/T12x5, T12ax2, T13, T14, T15, T16, T17, T18, T19, T20x4, T21, T22, T23 and groups A1/TG27 & A1/TG28.

Of these trees, trees A1/T12x5, T12ax2, T13, T21, T22 & T23 require removal to accommodate landscaping and site access.

Trees T13, T14, T15, T16, T17, T18, T19 & T20x4 fall within the building footprint and tree groups A1/TG27 & A1/TG28 are to be removed to allow for the modification of the Mollie Dive Field.

2.1.2 Table 1, Summary of trees to be removed

Total	Exotic trees	Native or local native trees
No. of	19	31
Tree No.	T12x5, T13, T16, T17 & T19, including 10 exotic trees within group A1/TG27 & 28	T12ax2, T14, T15, T18, T20x4, T21, T22 & T23, including 19 native trees within group A1/TG27 & 28

Trees to be removed	LGA Exempt trees	Dead or medium to high risk trees	Overall low retention value trees
21	-	3	3
Tree No:	-	T14, T23 & 1 tree within group A1/TG28	T14, T18 and T23

2.1.3 *Trees to be retained.* PLC Area 1A - No new works are identified adjacent trees A1A/T40 & T41. Given their location close to potential site access activities, they require Tree Protection Fencing (TPF) and general protection methodology as specified within section 4.0, the Tree Management Plan (TMP). Construction access may be required from the lower south eastern access road.

Trees located at the road edge will require timber beam trunk protection to prevent the potential of mechanical / commercial vehicle impact damage occurring. Specific trees located near the rear of the Aquatic Centre within PLC Area 1A that are expected to require TPF are identified as trees A1A/T32, T33, T34, T35, T42, T43, T44 & T45.

2.1.4 *Trees located within PLC Area 3.* For the purpose of the Aquatic & Fitness Centre proposal, trees located adjacent work vehicle access within Area 3 are identified as trees A3/T1, T2, T3, T4, T5, T6, T7, T8, T9, T10 and T11. These trees are protected by default by the existing asphalt access road, kerb and guttering. They require standard TPF to be constructed to prevent the potential of commercial vehicle impacts occurring during construction.

2.1.5 Tree A3/T15 – a significant Jacaranda tree requires Tree Protection Fencing (TPF) to be located at the edge of the existing footpath. New works may only occur on top of the existing ground level, on the same footprint of the existing footpath and hard surface area located beneath the tree such that the trees root zone is not compromised by new works. Care is to be taken so that the extending canopy does not become damaged during commercial vehicle access.

Tree protection fencing is recommended to be constructed along the footpath edge facing trees A3/T16, T17, T18 & T19 to adequately protect the trees. Trees located adjacent Lang House are exempt tree species being located within 3m of a structural dwelling.

2.2 Stage 2, Mollie Dive Field & underground parking

2.2.1 *Tree removal to accommodate proposal.* The majority of the trees are proposed to be removed within Stage 1. Excavations require to accommodate works in both Stage 1 & 2 require the removal of two (2) large tree groups, trees A1/TG27 and A1/TG28 [Dwg DA003 Jan/2012]

Tree group A1/TG27 consists of eight (8) Peppercorn trees (*Schinus areira*) and two (2) Sydney Blue Gum trees (*Euc saligna*).

Tree group A1/TG28 consists of thirteen (13) Tallowood trees (*Euc microcorys*), four (4) Sydney Blue Gum trees and two (2) Peppercorn trees (*Schinus areira*). One (1) large Sydney Blue Gum tree located at the northern end is structurally defective at the lower trunk reducing the retention value of the tree.

2.2.2 Table 1, Summary of trees to be removed to accommodate both Stage 1 & 2 works.

Total	Exotic trees	Native or local native trees
No. of	10	19
Tree No's.	8 within A1/TG27 2 within A1/TG28	2 within A1/TG27 17 within A1/TG28

Trees to be removed	LGA Exempt trees	Dead or medium to high risk trees	Overall low retention value trees
29	-	1	-
Total	-	North end tree of group28	-

2.2.3 Trees to be retained. The retention of three (3) Memorial Trees, trees A1/T24 - T25 & T26 is required. No adverse impacts are expected to the trees given a 6m Tree Protection Zone (TPZ) is constructed prior to any works commencing acting as a development exclusion zone.

Tree Protection Fencing (TPF) is to be constructed at a 6m radius from the centre of the trees. No works are permitted within this protection zone without prior consent from the appointed site arborist. All methodology in tree protection as specified within section 4.0 the Tree Management Plan (TMP) is to be adhered to at all times.

2.2.4 PLC Area 2 tree group TG29 (A2TG29) located at the western end of the existing lower car park will not be affected by site works. The trees are protected by default by the asphalt car parking surface and existing property timber fence lines.

Where trees facing the car park and are not protected by existing boundary fences, Tree Protection Fencing (TPF) is recommended to be installed under the guidance of the appointed site arborist being in accordance the TPM specifications section 4.0 of this report.

2.2.5 Trees located near the northern end of proposed works tree A1/T9, T10 and T11 can be protected during site works as identified within the TMP section 4.0. However, these trees are scheduled for removal to accommodate Stage 3 of the Master Plan proposal – the New Dining Facility, refer section 2.3 below.

2.3 Stage 3, the New Dining Facility

2.3.1 *Tree removal to accommodate proposal.* The Overall Site Analysis 2 Plan Dwg DA003 dated Jan/2012 identifies eleven (11) trees within Area 1 to be removed to accommodate the new Dining Facility and associated infrastructure. The Overall Upper Level Site Plan DA011 requires one (1) tree to be removed to accommodate site infrastructure and stairs within Area 3 providing access between Marden, Hammond and Lang House's. The tree is identified as defective tree A3/T10 which appears to have not been plotted within the site plan. The tree is located or estimated where new site access stairs are proposed.

Of the trees located within Area 3 two (2) further trees are recommended for removal due to low retention values. They are identified as trees A3/T04 & A3/T06.

2.3.2 The fourteen (14) trees in total to be removed to accommodate the new Dining Facility proposal are identified as trees: A1/T02x2, T03, T04, T05, T06, T07, T08, T09, T10 & T11 within Area 1, and trees A3/T04, T06 & T10 within Area 3.

Trees A1/T12x5, T12ax2 & T13 located near these works have been identified for removal under the new Stage 1 Aquatic & Fitness Centre landscape access proposal.

2.3.3 Table 1, Summary of trees to be removed

Total	Exotic trees	Native or local native trees
No. of	3	11
Tree No.	A1/T09, T10, & T11	A1/T02x2, T03, T04, T05, T06, T07 & T08 and trees A3/T04, T06 and T10

Trees to be removed	LGA Exempt trees	Dead or medium to high risk trees	Overall low retention value trees
14	-	1	5
Total	-	A3/T10	West tree of A1/T02x2, A1/T05 -- A3/T04, A3/T06 & A3/T10

2.3.4 *Trees identified for retention.* The Overall Upper Level Site Plan Dwg No. DA011 shows ten (10) trees located within Area 3 south of Marden, Hammond and Lang House's, of which nine (9) are proposed for retention.

Defective tree A3/T10 appears to be not located or survey plotted with trees A3/T04 & A3/T06 being of low retention value. The low retention value trees are recommended for removal leaving seven (7) trees that are considered viable to retain.

2.3.5 To protect the trees during the new Dining Facility development proposal tree protection and fencing is to be provided in accordance with the recommendations specified within sections 4.0 of the Tree Management Plan (TMP). TPF (fencing) is to be constructed at the edge of the existing kerb & guttering providing a barrier of protection against potential commercial vehicle impact.

2.3.6 Trees root systems are protected by the existing road asphalt surface minimising construction impacts where minor development impacts are expected during the construction phase of the Dining Facility proposal. Impacts are expected for the addition of the new site access stairs between Marden, Hammond and Lang House's.

The TPF may only be altered under the guidance of the appointed site arborist for the construction of the new access stairs and landscape works, and in particular works which surround tree A3/T11 as identified within Plan DA011.

2.3.7 To accurately determine landscape and stair access impacts further arborist assessment of the access stairs and landscape work proposal plans adjacent affected trees and in particular tree A3/T11 is required. Assessment of final construction drawings showing the extent of excavation cut and/or soil modifications will identify tree impacts with no works recommended within the SRZ setback of any tree to be retained.

2.3.8 Proposed works within the Tree Protection Zone (TPZ) radius area are to be conducted in accordance with the TMP recommendations ensuring no tree root at or greater than 30mm(Ø) is severed. Where larger woody trees roots are located the appointed site arborist must be consulted.

2.3.9 On site arborist involvement is required where works are proposed within the following setbacks:

Tree A3/T05 works within 2.4m of the tree / no works within 1.6m SRZ.
Tree A3/T08 works within 3.6m of the tree / no works within 2m SRZ.
Tree A3/T09 works within 7.2m of the tree / no works within 2.7m SRZ.
Tree A3/T11 works within 5.4m of the tree / no works within 2.4m SRZ.

2.4 Stage 4, New Health Care Centre

2.4.1 *Tree Removal to accommodate proposal.* No trees are proposed to be removed for the construction of the new Health Care Centre.

2.4.2 Five (5) trees are located at or near the eastern boundary and are located well outside of the expected construction work envelope. To protect the trees during development Tree Protection Fencing (TPF) is to be constructed at the extremity of the TPZ radius as identified within Appendix C the SRZ & TPZ distance column.

2.4.3 Limitations in locating the TPF may occur if the existing footpath is to remain open for site usage. It is likely that a designated fenced development exclusion zone area adjacent the new Health Care Centre will be constructed. This fenced development exclusion zone is expected to provide sufficient barriers towards the trees limiting impacts as the location of construction activities are outside of TPZ areas.

2.4.4 Specific tree canopy protection is required to Area 3 trees A3/T15 to T19. Tree Protection Fencing (TPF) is to be located at the edge of the existing footpath such that construction access and material deliveries by commercial vehicles do not compromise the trees.

Care is to be taken such that the extending canopy of significant Jacaranda tree A3/T15 does not become damaged during site work activities.

3.0 CONCLUSIONS & RECOMMENDATIONS

3.1 Stage 1, New Aquatic, Fitness Centre & Mollie Dive Field

3.1.1 Fifty (50) trees have been identified for removal to accommodate the new Aquatic & Fitness Centre & Mollie Dive Field modification proposal. The fifty trees are identified as trees:

- A1/T12x5, T12ax2, T13, T14, T15, T16, T17, T18, T19, T20x4, T21, T22, T23 and tree groups A1/TG27 & A1/TG28 (containing 29 trees).

3.1.2 Trees which are located within the proposed Aquatic & Fitness Centre building footprint are identified as trees A1/T14, T15, T16, T17, T18, T19 and T20x4. Tree group A1/TG27 & A1/TG28 require removal to allow for the Mollie Dive Field modification.

Trees A1/12x5, T12ax2 and T13 are located in areas of new landscaping and site access requirements with trees A1/T21, T22 & T23 identified for removal and replacement within the Overall Ground Level Site Plan Dwg DA010.

3.1.3 Of the trees identified for removal three (3) trees have been assessed as containing defects or faults that accord the trees as being low retention value trees which should not restrict development. The three trees located within Area 1 are identified as trees: T14, T18 and T23

3.1.4 Trees which require site protection from development activities in accordance with section 4.0 the Tree Management Plan (TMP) are identified as: Area 1A trees, A1A/T32, T33, T34, T35, T40, T41, T42, T43, T44 and T45, and those within Area 3 being trees A3/T15, T16, T17, T18 and T19.

Tree A3/T15 is a very significant Jacaranda tree where no works are permitted towards the tree or beyond the existing hard surface footpath located beneath the trees canopy. Site machinery or vehicle delivery access must ensure that the canopy extension is not adversely impacted by proposed site works.

3.1.5 No detrimental impacts are expected to those trees requiring retention under the Aquatic & Fitness Centre development proposal given that all recommendations are conducted in accordance with section 4.0 the Tree Management Plan (TMP) of this report.

3.1.6 The trunks of all trees located directly adjacent the lower eastern site access are to be protected from the potential of machinery or delivery vehicle impacts in accordance with the TMP of this report.

3.1.7 Prior to any demolition and excavation works the construction of Tree Protection Fencing (TPF) is to be installed such that trees are adequately protected. All TPF construction is to be assessed and certified by the appointed site arborist. The TPF is to remain in its designated location and is not to be moved without prior approval from the appointed site arborist.

3.2 Stage 2, Mollie Dive Field & underground parking

3.2.1 Twenty nine (29) trees have been identified for removal within Stage 1 to accommodate the new Mollie Dive Field and underground parking modification. The twenty nine trees form two groups of trees that have been assessed as individual stands. The tree groups are identified as:

- Tree groups A1/TG27$_{x10}$ and A1/TG28$_{x19}$ trees.

A1/TG27 consists of eight exotic trees and two natives.
A1/TG28 consists of seventeen natives and two exotic trees.

3.2.2 *Trees to be retained.* Memorial trees A1/T24, T25 & T26 require retention and protection prior to and throughout the course development works. As the trees are closely grouped with tree A1/T24 containing moderate wounding reducing retention values, a 6m Tree Protection Zone (TPZ) radius is required to adequately protect the trees.

Any reduction in the TPZ, the 6m Tree Protection Fencing (TPF) area requires endorsement by the appointed site arborist.

3.2.3 Area 2 tree group 29 (A2TG29) located directly to the west of the Mollie Dive Field and underground parking proposal are protected by default.

The existing asphalt car park and boundary fence line protects the trees from any adverse impacts occurring during construction activities. Tree protective fencing is currently provided by the existing boundary timber fences. Where boundary line timber fencing is not located, standard tree protection fencing is required as outlined within the Tree Management Plan (TMP) of this report.

3.2.4 Trees A1/T9, T10, T11, T12, T12a & T13 located near the Mollie Dive Field & underground parking proposal require removal to accommodate the new Aquatic & Fitness Centre and Dining Facility development proposal. The removal of trees T12, T12a & T13 is proposed within Stage 1.

Remaining tree protection during the staged construction period will be based on providing Tree Protection Fencing (TPF) at or near the extent of the TPZ radius as identified within Appendix C, SRZ & TPZ distance column.

3.3 Stage 3, New Dining Facility

3.3.1 Fourteen (14) trees are required to be removed to accommodate the new Dining Facility and associated infrastructure proposal. The trees are identified as trees:

- A1/T02x2, T03, T04, T05, T06, T07, T08, T09, T10 & T11 within Area 1 and trees A3/T04, T06 & T10 within Area 3.

Tree A3/T10 being of low retention value appears to require removal to accommodate site access stairs as the tree is not accurately plotted within documentation, with trees A3/T04 & A3T06 being recommended for removal due to low retention values.

3.3.2 Trees to be retained are located within PLC Area 3 adjacent Marden, Hammond & Lang House's. Their root systems are protected by default towards the Dining Facility development site by the existing asphalt access road where the new Dining Facility will have a negligible impact on the trees.

New works proposed near these trees are access stairs adjacent Marden, Hammond & Lang House's and landscape modifications surrounding tree A3/T11.

3.3.3 On site arborist supervision is required in the event that works will be located within the TPZ of any tree to be retained. Further assessment of stair and landscape construction drawings and in particular section drawings showing the extent of excavation cut will be required if proposed works are within the TPZ of any protected tree.

The SRZ & TPZ radial areas are identified within Appendix C –SRZ & TPZ distance column for further referencing.

3.3.4 No detrimental impacts are expected to those trees requiring retention under the new Dining Facility development proposal given that all recommendations are conducted in accordance with section 4.0 the Tree Management Plan (TMP) of this report.

3.4 Stage 4, New Health Care Centre

3.4.1 No trees will be adversely affected by the proposal.

3.4.2 Given that the eastern or rear Jeanette Buckham PE Centre access track is to remain open and in use, development site exclusion zone fencing is expected to be sufficient to separate construction activities from the trees that are located close to the eastern boundry line.

3.4.3 Tree A3/T15 is a very significant Jacaranda tree. The canopy of the tree overhangs what is likely to be the material or development access area. All construction activities are to ensure that the canopy extension is not adversely affected during works.

3.4.4 For trees to be retained all recommendations as specified within the Tree Management Plan (TMP) section 4.0 of this report are to be adhered to at all times.

4.0 TREE MANAGEMENT PLAN

4.1.0 All trees to be retained require the construction of Tree Protection Zones (Z) or Fencing (TPF) prior to the commencement of development activities which includes any demolition or excavation works. Specific tree protection methodology and fence modifications will be required where the TPF will interfere with development activities. The construction of modified tree protection zones or fencing is to be discussed, approved and certified by the appointed site arborist prior to works commencing.

4.1.1 **Tree Protection Fencing** is to be constructed prior to any works commencing to ensure no adverse impacts occur to trees requiring retention during the course of development activities.

TPZ fencing is to consist of 1.8m high chain link fencing secured to the ground by 50 x 50mm steel posts. Generally the location of the TPZ is to be constructed outside of the canopy drip line or extent of the TPZ as identified within Appendix C – the SRZ & TPZ distance column.

If development site constraints exist the location of the TPZ fence may be reduced or altered to timber beam trunk protection. Modifications of the TPZ location is to be specified and approved at a pre development site meeting between the appointed site arborist and development site superintendant. If reduced TPZ fencing or timber bean protection is required the arborist may request that the extent of the TPZ / root zone be protected by native leaf mulch during site works.

The location of the TPZ is to be constructed as to allow for best tree management practices while providing adequate development work access to finalise the construction proposal.

4.1.2 The TPZ is a development exclusion zone, it is an area isolated from construction disturbance so that the tree remains viable. No works or storage of materials are permitted within the TPZ without prior consultation and written approval from the appointed Site Arborist.

Appropriate signage shall be erected on the TPZ fencing identifying the prevention of any unauthorised activity and/or access.

4.2.1 **Appointing a Project Arborist**. Prior to works commencing a Project Arborist in accordance with AS4970 (1.4.4) being an Australian Qualification Framework (AQF) Level 5 certified arborist is to be appointed as the project arborist to address any development impacts that may occur to trees that require retention.

The development site superintendant is responsible for enforcing all tree protection methodology, contacting and liaising with the project arborist. The project arborist must be consulted at all times when working within the TPZ and specifically be on site if development activities are required within the SRZ radius to discuss impact mitigation techniques, refer Appendix C - SRZ & TPZ distance column.

The project arborist is to certify to the Principal Certifying Authority (PCA) that all tree protection methodology has been conducted accordingly, ref section 4.12.1.

4.3.1 **Hold Points**, no works are permitted within the SRZ radius of any tree without prior on site project arborist consultation. The SRZ setback is a development exclusion zone. Where works are proposed within the SRZ an Air Knife root investigation is required to identify the potential impact which is to be assessed by the project arborist. Hand tools are to be used when working within both the SRZ & TPZ with cantilevering or bridging over large woody roots greater than 50mm(Ø) under pier & beam construction recommended.

Section 4.4.1 & 4.5.1 are applicable when working within the SRZ & TPZ protection zones.

4.4.1 **Demolition within the Tree Protection Zone (TPZ)** is to be supervised by the project arborist. Rubber tracked excavators must work within the footprint of any hard surface such as pathways and pavements to minimise the radial impact to the TPZ and/or SRZ if permitted. Avoiding overall soil impacts and/or extensive compaction and root damage is required to maintain tree viability. Any sub base material located is to be removed by the use of hand tools to avoid damage to underlying tree roots.

4.5.1 **Excavation within the TPZ**, is to be avoided where possible. Any excavation for footings, foundations or grading (site leveling) is to be supervised by the project arborist. To appropriately protect the root zone Air Knife excavation is recommended to locate and expose any tree roots which may be affected by the proposal to avoid ripping by site machinery. Tree roots less than 30mm in diameter shall be clean cut with sharp clean root pruning tools. Further advice from the project arborist is required where larger woody tree roots have been exposed.

Pier footings are to be excavated by the use of hand tools to ensure no root damage occurs. Where significant tree roots are located, the relocation of the footing may be required if the project arborist determines that root removal is likely to have a detrimental impact on the tree.

4.6.1 **Landscaping or development within the TPZ** is to complement the long term needs to retain the subject trees. Pervious paving materials are recommended within the TPZ to maintain soil moisture availability. Unless approved within this report no grade changes being cut or fill is to occur within 80% of the TPZ radius. Twenty (20%) percent of the TPZ may be affected by development encroachment given prior advice and certification from the project arborist.

Maintaining the existing soil levels, moisture and aeration is the key to significant tree preservation. All efforts are to be made in maintaining the TPZ, soil moisture content and soil micro organism activity essential for maintaining good tree vigour.

4.6.2 The appointed arborist may specify the inclusion of native leaf mulch within the TPZ during the course of development activities to minimise soil and root zone impacts during construction.

4.7.1 **Fill material within the Tree Protection Zone**, fill material within the Tree Protection Zone shall be avoided where possible. Where placement of fill cannot be avoided the fill material type shall be discussed and approved by the project arborist. The surface of the Tree Protection Zone is not to be compacted before placement of any fill. Proposed fill is not to be located directly against the trunk of protected trees.

4.8.1 **Site machinery**, demolition, excavations and site construction machinery must ensure that no direct conflicts occur to protected trees which may include canopy overhang towards development activities.

4.8.2 In the event of tree damage the project arborist is to be notified immediately. The project arborist is to immediately undertake or authorise remedial action to minimise any adverse impact.

4.9.1 **Underground services**, no trenching for underground services is permitted within the radial SRZ setback without prior arborist approval. Where underground services are required within the SRZ or in line cutting through the TPZ, underboring or directional drilling is recommended, refer section 4.2.1 & 4.3.1.

4.10.1 **Root pruning**, all tree roots encountered are to be correctly treated, clean cut by the appointed site arborist abiding to the Australian Standards Pruning of Amenity Trees AS 4373 2007 section 9 *Root pruning* at all times.

At no stage are tree roots greater than 30mm(Ø) in diameter allowed to be cut by site contractors without prior arborist consultation.

Where significant woody tree roots are located bridging over or tunneling beneath the root system may be required to ensure the vigour of the tree/s is not adversely affected by proposed works.

4.11.1 **Canopy pruning**, where required tree removal and canopy reductions are to be conducted by a suitably qualified, site and Workcover (Code of Practice 'Amenity Tree Industry' 1998) insured AQF Level 3 Arborist abiding to the Australian Standards Pruning of Amenity Trees AS 4373 2007 at all times.

4.12.1 **Certifications**, the appointed site arborist is to provide certification to the Principal Certifying Authority (PCA) that all tree protection fencing has been installed to adequately protect any tree requiring retention.

The appointed site arborist is to provide certification to the PCA at the completion of works that all tree and root zone management has been conducted accordingly.

Arborist Certification is to consist of timing of events, discussions of attendance, tree root/s encountered and mitigation works conducted to minimise development impacts on protected trees during the course of site development activities.

Should you require further liaisons in this matter please contact me direct on 0419 250 248.

Yours sincerely

Mark A. Kokot
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APPENDICES

Appendix A:	Terminology & references	19
Appendix B:	Tree retention values	20
Appendix C:	Tree Assessment Schedule	21
Appendix D:	Tree Location Plan	29

APPENDIX, A: Terminology & references

Age classes: (I) Immature refers to a well established but juvenile tree. (ESM) refers to an early semi mature tree not of juvenile appearance. (SM) Semi-mature refers to a tree at growth stages advancing into maturity and full size. (LSM) Late Semi- Mature, refers to a tree between semi-mature and close to mature. (EM) refers to a tree at the first stages of maturity. (M) Mature 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.
Decay: (*N*) – an area of wood that is undergoing decomposition. (*V*) – decomposition of an area of wood by fungi or bacteria.
Decline: Is the response of a tree to a reduction of energy levels resulting from stress. Recovery from decline is difficult and slow; is usually irreversible.
Defect: A identifiable fault in a tree.
Epicormic Shoots: Shoots that arise from latent or adventitious buds that occur on stems and branches and on suckers produced from the base of the tree. A symptom / result of stress related factors.
Footprint: The area occupied by site structures, including the dwelling driveways and hard surfaces.
Hazard: When a tree failure hazard is present when a tree has potential to cause harm to people or property. (A source of potential harm).
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.
Order of branches: First order being those that are the first to extend from the main trunk or codominant limbs, second order branches extend from the first order and third order branches extend from the second order.
Probability: The likelihood of some event happening.
Risk: Is the probability of something adverse happening.
Suppression: Restrained growth pattern from competition of other trees or structures.
Stress: Refers to the response of a tree to the reduction of energy levels resulting from adverse influences such as altered soil conditions (compaction, poor nutrition, reduced oxygen or moisture levels), root damage, toxicity, drought, waterlogging; may be reversible given good arboricultural practices but may lead to decline.
Wound: Damage inflicted upon a tree through injury to its living cells, may continue to develop further weakening of the structure compromising structural integrity.

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.

Standards Australia 2009, *Australian Standards 4970 Protection of Trees on Development Sites* - Standards Australia, Sydney, Australia.

APPENDIX, B: Tree Retention Values

i) Landscape Significance: The significance of a tree in the landscape is a combination of its amenity, environmental and heritage values. The values may be subjective however, offer a visual understanding of the relative importance of the tree to the environment. The Landscape Significance of a tree is described in seven categories to assist in determining the retention value of the tree.

1	Significant	3	High	5	Low	7	Insignificant
2	Very High	4	Moderate	6	Very Low		

ii) Risk Values: Determined by degree of defect to tree height & dimensions, tree lean & loading pressures / weight, amount of damage, target area & frequency of occupancy within the target range of tree or tree part failure. Categorised as:

1	High risk	2	Medium risk	3	Low risk
Consider removal		*Should not restrict development due to faults*		*Retainable tree / includes medium to low risk trees (2/3)*	

iii) U.L.E. categories Useful Life Expectancy (modified by the author after *Barrell* 1996)

In a planning context, the time a tree can expect to be usefully retained is the most important long-term consideration. A trees U.L.E. category is the life expectancy of the tree modified first by its age, health, condition, safety and location. U.L.E. assessments are not static but may be modified as dictated by changes in trees health and environment.

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

1. **Long ULE** – Tree appeared retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance.
2. **Medium ULE**- Trees appeared to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk, assuming reasonable maintenance.
3. **Short ULE**- Trees appeared to be retainable at the time of assessment for 5 to15 years with an acceptable degree of risk, assuming reasonable maintenance.
4. **Very short - Removal**- Trees which should be removed within the next 5 years or as specified within this report.
5. **Small, young or regularly pruned**- Trees under 5m in height that can be readily moved or replaced.

APPENDIX, C: *AREA 1* Tree Assessment Schedule.

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values due to senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO).

Tree No	*Botanical Name* COMMON NAME	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Significance	Risk	U. L.E.	Comments
group A1/G27	Stand of 8 x Peppercorn trees 2x *Euc saligna's* (Blue Gums) within	av 8 x 6	av 350	2.1 / 4.2	ESM to SM	Good	Fair / Good	3/2	2/3	2	Largest Peppercorn 8x6 450mm(Ø) Largest Blue Gum 17x9 350mm(Ø) Appear typical for species type in age class with no significant defects noted
group A1/G28	Stand mostly large 13 x *Euc microcorys* & 4 x *Euc saligna's* (Blue Gums) within	av 22 x 12	av 350 to 450	2.4 / 5.4	SM	Good	Fair / Good	2	2/3	2	Select Tallowoods with minor developing stem inclusions, declining Peppercorn northern end, north end Blue Gum defective lower trunk with bracket fungus (conks) evident – small understory plantings <5m^, + 2x Peppercorns north end
group A2/G29 AREA 2	Mostly large *Euc saligna's* (Blue Gums) within + Camphor laurels and invasive weed species within	av 25 x 12	av 450 to 600	2.7 / 7.2	ESM to EM	Good	Fair / Good	3	2/3	2	Viewed from car park area, trees appear typical for species type with no significant defects.
A1/02 x2	*Elaeocarpus reticulatus* Blueberry Ash	av 8 x 4	av 200	1.6 / 2.4	ESM	Good	Good	3	2/3	3	Typical for species type, smaller western tree with basal defect = this tree low retention value
A1/03	*Eucalyptus microcorys* Tallowwood	16 x 8	550	2.6 / 6.6	ESM	Fair / Good	Good	3	2/3	2	Slight decline in canopy + large diameter deadwood to 80mm(Ø) with no significant defects noted
A1/04	*Eucalyptus saligna* Sydney Blue Gum	12 x 6	300	2 / 3.6	ESM	Good	Good	2	3	2	Narrow suppressed canopy, mid trunk wound at 2.2m east = appears not immediately detrimental
A1/05	*Eucalyptus sideroxylon* Red Ironbark	2 x 6	250	1.8 / 3	ESM	Fair / Good	Good	4/3	2	4	Declining tree with epicormic shoot development throughout – all in decline = very low retention value
A1/06	*Eucalyptus saligna* Sydney Blue Gum	22 x 12	350, 350	2.8 / 8.4	ESM	Good	Fair	2	2	3	Developing basal twin stem inclusion, south stem with minor isolated wounds appearing throughout main trunk

AREA 1

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values due to senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO).

Tree No	***Botanical Name*** **COMMON NAME**	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Significance	Risk	U. L.E.	Comments
A1/07	*Eucalyptus microcorys* Tallowwood	21 x 12	650, 300	3.1 / 10.8	ESM	Good	Fair	3	2/3	3	Trunk wound at 3 & 5m north, southern twin stems at base slightly included, damaged stem east
A1/08	*Eucalyptus citriodora* Lemon Scented Gum	21 x 12	400	2.3 / 4.8	ESM	Good	Good	4/3	2/3	2	Minor basal seam east – appears not immediately detrimental
A1/09	*Jacaranda mimosifolia* Jacaranda	6 x 6	250	1.8 / 3	ESM	Good	Good	4	3	2	Typical for species type with no significant defects noted.
A1/10	*Jacaranda mimosifolia* Jacaranda	6 x 6	300 at base	2 / 3.6	ESM	Good	Good	4	3	2	Typical for species type with no significant defects noted.
A1/11	*Jacaranda mimosifolia* Jacaranda	8 x 8	300, 250	2.6 / 6.6	ESM	Good	Good	4	3	2	Typical for species type with no significant defects noted.
A1/12 x5	*Jacaranda mimosifolia* Jacaranda	7 x 5	200	1.6 / 2.4	ESM	Good	Good	4	3	2	Stand of small trees. Typical for species type with no significant defects noted.
A1/12a x2	*Acacia longifolia* Golden Wattle	6 x 4	100	1.5 / 2	ESM	Good	Good	3	3	3	Typical for species type in age class
A1/13	*Ulmus sp* Elm	8 x 6	300 at base	2 / 3.6	ESM	Fair	deciduous	4/5	2/3	3	Twin stems near base slightly included, leaf infectious variation noted 1/2012 VTA
A1/14	*Eucalyptus resinifera* Red Mahogany	15 x 7	350	2.1 / 4.2	SM	Fair	Fair	4/3	1	4	Moderate basal wound south, seam extending to 1m above ground level, trunk swelling north, upper canopy in decline + large diameter deadwood to 100mm(Ø), developing stem inclusion at 6m, two fungal conks (brackets) at 2.4m north = developing high risk tree = recommend removal

AREA 1

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values due to senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO).								
Tree No	***Botanical Name* COMMON NAME**	**Height x spread (m)**	**DBH (mm)**	**SRZ / TPZ**	**Age**	**Health**	**Condition**	**Significance**	**Risk**	**U. L.E.**	**Comments**
A1/15	*Araucaria heterophylla* Norfolk Island Pine	165 x 8	450	2.4 / 5.4	ESM	Good	Good	2	3	2	Typical for species type with no significant defects noted.
A1/16	*Jacaranda mimosifolia* Jacaranda	6 x 6	300	2 / 3.6	ESM	Good	Good	4	3	2	Typical for species type with no significant defects noted.
A1/17	*Jacaranda mimosifolia* Jacaranda	4 x 4	150	1.5 / 2	ESM	Fair	Fair / Good	4	3	3	Slight decline in canopy with no significant defects noted
A1/18	*Brachychiton acerifolius* Illawarra Flame Tree	3 x 1	150	1.5 / 2	ESM	Fair / Poor	Fair / Poor	4/5	2/3	4	Environmentally stressed small tree in decline with low retention value, not recommended for mid term retention
A1/19	*Jacaranda mimosifolia* Jacaranda	7 x 8	300	2 / 3.6	ESM	Fair / Good	Good	4	3	2	Slight decline in canopy with no significant defects noted, decline of trees likely to be soil / moisture related or pool salt leaching?
A1/20 x4	*Corymbia gummifera* Bloodwood	7 x 3	150	1.5 / 2	ESM	Fair / Good	Fair / Good	4	3	<3	Stand of four trees, some with decline in canopy with slightly low vigour noted
A1/21	*Eucalyptus microcorys* Tallowwood	20 x 12	450	2.4 / 5.4	SM	Good	Fair / Good	3	2/3	3	Slight lean north with minor trunk seam to 1.2m above ground level
A1/22	*Eucalyptus microcorys* Tallowwood	20 x 14	400, 250	2.7 / 7.8	SM	Good	Fair / Good	3	2/3	3	Developing stem inclusion at base + 4m branch junction, slight lean west
A1/23	*Eucalyptus saligna* Sydney Blue Gum	21 x 17	450, 500	3.1 / 10.8	SM	Good	Fair / Poor	2	2	4	Damaged at base south with open wound + decay, decaying stub opposite on north leader with strong lean west, west leader large stem seam + open wound at 1m x 1.1m long, contains fungal conks (brackets), second open wound seam at 4m north, developing high risk tree = Low retention value

AREA 1

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values due to senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO).

Tree No	***Botanical Name*** **COMMON NAME**	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Significance	Risk	U. L.E.	Comments
A1/24	MEMORIAL TREE *Eucalyptus microcorys* Tallowwood	21 x 13	650 at base	2.7 / 7.8	SM	Good	Fair	1	2	3	Large mid trunk wound from 2 to 6m east requires further investigations = aerial inspection of defect
A1/25	MEMORIAL TREE *Eucalyptus microcorys* Tallowwood	20 x 6	300	2 / 3.6	ESM	Good	Good	1	3	2	One sided canopy bio mass south with no significant defects noted
A1/26	MEMORIAL TREE *Eucalyptus microcorys* Tallowwood	22 x 8	450	2.4 / 5.4	ESM	Good	Fair / Good	1	2/3	2	Typical minor developing stem inclusions throughout – appears not immediately detrimental

AREA 3 - Tree Assessment Schedule

A3/01	*Eucalyptus pilularis* Blackbutt	20 x 11	450	2.4 / 5.4	ESM	Good	Fair / Good	2	2/3	2	One sided canopy bio mass north west, developing inclusion north west = not immediately detrimental
A3/02	*Eucalyptus pilularis* Blackbutt	21 x 9	400	2.3 / 4.8	ESM	Good	Good	2	2/3	2	Slight basal damage south, canopy suppressed to south east with no significant defects noted
A3/03	*Eucalyptus pilularis* Blackbutt	22 x 13	450	2.4 / 5.4	ESM	Good	Fair / Good	2	2/3	3	Developing twin stem inclusion at 7m, slight junction swelling
A3/04	*Acacia elata.* Cedar Wattle	14 x 10	350	2.1 / 4.2	LM	Good	Fair / Good	3	2	<3	mid trunk wound at 1m, typically declining tree for species type in age class = Low retention value
A3/05	*Corymbia gummifera* Bloodwood	10 x 7	200	1.6 / 2.4	ESM	Good	Fair / Good	4/3	3	2	Slight decline in canopy + suppressed canopy mass to east with no significant defects noted
A3/06	*Pittosporum undulatum* Native Daphne	9 x 10	350	2.1 / 4.2	OM	Fair/ Good	Fair	3	2	4	Twin stems included at 1m^, typical borer damage throughout, declining canopy for age class = Low retention value

AREA 3

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values due to senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO).

Tree No	***Botanical Name*** **COMMON NAME**	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Significance	Risk	U. L.E.	Comments
A3/07	*Eucalyptus pilularis* Blackbutt	22 x 12	650	2.7 / 7.8	ESM	Good	Fair	2	2/3	<3	Reaction wood development at base to 2m^ east side, with slight buttressing west
A3/08	*Jacaranda mimosifolia* Jacaranda	9 x 8	300	2 / 3.6	ESM	Good	Good	4	3	2	Slight to moderate lean south, typical for species type in location with no significant defects noted
A3/09	*Eucalyptus saligna X* Hybrid sp	22 x 17	600	2.7 / 7.2	ESM	Good	Good	3	2/3	2	No significant defects noted.
A3/10	*Acacia elata* Cedar Wattle	20 x 15	350, 300	2.7 / 7.8	LM	Good	Fair	3	2/1	4	Mid trunk wounding from 1m to 4m^ south, main trunk wound at 1m east, in typical structural decline for age and species type = Low retention value
A3/11	*Ficus benjamina* Weeping Fig	10 x 12	450 @ base	2.4 / 5.4	ESM	Good	Fair	4/3	2/3	2	Multi stemmed at base, typically included throughout for species type not immediately detrimental, likely to cause infrastructure damage in future
***A3/12**	*Tamarix aphylla* Athel tree	4 x 5	450 @ base	2.4 / 5.4	OM	Fair / Good	Poor	4	2/1	4	*Exempt tree within 3m of building. Small tree structurally defective with splits from base to 2m^ = remove tree
A3/14	*Jacaranda mimosifolia* Jacaranda	9 x 8	450 @ base	2.4 / 5.4	ESM	Good	Good	4/3	3	2	Multi stemmed (x3) with slight developing inclusions south = not immediately detrimental, no significant defects noted
A3/15	*Jacaranda mimosifolia* Jacaranda	15 x 14	600	2.7 / 7.2	EM	Good	Good	3	2/3	2	Typical for species type with no significant defects noted
A3/16	*Casuarina glauca* Swamp She-Oak	13 x 7	300	2 / 3.6	SM	Fair / Good	Good	4/3	3	2	Typical for species type with no significant defects noted.
A3/17	*Eucalyptus microcorys* Tallowwood	21 x 15	800	3 / 9.6	EM	Good	Fair / Good	3	2	3	Moderate trunk wound at 2m north + indent seam increasing at .4m above wound

AREA 3

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values due to senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO).

Tree No	***Botanical Name*** **COMMON NAME**	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Significance	Risk	U. L.E.	Comments
A3/18	*Eucalyptus pilularis* Blackbutt	13 x 7	200	1.6 / 2.4	ESM	Good	Fair	2	3	3	All lower first order branches developing sharp included junctions, canopy suppressed form
A3/19	*Eucalyptus saligna* Sydney Blue Gum	15 x 11	300	2 / 3.6	ESM	Good	Good	2	2/3	2	Suppressed narrow canopy form, typical for species type in location with no significant defects noted
A3/20	*Eucalyptus microcorys* Tallowwood	25 x 15	800	3 / 9.6	EM	Good	Fair / Good	3	2	3	Developing stem inclusion at 9m twin stems, long lateral branch extension
***A3/22**	*Allocasuarina torulosa* Forest Oak	9 x 2	200	1.6 / 2.4	ESM	Good	Good	2	3	3	*Exempt tree within 3m of building. Lean east with no significant defects noted
***A3/23**	*Allocasuarina littoralis* Black She-Oak	11 x 2	100	1.5 / 2	ESM	Fair / Good	Fair	4	2	4	*Exempt tree within 3m of building. Structurally defective at 5m = remove tree
***A3/24**	*Persea americana* Avocado	6 x 3	100	1.5 / 2	ESM	Good	Good	4	3	2	*Exempt tree within 3m of building. Typical for species type with no significant defects noted.
***A3/25**	*Arbutus unedo* Irish Strawberry Tree	13 x 9	400 @ base	2.3 / 4.8	M	Fair / Good	Good	3	3	3	*Exempt tree within 3m of building. Retainable tree. Developing epicormic shoots throughout lower limbs

AREA 1A - Tree Assessment Schedule

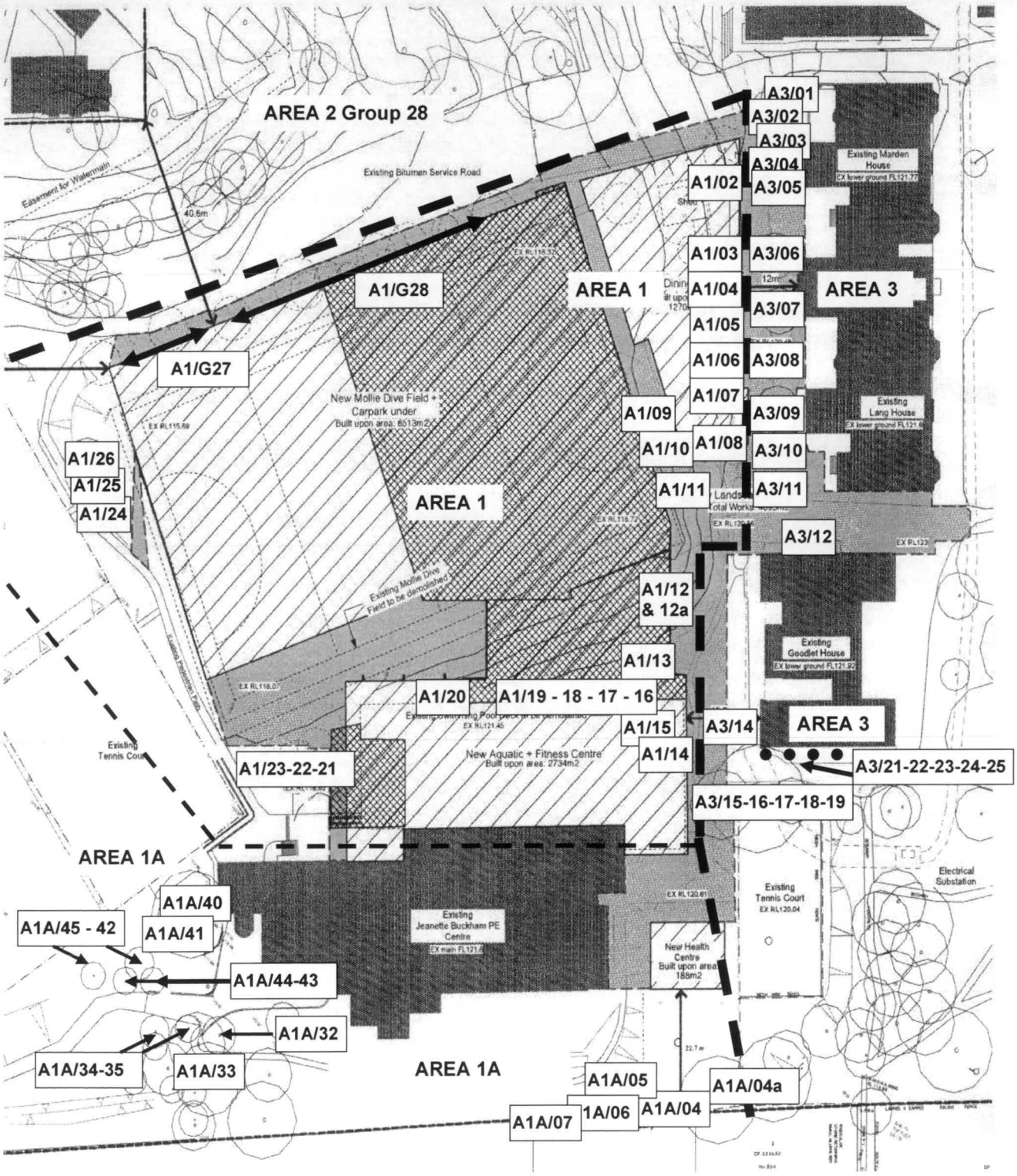
Tree requiring protection during Aquatic Centre construction

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values due to senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO).

Tree No	*Botanical Name* COMMON NAME	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Significance	Risk	U. L.E.	Comments
A1A/32	*Angophora floribunda* Rough Barked Apple	10 x 7	300	2 / 3.6	ESM	Fair / Good	Poor	2	2/1	4	Suppressed canopy lean west, mid trunk wound at 3 to 6m - 2m in length = defective tree requires removal
A1A/33	*Eucalyptus paniculata* Grey Iron Bark	28 x 17	700	2.8 / 8.4	M	Good	Good	4	2/3	2	Typical for species type with no significant defects noted
A1A/34	*Eucalyptus paniculata* Grey Iron Bark	15 x 7	300	2 / 3.6	ESM	Fair / Good	Fair	2	2/3	<3	Slight lean west + mid trunk open wound at 2m
A1A/35	*Eucalyptus paniculata* Grey Iron Bark	23 x 9	350	2.1 / 4.2	SM	Good	Fair / Good	2	2/3	2	Skewed trunk to 8m, epicormic shoot development + slight scaffold branch damage at 12m south east
A1A/40	*Eucalyptus pilularis* Blackbutt	25 x 17	350, 500	3 / 10.2	EM	Good	Fair / Good	2	2/3	2	Minor lower trunk seam at 1m east, typical for species type in location
A1A/41	*Eucalyptus pilularis* Blackbutt	30 x 17	850	3 / 10.2	M	Good	Fair / Good	2	2/3	3	One sided canopy bio mass north, mid trunk wound at 6m south east at branch stub location + large branch burl at 15m north
A1A/42	*Eucalyptus paniculata* Grey Iron Bark	27 x 14	500	2.5 / 6	EM	Fair / Good	Good	2	2/3	2	Developing epicormic shoots on lower trunk to 1st order branch division
A1A/43	*Eucalyptus paniculata* Grey Iron Bark	20 x 6	300	2 / 3.6	ESM	Fair / Good	Fair / Good	2	2/3	3	Developing epicormic shoots on lower trunk to 1st order branch division, trunk wound at 6m north + basal seam south
A1A/44	*Eucalyptus paniculata* Grey Iron Bark	22 x 7	300	2 / 3.6	ESM	Good	Fair / Good	2	2/3	2	Slight trunk seam at 2m east
A1A/45	*Eucalyptus pilularis* Blackbutt	9 x 6	250	1.8 / 3	ESM	Good	Good	2	3	2	Typical for species type in age class with no significant defects noted

AREA 1A - Tree Assessment Schedule
New Health Care Centre

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values due to senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO).

Tree No	*Botanical Name* COMMON NAME	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Significance	Risk	U. L.E.	Comments
A1A/04	*Syncarpia glomulifera* Turpentine	9 x 4	350 at base	2.1 / 4.2	ESM	Good	Fair	2	2/3	3	Multi stemmed at base, all included
A1A/04a	*Pittosporum undulatum* Native Daphne	4 x 4	150 at base	1.5 / 2	ESM	Good	Good	3	3	3	Typical for species type in location with no significant defects
A1A/05	*Syncarpia glomulifera* Turpentine	10 x 3	350	2.1 / 4.2	ESM	Good	Fair	2	2/3	3	Multi stemmed at base, all included
A1A/06	*Syncarpia glomulifera* Turpentine	10 x 3	250	1.8 / 3	ESM	Good	Fair	2	2/3	3	One sided canopy bio mass west, twin stems included at 5m + slight swelling at junction
A1A/07 x4	*Syncarpia glomulifera* Turpentine	10 x 3	200	1.6 / 2.4	ESM	Good	Good	2	3	2	Stand of saplings, one tree near path with basal damage

APPENDIX D: Tree Location Plan / modified for page setup