EARTHSCAPE HORTICULTURAL SERVICES
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DEVELOPMENT IMPACT ASSESSMENT REPORT

CONCEPT PLAN AND STAGE 1 DEVELOPMENT

MACQUARIE VILLAGE
110-114 HERRING ROAD, MACQUARIE PARK

February 2011

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1 INTRODUCTION

1.1.1 This report was commissioned by Allen Jack + Cottier on behalf of Stamford Property Services Pty Ltd to assess the health and condition of two-hundred and forty-three (243) trees located within or immediately adjacent the Stamford Grand North Ryde Hotel. This report has been prepared to aid in the assessment of a Concept Plan and Stage 1 of a proposed mixed-use development (residential/commercial) known as 'Macquarie Village' under Part 3A of the *Environmental Planning and Assessment Act* (1979).

1.1.1 The purpose of this report is to assess the potential impact of the proposed development on the subject trees, together with recommendations for amendments to the design or construction methodology where necessary to minimise any adverse impact. The report also provides recommended tree protection measures (Tree Management Plan – Section 13) to ensure the long-term preservation of the trees to be retained where appropriate.

2 THE SITE

2.1.1 The subject property is known as Lot 1 in DP 780314, being the Stamford Grand North Ryde Hotel, located on the corner of Herring and Epping Roads, Macquarie Park. For the purposes of this report the subject allotment will be referred to as "the Site". The site contains a number of buildings comprising the hotel complex together with a tennis court near the northern corner of the property, grade car parking on the south-western side of the complex and basement car parking facilities. The complex contains a large internal courtyard area incorporating a pool, ornamental ponds and garden areas. The total area of the site is 22,434.7 m². The site has a moderate northerly gradient. The site contains a mixture of locally-indigenous, non-local native and exotic tree and palms.

2.1.2 Soils of this area are typical of the Glenorie Soil Landscape Group (as classified in the Soil Landscapes of the Sydney 1:100,000 Sheet), consisting of "shallow to moderately deep (less than 1000mm) *Red Podzolic Soils* on crests, moderately deep (700 – 1500 mm) *Red & Brown Podzolic Soils* on upper slopes and deep (greater than 2000mm) *Yellow Podzolic Soils* on lower slopes*"*. Soil materials are derived from Wianamatta shales. The landscape of the area generally consists of undulating to rolling low hills with slopes of 5-20%. [1]

2.1.3 The original vegetation of this area consisted of tall open forest typical of shale/sandstone transitional areas. Dominant locally-indigenous tree species occurring in this area include *Angophora costata* (Sydney Red Gum), *Eucalyptus pilularis* (Blackbutt) and *Syncarpia glomulifera* (Turpentine). Other species found in this association may include *Eucalyptus resinifera* (Red Mahogany) and *Eucalyptus globoidea* (White Stringybark).

3 SUBJECT TREES

3.1.1 The subject trees were inspected by Earthscape Horticultural Services (EHS) on the 3rd November 2010. Each tree has been provided with an identification number for reference purposes denoted on the attached Tree Location Plan (**Appendix 5**), based on the survey prepared by Denny Linker & Co., Dwg. Ref No. 100915 dated 13th October 2010. The numbers used on this plan correlate with the Tree Assessment Schedule (**Appendix 3**). Trees 4a, 18a, 25a, 25b, 25c, 34a, 37a, 37b, 46a, 51a, 51b, 55a, 55b, 61a, 61b, 61c, 79a, 80a, 82a, 108a, 112a, 115a, 134a, 142a, 142b, 142c, 142d, 143a, 143b, 149a, 150a, 157a, 161a, 161b & 165-178 were not shown on the original survey and have been plotted on the drawing in their approximate positions.

4 HEALTH AND CONDITION ASSESSMENT

4.1 Methodology

4.1.1 An assessment of each tree was made using the Visual Tree Assessment (VTA) procedure.[2] All of the trees were assessed in view from the ground. No aerial inspection or diagnostic testing has been undertaken as part of this assessment.

4.1.2 The following information was collected for each tree:-

- Tree Species (Botanical & Common Name);
- Approximate height;
- Canopy spread; measured in four cardinal directions using a metric tape and an average taken.
- Trunk Diameter measured at 1.4 metres from ground level;
- Live Crown Size; (measured by subtracting the total height of the tree from the lowest point of the crown and multiplying by the average crown spread to give a value in square metres).
- Health & vigour; using foliage size, colour, extension growth, presence of disease or pest infestation, canopy density, presence of deadwood, dieback and epicormic growth as indicators,
- Condition; using visible evidence of structural defects, instability, evidence of previous pruning and physical damage as indicators.
- Suitability of the tree to the site and its existing location; in consideration of damage or potential damage to services or structures, available space for future development and nuisance issues.

This information is presented in a tabulated form in **Appendix 3.**

4.2 Safe Useful Life Expectancy (SULE)

4.2.1 The remaining Safe Useful Life Expectancy [3] of the tree is an estimate of the sustainability of the tree in the landscape, calculated based on an estimate of the average age of the species in an urban area in Sydney, less its estimated current age. The life expectancy of the tree has been further modified where necessary in consideration of its current health and vigour, condition and suitability to the site. The estimated SULE of each tree is shown in **Appendix 3.**

4.2.2 The following ranges have been allocated to each tree:-

- Greater than 40 years (Long)
- Between 15 and 40 years (Medium)
- Between 5 and 15 years (Short)
- Less than 5 years (Transient)
- Dead or immediately hazardous (defective or unstable)

5 LANDSCAPE SIGNIFICANCE

5.1 Methodology for Determining Landscape Significance

5.1.1 The significance of a tree in the landscape is a combination of its amenity, environmental and heritage values. Whilst these values may be fairly subjective and difficult to assess consistently, some measure is necessary to assist in determining the retention value of each tree. To ensure in a consistent approach, the assessment criterion shown in **Appendix 1** have been used in this assessment.

5.1.2 A rating has been applied to each tree to give an understanding of the relative significance of each tree in the landscape and to assist in determining priorities for retention, in accordance with the following categories:-

1. **Significant**
2. **Very High**
3. **High**
4. **Moderate**

5. **Low**
6. **Very Low**
7. **Insignificant**

5.2 Environmental Significance

5.2.1 Part 9.6 of Council's Development Control Plan (DCP) 2010 (Tree Preservation) applies to all land within the City of Ryde, made under Clause 5.9 of the Ryde Local Environment Plan 2010. The DCP generally protects all trees of a height of five (5) metres or greater or with a trunk circumference of 450mm (140mm in diameter). Some exemptions apply. The following trees are exempt (not protected) under the provisions of Ryde City Council's DCP:-

Tree No.	Species	Exemption
55b, 155 & 156	*Liquidambar styraciflua* (Liquidamber)	Nuisance Species
1, 2, 10, 18a, 47 & 195	*Grevillea robusta* (Silky Oak)	Environmental Weed Species
71, 108a, 161	*Schefflera actinophylla* (Umbrella Tree)	Nuisance Species
3, 5, 6, 7, 8, 12, 19-25, 25a, 25a, 25b, 25c, 26-34, 34a, 82, 82a, 83-90, 92-112, 112a, 113-115, 115a, 116, 118, 122, 125, 126, 128-134, 134a, 135-140, 142a, 142b, 142c, 142d, 144, 147, 165-178	*Syragus romanzoffianum* (Cocos Palm)	Nuisance Species
180	*Cotoneaster lacteus (Cotoneaster)*	Dead tree

5.2.2 The remainder of the trees are protected under Council's DCP.

5.2.3 *Eucalyptus saligna* (Sydney Blue Gum) [T38, T39 & T41], *Eucalyptus pilularis* (Blackbutt) [T67], *Syncarpia glomulifera* (Turpentine) [T142, T196, T198, T199, T200, T201, T202, T204, T205, T207, T210, T211] *Acacia parramattensis* (Sydney Green Wattle) [T61a, T153, & T158] and *Angophora costata* (Sydney Red Gum) [T35, T43, T44, T46a, T51, T52, T53, T54, T55, T55a, T56 & T57], are all locally-indigenous species, representative of the original vegetation of the area and would be of benefit to native wildlife. However, none of the trees contain cavities suitable as nesting hollows for arboreal mammals or birds or other visible signs of wildlife habitation.

5.2.4 None of the trees assessed are scheduled as Noxious Weeds under the meaning of *Noxious Weeds Act* (NSW) 1993.

5.2.5 *Eucalyptus scoparia* (Willow Gum) [T149a & T161b] is listed as Endangered Species in Schedule 2 of the *Threatened Species Conservation Act* 1995 (NSW) and listed as a Vulnerable Species under the *Environmental Protection and Biodiversity Conservation Act* 1999. Whilst this species is listed as endangered & vulnerable, it is a commonly planted ornamental tree in parks, gardens and streetscapes. The species is not endemic to this area and therefore does not have any ecological significance in this context.

5.2.6 The National Parks and Wildlife Service (NPWS) 1:25000 Mapping Series (Native Vegetation of the Cumberland Plain)[4] indicates that there are no remnant native vegetation communities within the area occupied by the site. The Flora and Fauna Assessment Report for the site prepared by Total Earth Care (TEC)[5] indicates that a small area of vegetation within the subject site contains species that are characteristic of the species assemblage for Sydney Turpentine Ironbark Forest

(STIF), all of which are positive diagnostic species for this vegetation community.[6] STIF is listed as an Endangered Ecological Community (EEC) under the *Threatened Species Conservation Act* 1995 (NSW) and a Critically Endangered Ecological Community under the *Environmental Protection and Biodiversity Conservation Act* 1999. The report acknowledges that the majority of these trees (including those listed at 5.2.3, with exception of T142), appear to have been planted within the site. T142, a *Syncarpia glomulifera* (Turpentine) is considered to be remnant tree, but is considered of limited conservation value due to its current condition. The trees are not contiguous with any bushland area or larger stand of trees and there is no remnant native understorey within the site.

5.2.7 None of the other trees are listed as Threatened or Vulnerable Species or form part of Endangered Ecological Communities under the provisions of the *Threatened Species Conservation Act* 1995 (NSW) or the *Environmental Protection and Biodiversity Conservation Act* 1999.

5.3 Heritage Significance

5.3.1 None of the trees within the site are listed as Heritage Items under Schedule 15 of the Ryde Planning Scheme Ordinance (May 1979). There is no known or suspected historical significance of any of the planted trees. T142 may be a remnant tree.

5.3.2 A Significant Tree Register also exists within the City of Ryde. Trees listed on the register are protected under Part 9.6 of Council's DCP 2010. None of the trees are assessed are listed on Council's Significant Tree Register.

5.4 Amenity Value

5.4.1 Criteria for the assessment of amenity values are incorporated into **Appendix 1**. The amenity value of a tree is a measure of its live crown size, visual appearance (form, habit, crown density), visibility and position in the landscape and contribution to the visual character of an area. Generally the larger and more prominently located the tree, and the better its form and habit, the higher its amenity value.

6 RETENTION VALUES

6.1.1 The Retention Values shown in **Appendix 3** and **Appendix 5** have been determined on the basis of the estimated longevity of the trees and their landscape significance rating, in accordance with **Table One**. Together with guidelines contained in **Section 7** (Tree Protection Zones) this information should be used to determine the most appropriate position of building footprints and other infrastructure within the site, with due consideration to other site constraints, to minimise the impact on trees considered worthy of preservation.

TABLE 1 – TREE RETENTION VALUES – ASSESSMENT METHODOLOGY

	Landscape Significance Rating						
Estimated Life Expectancy	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Long - Greater than 40 Years	High Retention Value						
Medium- 15 to 40 Years			Moderate Retention Value				
Short - 5 to 15 years				Low Ret. Value			
Transient - Less than 5 Years				Very Low Retention Value			
Dead or Potentially Hazardous							

7 TREE PROTECTION ZONES

7.1.1 In order to provide adequate protection for trees nominated as suitable for preservation, Tree Protection Zones (TPZ) are required to provide adequate setbacks from buildings and other infrastructure to minimise adverse impact. The Tree Protection Zone is a radial distance measured from the centre of the trunk of the tree as specified in **Appendix 4**. The intention of the Tree Protection Zone is to minimise incursions to the root system and canopy to ensure the long-term health and stability of each tree to be retained. Incursions to the root zone may occur due to excavation, changes in ground levels, (either lowering or raising the grade), trenching or other forms or soil disturbance such as ripping, grading or inverting the soil profile. Tree Protection Zones for each tree are shown in **Appendix 4**. These have been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites).[7]

7.2 Structural Root Zone (SRZ)

7.2.1 The Structural Root Zone (SRZ) provides the bulk of mechanical support and anchorage for a tree. Incursions within the SRZ are not recommended as they are likely to result in the severance of woody roots which may lead to the destabilisation and/or demise of the tree. The SRZ for each tree has been shown in **Appendix 4**. These have been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites).

7.3 Acceptable Incursions to the Tree Protection Zone.

7.3.1 Where encroachment to the TPZ is unavoidable, an incursion to the TPZ of not exceeding 10% of the area of the TPZ and outside the SRZ may be acceptable. Examples of acceptable incursions are shown in **Appendix 2**. Greater incursions to the TPZ may result in an adverse impact on the tree. Where incursions greater than 10% of the TPZ are unavoidable, exploratory excavation using non-destructive methods may be required to evaluate the extent of the root system affected and determine whether or not the tree can remain viable.

7.4 Legal Protection

7.4.1 Notwithstanding the above recommendations, Council may require a greater setback from certain types of structures to ensure the on-going legal protection of the tree (i.e. its legal status under Council's Tree Preservation Order). In Ryde City, a tree located within three (3) metres of the wall of an approved building with a floor area of more than 30m² is not protected under the Tree Preservation Order (TPO). The measurement is taken from the centre of the trunk of the tree to the external wall or foundation of the building. As such, if a tree is considered worthy of preservation, Council is unlikely to approve the construction of a building within three (3) metres of the tree (regardless of whether this can be undertaken without having an adverse impact on its health or longevity).

8 PROPOSED DEVELOPMENT

8.1.1 The proposed development includes the demolition of the existing hotel complex and construction of a mixed-use (residential/commercial) development to be constructed in a number of stages. The development includes a number of residential apartment buildings, retail space and basement and on-grade car parking facilities. The Concept Plan and Stage 1 of the proposed development are included in the submission under Part 3a of the EP&A Act.

9 IMPACT ASSESSMENT

9.1.1 The intention of this assessment is to determine the incursions to the root zones and canopies created by the proposed development and evaluate the likely impact of the proposed works on the subject trees. Details shown on the following plans were used in this assessment:-

Title	**Author**	**Dwg No.**	**Date**
Level 1 Basement Plan	Allen Jack + Cottier	DA2001.1 & 2	21/01/2011
Level 2 Basement Plan	Allen Jack + Cottier	DA2002.1 & 2 Rev 2	08/12/2010
Level 3 Basement Plan	Allen Jack + Cottier	DA2003.1 & 2 Rev 2	08/12/2010
Ground Level Plan	Allen Jack + Cottier	DA2100.1 & 2	21/01/2011
Level 1 Plan	Allen Jack + Cottier	DA2101.1 & 2	21/01/2011
Level 2 Plan	Allen Jack + Cottier	DA2102.1 & 2 Rev 4	08/12/2010

9.1.2 A summary of the impact of the proposed development on each tree within the site is shown in **Appendix 4**. The following criteria have been examined as part of this assessment:-

- Relative Level (R.L.) at base of tree;
- Optimum Tree Protection Zone (TPZ);
- Structural Root Zone (SRZ);
- Incursions to the TPZ, SRZ and tree canopy, including estimated cut & fill and offset from the tree;
- Assessment of the likely impact of the works;
- Recommendations for retention or removal.

9.1.3 The proposed development will necessitate the removal of one-hundred and twenty-one (121) trees of low and very low retention value. These include Tree No.s T153 & T158 (Sydney Green Wattle), T127, T142d, T143a & T145 (Alexandra Palm), T150 (Illawarra Flame), T143b (Himalayan Cedar), T117 (Fiddle-leaf Fig), T1, T2, T10 & T19a (Silky Oak), T13 (group of 3 x Chinese Arborvitae), T148 & T149 (Willow-leaf Hakea), T9 (Jacaranda), T73 (Brushbox), T17 (Canary Island Palm), T71, T108a & T161 (Umbrella Tree), T3, T5, T6, T7, T8, T12, T19, T21, T22, T25b, T25c, T26, T31, T33, T34, T34a, T82, T82a, T83-T90, T92-T112, T112a, T113, T114, T115, T116, T118, T122, T125, T126, T128-T134, T134a, T135-T140, T142a, T142b, T142c, T144, T147, T165-T178 (Cocos Palms), T119, T121, T123, T124 & T146 (American Arborvitae), 155 & 156 (Liquidambar), T37a (Cabbage Tree Palm) and T4a, T4b (Chinese Arborvitae). None of these trees are considered significant or worthy of special measures to ensure their preservation. It should be noted that all of the Cocos Palms, all of the Silky Oaks and all of the Umbrella Trees are exempt from Council's Tree Preservation Order.

9.1.4 The proposed development will necessitate the removal of a further eleven (11) trees of moderate retention value. These include Tree No.s T35 (Sydney Red Gum), T70 & T72 (Brushbox), T81, T152 & T160 (Weeping Golden Cypress), T91 & T106 (Swane's Golden Pencil Pine), T154 (Variegated Brusbox), T157 (Scribbly Gum) and T159 (Illawarra Flame Tree). These trees are not considered significant, but are in good health and condition and make a fair contribution to the amenity of the site and surrounding properties. In order to compensate for loss of amenity, consideration should be given to replacement planting within the site.

9.1.5 The removal of a further ten (10) Cocos Palms [T20, T23, T24, T25, T25a, T27, T28, T29, T30 & T32] is also recommended. Whilst these trees will not be adversely affected by the proposed development, they are considered a Nuisance Species. Replacement planting with a more suitable

species is considered appropriate in this instance. Note that all of these trees are exempt (not protected) under Council's Tree Preservation Order.

9.1.6 The proposed development will also necessitate the removal of six (6) mature Canary Island Palm trees [Tree No.s T4, T11, T14, T15, T16 & T18], one (1) semi-mature Cabbage Tree Palm [T141], sixteen (16) immature Chinese Fan Palms [T74-T80, T79a & T80a] and two (2) semi-mature Cotton Palms [T120 & T143] all of moderate retention value. The majority of these trees would be feasible to transplant with low risk of fatality if undertaken in accordance with proper horticultural practice. As such, consideration should be given to transplanting these trees elsewhere within the site if space permits. T17 (a Canary Island Palm) shows symptoms similar to Fusarium Wilt, but the presence of the disease could not be confirmed by visual assessment. In order to ascertain whether the Canary Island Palms are viable to transplant with an acceptable degree of risk, further pathology testing of T17 is recommended. If the disease is confirmed, the transplanting of the remaining Canary Island Palms is not considered viable.

9.1.7 The proposed development will also necessitate the removal of one (1) tree of High Retention Value (T142, a Turpentine). This tree may be a remnant of the original vegetation community. Whilst it may have some ecological significance in its association with STIF, it is not contiguous with any bushland area and is completely surrounded by urban development. The tree also shows evidence of decline and is not considered sustainable in this position in the long term. Its position more or less centrally within the site also makes its retention difficult with any proposed future development of the site.

9.1.8 Excavations for the proposed driveway and associated retaining wall are located within the SRZ of T161b (a Willow Gum located on the adjoining property to the north-west). Over-excavations to facilitate construction of the wall and permit the installation of drainage are likely to necessitate the severance of woody roots of this tree, which will result in a significant adverse impact. As such, consideration should be given to the removal of this tree subject to the approval of the adjoining property owner and Council.

9.1.9 Excavations and compaction associated with the proposed roadway are located within the SRZ of T72 (Variegated Brushbox). This may necessitate severance of woody roots, leading to an adverse impact on this tree. It may be feasible to retain T72 subject to exploratory excavations undertaken prior to bulk excavation for the pavement sub-grade to verify the size and quantity of roots affected.

9.1.10 Demolition of the existing asphalt pavement and kerb is located within the TPZ's of Tree No.s T35, T43, T51, T52, T53, T54, T55 & T56 (Sydney Red Gums), T59 (Brushbox) T38 (Sydney Blue Gum), T48 (English Oak), T61c (Scribbly Gum), T62 (Bangalay), T185 (Jacaranda), T187 (Illawarra Flame), T190 (Kaffir Plum), T193 (River Oak) and T194 & T197 (Yellowwood). The demolition of existing pavements and kerbs should not result in any adverse impact on these trees provided that all demolition works are undertaken in accordance with Section 13.18

9.1.11 Excavations for the proposed basement are located within the TPZ's of trees T35, T51, T52, T53, T54 & T55, (Sydney Red Gums) & T38 (Sydney Blue Gum). Assuming that the basement will be constructed using a soldier pier and shotcrete shoring system or similar, the proposed works should not result in any adverse impact on these trees as the extent of the incursion to the root zone is less than 10% of the TPZ, which is considered within acceptable limits. Minor pruning of trees T38, T52, T53, T54 & T55 may be required to clear the piling rig. This work should not result in any adverse impact on these trees provided that any required pruning works are carried out in accordance with Section 13.21.

9.1.12 Minor pruning of T38, T51 & T52 may be required to accommodate temporary scaffolding. However, this work will not result in any adverse impact on these trees provided that any temporary scaffold within the TPZ of these trees is erected in accordance with 13.23.

9.1.13 No other trees will be adversely affected by the proposed development.

10 REPLACEMENT PLANTING

10.1.1 Where compromises to tree retention are proposed, consideration should be given to replanting new trees within the allotment in accordance with Council's Tree Replenishment Policy in order to compensate for any loss of amenity. Replacement trees should preferably include some locally indigenous species. These will be most appropriate to the site conditions and be most valuable in terms of preserving the landscape character and wildlife habitat of the area.

11 CONCLUSIONS:-

11.1.1 A total of two-hundred and forty-three (243) trees stand within the site and in close proximity to the boundaries on adjoining properties. These are a mix of locally-indigenous, native and exotic species in fair to good health and condition. Whilst some of the species are representative of the original vegetation community within the area (Sydney Turpentine Ironbark Forest), all except on tree (T142) appear to have been planted within the site. With exception of T142, none of the trees have any special heritage or ecological significance. T142 is not considered viable in the long term and has limited conservation value given its present health and condition and its position within the site.

11.1.2 The proposed development will necessitate the removal of one-hundred and twenty-one (121) trees of low and very low retention value. These include Tree No.s T1, T2, T3, T4a, T4b, T5-T10, T12, T13, T17, T19, T19a, T21, T22, T25b, T25c, T26, T31, T33, T34, T34a, T37a, T71, T73, T82, T82a, T83-T90, T92-T105, T107, T108, T108a, T109, T110, T111, T112, T112a, T113-T115, T115a, T116-T119, T121-T134, T134a, T135-T140, T142a, T142b, T142c, T142d, T143b, T144-T150, T153, T158, T161 and T165-T178. None of these trees are considered significant or worthy of special measures to ensure their preservation. It should be noted that all of the Cocos Palms, all of the Silky Oaks and all of the Umbrella Trees are exempt from Council's Tree Preservation Order.

11.1.3 The proposed development will necessitate the removal of a further eleven (11) trees of moderate retention value. These include Tree No.s T35, T70, T72, T81, T91, T106, T152, T154, T157, T159 & T160. These trees are not considered significant, but are in good health and condition and make a fair contribution to the amenity of the site and surrounding properties

11.1.4 The removal of a further ten (10) Cocos Palms [T20, T23, T24, T25, T25a, T27, T28, T29 T30 & T32] is also recommended. Whilst these trees will not be adversely affected by the proposed development, they are considered a Nuisance Species. Note that all of these trees are exempt (not protected) under Council's Tree Preservation Order.

11.1.5 The proposed development will also necessitate the removal of twenty-five (25) palm trees of various species all of moderate retention value. These include Tree No.s T4, T11, T14, T15, T16, T18, T74-T80, T79a, T80a, T120, T141 & T143. The majority of these trees would be feasible to transplant with low risk of fatality if undertaken in accordance with proper horticultural practice. However, further pathology testing of T17 is recommended to verify the presence of Fusarium Wilt. If the disease is confirmed, the transplanting of the remaining Canary Island Palms is not considered viable.

11.1.6 The proposed development will also necessitate the removal of one (1) tree of High Retention Value (T142, a Turpentine). The tree shows evidence of decline and is not considered sustainable in this position in the long term. Its position more or less centrally within the site also makes its retention difficult with any proposed future development of the site.

11.1.7 Excavations for the proposed driveway and associated retaining wall will result in a significant adverse impact on T161b. Consideration should therefore be given to the removal of this tree subject to the approval of the adjoining property owner and Council.

11.1.8 Excavations and compaction associated with the proposed roadway may result in an adverse impact on of T72. It may be feasible to retain T72 subject to exploratory excavations undertaken prior to bulk excavation for the pavement sub-grade to verify the size and quantity of roots affected.

11.1.9 Demolition of the existing asphalt pavement and kerb should not result in any adverse impact on T35, T38, T43, T48, T51, T52, T53, T54, T55, T56, T59, T61c, T62, T185, T187, T190, T193, T194 & T197 provided that all demolition works are undertaken in accordance with Section 13.18

11.1.10 Excavations for the proposed basement should not result in any adverse impact on trees T35, T38, T51, T52, T53, T54 & T55 provided that the basement is constructed using a soldier pier and shotcrete shoring system or similar and any required pruning works to clear the piling rig are carried out in accordance with Section 13.21.

11.1.11 Minor pruning of T38, T51 & T52 to accommodate temporary scaffolding will not result in any adverse impact on these trees provided that any temporary scaffold within the TPZ of these trees is erected in accordance with 13.23.

11.1.12 No other trees will be adversely affected by the proposed development.

12 RECOMMENDATIONS

1. The following Tree Management Plan (**Section 13**) should be implemented to ensure the long term survival of all trees within the site to be retained as part of the development.

2. In order to compensate for loss of amenity resulting from the removal of trees to accommodate the proposed development, a minimum of twenty (20) new trees capable of attaining a height of thirteen (13) metres at maturity should be planted within the site.

3. The removal of Trees T20, T23, T24, T25, T25a, T27, T28, T29, T30 & T32 is recommended. Note that all of these trees are exempt (not protected) under Council's Tree Preservation Order.

4. Consideration should be given to the removal of T161b subject to the approval of the adjoining property owner and Council.

5. Consideration should be given to the transplanting of trees T74-T80, T79a, T80a T120, T141 & T143 elsewhere within the site if space permits

6. Subject to further diagnostic testing of T17 to verify the presence of Fusarium Wilt, consideration should also be given to the transplanting of trees T4, T11, T14, T15, T16 & T18 elsewhere within the site.

7. In order to minimise any adverse impact on T72, exploratory excavations along the line of the proposed kerb should be undertaken to confirm the presence of woody roots prior to mechanical excavation of the pavement sub-grade and kerb foundations. All such excavations should be carried out in accordance with Section 13.19.

8. Demolition of the existing driveway pavement, sub-base and associated kerbs within the TPZ's of T35, T38, T43, T48, T51, T52, T53, T54, T55, T56, T59, T61c, T62, T185, T187, T190, T193, T194, & T197 should be undertaken in accordance with Section 13.18

9. Demolition of the existing retaining wall adjacent Trees T199-T211 should be undertaken in accordance with Section 13.18.

10. In order to minimise the incursion to T35, T38, T51, T53, T54 & T55 created by the basement excavation, the basement wall should be constructed using soldier pier & shotcrete panel shoring system within the TPZ's of these trees. All excavations for the shoring should be undertaken in accordance with Section 13.19 within the TPZ of these trees. Where canopy pruning is required to clear the piling rig, all such pruning should be undertaken in undertaken in accordance with Section 13.21.

11. All pruning work pruning work of T38, T51 & T52 required to clear temporary scaffolding should be undertaken in accordance with Section 13.21.

Andrew Morton
EARTHSCAPE HORTICULTURAL SERVICES
3rd February 2011

13 TREE MANAGEMENT PLAN (TREE PROTECTION SPECIFICATIONS)

13.1 Introduction

13.1.1 This specification provides tree protection measures to be implemented prior to and during construction to ensure the long term health and preservation of trees to be retained as part of the site development. The specification should be read in conjunction with the Tree Protection Plans for the Demolition and Construction Phases (**Appendix 6 & 7**).

13.2 Site Arborist

13.2.1 A qualified consulting arborist ('Site Arborist') should be appointed to undertake regular inspections of the site to ensure compliance with the specified tree protection measures and monitor tree health.

13.2.2 The Site Arborist should have the following minimum qualifications:-

- Minimum five (5) years industry experience in the field of arboriculture, horticulture with relevant demonstrated experience in tree management on construction sites; and
- Diploma level qualifications in arboriculture [Australian Qualification Framework (AQF) Level 5];

13.3 Site Management Plan

13.3.1 Prior to commencement of any work on site, the Traffic Management Plan and Site Management Plan should be submitted to the Site Arborist for review and comment in order to resolve any potential issues or conflicts between tree protection and site management & vehicle movements.

HOLD POINT – The Site Management Plan and Traffic Management Plan shall be submitted to the Site Arborist prior to commencement of any work on site.

13.4 Site Inspections

13.4.1 Inspections should be conducted by the Site Arborist in accordance with the following key milestones:-

- Prior to any work commencing on-site (including demolition, earthworks or site clearing) and following installation of tree protection fences or other specified tree protection devices (e.g. Tree Protection Fences, Trunk Protection, Ground Protection etc);
- During removal of pavements or demolition of any structure within the Tree Protection Zone of any tree to be retained & protected;
- During any excavation within the nominated Tree Protection Zone of any tree required to be retained & protected;
- At two-monthly intervals during the construction phase;
- Following completion of the building works and prior to commencement of any landscape works;
- During any landscape works within Tree Protection Zones; and
- At the completion of landscape works.

13.4.2 The Project Manager or Construction Manager shall be responsible to notify the Site Arborist prior to any works within the Tree Protection Zone with a minimum of 24 hours notice.

13.5 Certification/Reporting

13.5.1 Following each inspection the Site Arborist shall prepare a Statement of Compliance, certifying whether or not the works have been completed in compliance with this Plan and the conditions of

development consent relating to tree protection. The Compliance Statements should contain photographic evidence where required to demonstrate that the work has been carried out as specified. The Compliance Statements shall be submitted to the Certifier at the end of each month.

13.5.2 If conditions have been breached, remedial action shall be recommended to minimise any adverse impact on the subject trees.

13.6 Induction

13.6.1 All contractors, sub-contractors or other persons required to carry out work within Tree Protection Zones should be inducted prior to the commencement of that work. The induction should highlight the following requirements:-

- The requirement to protect trees within the site;
- The specific trees that are to be protected;
- The type of actions that could lead to potential damage (refer **Section 13.11**);
- Maintenance of any protective devices (fencing, trunk protection, ground protection etc) during the proposed works;
- Penalties imposed by Council for breach of Development Consent or breach of Council's Tree Preservation Order; and
- Contact details for the Site Arborist.

13.7 Tree Protection Zones

13.7.1 The Tree Protection Zone (TPZ) is a radial distance measured from the centre of the trunk of the tree as specified in **Appendix 3**. These have been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites).[8]

13.7.2 The intention of the TPZ is to ensure protection of the root system and canopy from the potential damage from construction works and ensure the long-term health and stability of each tree to be retained. Incursions to the root zone may occur due to excavations, changes in ground levels, (either lowering or raising the grade), trenching or other forms or soil disturbance such as ripping, grading or inverting the soil profile. Such works may cause damage or loss of part of the root system, leading to an adverse impact on the tree.

13.8 Structural Root Zone (SRZ)

13.8.1 The Structural Root Zone (SRZ) provides the bulk of mechanical support and anchorage for a tree. This is also a radial distance measured from the centre of the trunk as specified in **Appendix 3**. The SRZ has been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites). Incursions within the SRZ are not recommended as they are likely to result in the severance of woody roots which may compromise the stability of the tree or lead to its decline and demise.

13.9 Acceptable Incursions to the Tree Protection Zone.

13.9.1 Where encroachment to the TPZ is unavoidable, an incursion to the TPZ of not exceeding 10% of the area of the TPZ and outside the SRZ may be acceptable. Examples of acceptable incursions are shown in **Appendix 2**. Greater incursions to the TPZ may result in an adverse impact on the tree.

13.9.2 Where incursions greater than 10% of the TPZ are unavoidable, exploratory excavation using non-destructive methods may be required to evaluate the extent of the root system affected and determine whether or not the tree can remain viable (refer **Section 13.19**).

13.10 Tree Protection Fencing

13.10.1 All trees within the site to be retained shall be protected prior to and during construction from all activities that may result in detrimental impact by erecting a suitable protective fence beneath the canopy in the positions indicated on the Tree Protection Plan (**Appendix 6**). The fence shall consist temporary chain wire panels 1.8 metres in height, supported by steel stakes as required and fastened together and supported to prevent sideways movement (refer to **Figure 1**). The fence shall be erected prior to the commencement of any work on-site and shall be maintained in good condition for the duration of construction. Where tree protection zones merge together a single fence encompassing the area is deemed to be adequate.

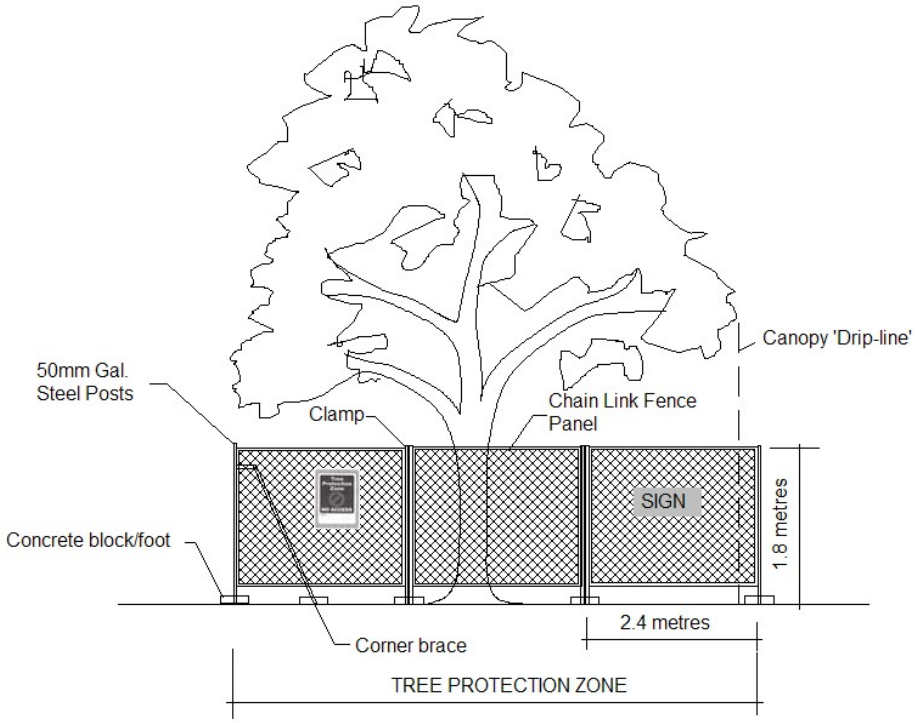


Figure 1 – Detail of Tree Protection Fence

13.11 Prohibited Activities

13.11.1 The following activities should be avoided within specified Tree Protection Zones:-

- Excavations and trenching (with exception of the approved foundations and approved underground services);
- Ripping or cultivation of soil;
- Mechanical removal of vegetation;
- Soil disturbance or movement of natural rock;
- Soil level changes including the placement of fill material (excluding that associated with the approved works);
- Stockpiling of spoil;
- Stockpiling of bulk materials such as soil, gravel, sand or similar materials;
- Storage or stockpiling of building materials, demolition waste, other waste and waste receptacles;
- Disposal of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil and other toxic liquids;
- Refuelling plant and equipment;
- Movement and storage of plant, equipment & vehicles;

- Erection of site sheds (except with prior approval of the site arborist);
- Affixing of signage or hoardings to trees;
- Other physical damage to the trunk or root system; and
- Any other activity likely to cause damage to the tree.

13.11.2 In some instances, proposed building footprints, roadways, services and other infrastructure may encroach into the recommended Tree Protection Zones. Details of the potential issues and recommendations are shown in the attached Impact Assessment Schedule (**Appendix 3**). In these cases, special provisions must be made for the protection of those trees, as per the recommendations column of the schedule.

13.12 Signage

13.12.1 Signs shall be installed on the Tree Protection Fence to prevent unauthorised movement of plant and equipment or entry to the Tree Protection Zone. The signs shall be securely attached to the fence using cable ties or equivalent. Signs shall be placed at minimum 10 metre intervals. The wording and layout of the sign shall comply with AS 4970-2009 as shown in Figure 2.

Figure 2 – Detail of Tree Protection Sign

13.13 Ground Protection

13.13.1 A 100mm layer of woodchip mulch shall be installed within designated areas of the Tree Protection Zone of nominated trees as indicated on the Tree Protection Plan (**Appendix 6**) to minimise compaction of the underlying soil profile during construction activity and haulage. A Geotextile fabric, such as Geotex® 'ST' Series manufactured by Synthetic Industries or an equivalent product, shall be installed beneath the mulch layer to minimise compaction to the underlying soil profile and limit migration of mulch into the underlying soil profile. Mulch shall be installed and spread by hand to avoid soil disturbance and compaction within the root zone. Ground protection shall be installed prior to any site works and maintained in good condition for the duration of the construction period. On completion of the works, ground protection shall be removed without damage or disturbance to the underlying soil profile.

13.14 Trunk Protection

13.14.1 Where provision of tree protection fencing is in impractical due to its proximity to the proposed building footprint, trunk protection shall be erected around the trunks of nominated trees to avoid accidental damage (**Appendix 6**). The trunk protection shall consist of two (2) metre lengths of softwood timbers (90 x 45mm in section) spaced at 100-150mm centres around the trunk and

secured together with 2mm galvanised wire or galvanised hoop strap as shown in Figure 3. Recycled timber (such as demolition waste) may be suitable for this purpose, subject to the approval of the Site Arborist. The timbers shall be wrapped around the trunk, but not fixed to the tree in any way to avoid mechanical injury or damage to the trunk. Trunk protection should be installed prior to any site works and maintained in good condition for the duration of the construction period.

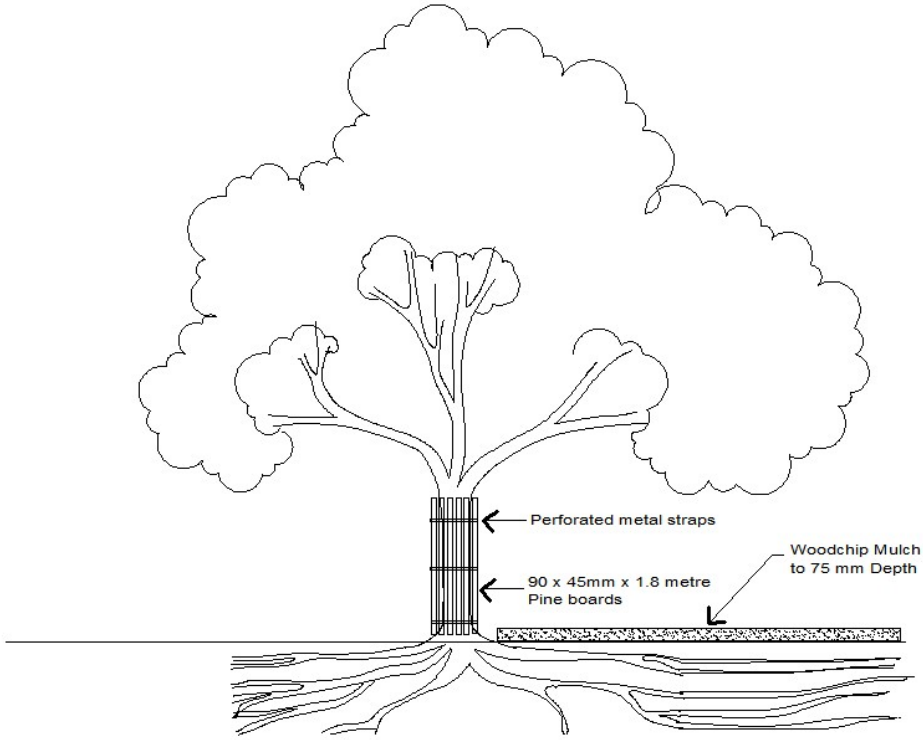


Figure 3 – Detail of Tree Protection Fence

HOLD POINT – The Site Arborist shall inspect Tree Protection Fences, Trunk Protection, Ground Protection and any other specified tree protection devices following their installation and prior to commencement of any other work on site.

13.15 Site Establishment

13.15.1 Where site sheds are required as part of the project, these should be located on existing hardstand areas where possible. Subject to approval of the Site Arborist, site sheds may be located within Tree Protection Zones, provided that they can be installed and removed without disturbance to the ground levels and without damage or pruning of the foliage and branches. Where all-weather surfaces are required beneath or around the site sheds, ground protection shall be installed as per **Section 13.13**. Gravel, roadbase or crushed concrete is *not* acceptable for this purpose.

13.15.2 Where temporary services are required, these shall be installed above ground within TPZ's. Where in-ground utilities are required, these shall be installed outside designated Tree Protection Zones. If trenching is required within Tree Protection Zones, the prior approval of the Site Arborist must be sought.

13.15.3 Compounds for storage of equipment and materials shall be located outside designated Tree Protection Zones. No storage or stockpiling of materials is permitted within Tree Protection Zones.

13.15.4 Care shall be taken when operating cranes, drilling rigs and similar equipment near trees to avoid damage to tree canopies (foliage and branches). Under no circumstances shall branches be torn-off

by construction equipment. Where there is potential conflict between tree canopy and construction activities, the advice of the Site Arborist must be sought.

13.16 Site Clearing & Tree Removal

13.16.1 Trees to be removed as part of the proposal are nominated in the attached schedule (**Appendix 3**) and indicated on the Tree Protection Plan (**Appendix 6**) with a dashed line. All trees within the Site are protected under Council's Tree Preservation Order with exception of those listed in **Section 5.2.1**. The approval of the Council shall be obtained prior to the removal or pruning of any tree protected under the Tree Preservation Order.

13.17 Temporary Construction/Demolition Haul Roads

13.17.1 Temporary construction haul roads shall be limited to the existing site roadways and pathways to avoid soil disturbance and compaction within Tree Protection Zones, as shown on the Tree Protection Plan (**Appendix 6**). If deviation from the designated haul routes and site access points is required for any reason, the approval of the Site Arborist must be obtained.

13.17.2 Where haul roads transect Tree Protection Zones and there is no existing paved surface, temporary ground protection shall be installed. Ground protection shall consist of temporary rumble boards (steel or plywood sheets) underlain by a 100mm layer of sand or no-fines aggregate (e.g. blue metal) or woodchip mulch underlain by a suitable geotextile material. The existing topsoil and ground vegetation layer shall be retained intact and undisturbed. Upon completion of demolition and construction works, the rumble boards underlying sub-base material and geotextile material shall be removed without disturbance of the underlying soil profile.

13.18 Demolition Works

13.18.1 Demolition of pathways and paved areas within the Tree Protection Zone of trees to be retained shall be undertaken under the supervision of the Site Arborist. Any asphalt pavement surface and sub-base shall be stripped-off in layers of no greater than 50mm thick using a small rubber tracked excavator or alternative approved method to avoid damage to underlying roots and minimise soil disturbance. Concrete shall be broken and lifted in sections to minimise ground disturbance. The machine shall work within the footprint of the existing paved area to avoid compaction of the underlying soil. The final layer of sub-base material shall be removed using hand tools were required to avoid compaction of the underlying soil profile and damage to woody roots.

13.18.2 Following removal of the pavement surface and sub-base, clean, friable topsoil shall be used to fill in the excavated area and bring flush with surrounding levels (where necessary). Soil shall only be imported and spread when the underlying soil conditions are dry to avoid compaction of the soil profile.

13.18.3 Demolition of the existing retaining walls or other structures, concrete slabs or footings within the Tree Protection Zone of trees to be retained shall be undertaken under the supervision of the Site Arborist. Equipment used in demolition works within Tree Protection Zones shall work only within areas that suitable ground protection has been installed in accordance with **Section 13.12**. Light weight equipment such as small rubber-tracked excavators and small 2-3 tonne tipper trucks should be used for demolition works within TPZ's to minimise compaction and ground disturbance.

13.18.4 Care shall be taken during demolition works to avoid damage to the root systems, trunks and lower branches of trees in the vicinity of existing buildings, particularly when using cranes, excavators drilling rigs and the like near or beneath the canopy.

HOLD POINT – Following demolition and prior to excavation of any basement, structural footings or pavement sub-grade, the Site Arborist shall inspect the site and verify whether any damage to trees has occurred during demolition works.

13.19 Excavations within Tree Protection Zones

13.19.1 Prior to excavations for foundations of new structures or buildings within Tree Protection Zones, exploratory excavation shall be undertaken by hand or using an Air-spade® device to locate and expose roots along the perimeter of the foundation prior to any mechanical excavation taking place. All care shall be undertaken to preserve root systems intact and undamaged. Any roots less than 50mm in diameter shall be cleanly severed with clean sharp pruning implements at the face of the excavation. The root zone in the vicinity of the excavation shall be kept moist following excavation for the duration of construction to minimise stress on the tree.

13.19.2 Where large woody roots (greater than 50mm diameter) are encountered during excavations, further advice from the Site Arborist shall be sought prior to severance

13.19.3 Excavations for the basement should be undertaken in accordance with the approved Shoring Plan to minimise encroachment to the TPZ. Care shall be taken during shoring works to avoid damage to the root systems, trunks and branches of trees in the vicinity of the basement, particularly when using piling rigs and the like near or beneath the canopy. Where necessary, pruning should be undertaken prior to piling operations to minimise damage in accordance with **Section 13.21** under the supervision of the site arborist.

HOLD POINT – Following any exploratory excavation and prior to any mechanical excavations for the building footings, the Site Arborist shall inspect and undertake any required root pruning or provide further advise on methods to protect tree roots during construction.

13.20 Underground Services

13.20.1 All proposed stormwater lines and other underground services should be located as far away as practicable from trees to be retained to avoid excavation or trenching within the Tree Protection Zones.

13.20.2 Where the incursion to the Tree Protection Zone is less than 10% of the total TPZ (refer **Appendix 3**), a chain trenching device may be used for open trenching works. A backhoe or skid steer loader is unacceptable due to the potential for excessive compaction and root damage. Where large woody roots (greater than 50mm in diameter) are encountered during excavation or trenching, these shall be retained intact. If necessary, the service line should be re-routed or conduits inserted beneath woody roots to avoid root severance.

13.20.3 Excavations required for underground services within the Structural Root Zone of any tree to be retained should only be undertaken by sub-surface boring. The Invert Level of the pipe, plus the pipe diameter, must be lower than the estimated root plate (minimum 1.3 metres below ground surface level). Where this is not practical and open trenching is the only alternative, proposed root pruning should be assessed by the arborist to determine continued health and stability of the subject tree.

13.21 Canopy Pruning

13.21.1 All specified pruning works shall be carried out in accordance with Australian Standard No 4373-2007 – Pruning of Amenity Trees. All pruning work shall be carried out by a qualified and experienced arborist or tree surgeon in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998) under the supervision of the Site Arborist.

13.21.2 Where pruning of any tree is required due to unforeseen circumstances, including site access or to facilitate materials handling or construction processes, prior approval for pruning works shall be obtained from Ku-ring-gai Council.

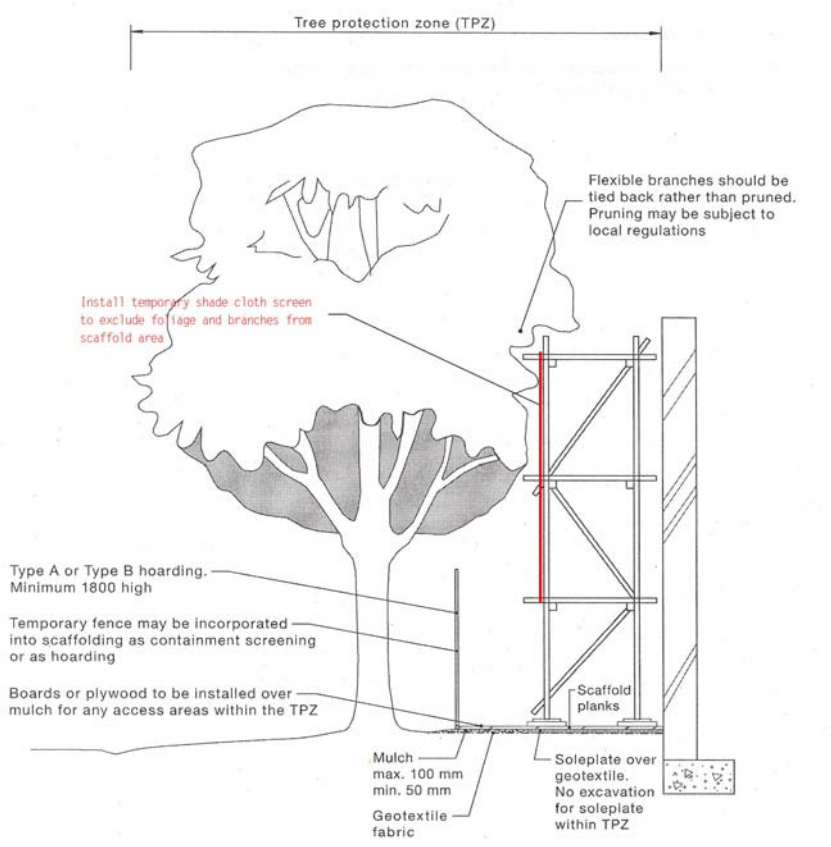
13.22 Root Pruning

13.22.1 Any required root pruning work shall be carried out in accordance with Australian Standard No 4373-2007 – Pruning of Amenity Trees. Written approval from Council may be required under the Tree Preservation Order prior to undertaking this work. All pruning work shall be carried out by a qualified and experienced arborist or tree surgeon in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998).

13.22.2 Where root pruning is required, roots shall be severed with clean, sharp pruning implements and retained in a moist condition during the construction phase using Hessian material or mulch where practical. Severed roots shall be treated with a suitable root growth hormone containing the active constituents Indol-3-yl-Butric Acid (IBA) and 1-Naphthylacetic Acid (NAA) to stimulate rapid regeneration of the root system.

13.23 Temporary Scaffolding

13.23.1 Temporary scaffolding shall be erected where required without pruning or removal of branches to accommodate the scaffold. Where foliage or branches project through the scaffold and create a safety hazard, such foliage and branches shall be temporarily excluded from the inner part of the scaffold by affixing a shade cloth screen on the outside of the scaffold, or alternatively temporarily tying back branches where required.



NOTE: Excavation required for the insertion of support posts for tree protection fencing should not involve the severance of any roots greater than 20 mm in diameter, without the prior approval of the project arborist.

Figure 5 - Detail of Temporary scaffolding within a Tree Protection Zone

13.23.2 Where scaffold is required to be erected within the Tree Protection Zone of any tree to be retained, suitable ground protection shall be installed in accordance with **Section 13.13** to prevent contamination, disturbance and compaction of the soil profile as shown in **Figure 5**

13.23.3 Where pruning or removal of branches to accommodate temporary scaffolding is unavoidable, all such pruning work shall be undertaken in accordance with **Section 13.21**.

13.24 Tree Damage & Remedial Action

13.24.1 In the event of any tree becoming damaged for any reason during the construction period a the Site Arborist shall be notified to inspect and provide advice on any remedial action to minimise any adverse impact. Such remedial action shall be implemented as soon as practicable and certified by the arborist

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[6] Tozer, Mark (2003)
The Native Vegetation of the Cumberland Plain, Western Sydney: Systematic Classification and Field Identification of Communities
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[7] Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney

[8] Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney

APPENDIX 1 - CRITERIA FOR ASSESSMENT OF LANDSCAPE SIGNIFICANCE

The level of landscape significance has been determined using the following key criteria as a guide:

1. SIGNIFICANT

- The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance; or
- The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item; or
- The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event; or
- The subject tree is scheduled as a Threatened Species as defined under the *Threatened Species Conservation Act* 1995 (NSW) or the *Environmental Protection and Biodiversity Conservation Act* 1999; or
- The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species; or
- The subject tree is a Remnant Tree, being a tree in existence prior to development of the area; or
- The subject tree has a very large live crown size exceeding 300m² with normal to dense foliage cover, is located in a visually prominent in the landscape, exhibits very good form and habit typical of the species and makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity; or
- The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.

2. VERY HIGH

- The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site; or
- The subject tree is listed on Council's Significant Tree Register; or
- The tree is a locally-indigenous species, representative of the original vegetation of the area and forms part of the assemblage of species of an Endangered Ecological Community;
- The subject tree has a very large live crown size exceeding 200m²; a crown density exceeding 70% Crown Cover (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area.

3. HIGH

- The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence; or
- The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value;
- The subject tree has a large live crown size exceeding 100m²; and
- The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (eg crown distortion/suppression) with a crown density of at least 70% Crown Cover (normal); and
- The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area.

4. MODERATE

- The subject tree has a medium live crown size exceeding 40m²; and
- The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% Crown Cover (thinning to normal); and
- The tree makes a fair contribution to the visual character and amenity of the area; and
- The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms.
- The tree has no known or suspected historical association

5. LOW

- The subject tree has a small live crown size of less than 40m² and can be replaced within the short term with new tree planting; or
- The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% Crown Cover (sparse); and
- The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area.

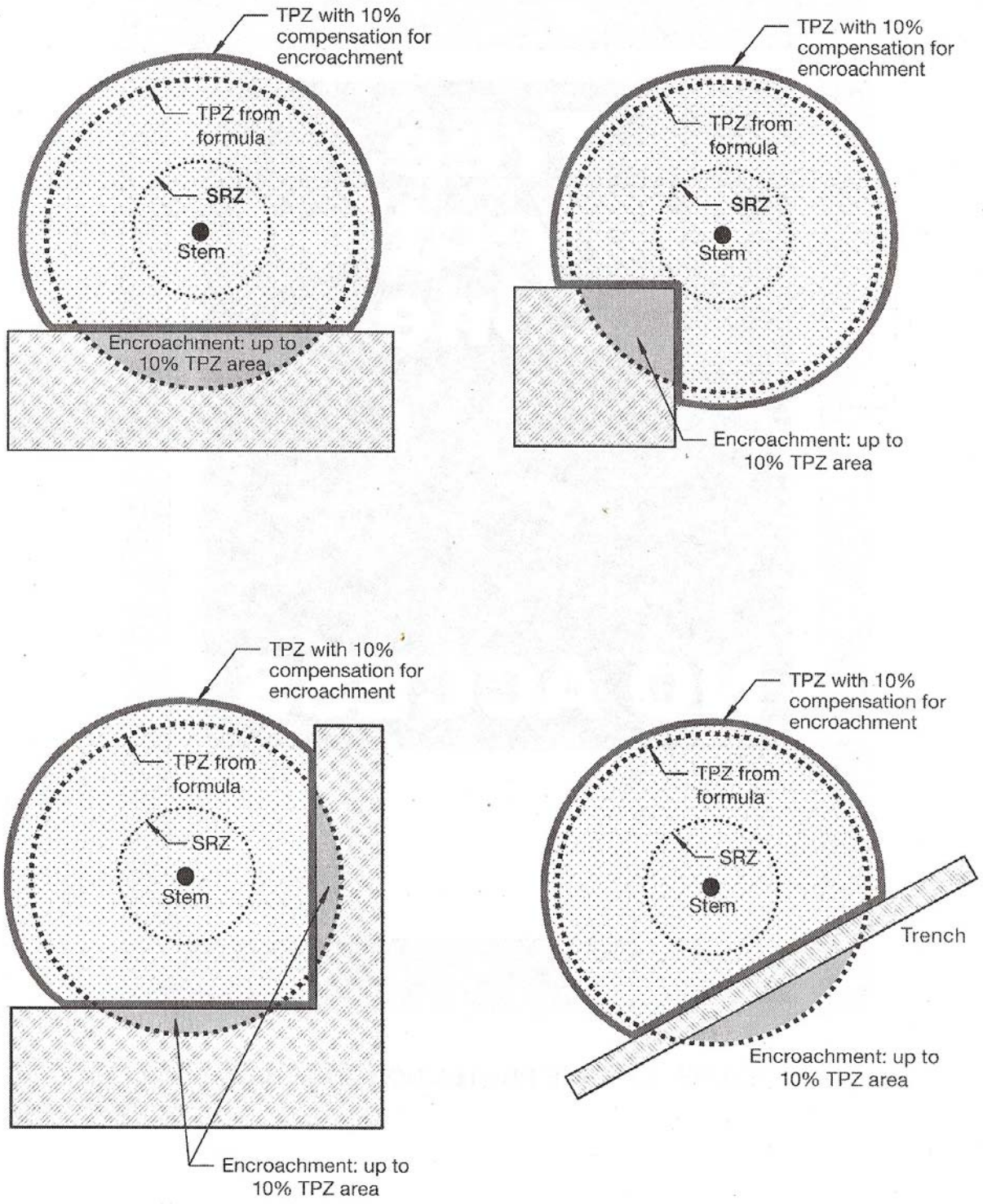
6. VERY LOW

- The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or is a known nuisance species.
- The subject tree is scheduled as exempt (not protected) under the provisions of the local Council's Tree Preservation Order due to its species, nuisance or position relative to buildings or other structures.

7. INSIGNIFICANT

- The tree is a declared Noxious Weed under the *Noxious Weeds Act* (NSW) 1993; or
- The tree is completely dead and has no visible habitat value.

APPENDIX 2 – ACCEPTABLE INCURSIONS TO THE TREE PROTECTION ZONE (TPZ)



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

REF:- Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney