

19 February 2016

Kamal Asadkamal
Brookfield Multiplex Constructions Pty Ltd
Level 22, 135 King Street
SYDNEY NSW 2000
Dear Kamal,

RE: Arboricultural Assessment of Supporting Removal of Tree 5 Camphor Laurel: MP10_0016 - "The Terraces" 2 Cooper Street, Paddington
Ref: 246MonTree5[AR-RE-P-1007]

1. Background

This Arboricultural Assessment has been prepared at the request of Brookfield Multiplex Constructions Pty Ltd (BMC) following review of Construction Drawings and the emergence of a number of construction/tree retention conflicts.

Tree 5 is a mature Camphor Laurel, *Cinnamomum camphora* located near to the Brown Street vehicular entrance to the existing Residential Aged Care (RAC) building at "The Terraces". Currently the tree is to be retained as detailed in the *Project Approval (MP10_0016)* (Condition C4, by reference to the Arboricultural Impact Assessment report dated September, 2010 by Tree Wise Men® Australia Pty Ltd).

Tree Management Plan September, 2015 prepared for Construction Certificate (Condition B16) prepared by Tree Wise Men® Australia Pty Ltd recommends retention of Tree 5 but identifies likely construction-related conflicts evident in Stage 1 and Stage 2 *Site Establishment Plans*. Refer to Section 3 below for detail of these conflicts.

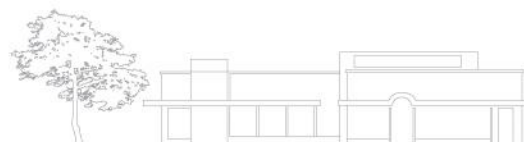
2. Current Status of Tree 5 and the Surrounding Trees

The current characteristics of Tree 5 are summarised in the Tree Schedule excerpt below. See Attachment B for Definitions of Terms used.

COMMON NAME /GENUS SPECIES	DBH (m)	HEIGHT (m)	CANOPY RADIUS (m)	AGE CLASS	VIGOUR	CONDITION	SRZ RADIUS (m)	TPZ RADIUS (m)	ULE	©SIG RATING	©RETENTION VALUE	RETENTION STATUS @ 7/12/15
Camphor Laurel, <i>Cinnamomum camphora</i>	1.4	18	N10, S8, E8, W8	M	G	F	4.0	15.0	L	3	B	R+

Table1: Tree 5 Tree Schedule Excerpt

Tree 5 is a ©Retention Value *B* tree by virtue of its ©Significance Rating of 3 and Useful Life Expectancy (ULE) of *Long*. The ©Significance Rating of 3 is due to this tree species being Exempt under the Woollahra TPO when less than 10m tall and not located on a Heritage Item. The *Fair* Condition is a reflection of the crossing branches and previous pruning of the tree (Photo A).



Camphor Laurels are generally regarded as nuisance or undesirable tree species in metropolitan Sydney due to their extremely strong, dominating growth habit and propensity to propagate by seed dispersal into adjoining land. Some municipal Councils (e.g. Ku-ring-gai) have declared Camphor Laurels as a Noxious Weed (Class 4) under the Threatened Species Conservation Act.

On the subject site Tree 5 dominates the surrounding trees including Tree 6 and this will continue as Tree 5 still has *Long* life expectancy with further capacity for growth above and below ground. There are surface roots growing towards the existing kerb and gutter (Photo B) which may need to be removed with the proposed Driveway realignment (towards the tree) and boardwalk construction.

The crown of Tree 5 merges with (competes with) the crown of other surrounding trees to be retained including Tree 6 the Heritage Listed Weeping Lilly Pilly, *Waterhousea floribunda* (Photo C). The Weeping Lilly Pilly, *Waterhousea floribunda* is a ©Retention Value A by virtue of the ©Significance Rating of 1 and ULE of *Long*.

A temporary construction Driveway has recently been built to the Project Arborist's (TWM) specifications for the purposes of Stage 1 construction (Photo D). This temporary Driveway passes between Tree 5 and Tree 6. The alignment of the Driveway is as indicated on *Site Establishment Plan – Stage 1, PM-P-2002 Rev. 3* prepared by BMC (Attachment C).

Crown pruning has recently been undertaken on the southern side over the temporary Driveway to provide a 4.5 metres clearance for vehicles and machines.



Google Maps image 26.11.15 showing Tree 5 following Stage 1 tree removals.



3. Construction Staging

The proposed construction works are to be undertaken in two Stages. Tree 5 is located central to the construction activity particularly during the Stage 2 works as indicated in *Site Establishment - Stage 2, PM-P 2003, Rev 3* (Attachment F). This is the primary reason why Consent is sought for its removal.

The Stage 1 works have commenced and temporary Driveway is in place for works between Trees 5 and Tree 6. The *Site Establishment – Stage 1 PM-P-2002, Rev 4* (Attachment E) shows the revised hardstand Driveway and gate layout with Tree 5 removed.

Significant tree protection issues will arise however during Stage 2 when a construction zone is to be established for the construction of the new Brown Street Building, whilst maintaining vehicular access to the new RACF building.

A revised *Site Establishment – Stage 2, Rev 4* (Attachment G) has been prepared with Tree 5 removed. This changes the alignment of the vehicular access road and it shifts the construction zone away from Trees 6, 122, 126, 127 and 133.

4. Summary

Removal of Tree 5 Camphor Laurel, *Cinnamomum camphora* is supported for the following reasons:

- It will provide a better Stage 1 hardstand layout benefiting Heritage Listed Tree 6. Trucks and vehicles will not need to exist the gate south of Tree 6 indicated on *PM-P-2002, Rev 3*. This temporary Driveway south of Tree 6 has not yet been constructed.
- It will provide a feasible construction zone for Stage 2 works.
- It will benefit the more significant Heritage Listed, Tree 6 Weeping Lilly Pilly, *Waterhousea floribunda* by reducing competition for soil nutrients and water and allowing space for the crown to growth in a northwesterly direction.
- It will allow for better views of the fully crown of Tree 6 from the main vehicular entrance to the site following site landscaping.
- It will allow for the retention of Tree 127 Port Jackson Fig, *Ficus rubiginosa* and Tree 133 Magenta Lilly Pilly, *Syzygium paniculatum* which would have been within the footprint of the hardstand of the *Site Establishment - Stage 2, Rev. 3* layout (Attachment C). The *Site Establishment - Stage 2, Rev. 4* with Tree 5 removed deletes the hardstand around Tree 127 and Tree 133. There will also be less Stage 2 hardstand construction required within the TPZs of Tree 122 and Tree 126.
- It will reduce the potential conflicts with the construction of the raised boardwalk adjacent to the new Driveway as indicated on the Landscape Plan.
- New plantings can be added to the Landscape Plan as required.



Peter Castor

DIRECTOR

Attachment A: Photos

Attachment B: Definition of Terms

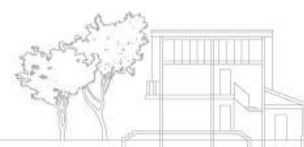
Attachment C: Tree Protection Plan 7.12.15

Attachment D: Site Establishment – Stage 1 (PM-P-2002, Rev 3)

Attachment E: Site Establishment – Stage 1 (PM-P-2002, Rev 4) with T5 removed

Attachment F: Site Establishment – Stage 2 (PM-P 2003, Rev 3)

Attachment G: Site Establishment – Stage 2 (PM-P 2003, Rev 4) with T5 removed



Attachment A: Photos

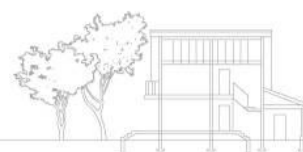




Photo A: Tree 5 Camphor Laurel showing basal suckers and previous pruning wounds resulting in ©Significance Rating of 3. Trees 4 and 8 to be retained are visible in the background.



Photo B: Tree 5 showing surface roots within SRZ which need to be retained as part of proposed construction.

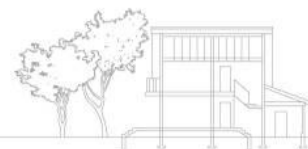




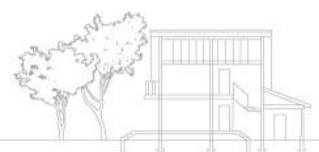
Photo C: Crown of Tree 5 (background) merging with surrounding trees to be retained.



Photo D: Recently installed temporary construction Driveway between Tree 5 and Tree 6. More similar pavement is required adjacent Trees 5 and 6 for the Stage 1 and Stage 2 construction.



Attachment B: Definition of Terms



COMMON NAME/GENUS SPECIES CULTIVAR – Common names can vary with selected texts. Where species is unknown, “sp.” indicated after genus. Where cultivar is unknown “cv” indicated after species.

DBH – Diameter at Breast Height. Tree trunk diameter measured at breast height (1.4 metres above ground level). Fabric diameter tape is used which assumes a circular cross section. Multiple measurements indicate multiple trunks. Where DBH measurement cannot be taken at 1.4m the height at which it has been taken is indicated.

CANOPY SPREAD RADIUS – Average canopy radius (widest + narrowest ÷ 2). Circular canopy depictions on Tree Plan/Survey are indicative only. Where canopy spread was significantly skewed, all four cardinal point measurements were recorded.

AGE CLASS – Immature (IM), Semi-mature (SM), Mature (M), Over-mature (OM). Assessment of the tree's current Age. A **Mature (M)** tree has reached a near stable size (biomass) above and below ground. Trees can have a *Mature* age class for >90% of life span. **Over-mature (OM)** trees show symptoms of irreversible decline and decreasing biomass.

VIGOUR – Good (G), Fair (F) or Poor (P). The general appearance of the canopy/foilage of the tree at the time of inspection. Vigour can vary with the season and rainfall frequency. A tree can have *Good* vigour but be hazardous due to *Poor* condition. A tree in *Good* vigour has the ability to sustain its life processes. Vigour is synonymous with health.

CONDITION – Good (G), Fair (F) or Poor (P). The general form and structure of the trunk/s and branching. Trunk lean, trunk/branch structural defects, canopy skewness or other hazard features are considered.

SRZ RADIUS – Structural Root Zone. The area around a tree required for tree stability. Earthworks should be prohibited within the SRZ. The area is calculated from the formula and graph at Figure 1 of AS4970-2009. The SRZ graph has been adapted from the work of Claus Mattheck (1994). DBH + 10% has been used for the calculation of SRZ. Where DBH is measured at grade or at a height other than 1.4m above grade, 10% has not been added.

TPZ RADIUS – Tree Protection Zone. Radial offset (m) of twelve times (12x) trunk DBH measured from centre of trunk (for trees less than 0.3 metre DBH minimum TPZ is 2.0 metres). To satisfactorily retain the tree, construction activity (both soil cut and fill) must be restricted within this offset. TPZ offsets are rounded to the nearest 0.1 metre. Existing constraints to root spread can vary. Generally an area equivalent to the TPZ should be available to the tree post development. Encroachment occupying up to 10% of the TPZ area is acceptable without detailed rootzone assessment. Encroachments greater than 10% require specific arboricultural assessment.

ULE – Useful Life Expectancy. The length of time from the date of inspection that the Arborist estimates the tree will live and provide a useful positive contribution to the landscape amenity of the site. ULE ratings are **Long** (retainable for 40 years or more), **Medium** (retainable for 16-39 years), **Short** (retainable for 5-15 years) and **Removal** (tree requiring immediate removal due to imminent risk or absolute unsuitability).

©SIG. RATING – ©Significance Rating Scale (see notes over)

©RETENTION INDEX (see notes over)

TREE RETENTION STATUS AT 7 DECEMBER, 2015 INSPECTION taking into account the nominated Variations. Trees are identified as *Retain (R)*, *Retain + (R+)*.

COMMENTS – Comments relating to the location, surroundings and hazard potential of the trees at the time of inspection and where applicable the reason for removal.



©SIG. RATING – ©Significance Rating Scale. A site specific qualitative evaluation of a tree relative to the existing land use developed by Tree Wise Men® Australia Pty Ltd. Takes into consideration the impact of the tree on the surrounding landscape, streetscape and bushland. Rarity, habitat value, historical/cultural value and structural form of the tree are considered in this rating system. It is possible for a tree to have a *Short* ULE and a ©Significance Rating of 1. Likewise it is possible for a tree to be given a *Long* ULE and a ©Significance Rating of 4 (e.g. weed species). The ©Significance Ratings used in this Report are as outlined in Table 1.

Table 1: ©Significance Rating Characteristics

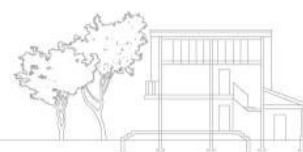
Rating	Significance	Characteristics (some or all)
©Sig. Rating 1	Exceptional	<ul style="list-style-type: none"> Major contribution to site amenity Remnant specimen Heritage Listed Listed on Significant Tree Register Threatened Species Good vigour and condition Cultural significance Possible habitat tree for threatened fauna Excellent, well formed specimen Rare or unusual species Large above ground biomass Unique within the site and surrounds
©Sig. Rating 2	High	<ul style="list-style-type: none"> Considerable contribution to site amenity Remnant specimen Good vigour and condition Threatened Species Cultural significance Possible habitat tree for threatened fauna Well formed specimen Rare or unusual species Large or moderate above ground biomass Other specimens with similar characteristics within the site and surrounds
©Sig. Rating 3	Moderate	<ul style="list-style-type: none"> Minor contribution to site amenity Remnant or planted Fair or Poor vigour and condition Potential for growth Well formed or asymmetrical form Other specimens with similar characteristics within the site and surrounds
©Sig. Rating 4	Low	<ul style="list-style-type: none"> Small/poor specimen Poor vigour and condition Inappropriate for the location Minor contribution to landscape amenity Easily replaced Weed species or TPO Exempt Hazardous Previously ©Sig. Rating 5 tree



©RETENTION INDEX. A site specific assessment of an individual tree's retention value developed by Tree Wise Men® Australia Pty Ltd. Incorporating ULE and ©Significance Rating each tree is allocated a ©Retention Value of A, B, C or D. The ©Retention Index values can be described as follows:

©Retention Value A	Should be retained	<ul style="list-style-type: none"> Major redesign may be required (e.g. movement of building footprint, re-alignment of roadway).
©Retention Value B	Could be retained	<ul style="list-style-type: none"> Minor redesign may be required (e.g. level changes, pavement detail).
©Retention Value C	Could be removed	<ul style="list-style-type: none"> Should not constrain proposed development.
©Retention Value D	Should be removed (irrespective of development layout.)	<ul style="list-style-type: none"> Should not constrain proposed development. Remove ULE should be removed irrespective of development layout.
	Should be removed or permanently fenced off	<ul style="list-style-type: none"> Should not constrain proposed development Short ULE could be retained pending landscape proposal.

©Retention Index		©Significance Rating			
		1	2	3	4
ULE Rating	Long (40+ years)	A		B	C
	Medium (15-40 years)				
	Short (5-15 years)	B		C	D
	Remove (< 5 years)	D			



Attachment C: Tree Protection Plan 7.12.15



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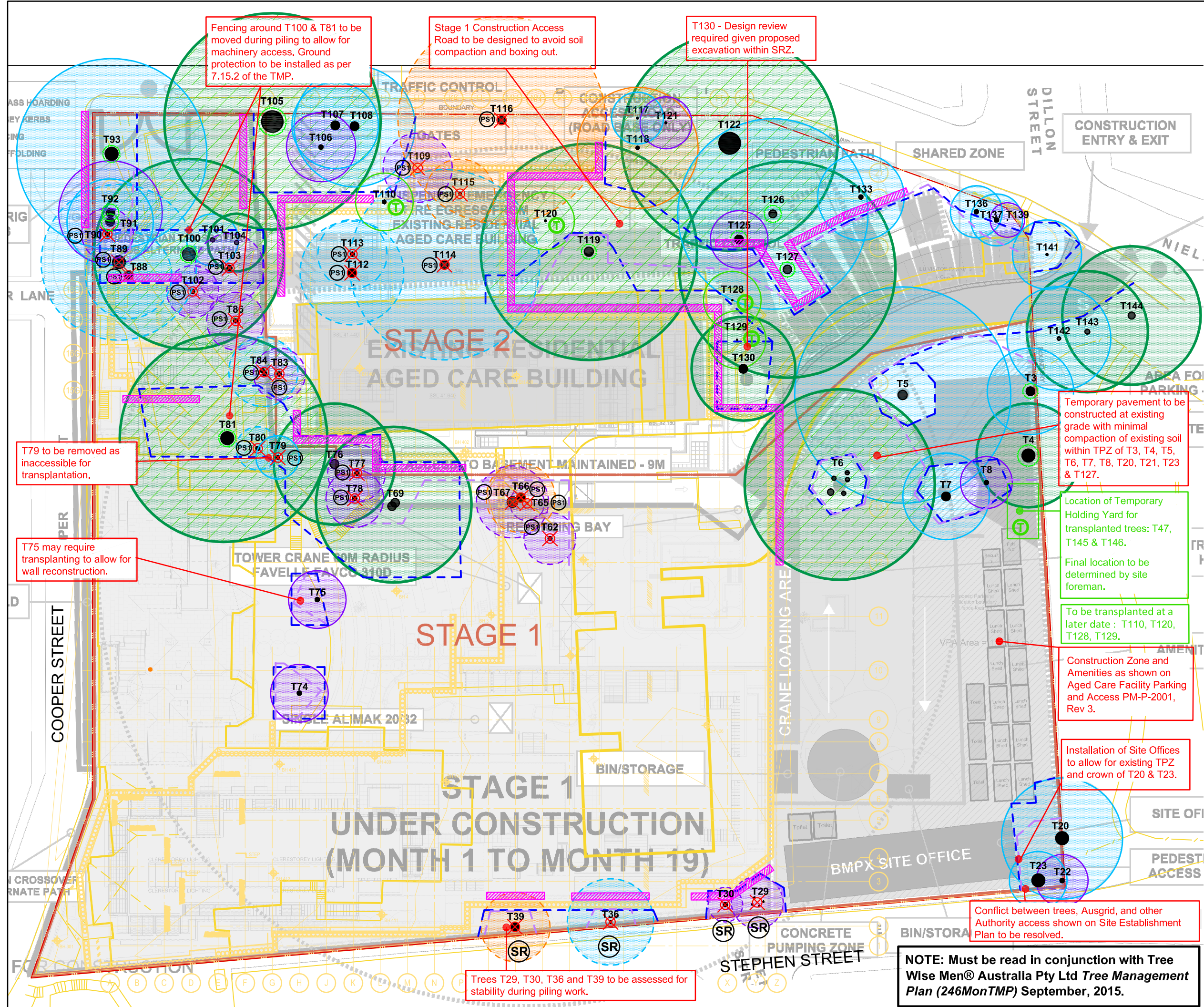
ARBORICULTURAL CONSULTANCY

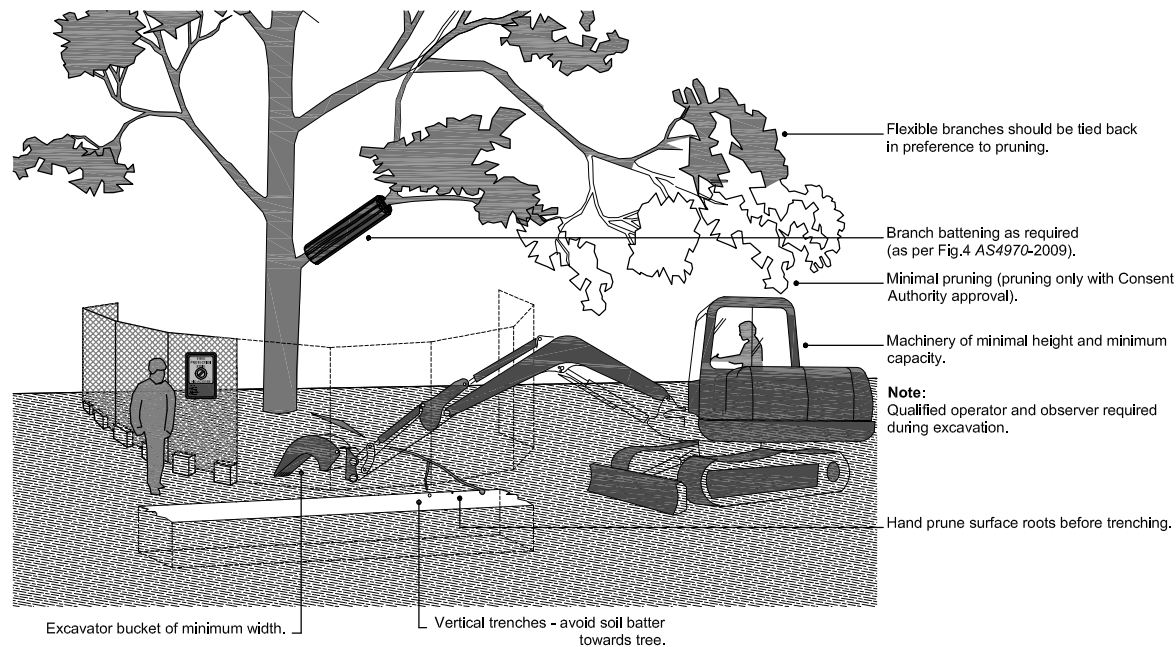
131 Fuller Street Narrabeen NSW 2101
Phone +61 2 9981 5219 Fax +61 9971 0881
treewisemen@treewisemen.com.au
www.treewisemen.com.au

LEGEND

Site boundary:	---
Stage boundary:	---
Existing features footprint:	---
Heritage listed tree: T6, T81, T100, T105, T119 & T122.	⊗
©Retention Value A TPZ:	⊙
©Retention Value B TPZ:	⊙
©Retention Value C TPZ:	⊙
©Retention Value D TPZ:	⊙
Transplant trees:	Ⓣ
Arborist supervision required during piling & early works:	▨
Recommended protective fencing:	---
Installed protective fencing 7.12.15:	---
Trunk and ground protection:	⊙
Staged Removal (3-6 years): T29, T30, T36 & T39.	ⓈⓇ
Post Stage 1 Removal: T62, T65, T66, T67, T77, T78, T79, T80, T83, T84, T86, T88, T89, T90, T102, T103, T109, T112, T113, T114, T115, T116.	Ⓟ

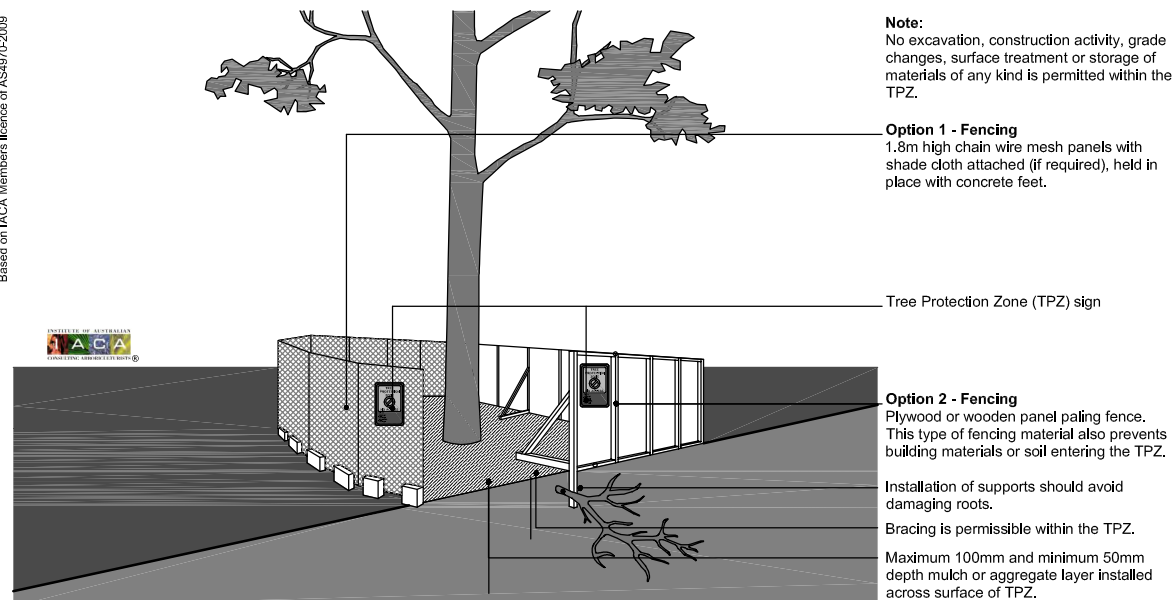
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CLIENT:	BROOKFIELD MULTIPLEX FOR PRESBYTERIAN AGED CARE		
PROJECT:	"THE TERRACES" SCOTTISH HOSPITAL, PADDINGTON		
DRAWING NO:	246MONTTP SHT 1 OF 2		
DRAWN BY:	JB MH		
BASED ON:	Shoring and Bulk Excavation Plan By Taylor Thomson Whitting - Consulting Engineers, Job No 141070, DWG No. S-P-0101, Rev P2, Dated 16/03/15		
DATE:	17/03/2015		
REV:	E	REV DATE:	29/01/2016
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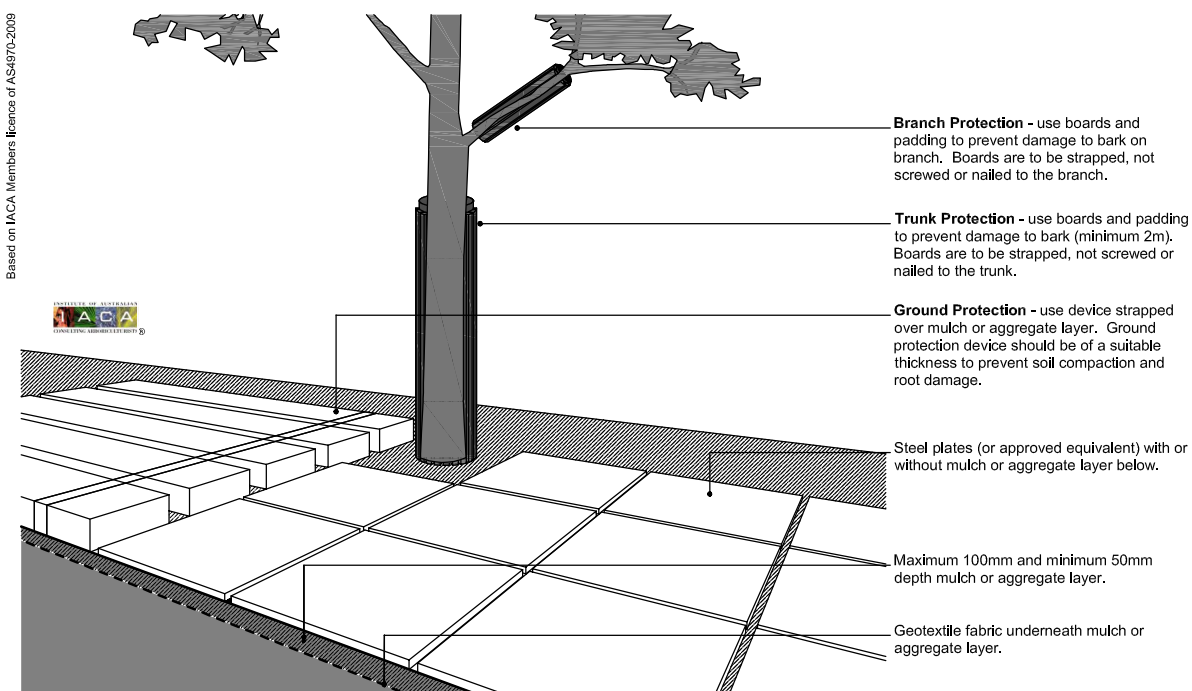


06 Machinery Use Within Tree Protection Zone (TPZ) **Not to Scale**
Copyright © 2014 TWM

Based on IACA Members Licence of AS4970-2009



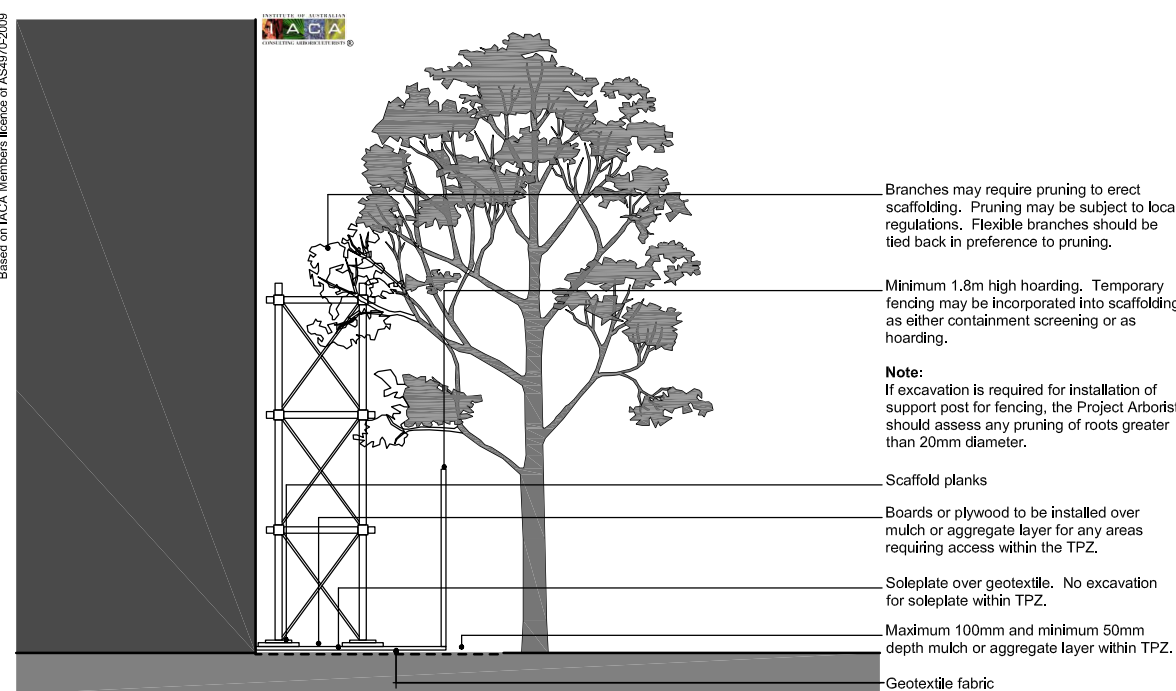
03 Tree Protection Fencing **Not to Scale**
Copyright © 2010 IACA



04 Examples of Branch, Trunk and Ground Protection **Not to Scale**
Copyright © 2010 IACA

Based on IACA Members Licence of AS4970-2009

Based on IACA Members Licence of AS4970-2009



05 Indicative Scaffolding within a Tree Protection Zone (TPZ) **Not to Scale**
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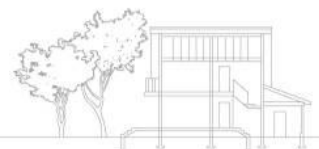
131 Fuller Street Narrabeen NSW 2101
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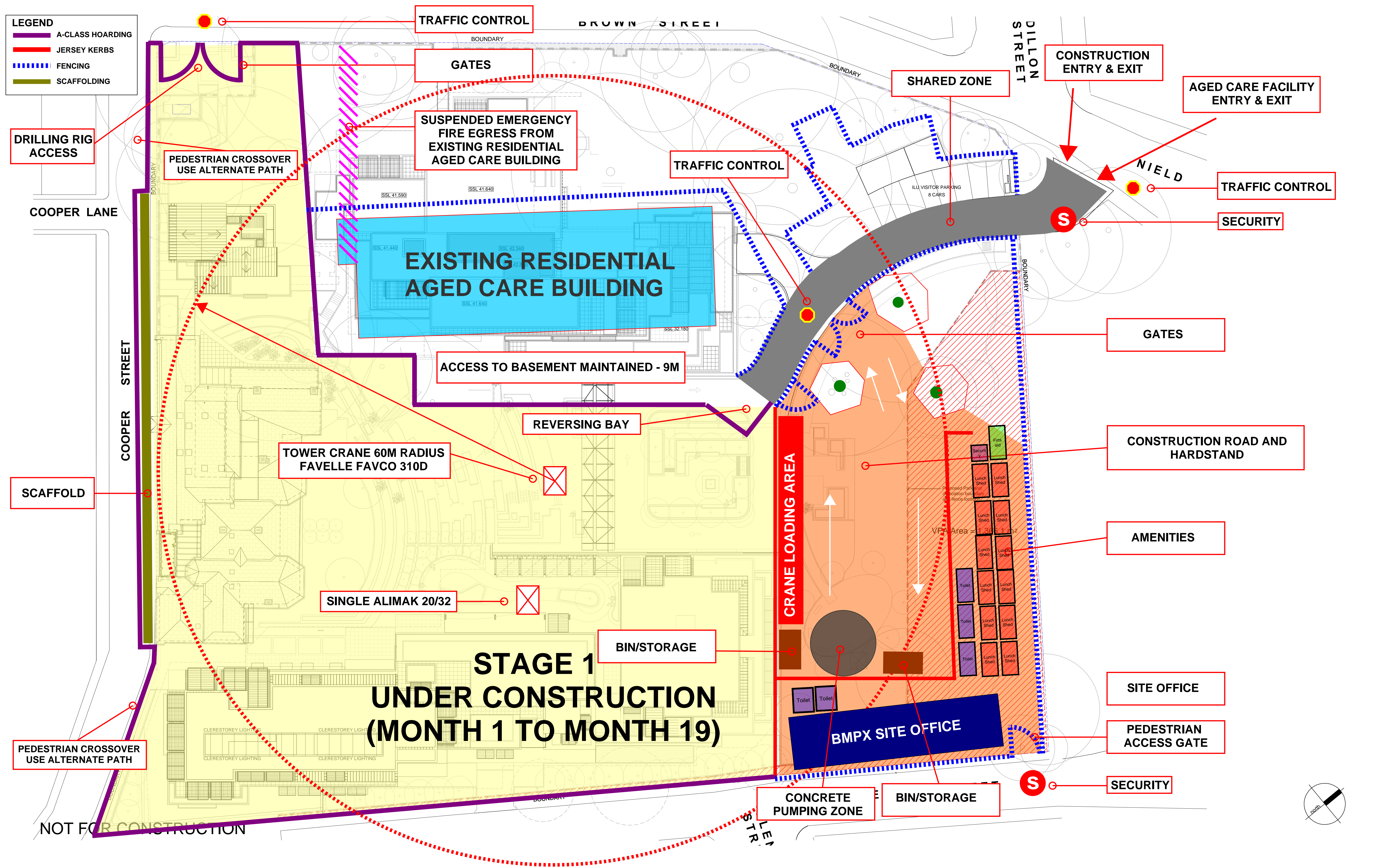


TITLE:	©TREE PROTECTION PLAN - SPECIFICATIONS		
CLIENT:	BROOKFIELD MULTIPLEX FOR PRESBYTERIAN AGED CARE		
PROJECT:	"THE TERRACES" SCOTTISH HOSPITAL, PADDINGTON		
DRAWING NO:	246MONTTP SHT 2 OF 2		
DRAWN BY:	JB MH		
BASED ON:	IACA Licence of AS4970-2009 <i>Protection of trees on development sites</i>		
DATE:	17/03/2015		
REV:	E	REV DATE:	29/01/2016

NOTE: Must be read in conjunction with Tree Wise Men® Australia Pty Ltd Tree Management Plan, 246MonTMP, September, 2015.

Attachment D: Site Establishment - Stage 1 (PM-P-2002, Rev 3)



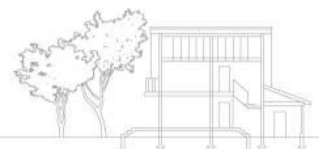


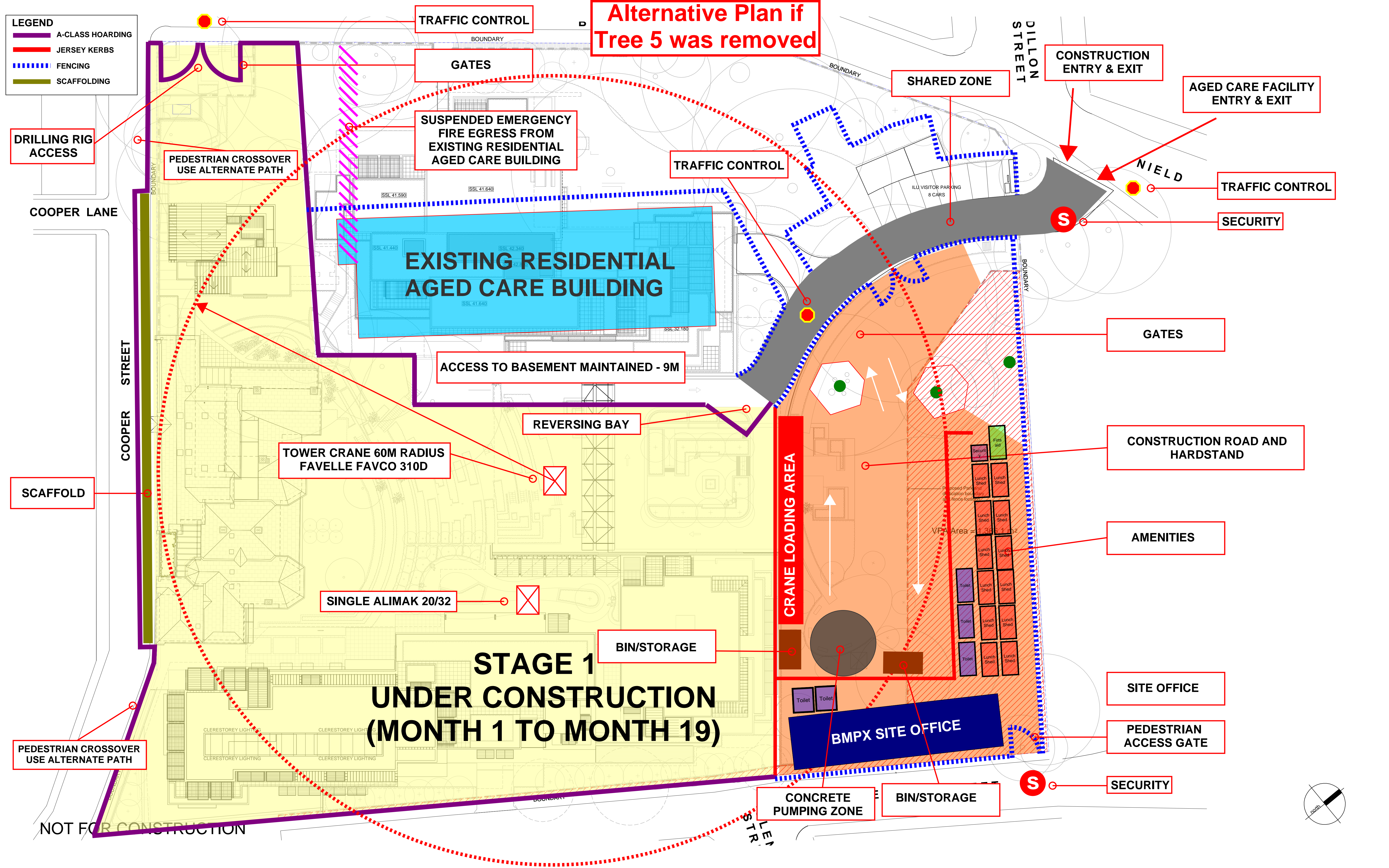
'THE TERRACES' Scottish Hospital
2 Cooper Street, Paddington

Drawing Title
Site Establishment - Stage 1
(Month 1 to Month 19)

Drawing No. PM-P-2002
Rev. 3
Scale 1:250
Date 17/09/15

Attachment E: Site Establishment - Stage 1 (PM-P-2002, Rev 4) with T5 removed



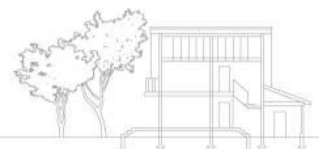


'THE TERRACES' Scottish Hospital
2 Cooper Street, Paddington

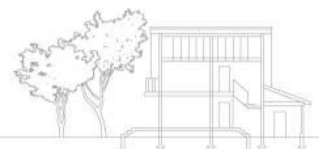
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(Month 1 to Month 19)

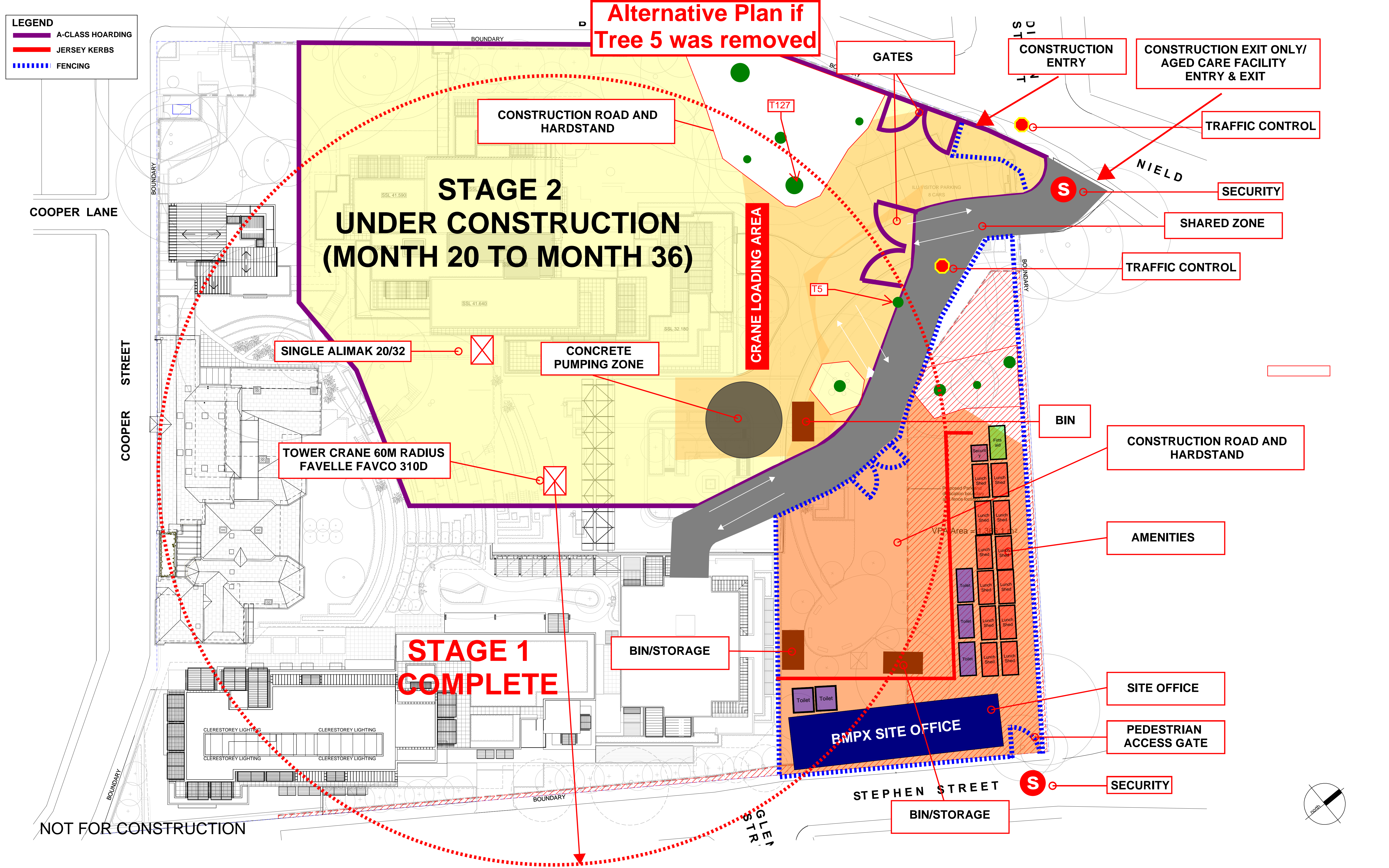
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Rev. 4
Scale 1:250
Date 04/02/16

Attachment F: Site Establishment - Stage 2 (PM-P 2003, Rev 3)



Attachment G: Site Establishment - Stage 2 (PM-P 2003, Rev 4) with T5 removed





'THE TERRACES' Scottish Hospital
2 Cooper Street, Paddington

Drawing Title
Site Establishment - Stage 2
(Month 20 to Month 36)

Drawing No. PM-P-2003
Rev. 4
Scale 1:250
Date 04/02/16