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ARBORICULTURAL IMPACT ASSESSMENT REPORT

At

339 Forest Road, Bexley

Prepared for

St Mary & St Mina Coptic Orthodox Church

2nd May 2019

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DISCLAIMER

The Client acknowledges that this Report, and any opinions, advice or recommendations expressed or given in it, are the information supplied by the Client and on the data inspections, measurements and analysis carried out or obtained by Jacksons Nature Works (JNW) and referred to in the Report. The Client should rely on The Report, and on its contents, only to that extent.

Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible. However, Ross Jackson – Consulting Arborist can neither guarantee nor be responsible for the accuracy of information provided by others. Unless stated otherwise:

- Information contained in this report covers only the trees examined and reflects the health and structure of the trees at the time of inspection. The documented, observations, results, recommendations and conclusions given may vary after the site visit due to environmental conditions.
- The inspection was limited to visual examination from the base of the subject tree without dissection, probing or coring; and
- There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Ross Jackson.

Consulting Arborist

Table of Contents

1. BACKGROUND and METHODODOLGY

1.1 The purpose of this Tree Report is to inform and accompany the development application works at 339 Forest Road, Bexley – The Site.

1.2 The report was commissioned by Mr T Mikhail for St Mary & St Mina Coptic Orthodox Church to respond to Council's requirements to consider the development impacts on trees located on and around the Site.

1.3 This report outlines the health and condition of the subject trees, the remaining life expectancy of the trees, identifies any visible defects or other problems, describes which trees require pruning, removal, retention or represent a potential hazard and comments on the impact on these trees in relation to the works proposed. The report also provides recommended tree protection measures (Tree Management Plan) to ensure the long-term preservation of the trees to be retained where appropriate.

1.4 The Site is a church with gardens at Bexley.

1.5 The trees were identified by ground level Visual Tree Assessment (VTA) [1] only in the data collection, taken on 26.2.2019. No aerial (climbing) was undertaken.

1.6 All site photographs were taken by the author at the site. All photographs were taken using a digital camera (Canon 7D) with no image enhancement either within the camera or on computer.

1.7 The subject trees were located on plans supplied. The trees have been plotted and can be found on Annexure B – Tree Location Plan.

1.8 The trees were identified and their genus species and common name used. The trees were identified by the use of data collected and compared to G Burnie, S Forrester et al (1997) **Botanica** Random House, Milsons Point, NSW, Australia.

1.9 DBH. The Trunk Diameter at Breast Height (1.4 metres above ground level) in centimetres was measured over bark using a metal tape which automatically converts to diameter and assumes a circular trunk cross section.

1.10 DRB. The trunk Diameter above Root Buttress in centimetres was measured over bark using a metal tape which automatically converts to diameter and assumes a circular trunk cross section.

1.11 Height. Estimated overall height in metres.

1.12 Spread. Measured with a metal tape measure and shown in metres.

1.13 Useful Life Expectancy (ULE)[2].
A systematic pre-development tree assessment procedure developed by Jeremy Barrell, Hampshire, England. It gives a length of time that the Arborist feels a

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[1] Mattheck, Dr. Clause & Breloer, Helge (1994) – Sixth Edition (2001) **The Body Language of Trees – A Handbook for Failure Analysis** The Stationery Office, London, England

[2] Barrell, Jeremy (1996, 2001) **Pre-development Tree Assessment** Proceedings of the International Conference on Trees and Building Sites (Chicago) International Society of Arboriculture, Illinois, USA

particular tree can be retained with an acceptable level of risk based on the information available at the time of the inspection. SULE ratings are Long (retainable for 40 years or more with an acceptable level of risk), Medium, (retainable for 16 – 39 years), Short (retainable for 5 – 15 years) and Removal (tree requiring immediate removal due to imminent hazard or absolute unsuitability).

1.14 The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) have been calculated in terms of AS 4970 – 2009 Protection of trees on development site Section 3.

1.15 To prepare this report we have reviewed the following documents:

- Detail survey by JRK Surveys, dated 17.7.2017;
- Architectural plans by Couvaras Architects, dated 31.1.2019, Issue G;
- Rockdale DCP 2011, 4.1.7 Tree Preservation (DCP); &
- Australian Standard AS 4970 – 2009 Protection of trees on development sites.

2. OBSERVATIONS as seen on the days of inspection (26.2.2019)

2.1 Our tree observations can be found in Annexure A.

3. DISCUSSIONS

3.1 We have been commissioned by Mr T Mikhail for St Mary & St Mina Coptic Orthodox Church, to examine the health and condition of the trees on and around this development site.

It is proposed to excavate for a basement carparking and the construction of a child care centre on Site (development works).

3.2 We have examined the trees on site and can suggest the following considerations for the development works:

1. The following trees are within the basement excavations or have an unacceptable encroachment (over 30%) within their TPZ: Tree 2 *Acmena smithii* (easily replaceable in landscape works), tree 3 & 5 *Schinus molle* (suppressed form), tree 4 *Cupaniopsis anacardioides* (suppressed form), tree 6 *Eucalyptus bicostata* (limited root volume, inter-canopy foliage loss & damaging retaining wall), tree 7 *Eucalyptus bicostata* (limited root volume, inter-canopy foliage loss, active termites & suspected lightning strike), tree 8 *Eucalyptus bicostata* (limited root volume, inter-canopy foliage loss & damaging retaining wall) – refer plate 1 for trees 2 - 8, tree 13 *Ficus microcarpa var. hillii* (fouling building and known invasive roots), tree 14 *Liquidambar styraciflua* (structurally defective – trunk decayed) – refer plate 2 for trees 13 & 14, tree 21 & 22 *Waterhousea floribunda* (easily replaced) and tree 23 x*Cupressocyparis leylandii* (undesirable species). Removal of these trees will be required to undertake the proposed development works, including the basement excavations. It is acknowledged these trees are over half of the trees in this portion of the site, however, their removal is supported due to the reasons noted in brackets and that there will be a number of trees being replanted on site. Note these trees for removal in the Tree Management Plan (TMP);

Plate 1: trees 2 – 8

Plate 2: tree 13 & 14

2. Tree 9 *Melaleuca armillaris*, tree 10 & 11 *Callistemon viminalis* are street trees in Bayview Street. There are no planned development impacts affecting their TPZ, thus ensuring retention. Note forb retention in the TMP;

3. Tree 15 & 16 *Acmena smithii* (tree 15 – 12% of TPZ & tree 16 – 21% of TPZ), tree 17 *Cinnamomum camphora* (28% of TPZ), tree 18 *Araucaria columnaris* (27% of TPZ) and tree 20 *Pinus halepensis* (nil encroachment within TPZ) are all located along the Forest Road frontage – refer Annexure C for these percentages. These trees have from fair to good vitality with Tree 20 having historical significance as an Anzac

memorial tree (Lone Pine Tree) – refer plate 3. All these trees have their root plates confined by the existing kerb and gutter on site, plus the asphalt driveway that is laid on a layer of compacted road base and asphalt – usually down to 400mm. Plus, no canopy pruning will be required to construct the new building opposite these trees. Retention of these trees is supported. Note for retention and protection in the TMP.

Plate 3: Lone Pine tree

4. Tree 19 *Cinnamomum camphora* is classified as an Exempt tree under Council's DCP and can be removed without consent. Note for removal in the TMP.

4. RECCOMENDATIONS

In consideration of the data collected recommendations are provided for the removal or retention of trees including specific tree protection measures required to reduce the anticipated impacts from the proposed construction on those trees proposed to be retained.

The report specifically recommends:

a. Remove the following trees on site: Tree 2, 3, 4, 5, 6, 7, 8, 13, 14, 21, 22 & 23;
b. Retain the following street trees: Trees 9, 10 & 11;
c. Retain the following trees on site: Tree 15, 16, 17, 18, & 20;
d. Remove the following Exempt tree: Tree 19;
e. Tree removal work shall be carried out by an experienced tree surgeon in accordance with *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal (2016);*
f. Install the following Tree Protection Measures around the retained trees: Tree protection measures shall be a temporary fence of chain wire panels 1.8 metres in height (or equivalent), supported by steel stakes or concrete blocks as required and fastened together and supported to prevent sideways movement. Existing boundary fences or walls are to be retained shall constitute part of the

tree protection fence where appropriate. A sign is to be erected on the tree protection fences of the trees to be retained that the trees are covered by Council's tree preservation orders and that "No Access" is permitted into the tree protection zone;

g. Trunk protection shall consist of a padding material such as hessian or thick carpet underlay wrapped around the trunk. Hardwood planks (50mm x 100mm or similar) shall be placed over the padding and around the trunk of the tree at 150mm centres. The planks shall be secured with 8-gauge wire or hoop steel at 300mm spacing. Trunk protection shall extend a minimum height of 2 metres or to the maximum possible length permitted by the first branches – refer Annexure D, on the following trees: Tree 15, 16, 17, 18 & 20;
h. That a Tree Management Plan be prepared as part of the Construction Certificate by a consulting arborist who holds the Diploma in Horticulture (Arboriculture), Level 5 or above under the Australian Qualification Framework;
i. An AQF Level 5 Project Arborist shall be engaged to supervise the building works and certify compliance with all Tree Protection Measures;
j. 10. Our tree location plan can be found on Annexure B; &
k. 11. The Tree Impact Plan can be found on Annexure C.

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Diploma Horticulture (Arboriculture) – AQF Level 5
Certificate III in Horticulture
Certificate in Horticulture (Landscape – Honours)

Annexure A: Observations as seen on the day of inspection of trees

Tree No	Botanical Name	Age Class	Height (m)	Spread (m)	D.B.H. (cm)	D.R.B. (cm)	TPZ (radius m)	SRZ (radius m)	Condition comments as seen on site	ULE
1	*Not found*	-	-	-	-	-	-	-	-	-
2	*Acmena smithii*	M	7	6	26	32	3.1	2.1	G vitality, ND, DW to North	2a
3	*Schinus molle*	M	5	4	28	32	3.4	2.1	F vitality, suppressed T6	2a
4	*Cupaniopsis anacardioides*	M	8	4	32	36	3.8	2.2	G vitality, suppressed T6	2a
5	*Schinus molle*	M	6	4	22	26	2.6	1.9	G vitality, suppressed T6	2a
6	*Eucalyptus bicostata*	M	10	8	98	106	11.8	3.4	G vitality, inter-canopy loss to East, suppressed, N.B. growing in 1m wide garden bed with retaining wall along ST	2a
7	*Eucalyptus bicostata*	M	10	8	78	96	9.4	3.3	G vitality, inter-canopy loss to East & West, suppressed, N.B. growing in 1m wide garden bed with retaining wall along ST	2a
8	*Eucalyptus bicostata*	M	8	7	56	64	6.7	2.7	G vitality, inter-canopy loss to West, suppressed, N.B. growing in 1m wide garden bed with retaining wall along ST	2a
9	*Melaleuca armillaris*	M	6	8	3 x 28	86	5.8	3.1	A vitality, only foliage on outer twigs	2b
10	*Callistemon viminalis*	M	5	5	2 x 18, 2 x 14	32	3.9	2.1	G vitality, ST, OHPL	2a
[redacted]	*Callistemon viminalis*	M	5	5	2 x 20, 2 x 15	34	4.2	2.1	G vitality, ST, OHPL	2a
12	*Not found*	-	-	-	-	-	-	-	-	-
13	*Ficus microcarpa var. hillii*	M	8	10	100	110	12.0	3.4	F vitality, thinning foliage density	2b
14	*Liquidambar styraciflua*	M	8	10	56	68	6.7	2.8	F vitality, trunk decay 1m down from 2m wound	2b
15	*Acmena smithii*	M	6	4	26	34	3.1	2.1	F vitality, all foliage ???, branch on West gone	2b
16	*Acmena smithii*	M	6	3	38	42	4.6	2.3	G vitality, canopy pruned and possibly topped	2b

17	*Cinnamomum camphora*	M	7	6	2 x 32	60	5.4	2.7	F vitality, co-dominant	3b
18	*Araucaria columnaris*	M	14	4	62	77	7.4	3.0	G vitality	2a
19	*Cinnamomum camphora*	M	3	-	-	-	-	-	Exempt tree (under 4m)	4e
20	*Pinus halepensis*	M	5	3	25	28	3.0	1.9	G vitality	2a
21	*Waterhousea floribunda*	M	7	5	12, 18	30	2.6	2.0	G vitality	2a
22	*Waterhousea floribunda*	M	7	5	20, 14	26	2.9	1.9	G vitality	2a
23	*xCupressocyparis leylandii*	M	4	2	16	20	1.9	1.7	G vitality	2b

Terms used in Tree Survey & Report:
Age Class
(Y) – Young refers to a well-established but juvenile tree. Less than 1/3 life expectancy
(SM) – Semi-mature refers to a tree at growth stages between immaturity and full size. A tree has reached First Adult Form i.e. displays adult characteristics. 1/3 to 2/3 life expectancy
(M)- Mature refers to a full size tree with some capacity for future growth. Older than 2/3 life expectancy
(OM) – Over-mature refers to a tree approaching decline or already declining. Older than 2/3 life expectancy and showing signs of irreversible decline.

Health refers to a tree's vigour, growth rate, disease and/or insects.
Vitality summarises observations about the health and structure of the tree on a scale of: **(G) Good, (F) Fair, (P) Poor & (D) Dead.**
Good: Tree is generally healthy and free from obvious signs of structural weaknesses or significant effects of pests and diseases or infection;
Fair: Tree is generally vigorous although has some indication of being adversely affected by the early effects of disease or infection or environmental or mechanical damage. Appropriate tree maintenance can usually improve overall health and halt decline;
Poor: Tree in decline and is not likely to improve with reasonable maintenance practices or has a structural fault such as bark inclusion;
Dead: Tree no longer capable of sustained growth.
Deadwood (DW) – deadwood found in canopy as a percentage.
Over Head Power Lines (OHPL) – upper canopy pruned to accommodate power lines at a given height.

Height expressed in metres refers to estimated overall height of tree.

Next Door tree (ND) – tree located in the neighbour's property.

Street Tree (ST) – tree located in Councils footpath reserve.

Spread expressed in metres refers to estimated spread of crown at the drip line.

(DBH) Diameter at Breast Height expressed in millimetres refers to the trunk diameter at 1.4 metres above ground level. Where there are multiple trunks the combined diameter has been calculated in terms of Appendix A – AS 4970 – 2009, shown in brackets.

(DRB) Diameter above Root Buttress expressed in millimetres refers to the trunk diameter above root buttress.

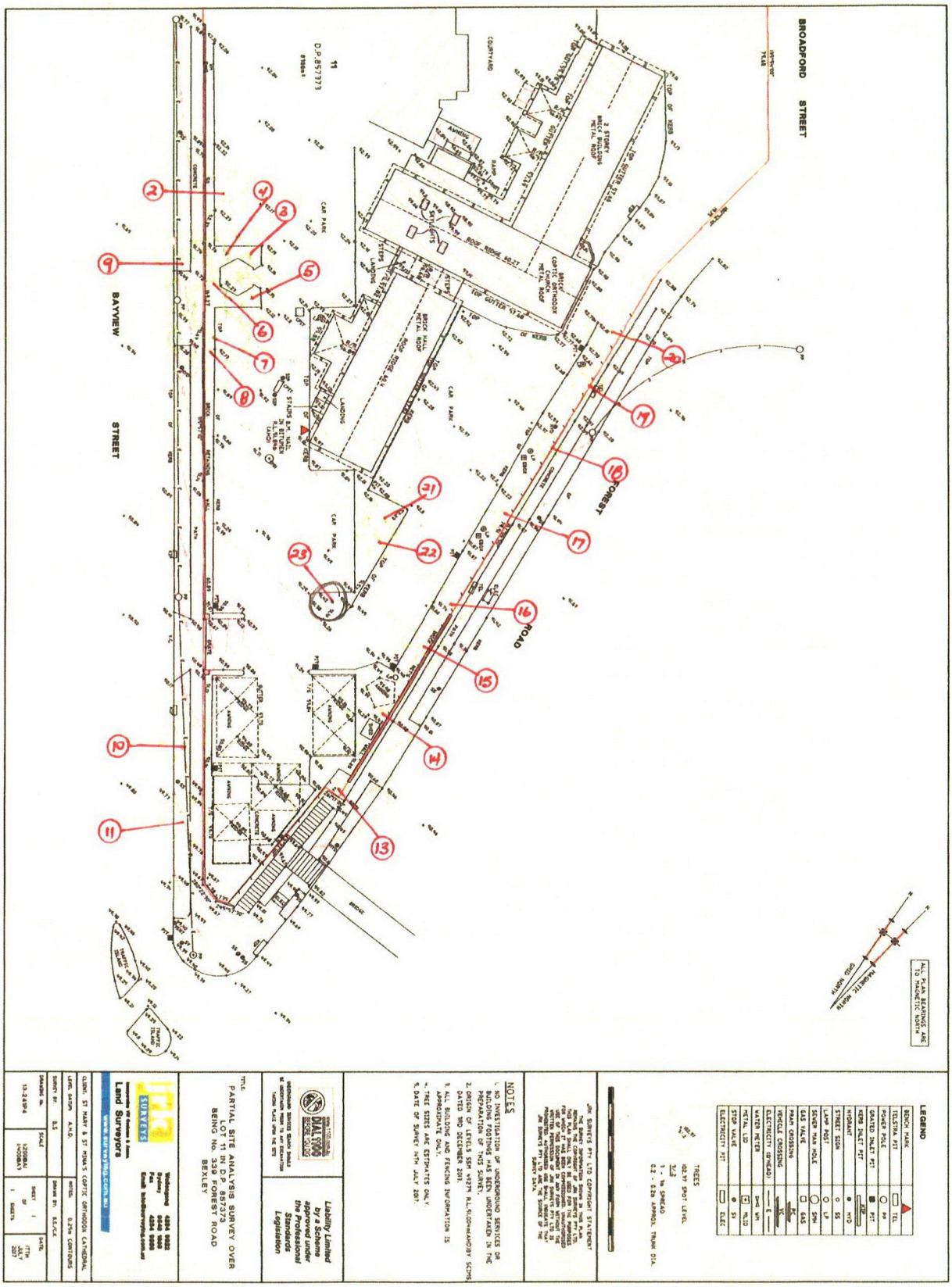
(TPZ) Tree Protection Zone & Structural Root Zone (SRZ) as defined by AS 4970 – 2009 Section 3

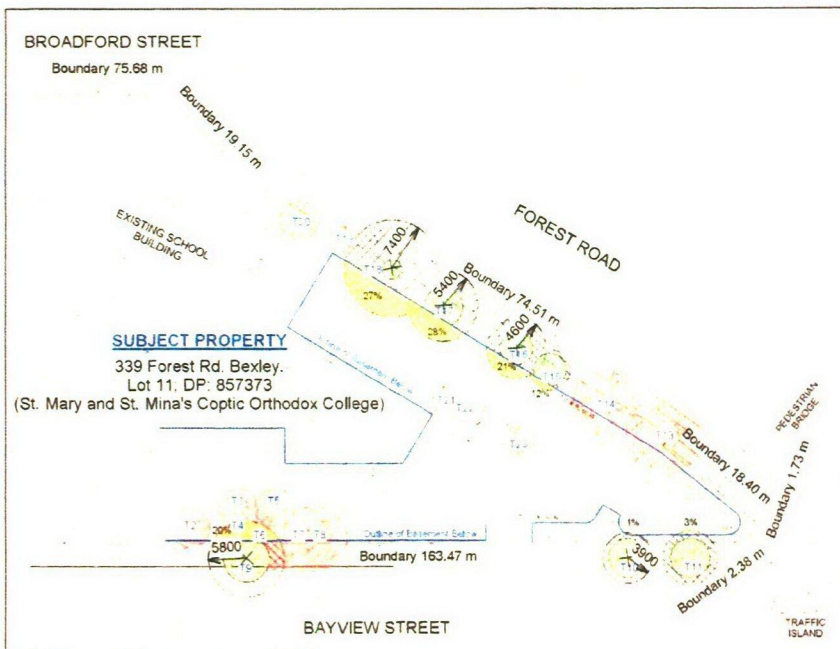
(ULE) The various ULE categories indicate the useful life anticipated for an individual tree or trees assessed as a group. Factors such as the location, age, condition and vitality of the tree are significant to the determination of this rating. Other influences such as the tree's effect on better specimens and the economics of managing the tree successfully in its location are also relevant to ULE (Barrell 1993, 1995, 2001).

ULE RATING (UPDATED 1/4/01) BARRELL

1.Long ULE: Trees that appear to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	**2.Medium ULE:** Trees that appear to be retainable at the time of assessment for more than 15-40 years with an acceptable level of risk.	**3.Short ULE:** Trees that appear to be retainable at the time of assessment for more than 5-15 years with an acceptable level of risk.	**4.Remove:** Trees that should be removed within the next 5 years.	**5.Small, young or regularly pruned:** Trees that can be reliably moved or replaced.
(A) Structurally sound trees located in positions that can accommodate future growth	**(A)** Trees that may only live between 15 and 40 more years.	**(A)** Trees that may only live between 5 and 15 more years.	**(A)** Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.	**(A)** Small trees less than 5 Metres in height.
(B) Trees that could be made suitable for retention in the long term by remedial tree care.	**(B)** Trees that could live for more than 40 years but may be removed for safety or nuisance reasons.	**(B)** Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.	**(B)** Dangerous trees because of instability or recent loss of adjacent trees.	**(B)** Young trees less than 15 years old but over 5 metres in height.
(C) Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	**(C)** Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	**(C)** Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	**(C)** Dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form.	**(C)** Formal hedges and trees intended for regular pruning to artificially control growth.
	(D) Trees that could be made suitable for retention in the medium term by remedial tree care.	**(D)** Trees that require substantial remedial tree care and are only suitable for retention in the short term.	**(D)** Damaged trees that are clearly not safe to retain.	
			(E) Trees that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	
			(F) Trees that are damaging or may cause damage to existing structures within 5 years.	
			(G) Trees that will become dangerous after removal of other trees for the reasons given in (A) to (F).	
			(H) Trees in categories (A) to (G) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.	

Annexure B: Tree location plan





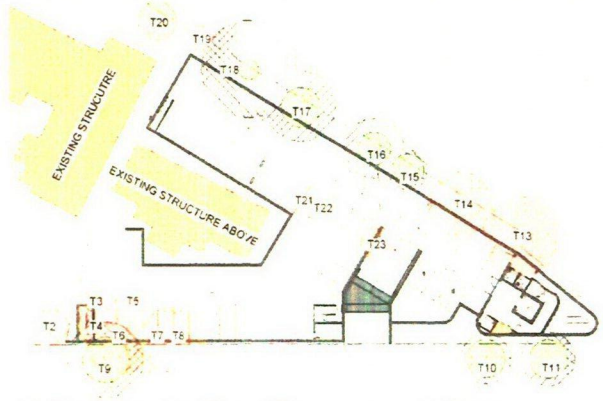
1. Tree Management Plan

Scale 1 : 600

TREES TO BE RETAINED

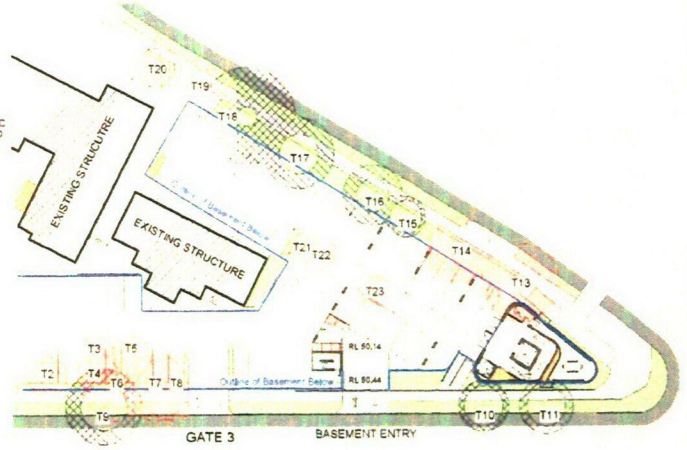
TREES TO BE REMOVED

TREE PROTECTION ZONE



2. Basement - Tree Management Plan

Scale 1 : 600



3. Ground Floor - Tree Management Plan

Scale 1 : 600

Issue	Description	Date

DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

couvaras

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Nominated Architect: Peter Couvaras Reg No.7344

Figured dimensions only to be used. Do not scale off drawings. Any discrepancies to be verified on site with architect.

North

Drawing Name: Tree Management Plan

339 Forest Rd, Bexley

Scale As indicated @ A3 | Issue Date

Project 1740

Issue

Sheet 17

Annexure D: Typical trunk protection