Naturally Trees

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**Arborist Reports, Landscape Design, Flora and Fauna Surveys,
Biodiversity and Ecological Impact Assessments &
Bushfire Protection Assessment Services**

ARBORICULTURAL IMPACT APPRAISAL AND METHOD STATEMENT

20 February 2014

1-17 and 27-37 Delhi Road
North Ryde, NSW

Prepared for
UrbanGrowth NSW

Summary

The proposed development includes the construction and subdivision of a public road within the site. I have inspected all the trees that could be affected and listed their details in Appendix 2.

Twenty four high category trees and nineteen low category trees are required to be removed to facilitate the proposal. A landscaping scheme to mitigate these losses is proposed that will include the planting of new semi-mature trees in prominent locations.

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Appendices

1. INTRODUCTION

1.1 **Instruction:** I am instructed by UrbanGrowth NSW to inspect the significant trees at 1-17 and 27-37 Delhi Road, North Ryde and to provide an arboricultural report to accompany a development application. This report investigates the impact of the proposed development on trees and provides the following guidelines for appropriate tree management and protective measures:

- a schedule of the relevant trees to include basic data and a condition assessment;
- an appraisal of the impact of the proposal on trees and any resulting impact that has on local character and amenity;
- a preliminary arboricultural method statement setting out appropriate protective measures and management for trees to be retained

1.2 **Purpose of this report**: This report provides an analysis of the impact of the development proposal on trees with additional guidance on appropriate management and protective measures. Its primary purpose is for the consent authority to review the tree information in support of the planning application and use as the basis for issuing a planning consent or engaging in further discussions towards that end. Within this planning process, it will be available for inspection by people other than tree experts so the information is presented to be helpful to those without a detailed knowledge of the subject.

1.3 **Qualifications and experience:** I have based this report on my site observations and the provided information, and I have come to conclusions in the light of my experience. I have experience and qualifications in arboriculture, and include a summary in Appendix 1.

1.4 **Documents and information provided:** NPC provided me with copies of the following documents:

- Survey Plan, Dwg No. CH4421.012 (Sheet 1 to 7), by William L. Backhouse dated November 2007; and
- Plans and Sections, Job No. 13656, by Robert Bird Group Pty Ltd dated 17 February 2014.

1.5 **Scope of this report:** This report is only concerned with forty three trees located within and/or adjacent to the proposed road and its related construction work area. It takes no account of other trees, shrubs or groundcovers within the site unless stated otherwise. It includes a preliminary assessment based on the site visit and the documents provided, listed in 1.4 above.

2. THE LAYOUT DESIGN

2.1 **Tree AZ method of tree assessment:** The TreeAZ assessment method determines the worthiness of trees in the planning process. TreeAZ is based on a systematic method of assessing whether individual trees are important and how much weight they should be given in management considerations. Simplistically, trees assessed as potentially important are categorised as '**A**' and those assessed as less important are categorised as '**Z**'. Further explanation of TreeAZ can be found in Appendix 3.

In the context of new development, all the Z trees are discounted as a material constraint in layout design. All the A trees are potentially important and they dictate the design constraints. This relatively simple constraints information is suitable for use by the architect to optimise the retention of the best trees in the context of other material considerations.

2.2 Site visit and collection of data

2.2.1 **Site visit:** I carried out an unaccompanied site visit on 14 January 2014. All my observations were from ground level without detailed investigations and I estimated all dimensions unless otherwise indicated. I did not have access to trees outside the boundaries or on other private properties and have confined observations of them to what was visible from within the property. The weather at the time of inspection was clear and dry, with good visibility.

2.2.2 **Brief site description:** 1-17 and 27-37 Delhi Road are located in the residential suburb of North Ryde (refer figure 1). The site is on the southern side of the road and surrounded by commercial development. The site area consists of an existing road and carparking. A variety of ornamental, coniferous and indigenous trees are scattered throughout the site and around the site boundaries.

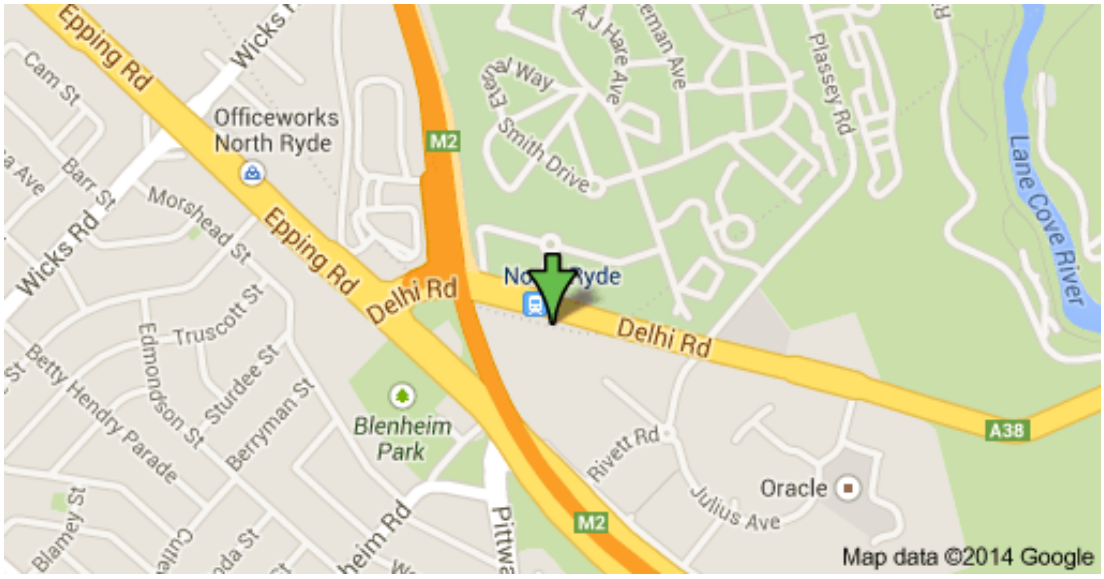


Figure 1: The location of the subject site (www.googlemaps.com).

2.2.3 **Collection of basic data:** I inspected each tree and have collected information on species, height, diameter, maturity and potential for contribution to amenity in a development context. I have recorded this information in the tree schedule included, with explanatory notes, in Appendix 2. Each tree was then allocated to one of four categories (**AA**, **A**, **Z** or **ZZ**), which reflected its suitability as a material constraint on development.

I stress that my inspection was of a preliminary nature and did not involve any climbing or detailed investigation beyond what was visible from accessible points at ground level.

2.2.4 **Identification and location of the trees:** I have illustrated the locations of the significant trees on the Tree Management Plan (Plan TMP01) included as Appendix 4. This plan is for illustrative purposes only and it should not be used for directly scaling measurements.

2.2.5 **Advanced interpretation of data:** Australian Standard *Protection of trees on development sites* (AS4970-2009), recommends that the trunk diameter measurement for each tree is used to calculate the tree protection zone (TPZ), which can then be interpreted to identify the design constraints and, once a layout has been consented, the exclusion zone is to be protected by barriers.

2.3 **The use of the tree information in layout design:** Following my inspection of the trees, the information listed in Appendix 2 was used to provide constraints guidance based on the locations of all the A trees. All the Z trees were discounted because they were not considered worthy of being a material constraint. This guidance identified two zones of constraint based on the following considerations:

- The tree protection zone (TPZ) is an area where ground disturbance must be carefully controlled. The TPZ was established according to the recommendations set out in AS4970-2009 and is the radial offset distance of twelve (x12) times the trunk diameter. In principle, a maximum encroachment of 10% is acceptable within the TPZ and a high level of care is needed during any activities that are authorised within it if important trees are to be successfully retained.

- The structural root zone (SRZ) is a radial distance from the centre of a tree's trunk, where it is likely that structural, woody roots would be encountered. The distance is generally based on trunk diameter, although this varies with tree height, crown area, soil type and soil moisture. The SRZ may also be influenced by natural or built structures, such as rocks and footings. The SRZ only needs to be calculated when major encroachment (>10%) into a TPZ is proposed.

3. ARBORICULTURAL IMPACT APPRAISAL

3.1 **Summary of the impact on trees:** I have assessed the impact of the proposal on trees by the extent of disturbance in TPZs and the encroachment of structures into the SRZ (as set out briefly in 2.3 above and more extensively in Appendix 2). All the trees that may be affected by the development proposal are listed in Table 1

Table 1: Summary of trees that may be affected by development

Impact	Reason	Important trees		Unimportant trees	
		AA	A	Z	ZZ
Retained trees that may be affected through disturbance to TPZs	Removal of existing surfacing/structures/ landscaping and/or installation of new surfacing/structures/ landscaping				
Trees to be removed	Construction and/or level variations within TPZ	68, 69, 70	12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 45, 59, 60, 61, 64	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 28, 44, 63	43, 62, 65, 66, 67

3.2 **Detailed impact appraisal**

3.2.1 **Category A trees to be lost:** There are twenty four high category trees (**12**, **13**, **14**, **15**, **16**, **17**, **18**, **19**, **20**, **21**, **22**, **23**, **24**, **25**, **26**, **27**, **45**, **59**, **60**, **61**, **64**, **68**, **69** and **70**) that will be felled to accommodate the proposal. These trees are located well within the site and mostly screened from all public viewpoints by the existing tree cover and built structures. As they are not largely visible from outside the site, their loss will have minor visual impact on local amenity or character in the wider setting. It is proposed to mitigate their loss with new tree planting around the site.

3.2.2 **Other trees to be removed:** Trees **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10**, **11**, **28**, **43**, **44**, **62**, **63**, **65**, **66** and **67** will be felled but they are category Z and ZZ because they are small, display poor health and/or structure and or/ dead. Their loss will have no significant impact on local character. The ZZ trees (**43**, **62**, **65**, **66** and **67**) are to be felled for safety reasons and are not a direct consequence of this proposal. In any event, it is proposed to mitigate their loss with new tree planting around the site.

3.3 **Proposals to mitigate any impact**

3.3.1 **New planting:** In the context of the loss of trees, a new landscaping scheme is proposed including semi-mature trees to be planted within available areas in prominent locations. The new trees should have the potential to reach a

significant height without excessive inconvenience and be sustainable into the long term, significantly improving the potential of the site to contribute to local amenity and character.

3.3.2 **Summary of the impact on local amenity:** Twenty four high category trees and nineteen low category trees are required to be removed to facilitate the proposal. A landscaping scheme to mitigate these losses is proposed that will include the planting of new semi-mature trees in prominent locations.

4. BIBLIOGRAPHY

4.1 List of references:

Australian Standard AS4373-2007 *Pruning of Amenity Trees*.
Standards Australia.

Australian Standard AS4970-2009 *Protection of trees on development sites*.
Standards Australia.

Barrell, J (2009) Draft for Practical Tree AZ version 9.02 A+NZ
Barrel Tree Consultancy, Bridge House, Ringwood BH24 1EX

Brooker, M. Kleinig, D (1999) Field guide to eucalypts – South eastern Aust.
Blooming Books, Hawthorn Vic.

Matheny, N.P. & Clark, J.R. (1998) Trees & Development: A Technical Guide to Preservation of Trees During Land Development
International Society ofArboriculture, Savoy, Illinois.

Robinson, L (1994) Field Guide to the Native Plants of Sydney
Kangaroo Press, Kenthurst NSW

5. DISCLAIMER

5.1 Limitations on use of this report:

This report is to be utilized in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, and directly attached to that submission, report or presentation.

ASSUMPTIONS

Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible: however, Naturally Trees can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:

- *Information contained in this report covers only those trees that were examined and reflects the condition of those trees at time of inspection: and*
- *The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.*

Yours sincerely

Andrew Scales

Manager/ Consultant
Dip. Horticulture / Arboriculture
Arboriculture Australia #2136
Mobile: 0417 250 420

APPENDIX 1

Brief qualifications and experience of Andrew Scales

1. Qualifications:

Associate Diploma Horticulture	Northern Sydney Institute of TAFE	1995-1998
Certificate in Tree Surgery	Northern Sydney Institute of TAFE	1998
Associate Diploma Arboriculture	Northern Sydney Institute of TAFE	1999-2006

2. Practical experience: Being involved in the arboricultural/horticultural industry for in excess of 10 years, I have developed skills and expertise recognized in the industry. Involvement in the construction industry and tertiary studies has provided me with a good knowledge of tree requirements within construction sites.

As director of Naturally Trees, in this year alone I have undertaken hundreds of arboricultural consultancy projects and have been engaged by a range of clients to undertake tree assessments. I have gained a wide range of practical tree knowledge through tree removal and pruning works.

3. Continuing professional development:

Visual Tree Assessment (Prof. Dr. Claus Mattheck)	Northern Sydney Institute of TAFE 2001
Wood Decay in Trees (F.W.M.R.Schwarze)	Northern Sydney Institute of TAFE 2004
Visual Tree Assessment (Prof. Dr. Claus Mattheck)	Carlton Hotel, Parramatta NSW 2004
Tree A-Z / Report Writing (Jeremy Barrell)	Northern Sydney Institute of TAFE 2006
Up by Roots – Healthy Soils and Trees in the Built Environment (James Urban)	The Sebel Parramatta NSW 2008
Tree Injection for Insect Control (Statement of Attainment)	Northern Sydney Institute of TAFE 2008
Quantified Tree Risk Assessment (QTRA) Registered Licensee #1655	South Western Sydney Institute TAFE 2011
Practitioners Guide to Visual Tree Assessment	South Western Sydney Institute TAFE 2011

4. Current professional memberships:

Arboriculture Australia – (Registered Consulting & Practising Arborist #2136)

APPENDIX 2
Tree schedule

NOTE: Colour annotation is AA & A trees with green background; Z & ZZ trees with blue background; trees to be removed in red text.

No.	Genus species	Height	Spread	DBH	Foliage %	Age class	Defects	Location	Services	Significance	Tree AZ
1	Melaleuca quinquenervia	5	5	150	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
2	Melaleuca quinquenervia	7	5	200	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
3	Melaleuca quinquenervia	5	4	150	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
4	Melaleuca quinquenervia	5	3	150	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
5	Melaleuca quinquenervia	7	5	250	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
6	Melaleuca quinquenervia	6	4	200	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
7	Melaleuca quinquenervia	5	4	200	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
8	Melaleuca quinquenervia	6	4	200	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
9	Melaleuca quinquenervia	5	3	150	70%	M	Nil	Sealed surfaces	Adjacent structure	L	Z1
10	Melaleuca linariifolia	5	5	250	70%	M	Nil	Grass	Adjacent structure	L	Z1
11	Eucalyptus sp.	12	13	550	50%	M	Bracket fungi, Failures	Grass	Adjacent structure	M	ZZ5
12	Eucalyptus microcorys	14	8	400	90%	M	Nil	Garden bed	Adjacent structure	M	A1
13	Eucalyptus microcorys	12	7	300	70%	M	Nil	Garden bed	Adjacent structure	M	A1
14	Eucalyptus microcorys	9	7	250	60%	S	Nil	Garden bed	Adjacent structure	M	A1
15	Eucalyptus microcorys	10	7	300	80%	M	Nil	Garden bed	Adjacent structure	M	A1
16	Eucalyptus microcorys	10	7	300	90%	M	Nil	Garden bed	Adjacent structure	M	A1
17	Eucalyptus microcorys	9	8	300	90%	M	Nil	Garden bed	Adjacent structure	M	A1
18	Eucalyptus microcorys	9	7	250	90%	M	Nil	Garden bed	Adjacent structure	M	A1
19	Eucalyptus microcorys	10	7	300	80%	M	Nil	Garden bed	Adjacent structure	M	A1
20	Eucalyptus microcorys	10	7	300	90%	M	Nil	Garden bed	Adjacent structure	M	A1
21	Eucalyptus microcorys	11	8	300	90%	M	Nil	Garden bed	Adjacent structure	M	A1
22	Eucalyptus microcorys	10	7	300	80%	M	Nil	Garden bed	Adjacent structure	M	A1
23	Eucalyptus microcorys	12	8	350	80%	M	Nil	Garden bed	Adjacent structure	M	A1
24	Eucalyptus microcorys	12	8	350	90%	M	Nil	Garden bed	Adjacent structure	M	A1
25	Eucalyptus microcorys	10	8	300	70%	M	Nil	Garden bed	Adjacent structure	M	A1
26	Eucalyptus microcorys	14	9	450	90%	M	Nil	Garden bed	Adjacent structure	M	A1

No.	Genus species	Height	Spread	DBH	Foliage %	Age class	Defects	Location	Services	Significance	Tree AZ
27	Eucalyptus microcorys	14	10	450	90%	M	Nil	Garden bed	Adjacent structure	M	**A1**
28	Eucalyptus microcorys	16	9	350	80%	M	Included bark	Garden bed	Adjacent structure	M	**Z9**
43	Eucalyptus scoparia	9	9	300	30%	O	Nil	Garden bed	Nil	M	**ZZ4**
44	Acacia elata	7	4	200	60%	M	Borer	Garden bed	Nil	L	**Z4**
45	Eucalyptus microcorys	11	10	400	90%	M	Nil	Garden bed	Nil	H	**A1**
59	Corymbia citriodora	18	13	450	90%	M	Nil	Garden bed	Nil	H	**A1**
60	Corymbia citriodora	18	13	450	90%	M	Nil	Garden bed	Nil	H	**A1**
61	Corymbia citriodora	18	13	450	90%	M	Nil	Garden bed	Nil	H	**A1**
62	Cupressus sp.	6	6	250	60%	M	Lopped	Garden bed	Nil	L	**ZZ5**
63	Casuarina cunninghamiana	9	4	150	80%	S	Nil	Garden bed	Nil	L	**Z1**
64	Casuarina cunninghamiana	10	7	300	70%	M	Nil	Garden bed	Adjacent structure	M	**A1**
65	Cupressus sp.	14	3	300	80%	O	Failures, Decayed basal trunk	Garden bed	Adjacent structure	M	**ZZ5**
66	Cupressus sp.	14	3	300	80%	O	Failures	Garden bed	Adjacent structure	M	**ZZ5**
67	Melaleuca armillaris	7	7	150	40%	O	Nil	Garden bed	Nil	L	**ZZ4**
68	Eucalyptus microcorys	20	13	450	90%	M	Nil	Garden bed	Adjacent structure	H	**AA1**
69	Eucalyptus microcorys	20	13	450	90%	M	Nil	Garden bed	Adjacent structure	H	**AA1**
70	Eucalyptus microcorys	20	13	450	90%	M	Nil	Garden bed	Adjacent structure	H	**AA1**

Explanatory Notes

- **Measurements/estimates:** All dimensions are estimates unless otherwise indicated. Measurements taken with a tape or clinometer are indicated with a '*'. Less reliable estimated dimensions are indicated with a '?'.
- **Species:** The species identification is based on visual observations and the botanical name. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. Where there is some doubt of the precise species of tree, it is indicated with a '?' after the name in order to avoid delay in the production of the report. The botanical name is followed by the abbreviation sp if only the genus is known. The species listed for groups and hedges represent the main component and there may be other minor species not listed.
- **Tree number:** relates to the reference number used on site diagram/report.
- **Height:** Height is estimated to the nearest metre.
- **Spread:** The average crown spread is visually estimated to the nearest metre from the outermost tips of the live lateral branches.
- **DBH:** These figures relate to 1.4m above ground level and are recorded in millimetres. If appropriate, diameter is measured with a diameter tape. 'M' indicates trees or shrubs with multiple stems.
- **Foliage Cover:** Percent of estimated live foliage cover for particular species range.
- **Age class:**

Y	Young = recently planted
S	Semi-mature (<20% of life expectancy)
M	Mature (20-80% of life expectancy)
O	Over-mature (>80% of life expectancy)

- **Tree AZ:** See reference for Tree AZ categories in Appendix 3.
- **Significance:** A tree's significance/value in the landscape takes into account its prominence from a wide range of perspectives. This includes, but is not limited to neighbour hood perspective, local perspective and site perspective. The significance of the subject trees has been categorized into three groups, such as: High, Moderate or Low significance.

APPENDIX 3

TreeAZ Categories (Version 9.02 A+NZ)

Z Category Z: Unimportant trees not worthy of being a material constraint

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species

Z1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e. exempt from legal protection because of proximity, etc
Z3	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc

High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure

Z4	Dead, dying, diseased or declining
Z5	Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
Z6	Instability, i.e. poor anchorage, increased exposure, etc

Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people

Z7	Excessive, severe and intolerable inconvenience to the extent that a locally recognised court or tribunal would be likely to authorise removal, i.e. dominance, debris, interference, etc
Z8	Excessive, severe and intolerable damage to property to the extent that a locally recognised court or tribunal would be likely to authorise removal, i.e. severe structural damage to surfacing and buildings, etc

Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population

Z9	Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
Z10	Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
Z11	Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
Z12	Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

NOTE: Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorisation hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

A Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
A3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

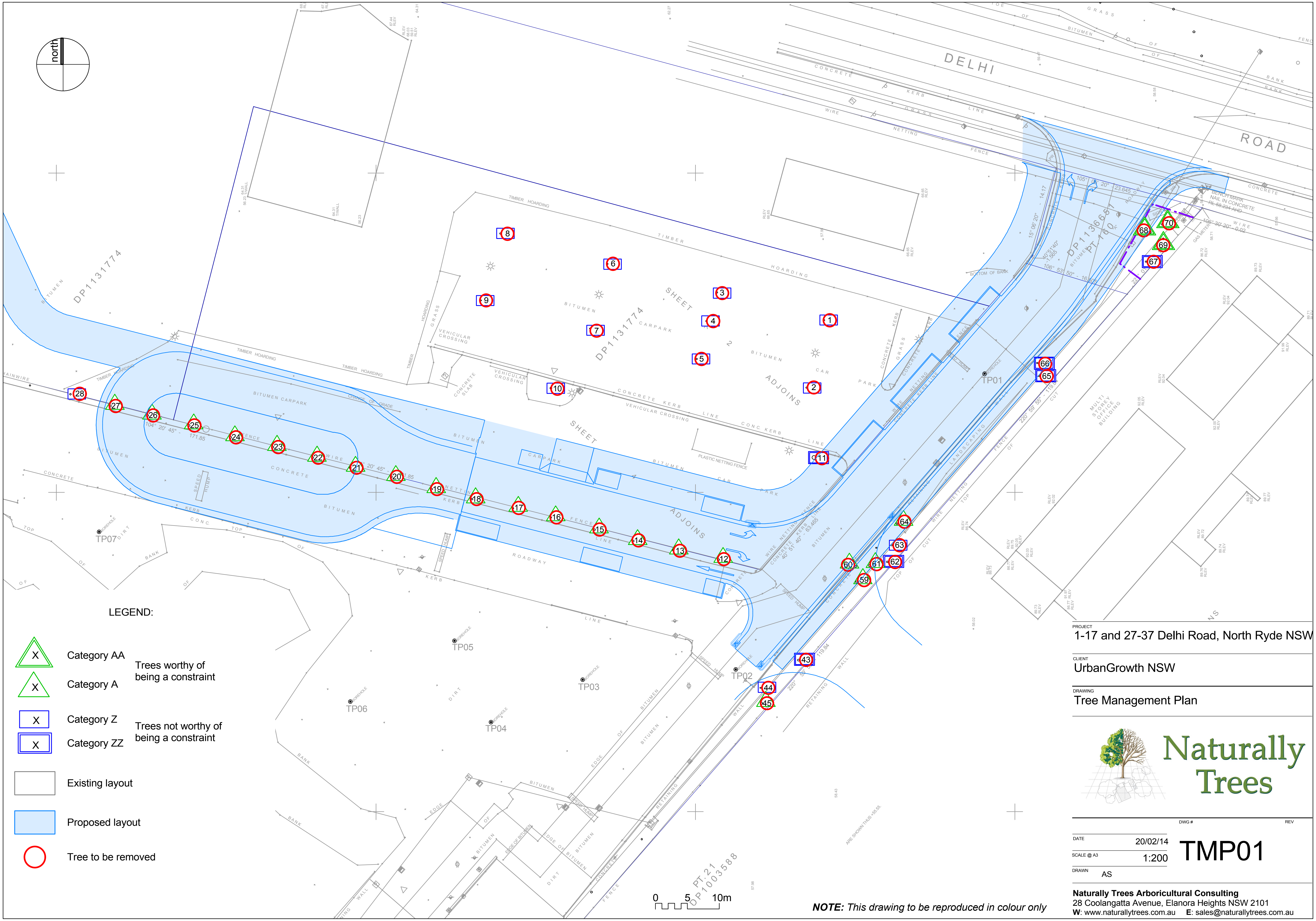
NOTE: Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorisation hierarchy and should be given the most weight in any selection process.

TreeAZ is designed by Barrell Tree Consultancy (www.treeaz.com/tree_az/)

APPENDIX 4

Tree management plan

-refer attached Tree Management Plan, Dwg No. TMP01,
by Naturally Trees dated 20 February 2014


north
DELHI ROAD
DP1131774
DP1136651
PT.21 DP1003588
SHEET 2 ADJOINS
SHEET 4 ADJOINS
TP01
TP02
TP03
TP04
TP05
TP06
TP07
BENCH MARK NAIL IN CONCRETE
MULTI STOREY OFFICE BUILDING
LEGEND:
Category AA
Category A
Trees worthy of being a constraint
Category Z
Category ZZ
Trees not worthy of being a constraint
Existing layout
Proposed layout
Tree to be removed
0
5
10m
NOTE: This drawing to be reproduced in colour only

PROJECT
1-17 and 27-37 Delhi Road, North Ryde NSW

CLIENT
UrbanGrowth NSW

DRAWING
Tree Management Plan

Naturally Trees

DATE	20/02/14	DWG #	REV
SCALE @ A3	1:200	TMP01	
DRAWN	AS		

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