Tree Report

Residential Development
at 128 Herring Rd Macquarie Park NSW

for Lipman Properties Pty Ltd

March 2010

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Introduction

It is proposed to develop the land at 128 Herring Rd Macquarie Park with five residential unit blocks with underground parking and with a central driveway. The site supports many trees, some of indigenous species, and some would be affected by the proposed development. This report provides tree protection measures for the trees proposed to be retained where they are in proximity to the works, in order to mitigate any impacts.

The trees were inspected in July 2009 to determine which trees were indigenous to the area and make a preliminary assessment of trees and the likely impact of development. Trees were inspected from the ground only and no aerial or subterranean inspections were carried out.

The site

The site is 'T' shaped with the long axis aligned northwest/southeast. The southeast boundary is to Herring Rd, the northeast boundary is to Dunmore Lang College, the southwest boundary is to Morling College and the northwest boundary is to private property.

Soils are loams and clay loams of the Glenorie soil landscape derived from the underlying Wianamatta Shale parent rock (Chapman & Murphy 1989). The site appears to have been greatly modified in the past by filling and levelling for playing fields and by the construction of roadways and buildings.

Site vegetation consists of scattered trees, with an understorey of turfgrass and shrubs. Trees are also located on the neighbouring property to the east, near the common boundary. Much of the site is devoid of trees and the grassland is maintained by frequent mowing. Most of the trees appear to have been planted as part of various landscape plans, although in some areas there are trees of species which are part of the former vegetation community of the area.

Trees on and near the site

The trees are mainly native species with a few scattered exotic species.

Species present include:

Native to Australia
Eucalyptus scoparia (Wallangarra White Gum)
Eucalyptus microcorys (Tallowwood)
Eucalyptus sideroxylon (Mugga Ironbark)
Eucalyptus cinerea (Argyle Apple)
Corymbia maculata (Spotted Gum)
Grevillea robusta (Silky Oak)
Melia azedarach (White Cedar)
Ficus microcarpa 'Hillii' (Hill's Weeping Fig)
Syzygium paniculatum (Magenta Cherry)
Angophora floribunda (Rough Barked Apple)

Indigenous to the area
Eucalyptus punctata (Grey Gum)
Eucalyptus haemostoma (Scribbly Gum)
Eucalyptus pilularis (Blackbutt)
Eucalyptus botryoides (Bangalay)
Eucalyptus paniculata (Grey Ironbark)
Syncarpia glomulifera (Turpentine)
Eucalyptus globoidea (White Stringybark)
Corymbia gummifera (Red Bloodwood)
Angophora costata (Sydney Red Gum)

Exotic
Jacaranda mimosifolia (Jacaranda)
Quercus robur (English Oak)
Liquidambar styraciflua (Liquidambar)
Erythrina x *sykesii* (Coral Tree)
Cinnamomum camphora (Camphor Laurel)
Cedrus deodara (Himalayan Cedar)
Cupressus macrocarpa (Monterey Cypress)

Tree removal and retention

The excavation required for the underground carpark would extend throughout the site and together with the internal roadway would require the removal of most of the trees, including several indigenous specimens of *Syncarpia glomulifera* (Turpentine) *Eucalyptus punctata* (Grey Gum) and *Eucalyptus globoidea* (White Stringybark). Other trees proposed for removal are native specimens from other parts of Australia, and exotic specimens from elsewhere.

Several trees, including some of indigenous species and some recent landscape plantings, could be retained along the Herring Rd frontage where there would be a substantial setback from the street. These trees would need to be protected during construction by fencing.

An exclusion zone in the north of the site would provide protection for the riparian corridor, where several major specimens of *Angophora costata* (Sydney Red Gum), *Eucalyptus pilularis* (Blackbutt) and *Eucalyptus punctata* (Grey Gum) are located.

On the neighbouring property to the northeast several mature specimens of *Syncarpia glomulifera* (Turpentine) are located near the boundary. The theoretical root zone of these trees, as determined by reference to Australian Standard AS 4970 *Protection of trees on development sites*, extends onto the site; however since most of these trees are some distance from the site, the intrusion would be predominantly within the 6m setback from the boundary. The excavation for the carpark would cut into the perimeter of the theoretical root zone in a few locations but significant root loss would be unlikely. Protection measures for these trees are noted below, including prevention of overexcavation into the theoretical root zone.

Within the 6m setback from the eastern boundary there are a few semimature specimens of planted native trees which could possibly be retained. The root systems of these trees are not widespread and given care during initial excavation some could be retained. Any such trees retained would require fencing as noted below.

Conclusions

Trees proposed for removal are mainly of species not indigenous to the site, with the chief exception of several mature specimens of Turpentine and Eucalypt. The site has been profoundly disturbed over many years and compared to its natural state has been highly modified and degraded.

Although some of the trees have landscape amenity value, those within the body of the site would be liable for removal under any development proposal. Their removal could be addressed by replanting as part of the landscape plan, with emphasis on the recovery of the currently degraded riparian zone and on tree planting along roadways.

The proposal allows the retention of trees along the northeast boundary and the Herring Rd frontage. All retained trees would need to be protected during construction by fencing.

David Ford, Adv Dip Land Management, Dip Horticulture (Arboriculture), Cert Horticulture, Cert Bush Regeneration, MAIH

Consulting Arborist

References

Chapman, G.A. & Murphy, C.L. 1989, *Soil Landscapes of the Sydney 1:100 000 Map Sheet*, Soil Conservation Service of NSW, Sydney.

Standards Australia 2009, Australian Standard AS 4970 *Protection of trees on development sites*, Standards Australia, Sydney.

Tree protection during construction

The following general measures should be undertaken to reduce the possible effects of construction on the trees proposed to be retained on and near the site.

Excavation in the vicinity of trees should be done initially by hand. Any roots encountered <50mm in diameter should be cut cleanly with a hand saw. Any roots encountered >50mm in diameter should retained intact and referred to the site arborist for advice.

Prior to the start of construction trees should be fenced (in groups where possible) to form tree protection zones as noted below and on the plan attached. Fences should be chainlink 1.8m high supported by steel posts.

Where access is required within these radii for building purposes, the fence should be set back 1.5m from the building face and the soil surface between the fence and the building should be protected by plywood sheets or strapped planking. See Figures 4 and 5 below, from AS4970.

Where not otherwise protected trunks should be armoured with 2m lengths of 50x100mm hardwood timbers spaced at 150mm centres and secured by 8 gauge wires or steel strapping at 300mm spacing. The trunk protection should be maintained intact until the completion of all work on the site.

There should be no pedestrian or vehicular access to the tree protection zones. No building activities should take place within the tree protection zones, including storage or stockpiling. Runoff from the site should not be allowed to enter the tree protection zones.

The soil surface within the tree protection zones should be mulched with a layer of composted organic material (Vitagrow Landcure or similar) to a depth of 100mm.

A temporary irrigation system should be provided, which may consist of soaker hoses laid so that the entire surface of the tree protection zones receive adequate moisture.

A site arborist should supervise any activities in the vicinity of trees, including fencing, excavation and root pruning, and make periodic visits and reports to monitor the state of the trees.

At the end of construction all retained trees should be pruned to remove deadwood and weak branches. All pruning should be done in accordance with Australian Standard AS4373- Pruning of Amenity Trees.

Guidelines for tree protection are noted in Australian Standard AS4970-2009 Protection of Trees on Development Sites. Specific measures to protect the root systems of trees are noted below.

Trees on the neighbouring property to the east in proximity to the excavations for Buildings A, C and D

The approximate location of special excavation measures and tree protection fences is noted on the plan attached. The excavations would be within the theoretical root zone of several of the trees, and the maximum root system spread of the larger trees has been estimated as a radius of 8m from the trunk centres.

These measures would apply to the entire length of the excavation for Buildings A and D, as well as most of Building C as noted on the plan attached.

Where excavation is to occur within 8m radius of the trunk centres the line of the excavation should be carefully trenched by hand prior to bulk excavation. Any roots found should be cut cleanly with a hand saw.

The excavation for the carparks within 8m radius of the trunk centres should be limited to a vertical cut at the 6m setback from the boundary, without overexcavation for battering or benching.

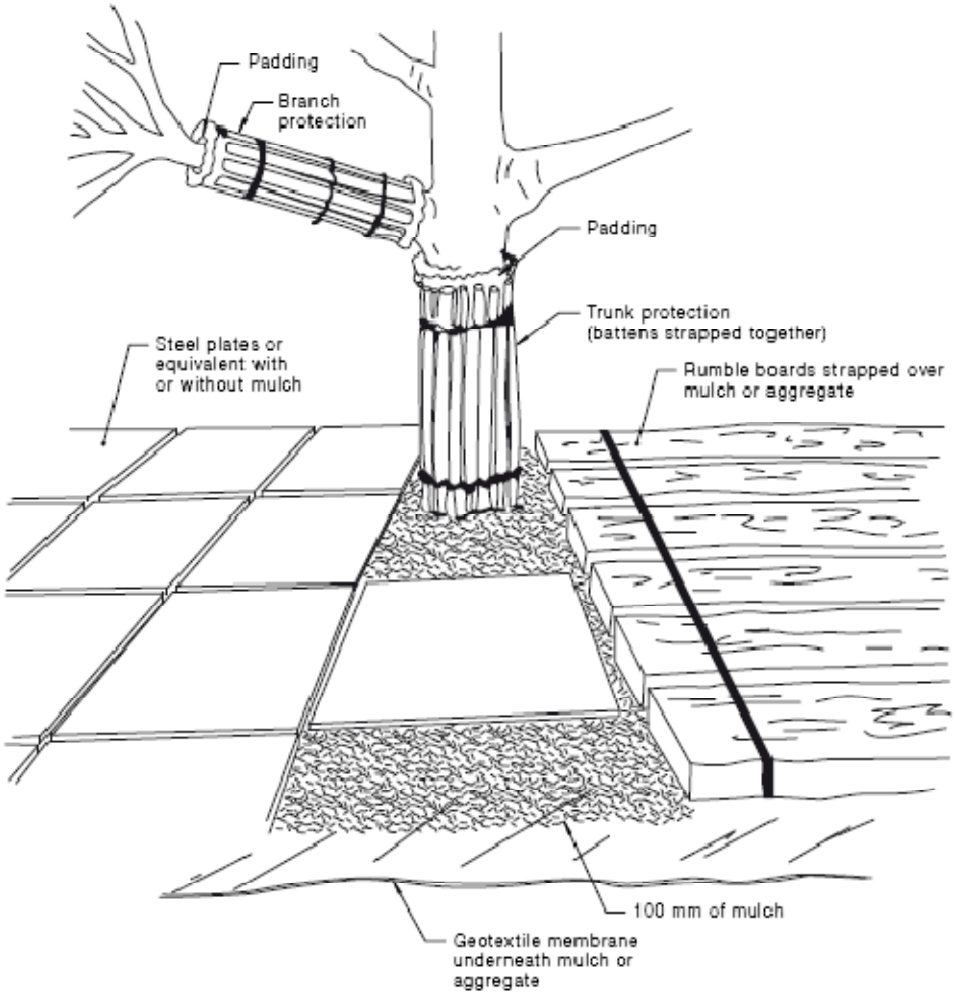
The 6m wide setback area between the excavation and the boundary within an 8m radius of the trees should be fenced off as noted above, or if access is required the soil surface should be retained intact and protected by fencing or by the installation of a rigid surface (eg planking or timber boardwalk or deck) for the entire construction period. See Figures 4 and 5 below, from AS4970. This information should be added to tender and construction drawings.

If the edge of the cut is to be left open for more than a few days, the cut face should be protected from erosion and drying by a layer of underlay, geotextile or similar, pegged in place to cover the entire topsoil horizon of the profile.

Trees in the Riparian Corridor

Several large trees are located to the northwest of Building D need to be protected during construction. A fence as noted above should be installed along the line of the tree protection zone at a radius of approximately 12x trunk diameter from each tree, or as noted on the plan attached.

Where a footpath is proposed near the trees, this should be constructed above existing levels to prevent root loss, eg as a boardwalk or similar.

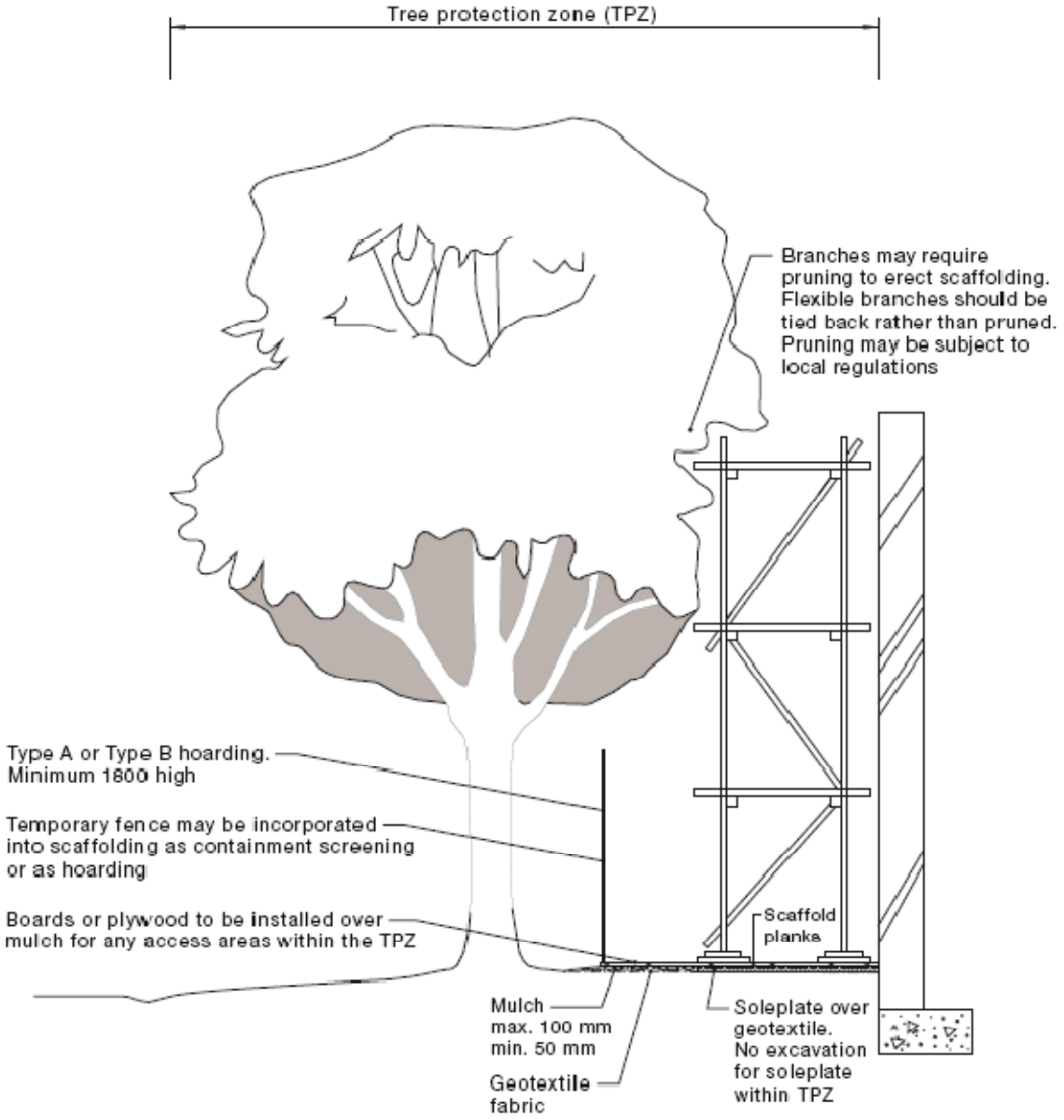


NOTES:

1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.

2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

FIGURE 4 EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION



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 INDICATIVE SCAFFOLDING WITHIN A TPZ

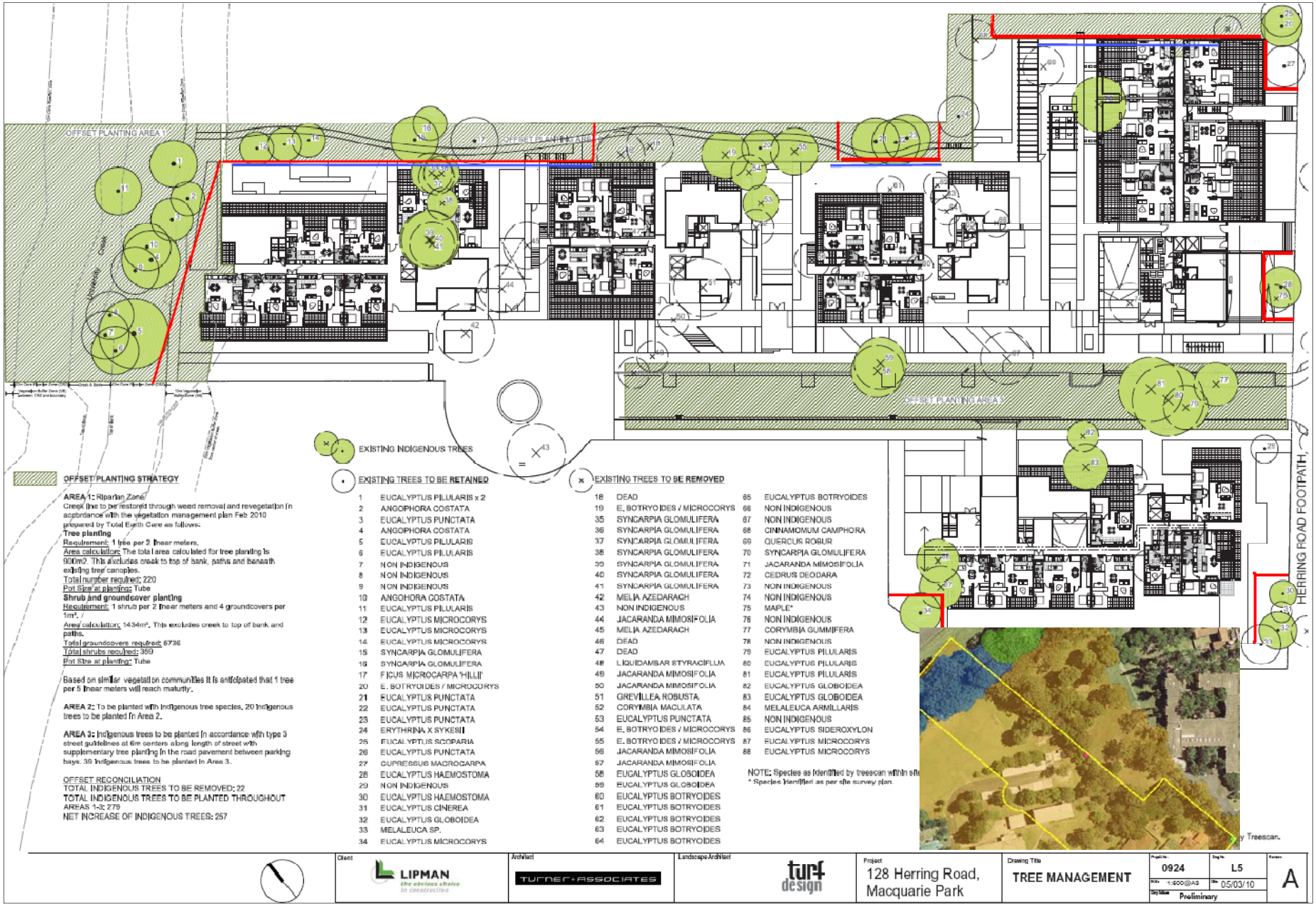
Tree protection plan

Notes:

Blue line: vertical cut
Red line: tree protection zone fence

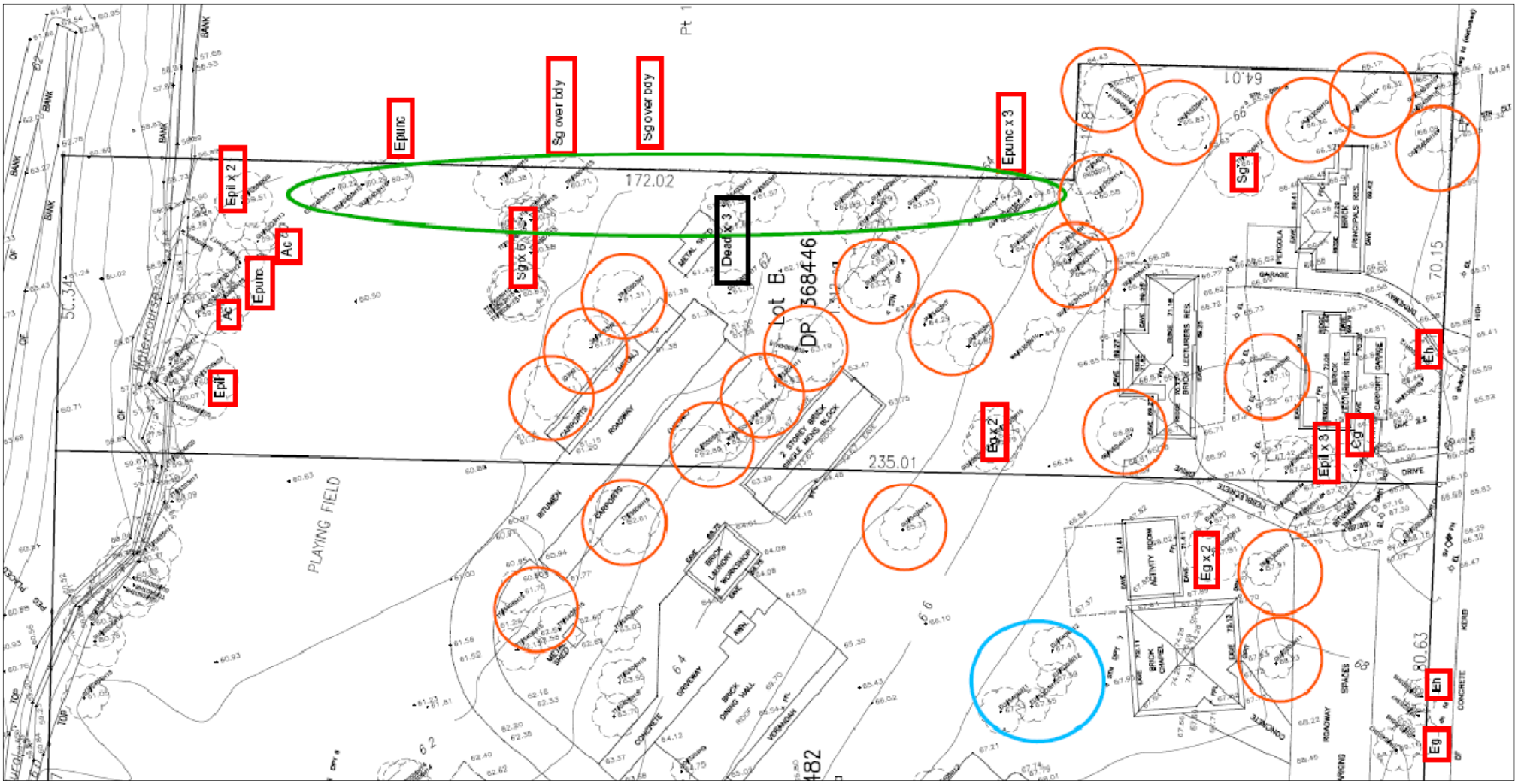
Location of tree protection zone fences is approximate only and would be verified on site at the time of installation

Fences along northeast boundary are required to protect root systems of trees on the neighbouring property; see aerial view in thumbnail below


OFFSET PLANTING AREA 1
OFFSET PLANTING AREA 2
OFFSET PLANTING AREA 3
HERRING ROAD FOOTPATH
EXISTING INDIGENOUS TREES
EXISTING TREES TO BE RETAINED
EXISTING TREES TO BE REMOVED
OFFSET PLANTING STRATEGY
AREA 1: Riparian Zone
Creek line to be restored through weed removal and revegetation in accordance with the vegetation management plan Feb 2010 prepared by Total Earth Care as follows:
Tree planting
Requirement: 1 tree per 2 linear meters.
Area calculation: The total area calculated for tree planting is 900m2. This excludes creek to top of bank, paths and beneath existing tree canopies.
Total number required: 220
Pot Size at planting: Tube
Shrub and groundcover planting
Requirement: 1 shrub per 2 linear meters and 4 groundcovers per 1m².
Area calculation: 1434m². This excludes creek to top of bank and paths.
Total groundcovers required: 5736
Total shrubs required: 359
Pot Size at planting: Tube
Based on similar vegetation communities it is anticipated that 1 tree per 5 linear meters will reach maturity.
AREA 2: To be planted with indigenous tree species, 20 indigenous trees to be planted in Area 2.
AREA 3: Indigenous trees to be planted in accordance with type 3 street guidelines at 6m centers along length of street with supplementary tree planting in the road pavement between parking bays. 39 indigenous trees to be planted in Area 3.
OFFSET RECONCILIATION
TOTAL INDIGENOUS TREES TO BE REMOVED: 22
TOTAL INDIGENOUS TREES TO BE PLANTED THROUGHOUT AREAS 1-3: 279
NET INCREASE OF INDIGENOUS TREES: 257
1 EUCALYPTUS PILULARIS x 2
2 ANGOPHORA COSTATA
3 EUCALYPTUS PUNCTATA
4 ANGOPHORA COSTATA
5 EUCALYPTUS PILULARIS
6 EUCALYPTUS PILULARIS
7 NON INDIGENOUS
8 NON INDIGENOUS
9 NON INDIGENOUS
10 ANGOPHORA COSTATA
11 EUCALYPTUS PILULARIS
12 EUCALYPTUS MICROCORYS
13 EUCALYPTUS MICROCORYS
14 EUCALYPTUS MICROCORYS
15 SYNCARPIA GLOMULIFERA
16 SYNCARPIA GLOMULIFERA
17 FICUS MICROCARPA 'HILLII'
20 E. BOTRYOIDES / MICROCORYS
21 EUCALYPTUS PUNCTATA
22 EUCALYPTUS PUNCTATA
23 EUCALYPTUS PUNCTATA
24 ERYTHRINA X SYKESII
25 EUCALYPTUS SCOPARIA
26 EUCALYPTUS PUNCTATA
27 CUPRESSUS MACROCARPA
28 EUCALYPTUS HAEMOSTOMA
29 NON INDIGENOUS
30 EUCALYPTUS HAEMOSTOMA
31 EUCALYPTUS CINEREA
32 EUCALYPTUS GLOBOIDEA
33 MELALEUCA SP.
34 EUCALYPTUS MICROCORYS
18 DEAD
19 E. BOTRYOIDES / MICROCORYS
35 SYNCARPIA GLOMULIFERA
36 SYNCARPIA GLOMULIFERA
37 SYNCARPIA GLOMULIFERA
38 SYNCARPIA GLOMULIFERA
39 SYNCARPIA GLOMULIFERA
40 SYNCARPIA GLOMULIFERA
41 SYNCARPIA GLOMULIFERA
42 MELIA AZEDARACH
43 NON INDIGENOUS
44 JACARANDA MIMOSIFOLIA
45 MELIA AZEDARACH
46 DEAD
47 DEAD
48 LIQUIDAMBAR STYRACIFLUA
49 JACARANDA MIMOSIFOLIA
50 JACARANDA MIMOSIFOLIA
51 GREVILLEA ROBUSTA
52 CORYMBIA MACULATA
53 EUCALYPTUS PUNCTATA
54 E. BOTRYOIDES / MICROCORYS
55 E. BOTRYOIDES / MICROCORYS
56 JACARANDA MIMOSIFOLIA
57 JACARANDA MIMOSIFOLIA
58 EUCALYPTUS GLOBOIDEA
59 EUCALYPTUS GLOBOIDEA
60 EUCALYPTUS BOTRYOIDES
61 EUCALYPTUS BOTRYOIDES
62 EUCALYPTUS BOTRYOIDES
63 EUCALYPTUS BOTRYOIDES
64 EUCALYPTUS BOTRYOIDES
65 EUCALYPTUS BOTRYOIDES
66 NON INDIGENOUS
67 NON INDIGENOUS
68 CINNAMOMUM CAMPHORA
69 QUERCUS ROBUR
70 SYNCARPIA GLOMULIFERA
71 JACARANDA MIMOSIFOLIA
72 CEDRUS DEODARA
73 NON INDIGENOUS
74 NON INDIGENOUS
75 MAPLE*
76 NON INDIGENOUS
77 CORYMBIA GUMMIFERA
78 NON INDIGENOUS
79 EUCALYPTUS PILULARIS
80 EUCALYPTUS PILULARIS
81 EUCALYPTUS PILULARIS
82 EUCALYPTUS GLOBOIDEA
83 EUCALYPTUS GLOBOIDEA
84 MELALEUCA ARMILLARIS
85 NON INDIGENOUS
86 EUCALYPTUS SIDEROXYLON
87 EUCALYPTUS MICROCORYS
88 EUCALYPTUS MICROCORYS
NOTE: Species as identified by treescan within site
* Species identified as per site survey plan.
by Treescan.
Client
LIPMAN
the obvious choice in construction
Architect
TURNER+ASSOCIATES
Landscape Architect
turf design
Project
128 Herring Road, Macquarie Park
Drawing Title
TREE MANAGEMENT
Project No.
0924
Dwg No.
L5
Scale
1:600@A3
Date
05/03/10
Preliminary
Revision
A

Tree location plan

Green oval: trees along the eastern boundary; mix of indigenous and other native species Blue oval: group of good *Eucalyptus microcorys* (Tallowwood) Orange circles: exotic and non-indigenous native species Red squares: locally occurring native trees; species as at right	Eg: *Eucalyptus globoidea* (White Stringybark) Epil: *Eucalyptus pilularis* (Blackbutt) Epunc: *Eucalyptus punctata* (Grey Gum) Eh: *Eucalyptus haemostoma* (Scribbly Gum) Cg: *Corymbia gummifera* (Red Bloodwood) Sg: *Syncarpia glomulifera* (Turpentine) Ac: *Angophora costata* (Sydney Red Gum)


Epil x 2
Epunc
Sg over bdy
Sg over bdy
Epunc x 3
Ac
Epunc
Ac
Sg x 6
Dead x 3
Epil
Eg x 2
Epil x 3
Eg x 2
Eh
Eh
Eg
172.02
235.01
50.34
70.15
80.63
Lot B
DP 368446
PLAYING FIELD
Watercourse
CARPORTS
ROADWAY
BITUMEN
GRAVEL
CONCRETE
BRICK LAUNDRY & WORKSHOP
BRICK DINING HALL
VERANDAH
2 STOREY BRICK SINGLE MENS BLOCK
BRICK LECTURERS RES.
BRICK PRINCIPALS RES.
PERGOLA
GARAGE
BRICK ACTIVITY ROOM
BRICK CHAPEL
DRIVE
SPACES
ROADWAY
KERB
CONCRETE
BANK
TOP
HIGH

Disclaimer

This is not a hazard assessment report and it should be noted that trees are always inherently dangerous. This assessment was carried out from the ground, and covers what was reasonably able to be assessed and available to the assessor at the time of inspection. No aerial or subterranean inspections were carried out and structural weakness may exist within roots, trunk or branches.

Any protection or preservation methods recommended are not a guarantee of tree survival or safety but are designed to improve vigour and reduce risk. Timely inspections and reports are necessary to monitor the trees' condition. No responsibility is accepted for damage or injury caused by the trees and no responsibility is accepted if the recommendations in this report are not followed.

Limitations on the use of this report

This report is to be utilised 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 information from reliable resources. All data have been verified insofar as possible; however, Treescan Urban Forest Management 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 that were examined and reflects the condition of the trees at the time of inspection: and

The inspection was limited to visual examination of the subject 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.