Hawkesbury City Council

attachment to item 361

Treescan Urban Forest Management's Tree Report

date of meeting: 14 June 2005
location: council chambers
time: 5:00 p.m.

TREESCAN

URBAN FOREST MANAGEMENT

TREE REPORT

Platanus x *hybrida* (London Plane)
in Chapel St Richmond

For
Hawkesbury City Council
October 2005

45 Glossop Road, Linden NSW 2778
Ph: 02 4753 1018, Fax: 02 4753 1167, Mobile: 0415 864 669
Email: mail@treescan.com.au Website: www.treescan.com.au

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Introduction

The avenue of trees along Chapel St Richmond is a recognised heritage item, with high landscape and historic values. Some individual trees are in poor structural condition due to lopping for power line clearance, overmaturity, fungal disease and decline. This report assesses four trees selected by Council, located in the section of Chapel St between Windsor St and Francis St.

The site

Chapel St is aligned approximately north/south. The trees are located outside Nos 12 and 14 on the eastern side of Chapel St, and are the four trees nearest the corner with Windsor St. The land is level and the footpath reserve consists of a hard-packed clay surface with grassed verges to each side. Driveway crossovers are present in three locations. The kerb and gutter consists of sandstone blocks. An aerial bundled conductor runs through the crowns of all four trees.

Soils are of the Richmond Soil Landscape (Bannerman & Hazelton 1990 pp. 75-77) consisting of poorly structured orange to red loams, clays and sands with low fertility and high aluminium toxicity.

Present state of the trees

The four trees are assessed below; tree numbers run from north to south. Trees were inspected from the ground only and no aerial or subterranean inspections were carried out. All trees are of the species *Platanus* x *hybrida* (London Plane) and in a mature or overmature age class.

The trees are generally overmature due to age, adverse growth conditions, root problems and lopping. Soils are severely compacted thereby reducing root extension, and may be acidic so that the aluminium toxicity known to affect these topsoils may be limiting tree growth. Roots have also been affected by confinement due to the proximity of kerbs and driveways; in some instances roots appear to have been cut in the past to allow driveway access. Severe lopping for power line clearance has produced massive wounds which trees cannot compartmentalise successfully, and fungal decay has infected the heartwood.

The trees are all hazardous due to their propensity for failures in large sections of the scaffolds and in proximity of constant traffic.

Tree 1 *Platanus* x *hybrida* (London Plane)

Trunk diameter 830mm, crown spread approximately 8m, height approximately 12m. In poor health, with extensive branch dieback in the upper crown. All major branches and the lower trunk bear prolific epicormic shoots.

In poor structural condition, having been severely lopped in the past for power line clearance.

The root crown is confined by the kerb and gutter, and by a highly compacted gravel driveway to the south of the trunk. No surface roots are visible. There is severe soil compaction within the footpath area with grass between the footpath and the kerb.

There is an extensive cavity in a major root buttress to the south of the trunk. The cavity extends at least 500mm into the trunk centre. This buttress is one of only two large root flares supporting the tree and its weakness indicates that the tree is likely to be unstable. There do not appear to be any roots on the western, kerb, side of the trunk, although the sandstone kerb has been moved and cracked by girth expansion.

The trunk turns at approximately 4m height with an extensive cavity present at the change of direction presumably from an old lopping wound. This is a point of likely failure. The trunk ascends at 45^0 as far as the boundary of the adjacent property then turns to the vertical. There is a pronounced rib on this section of the trunk indicating an attempted reinforcement of a weak structure.

Dying branches overhang the property. The crown dieback, coupled with the production of epicormic shoots, indicates decline, possible due to root system problems.

This tree is severely hazardous due to extensive defects and its location in a high traffic area. It should be removed and replaced. There is no requirement to undertake Resistograph investigation since the defects are severe and assessable externally.

Plates: Tree 1

Plate 1: Tree 1

Plate 2: kerb and driveway showing decayed root

Plate 3: subtrunk overhanging neighbouring property

Plate 4: decaying stub in subtrunk

Tree 2 *Platanus* x *hybrida* (London Plane)

Trunk diameter 920mm, crown spread approximately 14m, height approximately 15m. In poor health with extensive branch dieback in the upper crown. All major branches bear prolific epicormic shoots.

In poor structural condition as the result of lopping for power line clearance in the past.

The root crown is confined by the kerb and gutter, which is being lifted by root activity. Only one small surface root is present, within the footpath surface. The major root buttresses to the east of the trunk appear to have been severed in the past and have regenerated. There is a significant bulge in the lower trunk over a root buttress to the south of the trunk, possible evidence of internal decay. The lower trunk also exhibits a prominent fibre buckle around much of the circumference at approximately 1m height, possibly indicating weakness at this point.

The lower trunk divides into two major subtrunks. There is a large cavity in the eastern subtrunk, which overhangs the neighbouring property, 12 Chapel St. The upper section has severe branch dieback and there is a wound with significant decay at a branch junction. The northeastern subtrunk has been lopped to the boundary and a large vertical epicormic shoot arises at this point. There is a deep cavity at the junction with the lower trunk and decay may extend into the heartwood. A lopped and decayed stub extends over the roadway.

This tree is severely hazardous due to extensive defects and its location in a high traffic area. It should be removed and replaced. As an alternative, the subtrunks could be lopped down to a height of approximately 6m and the regrowth managed. This may allow its retention for a few years. Resistograph investigation of trunk and subtrunks would be required prior to the adoption of this program and regular inspections would be required.

Plates: Tree 2

Plate 5: Tree 2

Plate 6: root buttresses apparently severed and regenerated

Plate 7: Cavity at main junction

Plate 8: subtrunk overhanging boundary with large epicormic shoot

Tree 3 *Platanus* x *hybrida* (London Plane)

Trunk diameter 830mm, crown spread approximately 15m, height approximately 14m. In fair health with a reasonably dense leaf coverage of the crown, but with epicormic shoots along all branches and subtrunks.

In poor structural condition, having been severely lopped for power line clearance.

The root crown is confined by the driveway immediately to the north and by the kerb and gutter. Minor lifting of the sandstone is occurring.

Surface roots are present to the south and within the gravel driveway surface. Soils are very compacted and no grass is present.

There is a cavity in a major root buttress to the northern side of the trunk to a depth of at least 700mm towards the trunk centre: this root appears to have been severed for driveway construction. This weakness may render the tree unstable. In addition there are bulges over buttresses to the south and east of the trunk indicating possible decay.

The lower trunk divides into three subtrunks at about 2m height. There is a major cavity at the junction and a deep hollow which extends into both the subtrunk and the lower trunk. There is a pronounced bulge below the cavity, indicating an area where reinforcement is occurring in an attempt to strengthen the weak point. Failure is likely in this area.

The eastern subtrunk extends over the neighbouring properties of 12 and 14 Chapel St, with a large epicormic shoot approximately 200mm in diameter growing vertically from the limb. A decayed stub is present where the original subtrunk was lopped for power line clearance and decay may extend into the heartwood. This is a point of likely failure. A lateral branch overhanging 14 Chapel St has an acute change of direction at a lop wound and is weak at this point.

The southern subtrunk overhangs 14 Chapel St and has a major cavity at a change of direction. The wood below the cavity has an extensive crack, indicating imminent failure. The branches are lopped at the boundary and vertical epicormic shoots are in contact with the upper crown of Tree 4.

The western subtrunk extends approximately 10m over the roadway at a 45^0 angle; this subtrunk is weak at its base due to the presence of the cavity already noted in the lower trunk.

This tree is severely hazardous due to extensive defects in the root system and scaffold, and its location in a high traffic area. It should be removed as soon as possible and replaced. There is no requirement to undertake Resistograph investigation since the defects are severe and assessable externally.

Plates: Tree 3

Plate 9: Tree 3

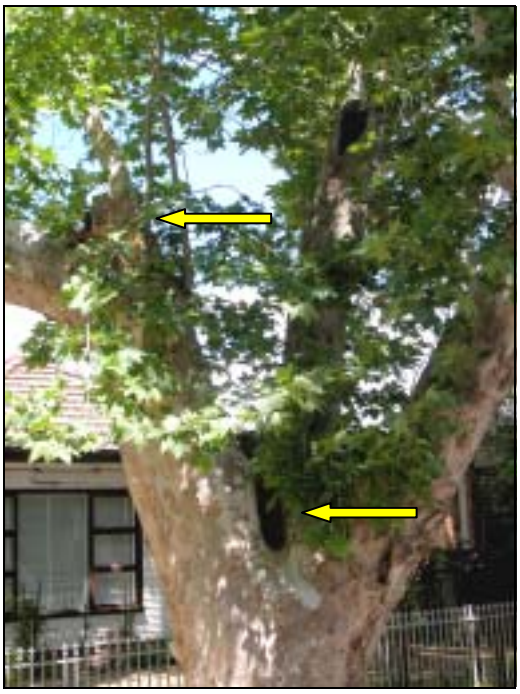

Plate 10: cavity at junction (lower arrow) and decayed stub in subtrunk

Plate 11: decayed root at edge of driveway

Plate 12: Cavity in subtrunk at change of direction

Tree 4 *Platanus* x *hybrida* (London Plane)

Trunk diameter 1000mm, crown spread approximately 18m, height approximately 12m. In fair health with a reasonably dense leaf coverage of the crown, and with less prolific growth of epicormic shoots.

In poor structural condition, having been severely lopped for power line clearance.

The root crown is confined by the concrete driveway immediately to the south and by the kerb and gutter. Extensive damage to the driveway has occurred, and the sandstone kerb and gutter has been lifted and cracked. Major surface roots extend into the front garden of the adjacent 14 Chapel St.

There are distinct bulges or fibre buckles over the root buttresses to the south and east, possibly indicating the presence of heartwood decay. A major root to the east of the trunk is either decayed or is lifting, since there is a void at least 700mm in depth under the root. The major supporting root to the south is lifting the concrete driveway, and reconstruction of the driveway would entail cutting this root. Similar problems would occur if reconstruction of the kerb and gutter takes place.

The main trunk contains a large decayed cavity at approximately 3m height, the decay probably extending into the heartwood. This wound contains bacterial wetwood. Failure may occur at this point.

The eastern subtrunk contains a major cavity at approximately 6m height. This subtrunk forms the upper crown and overhangs 14 Chapel St. Failure is likely at this point.

The southern subtrunk overhangs the premises of Brooks Tyres and contains a large cavity with heartwood decay.

The northeastern subtrunk overhangs 14 Chapel St and has a vertical epicormic shoot approximately 150mm in diameter arising near a change of direction in the subtrunk. This is a weak point in the scaffold.

The western subtrunk overhangs the roadway and has a decayed stub at the base.

This tree is severely hazardous due to extensive defects and its location in a high traffic area. It should be removed and replaced. As an alternative, the subtrunks could be lopped down to a height of approximately 6m and the regrowth managed. The kerb and gutter should be realigned to form a bubble into the roadway and the adjacent driveway reconstructed over the major root. These measures may allow its retention for a few years. Resistograph investigation of trunk and subtrunks would be required prior to the adoption of this program and regular inspections would be required.

Plates: Tree 4

Plate 13: Tree 4

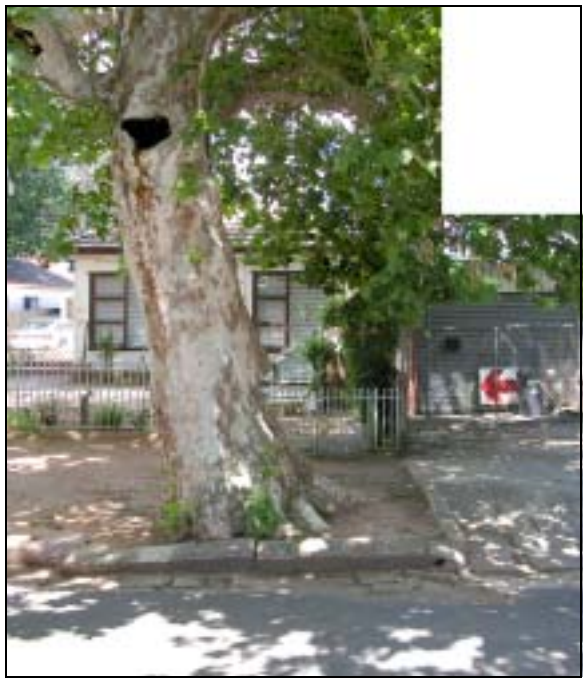

Plate 14: Damage to kerbing and driveway

Plate 15: Root decayed or lifting, void under

Plate 16: cavities in lower trunk and subtrunk

Conclusions

These four trees have now succumbed to multiple adverse factors: poor soil conditions, wounding by lopping, damage to root systems, fungal invasion and overmaturity. They are now hazardous and should be removed, since there is a real risk of damage or injury. An attempt could be made to retain two trees in greatly reduced form, with a consequent maintenance requirement. However the retention would be short term and would hinder plans for replanting.

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

Consulting Arborist

References

Bannerman, S.M. & Hazelton, P.A. 1990, *Soil Landscapes of the Penrith 1:100 000 Map Sheet*, Soil Conservation Service of NSW, Sydney.

Terminology used in the report

Age classes (I) *Immature* refers to a well-established but juvenile tree. (S) *Semimature* refers to a tree at growth stages between immaturity and full size. (M) *Mature* refers to a full sized tree with some capacity for further growth. (O) *Overmature* refers to a tree about to enter decline or already declining.

Health refers to the tree's vigour as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion and the degree of dieback.

Condition refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils), and the state of the scaffold (ie trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition.

Decay is the result of invasion by fungal diseases through a wound.

Decline is the response of the tree to a reduction of energy levels resulting from **stress**. Recovery from a decline is difficult and slow; is usually irreversible.

Epicormic shoots are sprouts produced from dormant buds in the bark. Production can be triggered by fire, pruning or root damage but may also be as a result of stress or decline.

Hazard is the potential for tree failure due to structural defect in the presence of targets.

Risk is the likelihood and consequence of failure.

Sparse crown refers to reduced leaf density, often a precursor to dieback and may imply stress or decline. Also possibly a response to drought or root damage.

Stress refers to the response of the tree to a reduction of energy levels resulting from adverse influences such as altered soil conditions (compaction, poor nutrition, reduced oxygen or moisture levels), root damage, toxicity, drought, waterlogging; may be reversible given good arboricultural practices but may lead to **decline**.

Weak junctions are points of possible failure in the scaffold. They are usually caused by the trunk or branch bark being squeezed within the junction so that the necessary interlocking of the wood fibres does not occur and the junction is forced open by the annual increments in growth. This is often a genetic problem.

Wounds are areas where the bark has been damaged by branch breakage, impact or insect attack. Some wounds decay and cause structural defects or weakness. Healthy trees are able to resist and contain infection by walling off areas within the wood. Tree wounds are often eventually covered over by new bark but the walled off or infected areas still remain internally and may lead to weakness of the heartwood.

Disclaimer

All care has been taken to assess potential hazard but 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.