

# **ENVIRONMENT, RESOURCES AND DEVELOPMENT COURT OF SOUTH AUSTRALIA**

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## **GOODE v CITY OF BURNSIDE**

**[2007] SAERDC 5**

**Judgment of Commissioner Hodgson**

**14 February 2007**

### **LOCAL GOVERNMENT - TOWN PLANNING**

Appeal against refusal of application under the Development Act 1993 to remove two significant trees – public and private risk – damage to buildings – trees visually significant - public and private risk moderate – evidence regarding damage to dwelling on subject land – absence of effective remedial measures – appeal upheld and Provisional Development Plan Consent and Development Approval granted for removal of trees, subject to one condition.

*Development Act 1993, referred to.*



**GOODE v CITY OF BURNSIDE**  
**[2007] SAERDC 5**

**THE COURT DELIVERED THE FOLLOWING JUDGMENT:**

- 1 This is an appeal against the decision of the City of Burnside (“the Council”) to refuse Provisional Development Plan Consent to an application under the *Development Act 1993* by the Appellant. Some relevant details are set out hereunder:

Date of application:	14 February 2006
Subject land:	43 Hyland Terrace, Rosslyn Park
Existing use:	Residential
Proposed Development:	Removal of two significant trees
Relevant authority:	City of Burnside
Relevant Development Plan:	Burnside (City) 25 January 2006
Relevant Zone:	Residential Policy Area 8 – Rosslyn Park
Date of decision:	22 May 2006
Appeal lodged:	10 July 2006

**The Proposal**

- 2 The trees proposed for removal are River Red Gums (*Eucalyptus camaldulensis* subsp. *camaldulensis*). For the purpose of this judgment I will refer to the trees as Tree 1 and Tree 2, Tree 1 being the southernmost of the two trees.
- 3 Tree 1 has a trunk circumference at 1.0m above ground level of 3.59m and Tree 2, a trunk circumference of 3.36m. Tree 1 is approximately 20.0m tall by 15.0m wide with a single slightly crooked trunk to a height of approximately 8.0m above ground level, at which point irregularly-spaced heavy branching begins. Tree 2 is approximately 13.0m tall by 9.0m wide with a single trunk up to a height of approximately 5.5m above ground level, at which point irregularly-spaced heavy branching begins.
- 4 Both trees occur in the front garden of a detached dwelling located at 43 Hyland Terrace, Rosslyn Park. The base of Tree 1 is located approximately 7.5m from that dwelling, with 1.0m to 2.0m of crown overhang, and approximately 1.5m from the driveway access to 43 Hyland Terrace, with full crown overhang. The crown of Tree 1 extends as far as a neighbouring, single-storey dwelling to the northwest, but does not extend over that dwelling.
- 5 The base of Tree 2 is located approximately 8.0m from the dwelling at 43 Hyland Terrace with no crown overhang, on the edge of the driveway access to the property, with full crown overhang and approximately 6.5m from the neighbouring single-storey dwelling to the northwest, with 1.0m to 2.0m of crown overhang.

- 6 The trees are estimated to be between 30 and 60 years old and are in good health, with an expectation that each could live for another 50 years or more.

### **Development Plan Provisions**

- 7 The subject land is located within the Residential Zone, Policy Area 8 – Rosslyn Park as depicted on Map Bur/5 in the Development Plan for the City of Burnside dated 25 January 2006. The sole objective for Policy Area 8 is in the following terms:

#### **Residential Policy Area 8 – Rosslyn Park**

Objective 1: Maintenance and enhancement of the low scale, low density residential character that is derived particularly from:

- (a) primarily low density, single-storeyed, detached dwellings in a variety of architectural styles (mainly from the post-war period, but with some from the inter-war period in the west); and
- (b) open front gardens, moderate to deep building set-backs, mature vegetation (particularly significant eucalypts in the south west and along Edgumbe Terrace) and extensive grassed verges.

- 8 Council Wide Objective 20 and Principles 42 and 48 speak most directly to proposals for the removal of significant trees. Those provisions are in the following terms.

Objective 20: The conservation of significant trees (including significant trees identified in Table Bur/4 and as shown on Figures Bur(ST)/1 to 8 inclusive) in Metropolitan Adelaide which provide important aesthetic and environmental benefits.

Principle 42: Where a significant tree:

- (a) makes an important contribution to the character or amenity of the local area; or
- (b) is indigenous to the local area and its species is listed under the National Parks and Wildlife Act as a rare or endangered native species; or
- (c) represents an important habitat for native fauna; or
- (d) is part of a wildlife corridor or a remnant area of native vegetation; or
- (e) is important to the maintenance of biodiversity in the local environment; or

- (f) forms a notable visual element to the landscape of the local area;

development should preserve these attributes.

Principle 48: Significant trees should be preserved and tree-damaging activity should not be undertaken unless:

- (a) in the case of tree removal;
  - (1) (i) the tree is diseased and its life expectancy is short; or
  - (ii) the tree represents an unacceptable risk to public or private safety; or
  - (iii) the tree is within 20 metres of a residential, tourist accommodation or otherwise habitable building and is a bushfire hazard within the Bushfire Prone Area shown on Figure BurBPA/1; or
  - (iv) the tree is shown to be causing or threatening to cause, substantial damage to a substantial building or structure of value; and

all other reasonable remedial treatments and measures have been determined to be ineffective.

- (2) it is demonstrated that all reasonable alternative development options and design solutions have been considered to prevent substantial tree-damaging activity occurring.

- (b) in any other case;
  - (i) the work is required for the removal of dead wood, treatment of disease, or is in the general interests of the health of the tree; or
  - (ii) the work is required due to unacceptable risk to public or private safety; or
  - (iii) the tree is within 20 metres of a residential, tourist accommodation or habitable building and is a bushfire hazard within the Bushfire Prone Area shown on Figure BurBPA/1; or
  - (iv) the tree is shown to be causing, or threatening to cause damage to a substantial building or structure of value; or
  - (v) the aesthetic appearance and structural integrity of the tree is maintained; or
  - (vi) it is demonstrated that all reasonable alternative development options and design solutions have

been considered to prevent substantial tree-damaging activities occurring.

- 9 Other Council Wide provisions of some relevance are Objective 16 and Principles 38, 39 and 40.

### **Assessment**

- 10 In determining whether the removal of the subject trees should be allowed, it is first of all necessary to determine whether either or both the trees meet one or more of the criteria set out in Council Wide Principle 42. Should none of those criteria be met by the trees in question, it is not necessary to go further. Should either or both trees be found to meet one or more of the criteria set out in Council Wide Principle 42, it then becomes necessary to decide whether either tree:

- (a) represents an unacceptable risk to public or private safety; or
- (b) is shown to be causing or threatening to cause, substantial damage to a substantial building or structure of value.

Should either or both the above criteria be met, it is then necessary to determine whether any reasonable remedial treatments and measures are available.

- 11 Mr S Heseltine, a qualified and experienced landscaping architect, gave evidence in the Council's case. In his opinion the trees, both individually and as part of a larger grouping of Eucalypts in Hyland Terrace, made an important contribution to the character and amenity of the local area and formed a notable visual element in the immediate landscape.

- 12 Mr Heseltine's evidence was admitted by consent without the need for cross-examination. Mr Mellor, for the Appellant, advised the Court that Mr Heseltine's conclusions as to the visual significance of the trees were not contested by the Appellant. However, despite the visual significance of the trees, Mr Mellor submitted their removal was justified on two grounds:

- (a) the trees were located in a position wherein they represented an unacceptable risk to the safety of the occupants of 43 Hyland Terrace, the occupants of 41 Hyland Terrace and visitors thereto; and
- (b) the trees were causing significant damage to the dwelling at 43 Hyland Terrace and, to a lesser extent, to the dwelling to the immediate northwest at 41 Highland Terrace.

- 13 In support of these submissions Mr Mellor called evidence on Mr A Goode, whose wife is the Appellant in these proceedings, Mr D Twelftree, owner of the property at 41 Hyland Terrace, Mr D Nicolle, a qualified and experienced Botanist and acknowledged authority on Eucalypt species, and Dr P Mitchell, a qualified and experienced geotechnical engineer and recognised authority on the design of footings on expansive soils.

### Public and Private Risk

- 14 The evidence of Mr Nicolle was that, having examined the two trees, he had concluded that both should be removed, for reasons set out in his statement of evidence as follows:

#### Tree 1

It is recommended that Tree One be removed.

This recommendation is made on the basis of:

- (1) The large size of the tree and its close proximity to structures of value and other infrastructures;
- (2) The tendency of the species to be subject to sudden branch failure, and the tree maturing to an age where sudden branch failure is becoming more likely, especially given the crown characteristics of the individual tree;
- (3) The likelihood of substantial damage to structures of value (including the residential dwelling of 43 Hyland Terrace) in the case of whole tree failure;
- (4) The moderate (and unacceptable) risk to safety associated with the tree, especially considering the crown of the tree largely overhangs areas of private and public loitering and thoroughfare;
- (5) The increasing risk to safety associated with the anticipated future tree growth (due to an increase in both tree size and crown mass); and
- (6) Hazard minimization techniques other than tree removal (such as crown reduction pruning, cabling, personal exclusion zones etc.) being inappropriate in this case.

#### Tree 2

It is recommended that Tree Two be removed.

This recommendation is made on the basis of:

- (1) The potential large size of the tree and its close proximity to structures of value and other infrastructure;
- (2) The tendency of the species to be subject to sudden branch failure, and the tree maturing to an age where sudden branch failure is becoming more likely;

- (3) The past lopping of the tree crown, resulting in a crown composed of structurally weakly attached branches of epicormic regrowth origin;
- (4) The likelihood of substantial damage to structures of value (including the side neighbouring residential dwelling) in the case of whole tree failure;
- (5) The low to moderate and increasing risk to safety associated with the tree, especially considering the crown of the tree largely overhangs areas of private and public loitering and thoroughfare;
- (6) The significantly increasing risk to safety associated with the anticipated future tree growth (due to a significant increase in both tree size and crown mass); and
- (7) Hazard minimization techniques other than tree removal (such as crown reduction pruning, cabling, personal exclusion zones etc.) being inappropriate in this case.

Both trees should be removed at the same time. It is not recommended that only one of the two trees be removed. In the case of the removal of one tree only, it is likely that changes to the wind dynamics in the crown of the remaining tree will cause an increase in the likelihood of whole tree failure and branch failure (in the remaining tree) over the next few years.

15 Mr Nicolle suggested a number of tree species indigenous to the area as potential replacements, including Drooping Sheoak (*Allocasuarina verticillata*), native cypress pines (*Callitris gracilis* or *C. rhomboidea*) and South Australian coastal mallee (*Eucalyptus diversifolia*).

16 Mr Lodge was of the opinion that the subject tree did not represent an unacceptable risk to public or private safety. The structure and history of the trees did not, in his view, indicate an increased potential for branch failure. Remedial pruning to remove the dead wood from the canopy and/or maintenance pruning of the canopy would remove the parts of the tree most likely to fail, namely, the small diameter dead wood.

17 Mr Lodge based his opinion on two different forms of assessment of the hazard to public or private safety represented by the trees. The first of these was a "Hazard Rating" arrived at by assessing the tree against three different criteria, failure potential, size of part and target rating. The method entailed assigning a score of 1 – 4 against each criterion, which resulted in a hazard rating score of 6/12. This rating, said Mr Lodge, suggested canopy management was the most appropriate means of addressing the hazards associated with the subject trees. Mr Lodge advised the Court that a hazard rating of 7 or more suggested a need for "priority management" of the trees and/or the site, such management ranging from reducing/removing the target to pruning or removing the trees.

18 In response to questions from the Court, Mr Lodged acknowledged that there was a fair measure of subjectivity entailed in the assignment of scores to



the three criteria under this method. That being the case, I have little confidence in the rating arrived at as an accurate reflection of the risk associated with the subject trees.

19 The second form of hazard assessment undertaken by Mr Lodge was based on a system entitled “Quantified Tree Risk Assessment”, in respect of which Mr Lodge had undertaken training. This system used similar criteria to the “Hazard Rating” system, but renamed them “Probability of Failure”, “Impact Potential”, and “Target Value”. This system, according to Mr Lodge, “allows the quantifications of the probabilities of each individual part to be calculated separately and their product (Risk of Harm) to be compared to generally accepted levels of risk.” As a reference point, Mr Lodge suggested that a risk of harm of 1/10,000 was generally considered acceptable.

20 Using this system, Mr Lodge calculated the risk of harm associated with the subject trees to be 1/24,272, a figure which, in his assessment, could be reduced to 1/13,320,000 if the trees were to be pruned to remove deadwood and weight reduce the epicormic growth.

21 Mr Lodge helpfully appended to his statement of evidence the paper upon which the above system is based, “*Qualified Tree Risk Assessment Used in the Management of Amenity Trees*”, Michael J Ellison, *Journal of Arboriculture Volume 31 No. 2, March 2005*. Having read that paper and carefully considered Mr Lodge’s evidence, I have significant reservations about the utility of the Quantified Tree Risk Assessment System in providing a reliable measure of the risk represented by a particular tree or trees. The precise nature of the way in which “Risk of Harm” is expressed suggests a level of accuracy and reliability not borne out by a close examination of the inputs to the calculation of that risk. For example, as Ellison himself notes in his paper, with reference to the criterion “Probability of Failure”:

Accurately assessing the probability that a tree or branch will fail is highly dependant [sic] upon the skill and experience of the assessor.

22 Mr Lodge premised his own calculation of risk of harm on two related premises: that there was a low probability of failure of a branch more than 100mm in diameter, and that the impact potential of a failure was correspondingly low. The premise that there was a low probability of a branch more than 100mm in diameter failing was in turn based on a survey of 472 *eucalyptus camaldulensis* carried out by Mr Lodge’s firm.

23 Mr Nicolle, in evidence, expressed reservations about the reliability of the survey data used by Mr Lodge, on two grounds:

- (a) the survey included a number of juvenile trees, which had a low propensity to limb failure by comparison with older trees, so that the likelihood of limb failure was understated; and

- (b) reliable statistics on limb failure could not be collected unless evidence of limb failure remained in the surveyed trees. In many cases subsequent pruning would have removed any evidence of limb failure.

24 Mr Nicolle's evidence was that the limbs most likely to fail in Tree 1 were 300mm or more in diameter. If that diameter were substituted for the 100mm diameter used in Mr Lodge's calculation of risk of harm, with no other change, the risk would, on my calculations, become 1/592, clearly unacceptable against the criteria underlying Mr Lodge's calculations. Were the probability of failure reduced to a level consistent with Mr Lodge's survey of failure in this species, the risk of harm, based on the Ellison methodology, would be, on my calculations, 1/5,920, again greater than the posited acceptable level of risk of 1/10,000.

25 Even a relatively minor increase in the diameter of limbs likely to fail, from 100mm to 150mm, would result in the risk of harm increasing from acceptable (1/24,272) to unacceptable (1/2,546 using the ranges set out in Table 5 in the Ellison paper, or 1/8,880 using the narrower ranges set out in Table 4 of the same paper).

26 It seems to me that the Ellison methodology suffers from the same defect as the Hazard Rating system, namely, that it requires a fair measure of subjectivity in determining the probability of failure and the size of branch most likely to fail, these in turn having a significant effect on impact potential.

27 Mr Nicolle is an acknowledged authority on eucalypt species. He has recently completed a PhD in the field of eucalypt evolution, and had had occasion to assess some 300-400 individual trees of this species. His understanding of the species' propensity to sudden limb failure and the size of limbs likely to fail is based on an understanding of the biology of the species, and to the extent that there is a conflict between the evidence of Mr Nicolle and Mr Lodge, I find the evidence of Mr Nicolle more persuasive. I am particularly concerned about the sensitivity of the Quantified Tree Risk Assessment methodology to underlying assumptions about the probability of limb failure and the diameter of limbs likely to fail.

28 Having regard to all the evidence, including that of Mr Goode regarding the extent to which activities occur beneath the canopy of both trees, I have concluded that, even with canopy modification consistent with maintaining the amenity value of the trees, there is at least a moderate risk to public and private safety represented by the subject trees.

### Damage to Buildings

29 The evidence of Dr Mitchell was that the dwelling at 43 Hyland Terrace was constructed on reactive soil, which responded to changes in moisture content by shrinking or swelling. The type of footings used at the time the dwelling was constructed was insufficient to withstand this soil movement, and cracking inevitably resulted. Cracking was exacerbated by tree roots in proximity to footings, inasmuch as they created abnormal moisture changes in the soil. The proximity of the trees to the dwelling meant that there would be tree roots near the footings below most parts of the dwelling. Without trees, some movement would still occur, but with a house as old as the dwelling on the subject land, a state of equilibrium would be reached, particularly if paving, good drainage and well-established lawns were in place, such that distortion was quite small and easily controlled with conventional patching and painting. The level of cracking evident in the dwelling was, in some instances, serious (Category 3 under Australian Standard AS 2870). Movement created by tree roots removing moisture from soil in the vicinity of footings could often be more severe a considerable distance from the tree trunk, rather than close to the trunk. This was consistent with the fact that some of the more serious cracks he observed were on the far side of the house relative to the trees.

30 With reference to cracking observed at the neighbouring dwelling, 41 Hyland Terrace, Dr Mitchell was of the opinion that the pattern of cracking, while not severe, was consistent with the pattern of cracking evident at 43 Hyland Terrace. The fact that cracking was not severe was attributable to the fact that the dwelling at 41 Hyland Terrace was constructed in the 1990's, by which time footing design was more sophisticated and likely to have factored in the proximity of the subject trees.

31 Engineering evidence in the Council's case was given by Mr D Nash, a qualified and experienced structural engineer and building surveyor. His opinion was that the house at 43 Hyland Terrace was generally in good condition with only minor cracking noted. He acknowledged more serious damage to the garage walls had occurred. Mr Nash agreed with Dr Mitchell that the subject trees would be having some effect on the soil movement under the house and garage, but disagreed as to the severity of the cracking. In his view the cracking observed was not dissimilar to what would be expected on such a site even without trees, and not substantial enough to warrant removal of the trees.

32 The essential difference between the evidence of Dr Mitchell and that of Mr Nash was:

- (a) whether cracking observed in both dwellings was properly described as 'substantial damage'; and
- (b) whether that damage was primarily attributable to inadequate footings or whether the subject trees were primarily responsible.

33 On both questions I found the evidence of Dr Mitchell the more persuasive, for several reasons. First, because his observations of the severity of cracking to the dwelling at 43 Hyland Terrace were more consistent with my observations on the view than was Mr Nash's description of cracking as "minor". The second is the specialist nature of Dr Mitchell's expertise. Mr Nash's evidence was that he would undertake, in a typical year, some 5 – 6 inspections of properties whose foundations had been affected by tree roots. This had formed part of his duties for the last 7 – 8 years. Before that, he had worked in a number of local government positions, in which he was responsible, *inter alia*, for checking footing reports and structural calculations lodged with building applications. It would be fair to say that Mr Nash's expertise lies in the general area of structural engineering and building surveying, with some experience in assessing the influence of tree roots on footings. By comparison, Dr Mitchell is a specialist on the latter, having obtained a doctorate degree which involved an examination of the magnitude of soil moisture loss from the effect of trees, published a book which, *inter alia*, examined the role played by trees in causing soil change around footings, and having also published many papers on this topic. Dr Mitchell was the recipient of a Churchill Fellowship to study cracking in houses, and a major contributor to the development of an Australian Standard for the design of footings on expansive soil. Dr Mitchell advised the Court that, since commencing private practice in 1974, he had examined some 8,000 cracked houses, at least 6,000 of which had been affected by nearby trees.

34 Having regard to the specialist nature of Dr Mitchell's expertise, and its direct relevance to the subject matter of this appeal, I accept his evidence to the effect that the subject trees are causing substantial damage to the dwelling and garage on the subject land, such damage being well in excess of that to be expected in a building some 60 years old constructed on reactive soil.

35 Dr Mitchell considered the possibility of a root barrier as a means of retaining the trees without further damage being done to the house and garage, but concluded that this was impracticable because of the depth of the barrier required and the limited space available within which the heavy machinery required for its installation could be manoeuvred, as well as the resultant weakening of the anchorage of the trees and the need to extend the barrier onto adjoining property. This evidence was not challenged by the respondent Council.

## Conclusions

36 Council Wide Principle 48 seeks the preservation of significant trees unless certain criteria are met, and all other reasonable remedial treatments and measures have been determined to be ineffective. On the evidence, the trees are "causing ... substantial damage to a substantial building or structure of value" (48(a)(1)(iv)), and construction of a root barrier will be impracticable as a means of addressing continuing damage. The evidence also suggests there is at least a

moderate risk to public and private safety represented by the trees, and that canopy management will be ineffective as means of reducing that risk.

37        Given the moderate level of risk suggested by the evidence, and the potential for ongoing canopy management to at least prevent that risk increasing, my decision in this matter would be finely balanced, were it not for the evidence as to damage being caused by the trees. When that damage and the risk represented by the trees are taken together, I am forced to the conclusion that removal of the trees is necessary and that Provisional Development Plan Consent for that purpose should be granted.

38        I note that Mr Goode indicated, in evidence, the Appellant's willingness to plant replacement trees of a species more suited to the situation of the present trees on the subject land, and that Mr Nicolle suggested a list of suitable species.

39        In response to a Memorandum in the above terms, the parties advised the Court that they were agreed that it was unnecessary to impose a condition concerning the planting of replacement trees.

40        Mr Hill, for the Council, sought imposition of a condition requiring the Applicant to repair and make good any damage caused to Council infrastructure during the course of removing the subject trees. Such a condition was justified, in his submission, by the proximity of the trees to the front boundary of the subject land, and the resultant potential for damage to Council infrastructure such as footpaths, kerbing and inverts. Mr Mellor, for the Appellant, opposed imposition of such a condition, on the basis that liability for any damage ultimately resided with the contractor engaged to remove the trees.

41        I am satisfied that the proposed condition is reasonable, in all the circumstances. It is a kind of condition routinely imposed in respect of development involving construction, in circumstances where the recipient of a planning consent will generally not be carrying out the construction work. Compliance with conditions of planning consent is the responsibility of the owner of the land to which that consent relates, and it is that owner's further responsibility to ensure that any contractor carrying out work on that land does not breach those conditions. Desirably, contractual arrangements between a landowner and a contractor should reflect this.

42        The decision of the Court is that the appeal is upheld and Provisional Development Plan Consent and Development Approval granted for the proposed development, being the removal of two significant trees in the front garden of 43 Hyland Terrace, Rosslyn Park (Development Application Number 180/0136/06) subject to the following condition:

1.    The Applicant shall, at its own expense, repair and make good any damage caused to existing inverts, kerbs, footpaths, pavements or other such works to the reasonable satisfaction of Council.