CITY OF BANYULE

SIGNIFICANT TREE & VEGETATION STUDY

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CITY OF BANYULE

SIGNIFICANT TREES AND VEGETATION STUDY

1 INTRODUCTION

1.1 Purpose of the Study

Urban communities across Australia are gradually recognising that the trees and vegetation with which they co-exist are important for aesthetic, cultural, scientific and conservation reasons and can greatly contribute to the local economy by enhancing property and streetscape values.

Covering an area of 63 square kilometers and with a population of around 112,000 residents, the City of Banyule is located 12 km north east of Melbourne. In December 1994, the new city was formed when the majority of the former city of Heidelberg and parts of the former Shires of Diamond Valley and Eltham amalgamated.

The Council and the residents of the City of Banyule recognise that trees on both private and public land are major assets to their community, contributing greatly to the local character of the municipality and to its conservation values.

Moreover, many residents within the community of Banyule have valued the rich vegetation heritage of the region for many years. This recognition first took form in the establishment of one of Victoria's first tree registers, the Warringal Conservation Society's *Register of Significant Trees in Heidelberg*, 1982.

In recent years, many private properties within the municipality have been redeveloped, with existing vegetation, including valuable indigenous and exotic trees, being cleared to make way for new single dwellings or multi-unit developments. It is clear that many in the Banyule community are concerned with the dramatic rate of development and the resulting changes to the character and ambience of the City.

In response to these concerns and the fact that most of the significant trees and much of the vegetation within the municipality have no statutory protection, the City of Banyule commissioned this study to:

- Re-evaluate and update the existing *Banyule Register of Significant Trees* (formerly the Heidelberg Register of 1985).

- Locate, identify and assess many other potentially significant trees and groups of vegetation not included on the Banyule Significant Tree Register, so that subsequent steps can be taken via the Banyule Planning Scheme, to protect and monitor these trees.

- Provide specific management recommendations for the protection of each tree or unit of vegetation and make general recommendations on how to protect the significant trees and vegetation through the Banyule Planning Scheme.

- Provide specific advice on the effective protection of mature River Red Gums growing throughout the municipality.

- Provide advice on how to minimise scenarios where the health of existing trees is compromised during development, resulting in a risk to safety in the months or years following the development.

1.2 Study Team

Under the co-ordination of Banyule City's Strategic and Economic Development Department, the Centre for Urban Horticulture at the University of Melbourne's Burnley College has drawn upon the theoretical and technical expertise of the university staff and an external consultant to complete the study.

The study team included the following members:

Centre for Urban Horticulture staff members at the Burnley campus of the University of Melbourne: Nicholas Bailey, Michael Looker, Dr Jan Schapper, Alex Campbell, Stuart Miller, Gareth Holmes, Karen Olsen and Dr. Greg Moore. External consultant Carmel McPhee assisted in the co-ordination of the project and the preparation the report.

1.3 Acknowledgements

Many people have assisted with the preparation of this study and the consultants wish to thank the following individuals and organisations for their support: The residents of Banyule, Pat Vaughan - City of Banyule, David Cameron - Department of Natural Resources and Environment and members of the Study Steering Committee, including Vivien Williamson, David Balsamo, Jon Brock, Rachel Haynes, Chris Lawrence, Tim Fallaw and the community representative Garry French.

2 THE STUDY

2.1 The Brief

The study brief set out the scope and details of the work required and is included as Appendix 1.

2.2 Study Limits

The study area was the whole of the City of Banyule (See Appendix 2) and included land adjacent to major waterways.

2.3 Study Methodology

The steps to undertake the study were as follows:

1. The consultant developed the criteria for establishing significance and these were approved by the Steering Committee (Appendix 3).

2. The City of Banyule placed public notices in local papers advising residents that the study was to commence and welcomed nominations from the community of potentially significant trees and vegetation.

3. Trees and vegetation to be assessed for significance were received from the following sources:

- An official nomination form completed by residents and Council officers (Appendix 3).

- The existing Banyule Register of Significant Trees.

- A comprehensive visual survey conducted by the consultant across the whole municipality.

4. Trees and vegetation on public land were assessed for significance against the established criteria.

5. A data sheet was designed for each significant tree, group of trees or vegetation. These form the bulk of this report.

6. Where access to private properties was required to assess trees and vegetation, a letter to residents requesting permission to access the property was sent out by the City of Banyule (Appendix 4).

7. Via amendment L21 to the Banyule Planning Scheme, interim protection was introduced for trees and vegetation considered to be significant. (Appendix 5).

8. The selected trees and vegetation were measured, photographed and their condition noted. No climbing inspections to assess condition were undertaken. The trees and

vegetation were located on lot plans of the municipality. Significant trees and vegetation in public open space were located using the Global Positioning System and the position of these trees or groups of vegetation was reported according to the Australian Map Grid.

9. The final database of trees and vegetation was cross-referenced against the National Trust (Vic) Register of Significant Trees, the Victorian Heritage Register and the Register of the National Estate.

10. Existing tree and vegetation controls were evaluated and recommendations made for extension of these controls in specific areas.

2.4 Developing the criteria for establishing significance

Criteria for assessing significant trees and vegetation in the City of Banyule were based on the ICOMOS Burra Charter criteria, Heritage Victoria's *Criteria for Assessment of Cultural Heritage Significance* (Appendix 6) and the National Trust of Australia (Vic) criteria for identification and classification of significant trees in Victoria (Appendix 7).

The Burra Charter's criteria of aesthetic, historic, scientific or social value are expanded and made more specific in the Heritage Victoria criteria that apply to places of cultural significance. Whilst broadly applicable to the Banyule study, the Heritage Victoria criteria, however, do not deal specifically with trees and vegetation.

The National Trust's criteria were developed specifically and principally for the assessment of individual trees and because they have arisen from the same broad heritage framework as the other criteria, are consistent with these, but are more fully developed to evaluate trees in particular.

Criteria for the assessment of trees and vegetation in the City of Banyule are broader than the National Trust criteria for significant trees, as they also relate to groups of trees and vegetated areas as habitat, in addition to individual trees. However they

incorporate similar ideas and are consistent with the National Trust criteria. The significant tree and vegetation criteria developed for the City of Banyule are also entirely consistent with the Burra Charter criteria as they recognise aesthetic, historic, scientific and social value. They are also consistent with Heritage Victoria's criteria, but use the words 'tree' or 'groups of trees' instead of the broader term 'place'.

The Banyule criteria are therefore an adaptation and refinement of the nationally acceptable criteria cited above, whilst being specifically developed for the particular task at hand. They have been designed to be straightforward and easily comprehended by professionals and non-professionals, containing one concept per criterion for clarity of interpretation and ease of use. Each criterion contains an identifying key word for simple recording and clarity of expression and together, all are comprehensive in the concepts they cover.

The Banyule Significant Tree and Vegetation Criteria are listed below and included separately in the report as part of Appendix 3.

2.4.1 Significance Categories

Landscape	A tree or group of trees with outstanding aesthetic value or which frame or screen views, or act as a landmark.
Size	Any tree of outstanding size in height, girth or canopy spread.
Age	Any tree of an age that makes it old or venerable for its species variant.
Botanical	A tree which is rarely found in the wild or in cultivation.
Horticultural	Any tree which is of outstanding horticultural or genetic value, and which could be an important stock for future propagation.
Historic	Any tree with a specific historic or commemorative association.

Form	Any tree with an outstanding, unusual, abnormal or curious growth form.
Remnant	Trees which survive from the pre-European era.
Habitat	A tree or group of trees with outstanding value as habitat or niche for native flora and fauna.
Aboriginal	A tree which has associations with aboriginal culture or heritage.

2.5 Levels of Significance

Trees and significant vegetation have been assessed against the criteria provided in Section 2.4. In applying these criteria, levels were established based on whether an individual tree was considered of national, state or local importance. While these categories provide a scale of significance on a comparative basis, it is important to recognise that trees of local significance are no less important to the local community than a tree recorded at a state or national level.

National & State Significance

Trees of national and state significance are those which reflect the major historical and horticultural themes of our cultural development. Trees of national and state significance are of importance beyond the municipal boundaries. They have been assessed on a comparative basis as being the best or at least an equivalent example in the state or in the nation for the criteria used to determine significance. Trees in these categories have either already been included or are recommended for addition to the Significant Tree Register (National Trust of Australia, Victoria), Heritage Victoria Register and the Register of the National Estate.

Local Significance

Trees of local significance are important to the local community, within the municipal boundary. They have been assessed on a comparative basis to be rare or the best examples in the municipality for the criteria used for significance. They may include

trees that are common elsewhere and represented by better examples outside the municipal boundary.

2.6 Banyule's Significant Trees and Vegetation

The vegetation in Banyule shows great diversity. There are many sites of native vegetation throughout the municipality while there are also a large number of excellent exotic specimens in a diverse range of sites. Significant trees and vegetation identified in this study occur in the following locations:

- Private gardens
- Institutional grounds and gardens
- Public parks and gardens
- Public reserves
- Streetscapes (median strips and footpaths)
- Private golf courses

The study has listed 302 individual trees or areas of vegetation that have been classed as being significant in the municipality. Of these, 290 were significant at the Local level while 12 are significant at the State level.

There is a concentration of entries in the southern suburbs of Ivanhoe (76), Eaglemont (31) and Heidelberg (47). There are also the historic sites of Yallambie and Viewbank that have a number of entries.

A brief listing of the entries is set out in Table 1, while full details of each record Attachment 1. Photographs were taken of each tree, these are in Attachment 2. Each tree or area of vegetation was located on lot plans of the municipality and these are presented in Attachment 3. The records of all the entries are incorporated in an interactive database, which is also included with report.

2.7 Banyule's River Red Gum population.

One of the most striking features in Banyule are the many hundreds, possibly thousands of remnant mature River Red Gums (*Eucalyptus camaldulensis)* that dominate the landscape across many parts of the municipality, but in particular the Lower Plenty area, which has experienced less intensive development than the rest of the city.

This vegetation community is of enormous environmental and cultural significance to Banyule and the wider community and the majority of these trees and their associated communities are now given protection from lopping or removal through the Banyule Planning Scheme (Appendix 8). Hundreds of individual River Red Gums, however, will continue to remain outside the VPO and whilst this study recognises their great importance, the consultants considered that to include all of them on the Banyule Significant Tree and Vegetation Register was not possible. A total of 67 records that include River Red Gums have in fact been selected for inclusion on the register, representing 22% of the expanded significant tree data base created by this study. Others can continue to be added to the register, which will remain open.

This large population makes a strong contribution to the character of Banyule. There is a very strong case for council to either further extend existing overlays in the Banyule Planning Scheme which provide for vegetation protection or develop specific planning controls to protect trees within the population which have associated indigenous or regenerating communities or which exceed a specified trunk girth. Should Council adopt and develop the recommendations in section 2.3.7 of this study, which propose a strengthening of tree protection controls generally throughout the municipality, specific controls for River Red Gums may not be required.

2.8 Banyule's Eucalyptus x studleyensis population

The City of Banyule also contains the majority of Victoria's Studley Park Gum (*Eucalyptus* x *studleyensis)* population, a naturally occurring uncommon hybrid between *E. camaldulensis and E. ovata.* A number of specimens which have been positively identified by senior botanist David Cameron of the Department of Natural Resources and Environment and botanist Kevin Rule, are included in the data base

which follows. A report by Cameron, Rule and Robinson (1999) identifying the various known populations of the hybrid within Banyule, has also recently been completed. As a result of this work, a number of other individual trees or areas of vegetation are likely to be nominated for the Banyule Significant Tree and Vegetation Register.

3 ISSUES AND RECOMMENDATIONS

3.1 Evaluation of existing tree protection measures in Banyule

As part of the process of responding to the study brief, the consultant evaluated current tree protection measures used in the Banyule Planning Scheme and associated tools. The range of controls are briefly summarised as follows:

- Environmental Significance Overlay (including protection of any vegetation in areas adjacent to the Yarra and Plenty Rivers and the Darebin Creek, sites of botanical, zoological and habitat significance and protection of some trees on the existing Significant Tree Register).
- Vegetation Protection Overlay (including protection of native vegetation in most of the area east of the Plenty River).
- Significant Landscape Overlay (protection of specified native vegetation in areas near the Yarra River).
- Requirement for Site Analyses and Development Plans to accompany planning permit applications for multi -unit development.
- Tree protection conditions applied to some permits.
- The occasional use of tree protection bonds.
- The occasional use of agreements created pursuant to Section 173 of the Planning and Environment Act 1987 to protect trees.

3.2 Extent and effectiveness of the current measures

- The ESO provides protection from lopping, removal and building or works in the root zone within the tree canopy.
- The VPO provides protection only from lopping or removal and provides no protection from building or works carried out in the tree root zone.
- It would appear that there are inadequate planning resources to enforce tree protection conditions on planning permits that may render the conditions ineffective.
- Tree protection bonds and legal agreements can only realistically be applied in special cases.

The current measures are either limited, or lack enforcement resources and are therefore frequently failing to protect trees across Banyule, in particular the many hundreds of mature River Red Gums still remaining outside the areas in which vegetation protection controls apply in the Banyule Planning Scheme.

3.3 Recommendations on Planning Scheme protection for significant trees and vegetation within Banyule.

3.3.1 Comments on current Planning Scheme protection significant trees within Banyule

Significant trees on the existing Banyule Significant Tree Register are included under Schedule Four to the Environmental Significance Overlay (ES04) (Appendix 8). While ESO4 is the most appropriate schedule of the Banyule Planning Scheme in which to place the expanded Register of Significant Trees and Vegetation, its wording needs to be altered to ensure their long-term protection.

3.3.2 Recommended changes to Schedule Four of the ESO

Schedule Four requires revision so that it includes the following considerations:

• In addition to requiring a permit for tree removal, destruction or lopping, a permit must also be required to construct a building or carry out works, not within the dripline as is currently recommended in the ES04, but within a specified distance of

all trees and vegetation included on the Register of Significant Trees and Vegetation (the Critical Root Zone). The principles which underlie the calculation of this protection zone, unlike the dripline distance currently stipulated, represent a more sophisticated understanding of the nature of tree root growth and acknowledge the fundamental importance of roots to the health of trees. This method also overcomes protection problems that arise in the case of narrow canopied trees. It can be determined according to either of the formulas shown in Appendix 9.

• The Decision Guidelines should require that the report be prepared by either an independent and qualified arborist nominated by the responsible authority (or where stands of indigenous vegetation are involved, a qualified ecologist). That report should detail the arboricultural or ecological implications of any application to either remove, destroy or lop or to build or carry out works within the 'Critical Root Zone' of trees or vegetation on the Register. That report should also stipulate tree protection specifications required in the proposed design (e.g. number and location of utility trenches, types of footings to be used, drainage considerations etc), as well as setting out the specific tree protection measures required during the works. To ensure compliance with the specifications, the arborist/ecologist will undertake a prescribed number of site visits during the works to approve conformance with the significant tree/vegetation protection specifications in the report. To minimise subjectivity, it is recommended that a pro forma report form be prepared for arborists to use in these instances.

• Recognising the lateral nature of tree root growth and the fact that tree roots don't stop at boundaries, the ESO4 should extend to the neighbouring property to protect significant trees or vegetation which are located within 5 metres of a site boundary. Where significant trees or vegetation are located on boundary corners backing onto more than one property, the ESO4 should extend to all properties involved.

• Under the Decision Guidelines, the responsible authority should also consider a set of policies/guidelines (a new planning permit process) which this study recommends be prepared and adopted by Council. (See 3.5.3) Where planning permits for development are required in Banyule, and trees and vegetation are present, this code

should be considered. In applying the code, the planning assessment process would require the applicant to undertake tree and vegetation protection considerations throughout the life of the project - from the pre design stage to completion of works.

3.4 Recommended extensions of the existing Vegetation Protection Overlay

Following a comprehensive evaluation of the city's vegetation, the consultant recommends an extension of the Banyule Planning Scheme's Vegetation Protection Overlay to cover native and exotic vegetation in the Neighbourhood Character Study areas GS5, GS6, GS7 and GS8. (The reasons for the proposed extensions are outlined in Appendix 8).

It also recommended that the current Vegetation Protection Overlay be extended to include the native vegetation in the area to the east of the Plenty River which is not currently included. The area should also be extended to include native vegetation in the area bounded by Greensborough Hwy, the railway line, the existing area and Carroll Crt.

3.5 Developing more comprehensive and effective tree controls across the whole of Banyule

3.5.1 Current development practices and trees

Current development practices in Australia very often result in tree and vegetation removal or decline and although community values and expectations in relation to vegetation protection have progressed, architects, engineers and the building industry continue to demonstrate little understanding of the minimum requirements of tree root systems in development projects.

Moreover, as land values increase in urban areas, there is a strong incentive for developers and private owners to gain the maximum return on their investment by dedicating an increasing the proportion of their site to buildings. This together with the more recent phenomenon of dual and multiple occupancy is placing enormous

pressure on existing vegetation. Municipalities such as Banyule, once semi rural and containing large tracts of indigenous vegetation, are becoming urbanised at an increasing rate. In order to ensure that this development occurs in a sustainable way, a stronger and more comprehensive set of tree protection controls is required as part of the local planning scheme.

3.5.2 The causes of conflict between trees and development

By far and away the greatest number of conflicts and ultimate compromises to tree health occur in building and road developments because tree protection is often only considered after a design has been approved and the works are well underway and because the features of many designs actually initiate or hasten tree decline.

Moreover, where designers actually attempt to incorporate existing trees into a development, there is very often a failure to understand and allow for their biological needs. The common result is that the trees die either immediately, or over a longer period of time (up to 10 years) as a direct result of the development. This leads to further concerns about the safety of these trees in close proximity to people and property and further costs in remedial works or removal in the years following the development.

A common feature in many developments is the retention of existing trees, which in fact during the course of the works, have been seriously compromised through the removal of large parts of their root system or by radical alteration of the environment of the trees' root zone, effectively initiating their death or decline.

Existing trees and vegetation and the associated land they need to remain healthy require real protection in new developments, in contrast to the often well meaning, but sometimes inadequate regard currently given to trees and indigenous vegetation. A strong and comprehensive local policy and guidelines is required to direct home owners and developers to design and develop in favour of protecting and enhancing the existing biological assets of development sites.

Because of the widespread lack of understanding about the behaviour and requirements of tree roots, the policy and guidelines would require support in the form of an education campaign that would target potential developers and new home builders. Although Banyule currently attempts, through a series of voluntary guidelines and educational pamphlets, to educate its residents and potential developers about the importance of a holistic approach to site development, this approach is having limited effect.

By adopting a more comprehensive approach, the most common conflicts relating to trees or significant vegetation can be designed out at the earliest stage of a project and the health of existing trees and vegetation can be managed during projects via standard construction industry methodology.

With support from the community and an education program provided for developers, a policy and guidelines would effectively protect and safely integrate existing trees and indigenous vegetation and would effectively protect the mature River Red Gums and their associated communities which currently lie outside the Vegetation Protection Overlay of the Banyule Planning Scheme.

A similar approach has been demonstrated to effectively protect trees and vegetation on building sites in the UK, drawing on the British Standards Institute BS 5837:1991(2) *Guide for Trees in Relation to Construction*, as well as additional work being carried out with local authorities by consulting arborists in Britain and the USA, specifically O'Callaghan and Lawson (1995) and Matheny and Clark (1998).

The key to the success of the new system will be determined by how easily it fits in with the existing Planning Scheme and standard construction industry project management procedures. The challenge will be to create a methodology that is administratively workable and efficient, relatively straightforward for developers and their design team to take on board and simple to administer on site.

3.5.3 The planning permit process

A key component of any policy and guidelines should be a process for consideration of an application for a planning permit which incorporates some of Banyule's existing tree protection measures, but is more comprehensive in its approach, including additional steps to ensure co-ordinated and well resourced monitoring and (if necessary) enforcement procedures as set out in Figure 1. By being built into a project format familiar to developers and construction workers, it is more likely to be effective. It would be resourced by the developer or home builder and establishes an educational and generally non-punitive approach to tree and vegetation protection.

3.5.4 Tree Health

The most common threats to tree health in Banyule or other urban settings are set out in Appendix 10. It is worth noting that the most common and most serious threats to tree health in urban environments occur as a result of immediate or ongoing impacts on tree root systems during building and road development works.

3.6 Community Education and Involvement

3.6.1 Owners of sites of significant trees and vegetation

Residents whose property contains significant trees or vegetation will require:

• Advice from Council about the protection controls which apply to the significant tree or vegetation on their property.

• Support and advice from Council in the form of cultural notes on how to care and maintain the health of the tree or vegetation.

• Educational material (especially relating to the way tree roots grow) which will assist them to make appropriate decisions in relation to the area around the tree, in particular the root zone.

3.6.2 The wider Banyule community

It is also recommended that council conduct an education program throughout the schools within Banyule, encouraging each school or local community group to take on the care of one or several significant trees in their area. This outreach scheme could be called “TreeCare Banyule” and would contain instructions/advice on how to care for the specific trees or vegetation in question. The program might become part of the local primary schools’ environment curriculum and could include specific instructions on yearly working bees to mulch and fertilise around the tree roots, or carry out other protection activities such as fencing a tree from mowing/grazing to enable regeneration to occur.

Figure 1 A model of the planning permit process

PLANNING PERMIT APPLICATION

• **SITE ANALYSIS**

• Details identity, age and location of all existing trees or indigenous vegetation and other site features including drainage, contours etc

• **ARBORICULTURAL/ECOLOGICAL ANALYSIS BUILT INTO DESIGN**

Arborist on design team makes input to architect on:

• Paving location and type

• Level changes affecting trees

• Drainage

• All other design issues affecting trees/veg

• Arborist prepares SULE report

(*Safe Useful Life Expectancy of Trees*- from Barrell, 1995)

• **DESIGN INCLUDES:**

• Tree Removal Zone

• Tree Protection Zone showing Critical Root Zones

• Development Exclusion Zone

• Location and nature of all services

• Irrigation as it relates to trees

• Other critical arboricultural information/documentation

PERMIT APPROVED SUBJECT TO PROVISION OF ARBORICULTURAL/ECOLOGICAL SPECIFICATIONS

ARBORICULTURAL/ECOLOGICAL SPECIFICATIONS

- Notes on design details
- Pre-works tree preparation
- Pre-works tree removal
- Topsoil removal and site clearance
- Tree protection (Fencing, mulching etc)
- Other relevant arboricultural/ecological specifications

ARBORIST/ECOLOGIST CONDUCTS SITE INSPECTIONS FOR CONFORMANCE WITH TREE PROTECTION SPECIFICATIONS & SENDS DETAILS TO PLANNING DEPARTMENT

3.7 Summary of Recommendations

1. That the Banyule Planning Scheme's Vegetation Protection Overlay be extended to cover native and exotic vegetation in the Neighbourhood Character Study areas GS5, GS6, GS7 and GS8.

It also recommended that the current Vegetation Protection Overlay be extended to include the native vegetation in the area to the east of the Plenty River which is not currently included. The area should also be extended to include native vegetation in the area bounded by Greensborough Hwy, the railway line, the existing area and Carroll Crt.

2. That a permit must also be required to construct a building or carry out works within a specified distance of all trees and vegetation included on the Register of Significant Trees and Vegetation (the Critical Root Zone).

3. The Decision Guidelines should require that a report be prepared by either an independent and qualified arborist nominated by the responsible authority (or where stands of indigenous vegetation are involved, a qualified ecologist). That report should detail the arboricultural or ecological implications of any application to either remove, destroy or lop or to build or carry out works within the 'Critical Root Zone' of trees or vegetation on the Register.

4. That the ESO4 should extend to the neighbouring property to protect significant trees or vegetation which are located within 5 metres of a site boundary. Where significant trees or vegetation are located on boundary corners backing onto more than one property, the ESO4 should extend to all properties involved.

5. Under the Decision Guidelines, the responsible authority should also consider a set of policies/guidelines (a new tree protection code or model) which this study recommends be prepared and adopted by Council. Where planning permits for development are required in Banyule, and trees and vegetation are present, this code should be considered. In applying the code, the planning assessment process would

require the applicant to undertake tree and vegetation protection considerations throughout the life of the project - from the pre design stage to completion of works.

6. That residents whose property contains significant trees or vegetation receive
• Advice from Council about the protection controls which apply to the significant tree or vegetation on their property.
• Support and advice from Council in the form of cultural notes on how to care and maintain the health of the tree or vegetation.
• Educational material (especially relating to the way tree roots grow) which will assist them to make appropriate decisions in relation to the area around the tree, in particular the root zone.

7. That council conduct an education program throughout the schools within Banyule, encouraging each school or local community group to take on the care of one or several significant trees in their area

8. That the Council adopt the protection measures for trees on construction sites as set out in Appendix 10.

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Appendix 1. The Study Brief

Appendix 2. The Study Area - City of Banyule

Appendix 3. Significance Categories for the City of Banyule, Significant Tree & Vegetation Study

Appendix 4. Letter from Banyule Council to residents requesting access for tree inspections

Appendix 5. Letter from Banyule Council to residents advising of interim protection for significant trees and vegetation

Appendix 6. Heritage Victoria - Criteria for Assessment of Cultural Heritage Significance

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Appendix 8. Existing Banyule Planning Scheme Vegetation Protection Overlay and proposed extensions

APPENDIX 9. Critical Root Zone formulas

Critical Root Zone - Formula 1

Entitled 'Guidelines for Optimal Tree Preservation Zones for Trees of Average to Excellent Vigor', this formula has been developed by internationally respected arborists, Nelda Matheny and James Clark and is based on guidelines set out in British Standard BS5837:1991 *Guide for Trees in Relation to Construction*) The formula takes into account a tree's age, diameter at breast height (DBH), species tolerance to impacts and vigour. Although published data on tolerances of native and exotic tree species in Australian conditions is not available, experienced arborists in Victoria are applying the formula based on their own experience of the tolerance of common local species to development pressures. The formula, presented below, requires application by an experienced arborist and is accepted as best current practice for determining a tree's Critical Root Zone.

Species tolerance to impacts	**Tree age**	**Distance from trunk in cm for every 1 cm of trunk diameter**
Good	Young Mature Overmature	6 cm 9 cm 12 cm
Moderate	Young Mature Overmature	9 cm 12 cm 15 cm
Poor	Young Mature Overmature	12 cm 15 cm 18 cm

Diameter at Breast Height (DBH) is measured at 1.2 metres above ground level.

Critical Root Zone - Formula 2

In the mid 1980's, the National Trust of Australia (Vic), concerned at development impacts on trees listed on the Significant Tree Register of Victoria and the impact of development on trees generally, promoted the concept of a 5 metre 'donut' beyond the canopy as a minimum tree protection zone. Whilst disarmingly simple, this formula also recognises that tree roots do not stop at the canopy. Like many other tree protection zone formulas, however, it does not acknowledge that trees respond differently to development according to their species, age and existing health or vigour.

Appendix 10. Recommended protection measures for trees on construction sites

Appendix 11. Banyule Planning Scheme Environmental Significance Overlay