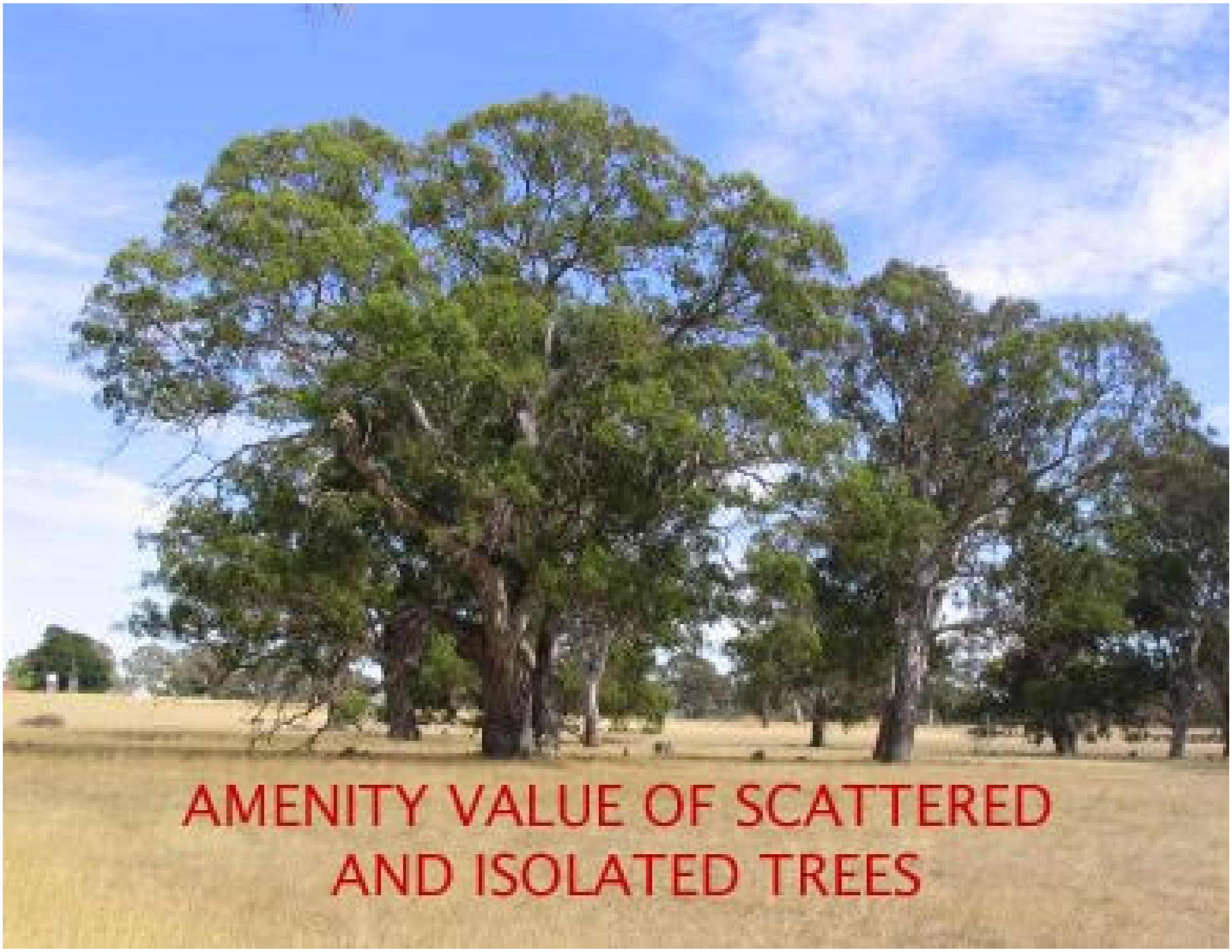

Report to the South Australian Native Vegetation Council

Dr Andrew Lothian
Principal, Scenic Solutions

2004

AMENITY VALUE OF SCATTERED AND ISOLATED TREES
Report to the South Australian Native Vegetation Council

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SUMMARY

Aim of project

In response to an application, the Native Vegetation Council awarded a grant to Dr Andrew Lothian, Scenic Solutions, to assess the visual amenity provide by scattered and isolated trees. The defined purpose was to provide the basis for assessment of the visual amenity provided by these trees for consideration in applications for their clearance.

Amenity and human preferences for trees

Amenity of trees has been described by the Council as the degree by which trees are regarded by the community as part of the local landscape. While this combines the quality and the contribution the trees make to the pleasantness of the locality, it is important to appreciate that the trees do not necessarily need to be accessible or viewable in order to be regarded as visually significant.

Pastoral landscapes, which scattered and isolated trees comprise, have a long history of providing pleasing environments for people. From the creation of parks in Persia, Greece and Rome through the monastic gardens of the middle ages and the hunting parks of the 15th century, to Capability Brown's landscaped gardens created in the image of Claude Lorraine's pastoral landscape paintings, and finally, the public parks and gardens and even home gardens of modern times, the idealised image of pastoral landscape of scattered trees amidst grass may be found.

Theorists speculate that the human preference for pastoral landscapes derives from their qualities of enhancing the survival of the human species. Tree shapes typical of the acacia trees of the African savannah have been shown to be preferred. Many studies have shown human preferences for substantial trees with height, thickness of trunk, and breadth of canopy, trees that have a significant impact on the landscape. A South Australian study showed that trees enhanced landscape quality significantly and that indigenous trees were preferred over introduced species.

Various studies have sought to determine whether a relationship existed between landscape quality and ecological quality but the results have been inconclusive, suggesting that any relationship that exists is very weak.

Gaining the data

The project involved photographing scattered and isolated trees in various regions, classification of the trees, selection of 112 photographs for the survey and preparation of the survey for the Internet. The survey was conducted over five

week period in April and May 2004. A total of 619 participated and of this 440 completed surveys were useable.

Participants

Survey participants differed significantly to the South Australian community in respect of their education and age but their gender balance and birthplace were not significantly different. Ratings were analysed across these characteristics and found to be very similar, suggesting that although the participants differed from the community, this made little difference to their ratings. The ratings differed significantly only in respect of education.

Extensive comments on the survey were obtained from participants. The main theme was concern regarding the lack of understorey to the isolated trees, the degraded, over-grazed fields, the age of trees and lack of regeneration, and the importance of naturalness in the ecosystems. Many participants appeared to have training in life sciences and land management fields.

Fifty scenes of South Australian landscapes were included to balance the scenes of trees. These had been previously rated in an earlier study and the differences in ratings indicated that while natural scenes rated more highly, those of barren fields, overgrazed and degraded areas rated poorly. This indicated that some participants were influenced by the botanical integrity of the scenes.

Analysis of tree characteristics

Detailed analysis across the categories of nine tree characteristics (e.g. height, canopy form, species) and two context (terrain, land use) characteristics quantified the contribution of each to the ratings of scenes. It found that preferences increased markedly with the greater number and density of trees, healthier trees, and height of trees. For the other characteristics however ratings did not change appreciably across them. There was some supporting evidence for a relationship between ecological health and landscape quality but it was not definitive.

Multiple regression analysis of the ratings of tree characteristics was used to define a predictive model of scenic amenity of scattered and isolated trees. The model defined was:

$$Y = 2.98 + 0.24\ \text{height} + 0.30\ \text{verticality} - 0.17\ \text{canopy density} + 0.40\ \text{health} - 0.21\ \text{species} + 0.35\ \text{number}$$

The model was tested against the 112 scenes and found to be accurate to an average of within 1%. Based on this, a workbook was developed to calculate the scenic rating in the field. The project achieved its aim of developing a model for assessment of scenic amenity of scattered and isolated trees.

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ACKNOWLEDGEMENTS

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David Whiterod, Planning SA (sub-consultant)

All participants in the Internet survey.

1. INTRODUCTION

In this report the development, implementation and findings of a study to assess the visual amenity of scattered and isolated trees are described.

The Native Vegetation Council sought advice on considering the amenity value of scattered and isolated trees in reaching its decisions on clearance applications.

The report provides the background of the study and then examines the concept of visual amenity and in particular, that provided by trees. The methodology for the project is outlined and its conduct described. The results of the study are then analysed, a predictive model developed, and guidelines for the field assessment of amenity from scattered and isolated trees described.

The report fulfills the requirement of the Native Vegetation Council to report on the results of a Council funded project.

The report has been prepared by Andrew Lothian Dip. Tech. (Town Planning), M.Sc. (Environmental Resources), PhD. Dr Lothian is Principal, Scenic Solutions, an Adelaide-based environmental consultancy.

2. BACKGROUND

Controls over the clearance of broadacre vegetation were introduced in South Australia on 12 May 1983 and have operated under statute since 1985. Since 1991, clearance of broadacre vegetation ceased and in 2002 was banned. However the clearance of scattered and isolated trees is sought to enable agricultural development, particularly pivot irrigation which requires cleared land for the movement of irrigation equipment, and for vineyard development. The rapid growth of vineyards over recent years has seen the loss of considerable numbers of remnant isolated trees, especially red gums in localities in the South East and the Clare Valley. Over the period, 1994/95 and 2001/02, 21,394 ha of scattered trees were approved for clearance (Native Vegetation Council secretariat).

On 28 June, 2003, the Native Vegetation Council invited applications for funding projects and research concerned with the preservation, enhancement and management of native vegetation. Included among the list of research priorities established by the Council was "research into … amenity value of scattered and isolated trees".

S29(1) of the Native Vegetation Act 1991 requires the Council to have regard to relevant principles of clearance of native vegetation and to not make a decision seriously at variance with those principles. The principles (Schedule 1 of Act) cover eleven matters including:

> (g) "it (i.e. the native vegetation) contributes significantly to the amenity of the area in which it is growing or is situated"

The NVC's Information Sheet 3, *Assessing the Value of Scattered Native Trees* defines amenity value as meaning:

> "how highly the trees are regarded by the community as part of the local landscape. This can be difficult to judge, but if a tree is large or otherwise distinctive and is at a location readily viewed by the public, it is of amenity value and should not be cleared."

Dr Lothian submitted a proposal to develop a model for the field assessment of the visual amenity provided by scattered and isolated trees that are subject to clearance applications under the Native Vegetation Act. The anticipated budget for the project was $16,680 covering:

- Photography of trees in Mt Lofty Ranges, Barossa and Clare Valleys, and the South East
- Selection of scenes and presentation to participants to rate the scenes on basis of scenic amenity
- Analysis of data
- Development of guidelines and their field testing
- Report preparation

On 10 October 2003 the Secretariat of the Council advised Dr Lothian of the Council's approval of funding assistance of $10,000 (GST inclusive) to carry out the project. Dr Lothian advised the Secretariat by letter (19 October) of his acceptance of the grant. Because the amount provided was 60% of that sought, the project was modified mainly by deletion of the field testing. This change was considered by the Council and the author was notified by the Secretariat of its acceptance of the proposal on 12 February 2004. Completion of the project was required by 1 December 2004.