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Visual Impact Assessment

of

Lake and Ocean Estate
Narrawallee, NSW

for

Hanson South Coast Pty Ltd.

by

New Lands Consulting

Canberra
April 1995

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Contents

1. Purpose

The purpose of this report is to:

- assess the visual impact of selective tree removal from land currently zoned for scenic protection;
- outline visual impact scenarios; and
- recommend appropriate actions for a common-sense approach to landscape development which recognises and understands the important need for scenic amenity.

2. Assessment Method

Little work has been completed in Australia on the development of consistent, accurate and reliable standards for visual impact assessment. Consequently, the method chosen for this assessment was developed in the United States by scientists and planners working with California State University (Tillman-Lyle, 1985). It has been applied extensively throughout the world over the past ten years with great success.

The visual impact assessment process in this case is relatively simple and involves:

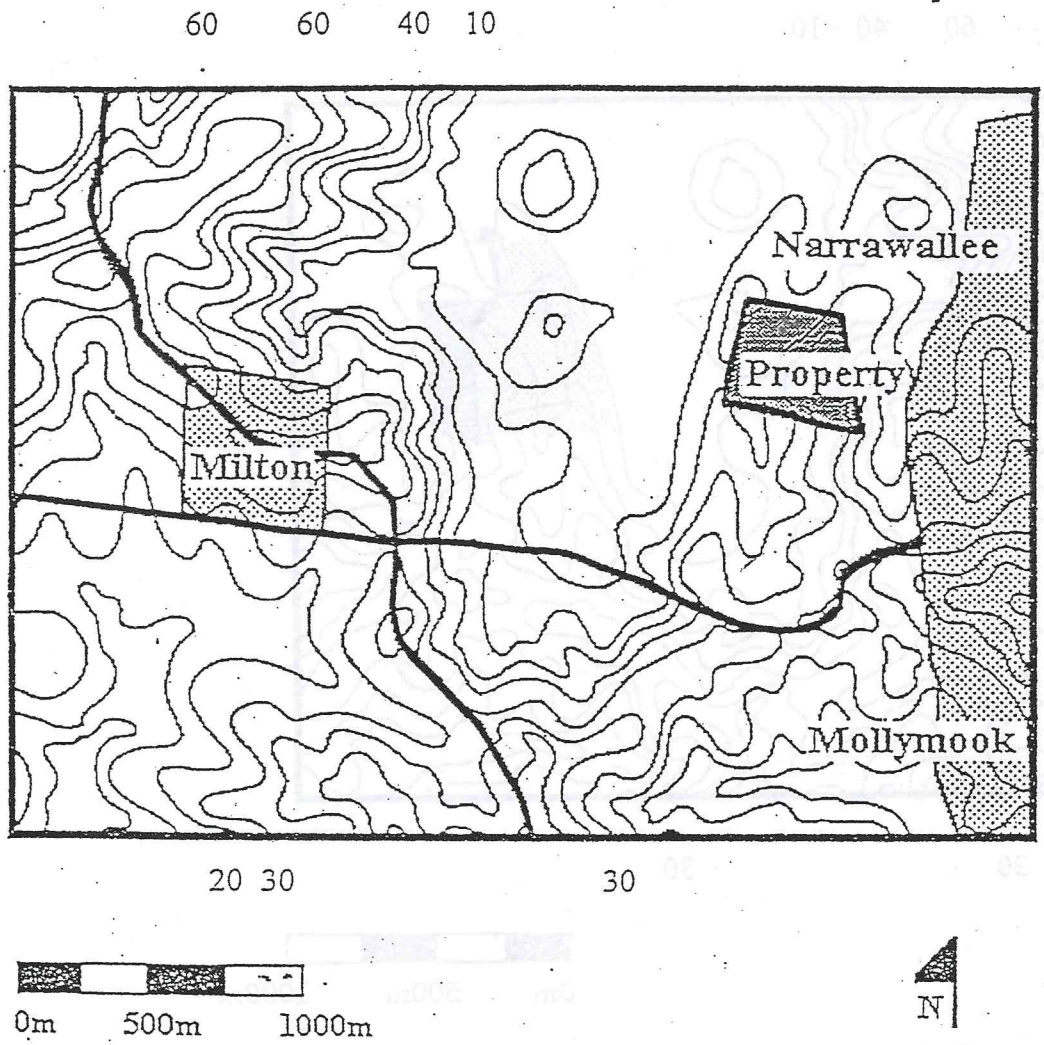
- cartographic interpretation from the Milton 1:25 000 Topographic Map (AUSLIG, 1984);

- ground control survey of XYZ coordinates for improved mapping accuracy and precision (Phillip Brown Surveyors, 1994);
- site inspection to survey vegetation characteristics, landscape pattern and public viewpoints;
- development of landscape transects and visual sensitivity zone maps using, in most cases, progressive computer software;
- development of visual impact scenarios; and
- preparation of recommendations.

3. Assessment

3.1 Infrastructure and Administration

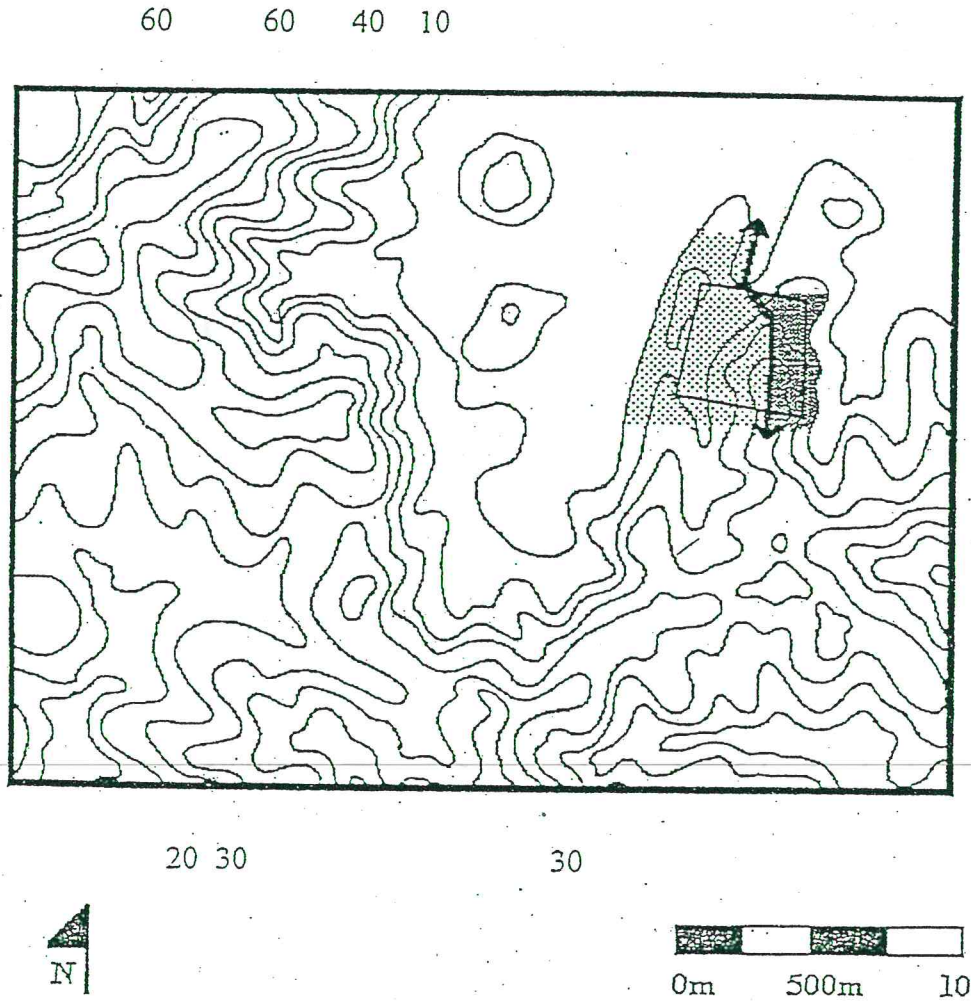
The land subject to this visual impact assessment, Lake and Ocean Estate, is a freehold property within Shoalhaven Shire owned by Hanson South Coast Pty Ltd. It is located (MAP 1) approximately 1km west of Narrawallee, 2km northwest of Mollymook, 2km east of Milton and 5km north of Ulladulla on the south coast of New South Wales. The property has a combination of 7(d2) Environmental Protection (Special Scenic) and 2(a3) Residential zoning (MAP 2) under the Shoalhaven Local Environment Plan of 1985.



MAP 1: Location of the study property relative to e local area.

3.2 *Terrain and Vegetation*

The property is situated in undulating coastal terrain with a local relief of 35 metres. The vegetation has a tall mixed-age forest form averaging 30 - 35 metres in height. The upper stratum is dominated by the *Eucalyptus globoidea* (White Stringybark) community which is common to this land system throughout the coastal region. The mid stratum is well developed with an average canopy cover of 40 percent and is dominated by *Acacia mearnsii* (Black Wattle). The lower stratum maintains an 80 percent cover of grass and small broadleaf species.



MAP 2: Existing zoning over the property.

7(d2) zoning

2(a3) zoning

property boundary

3.3 Landscape Transects

Assessment of visual impact requires the development of numerous landscape transects to ascertain whether landscape development on the property will threaten scenic amenity. Such transects are important tools as they clearly illustrate and resolve the issues of scenic protection, skyline continuity and landscape pattern within a consistent, reliable and user-friendly context.

In this case, six transects were developed to ensure an assessment which bases lines-of-sight from a variety of public view points with various elevations and aspects. This approach is important as it:

- maintains scientific objectivity and rigour;
- provides a means for assessing measures of visual sensitivity under different landscape development scenarios; and
- provides an accurate measure of vertical distances from lines-of-sight to the ground surface, which thus determine comfort zones for scenic protection.

The six transects are sighted from the northwest, west and southwest of the property. Four are from the Princes Highway, one from Matron Porter Drive and one from Garrads Lane (MAP 3). They are plotted with a scale-consistent vertical exaggeration factor of 4:1 which allows vertical comfort zone distances to be more accurately measured.

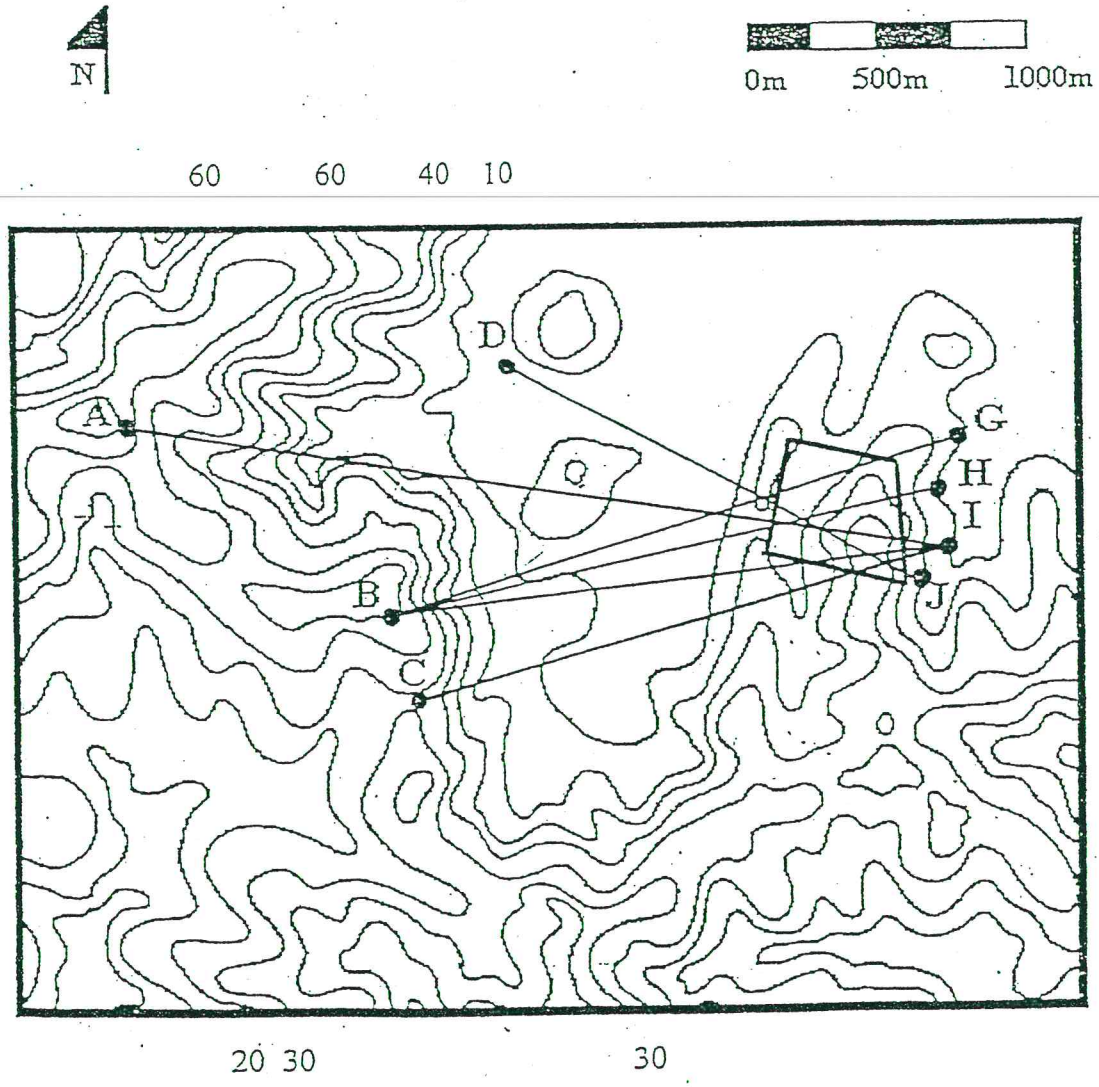
All transects are designed to assess three landscape scenarios in the form of:

- the preservation of existing forest cover (*scenario 1*);

- the removal of vegetation on the western slope of the property between the 18 and 42 metre contours (*scenario 2*); and

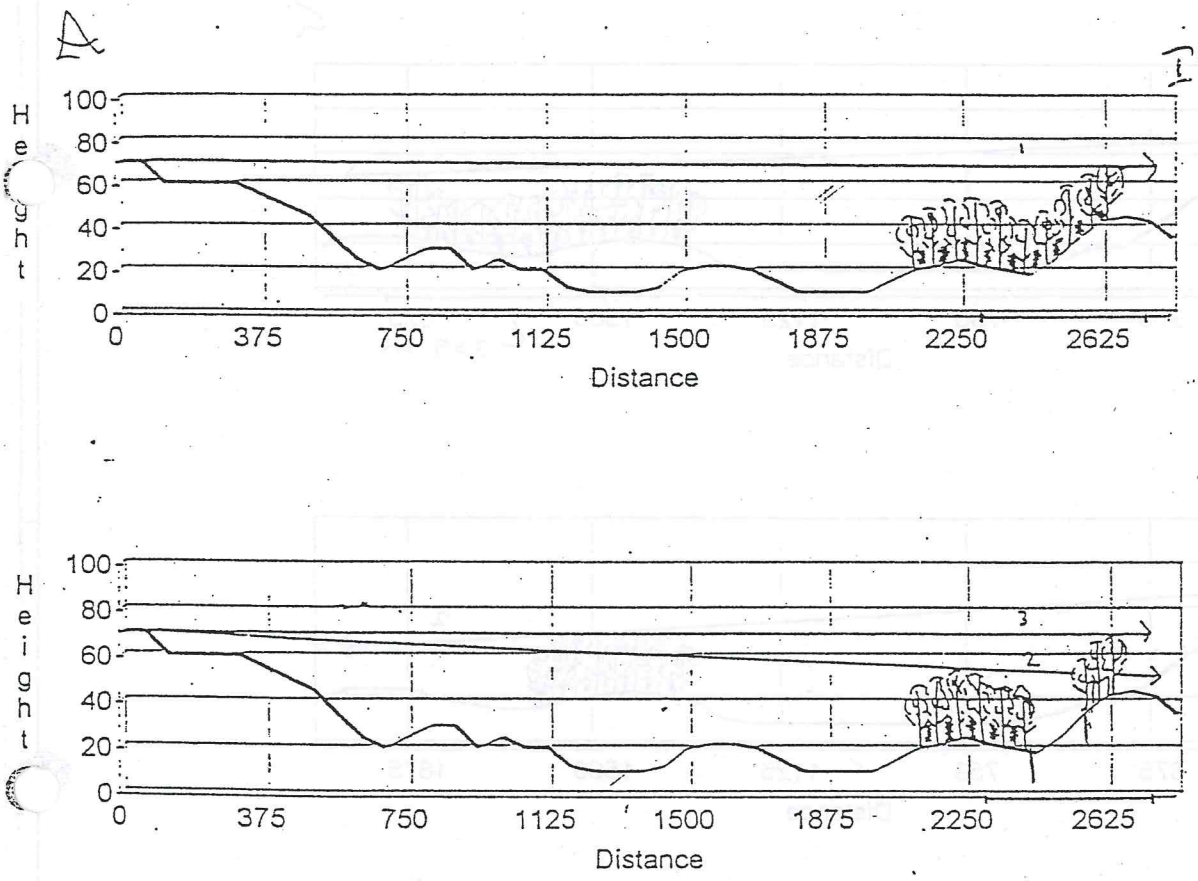
- the removal of vegetation on the western slope of the property between the 18 and 38 metre contours while maintaining tree cover as a visual buffer zone between the 38 and 42 metre contours (*scenario 3*).

MAP 3: Location and extent of the six landscape transects.



The first transect (A - I) is sighted from the highest point on the Princes Highway approximately 1km to the north of Milton. It deliberately passes through the lowest point on the ridge approximately 75m to the west of the property boundary.

Transect A -I with 4:1 Vertical Exaggeration (metres), showing ground surface, lines-of-sight and tree cover under landscape scenarios 1, 2 and 3.

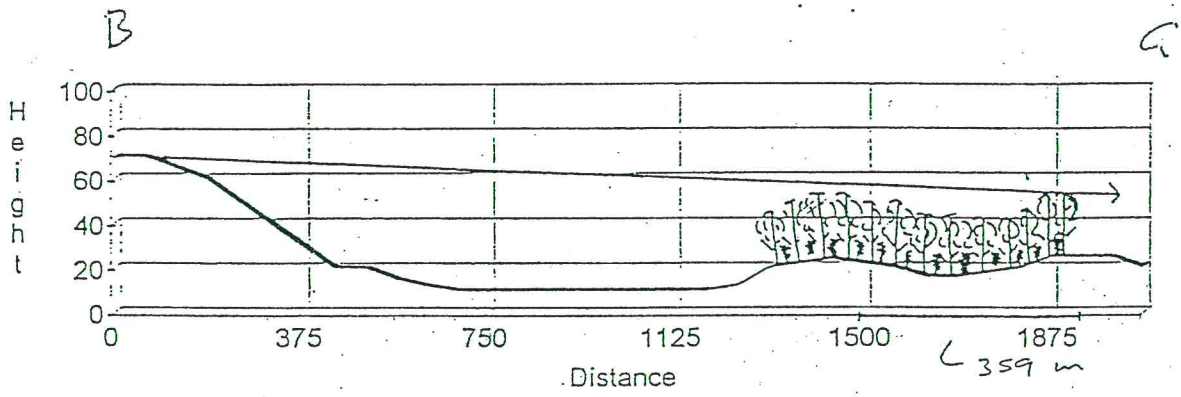


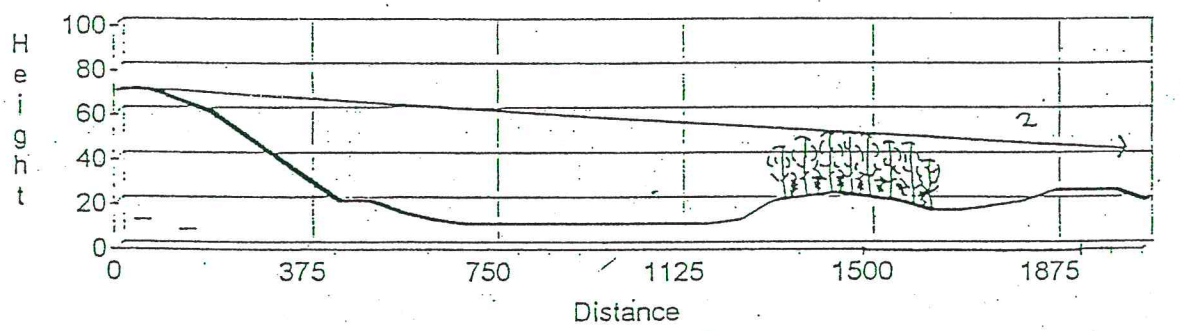
From the public viewpoint A, the highest point on the property is protected by a vertical comfort zone of:

- 9 metres under *scenario 2*; and
- 20 metres under *scenario 3*.

The second transect (B - G) is sighted from the highest point on the Princes Highway directly to the east of Milton. It is directed towards the northeastern section of the property.

Transect B-G with 4:1 Vertical Exaggeration (metres), showing ground surface, lines-of-sight and tree cover under landscape scenarios 1, 2 and 3.



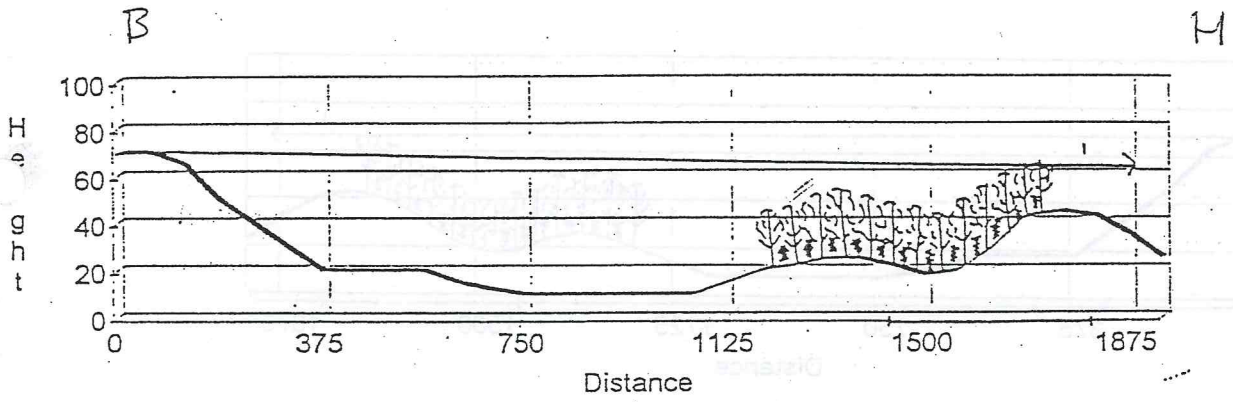


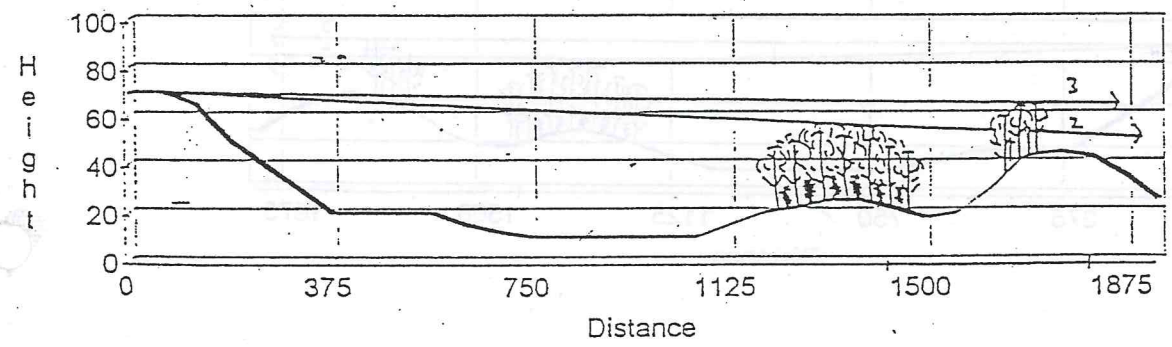
From the public viewpoint B, the highest point on the property is protected by a vertical comfort zone of:

- 23 metres under *scenario 2*, while *scenario 3* is not applicable in this case as the area on the property is below the 38 - 42 contour zone.

Transect B-H with 4:1 Vertical Exaggeration (metres), showing ground surface, lines-of-sight and tree cover under landscape scenarios 1, 2 and 3.

The third transect (B - H) is sighted from the highest point on the Princes Highway directly to the east of Milton. It is directed towards the eastern section of the property.



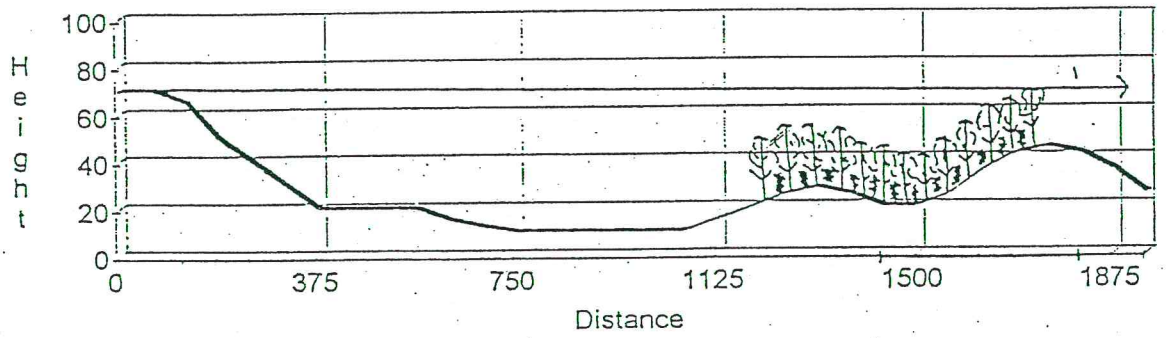


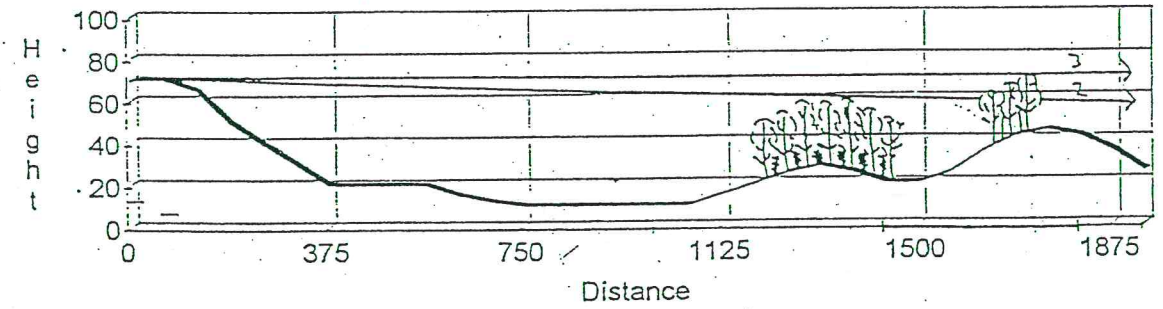
From the public viewpoint B, the highest point on the property is protected by a vertical comfort zone of:

- 9 metres under *scenario 2*; and
- 23 metres under *scenario 3*.

The fourth transect (B - I) is sighted from the highest point on the Princes Highway directly to the east of Milton. It is directed towards the southeastern section of the property.

Transect B-I with 4:1 Vertical Exaggeration (metres), showing ground surface, lines-of-sight and tree cover under landscape



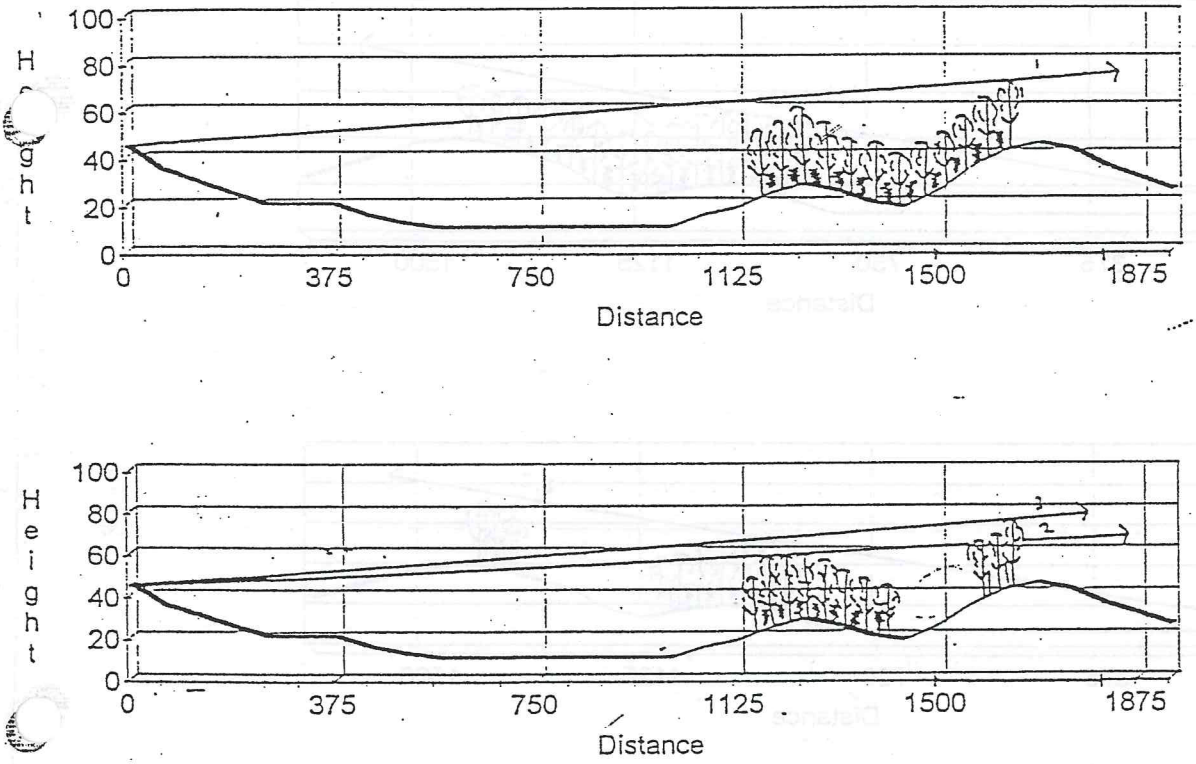


From the public viewpoint B, the highest point on the property is protected by a vertical comfort zone of:

- 14 metres under *scenario 2*; and
- 20 metres under *scenario 3*.

Transect C-I with 4:1 Vertical Exaggeration (metres), showing ground surface, lines-of-sight and tree cover under landscape scenarios 1, 2 and 3.

The fifth transect (C - H) is sighted from the highest point on Matron Porter Drive approximately 500 metres to the southeast of Milton. It is directed towards the eastern section of the property.

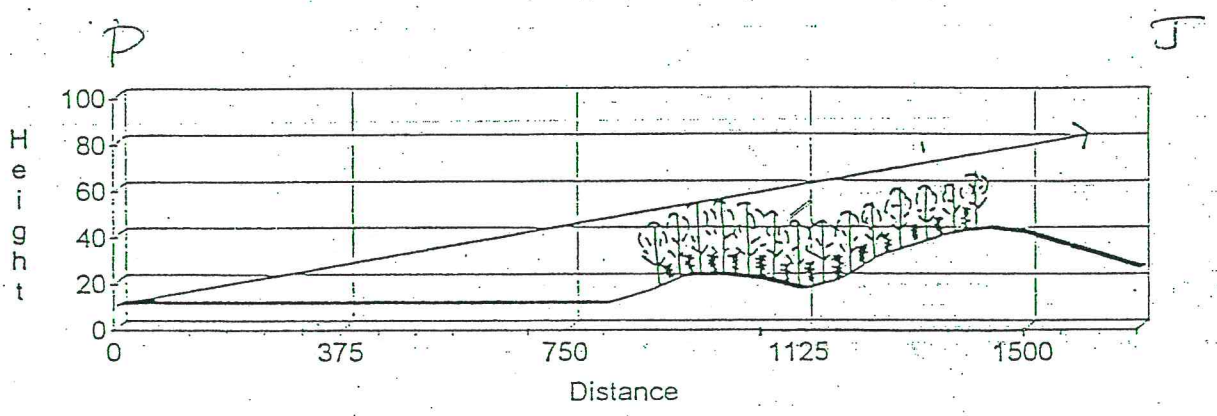


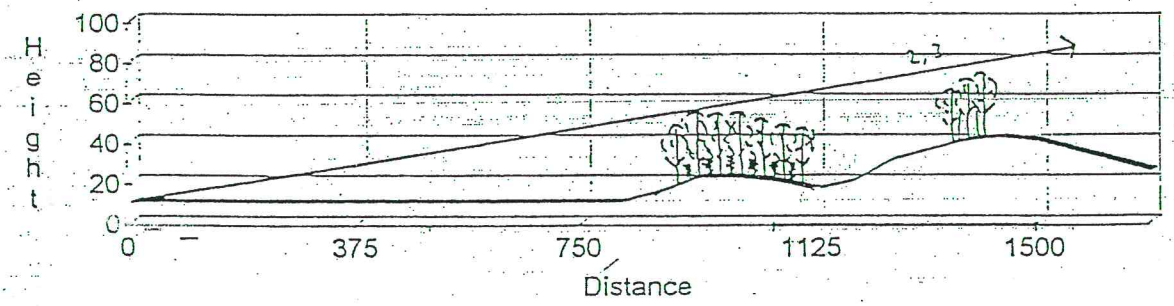
From the public viewpoint C, the highest point on the property is protected by a vertical comfort zone of:

- 23 metres under *scenario 2*; and
- 29 metres under *scenario 3*.

The final transect (D - J) is sighted from the northern end of Garrads Lane which is approximately 1500 metres northeast of Milton. It is directed towards the eastern and southeastern sections of the property.

Transect D-J with 4:1 Vertical Exaggeration (metres), showing ground surface, lines-of-sight and tree cover under landscape scenarios 1, 2 and 3.





From the public viewpoint D, the highest point on the property is protected by a vertical comfort zone of:

- 35 metres under *scenario 2*; and
- 35 metres under *scenario 3*.

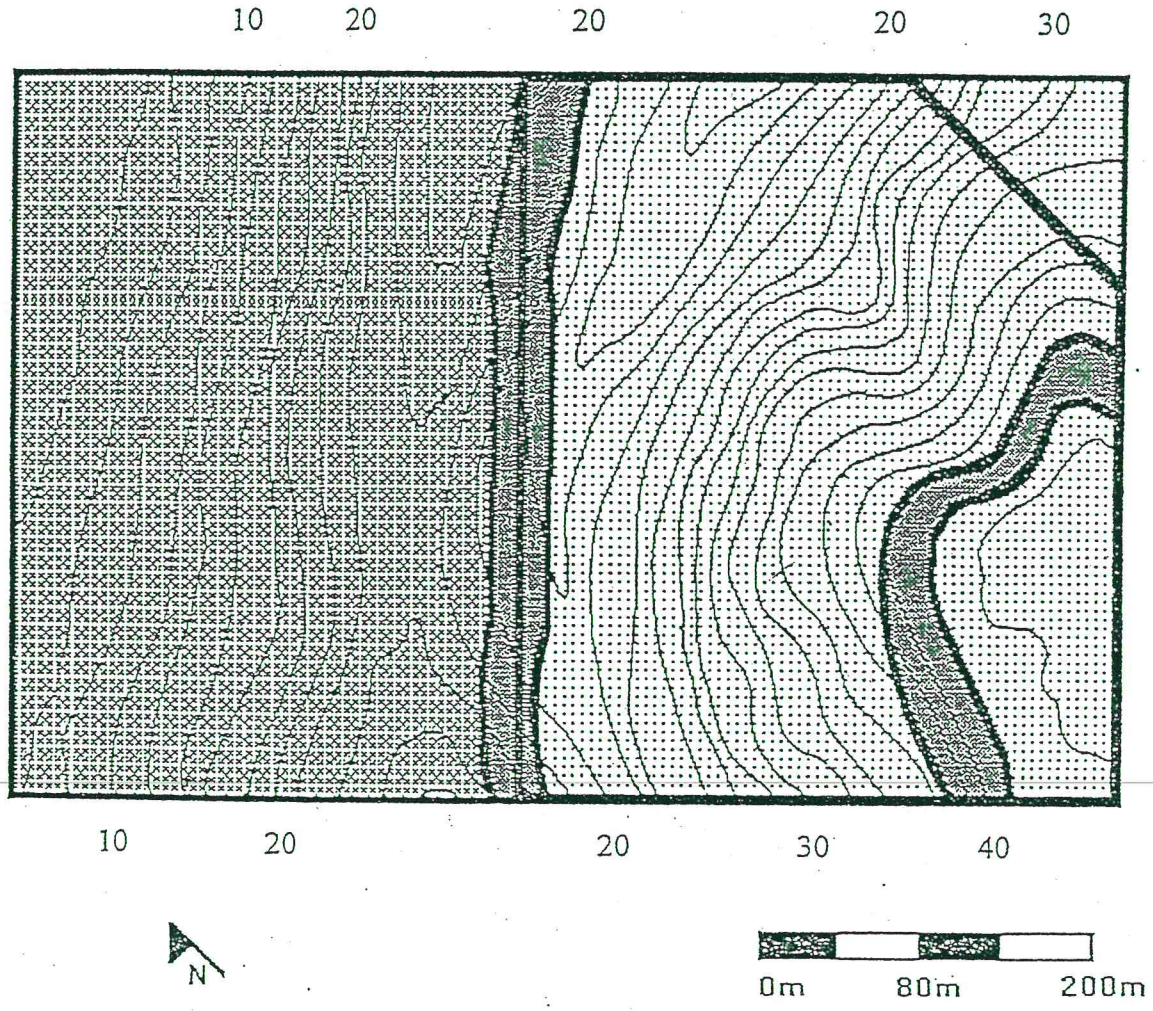
From these transects, it is quite clear that the entire property is protected by varying vertical comfort zones under both scenarios.

3.4 *Visual Sensitivity*

Visual sensitivity is the measure used to evaluate and quantify vertical comfort zones identified in the various transects. In this case, it classifies the property and surrounding area into three categories which form an accurate and reliable base for landscape development recommendations and decisions. The categories in this evaluation are:

- high visual sensitivity, which represents areas where both full forest structure and ground surface can be viewed from at least one of the selected public viewpoints;
- moderate visual sensitivity, which represents areas where only approximately half of the upper stratum canopy can be viewed from at least one of the selected public viewpoints; and
- low visual sensitivity, which represents areas where neither forest nor ground surface can be viewed from the selected public viewpoints.

The spatial extent of these categories is displayed on MAP 4.



From this map, the following can be summarised:

- 90 percent of the property falls into the low visual sensitivity category;
- 10 percent of the property falls into the moderate visual sensitivity category; while
- 0 percent of the property falls into the high visual sensitivity category.

MAP 4: Visual Sensitivity Categories for the property and surrounding area.

High Sensitivity

Moderate Sensitivity

Low Sensitivity

Property Boundary

4. Recommendations

With reference to both the landscape transects and visual sensitivity classification, the following recommendations can be made with confidence:

- any standard rural or residential development in areas identified as having low visual sensitivity on the property can in no way threaten scenic amenity;

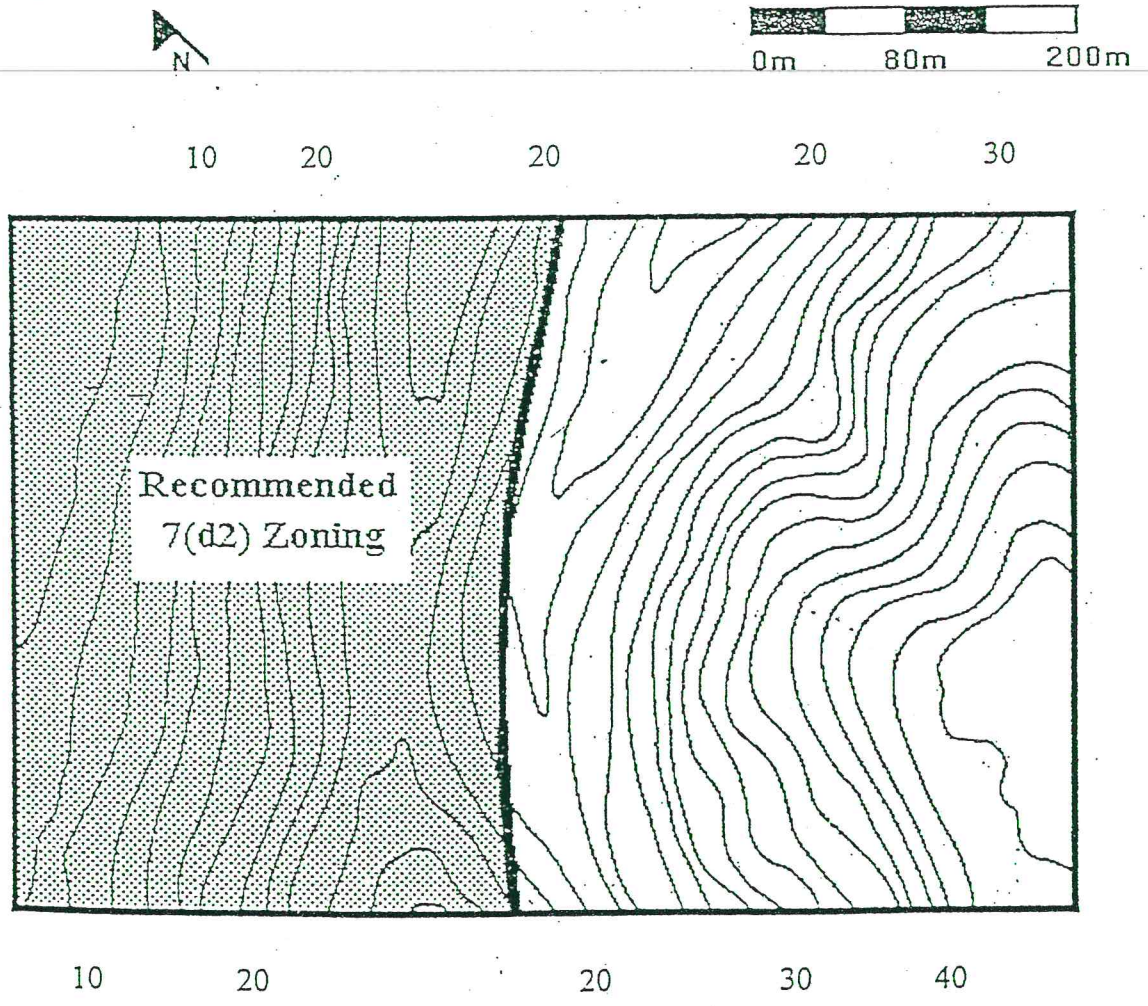
- preservation of the upper canopy in areas identified as having moderate visual sensitivity will maintain the important landscape characteristic of skyline continuity when viewed from the northwest, west and southwest;

- preservation of the upper canopy in areas identified as having moderate visual sensitivity will ensure at least a 20 metre vertical comfort zone over the highest parts of the property when viewed from the northwest, west and southwest;

- the existing 7(d2) zoning on the property is inappropriate as the entire area is visually protected by the ridge and forest cover approximately 50 metres to the west of the property boundary; and

- the eastern edge of the existing 7(d2) zoning on the property should be shifted approximately 350 metres to the west of its present location to run along the lower eastern side of the above-mentioned ridge (MAP 5), thus making the scenic protection zoning compatible with its desired function within the landscape and allowing fully protected land use activities to occur on its eastern side with no impact on scenic amenity.

MAP 5: Recommended 7(d2) zoning over the property based on the results of this assessment.



5. Further Information

The following provide more detailed information on the visual impact assessment technique used in this report:

1. Fabos, J (1979). *Planning the Total Landscape. A Guide to Intelligent Land Use.* Westview Press, Colarado.

2. Lucas, O.W (1991). *The Design of Forest Landscapes.* Oxford University Press, Oxford.

3. McHarg, I (1969). *Design with Nature.* Natural History Press, New York.

4. Steiner, F (1991). *The Living Landscape. An Ecological Approach to Landscape Planning.* McGraw-Hill Inc., New York.

5. Tillman-Lyle, J (1985). *Design for Human Ecosystems.* Van Nostrand Reinhold, New York.

6. Van Dresser, P (1973). *A Landscape for Humans. A Case Study of Potentials for Ecologically Guided Development in Upland Regions.* Biotechnic Press, New Mexico.

6. Credibility Statement

The author of this report has considerable experience in the fields of landscape and environmental survey, evaluation, management, mapping, design and planning. Examples of previous work include:

- Australian National University (1994). *Land Assessment in the Boorowa Region of NSW.* Prepared for the NSW Department of Conservation and Land Management.
- New Lands Consulting (1994). *Kioloa Property Development Strategy: An Outline of Development Options, Strategies and Scenarios for the ANU Research Station.* Prepared for the Edith and Joy London Foundation.
- New Lands Consulting (1994). *'Mountain View' Property Plan: An Outline of Development Options and Strategies for the 'Mountain View' Property Southwest of Moruya NSW.* Prepared for Hanson Holdings Pty Ltd.
- Murray-Darling Basin Commission (1994). *River Murray Floodplain Planning Guidelines: Camping Grounds and Waterfront Resorts.*
- Murray-Darling Basin Commission (1994). *River Murray Floodplain Planning Guidelines: Marinas, Moorings and Pump-Ashore Stations.*
- Murray-Darling Basin Commission (1995).. *Lake Hume Development Strategy: Environmental Planning and Development Guidelines.*
- Murray-Darling Basin Commission (1995). *Guidelines for the Preparation of River Management Plans Under Murray Regional Environmental Plan No.2 - Riverine Land.*

7. Services

New Lands Consulting offers a wide range of low cost consulting services. Examples include:

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