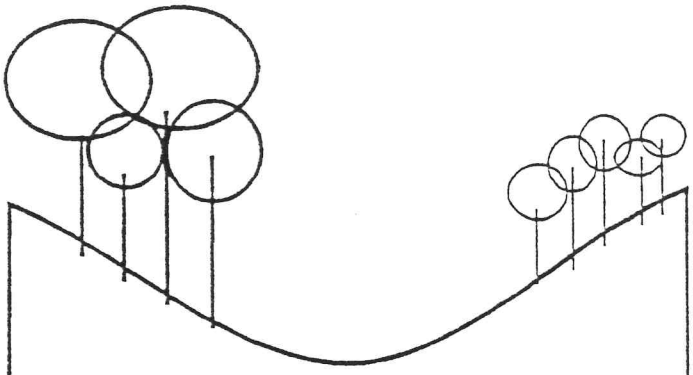
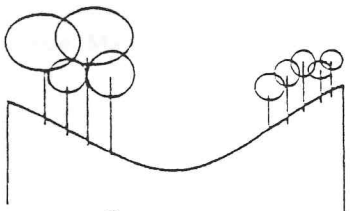


Guidelines for

Integrated Forest Harvest Planning & Design

Department of Conservation
and Land Management
Western Australia
1994

DEPARTMENT OF PARKS AND WILDLIFE



Guidelines for

Integrated Forest Harvest Planning & Design

INTRODUCTION

Changes to forest landscapes occur continually. Apart from natural disasters, natural changes are generally subtle and harmonious and are usually sympathetic to the perceived scenic or aesthetic qualities of the environment. Conversely, human imposed changes to landscape have a great capacity to subordinate desirable natural elements and can appear discordant and abruptly alien. The negative visual impacts of timber production activities are an example. Visual impact and loss in aesthetic quality often results.

The following guidelines address the broad scale and project level planning and design requirements of managing aesthetic forest values in an integrated resource or multiple-use forest management process for the Southern Forest Region. Integrated resource planning by definition involves the identification, evaluation and sensitive handling of the whole spectrum of natural and cultural resource values. Consequently, a multi-disciplinary approach is required if this planning process is to be totally effective. The role and performance of these strategic guidelines are linked to the abilities of further integrating landscape design capabilities at the specific forest operational site scale.

The prime purpose of these guidelines is to assist forest officers with the determination of the degrees of acceptable aesthetic change within forest landscapes. Wherever possible, visual landscape values must be sustained and or enhanced over space and time. These guidelines should be incorporated with other resource management objectives and associated specifications in the overall forest planning and design processes. The prime use will be in the areas of both Strategic and Operational planning and design.

Whilst these guidelines have been prepared for use in the Southern Forest Region, their application will be of importance for other Forest Regions in CALM.

KEY MANAGEMENT OBJECTIVES

1.0 *Ensure that all land uses on lands and waters managed by CALM are planned and carried out in ways that sustain the visual quality of the natural environment.'* CALM'S Landscape Management Policy No. 34.

2.0 *Manage operations in ways that sustain the beauty of the forest through the application of landscape planning and design principles.* Forest Management Plan 1994-2003.

LANDSCAPE MANAGEMENT PRINCIPLES

- At any one time, plan and manage for the maximum diversity and representation of intrinsic forest scenic quality across landscape character type areas. Do not simply manage for 'seen-area sensitivity' of the forest.

- Plan for harvesting in a manner compatible with the visual landscape management objectives specific to the locality or total visual landscape management (VLM) zone area.

The following objectives will be applied within the zones:

Visual Landscape Management Zone A :

VLM Priority- High
VLM Objective-Maximum Retention of Visual Quality:

- Avoid forest operations which lead to a major change in scenic quality in the short term.
- Focus on the maximum protection of all existing visual landscape features.
- The recommended landscape alteration level would be low, least accommodating to visual change.

Visual Landscape Management Zone B :

VLM Priority- Moderate
VLM Objective- Moderate Retention of Visual Quality:

- Landscape alterations may be visually apparent.
- Focus on the protection of the dominant existing visual landscape features.
- The recommended alteration level would be moderately accommodating to visual change.

Visual Landscape Management Zone C :

VLM Priority- Moderate
VLM Objective- Partial Retention/Enhancement:

- Landscape alterations may be visually dominant but should reflect the natural lines, forms, colours and textures of the surrounding landscape.
- Where possible, seek to optimise and enhance visual quality over the medium to longer term.
- The recommended alteration level would be highly accommodating to visual change.

Special Visual Landscape Management Area - Preservation:

VLM Priority- High
VLM Objective- Preservation:

- These preservation areas include those landscapes where visual values are of very high aesthetic importance and have equal priority with other critical natural resource values.
- The recommended alteration level for these areas allows for little more than natural change or very low impact changes which are carefully planned to accommodate and/or enhance the special visual qualities of the preservation area.

Special Visual Landscape Management Area- Rehabilitation:

VLM Priority- **High/Moderate.**
VLM Objective- **Rehabilitation:**

- Landscape alterations which have resulted from past management practices or natural events and do not satisfy the desired visual quality objective will require rehabilitation. This priority should be retained until the desired standard of visual quality is attained.

LANDSCAPE MANAGEMENT DESIGN PARAMETERS

The main harvest, landscape planning and design parameters are:

- distribution of harvest area in time and space
- scale of the harvest area
- apparent shape of the harvest area in the landscape
- Harvest area edge configuration and treatment

DISTRIBUTION OF HARVEST AREAS IN TIME AND SPACE

- Limit the amount of introduced change seen at any one time in any landscape scene. For best results, areas to be harvested simultaneously or consecutively should be located in dispersed parts of the landscape so that they are not seen together in a single view. This applies to views both of the foreground and of more distant landscape. Subsequent harvest in any view should then be delayed to allow for initial regeneration and greening of the previously harvested area. This will ensure that introduced changes in a scene occur over a period of time and remain subordinate to the existing natural character.

- Maximise the time between the harvesting of adjacent and surrounding harvest areas. (Fig. 4.1.1)

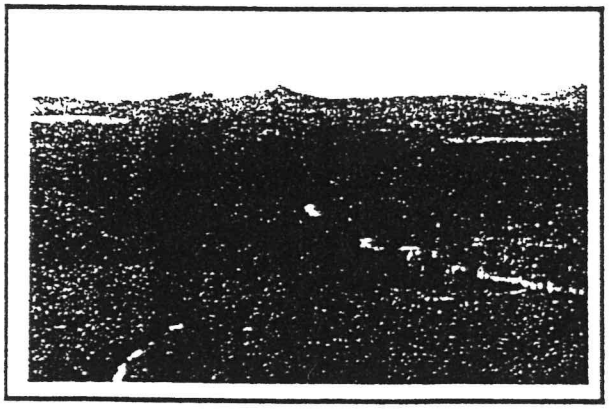


Fig. 4.1.1

Visual landscape change shown as a distribution over time and space. Note the retention of different sized forest areas for future harvests.

- The minimum cutting rotation length between adjacent harvest areas should aim to be 3 years. This will ensure changes occur over time and thus reduce the visual impact on the landscape. (Fig. 4.1.2)

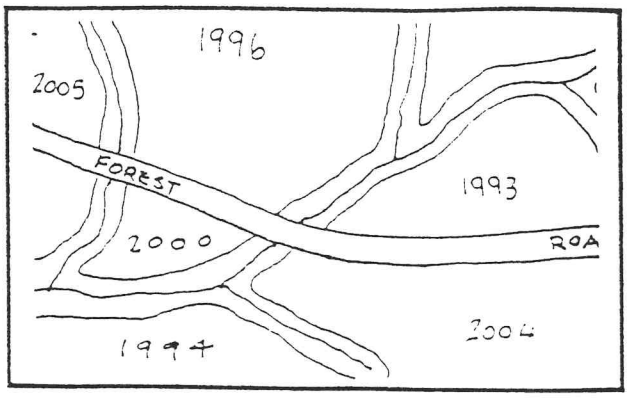


Fig. 4.1.2

The plan shows a mosaic of harvest areas distributed in time and space. Years denote time of harvest

- Within sensitive view sheds or areas of high scenic quality, sequencing of harvesting should aim to ensure that from any given observer point, no more than 2 active harvest areas are evident at any one time, and only one should be in the fore or middle ground distance zone. The forest area between active harvest areas should be maximised and be such an area as dictated by the landform. (Fig 4.1.3)

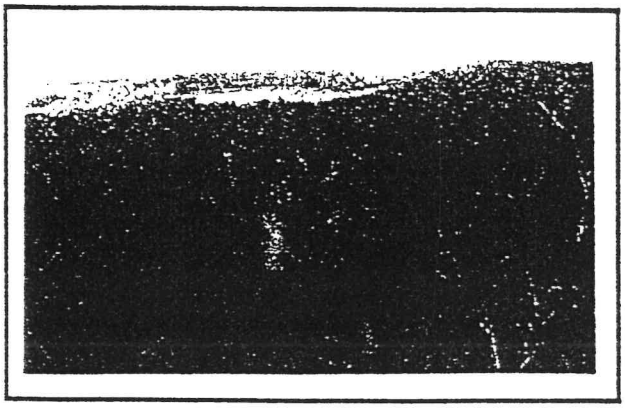


Fig 4.1.3

A view from Gloucester Tree looking toward a harvest area in the middle ground. The surrounding area is either regenerated or retained for future harvesting.

- The full range of harvest areas sizes in karri forest types, (0-80 Hectares) should be planned for in any one locality. Where clear felling is the mode of regeneration, plan for a *mosaic* of harvest area sizes in all distance zones. Harvest area mosaic patterns and configurations should borrow from existing forest gaps, or naturally occurring form, line, pattern and scale characteristics in the surrounding landscape. For example, forest/non-forest type boundaries (age, structure, specie type); landform, waterform and land-use patterns. In steeper country try to limit cutting to one or possibly two visually separate areas at any one time. (Fig. 4.1.4)

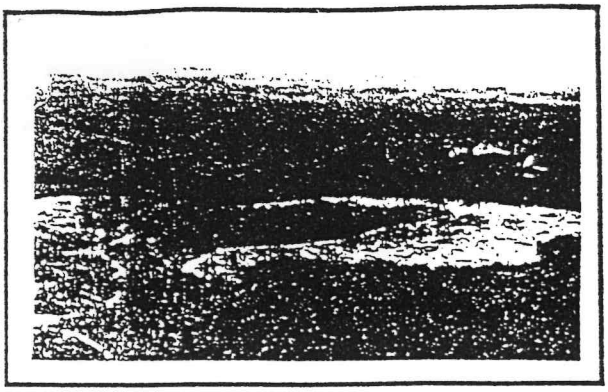


Fig. 4.1.4.

Landscape variety expressed through a range of harvest area shapes and regeneration ages.

- Initial harvest areas within a locality should be located in a low position within the landscape, and preferably should only be partially visible. Subsequent harvest areas should be dispersed in space and time. (Fig 4.1.5)

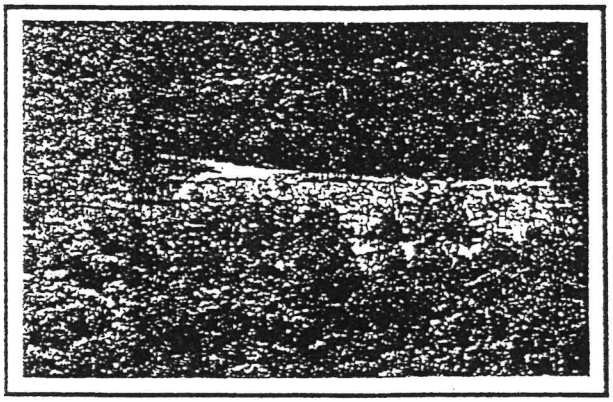


Fig. 4.1.5

The initial harvest area has been located low in the profile and partially obscured from a sensitive view point by the use of orientation and placement of exclusion zones.

- Harvest area gap sizes should be minimised in all Foreground Distance Zones for all Landscape Management Zones, for example 20 Ha or less (Zone A), 40 Ha or less (Zone B), and 80 Ha or less (Zone C). These sizes will depend on the landform characteristics-vegetation type, landuse patterns and scale etc.

- Schedule Harvest area/Gap sequencing from the rear or far Distance Zone of the landscape scene. Harvesting can also be scheduled from middle, to the rear, to front. The schedule of harvesting should take advantage of vegetative screening so that the operation is not visible until the last unit is cut. (Fig. 4.1.6)

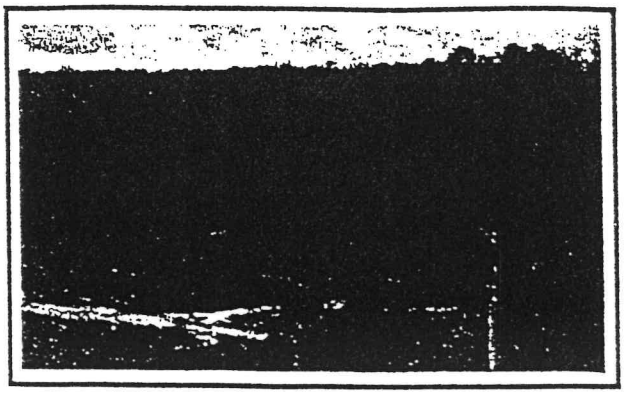


Fig. 4.1.6

Harvest scheduling between the background, middleground and foreground exposure zones.

- Harvest areas in any year should be spaced out throughout several compartments. This will visually disperse the harvest areas and reduce the overall impact, thus maintaining the visual character of the landscape.

- In sensitive view sheds, regeneration of harvest areas and landing areas should be completed as soon as possible and no longer than 2 years from the initial harvest entry.

SCALE OF HARVEST AREAS

- The scale of a landscape is defined by the size and character of landforms, vegetation and landuse patterns or variations within the landscape. Where little or no pattern exists naturally (as with the texture of even aged forest canopy), harvest operations can be related to the size and character of the landform. Thus, in broad, flat panoramas there is often scope for large harvest areas, whereas in small, enclosed landscapes and undulating topography, smaller harvest areas may be more appropriate. (Fig. 4.2.1)

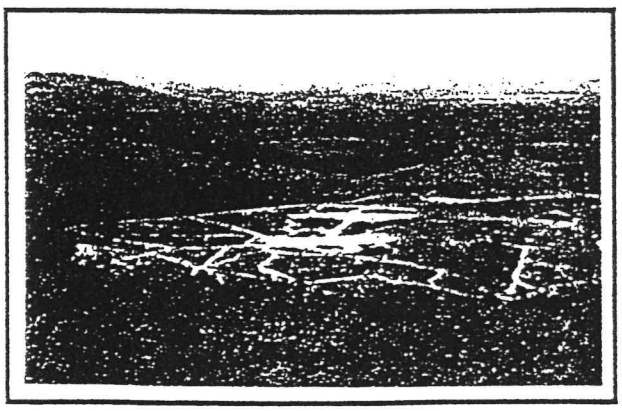


Fig 4.2.1.

The harvest areas in the foreground and middle ground are out of scale with the background harvest areas and the surrounding landscape.

- Scale can be found in the patterns in the landscape resulting from changes in vegetation and soils or in the presence of minor drainage catchment units. Essentially, introduced changes should be of a similar size to these existing patterns. (Fig. 4.2.2)

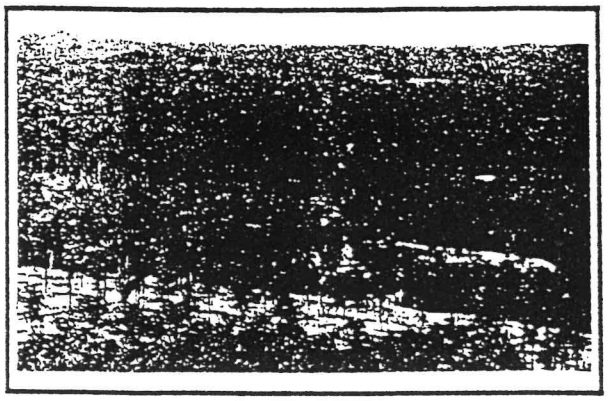


Fig. 4.2.2.

Two new Karri harvest areas borrow from the landform to fit in with the scale of the landscape.

APPARENT SHAPE OF HARVEST AREA

- This refers to the way a harvest area appears in the landscape when seen from a particular viewpoint. Existing natural patterns or shapes resulting from changes in vegetation communities or from areas of rock outcropping are valuable indicators to acceptable shapes for introduced changes. Harvest area shapes can also be guided by dominant ridge lines, skylines, drainage gullies, landform and land use patterns.

- Harvest area boundaries should not be continuously perpendicular to any given ridge line or contour. Harvest areas should have a natural shape, responsive to landform, folds in hills, skylines, the natural drainage patterns and shapes of the landforms. (Fig. 4.3.1)

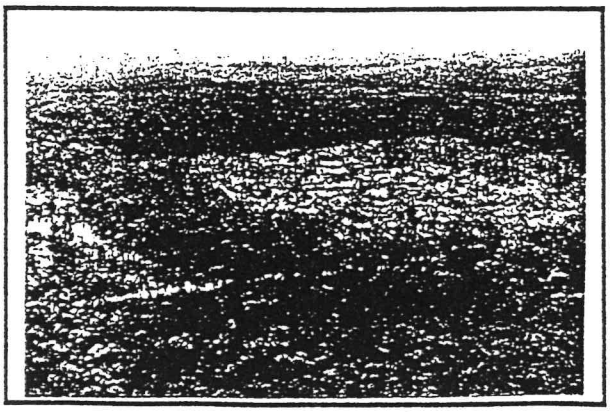


Fig. 4.3.1

Here visual impacts result from harvest areas being too square in shape, and where boundaries are perpendicular to the contour.

- Broad, flat panoramic landscapes can visually accommodate maximum size harvest areas/gaps. Small, enclosed, undulating and focal landscapes can support minimum size harvest areas/gaps. (Fig. 4.3.2)

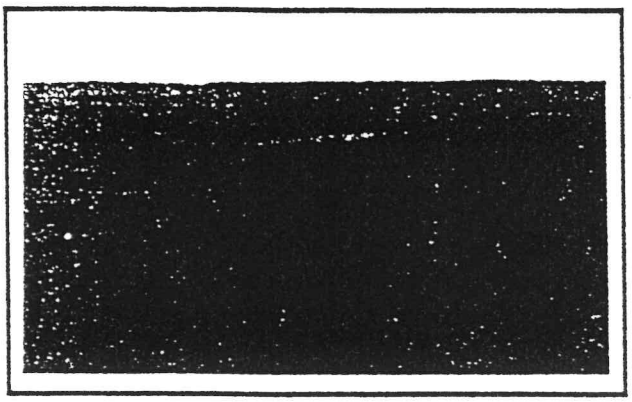
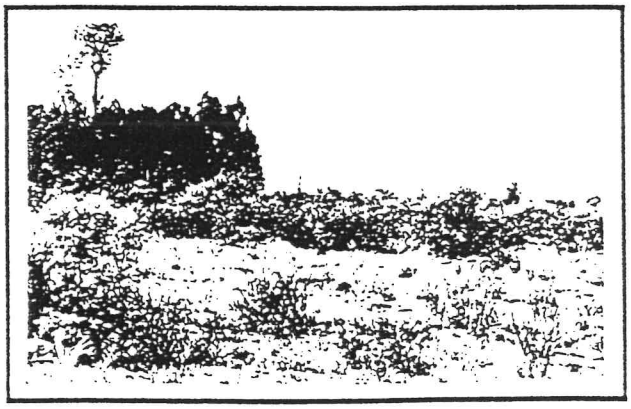


Fig. 4.3.2

Here the harvest areas are oriented to fit into the broad, flat shape of the surrounding landscape

- Avoid cutting across skylines, as this suggests that the harvest area continues over the hill and far-away. Skylines should not be cut directly across in the direction of the principal viewpoint, as the harvest area edges will remain clearly visible for many years. (Fig 4.3.3) If skyline cutting is necessary, arrange the harvest at an angle to the main viewpoint. Visual impacts are lessened if the harvest is along, instead of across, the skyline. (Fig, 4.3.4)



(Fig. 4.3.3)

Here the harvest areas have been cut over the skyline resulting in an over emphasis of the coupe size and contrast with adjacent forest edges.

Fig. 4.3.4.

This harvest area shows good orientation in the landscape and protection of the skyline.

- Harvest areas adjacent to agricultural lands should reflect the shapes and sizes of cleared openings in the surrounding landscape. More rectilinear shapes may be appropriate in such settings. (Fig. 4.3.5)

Fig. 4.3.5.

The shape of this harvest area reflects the geometric landuse patterns and relative landform strength of the surrounding landscape.

EDGE CONFIGURATION AND TREATMENT OF HARVEST AREA

- Efforts should be made to give an appearance to the harvest area edge which reflects the surrounding characteristic landscape. This usually means that the harvest area edges should be curvilinear to relate to the existing natural topographic and vegetation lines seen in the landscape. In some cases harvest area edges may be geometric to reflect surrounding land use patterns.

- Seek to minimise all visible harvest area boundary widths / lengths in foreground viewing areas (Landscape Management Zones A and B). This can be achieved by designing the shape of the harvest area with a narrow opening facing the primary view position. (Fig. 4.4.1)

Fig. 4.4.1

The opening of this Jarrah harvest area onto the road in this VLM "B" zone is 180 metres wide. The rear opens out to 350 metres wide.

- Avoid straight harvest area edges in native forest settings. Straight edges and rectilinear harvest patterns often highlight undesirable contrasts between mature trees and felled harvest areas. (Fig. 4.4.2)

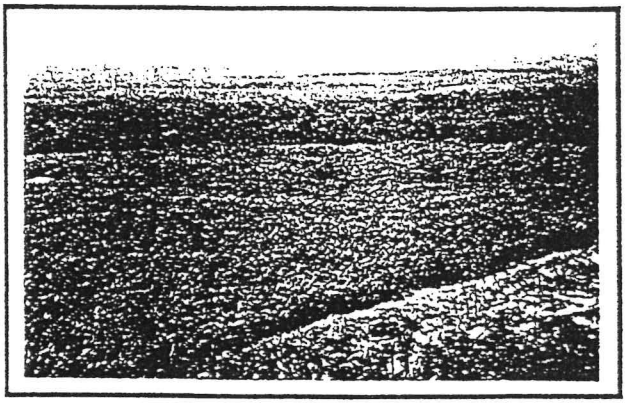


Fig. 4.4.2.

The straight line edges show the contrast between mature trees and regeneration of various ages.

SPECIAL AREAS

EXCLUSION AREAS

- These are areas set aside from harvesting and are often linked to natural lines and forms eg. rock outcrops and stream zones. Often, however, for silvicultural purposes and the protection of habitat, these exclusion areas are not often linked to such natural lines. It is important that the most natural position is found for these link reserves and that natural lines and forms are followed where these reserves need to be located. (Fig. 5.1.1)

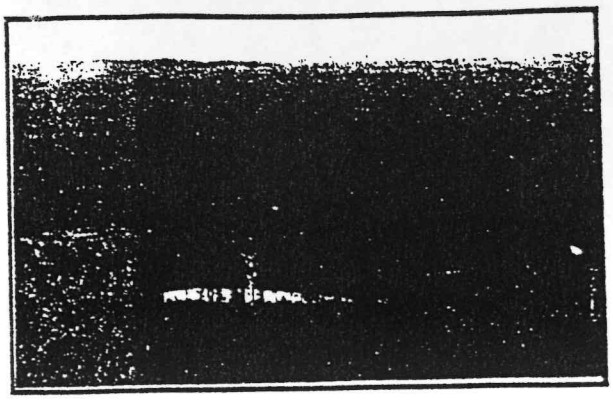


Fig. 5.1.1

Exclusion Areas can often be linked to other reserves to avoid, in this case, the solitary stand high in the landscape .

Fig. 5.2.2.

In this Jarrah harvest area, the PEA'S are linked to the TEA'S. The Habitat zone on the back of the cut over area is also linked to the harvest cell boundary.

RESERVES

- Areas of significant scenic and aesthetic quality shall form permanent exclusion areas (PEAS) and will remain free from harvesting activities. These boundaries should borrow from existing lines. This may be achieved by following one or all of these natural boundaries, ie.

  - soil types,
  - vegetation types,
  - contour lines
  - drainage patterns.

- PEAS (including 2 Ha (3,200 Ha) Mature Forest retention areas) should be continuous where possible, coincide with areas of high scenic quality, and be perpendicular to the primary viewing angles. Their shape and form should reflect the natural characteristics of the surrounding landscape and they should not be evenly sized or spaced over the landscape.

- PEAS should not be isolated from adjoining forest and non-forest areas, in particular on ridge lines and in other areas of visual and scenic prominence. For example, PEAS should not be surrounded by broken forested skylines, especially in areas with no vegetation backdrop.

- PEA's that are identified as Level 1 or 2 Road Reserves often are straight because these lines are parallel to the road alignment and cannot always follow natural lines. Where this occurs and the harvest area boundary is also the road reserve line, other PEA's and TEA's should be located to join these straight lines, where possible to maximise variation and to soften the line.

- Temporary exclusion areas (TEAS) should adjoin PEAS where possible, and maximise scenic quality representation. This allows continuity of the landscape rather than small broken units in isolation. These isolated patches are difficult to manage for many reasons other than landscape, for example regeneration, protection from fire and other natural phenomena like wind and future access for harvesting. (Fig. 5.2.2)

FINALLY

These guidelines will require levels of interpretation and training in the field and throughout the harvest planning process.

It is certainly not the intention to leave responsible staff alone now that these have been prepared, but rather further strengthen the integrated approach to harvest planning and design and to satisfy CALM's commitments to forest resource management.

These guidelines will be constantly reviewed, any suggested improvements will be most appreciated. Please contact you Business Unit Management or Planning, Recreation and Landscape Branch with any queries or requests for further information.

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