

### INTRODUCTION<sup>79</sup>

The rural sector is seeing dramatic changes in land uses, with forestry becoming a more attractive land use option in many areas. Forestry can have many social, economic and ecological benefits. These include soil protection, soil stabilisation, and habitat provision for flora and fauna. Forests can also provide important recreational resources. However, if not properly designed, forestry can also have adverse effects. These can include loss of views, landscape effects, effects on soil and water and adverse effects on indigenous flora and fauna.

The intention and purpose of these guidelines is to help raise awareness and understanding of these issues and to provide some guidance and direction in an effort to achieve the best, and most sustainable, compromise between forestry development, on the one hand, and protection of the environment on the other. Accordingly, the Council hope they will be used by prospective foresters in the design of their proposals. They will also be used by Council in assessing forestry proposals which require a resource consent as a restricted discretionary, discretionary or non complying activity.

These Guidelines are not intended to be a comprehensive set of standards but have been written to address the main issues to be considered as part of any forestry proposal. For more detailed and technical guidelines on sound forestry practices reference should be made to the “New Zealand Forest Code of Practice”, a copy of which may be viewed at the Council offices or obtained from N.Z. Logging Industry Research Organisation (Liro Limited) P.O. Box 147, Rotorua. In addition, the Canterbury Regional Council may also have standards and rules in relation to forestry. It will be important that forestry proposals are checked with them.

### 1. GENERAL

- a) Avoid locating forestry development where significant landforms or special landscape features, historic structures or sites, or archaeological sites may be visually lost or overpowered or even destroyed.
- b) Forests should not be located in areas where their existence will cause shading and icing on roads, houses or settlements.
- c) Exotic plantations should avoid the clearance or replacement of native vegetation and should not achieve canopy closure over native vegetation which met the definition of “indigenous vegetation” contained in this plan, at the time of the forestry plantings.  
(**Note:** see “Indigenous vegetation clearance” rules in the underlying zones.)
- d) Retain buffer zones clear of forestry plantings alongside streams and rivers. Buffer zones should be at least 10 metres in width and be vegetated to

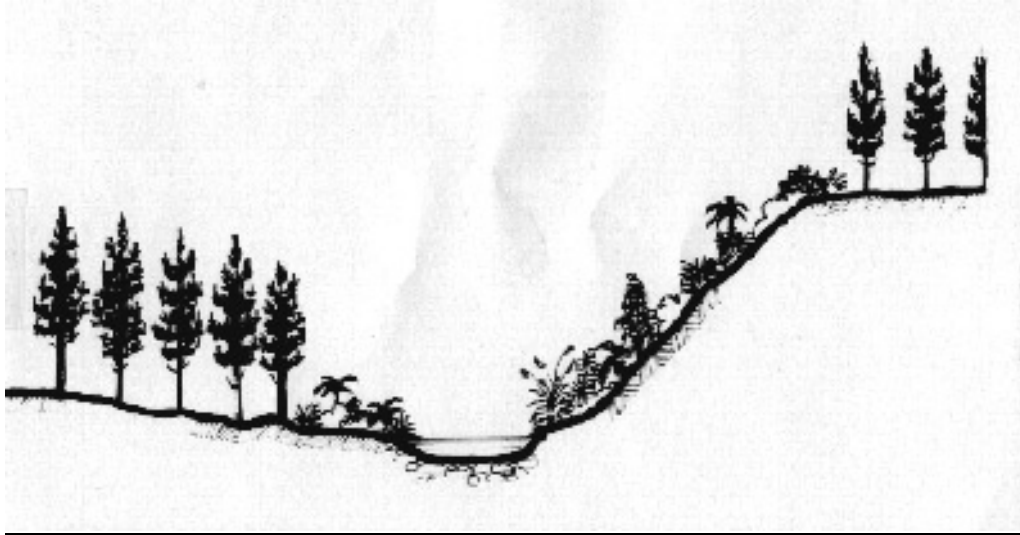
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<sup>79</sup> The forestry guidelines are subject to appeal which seeks the deletion of the guidelines (201B/05)

assist in maintaining stream health and enhance visual patterns in the landscape.

(Note: see the “Yard” rules in the underlying zones.)

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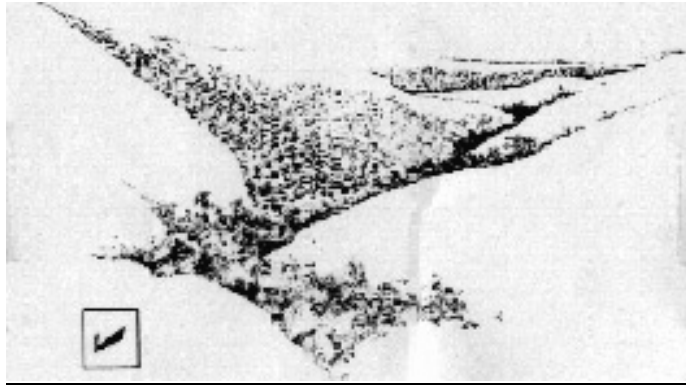


## **2. LANDSCAPE CONSIDERATIONS – SITING AND DESIGN**

- a) The scale of forest blocks should match the scale of the landscape. In expansive landscapes a large block may be compatible. In smaller scale, topographically diverse landscapes smaller blocks should be considered.
- b) Forestry blocks should be designed to be compatible with the shape of land-forms and vegetation existing in the landscape so that the visual unity of the landscape is maintained or enhanced. Examples of good design can be seen in the following illustrations.

Forestry blocks can also reduce the naturalness of a landscape and, therefore, should not be located in or close to areas designated as “Outstanding Natural Features” where they would detract from the high natural quality of the feature.

- c) Forestry should be informally linked to other vegetation to create an overall pattern or framework.



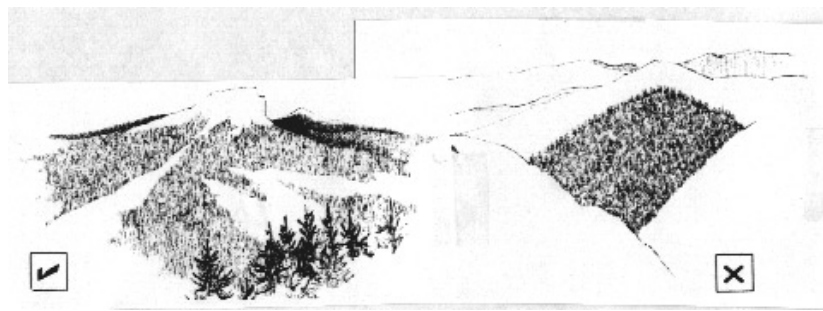
## APPENDIX IX FORESTRY GUIDELINES

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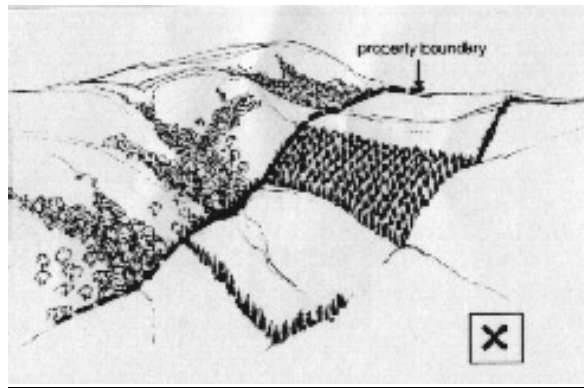
- d) In general, avoid locating forestry development on ridgelines where they form skylines visible from highways, roads or settlements in which the forestry plantings form a sharp boundary or shape which conflicts with the natural contours of the landforms in the area. Conversely, care needs to be taken, where a ridgeline is being left open, that plantings do not create a hard boundary or a “monk’s haircut” along the ridgeline. The following diagram illustrates sensitively designed plantation forestry which mimics a natural pattern of forest cover.



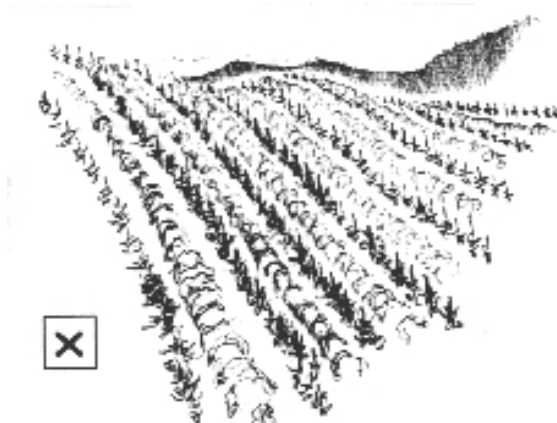
- e) Care should be taken that forestry plantings do not block views of significant landscapes, such as harbours, lakes and main ridgelines, from public viewing points, for example roads and reserves.  
**(Note: see “Summit Road setback” rules in the underlying zones.)**
- f) Because of the higher impact of development on ridgelines, avoid placing service roads in or near these locations.
- g) Forest blocks should be shaped so that their borders are visually compatible with the dominant lines in the landscape.



- h) Plantings should follow landform features and complement neighbouring sites. Where a property boundary cuts across such a feature, work out with the neighbour how the planting can be continued along the feature.



- i) Ideally, areas of existing riparian trees, bush and wetland should be retained and restored in sufficient width to maintain ecological functions, and the visual pattern of the landscape. On steeper land retention of these areas may also be beneficial in maintaining land stability and controlling water run-off.
- j) If planting rows on a hill, run rows along the contour around the hillside. Staggering rows reduces their visual impact.
- k) Avoid planting differing species in a manner so that their differences result in strong lines across the landscape. An example is the planting of alternative rows of deciduous and evergreen trees.
- l) Avoid locating forestry in areas whereby the forest may restrict established vistas from roads or settlements.



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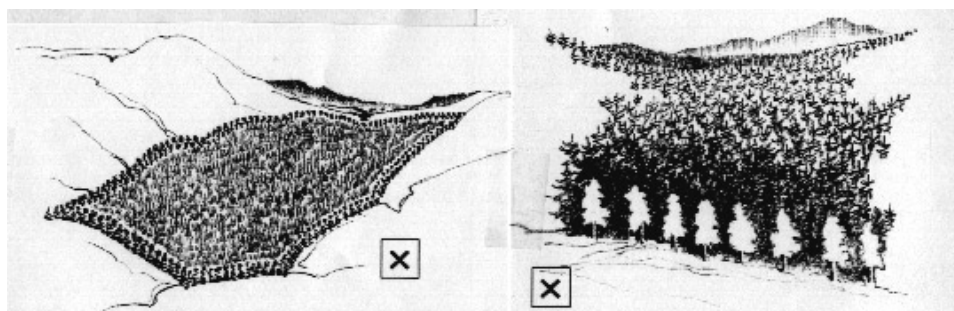
### **3. LANDSCAPE CONSIDERATIONS – EDGE DESIGN**

- a) Edges of forestry blocks should be softened to create a natural transition from forest to pasture. Avoid straight, sharp edges and uniform planting. Edges can be softened with wider spacings.

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- b) Avoid bordering forestry with a narrow fringe of ornamental trees, particularly when these are of a significantly different colour.



- c) In monocultural plantations, edges can be softened by reducing the pruning of trees on the outside of the forestry block.



- d) In mixed species forestry, put lighter, more rounded and open species near the edges.



- e) In locating forestry development along shorelines, ensure that edges of planting are sympathetic with the linear characteristics of the shoreline.

- f) Decrease the density and vary the spacing of trees on edges around settlements in order to provide a visual transition between them and the forest.

### **4. ESTABLISHMENT PROCEDURES**

- a) Firebreaks should be aligned to complement existing lines in the landscape and, where possible, run parallel to them. Firebreaks can outline individual forest blocks and should be located and aligned so that the resulting shapes are harmonious.

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- b) Consider using green fire breaks such as the planting of lucerne and other legumes which have the ability to provide green cover, fire breaks and control of noxious weeds.
- c) The application of pesticides by aerial or mechanical ground-based operation should comply with the "Code of Practice for Use of Pesticides in Forest Operations" (NZFOA, 1991) to avoid:
  - drift onto crops or non-target species, and
  - contamination of waterways.
- d) Burning as an established practice is discouraged because of its adverse effects on soil and water quality. Where it is employed burning should be carried out with great care to avoid spread.

### 5. ROADING/TRACKING

Potentially, roading and track construction can have high impacts on landscape and soil and water values. Inappropriately located or constructed roads can create highly conspicuous and conflicting visual elements in the landscape. With sensible design and location, tracking and roads can form an acceptable part of a working environment. Care must also be taken to ensure that roading does not lead to excess road spoil or siltation entering waterways. The following points should be kept in mind when designing roading and tracks:

- a) If possible keep roads off visually conspicuous faces.
- b) Keep road locations as low as possible across visible faces.
- c) Construct narrow roads, sufficient for planting access, then upgrade once screening develops from forest growth.
- d) Remove excess material by end-hauling to minimise colour contrast from side casting.
- e) Revegetate visible cut and fill surfaces to reduce colour and line contrasts from exposed subsoils.
- f) Generally, roads should not be located in gully bottoms and gully crossings should be minimised.
- g) Locate roads a safe distance from streams and gullies. Runoff from roads should not feed directly into gullies or streams, but should be filtered through vegetation or discharged safely. Where steep side cuts cannot be avoided, ensure adequate cross formation drainage flows onto stable or protected outflow areas, not soft fill.
- h) Locate tracks and firebreaks to minimise the possibility of debris entering permanent streams.
- i) Keep earthworks clear of steep drop offs and watercourses.

- j) Do not form extraction tracks directly down towards streams where runoff may go directly into the stream.

## **6. LAND PREPARATION**

### **V-Blading/Line Raking**

- a) Operate on the contour where possible, to minimise runoff concentration down the lines.
- b) Leave undisturbed strips at intervals on downhill lines to trap sediment.
- c) Leave an undisturbed strip beside waterways and wetlands to filter runoff.

### **Other Operations**

- d) Work along the contour where possible.
- e) Leave undisturbed strips along waterways and beside wetlands.
- f) Limit the length of downhill runs and provide breaks of undisturbed land to trap sediment.
- g) Use roller methods for crushing where possible, especially on steeper slopes, provided ridge tracking only is used for access.
- h) Align windrows of slash along the contour on sloping land to provide a physical barrier to sediment flow.
- i) Development of unstable hill slopes should not occur where the removal of vegetation, the building of roads and tracks and ancillary drainage systems, and/or the storage and transport of logs would promote mass movement.
- j) Forestry should not occur in any area where vegetation clearance is likely to cause accelerated soil erosion.

## **7. HARVESTING**

The Council recognises that the harvesting and harvest roading stages of forestry have the potential to have significant adverse effects on soil and water quality and the landscape.

- a) On ridgelines, logging should stop short of the ridge or carry over it in an alignment sympathetic with the ridge. Avoid cutting along the ridgeline so that trees are silhouetted against the sky. In addition, the vertical ridgetop



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- edge on either side of a clear cut can be avoided by running the setting edge across the ridge at an angle to the main view.
- b) Special care should be taken when logging blocks in the vicinity of “Interim Coastal Protection Areas” and “Interim Outstanding Natural Features and Landscapes Protection Areas” to ensure that logging has no effect on the character of the adjacent landform or feature.
  - c) The shape and size of a clear-fell or coppiced area should follow similar design principles to those for planting, by reflecting the landform pattern and scale of the landscape to avoid introducing unnatural form and line impacts. This can be achieved by using natural landscape features such as terraces, ridges, gullies, fans, basins and toe slopes as setting boundaries.
  - d) Avoid felling into or across waterways where possible.
  - e) Remove debris from waterways.
  - f) Retain streamside vegetation where possible.
  - g) Keep machinery away from, and out of, waterways where possible.
  - h) Consider use of full suspension cable hauling for log extraction over waterways and indigenous vegetation and on steep slopes where dragging of logs would lead to potential erosion and damage to the waterway or vegetation.  
(Note: “Significant indigenous vegetation” is subject to protection under the District Plan and must not be damaged by land use activities.)
  - i) Reduce stump removal to a minimum, especially on steep slopes where runoff could lead to erosion.
  - j) Special care should be taken during harvesting, around areas of significant indigenous vegetation.

### **8. WILDING CONTROL**

The potential exists, if a greater area of the District is planted in forestry, that certain areas may be at risk from wilding spread. A number of factors are important in determining the risk of tree spread. These include the species to be planted, surrounding land uses, and the siting of the plantation in relation to the dominant wind for the area. The following table should be used to calculate wilding tree spread risk. A high risk score may mean changing the species to be planted, the location, or the surrounding land uses.

## Calculating Wilding Tree Spread Risk From New Plantings

### 1. Species

**(a) Spreading vigour varies with species:**

- Radiata and muricata pine ..... 1
- Ponderosa pine and larch ..... 2
- Corsican pine and Douglas fir ..... 3
- Scots pine and Lodgepole pine (P. contorta) ..... 4

Enter score (1, 2, 3 or 4) here

**(b) Palatability:**

- Radiata and ponderosa pine ..... 1
- Lodgepole pine and larch ..... 2
- Scots pine and Douglas fir ..... 3
- Corsican pine ..... 4

Enter score (1, 2, 3 or 4) here

### 2. Siting

- Flat (<10°) sheltered, or slopes facing NE to SSW ..... 1
- Flat (<10°) partially exposed to N and W ..... 2
- Flat (<10°) fully exposed to N and W ..... 3
- Take off site, i.e. ridgetops, on or at base of slopes (>10°) or undulating land fully exposed to N and W ..... 4

Key: < less than  
> greater than

Enter score (1, 2, 3 or 4) here

### 3. Downwind Landuse

**(a) Within 200m:**

- Developed pasture/regular mob stocking (sheep) or closed canopy scrub/forest ..... 1
- Semi-improved grazing/occasional mob stocking ..... 2
- Extensive grazing only ..... 3
- No grazing ..... 4

Enter score (1, 2, 3 or 4) here

**(b) Within 200m-400m OR if 3 or 4 scored in "Siting", within 200m-2km:**

- Developed pasture/regular mob stocking (sheep) or closed canopy scrub/forest ..... 1
- Semi-improved grazing/occasional mob stocking ..... 2
- Extensive grazing only ..... 3
- No grazing ..... 4

Enter score (1, 2, 3 or 4) here

### SCORING RESULTS

- A score of 12 or more means high spread risk.
- A high risk is also likely if a score of 3 or 4 in "Siting" is followed by a 3 or 4 in "Downwind Landuse" (a) or (b).
- A high risk does not necessarily mean that tree planting is ruled out. A change of species, or siting, or downwind land management can significantly lower spread risk.

Prepared by N Legard, NZFRI Ltd, Rangiora, for Canterbury Wilding Tree Advisory Group 1993.