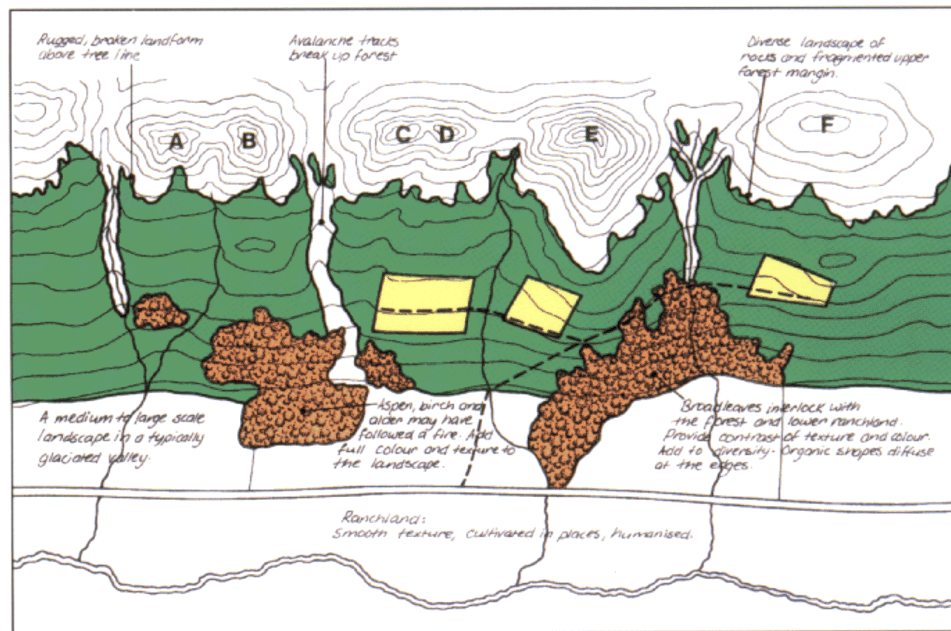
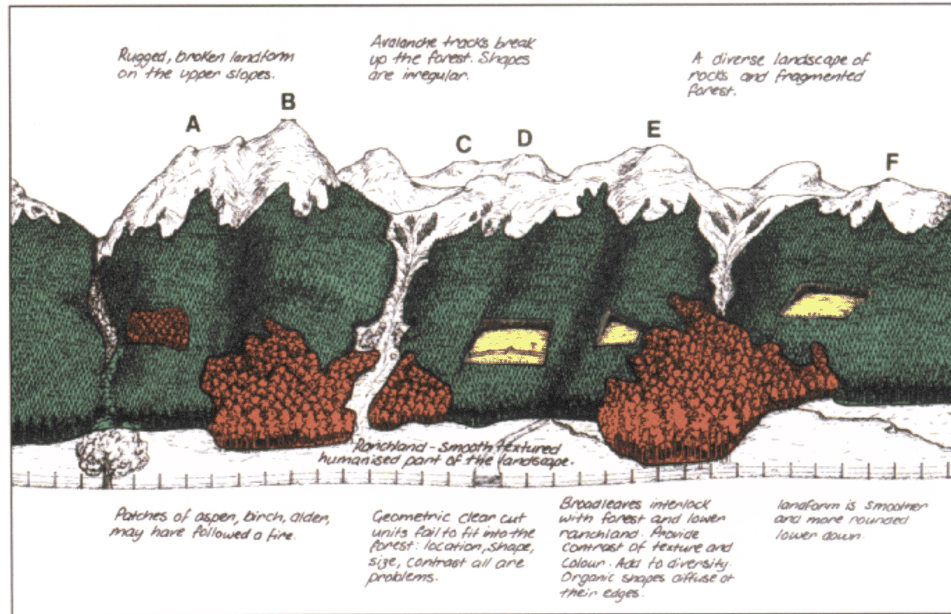


Figure A4.2 Landscape feature analysis in perspective and plan view (from the *Visual Landscape Design Training Manual*, 1994).



Appendix 5

Digital terrain model presentation criteria

The following information should be included with or shown on each digital terrain model plot:

- Title (e.g., “Digital Terrain Model of . . .” or “Perspective view of . . .”)
- Geographic area name (e.g., Lake X, Highway XX)
- Name and/or number of viewpoint used to produce plot
- Viewpoint UTM co-ordinates
- Elevation of viewpoint above ground (normally 1.6 m)
- Licensee name
- Licensee and/or cutting permit number
- Existing cutblock or road (including numbers)
- Proposed cutblock or road (including number)
- Average tree height used for forest cover
- Lens size (Ministry of Forests recommends 50 mm)
- Direction of view angle in degrees (centreline of vision cone)
- Vertical viewing angle (degrees)
- Vertical exaggeration (Ministry of Forests requests none)
- Name and telephone number for person who produced DTM
- Date plotted

Notes:

- The recommended DTM plot size is 11 x 17 inches. Each DTM plot should be accompanied with a plan-view map.
- A photograph taken from the same viewpoint location as the DTM plot should also be attached to the plot, especially if used for public presentation.
- The plan-view map DTM plot and photograph(s) should all be oriented in the same way in relation to each other.
- If colour codes are used on the plot instead of labels, then a colour-coded legend should be used to differentiate between water features, existing and proposed roads, and existing and proposed blocks.

Basic features or data to show on the accompanying plan-view map:

- Number of topographic map
- Contour lines with roads and water features
- Scale of map; 1:50 000 or larger scale preferred (e.g., 1:20 000 or 1:10 000)
- Existing cutblocks or roads
- Proposed cutblocks or roads
- Viewpoint location used for the DTM (shown on the map with a symbol) with centre and cone of vision lines matching the perspective view.
- Visual landscape inventory data, such as visible area and visual sensitivity unit (VSU) boundaries, VSU label including number and ratings, and visual quality objective.

Appendix 6

Choosing an appropriate visual simulation presentation technique

Choose the appropriate presentation technique for the perspective view based on:

- complexity of the proposed operation(s);
- number of viewpoints and visual sensitivity class (previously visual sensitivity rating);
- level of public involvement;
- silvicultural system proposed; and
- number and location of landmarks easily identified on both topographic map and photographs.

1. Sketching

- Freehand sketching requires some practice and is generally used only in low-risk situations where accurate representation of the proposed operation is not critical. A more accurate and effective approach is a photo overlay.
- In the field or based on photographs, record on sketches the main forms and lines of the landscape and some of the variety, such as forest type change, rock outcrops, and existing openings.
- Estimate and draw the shape and position of the proposed operation.
- Develop sight lines from specific viewpoints to increase reliability and accuracy.
- Refer to the Ministry of Forests booklet *An Introduction to Graphic Communication* (1994) for details on how to sketch. This booklet is available from the Forest Practices Branch upon request.

2. Photographic overlay

Acetate overlay:

- Photographic overlay is relatively easy to apply, but requires backup maps and sight-line information to be reliable and accurate.
- Place an acetate overlay on top of photograph and locate the proposed operation on the landscape by matching landscape features, such as rock outcrops, meadows, and timber type boundaries, on photographs with the same features observed in the field.
- Refer to Appendix 3 for photographic presentation criteria.

DTM overlay:

- Take a photograph from the important viewpoint(s) used in the assessment.
- Develop a simple wire-frame DTM from the photo locations using the same parameters as for taking the photograph (i.e., same lens size and same horizontal and vertical viewing angles).
- Plot the DTM to match the size of photo used; alternately reduce the wire-frame DTM onto acetate overhead material using a photocopier.
- When the reduced DTM matches the photograph perspective, overlay DTM acetate on top of the photograph and colour the proposed operation to match as closely as possible the final appearance.

This simulation should provide an accurate representation of size, shape, and location of the proposed operation relative to the photo image.

3. Computer simulations

- Computer simulations are usually necessary in situations where: the terrain is complex or indistinct; a high public concern is evident; or multiple proposals are visible from one or more viewpoints, or one proposal is visible from more than two viewpoints.
- Computer simulations are also used to predict forest operations over several passes or over an entire rotation period.

Digital terrain models:

- Import TRIM data and digitized or scanned contour map data to generate a DTM for the area being evaluated.
- Digitize all existing and proposed cutblocks and roads.
- Produce simulations from the same viewpoint previously used in the field for taking photographs. A stereoscopic pair can be produced by offsetting the viewpoint. An approximate offset of 100 m per km of distance from the target will provide an easy-to-view, three-dimensional image. Several offsets may be necessary to produce the desired image.
- To simulate a cutblock, some software programs add trees to the model surface while others counter-sink the block into a rendered surface. Whichever process is used, it is necessary to specify the average height of the trees in the vicinity of the proposed block. This information can either be measured in the field or derived from forest cover inventory data. After a visual simulation has been completed, it should be labelled with information identified in Appendix 5 (i.e., digital terrain model presentation criteria).

Digital photo retouching:

- Digital retouching allows the merging of DTM output with scanned photographs. The final product realistically simulates the appearance of proposed operations.
- This technique may be required in high-sensitivity areas and when public presentations are required.

Note: Not all visual simulation techniques are required for all visual impact assessments.

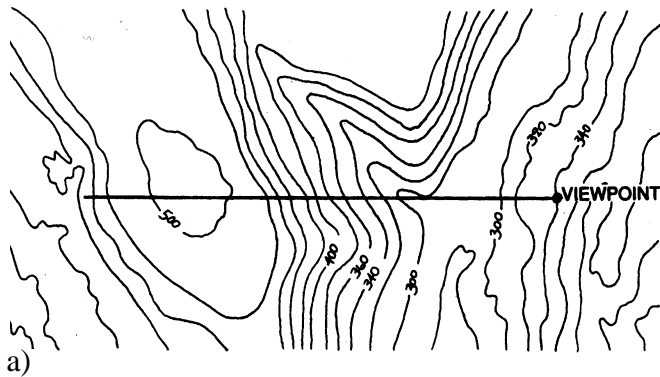
Appendix 7

Sight line plotting instructions and presentation criteria

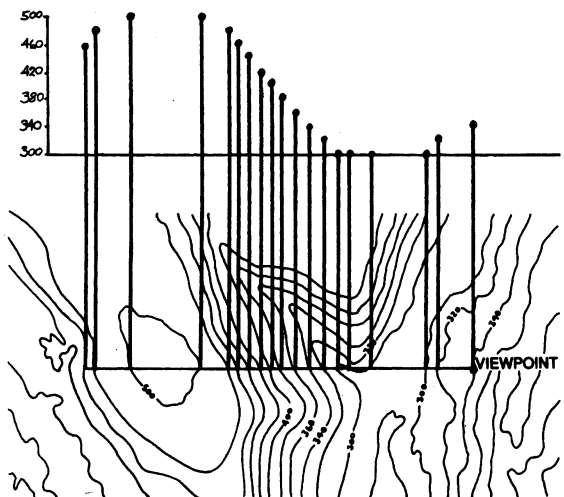
Sight lines

- Using the best topographic map scale available, plot sight lines to determine the areas visible from each viewpoint. Sight-line plots determine the extent of visible alteration(s) from viewpoints; the sight-line map (topographic map) shows the direction of lines of sight from the same viewpoints.
- Based on the sight-line plots, indicate on the topographic map the portion(s) of the proposal(s) that would be visible.
- Plot sight lines (also called “topographic sections or profiles”) using the best scale available (preferably at 1:10 000 or larger) from each important viewpoint.
- Label each sight-line plot with the viewpoint number, opening number, sight line number, and scale of the topographic map used for the plotting.
- Provide an elevation bar on the upslope end of the profile and a distance scale on the horizontal bar (see the following example).
- Identify the start and end of the opening with a tree representative of stand height class (see Figure A7.1).
- Indicate road locations within the block.
- Shade in the visible area and transfer these data onto the topographic map.
- Minimize vertical exaggeration; the recommended vertical exaggeration is 1:1–1:1.5.

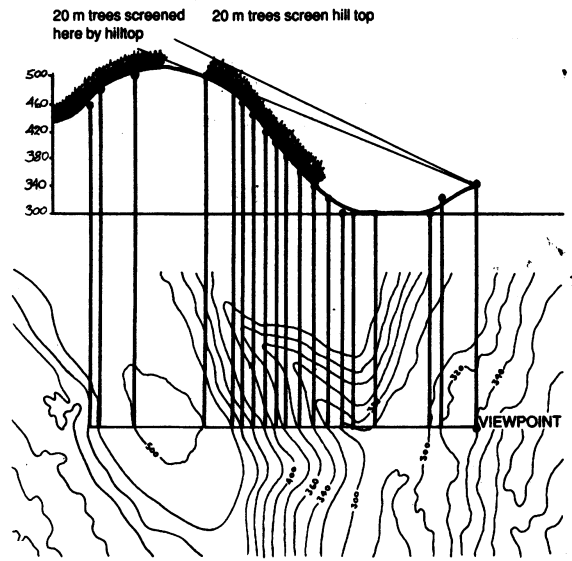
Figure A7.1 Plotting a sight line.



a)



b)

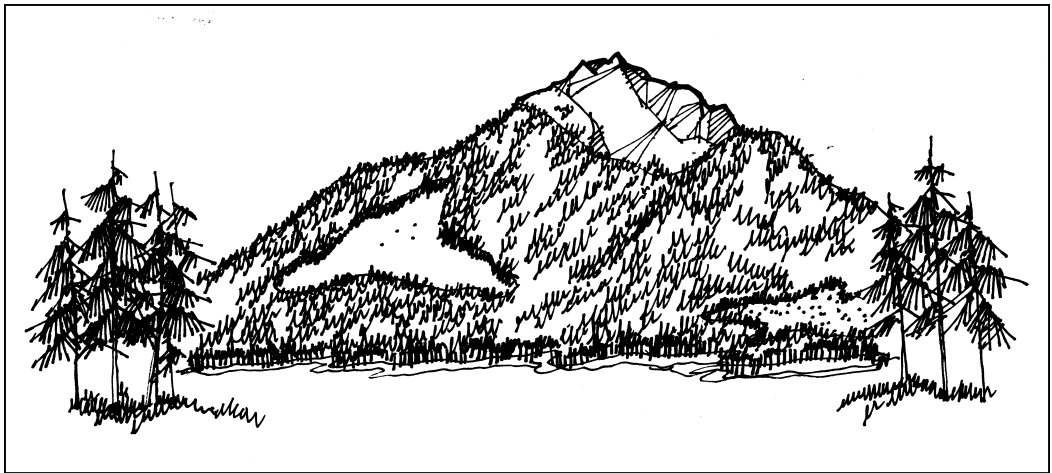


c)

Making topographic sections from a contour map. (a) Draw line of section on map from viewpoint across the relevant part of the terrain. Project lines at right angles from where the line of section cuts the contour to the corresponding heights on the sectional drawing above. (b) Connect the points on the section and draw line(s) of sight from the viewpoint. (c) Illustrate tree heights at appropriate age intervals as required.

Appendix 8

Calculating percent alteration in perspective view

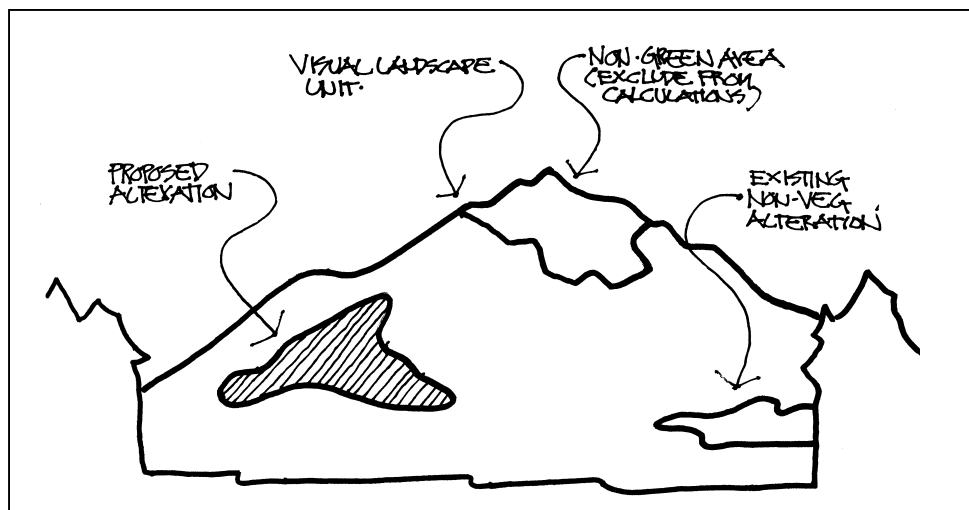


Proposed Alteration: Visual Simulation

Step 1. Using the visual simulation output produced, define and outline the visual unit or landform. Exclude those portions of the landform screened by vegetation and non-green areas, such as mountain tops, rock, snow, and ice.

Step 2. Measure the visible unit or landform (e.g., middle ground landscape unit = 37.5 cm^2).

Step 3. Measure visible ground area of existing alteration that has not yet achieved visually effective green-up (e.g., current alteration = 1.8 cm^2).



Step 5. Add existing non-VEG alteration and proposed alteration figures together to get total area altered.

Divide this figure into visual landscape unit figure to get percentage of unit altered (e.g., $[(1.8 + 4.7) \div 37.5] \times 100 = 17.3\%$.)

Note: Repeat the above calculation for each of the viewpoints selected for design and simulation. Enter the percent alteration figure derived from each viewpoint on the visual impact assessment summary form (Appendix 2).

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