

## Management of Skylines in Dry and High-altitude Forests

### Viewing Sensitivity

Native dry-sclerophyll and high-altitude forests and woodlands of Tasmania are mostly located in the Landscape Character Types of the *Eastern Hills and Plains* and the *Central Plateau*. These forests provide distinctive and highly quality scenery and occur widely in a variety of landscapes from flat and rolling topography, through to rounded hills and ridges. Forested skylines are a key feature of this landscape and appear in most areas as continuous, flowing, even-textured and non-transparent. This is an accepted distinguishing scenic feature, which the viewing public readily comes to expect.

Tall oldgrowth skyline forests have strong scale in the landscape due to their height relative to the moderate topographical relief of the hills. As well, they usually have wide tree spacing. Together these characteristics increase their visual sensitivity and vulnerability to harvest changes.

Even with less sensitive moderate sized trees, harvesting can disturb such skylines and easily result in dominant long lasting effects on the existing landscape character.

Skylines are inherently visually prominent due to the high tonal contrast between the bright open sky and the dark forest canopy, particularly when lighting is from behind or during the long twilight periods of summer. The eye is unconsciously drawn up ridgelines and slopes to these high contrast parts of the landscape. In addition, viewers commonly expect a simplified layout or appearance of visual elements (i.e. line, form, colour and texture), especially where this is the established form. Even small changes or deviations in these visual elements will result in observable effects that detract from the scenic quality of skylines and the landscape as a whole.



**A long-lasting skyline impact conflicting with the visual character of the otherwise apparently-natural scene.**

*Photo—Vanessa Thompson, FT*

Naturally established skyline forest with non-transparent, continuous and consistent appearance can readily be disrupted visually by excessive harvesting. Effects such as exposed ridgeline ground surface through a coarse silhouette of gaps between remaining trees disrupt the flowing line of the skyline. Such

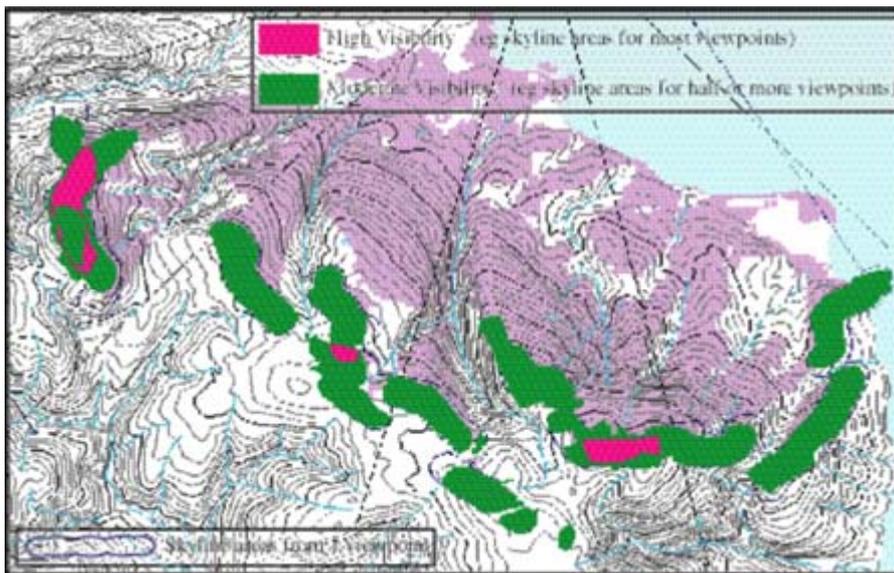
changes appear immediately out of place and inconsistent with surrounding areas. These may easily be seen from a great distance and detract from the scenery at the local and sub-regional levels.

## Forest Management

Due to potential for disturbance, retention of skyline character of dry forests has been recognised by the forest industry in Tasmania as a paramount issue especially. It is also a key issue now being considered for urban landscape planning by municipal councils (*Planning Guidelines for Urban Skylines and Hillfaces*, 2000, DPIWE, Hobart). The map below forms a stage in the visual analysis on Mount Nelson. Harvesting of skyline forests presents some challenge as even small operations can easily compromise an

otherwise scenic and balanced view giving a noticeable, discordant impact. Fortunately, such impact can be predicted and harvests can be planned to almost completely avoid disturbance.

The best approach therefore is to set a goal for management of skylines is to maintain the existing visual character. This will usually mean retention of an even textured, continuous forest silhouette, and avoidance of any increased transparency (i.e. maintain opacity).



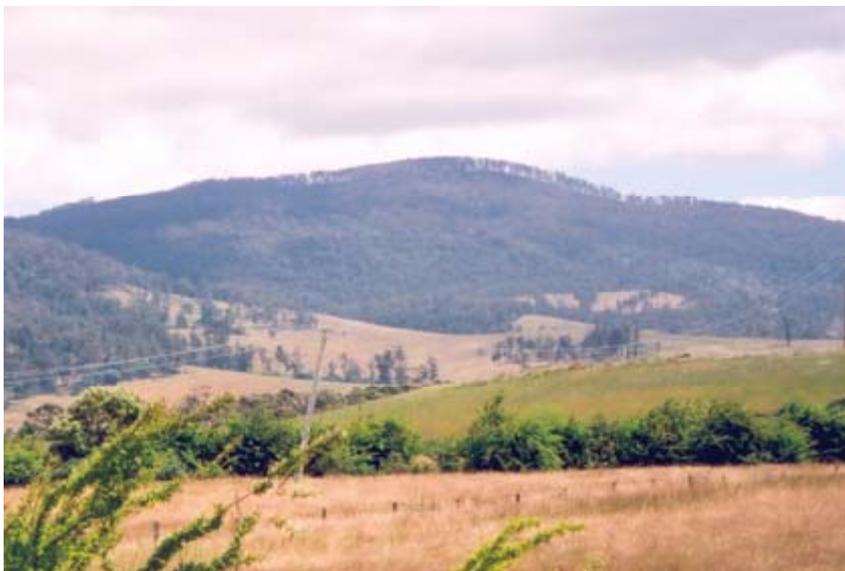
**The analysis map showing combined skyline zones from more than one viewpoint. Sensitivity ranges from High (red) to Moderate (green) and the visible area is in purple.**

Courtesy — DPIWE, Hobart

## Use of Basal Area guidelines

Partial harvesting of dry-sclerophyll forest is the usual forest management practice throughout the state. Past experience has shown that a common practice is to harvest down to between 10 and 12 m<sup>2</sup>/ha. BA (as with Seed tree retention and Shelterwood regimes etc.). When seen in profile

along a skyline in most cases this will create openings and partial clearings. At middleground and background viewing distances, such harvesting creates obvious disturbances, which are often visually jarring and out of character with surrounding natural forest skylines. For these reasons, a regular practice of retaining 16 to 18m<sup>2</sup>/ha BA in the skyline forest has been used in recent times and found to be largely successful for maintaining skyline visual qualities. This is especially useful in situations where the forest is reasonably consistent in structure and on a moderately wide and rounded hilltops or ridgelines.



**Here the characteristic forest skyline has been disturbed by standard AGR operations across the full ridgeline. A skyline zone could have been defined for retention of higher forest density to maintain an even-textured, non-transparent forest character.**

Partial harvesting using a simple BA retention standard is not likely to be effective for forest with moderate to wide variations in density, height and age, located on narrow skyline ridges and or on steep skyline edges. Disruptive variations in transparency and openings will readily occur with harvesting on such skylines. Here complete exclusion of harvesting in a precisely defined zone would normally be a most effective alternative.

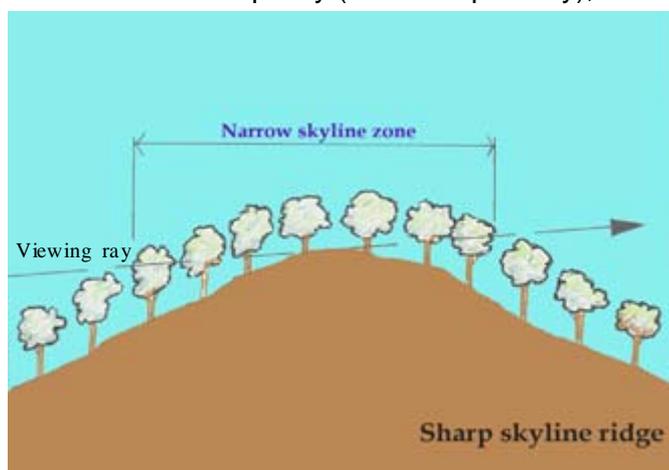
With such potential for variations in forest structure and ridgeline profile, it is critical to specify a visual quality standard or goal for management for skyline forests, which gives universal certainty for satisfactory visual results. The generally acceptable visual quality standard is to maintain an even textured, continuous forest silhouette and avoid any increased transparency within the skyline forest.

The effective achievement of this visual quality standard for forest management will rely on both inclusions of effective prescriptions as well as on systematic ongoing monitoring of the appearance of harvesting as it progresses within a defined skyline.

### **Defining the Skyline Zone**

An initial step is the identification of all opportunities for viewing to the planned operation and marking viewpoints on a map of the surrounding region. Next a decision is made on the primary or representative viewpoints – ideally no more than 3 or 4 points should be chosen to represent different directions and distances of viewing.

Key visual characteristics of the skyline forest need to be understood to understand screening effectiveness or opacity (non-transparency),



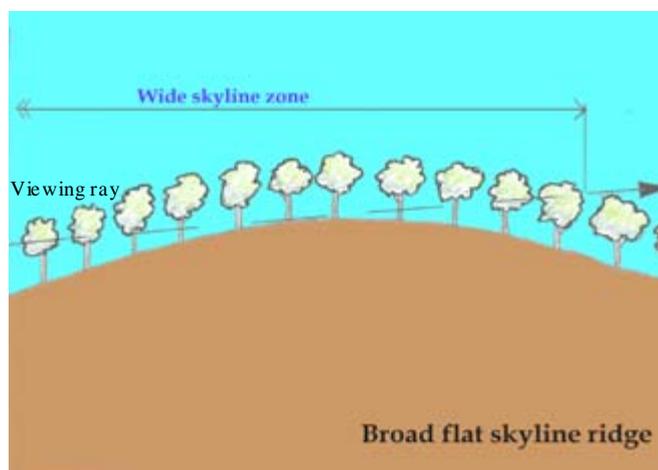
***A sharp ridgeline creates the most critical skyline situation for partial harvesting. Only a few trees with in the skyline zone serve to retain opacity of the forest silhouette.***

which is affected by:

- the angle and direction of viewing relative to the ridgeline (direct or side-on; level, below or above);
- the shape of the ridgeline (either sharp or flat and broad) and the steepness of the slope in front and behind the skyline edge;
- the angle of incidence of the sun-lighting; and
- the density, height and structure of the existing forest.

Tree trunks alone do little to screen the view to the sky that would theoretically be seen along the viewing ray directly behind the very top of ridgeline. Thus the canopies of all potential screening trees in front, on top and behind, should be identified and included as part of a Skyline Zone (SZ). This includes all trees that contribute to the opacity of the forest edge seen from afar (see diagrams below).

To define this zone, analysis by computer and or by drawing cross sections is used to determine the seen-area edge. This would show the incidence of the viewing ray across the skyline edge. Nominally, a 100m wide zone straddling along the skyline either side of the visible edge will be a satisfactory starting point. The zone can then be marked on the FPP map and reviewed with reference to the above factors (dot points) for clues to the likely problems to be encountered (i.e. existing clearings, large or tall and widely spaced trees, steep drop-off on one side).



***The appearance of broad ridgelines will be less sensitive to forest disturbance form partial harvesting and the effective skyline zone will be wider.***

## Management Issues

The two common approaches to management are: reserve all existing trees within this zone; or secondly partially harvest while retaining a high density of trees. The reserve approach is most suited to where steep slopes occur both sides of a sharp ridgeline (often this is an easy decision to make as such land is associated with rockiness and low productivity). As well this may be useful where viewing is directly at right angles to the skyline edge resulting in increased sensitivity over angled/obtuse viewing. Partial retention on the other hand is more suited where a rounded and broad ridge forms the skyline. Here a nominal minimum density of canopy of 16 m<sup>2</sup>/ha BA is the starting point for harvesting prescriptions.

Where the forest skyline is already seen to have slight gaps or transparency when viewed from a distance, this should be taken as an obvious telltale sign for raising concerns about the possible negative effects of further harvesting. This can occur where the Eucalypt forest density is low, often with only large old growth trees remaining, or where the forest is open and understorey vegetation is sparse. These aspects, combined with a sharp ridgeline and steep slopes adjacent on both sides, will indicate that removal of any trees at all will lead to a visually unacceptable result. In such situations as part of the analysis in the field, use binoculars from primary viewpoints to check the effectiveness of forest skyline edge.

### Procedure for Skyline Management

The specific visual standard stated above for dry Eucalypt forest skylines should be adopted as the goal to be achieved. Operational procedures are set out below as well as prescriptions to be followed to ensure effective protection of skyline character.

- Field check the nominal SZ on the ground as initially determined on the plan. Note the suitability of the zone boundary on-site, then review the structure and density of the forest and its screening potential. Check potential for windthrow. This should be done as part of the plan preparation. Extend or reduce the SZ where appropriate to safeguard the skyline. A wider zone may be warranted where the forest appears on the ground to be open or variable in form or structure.

- Commence harvest of the SZ from the lower front and proceed up-slope into the zone whilst retaining a minimum BA of 16 m<sup>2</sup>/ha.

- During the harvesting period of the SZ, monitor visual effects from each viewpoint using binoculars to review the skyline in detail. This should be

compared against a photo-panorama of the pre-logging view. Radio contact is required for communication with the tree-faller working within the SZ.

- Monitoring must occur frequently during harvesting to be able to review visual effects as the operations proceed. Whenever and wherever it can be determined that the visual quality standard may be compromised, harvesting in that part of the SZ should stop immediately. As indicated by the standard, it is essential here to avoid creation of gaps or for thinning of the skyline to occur. Either of these would signify that the visual standard has actually been compromised and that harvesting has progressed too far.

- With no apparent change to the skyline forest transparency, it may be necessary to consider whether further harvesting to a reduced BA might be possible. Settle for the existing position where forest ageing and windthrow is a concern as the canopy may open up naturally in the future. If necessary continue to harvest any more stable and dense forest areas while monitoring for skyline change, again halting if any signs are seen through binoculars.

- Photos are to be taken as a record during and after the operation is completed. This will be valuable to display the success of the treatment. Measurement of the pre- and post-harvest BA should be made if possible to record change to the forest stand structure within the SZ.

Note: As the success of this is obviously dependant on the understanding and ability to accurately define the basal area in the skyline zone, harvest contractors or operators must have a complete understanding of the purpose and goal of the skyline landscape zone and its management. This will require effective communication to all levels. As well contractors or operation staff need to have the survey equipment and skills to measure the required basal area in the field. The Principal operator must determine this.

## Prescriptions

The following generic prescription gives a guide for partial harvesting of skylines.

“The boundary of the area within the coupe requiring special management for skyline will be shown on the FPP map as Section A. This will be marked in the field with Blue and White striped tape. This surrounds the visible from the viewpoint and is the critical skyline zone.

Within Section A, the harvesting contractor will retain a consistent basal area of 16 to 18 m<sup>2</sup>/ha to maintain the existing complete canopy coverage across the skyline. The **visual standard** to be achieved from the defined viewpoints is:

**“to maintain an even textured, continuous forest silhouette and avoid any increased transparency within the skyline forest”.**

Harvesting should commence from the lower front boundary of the skyline zone and proceed up-slope into the zone whilst retaining a minimum BA of 16 to 18 m<sup>2</sup>/ha. Any other areas of the coupe below and in front of the skyline, as seen from the viewpoint, should be harvested first as they may fully or partially screen the skyline .

Ideally, monitoring should be done by the contractor or someone appointed by the harvest company. They will monitor the harvest activity conducted within Section A from the viewpoint during felling operations to identify any landscape changes that begin to exceed the required goal above. Harvesting must cease immediately if any landscape changes begin to be seen. An on-site meeting is to be arranged and the effects viewed from the viewpoint with the following participants.

- Planning officer or company representative responsible for harvesting supervision,
- Harvest company responsible for supervision,
- The Planner for the forest area,
- The Harvesting Contractor.

## Monitoring Kit

To streamline the review process, a Monitoring Kit is recommended and should be provided to the selected field officer responsible for monitoring skyline effects. This will include the following material:

The visual goal to be achieved from the defined viewpoints (ie. from the prescription to the left).

A description of the monitoring procedure and period when to be applied.

Broad scale map showing the coupe boundary and known key viewpoints to be used for monitoring.

FPP map showing the various operations planned and Section A. If possible the visible area edge should be defined.

Pre-harvest photos of the skyline from all viewpoints to provide a standard for review of visual changes

Monitoring sheet for recording times and effects of harvesting as well as details of photographs taken, time of day, stage of harvesting etc.

***A consistent and continuous dry forest skyline provides a following backdrop to this scenic landscape.***



## Document Control Log Table

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