A Manual for Forest Landscape Management

Chapter 2

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.

THE VISUAL MANAGEMENT SYSTEM*

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The forest areas of Tasmania are of growing importance for their scenic, cultural, biological and wood resource values. Of these, the scenic or landscape values are most in need of careful evaluation, for the public is increasingly concerned with the visual environment, and it expects landscape values to be carefully and wisely managed. The public experiences forest areas from both close at hand and as a scenic background. They are therefore important assets to the tourist industry.

Visual guidelines have been successfully followed during road building in this important scene viewed from the Dial Range walking trail.

*Chapter 2 is based on "The Forest Landscape Visual Management System", Bulletin No. 9, Nov. 1983, published by the Forestry Commission of Tasmania. [1]

To address the public's concern, the visual landscape must be considered as a basic "resource", to be assessed and managed along with other forest resource values. The Visual Management System provides a systematic framework for making an evaluation and inventory of visual resources in order to direct concern and effort in management of landscape values.

The product of the system is mapped zones of viewing and scenic importance. Each of the three levels of zoning has corresponding landscape management objectives that define the acceptable degree of modification of the natural character of the landscape. The landscape is evaluated so that the field planner, with the assistance of the landscape planner, can compare the landscape values with other assessed values of the forest such as wood, water catchments, and flora and fauna protection.

The Visual Management System provides:

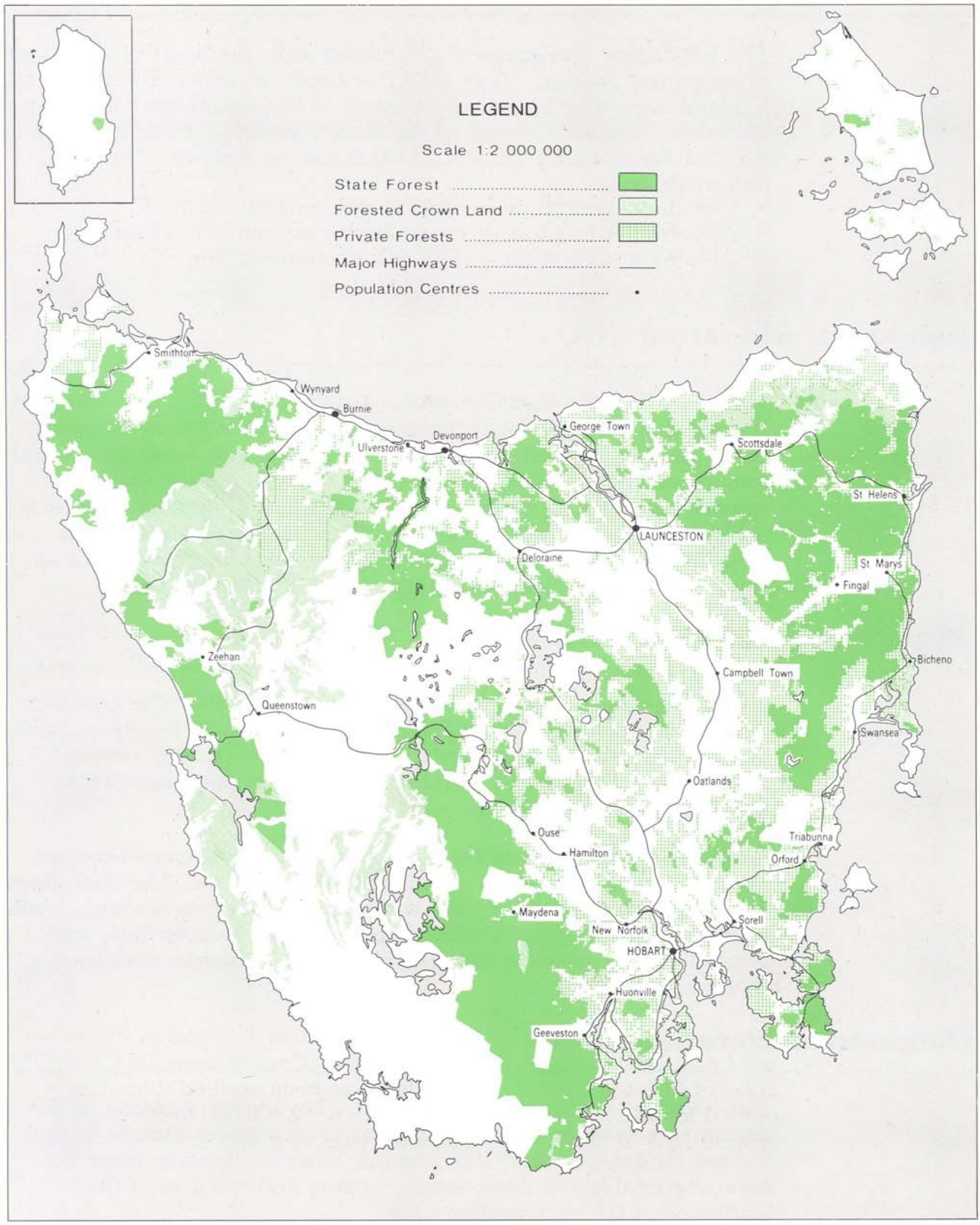
- A procedure for describing the visual character of the landscape regions of the state
- A procedure for classifying scenic quality
- Criteria for classifying the viewing sensitivity of public-use areas
- Criteria for stratification, based on viewing distance, of areas seen by the public
- A procedure for combining mapped information from all these sources into three zones of priority for visual management (called Landscape Priority Zones)
- Visual objectives to guide management alterations in the forest.

The Visual Management System is essentially the first stage in a comprehensive visual management process aimed at safeguarding forest landscape values. It establishes the broad priorities for management of landscape values.

The Forestry Commission of Tasmania first applied the visual management concept in 1979. It is based on the approach used by the Forests Commission of Victoria[2], which in turn closely follows the original developed by the United States Forest Service between 1968 and 1974. The Visual Management System was formally adopted by Tasmania in 1983[2].

The system has been progressively applied in Tasmania to much of the forest land controlled by the Forestry Commission, including areas of forested Crown land. It has also been applied to privately owned forests. Together these account for 2,400,000 hectares, or around 35% of Tasmania's land area (see Map 1)

Map 1. Forest areas of Tasmania



Landscape Management Objectives

The Landscape Management Objectives form the heart of the Visual Management System. They give the degree to which alterations in the landscape may be visually evident to the casual observer[7]. An objective accompanies each of the three Landscape Priority Zones (LPZ) determined by the Visual Management System. The objectives are:

- Inevident Alteration — high visual concern, Zone A
- Apparent Alteration — moderate visual concern, Zone B
- Dominant Alteration — low visual concern, Zone C

Inevident Alteration (IA)

This is the highest objective, and is required for LPZ "A". The goal is to fully retain the visual character of the landscape by ensuring that alterations are either inevident in the viewed landscape or only temporarily apparent. To be acceptable, any alteration that is initially apparent must be of such a nature as to become inevident within one year. Only low-impact alterations are suited to this objective (e.g., well-screened roading, selective logging and small, naturally shaped, clearfelled coupes seen in the distance).

In essence, the alteration when observed from a public viewpoint is—
(i) difficult to see,
(ii) small in scale and or muted in contrast and
(iii) natural in appearance.

Apparent Alteration (AA)

This management objective is required for LPZ "B". The goal is to retain key aspects of the visual character of the landscape to ensure that alterations range from apparent, and subordinate in the scenery, to temporarily dominant. The acceptable maximum period of dominance is two years.

Activities may introduce some colours, forms, lines and textures that seldom, if ever, occur in the natural landscape. The alterations may have moderate impact, with good recovery rates (e.g., small to medium-sized clearfells dispersed through the landscape and viewed from a distance; partially screened roadworks seen from a medium distance).

In essence, the alteration when observed from a public viewpoint is—
(i) easy to see,
(ii) small to medium in scale, and
(iii) natural and not rectilinear or geometric in shape.

Dominant Alteration (DA)

This objective is required for LPZ "C". The visual character of the landscape can be modified by alterations that are dominant in the viewed landscape. Activities should, however, borrow from the naturally established lines, forms, colours and textures of the landscape of the surrounding area.

Although this objective allows alterations of relatively high visual impact (e.g.. moderate to large clearfells, with irregular boundaries that harmonize with ridge lines and changes in vegetation), it seeks to maintain the natural visual integrity by limiting the introduction of unnatural visual elements.

In addition to the three primary Landscape Management Objectives discussed above, three further objectives (Reserve, Rehabilitation, and Special) are recommended in certain situations. These objectives, unlike the primary objectives, are *not* derived from the Visual Management System.

In essence, the alteration when observed from a public viewpoint is—
(i) very easy to see
(ii) large in scale and natural in its appearance and design, or
(iii) small to medium in scale but with strong angular characteristics.

Inevident Alteration

Inevident alteration objective/zone A: A clearfelled coupe is just visible to the right of the centre of the scene. The essential visual character of the forested hillside has been retained. The coupe is not visible to the casual observer because it is screened by intermediate forest and the rear uphill edge has been harvested selectively to reduce the visual contrast with the surrounding forest.

Apparent Alteration

Apparent alteration objective/zone B: The coupe is visually apparent and the natural visual character of the area has been retained. Although the coupe scale is sizeable within the scene, it has low colour contrast and its shape is characteristic of surrounding hills and ridges. Together these result in diminished visual effects.

Dominant Alteration

Dominant alteration objective/zone C: The scale of the alteration, the strong colour contrast and the direct aspect to the viewer of this recently clearfelled coupe cause it to dominate and visually modify the scene. However, the shape of the coupe borrows successfully from the established line and form of the surrounding skyline and drainage gully, lessening the overall impact. In time, regeneration will weaken colour and textural contrasts, further reducing the visual impact.

Auxiliary categories of visual objectives

In addition to the three primary Landscape Management Objectives discussed above, three further objectives (Reserve, Rehabilitation, and Special) are recommended in certain situations. These objectives, unlike the primary objectives, are *not* derived from the Visual Management System.

Reserve (RES)

This is the objective for natural areas of Forest Reserves,* alpine areas and streamside reserves. It allows for little more than natural changes or low-impact changes that are carefully planned to preserve or enhance the enjoyment of the special qualities of the existing landscape.

* Forest Reserves are designated areas of State Forest set aside specifically for the protection of flora and fauna and the provision of recreation opportunities

Rehabilitation (REH)

A landscape falls into this category when it has been altered in the past or though unsatisfactory recent operations and does not at present meet its primary landscape management objective. Rehabilitation of excessive impact in the landscape stemming from operations should be commenced to satisfy the primary objective as soon as possible. Where priorities for rehabilitation must be established, landscapes in areas with the highest landscape management objectives should receive preference.

For example, a landscape mapped as Zone B — Apparent Alteration Objective, by the Visual Management System, but already having alterations satisfying just the Dominant Alteration Objective, should be assigned as Zone B— Rehabilitation, to signify the priority for rehabilitation.

Special or Sensitive (SP)

This objective is required for landscape determined as having *critical visual concerns*. It encompasses viewing from key tourism features and principle towns and cities. As well it is suited for landscape seen within 25 km of prime wilderness destinations [7]. Management activities within viewfields from these locations are not to be visually evident to the discerning observer.

Maximum Dominance (MD)

This classification serves as a supplementary descriptor for landscape alterations that are generally excessive and unacceptable under the endeavors of visual landscape management.

This category is best defined as a visual alteration in the landscape that when observed is—
(i) extremely easy to see,
(ii) very large in scale and view encompassing, and or
(iii) rectilinear and geometric in shape.

Premises

The system is broadly based on a set of premises derived from visual perception studies carried out in the United States[3,5] and Victoria[6,7]. They give a guide to how people perceive the landscape. The premises are as follows:

- Aesthetic concerns of visitors vary depending their purpose for travelling or visiting, contextual understanding and expectations for a landscape region
- Naturalness of forest character is expected by recreationists and visitors to the forest.
- Variety of the vegetation pattern within the context of the landscape character and naturalness of the forest contribute positively to Scenic Quality of landscape
- Expected landscape images exist in the minds of residents and visitors to the countryside or forests
- Visual changes resulting from management activities are perceived by viewers in respect to duration of viewing. Thus with increased opportunity to observe changes comes heightens perception and recognition of visual impact
- From a political perspective, the visual impact of activities becomes more important as the number of viewers increases
- The capacity of different landscapes to absorb change without losing or being able to recover its visual character varies due to vegetative and landform screening, variety and capacity for vegetation to regrow and reach effective vegetative greenup
- Retention of landscape character is desirable. The visual impact of management operations increase with the amount of landscape alteration and the degree of deviation from the natural or cultural landscape
- The visual impact of management operations generally decreases with greater distance of viewing and associated reduced visibility, clarity and scale
- A more direct viewing angle or aspect to the viewer will result in greater visual impact of management activities
- Areas of viewing focus in the landscape have greater prominence for viewing and increased potential for visual impact from management operations
- Both the scale of an alteration in the total landscape and with respect to the landform affect the strength of its visual impact and its apparent deviation from the natural landscape character.

Landscape Priority Zone Mapping

The Visual Management System is used to generate mapped LPZs with accompanying objectives to guide management of the visual values of the forest. The diagram (Figure 1) and the flow chart (Figure 2) illustrate the process for determining these zones. The system takes into account the physical aspects of the landscape (the scenic values), and the social aspects (the public's use of, and concern for, the landscape).

Forested landscapes are a major component of Tasmania's scenic resources and are appreciated by local residents as well as interstate tourists. Here recreationists enjoy views from the Leven Canyon lookout. The Visual Management System was created to ensure that forest management takes account of such scenic values.

The principle of the system is that the highest level of visual importance or landscape priority should be given to:

- areas assessed as having high scenic quality
- areas seen from viewpoints that have high usage or attract users who are concerned with the visual landscape
- the closest areas seen

Figure 1. Development of Landscape Priority Zones

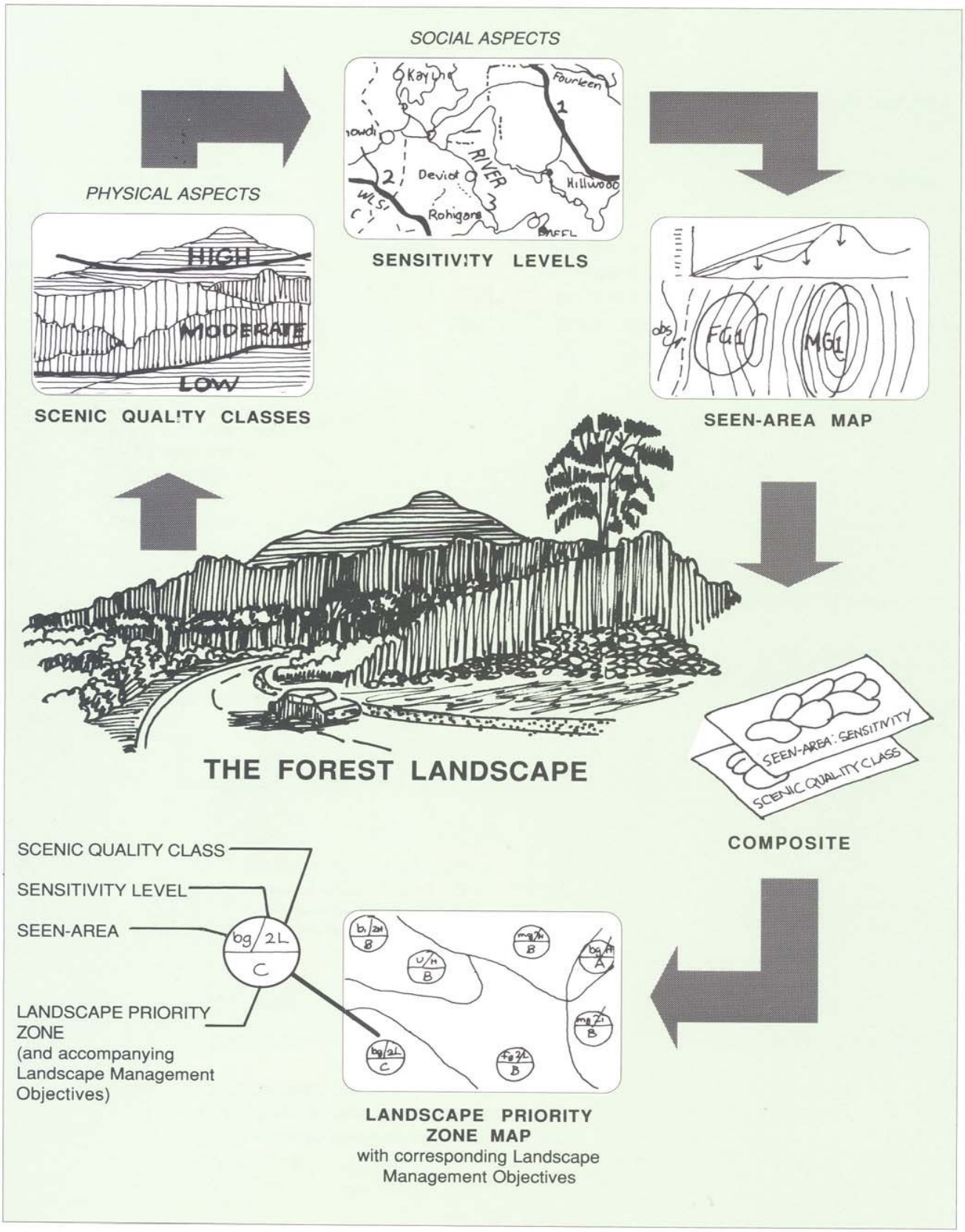
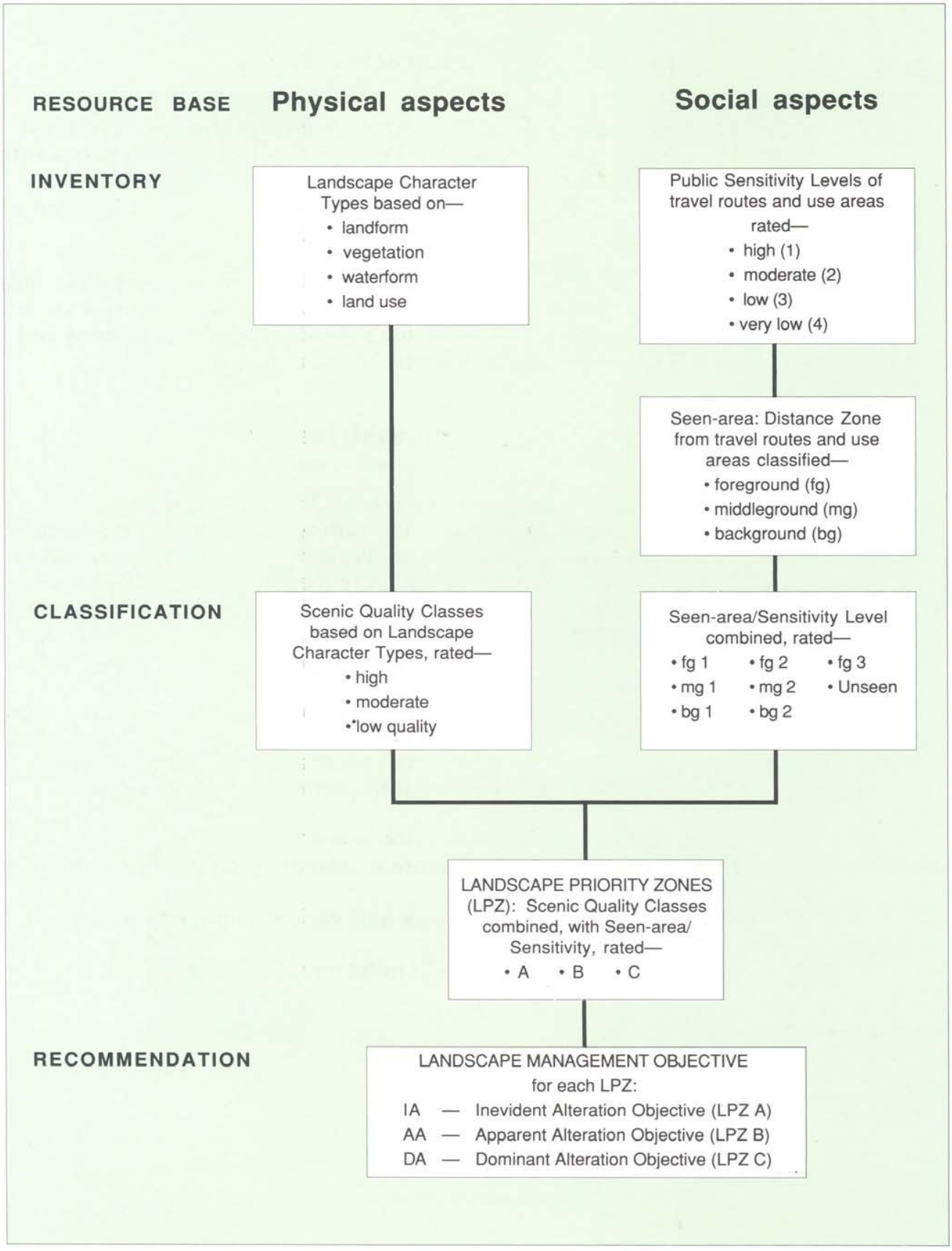


Figure 2. Visual Management System flow diagram



The step-by-step application of the Visual Management System process follows below.

Step 1 — identify landscape character types

Ten Landscape Character Types have been identified and described in Tasmania (see Chapter 7). These are physiographical regions with common distinguishing visual characteristics 8. The dominant visual character of each region results from the inter-relationship of the vegetative pattern, waterform, landform and land use.

For example, in the Southeast Coastal Hills (Type 6), the rolling hills and the proximity to the coast are the major visual factors, while in the High Mountains (Type 7), the rugged, dissected mountains and ranges create the visual character of the region.

Step 2 — assess scenic quality classifications

The landscape is classified into Scenic Quality Classes (high, moderate or low) based upon:

- the scenic variety,
- the scenic distinctiveness, uniqueness or prominence, and
- naturalness of the landform, vegetation and waterform.

These need to be gauged within the respective Landscape Character Type. A "frame of reference" table has been developed for each type (see example in Table 1). This sets out the criteria for landform, vegetation and waterform for each class. See the complete set of Landscape Character Types and Scenic Quality "frame of reference" tables is in Chapter 7.

Scenic assessment of the landscape is made from aerial photographs, guided by reference to the table. Local knowledge of the area is most important in helping to relate the photographs to the field reality. Additional field checks or aerial inspections should be made.

The three scenic quality classifications are:

High — feature areas with more outstanding, unusual or visually diverse aspects

Moderate — areas with features and variety commonly present in the character type

Low — extensive areas lacking in features or variety

Table 1. High Mountains Character Type — Scenic Quality Frame of Reference

	HIGH SCENIC QUALITY	MODERATE	LOW
LANDFORM (rock form)	• Mountains and peaks with dramatic forms that are focal points or landmarks; distinctive serrated ridgelines. • Steeply incised V- and U-shaped valleys (greater than 70% slope) and/or river gorges, creating strong spatial definition; valley slopes dissected by deep lateral drainages. • Massive rock outcropping; cliff lines and rock escarpments with irregular and outstanding form or with high colour contrast; large areas of rock scree.	• Peaks and ridgelines with rounded and regular forms. • Open valleys with moderate slopes (20-70%) and some spatial definition; slopes dissected by medium-sized lateral drainages. • Rock outcrops of regular shape and pattern with subdued colour contrast with the surrounding landscape.	• Rolling hills and valleys with slopes of less than 20%. • Minor rock outcrops or cliffs; no dominant shapes and patterns and of low colour contrast with the surrounding landscape.
VEGETATION	• Strongly defined pattern resulting from combinations of, or transitions between, eucalypt forest, rainforest, copses of native pine, alpine and riparian vegetation. • Dramatic displays of seasonal colour (e.g. deciduous beech, myrtle, *Richea scoparia*, silver wattle). • Stands of unusually tall eucalypt forest.	• Forest canopy varying slightly in texture, due to differences in age and spacing and offering some visual diversity. The resulting vegetative patterns are evident but not more dominant than the surrounding landform.	• Extensive areas of similar vegetation with few evident patterns (i.e. uniform species, heights and densities).
WATERFORM	• Large to moderate-sized lakes, tarns and reservoirs (with naturally appearing shorelines). • Major streams subject to regular flood flows at all times of the year. • Large river rapids and waterfalls (often associated with river gorges).	• Forest canopy varying slightly in texture, due to differences in age and spacing, and offering some visual diversity. The resulting vegetative patterns are evident but not more dominant than the surrounding landform.	• Minor streams with slight or intermittent flow (less than 5 m wide).

Table 2. Public Sensitivity Level criteria

(Travel route and use-area classifications, 2007)

Level 1 – High Sensitivity
1 Primary transportation systems of national and state importance. These include state highways, classified tourist roads and routes, and tourist railways
2 Other roads with more than 200 vehicles per day with cultural, historical or scenic significance
3 Roads to recreational destinations that have over 100 vehicles per day in peak seasons or on peak weekends
4 Primary recreational waterways and routes(i.e. rivers, lakes, reservoirs and the ocean)
5 Walking tracks, roads and use areas of national or state significance in National Parks, State Reserves and wilderness zones
6 Primary, high-use recreational areas such as camp grounds, picnic grounds and visitor centres
7 Cities, towns and residential areas/regions with sensitive communities and high levels of concern for scenic quality and landscape change.
Level 2 – Moderate Sensitivity
1 Secondary roads with 100 to 200 vehicles per day
2 Secondary roads to recreational destinations (such as trailheads or camp grounds), including forest access roads, with 25 to 100 vehicles per day in peak seasons, or on weekends
3 Recreational, cultural or scenic sites and viewpoints of regional significance
4 Walking tracks of regional significance
5 Secondary waterways, areas and routes for fishing, boating or recreation
6 Secondary, low-use recreational areas, such as camp areas and picnic areas
7 Villages or residential areas with moderate concern for scenery and landscape change.
Level 3 – Low Sensitivity
1 Forest and other roads with up to 25 recreational vehicles per day on weekends in peak seasons
2 Walking tracks of local significance
3 Recreational areas with only very occasional use and of local significance.
Level 4 – Very Low Sensitivity
1 Roads with fewer than two recreational vehicles per day
2 Seldom-used forest tracks.

NOTE: Level 4 is mapped to ensure all roads have been considered. Roads and use areas to be built in the 5 years should be taken into account.

Step 3 — determine public sensitivity levels

Public sensitivity is based on the premises that:

- Different types of observers generally have different levels of concern for the visual environment, ranging from

High concern	Recreational traffic
	Tourist traffic
to	Commuter traffic
	Commercial traffic
Lower concern	Forestry traffic

- Higher numbers of viewers give rise to a more critical view route or point.
- The greater the duration of viewing or time at a view area is a determinant for higher sensitivity.

Levels are determined for all travel routes (roads, walking tracks, navigable rivers and passenger rail routes) and use areas (campgrounds, picnic grounds, scenic lookouts, mountain peaks, boating areas and residential areas) by review of the number and types of observers or visitores recorded. (Viewing from aircraft is not specifically considered by the system).

Step 4 — map seen-areas

At this stage in the Visual Management System, the viewed areas (or "seen-areas") from travel routes and use areas are mapped for Sensitivity Levels 1 and 2. For viewpoints of Sensitivity Level 3, only the immediate vicinity or "foreground" needs to be mapped. For levels I and 2, mapping extends to no further than 16 km, as beyond this distance forest operations (harvests and roading) are likely to be of little visual concern to viewers; an exception is special Level I viewpoints in remote mountainous regions that have acknowledged importance for wilderness recreation. Here the mapping limit is extended to 25 km. (See Chapter 5 for methods of plotting seen-areas).

Three distance zones, as measured from the viewpoints, are used to stratify the viewing importance of the plotted seen-area [7].

Foreground (0 to 0.5 or 1 km) — Zone where colour contrast and textural detail are most clearly perceived.

Middleground (1 km to 5 or 6 km) — Here the links between different parts of the landscape become clearly apparent (e.g., a series of hills is seen as a range, or riverine plant communities signify the drainage pattern of a broad valley).

Background (6 km to 16 km) — Textures are no longer visible, but mountain and valley forms, skylines and ridgelines and shades of blues and greys become important. Background may extend to 25 km for remote, mountainous, natural country viewpoints[4].

Distance zones are defined on seen-area maps along with the corresponding public sensitivity levels of each viewpoint.

Step 5 — prepare Landscape Priority Zone maps

By this stage of the system, the landscape's visual variety and naturalness (i.e. scenic quality), the viewing public's concern for scenic values (i.e. public sensitivity), and the seen-area and viewing distance (i.e. distance zones) will have been listed and rated. These can now be combined to give one of three LPZs (A, B and C), each of which has specific objectives, as defined previously.

Mapping overlays are used to integrate the two maps to give the final LPZ. This step is guided by a matrix (Table 3).

Table 3. Recommended Landscape Management Objectives for Landscape Priority Zones

MATRIX

		(1) Distance Zone / Sensitivity Level							
		fg 1	mg 1	bg 1	fg 2	mg 2	bg 2	fg 3	u
(2) Scenic Quality Class	H	A	A	A	A	B	B	B	B
	M	A	B	B	B	B	C	C	C
	L	B	B	B	B	C	C	C	C
		(3) Landscape Priority Zone*							

MATRIX FORMULA

(1) Distance Zone / Sensitivity Level
\+ (2) Scenic Quality Class
= (3) Landscape Priority Zone with accompanying Landscape Management Objective

Examples:

fg 1 + H = zone A = IA objective
bg 2 + L = zone C = DA objective

MATRIX KEY

1 Distance Zones ..... Sensitivity Levels

fg — foreground
mg — middleground
bg — background
u — unseen and uninventoried Sensitivity Levels 3 and 4

1 — High
2 — Moderate
3 — Low
4 — Very Low

2 Scenic Quality Classes

H — High M — Moderate L — Low

3 Landscape Priority Zones /Landscape Management Objectives

Zone A — High concerns for visual resource values =
IA — *Inevident Alteration* objective: the landscape character must be *fully retained*
Zone B — Moderate concerns for visual resource values =
AA — *Apparent Alteration* objective: the landscape character must be *partially retained*
Zone C — Low concerns for visual resource values =
DA — *Dominant Alteration* objective: the landscape character may be *modified*

Landscape Management Objectives recommend the degree to which alterations in the landscape may be visually evident to the casual observer[2]. The objectives are: Inevident Alteration (for Zone A); Apparent Alteration (for Zone B), and Dominant Alteration (for Zone C).

Objectives for Reserve, Rehabilitation and Special are not included in this matrix.

Forest Planning and the Visual Management System

Once landscape management objectives have been established, forest operations must be planned to meet these objectives. This should be undertaken during forward planning of operations and must consider both placement within the landscape as well as coupe scheduling. These aspect need to be addressed prior to design analysis and review of plans for individual operations

The steps in the landscape planning process are detailed in the next chapter. The first is to develop an initial operational proposal by considering together all the relevant constraints and opportunities arising from silviculture, operations, marketing, environment and landscape values. An estimate is then made of the expected visual impact of this proposal (using the procedure described in Chapter 5, "Project Landscape Analysis" and the Visual Management Technical Note 02—04 "Visual Analysis Procedure [9]). This impact level is then compared with the Landscape Management Objectives. The Senior Landscape Planner (FPA) is available to help with interpreting these objectives and for review of analyses of the visual effects of operational proposals.

This procedure must be followed to ensure that visual resource values are properly considered in planning. If the visual impact of the proposal is predicted to meet the Objective, the operation can proceed, following the visual guidelines established during the planning process.
Where the expected visual impact of the proposed operation exceeds the recommended level set by the Visual Management System, this fact must be acknowledged and the proposal reviewed again following an iterative process to devise, where possible, an alternative operational proposal. The priority determined for achievement of satisfactory visual management outcomes should be guided not only by the LMO derived from the VMS, but also the particular landscape significance held for the area by the local and wider public. In some cases, the operation may need to be cancelled or delayed. Where no operational alternative is judged to be available and the decision is made to proceed – every possible effort must be made to reduce visual impact and explain the background to the plan to the viewing public.

References

1 Forestry Commission of Tasmania (1983) The Forest Landscape Visual Management System, Bulletin 9. Hobart.

2 Williamson, D. N. and Calder, 5. (1979) “Visual resource management of Victoria’s forests: a new concept for Australia”. Landscape Planning, 6: 313-341.

3 United States Department of Agriculture, Forest Service (1974) National Forest Landscape Management, Vol. 2, Chap. 1. Agriculture Handbook 462, Washington, D.C.

4 World Heritage Planning Team, Department of Lands, Parks and Wildlife, Tasmania (1988) (Pers. comm. based on part of a preliminary framework for viewfield management and classification of scenic values.)

5 Benson, R. F. and Ulbrich, J. R. (1980) Visual Impacts of Forest Management Activities. Research Paper INT-262, Intermountain Forest and Range Experiment Station, United States Department of Agriculture, Forest Service, Ogden, Utah.

6 Williamson, D. N. and Chalmers, J. (1982) Perceptions of Forest Scenic Quality in Northeast Victoria. Forests Commission of Victoria, Melbourne.

7 Williamson, D. N. (1979) “Scenic perceptions for Australian landscapes”. Landscape Australia, 2 (April): 94-101 Canberra.

8 Fennerman, N. M. (1931) Physiography of the Western United States. McGraw-Hill, New York.

9 FPA. (2006) Visual Management Technical Note 02—04 “Visual Analysis Procedure, FPA Hobart.