

SUMMARY OF AUSTRALIAN LANDSCAPE QUALITY STUDIES – ARRANGED BY STATE

Author	Location/area	Type	Instruments	Characteristics	Participants	Outputs
National						
Australian Heritage Commission (DEH), 2001	Australia – wide	Preferences + physical NER	Identification of <i>inspirational landscapes</i> – places of positive & inspiring aesthetic or cultural perceptions and experiences.	Eight indicators defined relating to the power of the landscape to inspire cultural creativity and action, produce emotional or spiritual response, or on account of their rarity		In progress. Intended to identify suitable landscapes for listing on National Heritage List
Queensland						
Prineas & Allen, 1992	Wet Tropics World Heritage Area 9000 km ²	Preferences WHA	Oblique air photos (28 mm). Landscape units defined (307). Pilot study 38 scenes, 1-15 scale. Public survey 80 scenes + 10 from elsewhere. Multiple regression compared ratings with 8 landscape dimensions. 85% variance explained.	Rivers & streams, coral, coastline, human disturbances, boundary interference, water, vegetation, slope.	Pilot 48 participants. Public survey 306 participants. Random passers-by, self-guided survey used.	Map of scenic quality from Cooktown to Townsville.
Loder and Bayly, 1993.	South East Queensland 20,400 km ²	Physical EM	Physical attributes measured from maps and aerial photographs.	Visual quality based on landform/ ruggedness, vegetation, naturalness, absence of unnatural landscapes, waterforms, water edges, water area.		Map of visual quality (1:100,000)
Loder and Bayly, 1994	Tambourine Mountain 70 km ²	Physical EM	More detailed than the SEQ study. Covered visual aspects plus other values	Other values included historical significance, natural environmental significance and social significance.		Map of landscape value
Brouwer, 1994	Queensland coast – Whitsunday pilot area	Preferences + physical EM	Maps, air photos, field surveys. Participants assessed on 7 pt scale: scenic quality (24 scenes); effect of development (19 scenes); scale of development (6 scenes)	Naturalness, landform, vegetation diversity & contrast, water.	32 participants	Aimed to inform coastal protection legislation & coastal management plans.
EDAW, 1996	Queensland coast 7400 km (mainland)	Physical EM	Based on Chenoweth's work. 3 stage process: identified coastal viewshed and landforms; identified coastal landscapes of similar characteristics; assessed scenic amenity.	Scenic quality criteria: landform type and features, land cover, water form.		Scenic quality mapped by 4 levels from highly outstanding, outstanding & distinctive, somewhat distinctive, common.

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Chenoweth <i>et al</i> , 1997	Queensland coast – SE Qld, Wide Bay – Burnett, Mackay – Whitsundays, Wet Tropics	Physical EM	Coastal Landscape Assessment (CLA) methodology comprising: Hierarchical assessment of scenic resources; Cultural themes & associations Landscape setting units; Scenic quality indicators; Landscape character & identity; Landscape settings divided locally into land types & evaluated for landscape sensitivity, scenic integrity, positive/negative elements, & cultural heritage sites. Landscape values & cultural significance reviewed by focus group workshops.	Scenic quality indicators rated on 5 pt scale – naturalness, pattern, built form, landform, vegetation & wildlife, water, shoreline. Land types: foreshore, island, foothills, plain etc. Landscape character (58 identified) and land types assessed.		Maps of landscape settings ranked by scenic significance – State, regional, local.
Lennon and Townsley, 1998	South East Queensland, Gladstone to NSW border, inland to Toowoomba. 62,000 km ²	Preferences + physical RFA	Aesthetic values determined through community workshops (13) and surveys of cultural sources. Of 163 places identified, 53 exceeded threshold for National Estate aesthetic values but only 47 mapable.	Cultural sources include literature, music, visual arts and film, historical photography and tourism images. Thresholds: Tasmanian criteria plus ability to map places and integrity of aesthetic value from earliest depiction.		List of significant aesthetic places
Preston, 2001	Mogill - fringe suburb of Brisbane 55.5 km ²	Preferences EM	5 stage: Scenic preferences survey using 52 photos; ranking, rating (1-10), bi-polar adjectives, familiarity Mapping of scenic preferences based on survey; Viewer appreciation survey of public viewing locations; Visual exposure mapping using GIS to assess frequency of view from viewing locations; Mapping scenic amenity for area through combining scenic preference & visual exposure.	110 attributes derived from photographs. 14 attributes were used to predict emotional response and 6 attributes in the scenic preference model: 14 attributes: crops, industrial structures, (+ in foreground), all built structures, grass, modern houses, power poles/transmission lines (foreground and mid ground), roads, trees or river (foreground and midground).	210 people – farmers, urban residents, rural residential blocks, public servants, visitors.	Positive effect: trees, high forest cover, low building density. Negative effect: powerlines, bare soil, roads. Different agricultural land uses had no effect. Scenic amenity map produced.

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Preston, 2001	Glen Rock, 100 km west of Brisbane, 63 km ²	Preferences EM	Scenic preferences survey using 21 photos; ranking, rating (1-10), evocative scoring (1-7), familiarity Scenic preference map derived from vegetation & topographic maps, stream information; Visual exposure mapping combined viewing location with visibility; Scenic amenity map combined scenic preferences & visual exposure.	Respondents also scored scenes: interesting, calming, beautiful.	60 people – recreationists, residents, backpackers, public servants	Highest quality along running streams & tops of mountains. Scenic amenity map produced.
Chenoweth, 2002.	Capricorn coast, Livingstone Shire Council.	Physical EM	Identified regional frame (skyline ridges) and landscape settings based on viewsheds. Settings rated for visual quality & positive or negative effects on landscape character. Land types rated for landscape integrity & sensitivity (viewer places & distance, visual absorption capacity). Landscape significance, scenic quality & sensitivity reviewed by stakeholder meetings.	Visual quality indicators rated on 5 pt scale – naturalness, pattern, built form & activity, landform, vegetation & wildlife, water & shoreline, and overall composite scenic quality. Land types: foothills, wetlands, headlands, towns, ranges, peaks etc.		Landscape Management Zones incorporated into Planning scheme
SEQRESA Steering Committee, 2005	South East Queensland: Noosa to NSW border, inland to Toowoomba, 20,400 km ²	Preferences EM	Public preference survey identified characteristics of views that influenced scenic preferences. This data used to prepared maps of location of areas with highly preferred scenery. Scenic preference maps then combined with maps of visible landscapes through to least visible to produce maps of scenic amenity on 1 – 10 scale.	Over 15,000 photographs used to calculate scenic preference ratings. Covered bush, rural, urban and coast. 31 variables identified that influenced preferences: 6 visual domain variables & 25 visual element variables. Positive variables included trees, water, some vegetation, bush-coast.	1,000 respondents interviewed	Maps of scenic amenity on 1 – 10 scale.

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New South Wales						
Setchell, 1968.	Sydney region from Gosford, Jenolan to Picton. 12000 km ²	Physical EM	Derivation of proposed Scenic Preserves not explained. No explicit valuation.			10 Scenic Preserves proposed
National Trust 1972	Hunter Valley 28,000 km ²	Physical EM	Derivation of proposed Scenic Preserves not explained.			8 Scenic Preserves proposed
National Trust 1976	Illawarra region – Wollongong to Batemans Bay. ~11,000 km ²	Physical NER	Maps of area. Consensus of assessors used to identify Scenic Protection Areas & Scenic Landscapes. Criteria for selection not explained.	Access, settlement, land form, hydrology, geology, soil, climate, land use, vegetation.	Specialists in mapping characteristics.	Map of scenic protection areas & scenic landscapes
Radford & Bartlett, 1977	Lower Hunter valley	Preferences + physical EM	Visual areas mapped. Components of visual environment overlaid & composite scores derived. Scores assigned to different landscapes. 15 photos sorted (cf Q sort) into five groups from very positive to very negative.	Terrain (slope), vegetation, water, natural contrast between natural and cleared areas.	164 participants	Map based on visual catchment areas. Map showing most positive to most negative visual quality.
Crawford, D., 1979.	Cooks River catchment, Sydney ~ 100 km ² Urban built-up catchment.	Physical EM	Landscape units delineated (44). 10 criteria scored -2 to +3 and added to yield score – high quality to low quality. 21 viewpoints selected and land visible from 1 – 5 viewpoints mapped to define prominent areas.	Criteria: landform, structures, tree cover, water bodies extent & edge condition, land use, outlook, contrast, harmony, diversity.		Maps of landscape quality and prominent areas. Used in route selection for major road and impact assessment.
Thorvaldson, 1981	Macquarie River, Bathurst	Physical EM	Inventory of river. 26 river sections – features recorded. Riverscape analysis. Spatial quality – colour, texture, movement, reflection. Riverscape rescaled & combined numerical values. 5 semantic	Inventory: view types, river form/pattern, vegetation, view distances, land uses. Riverscape analysis – form, pattern, width, slope, tree cover	3 Landscape architect students	River assigned into 5 visual quality values.

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			values – very high to very low.			
Correy, 1981, 1982	Botany Bay Visual Assessment	Physical EM	Defined landscape units, identified dominant physical components, ascribed numerical value to components, summed result and graded landscape. Repeated for viewpoints. Mapped frequency of view from viewpoints.	Land form, structures, tree cover, water, edge, activity, contrast, harmony, diversity.	Consultants	Maps of landscape scores and viewpoints. Regional guidelines for development control, colour and planting policies.
Bartlett, 1982	Greater Lithgow	Physical EM	USDA FS method – landscape character type & variety class. 100,000 scale.	Landscape character: water form, landform, land cover	Consultant	Advise on landscape improvement program
Lamb & Purcell, 1982	Warringah Shire: Newport to Palm Beach (Peninsula) ~8 km ²	Preferences AR	Assess relationship between planning controls, building regulations and perceived coastal landscape quality.	750 photographs taken on matrix of area. Sorting by photos of buildings only, buildings with native vegetation, buildings with man-made gardens. Photos of other Sydney landscapes included. Slide set 180. Rated 0 – 10. Range 0.8 – 8.8. 7 scenes >8 very high quality – water & natural vegetation. 36 scenes 6-7.9 high quality – water & natural vegetation. Average quality & low quality.	97 subjects – students, public servants, insurance company employees. Equal male/female. Ages 17 – 60 years.	High quality: extensive views, water, natural foreground, minimal man-made intrusion. Quality diminished by extent of man-made intrusion, lack of natural, vegetated areas. Factors identified which change scenic quality.
Purcell & Lamb, 1984	Narrow peninsula between sea and harbor, Sydney (location unspecified)	Preferences AR	180 slides taken on grid ranging natural to artificial. Landscape quality rated on 0-10 scale. Slide set reduced to 105 to avoid redundancy. Results analysed by variance, & cluster analysis used on low/high variance groups. Multidimensional scaling used to identify combinations of natural/man altered, small/panorama, water/no water - 8 sectors derived. MDS applied to small/large variance landscapes.		85 participants university students, insurance and defense employees	6 conclusions: 1. Variance ranges small to large; 2. Low to high scenic quality occurs in small variance landscape; 3. Four distinct groups of participants hold different views about landscapes; 4. Three dimensions identified; 5. Changes in subject weights compatible to variability;

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			Authors have conducted similar studies exploring landscape perception from a theoretical perspective. These are not reviewed here.			6. Results clarify what differences in landscape quality occur & how judgements are made.
Correy, 1984	Sydney Harbor	Preferences AR	Physical components identified from paintings, postcards, writers etc. 12 photos assessed by participants to identify significant components. 2 nd questionnaire used bi-polar semantic scale with 24 variables rated from liked most to liked least. Scenes rated on same scale. Found wide range of preferences. Multiple regression used to compare ratings with content of scenes.	Semantic scale included buildings, water, cliffs, beach, harmony, complexity, contrast, familiarity, panoramic, enclosure.	1 st survey: 40 participants. 2 nd survey 100 participants.	
Correy and Radford (Breckwoldt 1984)	Blue Mountains – three valleys (Megalong, Kanimbla & Hartley Valleys)	Physical EM	Area mapped. Landscape units defined & scenic quality rated high, medium or low. Scenes from viewpoints analysed and classified.	Maps of drainage pattern, topography, vegetation & land uses		Scenic quality mapped.
Browne, 1987	Jervis Bay 260 km ²	Physical NER	Visual units defined. National Estate values assessed. Boundaries of National Estate values defined.	National Estate values: geomorphology, wetlands, biodiversity, recreation, marine environment, Aboriginal heritage, European history		Maps of National Estate values including visual: visual units & areas seen from Jervis Bay & foreshore vantage points.
Bartlett & Llewellyn, 1989	River Murray – NSW. ~1800 km	Physical EM	5 Regional Planning Units (RPU) from highlands to SA border. Riverine landscape classification (RLC). River setting categories (RSC)	RPU includes degree of modification & landscape character. RLC – geomorphic/ physiographic tracts, landscape character types, RSC – 19/47 reaches highly scenic, 28/47 mod scenic.		Map of highly scenic and moderately scenic reaches.
Lamb & Purcell, 1990	Native vegetation in	Preferences AR	71 landscapes containing 12 structural vegetation forms,	Participants judged naturalness on scale rule 130	81 participants including	Judgements of naturalness related to ecological

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	central coast & near mountains in NSW.		reflecting a range of naturalness.	mm long.	university students & department store staff	naturalness but not equal.
Purcell <i>et al</i> , 1994.	Sydney region (location unspecified)	Preferences AR	12 scenes from region (plus 12 from Padua, Italy) used to assess landscape preferences, place to live & work, and place to visit. Two examples of each scene, total Sydney 24 scenes 7 pt scale. Results analysed with ANOVA.		Students (96) from each country.	Dominant effect of scene type and variations due to preferences and nationality. Naturalness vs built affected preferences – built scenes were lower.
Purcell and Lamb, 1998.	Eastern Australia (Location unspecified)	Preferences AR	Preferences for scenes of vegetation. 96 scenes – 6 examples each with 16 experimental conditions. 0 – 100 pt scale of preferences.	Vegetation classified by type of vegetation formation, structural integrity & foliar density. Extent of view also included.	49 participants, university students & staff.	Medium to high preferences
Hibbard, 1998	North East New South Wales. Queensland border to Sydney ~39,000 km ²	Preferences + physical RFA	Workshops of forest & National Park staff and community identified aesthetic values within forests. 188 sites identified in lower NE region and 107 sites in upper NE region. Sites prioritized by vote at community workshops. Gaps & overlaps identified, 295 sites identified & mapped. 15 sites identified in Upper NE and 11 in Lower NE following threshold analysis.	Threshold analysis for site selection – 1. Identified by forest staff & community of aesthetic value. 2. Good locational data and geographic spread, review sites already on National Estate Register. 3. Manageable site number given resources. Remove duplication.	27 forest staff participated in workshops. 13 community workshops.	Map of significant aesthetic places identified.
Environment Australia, 2000	Southern NSW region 45,000 km ²	Preferences + physical RFA	Aesthetic values assessed by workshops of forest and national park staff (2), community heritage, and from existing data. Foresters identified 81 places and the community identified 286 places. Following threshold analysis, 33 places identified for inclusion.	Data used included art and literature, tourism information, applied landscape research, community perception studies and land data. Thresholds same as NE NSW		List of significant aesthetic places
URS Asia Pacific, 2004	Tweed region pilot, NSW coast	Physical EM	Visual Management System had 4 components: Landscape management structure:	Landscape analysis defined landscape features which comprised land form, land		Application of Visual Management System to integrate management of

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			government responsibilities. Landscape assessment: hierarchical mapping of landscape systems and landscape units. Landscape analysis: views & visual qualities of landscape units. Landscape management: identification & mapping of coastal visual landscape management including preservation, conservation, modification or restoration.	cover, water features, ephemeral features (lighting, atmospheric conditions). Visual elements: formalist features of form, shape, pattern, line, texture, colour. Visual values included visual integrity, diversity/ contrast, balance/ harmony, distinctiveness, rarity, quality.		visual resources into land use planning decisions.

Victoria

Wright, 1973	Bellarine Peninsula ~400 km ²	Physical EM	Landscape units based on physical characteristics. Landscape elements scored based on subjective value judgements.	Permanent feature-land form Temporary features - forest, houses, pasture, water, Extra features - clouds, traffic, wildlife Other senses - sound, smells Man-made contrasts Familiarity		Map of landscape quality classes
Wright, 1974	Albury- Wodonga region 4100 km ²	Physical EM	Landscape units defined, field scoring of features (-10 to +10), scores added for total score. Rating chart developed & tested.	Permanent feature – land form Temporary features - forest, houses, pasture, water, Extra features - clouds, traffic, wildlife Other senses - sound, smells Spontaneous active involvement Natural contrasts Man-made contrasts Familiarity	6 observers in 3 teams.	Landscape quality map and landscape character map produced.
National Trust 1974	Mornington Peninsula and Western Port 2000 km ²	Physical EM	Intuitive subjective approach. Minister asked Trust to advise on region's preservation needs. 'Elitist' judgement	Physical & historical data, landscape location, size, ownership, threats.		Classified & Recorded parts of natural & management- made environment
Steel, 1974	Lake	Physical	Four variables mapped and	Four variables mapped:		Map of high visual quality

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	Mountain, 100 km NE Melbourne, 36 km ²	AR	weightings varied	highlights, sight distance, contrast, vegetation type.		
Champion 1974	Mornington Peninsula and Western Port 2000 km ²	Physical EM	Scenic value assessment based on 3 factors – contrast, condition, prominence at regional scale. Ranking criteria assigned scores -2 to +2 for each factor. These summed for final rank to show comparative value.	Biological data – botany, habitats, fauna. Land data – geology, historic, educational, scenic value, recreation, agricultural		
Seddon, Calder & Davies 1974	Southern Mornington Peninsula ~ 400 km ²	Physical EM	16 land units and 12 coastal units extensively described. “Elitist” judgement.	Covered geology, topography, soils, rainfall, land use, vegetation, cultural landscape, modes of experiencing landscape. Built environment and roads described.		Landscape quality not mapped. Landscape principles, conclusions & recommendations made covering design, land use & roads.
Zube and Mills, 1976	Lorne coastal landscape	Preferences AR	24 scenes. Participants in Lorne and in Amherst. Ratings compared between two groups.	Photographs sorted into five piles from highest to lowest scenic quality.	101 participants in Lorne, 22 in Massachusetts	Shoreline views rated highest, inland views rated lowest. Considerable agreement between groups.
Tract Consultants, 1977	Coast from Apollo Bay to South Australian border 2700 km ²	Physical EM	11 landscape regions (LR), five landscape units (LU) & 91 sub-units. Scenic quality defined by uniqueness, features, contrast & view types.	LR of similar visual, land use, land form characteristics. LU defined by physiographic features – towns, water, terraces		High visual quality areas mapped.
National Trust, 1977	North East region south from Wodonga 6000 km ²	Physical NER	Landscape units. Assessment based on “elitist” judgement (Fabos & McGregor).	Landscape units – valleys, mountains, R Murray floodplain		Significant landscapes Classified or Recorded.
Brown, Itami & King, 1979; Itami, 1981	Upper Yarra Valley & Dandenong Ranges ~3000 km ²	Physical EM	<u>Landscape Classification:</u> physical & cultural landscape, potential land use <u>Landscape assessment:</u> Scenic resource values (SRV) -those landscape dimensions which contribute to scenic quality.	Classification: landform, land use, vegetation, water, manmade & natural features, land use significance, compatibility & capability. Assessment:		Map of scenic resource value (5 classes). Combined with visual landscape sensitivity to develop landscape management units.

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			Visual landscape sensitivity (VLS) -resilience to change. Cultural value (CV) <u>Landscape management:</u> Regional units, Local landscape management units, policies	SRV: slope, spatial diversity, edge contrast, landcover compatibility, naturalism, variety, contrast VLS-vegetation ht & density, slope, agric. Capability, land use. CV-manmade & natural features		
Tawnsley, 1979	Warramate Hills, Lilydale 20 km ²	Physical AR	Assessed biophysical & visual characteristics of area. Bio-physical units defined. Visual landscape units having similar visual characteristics identified.	Biophysical characteristics: geology, slope, topography, soils, climate, hydrology, vegetation, wildlife. Visual characteristics of units: landscape contrast, variety, harmony; availability & depth of views; degree of enclosure		Management implications of environmental and visual units compared.
Williamson & Calder, 1979	Victoria's forests	Physical VMS	Application of US Forest Service Visual Resource Management system. Broad scale planning level and project level. Scenic quality correlated with variety in landforms, rockforms, water, vegetation. Public preferences to be assessed.	Maps of landscape character types, scenic variety classes, public sensitivity.		Visual quality objectives at broad scale & visual resource management guidelines at project level.
Williamson & Chalmers, 1979	Bright Forest Scenic quality	Preferences VMS	Ranked & rated 10 forest scenes positive/negative features.	Naturalness, water, landform/ vegetation variety	97 participants	Phase 1 of NE Victoria study.
Arnot & Grant, 1981	Model	Physical AR	'Multi-strand' approach to landscape beauty covering variable visual aspects (eg seasons), non-visual (eg sounds) scientific (knowledge of area), man-made & natural features (landscape features), economic aspects (existing & potential land uses), landscape appreciation (evocative aspects), scale of observation (panoramic to micro), position of observer	Evocative aspects: 1. drama, awe, 2. fertility, lushness, 3. joy, wonder, 4. composure, tranquility, water, 5. meditative quality, solitude, quietness.		Theoretical model, not applied.

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			(within, towards), significance of vision in motion, assessment (1 outstanding – 6 severe adverse effects).			
Williamson & Chalmers, 1982	Ovens Valley – Mt Buffalo, NE Victoria, 1800 km ²	Preferences VMS	Pilot study of rating 10 photos. Study involved interviews with 19 groups. Q sort of 56 colour photos, 1-7 rating. Paired comparison of 20 scenes. High agreement in ratings & photo sort. Ratings increase with naturalness, water, & variety in landform/vegetation. Decrease with management-made features, clear fells of timber.	Landscape dimensions: Naturalism, rock outcrops, land cover, slopes, water, distance, area of view.	Groups of forest users, managers & special interest. 253 participants.	Results indicate Visual Management system accurately reflects public perceptions in area but insufficient emphasis on naturalness and too much on variety.
Scenic Spectrums, 1986	National classification system applied to case study of Werribee River, Victoria	Physical EM	4 stage qualitative, descriptive approach. Defined River Setting Units (RSU) within landscape character types by biophysical/topography/land use in landscape. RSUs reflect continuum from natural (least altered) to highly developed (most altered). RSUs: natural, semi-natural, farm-forest, agricultural, small town-suburban, urban-industrial.	Within RSUs, assessed degree of occurrence of outstanding positive (landforms, waterforms, cultural features, wildlife) and negative (man-made) features covering the immediate river zone and surrounding viewshed. Evaluate comparative scenic quality of similar RSUs: high, moderate or low comparative degree of occurrence.		Determined River's relative level of scenic significance from world to local significance. Assist in identifying scenic management needs.
Anson, Sweatman & Sandford, 1987; Land Conservation Council, 1988	Victoria's rivers 56,000 km. Smaller rivers and creeks not included.	Physical EM	Covered scenic, recreational, cultural and ecological values of rivers and streams in Victoria. Used aerial photographs for assessment.	Classified rivers by their environment: natural, semi-natural, farm-forest, agricultural, small town-suburban, urban-industrial.		21 rivers of high natural scenic rivers.
Sandford, nd (assume 1988)	Wheeler's Creek, NE Victoria.	Physical VMS	Within Management Zones of Visual Management System defined for forests in area, provide detailed directions for operations to minimize			Timber harvesting plan developed for each landscape management zone.

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			landscape impacts including roads, coupe size, shape & harvest sequencing.			
DCFL, 1989	River Murray, Barmah to Torrumbarry Weir, 130 km.	Physical EM	River Character Units (RCU) – homogenous stretches of river at local level. Within RCUs, defined 35 Landscape Setting Units (LSU). Objectives & actions identified for each LSU.	LSU – natural, natural/high recreation use, natural/high conservation value, cultural/historic, urban, rural residential, farm forest, agriculture		Objectives & actions included in planning schemes and management plans at State & local levels.
Sweatman & Sandford, 1989	Mt Ellery, East Gippsland ~120 km ²	Physical VMS	Forest & landscape resources mapped. Broadscale VMS assessment. Landscape character types mapped & Scenic Quality Classes (high, moderate, low) mapped. Viewshed analysis - travel routes, use area volume, observer types. Seen areas based on distance from travel routes & use areas. Distance-sensitivity composite zones combine seen area & scenic quality classes.	Landscape character types: landform, vegetation, land use, waterform. Public sensitivity (high – very low) based on perceptions & volumes. Seen areas: foreground – background.		Landscape Management Zones & Landscape Quality Objectives
Australian Heritage Commission, 1994	Central Highlands, 12,000 km ²	Preferences + physical RFA	Places of aesthetic value identified. Thresholds of significance applied and places compared with others of similar landscape characteristics and landscape character types. 140 places identified and 66 assessed as being above threshold covering national parks, State parks, scenic reserves, forests, waterfalls, mountains, lookouts, rivers, scenic routes.	Aesthetic places identified by community heritage workshops, art & literature, recreational & tourism information, existing studies, foresters & field staff, and Victoria's Visual Management System		List of proposed National Estate places including aesthetic value. Map of cultural values including aesthetic values.
Environment Australia, 1997	East Gippsland, 12,000 km ²	Preferences + physical RFA	Places of aesthetic value identified. Thresholds of significance applied and places compared with others of similar landscape characteristics and	Aesthetic places identified by community heritage workshops, art & literature, recreational & tourism information, existing studies,		List of significant aesthetic places

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			landscape character types. 100 places identified and 60 assessed as being above threshold covering forests, coast, scenic routes, lookouts, mountains, unusual natural features, & cultural features.	foresters, Victoria's Visual Management System. Thresholds: multiple sources, strong attributes, uncommon or rare type, key local feature		
Tract Consultants, 1998	Victorian coast, 2500 km	Physical EM	Identified landscape character from features and characteristics. 34 setting types identified & defined.	Based on: landforms, land cover, settlements & structures, coast energy levels, capacity to absorb change, cultural influences & impacts, landscape character.		Map of landscape setting types with detailed descriptions. Assist in guiding coastal development and design.
Joint Commonwealth & Victorian RFA Steering Committee, 1999	North East region, 20,000 km ²	Preferences + physical RFA	Preliminary assessment of data from forest critics (133 places) & community workshops (178). Places meeting criteria for preliminary assessment assessed rigorously including field reconnaissance. Final assessment based on threshold analysis. 42 places identified meeting threshold covering 67 places.	Survey of literature, fine art, film and photography related to NE region. Identified frequency of association, public recognition of artists, artworks & places depicted. 44 places identified. Tourist publications reviewed & forest sites recorded and public exposure of the image assessed (45). Threshold criteria: identified by primary community sources, supported by foresters, comparisons with landscape character types, or remote places supported by secondary sources		Map of significant aesthetic places identified.
Joint Commonwealth & Victorian RFA Steering Committee, 2000	Gippsland 26,900 km ²	Preferences + physical RFA	Places with potential aesthetic value identified from forest critics (132 places) & community groups (337), cultural sources (52), tourism places (25), other published sources (25), unusual landform features, landmarks. Places meeting criteria for preliminary assessment	Cultural sources include art, poetry, literature identified 52 places. Thresholds same as NE Victoria.		Map of significant aesthetic places identified.

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			assessed rigorously including field reconnaissance. Field work identified further 21 areas. Final assessment based on threshold analysis. 27 places identified meeting threshold.			
Joint Commonwealth & Victorian RFA Steering Committee, 2000	West Region 57,600 km ⁻²	Preferences + physical RFA	Places with potential aesthetic value identified from forest & park critics & community groups, cultural sources (84 places), tourism places, other published sources. Places meeting criteria for preliminary assessment assessed rigorously including field reconnaissance. Final assessment based on threshold analysis. 37 places identified meeting threshold.	Cultural sources include art, poetry, literature (84 places). Thresholds same as NE Victoria & Gippsland.		Map of significant aesthetic places identified.
Williams and Cary, 2002	Lower rainfall area of SE Australia (location unspecified)	Preferences AR	36 b/w photographs of 5 vegetation types from three rural sites. 5 point rating scale plus interviews of ~20% respondents. Ecological integrity of vegetation rated by 15 ecologists/botanists.		664 respondents from Melbourne and 568 responses from landholders from Vic, Tas and SA	Preferences higher for eucalyptus species than non-eucalypts. Perceived naturalness key influence of ratings of different species. No relationship between ecological quality & preferences.
Planisphere, 2005	Victorian coast, 2500 km (excluding Melbourne). Complemented earlier study of Great Ocean Road.	Physical EM	Mapped and assessed distinctive landscape elements, features, character, quality and extent and identified significant landscape types. Landscape significance depends on landform features, views, edges, contrasts, natural character without development.	Landscape character types of common landform, water form, vegetation, land use. Detailed landscape character areas within landscape types. 32 LCA + 20 in Great Ocean Road region.	Local community given questionnaire and disposable cameras to input in significance determination.	Maps of regional landscape character types and areas and regional landscape significance
Raymond & Brown, 2006	Otway region parks ~2000 km ⁻²	Preferences AR	Part of study of public and private land perception using 12 landscape values. Participants placed sticker dots on maps indicating landscape values for locations.	Used vector & raster models. 12 landscape values included: aesthetic, economic, recreation, spiritual, heritage, intrinsic	1400 sample drawn from electoral roll of region.	Few differences in mix of landscape values for state forests & national parks. Greater differences between national parks & private land.

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Wu et al, 2006	South-central Mornington Peninsula, 190 km coast	Physical + preferences AR	Eight visual features identified as spatial GIS layers. 112 view-points along roads selected. Factor indexes calculated based on viewsheds. Visual exposure modeled. Factor indexes included distance to objects classified 4 zones from 0 m - >5 km. 4 photographs each from 60 viewpoints. Shown randomly & rated 1 – 7 scale. Average rating for each viewpoint derived. Multiple regression analysed relationship between ratings and factor indexes. Visual quality map based on visual quality of each viewpoint.	Visual features: pasture, other vegetation, shore, creek, road, building, slope, sea. Predictive equation based on positive factors of slope and ocean and negative factors of pasture, road, building.	Participants – residents, council staff, professional staff	Map of landscape visual quality of 5 classes

Tasmania

Forestry Commission, Tasmania, 1983	Tasmania – Visual Management System application 16,000 km ²	Physical VMS	Classified landscape character types. Scenic quality classified high/moderate/low by descriptive Frames of Reference. Classified travel routes & use areas by sensitivity & mapped areas seen from high/moderate sensitivity. Classified distance – foreground, middle, background. Mapped Landscape Priority Zones (A, B, C) covering quality, distance, sensitivity.	Vegetation, land form, waterform, land use; public sensitivity of travel routes & use areas		Classification by Landscape Priority Zones – Inevent impact, Apparent impact, Dominant impact.
Russell, 1985, 1987	Tasman Peninsula, 48 km ²	Physical EM	Character, special values, natural resources, sensitivity to development, intervisibility, landscape suitability & potential			Scenic quality assessment and analysis, landscape accessibility analysis, scenic area management
Tasmania-Commonwealth Steering Committee, 1997	Tasmania 68,401 km ²	Preferences + physical RFA	Places with potential aesthetic value identified from 8 social values community workshops as primary data, overlaid by contributions from forest planners, cultural sources &	Cultural sources include novelists, poets, songwriters, playwrights, musicians, fine artists, photographers, craftspeople from 1800s. Scenic mapping based on		Map of significant aesthetic places identified.

Author	Location/area	Type	Instruments	Characteristics	Participants	Outputs
			scenic quality mapping. Scenic mapping delineated high, medium & low quality areas. 491 places identified. 79 of these places of aesthetic significance. Areas assessed against threshold criteria (53 areas)	variety, uniqueness, prominence, & naturalness (VMS). Threshold criteria were identified through community workshop, by community, & by cultural sources.		
Mendel and Kirkpatrick, 1999	Tasmania, 68,401 km ²	Physical AR	Assessed changes in landscape over period 1916 to 1992 using 392 photographs of landscapes. Landscape elements analysed and average scores for period derived. Scenic evaluation based on 10 km square cells and data on scenic attributes used. Formula of scenic evaluation used average scores from photos applied to landscape content.	Landscape elements: mountains, lakes, coast, waterfalls, caves. Scenic attributes: relative relief, water, vegetation diversity, waterfalls, caves.		Maps of scenic value of reserved and unreserved areas in Tasmania

South Australia

Kane, 1976 and McBriar 1977	South Australia – 5 regions 1. Lake Eyre sth to Innamincka 2. Central lower Flinders Ranges 3. Riverland 4. Sth Eyre Peninsula 5. Kangaroo Island	Preferences + physical NER	Developed 4 methods: 1. Bi-polar semantic differential (adjective pairs) – emotional responses to scene. 2. Component checklist – emotional response to parts of scene. 3. Set of marker scenes – ‘objective’ appraisal of scene. 4. Factor equation which ‘objectively’ appraises landscape components from photographs. Components scored +/-2 whether positive or negative impact on scene’s quality. 46 scenes scored by 10 respondents. Averages for each scene scored out of 100.	Bipolar scale included wet/dry, cold/warm, soft/ hard, private/public, unstimulating/stimulating, and disordered/order. Components checklist: coastal & non-coastal landforms, coastal water, streams, lakes & reservoirs, vegetation, human impact, composition & temporary factors	10 respondents	Identified scenes worth classifying (70 pts+), worth recording (60-69). 26 scenes classified, 13 recorded.
Dallwitz, 1977	Flinders Ranges	Physical EM	Assessed landscape elements, Exposure visibility factor (feature	Landscape elements: landform relief & geological		Map of landscape grades

Author	Location/area	Type	Instruments	Characteristics	Participants	Outputs
	76,000 km ²		dominance and viewing area), participation factor (spontaneous suggestion, photographs), modifications (settlements, mining, structures). Scoring range +/-12. Outstanding qualities/dominant detractors +/-7 & significant qualities/detractors +/-5 Ratings summed	exposure; vegetation diversity & scale; pictorial composition form, depth, scale, rhythm & proportion; visual detail colour, texture & contrast; transitory elements- wildflowers, clouds, lighting, wildlife. Ratings: outstanding 10-12, very high 7-9, high 4-6, average 1-3, low ≤0		
Heyligers, 1981	Coast adjacent Coorong	Physical AR	Coastal physiography described. Aesthetic aspects mapped.	Aesthetic criteria: unity, variety, vividness, vantage points, prospects, hazards, refuges		Landscape described as Litton (1974) & Appleton (1975).
Heyligers, 1981	Encounter Bay	Physical AR	Coastal physiography described. Aesthetic aspects mapped.	Aesthetic criteria: unity, variety, vividness, vantage points, prospects, hazards, refuges		Landscape described as Litton (1974) & Appleton (1975).
Dare, 1978	Fleurieu Peninsula ~900 km ²	Preferences AR	Nine landscape tracts of visual enclosure, 1 km grid. Landscape character map from landform & land cover for each square. Assessment of landforms by assessors viewing slides and scoring elements. Impact (0 – 2) of each element multiplied by contribution to quality (-2 to +2). Scores summed for each landform. Landscape quality map to be based on landscape character & field work but not completed.	Landform and land cover	Minimum 10 assessors.	Map not completed
Sanderson, 1979	Adelaide Hills (part)	Physical EM	Landscape character & sensitivity to visual change from development described. 12 landscape management units derived of similar/dissimilar character & sensitivity.	Landform, landcover mapped. Sensitivity to change – slope, landcover, rainfall, soil, slope, aspect, viewsheds, climate		Planning principles & policies defined. Method simplified from Brown, Itami & King, 1979
Wynne, 1980	Yorke Peninsula	Physical EM	Two class landscape assessment by subjective	Landscape assessment based on topographic		Input to regional management plan.

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			judgement.	variation, impairment by buildings & works, vistas.		
Revell, 1981	Fleurieu Peninsula ~900 km ²	Preferences AR	Ten tracts defined and 10 slides per tract selected. Respondents evaluated slides on 0 - 100 scale. Remaining slides grouped by similarity to rated slides and scores assigned by 5 respondents. Each slide thus scored. These converted to on-site score by Kane's (1976) graph. Did not translate scores of views into map.	Scenes covered landforms, water, vegetation, man-made forms.	10 + 5 respondents	Scores over 70 points classified as outstanding – 198 scenes. Map not produced.
Social & Ecological Assessment, 1984	Kangaroo Island coast and inland 4350 km ²	Physical EM	45 coastal & inland locations. Landscape rated high, medium, low. Attributes added (high = 3, moderate = 2, low = 1) and overall scores derived. Aggregate scores 0 – 16 low, 17 – 25 moderate, 26 – 39 high.	Panoramic/distant view, middleground views, restricted views, contrasts, diversity, relief, unity, naturalness, vegetation, fauna, structures, ephemera, rarity		
Edwards, 1987	Kangaroo Island coast 460 km	Physical EM	Classified five "coastscape" character types. Assessed landscape quality using land form and land cover	Coastscape: cliff backed beaches, dune backed beaches, cliffs, coastal slopes & plains, estuary & tidal flats. Land form: relative relief, slope, relief contrast, spatial diversity Land cover: compatibility, naturalism, height contrast, internal variety.		Map of excellent, average and poor landscapes
Lothian, 2000	South Australia, 984,400 km ² and 3,700 km coast	Preferences AR	Broadscale landscape quality assessment based on community rating of representative photographs	Analysed by region, landscape units, land form, land cover, land use, water, diversity, naturalness, colour	319 respondents	Map of ratings (1 – 10) for South Australia
Davis, 2003	Adelaide metro area – parks	Preferences AR	Defined landscape character units. 21 sites surveyed, 42 photos. Photos rated by participants, 1 -10 scale. Ecological integrity measured on	Landscape character units – forest, woodland, shrubland	72 students, 34 bushwalking club. Total 106	Found no relationship between ecological integrity & landscape preferences. Preferences increased with trees, larger for large trees.

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			6 pt scale.			No support for park-like structures
Lothian, 2004	Scattered and isolated trees, South Australian agricultural region	Preferences EM	112 photographs of large isolated eucalypts plus 50 South Australian benchmark scenes. 1 – 10 rating scale. Trees classified by 9 characteristics. Multiple regression compared ratings against characteristics.	Tree characteristics: trunk height, diameter & verticality; canopy form & density, tree height, health, spacing, number, species; terrain, land use.	440 respondents through Internet survey.	Predictive model derived. Preferences increased with number & density of trees, health & height of trees. Slight relationship between ecological health & ratings.
Lothian 2005a	Coast of South Australia 3,700 km	Preferences EM	138 scenes plus 28 South Australian benchmark scenes. 1-10 rating scale. Coastal development survey also conducted with scenes with and without developments.	Coastal factors: Indentation of water/land, area of water, awe - tranquil scale, naturalness, diversity, beach quality, landform height.	2200 respondents Internet survey. 1660 for coastal development survey.	Map of ratings for coast. Predictive models derived. Scenic quality enhanced by: diversity, tranquility-awe, naturalness. Maps and statistics of ratings per region and council.
Lothian, 2005b	Barossa & Light Council areas (840 km ²)	Preferences EM	120 scenes plus 30 South Australian benchmark scenes. 1-10 rating scale.	Landscape factors: Visibility of Barossa Ranges, buildings & structures, naturalness, trees, terrain, vines, water.	1200 respondents Internet survey.	Map of ratings for Barossa. Predictive models derived. Scenic quality enhanced by: naturalness, trees, terrain, water, visibility of Barossa Ranges. Map and statistics of ratings
Lothian, 2007	River Murray (571 km), Lakes (850 km ²) and Coorong (140 km)	Preferences EM	120 scenes plus 30 South Australian benchmark scenes. 1-10 rating scale. River development survey also conducted of development scenes.	Landscape factors: Cliffs, trees, water, diversity, naturalness, awe – tranquility, tree health, water reflections, wildlife.	1670 respondents Internet survey. 1260 for R Murray development survey.	Map of ratings for River Murray, Lakes & Coorong. Predictive models derived. Scenic quality enhanced by: water, tall dense trees, high sheer cliffs. Maps and statistics of ratings
Lothian, 2009	Flinders Ranges	Preferences EM	127 scenes plus 20 South Australian benchmark scenes, 1 – 10 rating scale	Landscape factors: Landforms, rockfaces, dull-awe inspiring (spectacular), vegetation, naturalness, diversity, colour, aridity-lushness	2422 respondents, Internet survey.	Map of ratings for Flinders Ranges. Predictive models derived. Scenic quality enhanced by spectacular, diversity and landforms.

Author	Location/area	Type	Instruments	Characteristics	Participants	Outputs
Western Australia						
Joint Commonwealth - Western Australia Steering Committee, 1998	South West forest region, 43,000 km ²	Preferences + physical RFA	Places of potential aesthetic significance identified from tourist literature, forest experts, previously identified places. 341 places identified. Threshold analysis reduced this to 112 places. These reconciled into 42 distinct areas and mapped. Further 9 places identified through social values workshops. Total of 51 places.	Tourist literature included tourist brochures & guide maps (104 places). Threshold analysis based on 7+ tourist sources mentioning place, or if <7, corroborated by foresters or community workshops. Similarly places identified by foresters or community workshops had to be corroborated by one of the other two sources.		Map of significant aesthetic places identified.
Northern Territory						
Harding et al, 1987	Kakadu National Park Stage 2. ~9000 km ²	Physical WHA	Compiled list of aesthetic features, mapped these including by aerial survey, identified comparable locations, experienced phenomena and assessed. Six outstanding, intrinsic aesthetic features identified.	Scale of features, form contrast and evocative contrast between arid outliers & lush floodplain, wildlife, seasonal changes.	Researchers and locals familiar with area.	Map of aesthetic phenomenon