

# Determining scenic preference in the coastal zone

## Guideline for coastal development

### Introduction

The objective of the State Planning Policy (SPP) scenic amenity policy is to maintain or enhance the scenic amenity of important natural coastal landscapes, views and vistas of Queensland's coasts. Regionally significant and locally important coastal landscape features and areas of high scenic value should be acknowledged by local governments and identified in their planning instruments.

Where the existing scenic amenity values of the coast draw heavily on a predominantly natural undeveloped landscape character, new development should be undertaken in a manner which maintains or enhances the dominance of this character.

This guideline provides information on a method that may be used to assess the scenic amenity values for coastal and riverine landscapes, and determine the extent of changes to the scenic amenity. It has been adapted to apply to the whole of Queensland from the 'Implementation Guideline No. 8 – Identifying and protecting scenic amenity values' (<http://www.statedevelopment.qld.gov.au/resources/guideline/scenic-amenity-guideline.pdf>).

The scenic preference rating (SPR) of an area can be used as an indicator of scenic amenity. Methods to maintain and/or improve scenic amenity of important natural coastal landscapes, views and vistas most commonly include locating structure(s) so that they are partly or fully hidden from important viewing locations and providing or restoring vegetated buffers between development and coastal waters.

### Basic concepts, terms and methodology

Scenic preference indicates people's relative preference for different landscape features and is defined as 'a rating of the community's liking for scenery of open space compared to areas occupied by built structures, measured using photographs'<sup>1</sup>. Scenic preference is recorded using a rating between one and 10, where landscape elements with a rating of one are least preferred and elements with a rating of 10 are most preferred.

### Describing views

People's preference of a view is influenced by the context of a view (inferred from elements of the view), the specific elements of the view and the compatibility of such elements within that context. The term 'visual domain' is used to describe a scene's context, and the specific elements of the view are referred to as 'visual elements'.

A visual domain is a large, geographically distinct and connecting area that defines the context and principle expectations by which people respond to the elements of a view. A visual domain is characterised by a repeatable set of mostly similar visual elements. While it would be theoretically possible to define any number of visual domains, four visual domains have been found to be practically and statistically significant. These are bush, coast, rural and urban.

A view can contain more than one visual domain and a view is usually described by the two most prominent visual domains. For example, a view might be 60 per cent coast and 40 per cent bush and therefore described as a coast/bush domain. The major distinguishing characteristics of each visual domain are outlined in Table 1.

A visual element is a recognisable object which represents a component of a view that influences people's preference. A visual element can be built or natural and is usually more common in one visual domain than in other

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<sup>1</sup> Department of Natural Resources and Mines and Environmental Protection Agency (2001), *Scenic amenity: Measuring community response to landscape aesthetics at Moggill and Glen Rock*, Brisbane.

visual domains. Examples of built visual elements include boats, building, bridges, fences, quarries, roads, trails, park furniture, signs, and vehicles. Examples of natural visual elements include animals, crops, grass, rock, sand or mud, trees or shrubs and water (Table 2 provides examples of both built and natural elements).

**Table 1: Major characteristics of visual domains.**

Visual domain	Common visual elements
Bush	Relatively even, unbroken canopy of mostly mature natural vegetation Very few built elements.
Rural	Crops Grazing land Pine forest Rural fences, farm animals, farm houses, farm machinery or farm buildings.
Urban	Moderate to high density of residential, industrial or commercial buildings Urban parks including planted trees and mown grass Roads with kerbing, lights, signs and other urban infrastructure.
Coast	Ocean (open sea, estuary or bay) Sand or mud beaches Rocky cliffs or shores Jetties and boats.
Extent of coastal domain	When adjacent to the urban visual domain, the coast visual domain ends as soon as any built structure or mown grass commences. This may be an urban park, footpath, road, car park or surrounds of a building. When adjacent to the bush visual domain, the coast visual domain ends where any trees or low vegetation occurs above the high water mark. Low sparse natural vegetation (e.g. spinifex) on sand dunes is within the coast visual domain.
Other considerations	Creeks, rivers or roads can occur in the bush, rural or urban visual domains.

A distinction is made between areas of high and medium scenic preference. It is important to protect both areas of high and medium scenic preference to ensure the coastal scenic values that are attractive to communities and tourists alike are retained.

Areas with high scenic preference have a SPR of 8, 9 or 10 and these areas are generally characterised by natural environments with little or no built elements. It is the intent of the SPP to protect these environments from intrusive development and retain the natural features of the landscape, and specifically to retain the features of the coast domain, such as coastal waters, wetlands, dunes and the foreshore. The photographs below provide examples of areas of high scenic preference.



Domain: bush/coast SPR = 9.8



Domain: coast/bush SPR = 9.6



Domain: rural SPR = 9.4



Domain: bush SPR = 9.4



Domain: coast/bush SPR = 8.6



Domain: bush/coast SPR = 8.5



Domain: bush SPR = 8.5



Domain: rural/bush SPR = 8.0

Areas of medium scenic preference are defined as areas with a SPR of six or seven and tend to have some built elements See pictures below for examples.



Domain: urban/coast SPR = 7.9



Domain: bush SPR = 7.2



Domain: coast/urban SPR = 6.8



Domain: coast/urban SPR = 6.3

## Coastal and riverine landscape features of high scenic preference

Areas within 500 m of the coast or the bank of a waterway or estuary are considered to contain scenic preference values, such as water in the ocean, bays, rivers and estuaries. The preliminary identification of these areas as with high or medium scenic preference values is supported by previous studies, which have demonstrated that the highest scoring views depict natural scenes with water in the ocean, a bay, river or creek and natural vegetation with no evident development<sup>2</sup>.

This research also shows that:

- people place a high value on intimate views of natural waterways
- top-rating views are of natural scenes of the ocean, rocks, white sand and natural coastal vegetation without any evident development
- moderately important coastal views are of water in a bay or an estuary with trees and relatively little development
- top-rating rural views include rivers or a dam surrounded by eucalypt forest and pasture
- with few exceptions, views with water, trees and hills in all visual domains score highly where there is no evident development.

As scenic preference surveys have not been conducted for the entire coastal zone, the methodology from South East Queensland (SEQ) studies has been adapted to determine areas of high and medium scenic preference within the Queensland coastal zone.

Where there is reasonable concern that the SEQ studies are not applicable to other regions, local studies using the SEQ survey methodology can be conducted to verify locally applicable standards.

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<sup>2</sup> South East Queensland Regional Scenic Amenity Study (2004), *Interim Scenic Amenity Maps and Guidelines to Protect High Scenic Amenity in South East Queensland*, Brisbane, South East Queensland Regional Organisation of Councils, Office of Urban Management, Department of Local Government, Planning, Sport and Recreation, Department of Main Roads, Department of Primary Industries and Fisheries, Environmental Protection Agency, Moreton Bay Waterways and Catchments Partnership, SEQ Western Catchments Group, Natural Resources Management SEQ and SEQWater.

## Assessing scenic preference

Coastal Environment planning policies in the SPP aim to protect scenic amenity by encouraging planning and development decisions that maximise opportunities to maintain or enhance the natural scenic amenity values of the coast. To do this, development should avoid adverse impacts on scenic preference values. Adverse impacts with regard to scenic preference occur when a development proposal will result in a significant change in the SPR of the view. However, certain types of development, by their nature, may not be able to avoid adverse impacts on scenic preference values. In such instances, development must minimise adverse impacts to scenic preference values by applying suggested acceptable solutions. These types of development include government-supported transport infrastructure and coastal protection works. Method to estimate the pre-change SPR of an area within 500 m of the coastline, riverbank or estuary-

**Step 1: Plan the site inspection.** Plan the site inspection by reference to topographic maps, aerial photographs, roads and tourist maps, cadastral maps or land-use maps that provide a broad overview of the locality of interest. Particular note should be made of access routes and potential visual features of interest.

**Step 2: Select viewing locations.** Select specific view locations that are representative of views of interest - this may involve consultation with the development proponent to reach agreement on the specific location that will best characterise the view. It may be helpful to consult available information (informal or formal) on visitation or use of access routes to, or near, the site of interest to identify viewing locations that have higher levels of use, or prolonged periods of use (such as picnic areas).

**Step 3: Acquire photos.** Take three colour photographs (using a 50 mm lens or equivalent) of the proposed development site that are representative of the different views people will have of the proposed development. Preference must be given to the most highly used and affected public viewing location within a maximum distance of five kilometres. The photos should be taken according to the photography guidelines outlined below.

### Guideline for taking photos-

1. Take photos from publicly accessible viewing locations (for example, roadside or public park).
2. Take photos from standing height at a location where people would be most likely to experience the landscape.
3. Take photos in the regular 'landscape' horizontal format.
4. Take photos on a fine day under full sun; or if not possible, under uniform lighting. The sky should be mainly blue.
5. Do not take photos in early morning or late afternoon.
6. Some clouds in the photo are allowable, provided they are not particularly distinctive (do not influence people's preference).
7. The sky should take up about one-fifth of the photo area, except for intimate views with close trees or shrubs in the foreground, or views close to mountains or cliffs.
8. Any major features or landmarks should be located about one-third of the way across the photograph.
9. Avoid unusual and particularly attractive or unattractive features in the foreground.
10. Minimise the occurrence of people or vehicles in the overall photo, where possible, especially in the foreground.

**Step 4: Record the details of each photo.** It is best to mark each viewing location and direction of the view on a large-scale reference map, such as a photocopy from a street directory. For each photo, record the viewing location, a photo identifier, the time the photo was taken, view direction and the specific location the photo was taken from.

**Step 5: Print photos.** It is preferable for photos to be printed in a 5" x 7" format with a white border; but any print format is acceptable.

**Step 6: Code the view characteristics of the photos.** Code each photo by placing a transparent overlay on the photo, delineating polygons around objects, and recording characteristics of each object. It is suggested that polygons are delineated using a black marker in the following order: sky, visual domain, built visual elements, and then natural visual elements. Overlays should ideally be reproduced with a black rectangle equivalent to the extent of the survey photograph (176 mm x 199 mm for 5" x 7" photos).

The characteristics to be recorded for each polygon are:

- polygon number (1.n)

- visual domain (bush, coast, urban or rural)
- visual elements (level 3), see Table 2 below.

**Table 2: Visual elements to be recorded for each polygon.**

Level 1	Level 2	Level 3 (to be recorded)	Level 4 (basic visual elements)
Built	Building	Low non-residential	Low non-residential Water tower
		Low residential	Low residential several
		Low single	Low residential single
		Medium to high	Medium High
		Park cultural buildings	Low cultural or heritage Low park
	Built elements water	Built elements water	Boat ferry Boat small Bridge concrete Bridge wooden Jetty
	Built miscellaneous	Built miscellaneous	Other built Rubbish bin
	Farm elements	Farm elements	Irrigation pipe Machinery Windmill
	Fence retaining wall	Fence	Concrete Other Paling Post rail Post wire Solid Wire netting
		Retaining wall	Concrete Groyne Other Rock
	Mines, quarries, dumps	Mines, quarries, dumps	Quarry concrete Quarry exposed rock Rubbish dump landfill
	Park recreation elements	Park elements	Graves Park furniture Vehicles sport
		Path	Path sealed Path unsealed
	People	People	People
	Roads freeways	Roads freeways	Road freeway
		Roads	Car park sealed Car park unsealed Road guard rail Road sealed Road unsealed Road verge
		Vehicles	Car Trucks
	Towers cables poles signs	Signs	Signs advertising Signs advisory
		Towers cables poles	Communication structures poles Communication structures tower Electricity structures cable Electricity structures pole Electricity structures tower Electricity structures transformer Pole light

Level 1	Level 2	Level 3 (to be recorded)	Level 4 (basic visual elements)
Natural	Crops pasture animals	Crops pasture animals	Animal cow Crops grain Crops orchard Crops pineapples Crops soil Crops sugar cane Crops vegetables Grass pasture
	Grass	Grass mown	Grass mown
		Grass natural	Grass natural
		Grass unmanaged	Grass long Grass soil
	Natural miscellaneous	Natural miscellaneous	Animals birds Other natural
	Rock sand mud	Mud	Mud bay Mud creek river
		Rock	Rock cliff Rock headland Rock stones boulder
		Sand	Sand beach Sand creek river
	Trees shrubs	Coastal vegetation	Trees shrubs low coastal Trees shrubs mangroves Trees shrubs melaleuca Trees shrubs pandanus
		Eucalyptus (euc) associated forest	Trees shrubs Casuarina Trees shrubs euc dense Trees shrubs euc mid-dense Trees shrubs euc sparse Trees shrubs riverine
		Garden	Garden
		Modified vegetation	Trees shrubs mostly trees Trees shrubs other Trees shrubs camphor laurel Trees shrubs dead tree Trees shrubs exotic pine Trees shrubs regrowth wattle Trees shrubs weeds
		Native pine	Native pine
		Pine forest	Pine plantation
		Rainforest	Rainforest
		Trees planted	Planted exotic Planted native
	Water	Water bay	Water bay
		Water constructed	Water constructed
		Water inland	Water creek river Water dam or lake
		Water ocean estuary	Water estuary Water ocean
Mixture	Buildings trees grass	Building trees grass	Mostly grass Mostly buildings Mostly trees Equal trees buildings



**Example of a sketch delineating visual element polygons on a photograph.**



Step 7: **Summarise view characteristics of each photo.** Scan the transparent overlay and calculate the area of each polygon using ImageJ image analysis software package (available from <http://rsb.info.nih.gov/ij/>; and instructions for use can be accessed via the Department of Environment and Science (DES) website). Transfer data on the area of each polygon of visual elements and the area of each domain into an Excel spreadsheet (template available on the DES website) and calculate the area of each polygon as a proportion of the area of all 'terrestrial' objects (photo areas excluding the sky).

Step 8: **Enter view characteristics of each photo in SPRAT-1.** Enter the proportion of each level 3 visual element of the photo into SPRAT-1 (available on DES's website). Record the estimated SPR for each view of interest. Calculate the mean SPR of all three photos taken and also note the range of scores.

Completing the above process will provide the pre-change SPR for the view of interest. If the mean SPR rating is five or less, it is considered to be of low scenic preference.

**Determining if the visual impact of proposed development is acceptable**

It is important to be able to assess the impact of proposed changes to an existing view when built or natural elements are increased or decreased.

In the context of the SPP, built development refers to urban, industrial and commercial development and associated infrastructure. Examples of built elements are outlined in Table 2.

The procedure for assessing the difference between two views is based around the above steps for assessing the SPR of the pre-change view.

1. Enter the information gathered when determining the pre-change view SPR into view one of SPRAT-2 (available on DES's website).
2. Sketch the outline of the proposed development and the applicable landscape unit on each photograph. This can be done either manually or using digital photo montage techniques. Take into account the screening effect of new trees and landscaping after five years (if applicable).
3. Measure characteristics of view two. For this 'changed view', repeat steps six and seven above from the measurement procedure to calculate the proportion of each visual domain and visual element.
4. Enter new proportions for view two. Enter percentages for the change proportions into the view two column of the SPRAT-2 spreadsheet. Where digital photo editing tools are available, it may be possible to conduct some of the above steps using computer software instead of manual techniques.
5. Record estimated change in SPR. The tool estimates the level and direction of change (ranging from one to 10 points difference) and a simple yes (Y) or no (N) indicating whether the change is statistically significant.
6. Repeat for all pairs of photos. The above procedure (steps two to five) can be repeated for all 'pairs' of photos taken of the view of interest to determine the average change in mean SPR and whether changes are consistently significant. The change is statistically significant if the assessment of two of three (2/3) or three of three (3/3) of the photos result in a significant change (Y).

## Acceptable level of change

In areas of high and medium scenic preference, proposed development should not result in an average significant change (2/3 or 3/3 Y). The amount of change acceptable varies between high and medium important scenic preference areas, for example, placing development in a high scenic preference area that is currently free of development will have a greater visual impact than if the development was proposed in an area with other similar types of development.

Thresholds of acceptable change have been determined to ensure that areas of high or medium important scenic preference are preserved in the long term and to address the issue of compounding long-term impacts of development, see Table 3.

**Table 3: Acceptable level of change.**

	Pre-change SPR	Lowest acceptable SPR post change
Areas of high scenic preference	10	10
	9.0–9.9	9.0
	8.0–8.9	8.0
Areas of medium scenic preference	7.0–7.9	6.0
	6.0–6.9	5.0

### Areas of high scenic preference

Acceptable change (for example, development) in an area of high scenic preference (pre-change SPR of eight, nine or 10) should not result in a post-change score of less than the pre-change score. This requirement is additional to an average non-significant change. For example, if the pre-change SPR of a view is 9.3 it should not result in post-change SPR of less than 9.0 and should not be statistically significant.

If the proposed development results in an unacceptable change, then the design and location of the development should be modified using the suggested acceptable solutions and then reassessed. If the proposal still results in an unacceptable change, the proposal should be declined. This will protect natural areas with little or no built development and takes into account the cumulative impacts of development.

### Areas of medium scenic preference

Acceptable proposed development of an area of medium scenic preference (pre-change SPR of 6 or 7) should only result in an incremental change of one SPR point, for example, 7 to 6 in addition to an average non-significant change.

If the post-change score results in a change in the SPR of more than one increment, the design and location of the development should be modified using the suggested acceptable solutions and then reassessed.

## Acceptable solutions

For development that is unable to avoid adverse impacts to scenic preference values, the following acceptable solutions for reducing the visual impact of proposed buildings and infrastructure should be implemented:

#### A. Modify location and design

The most effective way to reduce the area of proposed evident built development is to reduce the amount of building and infrastructure visible to viewers from the foreshore. This may entail:

- a) increasing the distance between the development and important viewing locations
- b) locating the structure(s) so that it is partly or fully hidden from important viewing locations
- c) reducing the height and width of the structure(s) visible from the public viewing locations.  
and/or

#### B. Use trees and vegetation to screen buildings and infrastructure, and thus reduce the area of evident built development.

This may entail:

- a) retaining existing vegetation or planting new trees to screen the buildings or infrastructure
- b) undertaking supplementary planting around or under remnant trees
- c) planting trees and vegetation part way between the viewing location and the structure(s) rather than immediately adjacent to the structure(s).

The impact of the development may also be reduced if it is constructed of materials and with finishes that complement the scenic landscape.

When developing a landscaping plan—wherever possible, plant species should be chosen that quickly screen the development and contribute to other environmental and community amenity objectives (such as biodiversity, shade, low risk to drainage pipes, low fire risk, and low risk of storm damage). The landscaping plan should be accompanied by a watering and maintenance plan.

The above solutions can also be implemented in order to attempt to achieve an acceptable change.

Compile a final visual impact report, including:

- identifying visual envelope from site, land use and land cover, topographic features
- identifying location and characteristics of proposed development
- identifying access and viewing locations
- identifying viewing location to be used for assessment of impacts
- illustrating site pre-development in predominately undeveloped areas: photographs, polygon images (identifying visual elements)
- illustrating site post-development: photographs, polygon images (identifying visual elements)
- calculating SPR for pre and post development (SPRAT and excel spreadsheet)
- measuring evident development before mitigation
- describing visual mitigation measures and maintenance plans (if applicable)
- measuring evident development after mitigation (if applicable).

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