

Queensland Coastal Plan

State Planning Policy for Coastal Protection Guideline

Prepared by:

Environment Planning

Department of Environment and Resource Management

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The State Planning Policy for Coastal Protection Guideline (the guideline) is not intended to replicate the contents of the State Planning Policy for Coastal Protection (SPP) or the development assessment code (the code) contained therein.

Section 1 – General

1. Policy outcome

The Queensland Coastal Plan (incorporating the SPP) supersedes the regional coastal management plans (RCMPs). For certain coastal localities, information that remains relevant for informing decisions under the SPP has been included at Annex 1 of this guideline.

2. Relationship with other planning instruments

Achieving the policy outcomes may conflict with policies and requirements in other planning instruments. However, the SPP has been prepared to reflect the following principles:

- a) Existing development commitments, notably a current development approval(s) and detailed provisions in planning schemes, may limit the extent to which the SPP's policy outcomes can be achieved.
- b) The SPP is generally able to inform other planning instruments even if, initially, there seems to be a conflict.

The SPP does not automatically override policies and requirements contained in other State planning instruments. Where there is a conflict between the SPP and a statutory regional plan, the regional plan prevails to the extent of the conflict. However, in all other circumstances, the SPP should be considered together with, and complementary to, any applicable State planning regulatory provisions and any applicable statutory regional plan.

The SPP is mandatory and prevails over any local planning instrument to the extent there are any conflicts. These requirements apply to both planning (that is, making or amending planning instruments) and development assessment.

3. Addressing any policy conflicts

There is no obvious conflict between the SPP and any other current State planning policy. If a conflict arises in the future when state interests are being addressed, the state government will determine how the conflict should be resolved in the context of a whole-of-government review prior to adoption of a planning scheme or amendment.

Development applications must be assessed on their merits against all relevant considerations specified in the integrated development assessment system (IDAS). Where there is conflict, the assessment manager will make a balanced assessment to determine what policy and development outcomes are appropriate in the public interest. In rare cases, the state government may consider the assessment manager's decision is sufficiently contrary to a state interest to justify intervening in the decision.

4. Limits on implementing the SPP

Nothing in the SPP prevents a local government, assessment manager or designator from addressing the policy outcomes of the SPP more stringently or in more detail than sought by the SPP, other than the factors used to identify coastal hazard areas. The factors referred to in section 2.1.1 and Annex 3 of the SPP are not to be changed by a local government, assessment manager or designator when implementing the policy, either through development assessment, the preparation of a local planning instrument, or designating development as community infrastructure.

Section 2 – Planning instruments

It is preferable that the state's interests in coastal matters are considered and addressed through land-use planning in the first instance, rather than through subsequent development assessment in isolation. This is a more efficient and effective way of achieving coastal protection outcomes. Coastal protection matters are to be addressed when making other state or any local planning instrument under the *Sustainability Planning Act 2009* (SPA), where these have effect in the coastal zone.

5. Identifying coastal zone elements within the planning instrument

Identification by zone or overlay is to be undertaken in accordance with the Queensland planning provisions (standard planning scheme provisions under the SPA).

All areas within 500 m of the coastline or the bank of a tidal waterway or estuary are considered to have scenic preference values. Annex 3 of this guideline provides information to assist in identifying the scenic preference rating of areas.

Whilst the foregoing areas need not be identified as zones or overlays within local planning instruments, they are nevertheless critical for informing land-use planning and the preparation of local planning instruments.

The SPP is not intended to preclude or deter a planning instrument from identifying other areas that will assist in achieving the outcomes of the policy.

6. Land-use allocations in the planning instrument

Planning scheme and regional plan land-use allocations and policies should give preference to land uses within the coastal zone that achieve the SPP's outcomes.

The likely impact of climate change on coastal erosion and/or storm tide inundation is to inform the placement of urban growth areas within the coastal zone. The Queensland Coastal Hazards Guideline outlines land uses that are considered appropriate for projected levels of storm tide hazard severity and recommended storm tide event levels for essential community infrastructure (refer to <www.derm.qld.gov.au/coastalplan>).

With the exception of land allocated for coastal-dependent development and essential community infrastructure, planning instruments should maintain erosion prone areas free from permanent development. Allocation of land within the erosion prone area for urban growth is inconsistent with maintaining public safety, minimising risk to private and public structures and maintaining the coast in a natural state.

Planning schemes for coastal areas should reflect a coastal hazard adaptation strategy for urban areas that are projected to be within a high hazard area between the commencement of the SPP and the year 2100 (refer to Annex 4). Additional guidance to assist local government in the preparation of an adaptation strategy will be made available on commencement of the SPP (refer to <www.derm.qld.gov.au/coastalplan>).

Section 3 – Development assessment

Coastal hazard areas

The Queensland Coastal Hazards Guideline provides information about how to identify areas that are, or are projected to be, at risk from coastal hazards.

The methodology for preparing a shoreline erosion management plan referred to in section 2.4 of the SPP is outlined at Annex 5 of this guideline.

Information about undertaking a risk assessment referred to in section 2.5 of the SPP is contained at Annex 4 of this guideline.

Nature conservation

A copy of the following documents and reference materials are available from the DERM website <www.derm.qld.gov.au>:

- Queensland Government Environmental Offsets Policy
- specific issue offsets policies, such as the policy for vegetation management offsets
- marine park zoning plans and management plans.

Mapping of areas of ecological significance

Where high ecological significance (HES) or general ecological significance (GES) mapping is suspected to be incorrect (that is, a particular environmental attribute or value is not present), a full ecological assessment of the site may not always be required to demonstrate the mapping is incorrect. For example, if an aerial photograph of the site clearly demonstrates that the attribute could not exist on the site (as the site is fully developed and the attribute, such as remnant vegetation, would only be present on an undeveloped site), the photograph would be sufficient to demonstrate that the HES or GES mapping is incorrect.

An ecological assessment would be required where the HES or GES values are present or are likely to be present on site. Based on the values, a basic ecological site assessment or more comprehensive ecological site assessment may be required. Requests to undertake a lesser or greater degree of assessment will be a matter for negotiation between the applicant and assessment manager or concurrence agency, based on the potential environmental impact of the particular development proposal.

The Department of Environment and Resource Management (DERM) can provide information about the ecological attributes of a site shown to be of ecological significance within the SPP. This will allow the ecological assessment to specifically address the attribute or attributes that have resulted in the area being designated as HES or GES.

Threatened species habitat

Specific information about turtle nesting areas is contained at Annex 6 of this guideline.

Scenic amenity

Information on how to determine the scenic preference rating of an area can be found at Annex 3 of this guideline. The guideline also outlines methodology for determining if a change, resulting from development in a high or locally important scenic preference area, is considered to be within acceptable levels in accordance with the SPP.

To assist in determining whether development complies with the policy requirements, Annex 1 lists specific localities in which buildings and other structures should be limited to a maximum of two storeys and screened by native vegetation complementary to the landscape character of the area.

Coastal-dependent development

Maritime development area (MDA)

Annex 1 lists specific localities that are not considered suitable for designation as an MDA.

Minor public maritime infrastructure

Annex 1 lists specific localities where new maritime infrastructure is not supported (with the exception of navigation or regulatory aids to assist vessels, modifications of existing structures, or infrastructure necessary for environmental protection or management), and minor modifications of existing approved structures.

Private marine access structures

Annex 1 lists specific localities where new private jetties, pontoons, ramps and buoy moorings should be avoided.

Extraction and dredging

Annex 1 lists specific localities where sand extraction has the potential to reduce the availability of sand for longshore transport with impacts on beach nourishment. As outlined in Annex 1, dredging of the Hinchinbrook Channel should be avoided, other than for maritime safety.

Section 4 – Review of the policy

The *Coastal Protection and Management Act 1995* (Coastal Act) requires that monitoring and reporting is undertaken in relation to the coastal zone. DERM uses available data to report on the state of the coastal zone as part of preparing the state of the environment reports (SoE) under the *Environmental Protection Act 1994* (EP Act). Periodic review is essential to ensure new information (obtained through research, development and monitoring), changes to government policy, and changes in community attitudes and values are reflected in the SPP, maintaining its effectiveness and relevance.

The performance assessment criteria are provided at Annex 7. The performance assessment criteria are not intended to be used to assess the status of coastal values and assets, and the data sources are those readily available to DERM.

Annex 1 – Locality-specific requirements derived from previous coastal planning processes

The Queensland Coastal Plan (incorporating the coastal SPP) supersedes the regional coastal management plans (RCMPs). Considerable research and investigation has been undertaken in recent years to inform policy and legislation prepared and implemented with respect to the management of resources within Queensland's coastal zone.

This information has been reflected in mapping of vegetation, geology, erosion prone areas, scenic coastal landscapes, etc contained within the now superseded RCMPs and used to identify regionally specific coastal resources and values and the associated coastal management issues.

Site or locality-specific coastal information that remains relevant for informing decisions under the policy has been included in this annex.

Land-use planning

The following coastal localities are not considered suitable for identification as future urban areas in order to maintain natural and cultural resources or the character of existing settlements:

- Tully-Murray wetlands and dunes (Tully Heads, Rockingham Parish)
- Hinchinbrook Channel scenic rim (Damper Creek, Ellerbeck Parish and Rungoo, Pitt Parish)
- Gentle Annie wetlands (Lucinda, Cordelia Parish)
- Forrest Beach sand spit (Taylors Beach, Cordelia Parish)
- Cassady Beach dunes (Forrest Beach, Cordelia Parish)
- Forrest Beach to Crystal Creek wetlands (Coolbie, Waterview Parish; Rollingstone, Hinchinbrook Parish; Clemant, Clemant Parish; Bluewater, Halifax Parish)
- Joyce wetlands and dunes (Bramston Beach, Russell Parish), other than consolidated growth of the existing urban settlement
- Barr and Redden creeks (Machans Beach, Smithfield Parish)
- Dickson (Newell, Whyanbeel; Cooya Beach and Killaloe, Victory Parish)

Scenic amenity

For the following coastal localities, buildings and other structures are to be screened by native vegetation complementary to the landscape character of the area and preferably be no more than two storeys:

- Tam O'Shanter Point (South Mission, Rockingham Parish)
- Dunk (Coonanglebah) Island Spit and associated freehold land (Dukalli Parish)
- Thorpe (Timana) Island (Dunkalli Parish)
- Richards (Bedarra) Island (Dunkalli Parish)
- Hinchinbrook Channel scenic rim (Damper Creek, Ellerbeck Parish and Rungoo, Pitt Parish)
- Hinchinbrook Channel (Damper Creek, Ellerbeck Parish and Rungoo, Pitt Parish)
- Cape Richards (Hinchinbrook Island, Hecate Parish)
- Clump Point (Mission Beach, Hull Parish), excluding developed areas of Mission Beach
- Maria Creek (Kurrimine Beach, Hull Parish)
- Kurrimine dunes and wetlands (Kurrimine Beach, Hull Parish)
- South Barnard Islands (Stephen's Island and Sisters Island)
- Cowley dunes (Cowley Beach, Mourilyan Parish)
- Moresby headlands (Cowley Beach, Mourilyan Parish)
- North Barnards (North Barnard Islands)

- Moresby Range (Etty Bay, Mourilyan Parish)
- Ella Bay (Wanjuru, Gladys Parish)
- Joyce wetlands and dunes (Bramston Beach, Russell Parish) – non agricultural areas
- Bramston Beach (Bramston Beach, Russell Parish)
- Wyvuri (Wyvuri Swamp, Bramston Beach, Russell Parish)
- Mutchero (Deeral, Bellenden Ker Parish)
- undeveloped area of Russell heads (Mutchero Inlet, Bellenden Ker Parish and Russell Parish)
- Frankland Islands (Frankland Group National Park, Russell Parish)
- Russell Heads north (northeast of Deeral, Trinity Parish)
- Eastern Malbon Thompson (Aloomba, Sophia Parish)
- northern foreshore of Western Malbon Thompson (Aloomba, Sophia Parish)
- Yarrabah Peninsula (Yarrabah, Trinity Parish), excluding township and road
- Fitzroy Island (north-east of Cairns City, Trinity Parish)
- Macalister south scenic rim (north of Cairns City, Dullaban Parish)
- Hartley (Wangetti, Dullaban Parish)
- Macalister north (Ratchet Bay to Yule Point, Mowbray Parish)
- Yule Point (Victory Parish)
- Dickson (Newell, Whyanbeel; Cooya Beach, Victory Parish; Killaloe, Victory Parish), excluding mouth of the Mossman River
- Dagmar Range (south of the Daintree River, Whyanbeel Parish)
- Snapper Islands (east of the Daintree River mouth, Alexandra Parish)
- Low Isles (east of Dayman Point, Whyanbeel Parish)
- Shipwreck Bay (south of Cow Bay, Alexandra Parish)
- Cow Bay (Cairns local government area, Tribulation Parish)
- Bailey Creek complex (inland of Alexandra Bay, Alexandra Parish)
- Thornton foot slopes, running adjacent to the west of coastal locality (Alexandra Parish)
- Noah Creek (south of Noah Head, Alexandra Parish)
- Noah Head to Bloomfield (encompasses the coastline from Noah Head to Bloomfield River, Alexandra Parish to Tribulation Parish).

Coastal-dependent development

Maritime development areas (MDA)

The following coastal localities are not considered suitable for designation as an MDA:

- Wongaling Beach to Tully River (Tully to South Mission Beach, Hull Parish)
- Family Islands (east of south Mission Beach, Dunkalli Parish)
- Tully and Murray rivers (Parishes Tyson and Meunga, County Cardwell, Cassowary Coast Regional Council)
- Tully-Murray wetlands and dunes (Tully Heads, Rockingham Parish)
- Hinchinbrook Channel (Damper Creek, Ellerbeck Parish and Rungoo, Pitt Parish), including Herbert River
- Gentle Annie wetlands (Lucinda, Cordelia Parish)
- Taylors Beach wetlands and dunes (Taylors Beach, Cordelia Parish)
- Forrest Beach wetlands and dunes (Parish Cordelia, County Cardwell, Hinchinbrook Shire Council)

- Forrest Beach to Crystal Creek wetlands (Parishes Trebonne, Cordelia; Coolbie, Waterview in County Cardwell and Trollope in County Sidmouth, Hinchinbrook Shire Council) (Rollingstone, Hinchinbrook Parish; Clemant, Clemant Parish; Bluewater, Halifax Parish)
- Maria Creek (Kurrimine Beach, Hull Parish)
- Liverpool Creek (Cowley Beach, Mourilyan Parish)
- Moresby wetlands (inland from Camp Point and Cowley Beach, Mourilyan Parish)
- Barr and Redden creeks (Machans Beach, Smithfield Parish)
- Yorkeys south and north (inland from Half Moon Beach and Richters/Thomatis Creek, northern Cairns, Smithfield Parish)
- Daintree wetland-dune complex (mouth and wetlands of the Daintree River, Whyanbeel Parish)
- Bloomfield River (to the north of Degerra, Tribulation Parish).

Minor public maritime infrastructure

With the exception of navigation or regulatory aids to assist vessels, modifications of existing structures or infrastructure necessary for environmental protection or management) and minor modifications of existing approved structures, new maritime infrastructure development should not be undertaken in the following coastal localities:

- Mutchero (Deearal, Bellenden Ker Parish)
- Yorkeys north and south (inland from Half Moon Beach and Richters/Thomatis Creek, northern Cairns, Smithfield Parish)

Private marine access structures

In reference to policy 6.3.1, the following tidal waterways are not considered suitable for new private jetties, pontoons, ramps and buoy moorings:

- marine areas adjacent to Curtis Island (Parishes Curtis and Targinie, County Deas Thompson, Gladstone Regional Council)
- The Narrows (Parish Curtis, County Deas Thompson, Gladstone Regional Council)
- Calliope River (Parish Auckland, County Clinton, Gladstone Regional Council)
- Facing Island (Parish Gatcomb, County Clinton, Gladstone Regional Council)
- South Trees Inlet (Parish Iveragh, County Clinton, Gladstone Regional Council), adjacent to Wild Cattle Island
- Colosseum Inlet (Parishes Rodds Bay and Iveragh, counties Flinders and Clinton, Gladstone Regional Council).

New **pontoons** within 500 m of the reef crest are not supported at the following localities:

- North Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Tryon Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Broomfield Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Wilson Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Wreck Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Polmaise Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Masthead Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Erskine Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Heron Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Sykes Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- One Tree Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)

New **moorings** within 500 m of the reef crest are not supported at the following localities:

- North Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Wreck Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council)
- Erskine Island and Reef (Bunker Parish, Capricornia Cays National Park, Gladstone Regional Council).

Extraction and dredging

Sand extraction from the following coastal localities has the potential to reduce the availability of sand for longshore transport with impacts on beach nourishment:

- Tully and Murray rivers (Parishes Tyson and Meunga, County Cardwell, Cassowary Coast Regional Council)
- Liverpool Creek (Cowley Beach, Mourilyan)
- Flying Fish Point (east of Coconuts, Glady Parish)
- Lower Mulgrave Valley
- Barron River delta (north of Cairns, includes Ellie Point, Cairns Parish)
- Barr and Redden creeks (Machans Beach, Smithfield Parish)
- Dickson (Newell, Whyanbeel; Cooya Beach, Victory Parish; Killaloe, Victory Parish)
- Daintree wetland-dune complex (mouth and wetlands of the Daintree River, Whyanbeel Parish)

In reference to Nature Conservation Policy 3.3, development in coastal waters maintains the habitat value and ecological functionality of dugong protection areas. As a result, dredging of the Hinchinbrook Channel (Damper Creek, Ellerbeck Parish and Rungoo, Pitt Parish) should be avoided, other than for maritime safety due to the ecological impacts on the marine environment.

Coastal and island communities

In reference to SPP – Policy 1.5, the coastal and island communities located in local government areas between and including Wujal Wujal Aboriginal Shire and Burke Shire are listed below:

- Aurukun Shire
- Burke Shire
- Carpentaria Shire
- Cook Shire
- Doomadgee Aboriginal Shire
- Hope Vale Aboriginal Shire
- Kowanyama Aboriginal Shire
- Lockhart River Aboriginal Shire
- Mapoon Aboriginal Shire
- Mornington Shire
- Napranum Aboriginal Shire
- Northern Peninsula Area Regional
- Pormpuraaw Aboriginal Shire
- Torres Shire
- Torres Strait Island Regional
- Weipa Town Authority
- Wujal Wujal Aboriginal Shire

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Annex 3 – Determining scenic preference in the coastal zone

A3.1 The Queensland Coastal Plan and SPP aim to preserve the scenic amenity of the coast by retaining undeveloped coast in a manner that maintains its natural character. For the purposes of the policy, the scenic preference rating (SPR) of an area will be used as an indicator of scenic amenity.

This annex provides information on how to assess scenic preference for coastal and riverine landscapes, and determine the extent to which changes to scenic amenity are consistent with the policy outcomes of the SPP. Information in this annex has been adapted to apply to the whole of Queensland from the 'Implementation Guideline No. 8 – Identifying and protecting scenic amenity values' based on advice from the Department of Local Government and Planning. Implementation Guideline No. 8 is available from the Department of Local Government and Planning website: <www.dip.qld.gov.au>.

Basic concepts, terms and methodology

A3.2 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' (Department of Natural Resources, 2001). 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

A3.3 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 congruity of such elements within that context. For the purposes of the policy, 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'.

A3.4 A visual domain is a large, geographically distinct and contiguous 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 congruent 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.

A3.5 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.

A3.6 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 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

Visual domain	Common visual elements
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


Scenic preference in the SPP

A3.7 For the purposes of the SPP, areas of high or locally important scenic preference include all defined coastal and riverine landscape features within 500 m of the coastline or 500 m of the bank of a waterway or estuary. The policy does not apply to views that solely comprise of the urban visual domain (100 per cent urban domain; characteristics of the urban domain are described in Table 1) or areas that have a pre-change scenic preference rating (SPR) of five or less. The policy only applies where the natural (undeveloped) character of the coast remains the predominant scenic character.

A3.8 A distinction is made between areas of high and locally important scenic preference. It is important to protect areas of locally important and high scenic preference to ensure the coastal scenic values that are attractive to communities and tourists alike are retained.

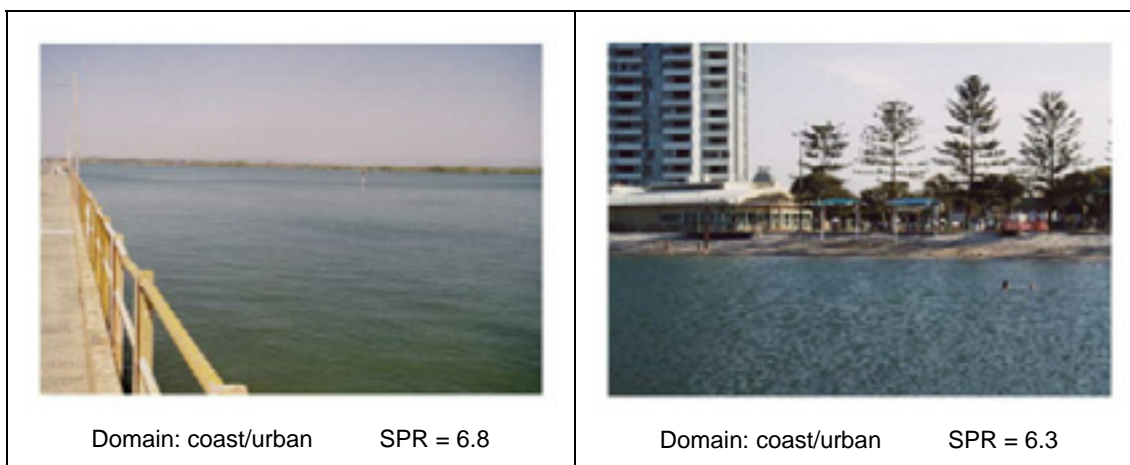
A3.9 Areas with high scenic preference have a SPR of eight, nine or 10 and these areas are generally characterised by natural environments with little or no built elements. It is the intent of the Queensland Coastal Plan and the SPP to protect these environments from intrusive development and retain 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.



 <p>Domain: rural SPR = 9.4</p>	 <p>Domain: bush SPR = 9.4</p>
 <p>Domain: coast/bush SPR = 8.6</p>	 <p>Domain: bush/coast SPR = 8.5</p>
 <p>Domain: bush SPR = 8.5</p>	 <p>Domain: rural/bush SPR = 8.0</p>

A3.10 Areas of locally important scenic preference are defined as areas with a SPR of six or seven and tend to have some built elements. The Queensland Coastal Plan and SPP acknowledge that these areas may contain some built elements and intend to maintain this non-intensive state and to allow limited future development that is contextually congruent to the view. See pictures below for examples.

 <p>Domain: urban/coast SPR = 7.9</p>	 <p>Domain: bush SPR = 7.2</p>
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Coastal and riverine landscape features of high scenic preference

A3.11 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 locally important 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 (South East Queensland Regional Scenic Amenity Study, 2005).

A3.12 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.

A3.13 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 locally important 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. Guidelines on how to conduct a local scenic preference survey are available from the Department of Local Government and Planning.

Assessing scenic preference

A3.14 The coastal SPP requires that development avoids adverse effects to scenic preference values. Adverse effects with regards to scenic preference occur when a development proposal will result in a significant change in the SPR of the view. There are certain types of development that, by their nature, may not be able to avoid adverse effects on scenic preference values. In such instances, development must minimise adverse effects to scenic preference values by applying suggested acceptable solutions. These types of development include government-supported transport infrastructure, maritime development in maritime development areas and coastal protection works.

Method to estimate the pre-change SPR of an area within 500 m of the coastline, riverbank or estuary

A3.15 **Step 1: Planning 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.

A3.16 **Step 2: Selection of viewing locations.** Selection of specific view locations that are representative of views of interest may involve consultation with the development proponent to reach agreement on the specific location that 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).

A3.17 **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, 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.

A3.18 **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.

A3.19 **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.

A3.20 **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.



- A3.21 **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 <rsb.info.nih.gov/ij>). Transfer data on the area of each polygon of visual elements and the area of each domain into an Excel database and calculate the area of each polygon as a proportion of the area of all 'terrestrial' objects (photo areas excluding the sky).
- A3.22 **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 DERM'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.
- A3.23 Completing the above process will provide the pre-change SPR for the view of interest. If the mean SPR rating is five or less, no further assessment is required.

Determining if the visual effect of proposed development is acceptable

- A3.24 It is important to be able to assess the effect of proposed changes to an existing view when built or natural elements are increased or decreased.
- A3.25 In the context of the Queensland Coastal Plan and the SPP, built development refers to urban, industrial and commercial development and associated infrastructure. Examples of built elements are outlined in Table 2.
- A3.26 The procedure for assessing the difference between two views is based around the above steps for assessing the SPR of the pre-change view in paragraphs A4.15 to A4.23.
1. Enter the information gathered when determining the pre-change view SPR into view one of SPRAT-2 (available on DERM'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 (paragraphs A3.20 and A3.21) 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

- A3.27 In areas of high and locally important 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 locally 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.
- A3.28 Thresholds of acceptable change have been determined to ensure that areas of high or locally important scenic preference are preserved in the long term and to address the issue of compounding long-term effects 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	9
	8	8
Areas of locally important scenic preference	7	6
	6	5

Areas of high scenic preference

- A3.29 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.
- A3.30 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 locally important scenic preference

- A3.31 Acceptable proposed development of an area of locally important scenic preference (pre-change SPR of six or seven) should only result in an incremental change of one SPR point, for example, seven to six in addition to an average non-significant change.
- A3.32 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

- A3.33 For development that is unable to avoid adverse effects 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).

A3.34 The impact of the development may also be reduced if it is constructed of materials and with finishes that complement the scenic landscape.

A3.35 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.

A3.36 The above solutions can also be implemented in order to attempt to achieve an acceptable change.

A3.37 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 and access viewing locations
- identifying viewing location to be used for assessment of impacts
- illustrating site pre-development in predominately undeveloped areas, for example, domain, view characteristics, SPR.
- illustrating site post-development, for example, domain, view characteristics, SPR
- measuring evident development before mitigation
- describing visual mitigation measures and maintenance plans (if applicable)
- measuring evident development after mitigation (if applicable).

Annex 4 – Coastal hazard risk assessment and adaptation strategies

The following table summarises the planning and development outcomes in hazard areas as directed by the SPP:

Land use	Hazard category and development requirements	
	High hazard Description: <ul style="list-style-type: none"> permanent inundation areas due to sea level rise (0.8 m by 2100) inundation during defined storm tide event greater than 1 m 	Medium hazard Description: <ul style="list-style-type: none"> inundation during defined storm tide event less than 1 m
Existing urban areas <ul style="list-style-type: none"> built-up urban zones committed for urban development <ul style="list-style-type: none"> future urban zones master plan areas urban development areas 	<ul style="list-style-type: none"> after 3–5 years – adaptation plan required, or no intensification interim – risk assessment and design requirements 	<ul style="list-style-type: none"> risk assessment and design requirements
Greenfield urban footprint areas (uncommitted) <ul style="list-style-type: none"> investigation areas future development areas 	<ul style="list-style-type: none"> no new urban development, except industrial design requirements for industrial development 	<ul style="list-style-type: none"> no new residential development risk assessment and design requirements for non-residential development
Non-urban areas <ul style="list-style-type: none"> rural 	<ul style="list-style-type: none"> no new urban development, except industrial design requirements for non-urban development 	<ul style="list-style-type: none"> no new urban development, except industrial design requirements for non-urban and industrial development
Maritime development areas <ul style="list-style-type: none"> mixed-use development that is not coastal dependant 	<ul style="list-style-type: none"> risk assessment and design requirements for accommodation development 	<ul style="list-style-type: none"> design requirements
Small-to-medium tourist development	<ul style="list-style-type: none"> risk assessment and design requirements for accommodation development 	<ul style="list-style-type: none"> design requirements

Coastal local governments should prepare coastal hazard adaptation strategies for urban areas projected to be adversely affected by coastal hazard impacts before the year 2100. After five years following implementation of the SPP, intensification of existing urban development in a high hazard area requires the support of an adaptation strategy before it will meet the requirements of the SPP.

The adaptation strategy is to:

- a) identify risk areas
- b) prepare an assessment of risks and mitigation options for projected impacts
- c) outline the mitigation measures that will be undertaken and any allowable development in areas where risks will effectively be addressed.

A risk-averse approach is to be taken as there are significant social, economic and environmental implications for underestimating the impact of climate change including the potential for loss of life and property. Risk analysis and evaluation will aid, inform and prioritise the most appropriate adaption strategy. The exact nature of the adaptation strategy will be dependent on the nature of the risk, the vulnerability of the area to impacts and the capacity of the community to respond. Adaptation options include avoidance, retreat, mitigation and defence.

In the interim and for redevelopment in medium hazard areas that propose to intensify the existing level of use, development applications are to be accompanied by a risk assessment that demonstrates that adverse coastal hazard impacts from projected permanent inundation or a defined storm tide event that affect the development (including its operation) can be mitigated. Mitigation options may include location, design, construction and operating standards, including demonstrating existing defensive structures will satisfactorily address the risk of hazard impacts.

Intensification of development refers to development that will increase the community's exposure to coastal hazard risks—for example, replacing a single residential dwelling with a multi-dwelling development, such as a block of flats. The requirement to prepare a risk assessment is not intended to apply to development that replaces an existing single residence with a new single residence, regardless of whether the new residence is larger in either gross floor area or the number of habitable rooms it contains.

Local authorities and applicants are encouraged to take advantage of the significant body of work that has already been undertaken to guide planners and resource managers in responding to the implications of climate change for coastal development. In this regard the following publications are suggested:

Ministry for the Environment 2008. Coastal Hazards and Climate Change. *A Guidance Manual for Local Government in New Zealand*. 2nd edition. Revised by Ramsay, D and Bell, R. (NIWA) Prepared for Ministry for the Environment, Manatu Mo Te Taiao. Available from <www.mfe.govt.nz>.

Commonwealth of Australia 2007. *Climate Change Adaptation Actions for Local Government*. Report by SMEC Australia to the Australian Greenhouse Office Department of the Environment and Water Resources. Available from <www.climatechange.gov.au>.

Commonwealth of Australia 2009. Department of Climate Change. *Climate Change Risks to Australia's Coasts. A First Pass National Assessment*. Available from <www.climatechange.gov.au>.

Annex 5 – Preparing a shoreline erosion management plan

The purpose of this guideline is to assist local governments in the preparation of a shoreline erosion management plan (SEMP) to proactively plan for erosion management in erosion prone areas. Key elements of a SEMP include obtaining a sound technical understanding of the physical coastal processes at the site, involving the community, and engaging the agencies responsible for development application decisions. This guideline does not provide definitive advice on the development of a SEMP. A flexible approach is required to suit local government circumstances. A SEMP is best undertaken via the steering committee to ensure stakeholder concerns and preferences are addressed and managed.

Context

Various beaches in Queensland are experiencing recurring or persistent shoreline erosion problems as a result of the dynamic nature of the coastal environment. The coastal processes of sediment transport, land building and erosion—driven by an interaction of tidal currents, waves, river flows and vegetation—continuously shape and reshape our coastline.

Developed areas impacted by erosion require balanced management to protect infrastructure and preserve coastal values and amenity. However, it is important that natural coastal processes are maintained in the process of protecting development, and where practical development is located away from areas of active coastal processes. Maintaining natural coastal processes is the most cost-effective and least impacting action to protect beach environments.

Management of coastal areas that are vulnerable to erosion is complex due to varying land tenure, high recreational and ecological values, competing interests in the land, and coastal processes. Long-term planning for these areas must also consider the potential for coastal hazards, such as storm tide events and flooding, and the need for adaptation to climate change induced sea level rise.

Purpose of a SEMP

A SEMP is a non-statutory planning document that sets out an agreed framework and management strategy to manage and respond to current erosion or potential future erosion problems in a manner consistent with the Queensland Coastal Plan. A SEMP provides a framework for the sustainable use, development and management of land vulnerable to erosion by considering the environmental, social and economic values of the land and the physical coastal processes acting on the foreshore. The SEMP also outlines the appropriate uses of erosion prone land, and long-term management goals as agreed upon by governments and the community.

The local authority may request that the SEMP be endorsed by the Minister to facilitate its application in the assessment of development applications lodged for land contained in the coastal zone.

The purpose of a SEMP is to:

1. enable local government to proactively plan for erosion management in priority areas consistent with the policies of the Queensland Coastal Plan
2. investigate and address the underlying causes of shoreline erosion and likely future progression, at the local scale
3. determine cost-effective and sustainable erosion management strategies that maintain natural coastal processes and resources, and consider community needs in both the short and long-term.

The benefits of a SEMP

A SEMP may be beneficial when:

- natural coastal processes in an area pose a threat to existing development, such as roads and other community infrastructure or multiple private properties, along a coastal sector; or
- existing or proposed land uses are disrupting natural coastal processes, or are increasing the erosion risk by destroying native vegetation, removing sand or altering land levels, or changing currents and wave actions which transfer erosion to other areas; or
- natural coastal processes need to be allowed to proceed by managing an area as an erosion buffer zone or by maintaining areas free of permanent development.

Such areas may be identified in the Queensland Coastal Plan as priority areas for coastal erosion management. Local governments are encouraged to develop long-term management strategies for these areas through a SEMP.

The preparation of a SEMP provides the following benefits to local governments and the community:

- Individual and ad-hoc property protection works can be expensive and time consuming as additional detailed information is often required to adequately assess the impacts of each proposal on coastal management. The preparation of a SEMP provides for a holistic and integrated approach to shoreline management in a local government area, streamlining the assessment process and reducing the need for multiple, costly investigations and reports.
- A SEMP that has been endorsed by the Minister can form the basis for a preliminary approval or development application for a scheme of works throughout the local government area, removing the administrative burden of managing multiple development applications and permits.
- By developing a SEMP in consultation with relevant government agencies and the community, local government can gain a clear understanding of the constraints and opportunities for shoreline management prior to embarking on development application processes. It can also be a useful tool in managing stakeholder expectations and educating the wider community about coastal processes and available erosion management options.

Land to which a SEMP can apply

The geographical scope of a SEMP may be confined to a specific coastal section or include all erosion prone areas within a local government area (as defined by the relevant erosion prone area plan) and land adjacent to the erosion prone area where future development is proposed in potential erosion prone areas. Erosion risk is not constrained by tenure and therefore a SEMP should apply to all types of public and private land tenure.

Consideration may also need to be given to the related management of coastal resources, such as coastal wetlands and dune systems, particularly those contiguous with, or linked to, the erosion prone area.

Although a SEMP provides a management strategy to deal with shoreline erosion in specific localities, the studies undertaken as part of a SEMP may involve an investigation of the sediment transport process occurring in the broader region.

Contents of a SEMP

A SEMP may include:

- Assessment, identification and review of factors comprising risk, physical coastal processes, implementation strategies and responses—
 - an assessment, analysis and documentation of the severity of shoreline erosion and the subsequent risks posed for the community and development in the area
 - a description of the local and regional coastal processes impacting the area (specifically sediment transport processes, hydrodynamic regimes and the role of plants in erosion control and land building)
 - identification of the cause of shoreline erosion, the geomorphic system responses and likely future trends, in a manner that can be understood by all stakeholders
 - a review of the effectiveness and suitability of existing erosion responses and strategies being implemented (including an analysis of the structural integrity and effectiveness of any existing protection works) to determine if these are consistent with government policy
 - identification of any knowledge gaps that may limit management of shoreline erosion.
- Management options and strategies—
 - the provision of technical descriptions of shoreline erosion or buffer zone management options
 - a ranking of management options with regard to environmental, social and economic cost benefits, sequentially prioritising options having regard to:
 - minimising adverse impacts on coastal processes and biodiversity

- preserving areas of high conservation or ecological values with specific reference to areas of state significance (natural resources), coastal wetlands, biodiversity¹, environmental values and water quality objectives², and any relevant marine park zoning plan³ or declared Fish Habitat Area⁴. Other international, national, state and regional designations may also be relevant and should be identified and considered
- maintaining or enhancing buffer zones (dunal, mangrove or riparian)
- maintaining foreshore access and recreational amenity of the site
- minimising the threat to permanent development
- minimising risk within storm tide coastal hazard areas
- a recommendation of the preferred management strategy based on the ranking.
- Budgetary information:
 - an outline of the estimated costs associated with the preferred management strategy and possible funding sources
 - a summary of potential sources and costs of materials should a preferred management strategy require the use of sand for nourishment or rock for seawalls.
- Implementation strategies:
 - a program or strategy to implement preferred erosion and buffer zone management works
 - details of all federal, state and local government development approvals and requirements that may be required to undertake works associated with the recommended management strategies
 - a summary of how the preferred management strategy complies with all relevant legislation particularly the *Coastal Protection and Management Act 1995* and relevant policies of the Queensland Coastal Plan.

Stakeholder roles

Local government

Generally, council will lead and administer a SEMP project and be responsible for implementing erosion mitigation measures. Council's role in developing a SEMP may include⁵ (but not limited to):

- selecting, forming and administering a project steering committee
- establishing a community participation program
- preparing a terms of reference and expressions of interest for interested consultants
- selecting an appropriate consultant and administer the contract of engagement
- collating preliminary information for the consultant
- conducting a community consultation and participation program
- updating the steering committee
- making final decisions regarding the implementation of management options outlined in the SEMP, based on advice and comments from the steering committee and the community
- implementing the preferred management strategy, including obtaining the relevant statutory approvals, overseeing programs of works, and regularly monitoring and reviewing the effectiveness of the preferred management strategy.⁶

¹ See the Queensland Coastal Plan.

² See Environmental Protection (Water) Policy 1997 and the Queensland Water Quality Guidelines 2006.

³ prepared under the *Marine Parks Act 2004*.

⁴ declared under the *Fisheries Act 1994*.

⁵ The availability of resources may require local government to restrict their role and the outputs of the SEMP or undertake the SEMP in sequential stages.

⁶ The monitor/review/update cycle should be based on a timescale of approximately five years.

The Department of Environment and Resource Management

The Department of Environment and Resource Management (DERM) is available to provide technical direction and expert coastal advice and ensure the objectives of the *Coastal Protection and Management Act 1995* are met. The key roles of DERM may include:

- assisting council set the terms of reference for any investigation
- providing access to coastal data held by DERM
- providing technical guidance and expert knowledge on coastal processes, coastal resources and their values (including biodiversity and habitat values) and techniques to manage coastal areas
- addressing any matters affecting DERM's estate (such as national parks) or State marine parks
- ensuring the erosion mitigation options and the final management strategy are consistent with the Queensland Coastal Plan policies and other relevant policies and guidelines for coastal development
- considering the SEMP as a pre-design agreement between the relevant agencies as a means of facilitating or simplifying future development approvals for proposed works.⁷

Consultant

The local community should be consulted on the draft SEMP and asked to provide feedback on the management options provided. The steering committee may establish a reference group of interested community members to carry out this role. It may also be beneficial for a reference group to provide scope for the project by contributing to the development of the terms of reference. This will ensure community expectations are met by the consultant when preparing the SEMP. All landholders in areas with a defined problem would be encouraged to participate or express their views.

Procedures for developing a SEMP

In consultation with the steering committee, the project manager is to prepare terms of reference, which outline the desired outcomes of the SEMP and the respective requirements of any consultant engaged to prepare the SEMP.⁸ The development of a SEMP should be generally based on the following methodology:

1. If the SEMP is to address more than one erosion prone area, divide the coastal section into logical units or localities for individual investigation. This could be based on physical boundaries, such as headlands or river entrances or administrative boundaries.
2. Identify coastal resources, including wildlife and vegetation communities (such as shoreline vegetation, migratory shorebirds, nesting turtles, and intertidal communities), environmental values and water quality objectives of waters in each locality and their relative importance with regards to biodiversity conservation, water quality protection and maintenance of coastal processes.
3. Identify and describe the physical coastal processes at work in each locality.
4. Determine the threats within each coastal locality and describe present and emerging risks to people, property and the environment from shoreline erosion. In addition, the benefits of the coastal areas to the community should be outlined.
5. This information is then used to outline the processes required to retain coastal resources and maintain or return a stable coastline. This should be based on a planning period of up to 20 years and would comprise:
 - mapping the erosion prone areas showing the various land uses with particular emphasis on property, infrastructure (including roads and access points), existing coastal protection works and areas of high ecological significance
 - identifying or mapping existing coastal resources (such as wetlands, inshore and wildlife habitats)
 - detailing a description of the environmental, economic and social values of the developed and undeveloped areas

⁷ The completion of an SEMP is not a pre-requisite for assessment of a coastal development proposal by DERM; however, the SEMP process could be used to identify all works requiring approval and one integrated development application could then be prepared for all works required to implement the management strategy.

⁸ If a local government chooses to not engage a consultant to undertake the SEMP, the terms of reference may not be required or would be simplified document such as a project plan.

- identifying zones of present and emerging threats to existing and planned development within the erosion prone areas. This would include coastal areas subject to active shoreline recession and areas that are apparently stable that may be affected by potential short-term storm erosion. The assessment should take into account potential impacts of coastal hazards (coastal erosion and storm tide inundation, or permanent inundation due to sea level rise and effects of cyclones)
 - identifying present and emerging pressures for preserving and enhancing public access to foreshore areas and providing additional recreation infrastructure, such as walking tracks, viewing platforms, shelters, etc.
 - identifying a priority listing for rehabilitating areas to create coastal buffer zones
 - assessing erosion risks for various localities and determine an approximate ranking of importance.⁹
6. For each coastal locality, determine options for risk treatment, including a discussion of:
- descriptions and conceptual designs of the options available to limit erosion threats to development and coastal values, including the 'do nothing' case
 - a 'triple-bottom line' benefit–cost analysis of the options with specific reference to Queensland Coastal Plan outcomes that will be achieved.
7. Seek stakeholder input on proposed options. The objectives are to:
- gather information and improve estimates of the economic and social values of various coastal localities
 - obtain feedback from stakeholders on the various options and associated costs, benefits and impacts and incorporate this knowledge into refinements of possible options
 - seek advice from the relevant state agencies¹⁰ with regards to compliance with relevant legislation and policies and approval requirements for any works required to implement the various options identified.
8. Develop a recommended management strategy. This would comprise:
- an assessment of each risk management option taking into account all environmental, economic and social factors
 - relevant stakeholder input, determining a priority list of recommended actions including timings and estimated costs
 - relevant stakeholder input, determining the recommended review process for the SEMP, including performance criteria, monitoring programs, timings and reporting responsibilities.

The development of a SEMP is likely to require specialist technical and planning advice. The terms of reference for a SEMP should be carefully tailored to suit the coastal section and might not include the complete methodology outlined above.

DERM can assist in the formulation of a SEMP. Email <coastal.support@derm.qld.gov.au> to obtain further information or a copy of a generic terms of reference template.

⁹ If a local government is undertaking the SEMP process as a staged approach, this ranking is used to identify which stages are to be completed first.

¹⁰ In addition to the state agencies who may be represented on the steering committee, the following may need to be consulted: DERM regarding acid sulphate soils, the Department of Transport and Main Roads (Maritime Safety Queensland) regarding potential impacts of protection works on navigational safety, and the Department of Community Safety regarding disaster mitigation.

Annex 6 – Turtle nesting areas

Leatherback turtle *Dermochelys coriacea*

Nesting: There are two focal areas for leatherback turtle nesting in Australia. One is found in southern Queensland at Wreck Rock Beaches and the other at Rules Beach.

Sporadic nesting has been recorded on the southern Queensland coast between northern Hervey Bay (Bundaberg) and Roundhill Head, while a nesting event has been recorded in Mackay in central Queensland.

Nesting along the south-eastern coastline of Queensland commences mid-December and reaches a peak in January before ending about mid-February. Hatchlings emerge from nests approximately eight to nine weeks after oviposition.

Hawksbill turtle

Nesting: Northern Great Barrier Reef, Torres Strait and eastern Gulf of Carpentaria.

Nesting has been recorded on a wide range of sites with centres of abundance within central and south-western Torres Strait and the inner shelf cays of the northern Great Barrier Reef. The concentrated nesting occurred on several islands within each of these areas with numerous surrounding islands supporting low-density nesting. In particular Long Island, Hawksbury Island and Dayman Island, which are located in central and western Torres Strait had high concentrations (>500 nesting females per year) of nesting sittings, with the following islands recorded as having lower numbers (100–500 nesting females per year) of nesting sittings on Milman, Boydong, Zuizin, Mimi, Bourke, Aukane, Layoak, Bet, Saddle, Dadalai, Albany and Mt Adolphus islands.

Surveys: During the dry season, high numbers of female hawksbill turtles were recorded (>100 nesting females per year) nesting on Hawksbury and Dayman islands and a lesser number (10–100 nesting females per year) on Crab, Gaibait, Ului and Zarat islands and Dadalai Islet, and north of Cotterell River on the mainland. Surveys on Kalbai Kalbai, Matu, Prince of Wales, Possession, Red Wallis and Tukupai islands, and the mainland coast south of Roonga Point adjacent to Possession Island and north of Jackson River found a lesser number of nesting hawksbill turtles (1–10 nesting female turtles).

Duration of nesting season: The largest nesting concentration of hawksbill turtles in Queensland occurs on Long Island in central Torres Strait with an estimated 500–1000 nesting females annually. These observations indicate that appreciable levels of nesting can be expected across a major part of the year at this core breeding area for the stock.

At Milman Island and nearby islands of the northern Great Barrier Reef (GBR), hundreds of nesting hawksbill turtles were observed during late November to early April. In late November to early December there also were hatchlings emerging from clutches possibly laid some two months earlier in September to October. Sporadic nesting has also been recorded in July and August at Milman and adjacent islands. Again in south-western Torres Strait and north-eastern Gulf of Carpentaria, nesting hawksbill turtles have been recorded at all visits to these islands in January, February, May, July, October and December. High-density nesting was recorded during February and July at both the focal areas (Dayman and Hawksbury islands) at this western extremity of the north Queensland breeding population. The highest density of nesting occurs during December–February while variable but lower levels of nesting occur at mid-year.

Green turtle

Nesting: There are three clusters of high density nesting for green turtles in Queensland and eastern Northern Territory. They are the southern GBR Coral Sea cays, northern GBR Torres Strait and Gulf of Carpentaria.

Raine Island in the northern GBR supports the largest nesting concentration of green turtles in the world with Moulter Cay supporting a similar density of nesting. In addition, several thousand additional green turtles nest annually on the other islands of the northern GBR and Torres Strait combined, including Bramble Cay, Murray Islands, Milman Island, and No. 7 and No. 8 sandbanks.

For the southern GBR stock, nesting is concentrated within the southern GBR and the Coral Sea cays. The highest density nesting occurs on Northwest, Wreck and Hoskyn islands. Lower density nesting occurs on most islands and beaches in the vicinity.

In the south-eastern Gulf of Carpentaria, high density nesting occurs annually on Bountiful, Pisonia and Rocky islands, while lower numbers nest on the adjacent islands of the Wellesley Group.

Olive ridley turtle

Within Australia, the olive ridley turtle has its focus for nesting in northern Arnhem Land where two concentrations occur—the McCluer Group of islands in western Arnhem Land and the Wessel Islands of eastern Arnhem Land. There is dispersed nesting at low density within the Gulf of Carpentaria and no breeding by this species has been recorded in eastern Australia. The nesting distribution of this species is one of the most poorly understood in Australia.

Guidelines and actions

Capricornia Cays National Park – management strategies

Natural resource management:

- Modify or remove all light sources on cays that change natural light horizons enough to disorientate turtles, by using intermittent, low pressure sodium vapour, shielded or reduced intensity lighting.
- Capricornia Cays National Park will be kept in as natural condition as possible; however, ecological sustainable use and development may occur on cays with designated camping and resort areas.
- Aircraft will not be allowed within 1500 feet of the vicinity of any cay, unless for the purposes of taking off and landing from a permitted landing area. Emergency situations and management activities are excluded from these restrictions.

Landscape management:

- Revegetation of foredune areas will consider the natural mosaic of open and shaded areas that provide the variability in turtle nest temperatures.
- Natural, open areas on cays should not be altered as they are important to the natural temperature regime of turtle nesting habitat, and to maintain suitable nesting areas for ground-nesting seabird species.
- Spoil dumping from harbour maintenance activities at Heron Island should occur outside the turtle nesting season to avoid covering turtle nests and should not create habitat unsuitable for turtle nest construction.

Annex 7 – Performance criteria used to assess the policy

Policy outcome to be achieved	Performance criteria	Data source
1. Coastal policy outcomes are reflected in planning schemes	1. Number of planning schemes that are signed off by the Planning Minister as appropriately reflecting the SPP for coastal protection.	1. Planning schemes
2. Undeveloped coastal areas remain undeveloped	2.1 Area of land allocated for urban purposes outside existing urban areas under SPA planning instruments 2.2 Number of new allotments made that are less than 50 ha in rural zones 2.3 Decrease in the ratio of population to area allocated for urban purposes under SPA planning instruments.	2.1 DCDB 2.2 Zoning data 2.3 Office of Economic and Statistical Research (OESR) population data
3. Protection of ecological values	3.1 Change in the area of HES areas outside urban areas 3.2 Number of developments that provide an environmental offset 3.3 Number of State and local planning instruments in coastal locations that contain policies to protect ecological values.	3.1 HES mapping 3.2 Protected area mapping 3.3 DCDB 3.4 SPA regional plans and planning schemes
4. Development maintains public access	4.1 Increase in the boundary length of public land lots abutting the coast relative to private lots in areas allocated under a SPA planning instrument for urban purposes 4.2 Extent of land surrendered under the Coastal Protection and Management Act 1995 for coastal management.	4.1 Land Titles registry 4.2 DCDB 4.3 Zoning data
5. Development maintains scenic amenity	5.1 Number of State and local planning instruments in coastal locations that contain policies to preserve the scenic preference rating of coastal areas.	5.1 SPA regional plans and planning schemes
6. Sustainable growth of the maritime development industry	6.1 Change in the total area allocated for maritime development in Queensland. 6.2 Number of maritime development approvals within maritime development areas. 6.3 Increase in total number of marina berths. 6.4 Marina berths (wet/dry) meet sustainable demand/supply projections identified in an approved marine precinct plan.	6.1 Internal mapping 6.2 Department of Transport and Main Roads 6.3 Department of Local Government and Planning (Maritime Development)
7. Coastal hazard areas are maintained in an undeveloped state	7.1 Change in the number of allotments below or partly below 1.5 m in SEQ and below 2 m HAT elsewhere in Queensland 7.2 Change in proportion of public land to private land within the erosion prone area	7.1 DCDB 7.2 DEM generated 2 m HAT contour 7.3 DERM's Erosion Area Risk mapping
8. Impacts of erosion are avoided or minimised not involving the construction of hard protection structures	8.1 Change in the number of applications for coastal protection works 8.2 Change in the per cent coverage of locations identified as erosion prone areas by shoreline erosion management plans approved by the chief executive	8.1 DERM permit database (Ecotrack) 8.2 SEMP's approved or supported by DERM 8.3 Mapped erosion prone areas