

Module 10. Coastal protection

10.1 Tidal works, or development in the coastal management district state code

10.1.1 Purpose

The purpose of this code is to ensure tidal works or development completely or partly within the coastal management district:

- (1) is managed to protect and conserve environmental, social and economic coastal resources
- (2) enhances the resilience of coastal communities to coastal hazards.

10.1.2 Criteria for assessment tables

Development mentioned in column 1 below must be assessed against the assessment criteria in the table mentioned in column 2.

Column 1	Column 2
All development	Table 10.1.1
Operational work	Table 10.1.2
Reconfiguring a lot	Table 10.1.3

Table 10.1.1: All development

Performance outcomes	Acceptable outcomes
<p>PO1 Development in a <u>coastal hazard area</u> is compatible with the level of severity of the <u>coastal hazard</u>.</p>	<p>AO1.1 Development is located outside a <u>high coastal hazard area</u> unless it is:</p> <ol style="list-style-type: none"> (1) <u>coastal-dependent development</u>, or (2) compatible with inundation due to its nature or function, or (3) <u>temporary, readily relocatable, or able to be abandoned</u>, or (4) <u>essential community service infrastructure</u>, or (5) <u>small to medium scale tourist development</u>, or (6) <u>redevelopment</u> within an existing built-up urban area, or is <u>redevelopment</u> of built structures that cannot be relocated or abandoned. <p>AND</p> <p>AO1.2 Development referred to in AO1.1(6) avoids being located within a <u>high coastal hazard area</u>, or where this is not practicable, minimises the exposure of people and permanent structures to <u>coastal hazard impacts</u>.</p>
<p>PO2 Development siting, layout and access in a <u>coastal hazard area</u> responds to potential inundation due to a <u>defined storm tide event</u> and minimises associated risks to personal safety and property.</p>	<p>AO2.1 Development within a <u>coastal hazard area</u> is located, designed, constructed and operated to maintain or enhance the community’s resilience to a <u>defined storm tide event</u> by limiting the exposure of people and structures to associated impacts.</p> <p>AND</p> <p>AO2.2 Development mitigates any residual impacts from <u>storm tide inundation</u> in a <u>coastal hazard area</u> including by ensuring:</p> <ol style="list-style-type: none"> (1) <u>habitable rooms</u> of built structures are located above the <u>defined storm tide event level</u> and any additional freeboard level that would ordinarily apply in a flood prone area under a relevant planning scheme standard, or (2) a safe refuge is available for people within the premises during a <u>defined storm tide event</u>, or (3) at least one evacuation route remains passable for emergency evacuations during a <u>defined storm tide event</u>, including consideration of the capacity of the route to support the evacuation of the entire local

Performance outcomes	Acceptable outcomes
	<p>population within a reasonably short time frame (for example, 12 hours).</p> <p>AND</p> <p>AO2.3 Development within a <u>coastal hazard area</u> is located, designed and constructed to ensure exposed structures can sustain flooding from a <u>defined storm tide event</u>.</p> <p>AND</p> <p>AO2.4 <u>Essential community service infrastructure</u> is:</p> <ol style="list-style-type: none"> (1) located so that it is not inundated by a <u>recommended storm tide event</u> specified for that infrastructure, or (2) located and designed to ensure any components of the infrastructure that are likely to fail to function or may result in contamination when inundated by a storm tide (for example, electrical switch gear and motors, water supply pipeline air valves) are: <ol style="list-style-type: none"> (a) located above the peak water level for a <u>recommended storm tide event</u>, or (b) designed and constructed to exclude storm tide intrusions or infiltration (including by being located in the ground), or (c) able to temporarily stop functioning during a <u>recommended storm tide event</u> without causing significant adverse impacts to the infrastructure or the community. <p>AND</p> <p>AO2.5 Emergency services infrastructure and emergency shelters, police facilities, and hospitals and associated facilities have an emergency rescue area above the peak water level for a <u>recommended storm tide event</u>.</p>
<p>PO3 Development directly, indirectly and cumulatively avoids an unacceptable increase in the severity of the <u>coastal hazard</u>, and does not significantly increase the potential for damage on the premises or to other premises.</p>	<p>AO3.1 Development avoids increasing the number of premises from which people would need to be evacuated to prevent death or injury from a <u>defined storm tide event</u>.</p>
<p>PO4 Development avoids the release of hazardous materials as a result of a natural hazard event.</p> <p>Editor's note: Applications should:</p> <ol style="list-style-type: none"> (1) assess the risk of <u>storm tide inundation</u> releasing or otherwise exposing hazardous materials, including appropriate emergency planning and contingency measures. (2) applications are to be supported by a report certified by a Registered Professional Engineer of Queensland (RPEQ) that demonstrates this performance outcome will be achieved. 	<p>AO4.1 Development that involves the manufacture or storage of hazardous materials in bulk are designed to:</p> <ol style="list-style-type: none"> (1) prevent the intrusion of waters from a <u>defined storm tide event</u> into structures or facilities containing the hazardous materials, or (2) ensure hazardous materials remain secured despite inundation, including secure from the effects of <u>hydrodynamic forcing</u> associated with wave action or flowing water.
<p>PO5 Natural processes and the protective function of landforms and vegetation are maintained in <u>coastal hazard areas</u>.</p>	<p>AO5.1 Development in an <u>erosion prone area</u> within the <u>coastal management district</u>:</p> <ol style="list-style-type: none"> (1) maintains vegetation on coastal landforms where its removal or damage may: <ol style="list-style-type: none"> (a) destabilise the area and increase the potential for erosion, or (b) interrupt natural sediment trapping processes or dune or land building processes (2) maintains sediment volumes of dunes and near-shore coastal landforms, or where a reduction in sediment volumes cannot be avoided, increased risks to development from <u>coastal erosion</u> are mitigated by location, design, construction and operating standards (3) minimises the need for <u>erosion control structures</u> or riverbank hardening through location, design and construction standards (4) maintains physical coastal processes outside the development footprint

Performance outcomes	Acceptable outcomes
	<p>for the development, including longshore transport of sediment along the coast</p> <p>(5) reduces the risk of shoreline erosion for areas adjacent to the development footprint unless the development is an <u>erosion control structure</u></p> <p>(6) reduces the risk of shoreline erosion for areas adjacent to the development footprint to the maximum extent feasible in the case of <u>erosion control structures</u>.</p> <p>AND</p> <p>AO5.2 Development in a <u>storm tide inundation area</u> is located, designed, constructed and operated to:</p> <p>(1) maintain dune crest heights, or where a reduction in crest heights cannot be avoided, mitigate risks to development from wave overtopping and <u>storm tide inundation</u></p> <p>(2) maintain or enhance coastal ecosystems and natural features, such as mangroves and coastal wetlands, between the development and <u>tidal waters</u>, where the coastal ecosystems and natural features protect or buffer communities and infrastructure from <u>sea-level rise</u> and impacts from <u>storm tide inundation</u>.</p> <p>AND</p> <p>AO5.3 Redevelopment of built structures in the <u>erosion prone area</u> within a <u>coastal management district</u>:</p> <p>(1) avoids intensifying the use of the premises, or</p> <p>(2) demonstrates that any intensification of use will not result in an increase in the need for <u>erosion control structures</u> or riverbank hardening.</p> <p>AND</p> <p>AO5.4 Development that is <u>coastal protection work</u> involves, in order of priority:</p> <p>(1) <u>beach nourishment</u> undertaken in accordance with a program of <u>beach nourishment</u> works that source sediment of a suitable quality and type from outside the active beach system, or</p> <p>(2) the construction of an <u>erosion control structure</u>, where it is demonstrated that installing an <u>erosion control structure</u> is the only feasible option for protecting permanent structures from <u>coastal erosion</u> and those structures cannot be abandoned or relocated in the event of <u>coastal erosion</u> occurring.</p> <p>Editor's note: Applications for <u>coastal protection work</u> should be supported by a report certified by a Registered Professional Engineer of Queensland (RPEQ) that demonstrates how the engineering solution sought by the work will be achieved.</p> <p>Editor's note: Applications for <u>erosion control structures</u> should demonstrate the consideration of <u>beach nourishment</u> techniques, and include a statement of why nourishment (in whole or part) has not been adopted as the preferred means of controlling the erosion risk.</p> <p>AND</p> <p>AO5.5 Development involving <u>reclamation</u>:</p> <p>(1) does not alter, or otherwise minimises impacts on, the physical characteristics of a waterway or the seabed near the <u>reclamation</u>, including flow regimes, <u>hydrodynamic forces</u>, tidal water and riverbank stability</p> <p>(2) is located outside the active sediment transport area, or otherwise maintains sediment transport processes as close as possible to their natural state</p> <p>(3) ensures activities associated with the operation of the development maintain the structure and condition of vegetation communities and</p>

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	avoid wind and water run-off erosion. Editor's note: Applications for reclamation should be supported by a report certified by an RPEQ that demonstrates how the engineering solutions by the work will be achieved.
PO6 <u>Erosion prone areas in a coastal management district</u> are maintained as development free buffers, or where permanent buildings or structures exist, <u>coastal erosion</u> risks are avoided or mitigated.	<p>AO6.1 Development locates built structures outside the part of the <u>coastal management district</u> that is the <u>erosion prone area</u> unless the development is listed under AO1.1 (1) – (4). AND AO6.2 <u>Small to medium scale tourist development</u> is located outside the <u>erosion prone area</u> unless it is <u>redevelopment</u>. AND AO6.3 <u>Coastal-dependent development</u>: (1) locates, designs and constructs relevant buildings or structures to withstand <u>coastal erosion</u> impacts, including by use of appropriate foundations, or (2) installs and maintains <u>coastal protection works</u> to mitigate adverse impacts to people and permanent structures from <u>coastal erosion</u> at the location. AND AO6.4 Development that is <u>temporary, readily relocatable or able to be abandoned</u>, or <u>essential community service infrastructure</u>: (1) locates built structures landward of an applicable <u>coastal building line</u>, or (2) where there is no <u>coastal building line</u>, locates habitable built structures landward of the alignment of adjacent habitable buildings, or (3) locates lifesaver towers or beach access infrastructure to minimise its impacts on physical coastal processes, or (4) where it is demonstrated that (1) or (2) is not reasonable and (3) does not apply: (a) locates built structures as far landward as practicable (b) uses layout design to minimise the footprint of the development that remains within the <u>erosion prone area</u>. AND AO6.5 <u>Redevelopment</u> of existing built structures not referred to in AO6.4, and excluding <u>marine development</u>: (1) relocates built structures outside that part of the <u>erosion prone area</u> that is within the <u>coastal management district</u>, or (2) relocates built structures as far landward as practicable, and landward of an applicable <u>coastal building line</u>, or (3) where there is no <u>coastal building line</u>: (a) relocates built structures landward of the alignment of adjacent habitable buildings, or (b) uses layout design to minimise the footprint of the development that remains within the <u>erosion prone area</u>, or (c) provides sufficient space seaward of the development within the premises to allow for the construction of <u>erosion control structures</u>. AND AO6.6 <u>Redevelopment</u> of built structures in the <u>erosion prone area</u> within a <u>coastal management district</u>, which results in an intensification of use, mitigates the erosion threat to the development, having regard to: (1) design and construction standards (2) installing and maintaining on-site <u>erosion control structures</u> within the premises if the development is not intended to be temporary.</p>
PO7 Development avoids or minimises adverse	AO7.1 <u>Coastal protection work</u> that is in the form of <u>beach nourishment</u> uses

Performance outcomes	Acceptable outcomes
<p>impacts on <u>coastal resources</u> and their values, to the maximum extent reasonable.</p>	<p>methods of placement suitable for the location that do not interfere with the long-term use of the locality of, or natural values within or neighbouring, the proposed placement site.</p> <p>AND</p> <p>A07.2 <u>Marine development</u> is located and designed to expand on or redevelop existing marine infrastructure unless it is demonstrated that it is not practicable to co-locate the development with existing marine infrastructure.</p> <p>AND</p> <p>A07.3 <u>Marine development</u>:</p> <ol style="list-style-type: none"> (1) relies on a natural channel of a depth adequate for the intended vessels, or (2) where there are no feasible alternative locations for the facility in the local area that do not require <u>dredging</u> for navigation channel purposes, development is located, designed and operated to minimise the need for capital and maintenance <u>dredging</u> for navigation channel purposes. <p>AND</p> <p>A07.4 Development minimises <u>dredging</u> or the disposal of material in <u>coastal waters</u> during key biological events (such as fish aggregations or spawning) for species found in the area.</p> <p>AND</p> <p>A07.5 Measures are to be incorporated as part of siting and design of the development to protect and retain identified ecological values and underlying ecosystem processes within or adjacent to the development site to the greatest extent practicable. This includes:</p> <ol style="list-style-type: none"> (1) maintaining or restoring vegetated buffers between development and <u>coastal waters</u> to the extent practicable, unless the development is within ports or airports, or is <u>marine development</u> (2) maintaining or enhancing the connectivity of ecosystems in consideration of the cumulative effect of the development in addition to existing developed areas (3) retaining coastal wetlands, seagrass beds and other locally important feeding, nesting or breeding sites for native wildlife. <p>AND</p> <p>A07.6 Measures are incorporated as part of siting and design of the development to maintain or enhance water quality to achieve the <u>environmental values</u> and water quality objectives outlined in the <i>Environmental Protection (Water) Policy 2009</i>.</p> <p>AND</p> <p>A07.7 Development avoids the disturbance of acid sulphate soils, or where it is demonstrated that this is not possible, the disturbance of acid sulphate soils is carefully managed to minimise and mitigate the adverse effects of the disturbance on <u>coastal resources</u>.</p>
<p>PO8 <u>Coastal protection work</u> is undertaken only as a last resort where erosion presents an imminent threat to public safety or permanent structures.</p> <p>Editor's note: Applications for <u>coastal protection work</u> must be supported by a report certified by an RPEQ that demonstrates how the engineering solution sought by the work will be achieved.</p>	<p>A08.1 <u>Coastal protection work</u> is only undertaken to protect existing permanent structures from imminent adverse <u>coastal erosion</u> impacts, and the structures cannot reasonably be relocated or abandoned.</p> <p>AND</p> <p>A08.2 <u>Coastal protection work</u> to protect private structures is undertaken on private land to the maximum extent reasonable.</p> <p>AND</p> <p>A08.3 <u>Coastal protection work</u> does not increase the <u>coastal hazard</u> risk for adjacent areas or properties.</p>
<p>PO9 Development avoids adverse impacts on <u>matters of state environmental significance</u>, or</p>	<p>A09.1 Development:</p> <ol style="list-style-type: none"> (1) is set back from <u>matters of state environmental significance</u>

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<p>where this is not reasonably possible, impacts are minimised and an <u>environmental offset</u> is provided for any <u>significant residual impacts to matters of state environmental significance</u> that are <u>prescribed environmental matters</u>.</p>	<p>(2) avoids interrupting, interfering or otherwise adversely impacting underlying natural ecosystem components or processes and interactions that affect or maintain the <u>matters of state environmental significance</u>, such as water quality, hydrology, geomorphology and biological processes, or</p> <p>(3) incorporates measures as part of its location and design to protect and retain <u>matters of state environmental significance</u> and underlying ecosystem processes within and adjacent to the development site to the greatest extent practicable.</p> <p>Editor's note: Applications for development should identify any threatened species or their habitats, or threatened ecosystems, that may be affected by the proposal. In particular, applications should identify and describe how the development avoids adverse impacts on any critical life stage ecological processes within or adjacent to the development area.</p> <p>AND</p> <p>AO9.2 Where impacts cannot be reasonably avoided or minimised, an <u>environmental offset</u> is provided for any <u>significant residual impact on matters of state environmental significance</u> that are <u>prescribed environmental matters</u> caused by the development.</p> <p>Editor's note: Applications for development should identify anticipated losses, and outline what actions are proposed to be undertaken to offset the loss in accordance with the <i>Significant Residual Impact Guideline</i> and the relevant <i>Queensland Environmental Offsets Policy</i>.</p>
<p>PO10 Development maintains or enhances general public access to or along the <u>foreshore</u>, unless this is contrary to the protection of <u>coastal resources</u> or public safety.</p>	<p>AO10.1 Development adjacent to <u>state coastal land</u> or tidal water:</p> <p>(1) demonstrates that restrictions to public access are necessary for:</p> <ol style="list-style-type: none"> the safe or secure operation of development, or the maintenance of coastal landforms and coastal habitat <p>(2) separates residential, tourist and retail development from tidal water with public areas or public access facilities, or</p> <p>(3) maintains existing public access (including public access infrastructure that is in the public interest) through the site to the <u>foreshore</u> for:</p> <ol style="list-style-type: none"> pedestrians, via access points including approved walking tracks, boardwalks and viewing platforms, or vehicles, via access points including approved roads or tracks. <p>AND</p> <p>AO10.2 Development adjacent to <u>state coastal land</u>, including land under tidal water:</p> <p>(1) is located and designed to:</p> <ol style="list-style-type: none"> allow safe and unimpeded access to, over, under or around built structures located on, over or along the <u>foreshore</u> ensure emergency vehicles can access the area near the development, or <p>(2) minimises and offsets any loss of access to and along the foreshore within two kilometres of the existing access points, and the access is located and designed to be consistent with (1)(a) and (b).</p> <p>AND</p> <p>AO10.3 Any parts of private development that extend over tidal water are to be designed, constructed and used for marine access purposes only.</p>
<p>PO11 <u>Private marine development</u> avoids structures attaching to, or extending across, non-tidal <u>state coastal land</u> abutting tidal waters.</p>	<p>AO11.1 <u>Private marine development</u> and other structures such as decks or boardwalks for private use do not attach to, or extend across <u>state coastal land</u> that is situated above the high water mark.</p> <p>Editor's note: For occupation permits or allocations of State land, refer to the <i>Land Act 1994</i>.</p>

Performance outcomes	Acceptable outcomes
<p>PO12 Further development of <u>artificial waterways</u> avoids or minimises adverse impacts on coastal resources and their values, and does not contribute to:</p> <ol style="list-style-type: none"> (1) an increase in the risk of flooding or erosion (2) degradation of water quality (3) degradation and loss of <u>matters of state environmental significance</u> (including, but not limited to, coastal wetlands, fish habitat areas and migratory species habitat). 	<p>AO12.1 The design, construction and operation of artificial tidal waterways maintains the <u>tidal prism volume</u> of the natural waterway to which it is connected.</p> <p>AND</p> <p>AO12.2 The design, construction and operation of artificial tidal waterways does not increase risk from flooding.</p> <p>AND</p> <p>AO12.3 The design, construction and operation of an <u>artificial waterway</u> in connection with the reconfiguration of a lot ensures:</p> <ol style="list-style-type: none"> (1) water inlet and outlet structures are of sufficient capacity to maintain the water quality within the waterway (2) water discharged from the <u>artificial waterway</u> protects the environmental values and water quality objectives of the receiving waters (3) dredged material is not disposed of in tidal water beyond the <u>artificial waterway</u> unless there is a beneficial reuse, e.g. <u>beach nourishment</u>. <p>Editor's note: For more information on environmental values and water quality objectives see Schedule 1 of the <i>Environment Protection (Water) Policy 2009</i>.</p> <p>AND</p> <p>AO12.4 The location of the <u>artificial waterway</u> avoids <u>matters of state environmental significance</u>, or does not result in any significant adverse impact on <u>matters of state environmental significance</u>.</p>
<p>PO13 Development does not involve <u>reclamation</u> of land below tidal water, other than for the purposes of:</p> <ol style="list-style-type: none"> (1) <u>coastal-dependent development</u>, public <u>marine development</u> or community infrastructure (2) strategic ports, boat harbours or strategic airports and aviation facilities, in accordance with a statutory land use plan, where there is a demonstrated net benefit for the state or region and no feasible alternative exists (3) <u>coastal protection work</u> or work necessary to protect <u>coastal resources</u> or <u>physical coastal processes</u>. 	<p>No acceptable outcome is prescribed.</p>

Table 10.1.2: Operational work

Performance outcomes	Acceptable outcomes
<p>PO1 Tidal works that is <u>private marine development</u> does not result in adverse impacts to tidal land.</p> <p>Editor's note: In addressing this performance outcome, the applicant should comply with the performance criteria and acceptable standards set out in the Operational Policy <i>Building and engineering standards for tidal works</i>, Department of Environment and Heritage Protection, 2013.</p> <p>Editor's note: Applications should be supported by a report certified by an RPEQ to demonstrate compliance with this performance outcome.</p>	<p>AO1.1 The location and design of tidal works that is <u>private marine development</u>:</p> <ol style="list-style-type: none"> (1) is on private land abutting tidal water and used for property access purposes (2) occupies the minimum area reasonably required for its designed purpose (3) is not to be roofed or otherwise covered (4) does not require the construction of <u>coastal protection works</u>, shoreline or riverbank hardening or <u>dredging</u> for marine access (5) does not adversely impact on public safety or public access and use of the <u>foreshore</u>.
<p>PO2 Development does not result in the disposal of material dredged from an <u>artificial</u></p>	<p>AO2.1 The design and construction of the <u>artificial waterway</u> includes onsite provisions for drying, re-handling and disposal of <u>dredged material</u> on site to</p>

Performance outcomes	Acceptable outcomes
<p><u>waterway into coastal waters</u>, with the exception of:</p> <ol style="list-style-type: none"> (1) <u>reclamation works</u>, or (2) <u>coastal protection works</u>, or (3) the maintenance of an existing <u>artificial waterway</u> and the at-sea disposal of material that has previously been approved for the waterway. 	<p>facilitate the timely disposal to land or re-use.</p>
<p>PO3 The design and construction of an <u>artificial waterway</u> maintains coastal landforms.</p>	<p>AO3.1 The design and construction of the <u>artificial waterway</u> provides for sand bypassing where this is necessary to prevent erosion of adjacent coasts and minimise sedimentation of the waterway.</p> <p>AND</p> <p>AO3.2 Clean sand accumulating within an <u>artificial waterway</u> is returned to the active beach system, rather than disposed on land.</p>
<p>PO4 Development that involves <u>dredging</u> includes and complies with a management plan that demonstrates how environmental impacts will be managed and mitigated, and how the requirements of the <i>National Assessment Guidelines for Dredging</i>, Australian Government Department of the Environment, Water, Heritage and the Arts, 2009, will be met.</p>	<p>AO4.1 A management plan for the development:</p> <ol style="list-style-type: none"> (1) directs the operation of the development (2) identifies disposal methods and disposal sites for the removed material for the construction and operational phases of the development (3) outlines how any adverse effects from extraction activities on sediment transport processes or adjacent coastal landforms will be mitigated or otherwise remediated by suitably planned and implemented <u>beach nourishment</u> and rehabilitation works. <p>Editor's note: The suitability of the dredged sediment for ocean disposal is to follow the assessment of potential contaminants under the <i>National assessment guidelines for dredging</i>, Australian Government Department of the Environment, Water, Heritage and the Arts, 2009.</p> <p>AND</p> <p>AO4.2 For land based disposal of <u>dredged material</u>, any area used for storing, dewatering, drying or rehandling <u>dredged material</u> as outlined in the dredge management plan is:</p> <ol style="list-style-type: none"> (1) of sufficient size for the projected volume of <u>dredged material</u> from relevant capital or maintenance <u>dredging</u> (2) protected from future development that would compromise the use of the area for its intended purpose of material storage and dewatering. <p>AND</p> <p>AO4.3 For at-sea disposal of suitable <u>dredged material</u>, the dredge management plan specifies that material is placed at a <u>dredged material</u> disposal site only if it is demonstrated that it is not feasible to:</p> <ol style="list-style-type: none"> (1) dispose of the material above the high water mark, if the material is from maintenance works for an existing <u>artificial waterway</u> for which at-sea disposal was previously approved, or (2) keep the <u>dredged material</u> within the active sediment transport system for the locality, or (3) use the material for <u>beach nourishment</u> or another beneficial purpose. <p>AND</p> <p>AO4.4 For at-sea disposal of <u>dredged material</u> where the marine spoil disposal site is a retentive (i.e. non-dispersive) site, the disposal site identified in the dredge management plan has the capacity to hold and retain the material within its boundaries during construction and operation of the development.</p> <p>Editor's note: The use of <u>dredged material</u> for a beneficial purpose could include development of port or other marine facilities, use for construction or industrial</p>

Performance outcomes	Acceptable outcomes
	purposes, or use to create or modify land or waters for an approved environmental outcome (such as creation of a bird roosting site). Further information about beneficial uses is contained in the <i>National assessment guidelines for dredging</i> , Australian Government Department of the Environment, Water, Heritage and the Arts, 2009.
Within a strategic environmental area: riparian and wildlife corridor functions	
PO5 Natural regeneration of any cleared or work area is facilitated wherever possible.	AO5.1 There is no impediment to the natural regeneration of native plant species in the area of clearing and works following completion of works.
Within a strategic environmental area: hydrological processes	
PO6 Development avoids or minimises impacts on natural drainage lines or flow paths, during both construction and operation.	No acceptable outcome is prescribed.
Within a strategic environmental area: water quality	
PO7 Development avoids or minimises any adverse impacts on environmental values and water quality objectives for receiving waters (surface and groundwater) from pollutants on site or leaving a site located in a <u>strategic environmental area</u> .	<p>AO7.1 Development demonstrates <u>best practice environmental management</u> to meet relevant environmental values and water quality objectives of the <i>Environmental Protection (Water) Policy 2009</i>.</p> <p>OR</p> <p>AO7.2 All stormwater, wastewater, discharges and overflows leaving the site are:</p> <ol style="list-style-type: none"> (1) treated to the quality of the receiving waters prior to discharge, or (2) reclaimed or re-used such that there is no export of pollutants to receiving waters.

Table 10.1.3: Reconfiguring a lot

Performance outcomes	Acceptable outcomes
PO1 <u>Erosion prone areas</u> in a <u>coastal management district</u> are maintained as development free buffers, or where permanent buildings or structures exist, <u>coastal erosion</u> risks are avoided or mitigated.	<p>AO1.1 Land within the <u>erosion prone area</u> is surrendered to the State and dedicated as a reserve for beach protection, coastal management or environmental purposes, unless:</p> <ol style="list-style-type: none"> (1) the development is in a port or is for <u>coastal-dependent development</u>, or (2) the surrender of the land will not enhance coastal management outcomes, for example, because there is already substantial development seaward of the lot. <p>Editor's note: Land surrendered to the State for public use under AO1.1 is to be:</p> <ol style="list-style-type: none"> (1) placed in a State land reserve for beach protection and coastal management purposes under the <i>Land Act 1994</i>, with local government as trustee, or (2) managed for beach protection and coastal management purposes under another management regime to the satisfaction of the chief executive administering the <i>Sustainable Planning Act 2009</i> and <i>Land Act 1994</i>, if it is demonstrated that AO1.1(1) cannot be reasonably achieved. (3) The <i>Land Act 1994</i> also includes provisions for voluntary land surrender for freehold land to the satisfaction of the chief executive administering the Land Act.
PO2 Development maintains or enhances general public access to or along the <u>foreshore</u> , unless this is contrary to the protection of coastal resources or public safety.	AO2.1 Reconfiguring a lot that abuts the <u>foreshore</u> or tidal waters is designed to enhance public access if it involves the creation of 10 or more lots or the opening of a new road, unless it is for <u>coastal-dependent development</u> .
PO3 Development in connection with a <u>canal</u> enhances public access to <u>coastal waters</u> .	<p>AO3.1 The <u>canal</u> avoids intersecting with land or tidal land where the passage, use or movement of vessels in water could be restricted by the registered proprietor of the land.</p> <p>AND</p> <p>AO3.2 The area of the <u>canal</u> relating to the development is surrendered to the State as a public waterway.</p> <p>AND</p> <p>AO3.3 The plans of subdivision for the <u>canal</u> are consistent with</p>

Performance outcomes	Acceptable outcomes
	<i>Requirements for plans of subdivision of an artificial waterway</i> , Department of Environment and Heritage Protection, 2013.

10.2 Reference documents

- Department of Environment and Heritage Protection 2009 [Environmental Protection \(Water\) Policy 2009](#)
- Department of Environment and Heritage Protection [Certification \(statutory declaration\): Design of tidal works](#)
- Department of Environment and Heritage Protection 2013 [Building and engineering standards for tidal works](#)
- Department of Environment and Heritage Protection 2013 [Guideline: Removal or interfering with coastal dunes](#)
- Department of Environment and Heritage Protection 2013 [Guideline: Approval requirements for local government works in coastal management district](#)
- Department of Environment and Heritage Protection 2013 [Guideline: Building work seaward of a coastal building line](#)
- Department of Environment and Heritage Protection 2013 [Guideline: Constructing tidal works](#)
- Department of Environment and Heritage Protection 2013 [Guideline: Operational work on State coastal land](#)
- Department of Environment and Heritage Protection 2013 [Guideline: Preparing a water allocation area for tidal works](#)
- Department of Environment and Heritage Protection 2013 [Guideline: Development involving an artificial waterway](#)
- Department of Environment and Heritage Protection 2013 [Coastal hazard technical guide](#)
- Department of Environment and Heritage Protection 2014 [Queensland environmental offsets policy](#)
- Australian Government Department of the Environment, Water, Heritage and the Arts 2009 [National assessment guidelines for dredging](#)

10.3 Glossary of terms

Annual exceedance probability means the likelihood of occurrence of a flood of a given size or larger in any one year, usually expressed as a percentage.

Artificial waterway see the Coastal Protection and Management Act 1995, schedule.

Editor's note: Artificial waterway means an artificial channel, lake or other body of water. An artificial waterway includes:

- (1) An access channel
- (2) An artificial channel that is formed because land has been reclaimed from tidal water and is intended to allow boating access to allotments on subdivided land
- (3) Other channels subject to the ebb and flow of the tide
- (4) Any additional to an artificial waterway.

However, an artificial waterway does not include the following:

- (1) A swimming pool
- (2) An ornamental pond of no more than 5000 square metres in area
- (3) A pond for aquaculture or for treating effluent
- (4) A freshwater storage reservoir for domestic water supply
- (5) A water storage facility situated on a natural watercourse and used for irrigation or other agricultural purposes
- (6) A part of a river, creek or stream in which water flows in a natural channel, whether artificially improved or not
- (7) A drain for carrying stormwater or other material
- (8) Any of the following used for accessing port infrastructure if constructed in the area of a part for which a port authority or port operator is responsible—
 - (a) a navigation channel
 - (b) a harbour swing basin
 - (c) a berth pocket
 - (d) a berth approach or departure path.

Beach nourishment means the replenishment of a beach system using imported sediment to balance erosion losses or to re-establish a wider dunal buffer zone.

Best practice environmental management, for an activity, see the *Environmental Protection Act 1994*, section 21.

Editor's note: In deciding best practice environmental management of an activity is the management of the activity to achieve an ongoing minimisation of the activity's environmental harm through cost-effective measures assessed against the measures currently used nationally and internationally for the activity.

In deciding the best practice environmental management of an activity, regard must be had to the following measures:

- (1) strategic planning by the person carrying out, or proposing to carry out, the activity
- (2) administrative systems put into effect by the person, including staff training and monitoring and review of the systems
- (3) public consultation carried out by the person
- (4) product and process design
- (5) waste prevention, treatment and disposal.

The above matters do not limit the measures to which regard may be had in deciding the best practice environmental management of an activity.

Canal see the *Coastal Protection and Management Act 1995*, schedule.

Editor's note: Canal means an artificial waterway:

- (1) connected, or intended to be connected, to tidal water
- (2) from which boating access to the tidal water is not hindered by a lock, weir or similar structure.

Coastal building line see the *Coastal Protection and Management Act 1995*, schedule.

Editor's note: Coastal building line means a line declared as a coastal building line under the *Coastal Protection and Management Act 1995*.

Coastal-dependent development:

- (1) means development that in order to function must be located in tidal waters or be able to access tidal water,
- (2) may include, but is not limited to:
 - (a) industrial and commercial facilities such as ports, harbours and navigation channels and facilities, aquaculture involving marine species, desalination plants, tidal generators, erosion control structures and beach nourishment,
 - (b) tourism facilities for marine (boating) purposes,
 - (c) community facilities and sporting facilities which require access to tidal water in order to function, such as surf clubs, marine rescue, rowing and sailing clubs, or
 - (d) co-located residential and tourist uses that are part of an integrated development proposal (e.g. mixed use development) incorporating a marina, if these uses are located landward of the marina and appropriately protected from natural hazards, but
- (3) does not include:
 - (a) residential development as the primary use,
 - (b) waste management facilities, such as landfills, sewerage treatment plants, or
 - (c) transport infrastructure, other than for access to the coast.

Coastal erosion means the wearing away of land or the removal of beach or dune sediments by wave or wind action, tidal currents and water flows.

Coastal hazard see the *Coastal Protection and Management Act 1995*, schedule.

Editor's note: Coastal hazard means erosion of the foreshore or tidal inundation.

Coastal hazard area means an area affected by a coastal hazard, including:

- (1) a storm tide inundation area
- (2) an erosion prone area.

Coastal hazard areas are identified in accordance with the methodology set out in the *Coastal hazard technical guide*, Department of Environment and Heritage Protection, 2013 and use the following factors to account for the projected impacts of climate change by the year 2100:

- (1) a sea-level rise factor of 0.8 metres
- (2) an increase in the maximum cyclone intensity by 10 per cent.

Editor's note: the storm tide inundation area and erosion prone area are indicatively shown on the DA mapping system.

Coastal hazard impact means the impact resulting from one or more of the following:

- (1) coastal erosion within an erosion prone area that is also within the coastal management district
- (2) a defined storm tide event
- (3) the permanent inundation of land due to sea-level rise.

Coastal management district see the *Sustainable Planning Act 2009*.

Editor's note: Coastal management district means a coastal management district under the *Coastal Protection and Management Act 1995*, other than an area declared as a coastal management district under section 54(2) of that Act.

Coastal protection work means any permanent or periodic work undertaken primarily to manage the impacts of coastal hazards, including altering physical coastal processes such as sediment transport.

Coastal resources see the *Coastal Protection and Management Act 1995*, schedule.

Editor's note: Coastal resources means the natural and cultural resources of the coastal zone. It includes natural and physical features, processes and landforms, vegetation, wildlife, quarry material, soil, water and places and objects that have anthropological, archaeological, historical, scientific, spiritual, visual or sociological significance or value, including such significance or value under Aboriginal tradition or Island customs.

Coastal waters see the *Coastal Protection and Management Act 1995*, section 13.

Editor's note: Coastal waters means Queensland waters to the limit of the highest astronomical tide.

DA mapping system means the mapping system containing the Geographic Information System mapping layers kept, prepared or sourced by the state that relate to development assessment and matters of interest to the state in assessing development applications.

Editor's note: The DA mapping system is available at [DA mapping system](#).

Defined storm tide event (DSTE) means the event, measured in terms of likelihood of reoccurrence, and associated inundation level adopted to manage the development of a particular area.

Except in the case of redevelopment, the DSTE is equivalent to a one in 100 year average recurrence interval storm event incorporating:

- (1) sea-level rise, and
- (2) an increase in cyclone intensity by 10 per cent relative to maximum potential intensity.

In the case of redevelopment, the DSTE is equivalent to a one in 100 year average recurrence interval storm event incorporating:

- (1) an increase in cyclone intensity by 10 per cent relative to maximum potential intensity, and
- (2) sea-level rise of the amount outlined in table 10.3.1 based on the year of end of design life for the design life outlined for development in table 10.3.2.

Table 10.3.1: Sea-level rise (projected) for the year of the end of design life as per table 10.3.2

Year of end of design life	Sea-level rise (projected)
Year 2050	0.3 metres
Year 2060	0.4 metres
Year 2070	0.5 metres
Year 2080	0.6 metres
Year 2090	0.7 metres
Year 2100	0.8 metres

Table 10.3.2: Design life for redevelopment

Type of development	Design life
Commercial buildings Industrial buildings Short-term tourist accommodation Residential dwellings including multi-storey unit blocks of 10 dwellings or less.	40 years
Multi-storey residential buildings of more than 10 dwellings. Reconfiguring a lot for urban purposes that involves the provision of new public infrastructure such as roads, water connections or sewage connections. Permanent community infrastructure such as sewage treatment plants.	90 years +

Editor's note: Where storm tide inundation levels have not been determined by a local study, the defined storm tide event level can be determined by reference to default storm tide inundation area mapping, as depicted in the DA mapping system. In these mapping layers, storm tide inundation is based on default values of 1.5 metres above highest astronomical tide (HAT) for South East Queensland and 2.0 metres above HAT for the remainder of the state. Where required, the storm tide level can be related back to Australian Height Datum by reference to the Queensland Tide Tables.

Defined storm tide event level means the peak water level reached during a defined storm tide event.

Dredged material means mud, sand, coral, ballast, shingle, gravel, clay, earth and other material removed by dredging from the bed of tidal waters.

Dredging means the mechanical removal of dredged material from below tidal water.

Dry land marina means a marina created by the excavation of land above high water mark.

Environmental attribute see the *Regional Planning Interests Act 2014*.

Editor's note: Environmental attribute, for an area, means an attribute of the environment identified as an environmental attribute for the area under a regional plan or regulation

Environmental offset see the *Environmental Offsets Act 2014*.

Editor's note: Environmental offset means an activity undertaken to counterbalance a significant residual impact of a prescribed activity on a prescribed environmental matter.

Environmental value see the *Environmental Protection Act 1994*, section 9.

Editor's note: The *Environmental Protection (Water) Policy 2009* states the environmental values of waters.

Editor's note: Environmental value is:

- (1) a quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety, or
- (2) another quality of the environment identified and declared to be an environmental value under an environmental protection policy or regulation.

Erosion control structure means a structure designed to protect land or to permanently alter sediment transport processes and includes a structure such as a seawall or revetment (rock walls), groyne, artificial reef, or breakwater.

Erosion prone area see the *Coastal Protection and Management Act 1995*, schedule.

Editor's note: Erosion prone area means an area declared to be an erosion prone area under section 70(1) of the *Coastal Protection and Management Act 1995*.

Essential community service infrastructure includes:

- (1) emergency services infrastructure
- (2) emergency shelters
- (3) police facilities
- (4) hospitals and associated facilities
- (5) stores of valuable records or heritage items
- (6) power stations and substations
- (7) major switch yards
- (8) communications facilities
- (9) sewerage treatment plants
- (10) water treatment plants.

Fish habitat see the *Fisheries Act 1994*.

Editor's note: Fish habitat includes land, waters and plants associated with the life cycle of fish, and includes land and water occupied by fisheries resources.

Foreshore see the *Coastal Protection and Management Act 1995*, schedule.

Editor's note: Foreshore means the land lying between the high water mark and low water mark as is ordinarily covered and uncovered by the flow and ebb of the tide at spring tides.

Habitable room see the Building Code of Australia.

Editor's note: Habitable room means a room used for normal domestic activities, and includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom but excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.

High coastal hazard area means one or more of the following:

- (1) the part of the erosion prone area that is within the coastal management district
- (2) land that is expected to be permanently inundated due to a sea-level rise
- (3) the part of the storm tide inundation area that is expected to be temporarily inundated to a depth of one metre or more during a defined storm-tide event.

Highest astronomical tide (HAT) means the highest tide level that can be predicted to occur under average meteorological conditions and any combination of astronomical conditions. This level will not be reached every year, and is less than the extreme levels that can be caused by storm tides.

Hydrodynamic forcing means the force exerted on its surroundings by a moving body of water (for example, force exerted on a structure by waves).

Marine development means maritime infrastructure that is related to navigation, shipping and boating.

Marine plant see the *Fisheries Act 1994*, section 8.

Editor's note: Marine plant includes the following:

- (1) a plant (a tidal plant) that usually grows on, or adjacent to, tidal land, whether it is living, dead, standing or fallen material of a tidal plant, or other plant material on tidal land
- (2) a plant, or material of a plant, prescribed under a Regulation or management plan to be a marine plant.

A marine plant does not include a plant that is a declared pest under the *Land Protection (Pest and Stock Route Management) Act 2002*.

Matters of state environmental significance see the *State Planning Policy*, Department of State Development, Infrastructure and Planning, 2014.

Editor's note: Matters of state environmental significance means the following natural values and areas:

- (1) protected area estates (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992*
- (2) marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' and 'buffer' zone under the *Marine Parks Act 2004*
- (3) areas within declared fish habitat areas that are management A areas or management B areas under the *Fisheries Regulation 2008*
- (4) threatened wildlife under the *Nature Conservation Act 1992* and special least concern animal under the Nature Conservation (Wildlife) Regulation 2006
- (5) regulated vegetation under the *Vegetation Management Act 1999* that is:
 - (a) category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems
 - (b) category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems
 - (c) category R areas on the regulated vegetation management map
 - (d) areas of essential habitat on the essential habitat map for wildlife prescribed as 'endangered wildlife' or 'vulnerable wildlife' under the *Nature Conservation Act 1992*
 - (e) regional ecosystems that intersect with watercourses identified on the vegetation management watercourse map
 - (f) regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map
- (6) wetlands in a wetland protection area or wetlands of high ecological significance shown on the Map of Referable Wetlands under the Environment Protection Regulation 2008
- (7) wetlands and watercourses in high ecological value waters as defined in the Environmental Protection (Water) Policy 2009, schedule 2
- (8) legally secured offset areas.

Physical coastal processes means the natural processes of the coast including sediment transport; fluctuations in the location and form of the foreshore, dune systems and associated ecosystems; tides; changes in sea level and coastal hazards (for example, storm-tide), ecological processes (for example, migration of plant and animal species) and the natural water cycle (for example, coastal wetlands' role in nutrient filtration and flood mitigation).

Prescribed environmental matters see *Environmental Offsets Act 2014*

Editor's note: A prescribed environmental matter is any species, ecosystem or other similar matter protected under Queensland legislation for which an environmental offset may be provided. Each of the prescribed environmental matters are listed under the Environmental Offsets Regulation 2014. Not all environmental matters that may be impacted by development are associated with an offset requirement. Offsets are only required for a limited set of environmental values — categorised as prescribed environmental matters. These prescribed matters may be of national, state or local significance.

Private marine development means marine development constructed to provide private access to private land from tidal water for non-commercial purposes, including jetties, ramps, floating docks, fixed piers and gangways.

Reclamation see the *Coastal Protection and Management Act 1995*, schedule.

Editor's note: Reclamation of land under tidal water means raising the land above the high water mark, whether gradually and imperceptibly or otherwise, by carrying out works, including dredging and the depositing of solid material.

Recommended storm tide event (RSTE) means the recommended storm tide event level in table 10.3.3, column 2 for the infrastructure mentioned in table 10.3.3, column 1.

Table 10.3.3: Recommended storm tide event levels for essential community service infrastructure

Type of infrastructure	Recommended storm tide event level (annual exceedance probability)
Hospitals and associated facilities Emergency service facilities* Power stations	0.2%
Major switch yards and substations* Police facilities* School facilities Stores of valuable records or items of historic or cultural significance (e.g. galleries and libraries) Water treatment plants*	0.5%
* The <u>RSTE</u> level applies only to electrical and other equipment that, if damaged by floodwater or debris, would prevent the infrastructure from functioning.	

Redevelopment means development that affects permanent built structures on an already developed site. Redevelopment includes the expansion of a building footprint or addition of a structure, reconstruction or remodelling an exterior, demolition and replacement of existing structures, or the establishment of an alternative type of use and associated land disturbing activities.

Sea-level rise means an increase in sea level caused by global warming due to anthropogenic climate change. Sea-level rise is projected to be 0.8 metres from the present day to 2100.

Significant residual impact see the *Environmental Offsets Act 2014*.

Editor's note: Generally, a significant residual impact is an adverse impact, whether direct or indirect, of a prescribed activity on all or part of a prescribed environmental matter that –

- (1) remains, or will or is likely to remain, (whether temporarily or permanently) despite on-site mitigation measures for the prescribed activity; and
- (2) is, or will or is likely to be, significant.

Small to medium scale tourist development means development catering for short term accommodation for tourist activity that contains no more than 300 persons and any associated ancillary facilities.

State coastal land see the *Coastal Protection and Management Act 1995*, section 17.

Editor's note: State coastal land means land in a coastal management district, other than land that is:

- (1) freehold land, or land contracted to be granted in fee simple by the state, or
- (2) a state forest or timber reserve under the *Forestry Act 1959*, or
- (3) in a watercourse or lake as defined under the *Water Act 2000*, or
- (4) subject to a lease or licence issued by the state.

Storm tide inundation means temporary inundation of land by abnormally high ocean levels caused by cyclones and severe storms.

Storm tide inundation area means the area of land determined to be inundated during a defined storm tide event.

Strategic environmental area see the *Regional Planning Interests Act 2014*.

Editor's note: a strategic environmental area is an area that –

- (1) contains 1 or more environmental attributes for the area
- (2) is either—
 - (a) shown on a map in a regional plan as a strategic environmental area, or
 - (b) prescribed under regulation.

Temporary, readily relocatable or able to be abandoned development means a land use or structure that, if threatened by adverse coastal hazard impacts, will be relocated, or discontinued and removed rather than protected from the impacts because:

- (1) it is not anticipated to remain in place for more than 10 years and/or is capable of being disassembled or easily removed
- (2) there will be negligible adverse economic or social consequences associated with its relocation, or from it being discontinued or removed.

Tidal prism volume means the volume of water in an estuary or inlet between mean high tide and mean low tide, or the volume of water leaving an estuary at ebb tide.