



State Development Assessment Provisions guideline

State code 11: Removal, destruction or damage of
marine plants

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Summary

All fish habitats are important in providing a diverse habitat mosaic that is essential for maintaining the high biodiversity of aquatic life in Queensland's wetland ecosystems.

Marine plants contribute to a detritus-based food web and provide or enhance habitat for the shelter, spawning, feeding and nursery requirements of a diverse range of fisheries resources. Marine plants are protected and managed fisheries resources in their own right. The presence of marine plants is also recognised as an indicator of high-value fish habitats.

The Department of Agriculture and Fisheries delivers the Queensland Government's priority of protecting the environment for a sustainable future by protecting and managing marine plants and other fish habitats under the *Fisheries Act 1994*. Particular emphasis is placed upon managing the impacts of development on the health and productivity of marine plant communities through the fisheries development framework underpinned by the *Planning Act 2016* and *Environmental Offsets Act 2014*.

The *Planning Act 2016* provides for types and categories of development and the development assessment and decision-making process. The removal, destruction or damage of a marine plant is a matter of interest to the state government and is either assessable under a state code or is considered accepted development.

A development approval is required for assessable development. State code 11 of the State Development Assessment Provisions (SDAP) sets out the assessment benchmarks that a development application for the removal, destruction or damage of a marine plant is assessed against. Applicants are expected to provide adequate information and respond to the relevant provisions of SDAP.

This guideline helps applicants design sustainable development that avoids or minimises and mitigates impacts on marine plants. It should be followed when preparing any development application that proposes the removal, destruction or damage of marine plants.

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1 Overview

1.1 Introduction

State code 11: Removal, destruction or damage of marine plants within the State Development Assessment Provisions (SDAP) ensures development:

1. maintains the extent, distribution, diversity and condition of **marine plant** communities and protects the ecological functions to which they contribute
2. maintains the health and productivity of **fisheries resources** and **fish habitat**
3. minimises impacts on the management, use, development and protection of **fisheries resources** and **fish habitat**
4. is designed and located to avoid impacts or, where the matters of state environmental significance cannot be reasonably avoided, impacts are reasonably minimised and mitigated
5. does not result in a significant residual impact on a matter of state environmental significance unless **the significant residual impact** is acceptable, and an **offset** is provided.

1.2 Purpose

The purpose of this guideline is to assist applicants who are considering development that proposes the removal, destruction or damage of marine plants during the following application stages:

- undertaking due diligence and identifying issues with the concept proposal before lodging a development application or investing in the proposal (pre-lodgement advice should also be sought at this time)
- preparing a development application and responding in writing to each of the performance outcomes of state code 11.

To prepare a development application, it is necessary to consider whether the proposed impact on marine plants can be avoided or minimised. It is possible that, by working through this guideline, some applicants may identify ways to avoid impacts to marine plants completely, thus removing this development trigger altogether from their proposal.

If complete avoidance is not achieved, this guideline may also help applicants respond to an information request or a further advice notice that is part of the development assessment process.

This guideline should not be solely relied on for persons who are acting outside their field of competence, expertise, or experience. Decisions must be made regarding the extent to which this guidance material is relevant to a particular application and a person suitably qualified and experienced marine plant professional may be required to assist. Refer to Appendix 1.

The use of this guideline alone does not guarantee compliance with all planning and environmental management requirements for the removal, destruction or damage of marine plants. This guideline provides advice that is specific to a *Planning Act 2016* development application that is for works involving the removal, destruction or damage of marine plants. Other development triggers, authorisation requirements and considerations may also apply.

1.3 Using this guideline

This guideline consists of the following:

- section 1 introduces the state code and the purpose of this guideline
- section 2 provides information on marine plant protection and what a marine plant is
- section 3 provides an overview of the assessment framework
- section 4 provides the standard information that should be submitted with any development application for works involving the removal, destruction or damage of marine plants
- section 5 provides information to help applicants prepare a response to state code 11 to be submitted with any development application for works involving the removal, destruction or damage of marine plants
- glossary
- appendices that contain useful information for applicants.

2 Protection and management of marine plants

Marine plants are a **fisheries resource** protected under the *Fisheries Act 1994*. Section 123 of the Act provides the head of power for marine plant protection and states that a person must not unlawfully—

- (a) Remove, destroy or damage a marine plant; or
- (b) Cause a marine plant to be destroyed or damaged.

Maximum penalty—3,000 penalty units.

Example of removing a marine plant—removing seagrass leaves from a beach or foreshore.

Example of destroying a marine plant—burning saltcouch.

Example of damaging a marine plant—pruning or trimming mangroves.

With some exceptions, this protection applies irrespective of the tenure of the land that marine plants occur on. For example, marine plants are protected whether they occur on freehold or any other form of state tenured or untenured lands. Marine plants are protected and marine plant removal, destruction or damage requires authorisation, regardless of the time the plant has been growing at the location or the degree or purpose of the disturbance.

2.1 What is a marine plant?

The meaning of marine plant is provided in section 8 of the *Fisheries Act 1994*:

- (1) 'Marine plant' includes the following—
 - (a) a plant (a 'tidal plant') that usually grows on, or adjacent to, tidal land, whether it is living or dead, standing or fallen;
 - (b) the material of a tidal plant, or other plant material on tidal land;
 - (c) a plant, or material of a plant, prescribed under a regulation or management plan to be a marine plant.
- (2) **Marine plant** does not include a plant that is—
 - (a) prohibited matter or restricted matter under the *Biosecurity Act 2014*; or
Notes—
 - 1 See the *Biosecurity Act 2014*, schedule 1 or schedule 2.
 - 2 See also the note to the *Biosecurity Act 2014*, schedules 1 and 2.
 - (b) controlled biosecurity matter or regulated biosecurity matter under the *Biosecurity Act 2014*.

The legislation protects all types of marine plants (such as mangrove, saltmarsh, seagrass and algal communities) and all parts of marine plants (including leaves, flowers, seeds, roots and branches) irrespective of whether they are trees, shrubs, groundcover, floating or attached plants. Dead or fallen marine plants are also protected in recognition of the important roles these materials play in the food web and in providing habitats.

Appendix 2 lists common marine plant species.

2.1.1 Inherent marine plants

Some species of plants are considered to be 'inherent' marine plants. Inherent marine plants are protected regardless of their location being on or above tidal land. The protection of inherent marine plants recognises the necessity to maintain their seed stocks as well as other values to maintain ongoing fisheries productivity and other ecosystem services that they provide. Inherent marine plants include all true mangroves, saltcouch, seagrasses, mangrove fern, marine algae and coastal samphires.

2.1.2 Plant material on tidal land

Material of a tidal plant, or other plant material on tidal land is protected as a marine plant given its significant contribution to fisheries productivity. All plant material on tidal land provides a direct source of shelter, food and nursery areas for fish. Plant material on tidal land can also play a vital role in stabilising sediments and filtering water-borne pollutants, thus enhancing and sustaining the condition of aquatic habitats and water quality.

'Material' of plants, whether they be tidal or other plants, relates to entire plants and/or parts of plants, such as bark, leaves, stems, roots, flowers or seeds.

Dead marine wood, including flotsam, falls within the marine plant definition as it provides material to the food chain as it breaks down. It is a naturally occurring feature in fish habitats that are in good condition. In various situations, dead marine wood provides shoreline protection from wave action and habitat for marine animals, such as shipworms and gastropods. Dead marine wood provides shade and refuge that attracts and benefits fin fish and crustaceans.

Terrestrial plants, such as river gums and terrestrial grasses that are growing on tidal land, are considered 'material' of an 'other' plant on tidal land and are therefore a marine plant.

2.1.3 Adjacent marine plants

Adjacent marine plants include a range of plant species that usually grow adjacent to tidal land and provide valuable habitat to our native fish when hydrologically connected to the marine environment. These plants include a range of saltmarsh species, casuarinas, melaleucas and cottonwood, and are often found interspersed with inherent marine plants. Where such species are located adjacent to tidal land and associated with any one of the inherent marine plant species listed above, the understory (in addition to the canopy cover) are considered marine plants.

Alternatively, if an adjacent plant is not associated with an inherent marine plant, it is still considered a marine plant if located in an area that is permanently or periodically connected to tidal waters and freshwater flows, including rainfall runoff. This connection provides opportunities for native fish to move between the freshwater and tidal environments to access these plants in times of inundation. For many species, this an important requirement for completing their lifecycles.

2.1.4 Threatened marine plants or ecological communities

Some marine plants are recognised through legislation as being vulnerable, rare or threatened. Development should avoid impacts to rare or threatened marine plants. It would be extremely challenging and costly to offset any significant residual impact to rare or threatened marine plants, due to the difficulties in attempting to achieve a conservation outcome to counterbalance the impacts that provides environmental values consistent with the impact site. Any proposal to impact these plants cannot be undertaken under the accepted development requirements and would only be considered as assessable development.

Some examples of threatened marine plants include the following:

- *Bruguiera X hainesii* (Haines's Orange Mangrove) is limited in distribution to one population adjacent to Trinity Inlet in the Cairns region and is listed as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- The coastal swamp oak (*Casuarina glauca*) forest of New South Wales and South East Queensland occurs from Curtis Island near Gladstone and south along the Queensland coast. It is a threatened ecological community listed as endangered under the EPBC Act.
- Subtropical and temperate coastal saltmarsh located south of latitude -23° 37' on Queensland's east coast is a threatened ecological community listed as vulnerable under the EPBC Act.

2.2 Marine plants are a matter of state environmental significance

Marine plants are a matter of state environmental significance, recognising their contribution to a detritus-based food web and their value in providing a range of critical habitats for shelter, feeding, spawning and nursery areas for other fisheries resources.

In addition to being a critical component of productive fisheries, areas with marine plants are also recognised for their important roles in mitigating the effects of climate change, such as by storing carbon, assisting in the stabilisation of sediments and shoreline, bed or bank features, providing desirable nutrients or food in a form our coastal ecosystems rely upon and improving water quality.

For these reasons, marine plants make a significant contribution to the condition of the wetlands that they occur within, or adjacent to.

3 Assessment framework

3.1 Removal, destruction or damage of marine plants

The *Planning Act 2016* and *Planning Regulation 2017* provide for types and categories of development, and the development assessment and decision-making process. The removal, destruction or damage of a marine plant is a matter of interest to the state and is either assessable (under a code) or accepted development.

3.1.1 Accepted development requirements

Accepted development requirements for operational work that is the removal, destruction or damage of marine plants are prescribed under section 135 of the *Fisheries (General) Regulation 2019*.

Compliance with all aspects of the requirements can provide authorisation for specific work types as accepted development.

If the proposed work does not comply with all accepted development requirements, the work is not accepted development. Removal, destruction or damage of marine plants that is not accepted development is assessable development and requires development approval.

Accepted development requirements are available at fisheries.qld.gov.au.

3.1.2 Assessable development

A development approval is required for assessable development. The removal, destruction or damage of a marine plant is assessable development, unless the work is accepted development, a development permit exists for the removal, destruction or damage of a marine plant or is Priority Development Area (PDA) related development.

Development applications for the removal, destruction or damage of a marine plant must be submitted to the State Assessment and Referral Agency, either as the assessment manager or referral agency.

Development applications for a material change of use and/or reconfiguring a lot may inherently involve the removal, destruction or damage of a marine plant or imply an expectation that this may be permitted at a future stage. For example, where:

- boundaries are created or relocated through, or adjacent to, areas of marine plants creating new rights or expectations whereby marine plants may then be removed, damaged or destroyed for fencing or access purposes
- new lots are created that would result in new rights to build a residence/s or other structures when marine plants are present on the new lot/s and must be avoided. The presence and extent of marine plants must be considered in the assessment and the developable area should be clearly expressed in any approval ensuring the marine plants are avoided and appropriately buffered.

- new lots are created adjacent to waterfront or coastal areas. If the application lacks explicit buffers from fringing fish habitats and marine plants this may result in expectations of additional maritime infrastructure or other access impacting on marine plants associated with any or all of the lots.
- a change in use to a type of open space for a park encouraging active recreational use over and through areas of marine plants will result in impacts through landscaping, mowing, access or trampling.
- a reconfiguration/change of use will interrupt or divert tidal flows from marine plants, thereby changing the tidal flushing and/or the freshwater flows they require to survive
- a change in use proposing stormwater management or flood retention infrastructure in areas of marine plants
 - such a change would undermine the protection and management of the marine plants and the ecosystem services that they provide and must be avoided. For example, incorporating marine plants within proposed infrastructure creates an expectation that they may be removed, destroyed or damaged in the future, for example to control roughness, remove excess growth resulting from nutrients or remove them to facilitate the removal of sediment to restore flows or holding capacity.
 - although marine plants may occur in, or be connected to, aquatic features adjacent to proposed development, they must be separated and protected from the impacts of development, including water quality.

Such development proposals must include an application for the removal, destruction or damage of a marine plant.

Some of the above examples may also constitute construction or raising of waterway barrier works associated with the design. In those cases, this development trigger must also be identified and applied for at the time the proposed barrier or barrier appears on any plans for the proposed development. Examples include filling of areas of tidal land or waterways effectively removing fish passage to that habitat, diverting or blocking waterways that provide fresh or tidal flows important for marine plant health and survival.

If a material change of use or reconfiguring a lot has been applied for or decided without assessment of the relevant removal, destruction or damage of marine plants development trigger, then this is a missed development trigger. To achieve all the necessary approvals, a new application will need to be lodged and it may be necessary to redesign the layout to address relevant aspects of state code 11. If this is the case, it is likely that previously assessed development triggers will also have to be reapplied for and reassessed. To manage projects efficiently and in a timely manner, and to avoid compliance issues, it is very important that the removal, destruction or damage of marine plants development trigger involved in the proposal is identified and applied for as early as possible.

3.2 Other authorisations

In addition to requiring a development approval or complying with the accepted development requirements, an applicant is required to obtain and comply with other statutory requirements under the *Planning Act 2016* and other legislation. For example:

- development approval for other development under the *Planning Act 2016*, such as constructing or raising of waterway barrier works or to undertake tidal works
- tenure under the *Land Act 1994* may be required for development on state land
- a *Marine Parks Act 2004* permit may be required within a marine park
- a *Fisheries Act 1994* resource allocation authority may be required for works completely or partly within a declared fish habitat area.

3.3 Pre-lodgement advice

Applicants should request coordinated pre-lodgement advice from State Assessment and Referral Agency (SARA) prior to lodging the development application. This advice will help applicants understand the development assessment requirements, including the required level of detail for the development application and technical considerations for the proposed development. The level of detail of the advice will depend on the quality and detail of information provided as part of the pre-lodgement request.

4 Standard information for all applications

Development applications that involve the removal, destruction or damage of marine plants require assessment of the impacts and effects of the development on fisheries resources, fish habitats and fishing sectors and industries. Applicants are to submit information and material as part of the development application, including statements detailing how the development meets the performance outcomes of state code 11. The level of detail submitted in support of a development application is to be tailored to, and relative to, the size of the development proposal. Any statement or assertion made is to be substantiated.

In addressing the assessment benchmarks of state code 11, the following information is required:

1. an appropriately scaled plan of the development site in relation to current and proposed property boundaries detailing
 - a. location and extent of all marine plants and a description of the type of marine plants present. For example, saltmarsh, mangrove, seagrass, *Casuarina*, *marine algae* or other marine plant types.
 - b. lines of the highest astronomical tide, mean high water spring tide and mean low water spring tide
 - c. location and extent of all fish habitat within the development area, including all waterways, tidal land and other wetlands present. Identify specific fish habitat features such as sand and/or yabby banks
 - d. location of any connectivity to fish habitat surrounding the development area. For example, upstream and downstream waterways and other wetlands
2. a scaled site plan of the proposed work showing the location, areas of impact and adjacent area including or in relation to
 - a. the location and extent of the actual areas of marine plants to be removed, destroyed or damaged in square metres. Identify proportion (m²) of permanent and/or temporary disturbance of fish habitats and purpose of disturbance. See Appendix 3 for information to help prepare an appropriately scaled plan showing the location and extent of marine plants
 - b. identifiable site features such as roads, road intersections, waterway names and bends in the waterway
 - c. real property boundaries adjacent to, and in the vicinity of, the proposed work
 - d. location, layout, extent, nature and dimensions of the area for proposed work showing the components of the proposed development, including access paths, construction areas, moorings and dredging required to undertake the work
 - e. location and extent of any existing disturbances, structures, improvements or fill within, adjacent to, or associated with, the proposed work

3. written documentation
 - a. details of the purpose of the proposed work, such as public jetty, private jetty, boat ramp, pontoon, revetment or boardwalk
 - b. a description of the fish habitats proposed to be impacted (such as sand banks, mud banks, seagrass, mangroves, salt couch and rocky shore) and the nature of the impact
 - c. a description of the marine plants proposed to be removed, destroyed or damaged by the work, including species, number, height, area, density and condition
 - d. description of the known or likely values of any aquatic features to fisheries productivity as fish habitat, or to provide fish movement or migration paths
 - e. description of the method of works, including details such as work stages, temporary structures and equipment to be used
 - f. a description of the past uses and/or disturbances of the development area
4. justification
 - a. a detailed description of how the proposed development has aimed to avoid and minimise impacts through considerations such as design, location, setbacks and/or buffer distances
 - b. details of on-site mitigation actions proposed to prevent the proposed work contributing to degradation of fish habitats including marine plants, in and adjacent to the development area, during and after the development
 - c. the location and extent of any future works including, but not limited to, maintenance works required for the continued safe and compliant operation of the proposed development. For example, proposed trimming of regrowth of marine plants, dredging, stormwater treatment devices, fencing, fire breaks, access tracks, water intake or outlet structures that may impact marine plants.

5 Addressing the SDAP state code 11

5.1 All development – impacts to marine plants

5.1.1 Performance outcome 1

The primary purpose of the *Fisheries Act 1994* is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats. A key mechanism to achieve this purpose is the management and protection of fish habitats, including marine plants.

Any development or works involving the removal, damage or destruction of marine plants is not to result in adverse impacts or effects to the health, quality, condition and values of fish and marine plants (fisheries resources). Marine plants and other fish habitats have proven difficult to restore or offset for a range of reasons. The design, including both built form and location, of development should be planned to avoid impacts to marine plants wherever possible.

In addition to not placing elements of development within fish habitats, a key design component of development that protects and avoids marine plants is the incorporation of buffers to protect riparian, coastal and other wetlands. Buffers are a physical setback area between the development and the fish habitat, and should be of a sufficient size and managed in such a way that prevents edge effects and other impacts of development from reaching the fish habitat. The placement of buffers to fish habitats often needs to take in account how risks such as flood, storm surge or sea level rise inundation, coastal processes and other erosion are to be managed. Buffers, for the purpose of this guideline, are designed to protect marine plants and the habitat they are a feature of.

Elements of development that do not require a location in tidal areas to function (see performance outcome 4) should be set back from waterways, tidal land and associated marine plants through incorporation of appropriate buffer provisions.

Where it is demonstrated that development cannot reasonably avoid the removal, destruction or damage of all marine plants, it should be designed to minimise and mitigate any impacts. Any impacts to fish habitats should be identified and contained within the footprint of the impact site/s for which authorisation is being sought in the development application.

Proposed development should not result in adverse impacts to adjacent marine plants and fish habitats through the creation of degrading processes.

Construction and maintenance activities should be planned so they do not result in adverse impacts to marine plants and fish habitats by, for example, minimising temporary construction footprints, employing best practice environmental controls and employing designs that will minimise the required frequency of maintenance activities in fish habitats if these cannot be avoided.

Performance outcomes	Acceptable outcomes
PO1 The design, construction and maintenance of the development does not result in adverse impacts to marine plants and fish habitat .	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Provide information on how the design, construction and maintenance of the development has been planned so they do not result in adverse impacts to marine plants and fish habitat.

Note: Specific responses to the performance outcomes below will further draw out whether the proposed development is likely to result in adverse impacts to marine plants and fish habitat. These responses should also be discussed in response to performance outcome 1.

5.1.2 Performance outcome 2

Marine plants are a matter of state environmental significance. Coastal development proposals, land uses and activities have the potential to remove, destroy or damage marine plants and can result in permanent and irreversible loss of fish habitat, fisheries resources and fisheries productivity.

In the first instance, development is to avoid impacts to marine plants and other tidal fish habitats. Usually there are alternative locations, designs and construction methodologies that would avoid impacts to marine plants and other tidal fish habitats. For example:

- lay down areas for machinery, equipment and spoil can be located away from marine plants
- directionally drilling a pipeline or attaching it to an existing bridge can avoid impacts to marine plants that would result from new trenching works
- disposing of dredge spoil away from marine plants
- strategically designing access track routes to avoid areas of marine plants.

If there are any proposed impacts to marine plants, they are to be clearly demonstrated to be unavoidable.

Marine plants are a protected state resource critical to sustain traditional, recreational and commercial fishing. Marine plants also provide other ecosystem services that protect land, water quality, biodiversity and the condition of wetlands and store carbon. Development is to be designed to minimise the spatial extent of disturbance to the greatest extent possible. The design should aim to locate development within the area to avoid impacts to marine plants. Works are not supported if there are alternative designs, methods or locations available that have less spatial impact on marine plants or other tidal fish habitats. For example:

- reducing the footprint of development to the minimum size that is required
- minimising the widths of access tracks, temporary construction corridors or other aspects of development that would result in the removal, destruction or damage of marine plants

Impacts to marine plants can be minimised by ensuring the development does not result in the removal, destruction or damage of adjacent, nearby or upstream marine plants. For example:

- large rock groynes placed perpendicular to the shoreline can modify erosion and accretion processes nearby and consequently impact adjacent marine plant communities – other, more subtle erosion control measures that promote natural restoration of fringing marine plants would result in less impact to marine plants
- works that may impact the tidal prism in a waterway or other wetland can result in changes to the inundation pattern and water quality to which marine plants have adapted

- constructing a causeway across a tidal waterway, when a piled bridge could be used instead, can result in changes to the extent and duration of tidal inundation upstream of the structure – such changes can impact the health and composition of marine plants
- erosion and sediment controls are implemented to ensure sediment plumes do not result in the removal, destruction and damage of marine plants.

Performance outcomes	Acceptable outcomes
PO2 Development is designed, constructed and maintained to avoid and minimise impacts on matters of state environmental significance .	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Include plans and drawings of the development site, identifying the extent of all marine plants and other tidal fish habitats within and adjoining the development site with an overlay of the proposed development.
- ✓ On a plan, provide areas in m² of permanent and temporary removal, destruction or damage of marine plants by marine plant type, for example mangrove, saltmarsh, seagrass.
- ✓ A detailed description of how the proposed development has aimed to avoid and minimise impacts through such considerations as design, location, construction methods, setbacks and/or environmental buffers.
- ✓ Demonstrate that the location, design and work methods will result in the smallest impact possible to marine plants and other tidal fish habitat.
- ✓ Detail measures taken to minimise the extent of impacts to marine plants.
- ✓ Demonstrate that the proposed development will avoid or minimise impacts to adjacent marine plants, for example through changes to tidal inundation, erosion or sedimentation.

5.1.3 Performance outcome 3

Marine plants are a **matter of state environmental significance** under the *Environment Offsets Act 2014*. The ‘avoid, minimise, mitigate, offset’ hierarchy underpins the state’s assessment and decision-making processes for development resulting in the removal, destruction or damage of marine plants. In the first instance, this framework requires that impacts to marine plants are avoided. If avoidance cannot be achieved, it must be demonstrated that impacts have been minimised and mitigated.

Mitigation actions can reduce the severity of an impact. For example:

- active restoration of marine plants in sites temporarily disturbed by the development
- control of unauthorised access that has resulted in marine plant disturbance
- implementation of erosion and sediment controls that protect marine plants
- acid sulfate soil management that protects marine plants

- restoration of existing disturbed areas within, and adjacent to, the development site to promote establishment of marine plants
- provision and management of buffers between the development and marine plants that have been avoided
- preventing or containing turbid plumes in waterways to protect marine plants
- fencing to prevent stock access and grazing and/or to prevent unauthorised mowing and slashing of marine plants
- restoring tidal inundation by removing unauthorised or obsolete structures
- removal of illegally dumped waste or fill from tidal lands to promote recovery of marine plant communities
- permanent structures include fish-friendly design elements to provide an enhanced habitat that benefits endemic fish.

In some circumstances, mitigation actions can reduce the overall **significant residual impact** of a proposed development. For example:

- onsite rehabilitation or restoration results in the establishment of marine plants, providing similar or better fisheries values, within 5 years of clearing.

If there is a residual and acceptable impact to marine plants after all reasonable avoidance and mitigation measures have been taken, an offset may be required if the residual impact is, or is likely to be, 'significant'. Guidance for determining if the residual impact is significant can be found in the *Significant residual impact guideline* (Department of State Development, Infrastructure and Planning 2014).

Where development cannot avoid impacts to marine plants, impacts must be acceptable and consistent with ecologically sustainable development. The removal, destruction or damage of marine plants may be unacceptable when:

- the marine plants are threatened or are part of a threatened ecological communities (see section 2.1.4)
- the marine plants are known to provide an important role in the lifecycle and/or productivity of fish that are important in traditional, commercial or recreational fisheries
- the marine plants could not be feasibly offset to achieve environmental values consistent with the impact site
- the marine plants are known to provide valuable ecosystem services that, if lost, would be difficult to replace. For example, shoreline protection, maintenance of water quality or are host to threatened species such as Ant plants, water mouse and/or Illidge's ant blue butterfly
- the proposed development is unable to meet all performance outcomes of this code and does not comply with the purpose statement.

Any significant residual impacts must be offset in accordance with Queensland's Environmental Offsets Framework. If a proponent-driven offset is proposed, the applicant should seek pre-lodgement advice through the State Assessment and Referral Agency to identify any potential development triggers associated with the proposal.

Performance outcomes	Acceptable outcomes
<p>PO3 Where development impacts on matters of state environmental significance, development mitigates impacts and provides an offset for any acceptable significant residual impact on matters of state environmental significance.</p> <p>Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the Brisbane Port LUP precinct plan.</p>	<p>No acceptable outcome is prescribed.</p>

Information to be submitted with development application

- ✓ Describe the **matter(s) of state environmental significance** to be impacted.
- ✓ For any temporary impacts, provide:
 - the total area (m²) of temporary removal, destruction or damage of marine plants
 - discussion on the type of marine plants to be impacted and the ability for the area to naturally restore to pre-disturbance condition within 5 years of clearing
 - any active restoration or monitoring to achieve restoration of the pre-disturbance condition within 5 years in a restoration plan.
- ✓ For any permanent impacts, provide:
 - the total area (m²) of permanent removal, destruction or damage of marine plants.
- ✓ For any onsite restoration or rehabilitation, including outside the impact site but within the cadastral bounds of the proposed development application, provide:
 - the area (m²) of marine plants expected to be restored/rehabilitated within 5 years of the proposed clearing
 - discussion on the type of marine plants that are expected to be restored/rehabilitated and how they are expected to provide equal or better fisheries values to those impacted within 5 years of the proposed clearing
 - a restoration plan including the details referenced in the 'information to be submitted with development application' section for performance outcome 24.
- ✓ Detail the types of marine plants to be impacted, such as mangroves, saltmarsh, seagrass or casuarina, including details of any threatened marine plants or ecological communities.
- ✓ Demonstrate that the proposed development mitigates impacts to marine plants to the greatest extent possible and outline proposed mitigation measures.
- ✓ Identify any significant residual impacts to marine plants.
- ✓ If relevant, discuss the feasibility of providing an **offset** for any **significant residual impacts**. This information may help to determine if the significant residual impact is acceptable.

5.2 All development in general

5.2.1 Performance outcome 4

The coastline and intertidal areas are a finite resource under considerable development pressure. Only development that depends on its location being on tidal land to function will meet this performance outcome.

A functional requirement to be located on tidal land means that there is a prerequisite greater than any other consideration for the aspect of development to be located on tidal lands to achieve its function. For example, the ramp element of a boat ramp must be on tidal land to enable the launching of boats.

However, the functional requirement does not extend to associated or ancillary elements. For example, amenity facilities to service ramp users are not required to be located on tidal lands to function.

Examples of aspects of development that have the potential to demonstrate a functional requirement to be located on or under tidal lands include:

- boat ramps, pontoons and jetties
- harbours
- marina berths
- marine-based research
- pedestrian, road or rail crossings over a tidal waterway
- emergency facilities for remote communities where no terrestrial option exists
- post-treatment system stormwater, sewerage or aquaculture outlets
- essential infrastructure such as power, water and communications.

The uses described below are not acceptable within tidal land because they can be located elsewhere and still provide their intended function.

Examples of development that **do not** have a functional requirement to be located on tidal lands include:

- offices
- amenity facilities
- car park areas
- private walkways
- parks
- residential, industrial and agriculture development
- restaurants, hotels and supermarkets
- golf course developments
- sports fields
- sewage effluent, water and stormwater treatment works, excluding inlets and post-treatment outlets.

In addition to having a functional requirement to be located on tidal lands, it must be demonstrated that the development cannot be feasibly located elsewhere with regard to minimising impacts to marine plants and tidal fish habitats. For example:

- instead of locating a boat ramp through a mature stand of healthy mangroves, a boat ramp may be able to be located in an area devoid of marine plants
- instead of locating a pontoon where navigational access would not be possible or reliable, locate it in an area with all-tide access so marine plants will not be disturbed by dredging.

Performance outcomes	Acceptable outcomes
<p>PO4 Aspects of development are only permitted on tidal land if there is a functional requirement and the development cannot be feasibly located elsewhere. Ancillary elements (such as rest rooms and offices) must be located outside of tidal land.</p>	<p>No acceptable outcome is prescribed.</p>

Information to be submitted with development application

- ✓ Plans and drawings that identify all aspects of development, including construction requirements proposed on tidal land. Plans should clearly identify tidally connected land below the level of highest astronomical tide.
- ✓ Information to demonstrate that any aspect of the development located on tidal land is dependent on being located on tidal land to function.
- ✓ Information to demonstrate that the development cannot be feasibly located elsewhere.

5.2.2 Performance outcome 5

Development should not result in the loss or significant alteration of fish access and movement. Development within and adjacent to tidal areas or waterways has the potential to limit or alter fish movement. For example:

- structures within and adjacent to waterways can physically block fish from accessing fish habitats or significantly alter the path they usually take to access habitats. For example
 - large groynes at river mouths
 - raised access tracks on tidal lands
 - filling of tidal lands
 - causeways
 - new tidal flood gates
- dredging or construction at the mouth of estuaries during fish spawning and fish migration periods may interrupt recruitment and catch of key commercial or recreational species
 - in central and northern Queensland, works at the mouth of a waterway should be conducted in March–October to avoid known spawning and migration times of key fish species such as Barramundi
 - in southern Queensland, dredging or construction works near the mouth of estuaries should be undertaken in September–March to minimise impacts to the spawning migrations of sea mullet, which are targeted by commercial fishers.

Fish habitats and associated fisheries resources are highly susceptible to degrading or threatening processes resulting from habitat fragmentation. Habitat fragmentation results in isolation of existing patches of fish habitat and causes edge effects with the potential to:

- reduce the quality of the habitat provided by marine plants
- stop certain species from moving from one patch to the next
- expose the edges of habitat to further disturbances, both natural and human caused.

Performance outcomes	Acceptable outcomes
<p>PO5 The development does not result in adverse impacts on fish movement or fragmentation of fish habitats.</p>	<p>No acceptable outcome is prescribed.</p>

Information to be submitted with development application

- ✓ Demonstrate that the works or development will not restrict or significantly alter fish access to fish habitats or fisheries resources.
- ✓ Demonstrate that the proposed development will minimise impacts to fish movement in the area including details of known fish spawning and fish migration periods.
- ✓ Demonstrate that the proposed development will not result in the fragmentation of fish habitats.

5.2.3 Performance outcome 6

The design, construction and maintenance of development in fish habitats has the potential to adversely impact fish and marine plants. Impacts to **fisheries resources** as a result of development have the potential to occur due to:

- changes to biotic and abiotic conditions, such as water and sediment quality
- exposure to substances that are toxic to plants or toxic to, or cumulative within, fish
- significant changes to existing coastal processes, such as erosion and accretion rates. For example, the placement of structures can change coastal processes causing the dieback of seagrass meadows or the removal of yabby banks
- impacts on reproductive success of fish and/or marine plants
- depletion of fish energy reserves through alteration or removal of fish habitats and/or food sources
- structures that result in the physical damage, death, trapping or stranding of fish (a fish salvage plan may be required to demonstrate compliance with this performance outcome)
- changes that result in an increase of pest fish and/or other relevant pest species
- the foreseeable requirement for additional works or activities that would impact fish habitats. For example, dredging to access a pontoon structure, flood or erosion mitigation actions for development proposed in areas prone to such events.

Development is to be designed, constructed and maintained to ensure impacts to marine plants and other tidal fish habitats do not extend to areas adjacent to those proposed to be disturbed.

For more information, refer to relevant fish habitat management operational policies and fish habitat guidelines:

1. *Management and protection of marine plants and other tidal fish habitats (FHMOP 001)*, Department of Primary Industries and Fisheries, 2007
2. *Tidal fish habitats, erosion control and beach replenishment (FHMOP 010)*, Department of Primary Industries and Fisheries, 2007

3. *Dredging, extraction and spoil disposal activities (FHMOP 004)*, Department of Primary Industries, 1998
4. *Departmental procedures for permit applications assessment and approvals for insect pest control in wetlands (FHMOP 003)*, Department of Primary Industries, 1996
5. Department of Agriculture and Fisheries Factsheet [What are fish friendly structures?](#)

Performance outcomes	Acceptable outcomes
PO6 The design, construction and maintenance of the development does not result in adverse impacts on fisheries resources .	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Identification of the current fish habitats within, and adjacent to, the development site.
- ✓ Discussion of any potential impacts to fish and marine plants that may result from the proposed development. Particular focus should be given to:
 - changes to biotic and abiotic conditions, such as water and sediment quality
 - exposure to substances that are toxic to plants or toxic to, or cumulative within, fish
 - expected changes to existing coastal processes, such as erosion and accretion rates
 - impacts on reproductive success of fish and/or marine plants
 - depletion of fish energy reserves
 - structures that result in the physical damage, death, trapping or stranding of fish
 - changes that have the potential to result in an increase of pest fish and/or other relevant pest species
 - the foreseeable or likely requirement for any additional works or activities that would impact fish habitats. For example, dredging to access a pontoon structure.
- ✓ Details on how the proposed development has been designed, constructed, maintained and/or will be managed to protect fish and marine plants from identified potential impacts.

5.2.4 Performance outcome 7

Development has the potential to result in the temporary disturbance of tidal land and fish habitat, including marine plants. Rehabilitation of tidal land and fish habitat is important to ensure works do not result in an adverse impact to fisheries resources. Experience in Australia and overseas has demonstrated that the restoration of natural profiles and conditions are the most cost-effective and biologically successful methods of restoring tidal fish habitats. Any degrading processes that exist or are created by the proposed development must be managed to ensure the successful natural regeneration of marine plants and other tidal fish habitats.

Degrading processes that have the potential to reduce the success of natural recruitment of marine plants at a site after natural profiles are restored can include:

- accelerated erosion via
 - destabilisation of sediment from temporary development, including marine plant removal
 - modifications to coastal processes
 - increased boat traffic
 - increased stormwater runoff from adjacent development
- accretion through modifications to coastal processes
- sediment compaction
- unauthorised vehicle access
- unauthorised dumping or rubbish
- increased rubbish accumulation in tidal areas originating from adjacent development sites
- grazing
- feral animals.

Works to promote natural regeneration of fish habitats and fisheries resources are to be monitored and actions taken to adjust for any unexpected failure of the site to naturally regenerate.

Performance outcomes	Acceptable outcomes
PO7 The development is designed, constructed and maintained to encourage fish habitats and fisheries resource values to naturally regenerate.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Submit application material demonstrating that degrading processes are avoided and mitigated to provide conditions in which natural regeneration of tidal fish habitats will occur.
- ✓ For temporary works, the application is to demonstrate that the works will allow for the natural regeneration of marine plants on tidal lands through the reinstatement of suitable tidal profiles and natural tidal inundation patterns to encourage natural recruitment back to the target area.
- ✓ A post-works monitoring and maintenance program appropriate for the scale of the restoration works. The plan should identify potential risks from degrading processes and include management actions to be undertaken should these occur.

5.2.5 Performance outcome 8

Acid sulfate soils occur naturally over extensive areas of low-lying coastal lands, predominately below 5 metres Australian Height Datum. Acid sulfate soils exposed to oxygen through excavation and drainage can produce sulfuric acid and toxic heavy metals. The acid can corrode concrete and steel infrastructure, and also release metals from soils through runoff, drainage and groundwater movement. Released metals can harm or even kill fish, other aquatic life, native vegetation and crops. This may be through toxic metal effects or, as metal flocs form and precipitate, suffocating benthic fish habitats and/or consuming oxygen from the water column.

Performance outcomes	Acceptable outcomes
PO8 Development likely to cause drainage or disturbance to acid sulfate soils prevents the release of contaminants and impacts on fisheries resources and fish habitats .	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Identify if the proposal will disturb or drain acid sulfate soils.
- ✓ Provide an acid sulfate soil management plan, including measures to avoid and minimise impacts of acid sulfate soils on fisheries resources and fish habitats.
- ✓ Confirm that the proposed management is consistent with the current version of the *Queensland acid sulfate soil technical manual*.

5.2.6 Performance outcome 9

Fisheries resources, fish habitats and the aquatic ecosystems they occur within rely on, and are adapted to, tidal and hydrological regimes.

Some development has the potential to modify or reduce tidal or freshwater inundation extent or cause water to pond. For example, development that:

- results in a waterway restriction or blockage
- changes ground levels or tidal land profiles
- modifies flow patterns by including features like raised access structures, bunding or levees
- changes the cross section of a waterway or drain.

Disturbances or changes to tidal and hydrological regimes can compromise ecological processes and has the potential to result in:

- die back of marine plants. For example, through reduction of tidal extent and/or freshwater ponding
- fish kills
- loss of fish habitat through reduction of tidal or freshwater inundation
- fish stranding
- modification of habitat type. For example, a change from tidal to fresh water

- a reduction of the condition or value of the fish habitats and fisheries resources.

Performance outcomes	Acceptable outcomes
<p>PO9 The development maintains or restores drainage patterns, the extent and timing of tidal and freshwater inundation.</p>	<p>No acceptable outcome is prescribed.</p>

Information to be submitted with development application

- ✓ Demonstrate that tidal and freshwater inundation and drainage patterns, extent and timing are maintained so that ecological values and processes continue.

or

- ✓ Identify if the extent and duration of the existing tidal or freshwater inundation and drainage patterns will be restricted or impacted either temporarily or permanently by the proposed work through, but not limited to, the provision of the following information:
 - an appropriately scaled drawing or plan identifying
 - the current extent of freshwater or tidal inundation, including lines of highest astronomical tide height, mean high water spring and mean low water, existing profile and surface levels of the waterway
 - the resultant extent of tidal inundation or waterway profile on completion of the works, including lines of highest astronomical tide height, mean high water spring and mean low water, proposed profile and surface levels of the waterway
 - confirm if the duration of tidal inundation or hydrological regime will change as a result of the works and any new infrastructure, and detail and quantify the impacts to fisheries resources
 - confirm if tidal inundation and drainage patterns will be temporarily restricted, specifying the time required for the restriction and detailing and quantifying the impacts to fisheries resources.
 - clearly outline any activities or measures that will be undertaken to mitigate impacts or remediate the area on completion of the works.

5.2.7 Performance outcome 10

Shorelines and foreshores are dynamic, and fluctuations are naturally occurring processes of erosion and accretion. Such processes, along with the retention of buffers between shorelines and development, maintain diverse and productive tidal fish habitats.

Development has the potential to accelerate or compromise natural processes and impact on the condition and value of fish habitats. For example, intensification of land use adjacent to tidal land and waterways may result in the clearing of riparian vegetation and/or changes to overland water flow, increasing the risk of erosion and sedimentation as well as waterway bank slumping.

Hard engineered structures such as revetment walls, rock groynes and break walls can impact adjacent fish habitats by modifying erosion and accretion processes. Such modifications have the potential to smother or erode adjacent marine plants. Providing buffers between shorelines and development is the best way to maintain natural erosion and accretion processes.

Where buffers are not able to be incorporated due to the presence of existing infrastructure that is not expendable or that cannot be relocated, managing the cause of the erosion is likely to have greater benefits to marine plants and fish habitats than physical erosion control structures.

Some methods, such as bank reprofiling and planting of native vegetation, can control erosion while maintaining natural erosion and accretion processes.

Performance outcomes	Acceptable outcomes
PO10 The design, construction and maintenance of the development maintains natural erosion and accretion processes.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ A discussion detailing how the development will maintain or improve natural processes, with specific reference to erosion and accretion.
- ✓ A discussion detailing how the development will not result in increased or accelerated erosion or scouring of the waterway bed and banks or shoreline or foreshore erosion.
- ✓ Measures to avoid and minimise impacts to tidal fish habitats and fisheries resources, with reference to plans detailing temporary and permanent impacts.
- ✓ Design and other measures taken to avoid the risk of associated scour and erosion of the waterway bed or banks, foreshores or shorelines (links to performance outcomes 11 and 12).

5.2.8 Performance outcome 11

In estuaries, natural processes provide the dynamic habitat complexity, for example undercut banks, shallow flats and snags used by fish).

Development within estuaries alters natural processes and has the potential to exacerbate erosion of the bed and banks adjacent to the proposed works. This can result in erosion of adjacent fish habitats, increased sedimentation in waterways and disturbance of fish habitats by creating a requirement for further erosion control works.

Development should be designed to ensure it does not increase the risk of scour or erosion of the waterway bed or banks.

Performance outcomes	Acceptable outcomes
PO11 The development is designed, constructed and maintained so that it does not increase the risk of scour or erosion of waterway bed or banks.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ A discussion of the natural process such as erosion, accretion, vegetation and biota colonisation, that affect the proposed development area. Reference of historical imagery, such as aerial photography, may assist to demonstrate changes that have occurred in the area over time.
- ✓ A discussion detailing how these natural processes were considered to inform design, construction and maintenance of the proposed development so as not to increase the risk of scour or erosion of the waterway bed or banks.

5.2.9 Performance outcome 12

The nature of shorelines is dynamic, as fluctuations naturally occur from the processes of erosion and accretion. The formation of coastal shorelines constantly changes because of these natural processes, especially those caused by storm tides and cyclones.

Natural shoreline processes and natural buffers between shorelines and development maintain natural, diverse and productive tidal fish habitats. In estuaries, natural processes provide the dynamic habitat complexity, such as shallow flats, bars, snags, deep gutters and reef used by fish.

Development located on or near a shoreline can detrimentally impact the condition and function of tidal fish habitats and has the potential to exacerbate erosion of the adjacent shoreline and foreshore.

Performance outcomes	Acceptable outcomes
PO12 The development is designed, constructed and maintained so that it does not increase the risk of shoreline or foreshore erosion.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ A discussion of the natural processes, such as erosion, accretion, vegetation and biota colonisation, that affect the proposed development area. Reference of historical imagery, such as aerial photography, may assist to demonstrate changes that have occurred in the area over time.
- ✓ A discussion detailing how these natural processes were considered to inform design, construction and maintenance of the proposed development so as not to increase the risk of shoreline or foreshore erosion.

5.2.10 Performance outcome 13

Tidal lands, waterways and other wetlands outside of private tenure are public assets, and access to these areas must be maintained or made available where possible.

Development adjacent to, and within, tidal land and waterways has the potential to restrict public access through changes to:

- land tenure and use, for example the conversion of foreshore esplanade to freehold or exclusive leases of that land
- construction and operation of buildings
- structures and infrastructure, for example new private structures over tidal land or waterways.

Applications for development that propose adverse impacts on community access to tidal land and waterways may be able to justify the impact if it can be demonstrated there is a right to access the area and undertake the proposed works that is greater than the general communities' rights to fisheries resources or the fisheries productivity associated with the fisheries resources. Such evidence may include the following:

1. The applicant has been granted appropriate tenure over the area of works.
2. For jetties or boat ramps, the applicant has appropriate tenure over the works area or has tenure over the area immediately adjoining the area of works and has full riparian access rights.
3. For drainage works, the applicant has appropriate tenure over the area immediately adjoining the area of works.
4. For revetment works, the applicant has appropriate tenure over the area immediately adjoining the area of works, the rate of erosion that is occurring is accelerated above and beyond the natural rate of erosion and the works will be fully undertaken within the tenured boundary above the highest astronomical tide.
5. For aquaculture inlet and outlet structures, the applicant has appropriate tenure of the area immediately adjoining the area of works and will undertake restoration of tidal profiles.

It is recognised that landholders may have a legitimate expectation to be able to access tidal lands to build and maintain limited maritime infrastructure for private use if higher level rights can be demonstrated and the impacts to the communities' fisheries resources are minimised and found to be of an acceptable level.

An example of works for which rights could not be demonstrated would be if a private jetty was to extend from public park, esplanade or unallocated state land. The impacts to public use of or access to tidal land and waterways could not be justified, as the jetty owner has no rights to access public lands for a private purpose.

Rights are necessary to ensure:

- fair access
- ecologically sustainable use of resources
- optimal community and economic benefits.

Performance outcomes	Acceptable outcomes
<p>PO13 Development does not have an adverse impact on public use of or access to tidal land and waterways.</p>	<p><i>For development for a material change of use or reconfiguration of a lot:</i></p> <p>AO13.1 Tidal land and fish habitats are separated from development and are available for public use.</p> <p><i>For any other development:</i></p> <p>No acceptable outcome is prescribed.</p>

Information to be submitted with development application

- ✓ Supporting information demonstrating that the public use of, and access to, tidal land and waterways will be maintained.
- ✓ Supporting information to demonstrate rights or eligibility (if any) to undertake the works or activity by providing:
 - proof of tenure over land directly abutting the tidal area with full riparian access rights
 - evidence of appropriate tenure that has been granted over the area of work, or a resource entitlement or resource allocation that has been granted for the state resource being developed
 - details of the proponent's role as the responsible agency for legislative or community requirements such as, but not limited to
 - a legitimate public health or safety issue
 - public infrastructure that has no alternative viable route that does not require works on tidal land or fish habitats.

5.2.11 Performance outcome 14

Development within, or adjacent to, tidal fish habitats and waterways has the potential to reduce or fetter community access to fisheries resources in the short or long term. The sustainability and productivity of recreational and community fisheries is dependent on the ability for the community to be able to access fisheries resources – that is, the ability of the community, including recreational and traditional fishers, to catch or harvest fisheries resources. For example:

- the construction of permanent structures in waterways that reduce the community's ability to undertake certain fishing activities
- temporary access restrictions to an area may result from construction of infrastructure within waterways
- low clearance bridges in waterways may limit boat access to upstream or downstream fishing locations
- changes to the tenure of tidal land or waterways or to adjacent areas that allow public access
- changes in use of structures for example prohibiting fishing from a public jetty or restricting public access to state waters around private structures.

Where development has the potential to impact on community access to fisheries resources and fish habitats, it is recommended that consultation is undertaken with appropriate representatives from recreational and/or traditional fishing groups.

In some cases, compensation for impact on fisheries access, operations and/or productivity may be necessary. The *Guideline on fisheries adjustment* provides advice for proponents on relevant fisheries adjustment processes and is available by request from the Department of Agriculture and Fisheries.

Performance outcomes	Acceptable outcomes
<p>PO14 Development does not adversely impact on community access to fisheries resources and fish habitats including recreational and indigenous fishing access.</p>	<p>AO14.1 The development does not alter existing infrastructure or existing community access arrangements.</p>

Information to be submitted with development application

- ✓ Discussion of existing access arrangements to fisheries resources, including identification of existing fishing activities and stakeholders.
- ✓ Identification and discussion of any elements of the location, design, construction methods or operation of the proposed development that have the potential to adversely impact on community access to fisheries resources and fish habitats, with specific reference to recreational and traditional fishing activities.
- ✓ Discussion of all aspects of the proposed development that have been incorporated to maintain community access arrangements to fisheries resources and fish habitats.
- ✓ Detail any community consultation undertaken, including any agreed outcomes.
- ✓ Detail any fisheries adjustment initiatives that have, or will be, undertaken to compensate for any adverse impacts to community access arrangements.

5.2.12 Performance outcome 15

Commercial fishing makes a valuable contribution to the Queensland economy, has an important role in providing seafood for purchase and consumption by the general public, and supports other industries such as tourism.

Commercial fishing is dependent on sustainable fish stocks and access to fish stocks as well as infrastructure, services and supply chain facilities. The *Fisheries Act 1994* and Fisheries (General) Regulation 2019 provides for the allocation of fisheries resources and the management of commercial fisheries arrangements. Development has the potential to restrict access to fish stocks and fishing grounds, and to interrupt or displace fishing activities and supply chains that provide access to services and markets.

If development has the potential to impact on commercial fishing operations, it is recommended that consultation is undertaken with appropriate representatives from the commercial fishing industry.

In some cases, compensation for impact on fisheries access, operations and/or productivity may be necessary. The *Guideline on fisheries adjustment* provides advice for proponents on relevant fisheries adjustment processes and is available by request from the Department of Agriculture and Fisheries.

Performance outcomes	Acceptable outcomes
<p>PO15 Development does not adversely impact on commercial fishing access and linkages between a commercial fishery and infrastructure, services and facilities.</p>	<p>No acceptable outcome is prescribed.</p>

Information to be submitted with development application

- ✓ Discussion of existing commercial access arrangements to fisheries resources and quantification of any adverse impacts to access arrangements resulting from the proposed development. This will include identification of existing commercial fishing activities and industries. Consideration must be given to the seasonal and transient nature of commercial fisheries.
- ✓ Identification and discussion of any elements of the location, design, construction methods and operation of the proposed development that have the potential to adversely impact on commercial fishing access to fisheries resources and fish habitats.
- ✓ Discussion of all aspects of the proposed development that have been incorporated to maintain commercial fishing access arrangements to fisheries resources and fish habitats.
- ✓ Detail any industry consultation undertaken, including evidence of any agreed outcomes.
- ✓ Detail any fisheries adjustment initiatives that have, or will be, undertaken to compensate for any adverse impacts to commercial fish access arrangements.

5.3 Erosion control structures and beach replenishment

For more information, refer to relevant fish habitat management operational policies and fish habitat guidelines:

- *Tidal fish habitats, erosion control and beach replenishment (FHMOP 010)*, Department of Primary Industries and Fisheries, 2007

5.3.1 Performance outcome 16

The diverse mosaic of tidal fish habitats associated with shorelines, foreshores and waterway banks includes mangrove, seagrass, saltmarsh and algal communities, rocky foreshores, mud flats, reefs and sandbars. These habitats, and the adjacency and connectivity between them, sustain fish stocks and associated fishing industries.

Development is to avoid impacts to fisheries resources through appropriately sized riparian buffer zones and designing development to facilitate managed retreat and treating the cause of erosion where possible. Restoration of natural ecological processes, fringing or riparian vegetation and other aquatic habitat components is used to manage accelerated erosion in the first instance.

Erosion control structures may be considered for **significant erosion** posing an immediate threat. Erosion management or control measures and associated impacts is to be commensurate with the identified erosion risk. Development and construction methods are to minimise permanent and temporary disturbances to tidal fish habitats and fisheries resources. Reclamation of tidal land is not supported; however, certain works to regularise the shoreline for erosion control may be considered.

Performance outcomes	Acceptable outcomes
<p>PO16: Removal, destruction or damage of marine plants as a result of erosion control structures or beach replenishment only occurs if:</p> <ul style="list-style-type: none"> • there is an immediate and significant threat of erosion to the use of the land for its existing or approved purpose and • infrastructure, structures or buildings are not expendable or not able to be relocated. 	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Identify the cause of erosion.
- ✓ Quantify the extent and risk of erosion, demonstrating that the threat is imminent.
- ✓ Details of the existing and approved land use and associated buildings, structures or infrastructure that are under immediate threat from significant erosion.
- ✓ Discuss alternative actions that have been considered and justification for the chosen option.
- ✓ Discussion demonstrating that the proposed erosion control works and/or beach replenishment is the option available to address the identified imminent risk of erosion with the least impact on tidal fish habitats and fisheries resources. Provide justification as to why relocation or loss of buildings, structures or infrastructure is not a viable option.

5.3.2 Performance outcome 17

Beach replenishment is defined as ‘the placement of sand along a (beach) foreshore to supplement the existing quantity of sand’. The placement of sand on a soft-sediment foreshore is considered artificial beach creation and not beach replenishment.

Beach replenishment is used on sandy shorelines in high-energy environments such as open coasts and exposed estuarine areas. In these environments benthic floral and faunal communities are adapted to mobile sandy substrates and are therefore more tolerant to the smothering and abrasive impacts of beach replenishment. Sandy shorelines also contain important tidal fish habitats and fisheries resources, such as yabby banks, that play an important role in Queensland’s fisheries.

Soft-sediment shorelines are found in low-energy environments, such as the protected waters of estuaries. Benthic floral and faunal communities in soft-sediment environments are more susceptible to the impacts of sand deposition and abrasion.

Performance outcomes	Acceptable outcomes
<p>PO17 The area that the beach replenishment is to be carried out on is a high-energy, sandy sediment shoreline with biological communities adapted to mobile sediments.</p>	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Provide information on the various fish habitat types present at, and adjacent to, the beach replenishment site, for example yabby banks, shores with coarse sand, marine plants or rocky outcrops.
- ✓ Provide information to demonstrate that the proposed beach nourishment site is a high-energy, sandy sediment shoreline with biological communities adapted to mobile sediments.

5.3.3 Performance outcome 18

Erosion control structures can be highly effective in protecting an area from erosion; however, they can result in irreversible impacts to fish habitats and natural processes. Erosion control structures that create terrestrial land over existing tidal areas result in a permanent loss of tidal fish habitat. Erosion control structures are not to result in the reclamation of tidal land unless it is minor and forms an integral part of the erosion control design.

Performance outcomes	Acceptable outcomes
PO18 Erosion control structures including beach replenishment does not create terrestrial land , unless they form an integral part of the erosion control design.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Details of erosion control/beach replenishment proposal, including plans and drawings identifying the area and extent of works and existing and proposed beach or benthic profiles in relation to the level of highest astronomical tide. Clearly illustrate expected changes to the extent of tidal inundation.
- ✓ Demonstrate with reference to plans and drawings and through discussion of the proposed design, construction and maintenance methodology that the erosion control structure does not result in the filling of tidal lands to create terrestrial land unless the fill forms an integral part of the erosion control design.

5.3.4 Performance outcome 19

Beach replenishment is an activity that may require a maintenance regime to retain the desired sand volume and beach profile. Each beach nourishment activity results in disturbance to fisheries resources at both the sand source and nourishment sites.

Performance outcomes	Acceptable outcomes
PO19 The beach replenishment work is undertaken in a way that minimises the frequency of any ongoing replenishment requirements.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Provide information to demonstrate that the proposed design, construction and maintenance of the erosion control works minimise the frequency of ongoing replenishment.
- ✓ Provide a beach replenishment maintenance plan that clearly outlines the frequency of any ongoing replenishment, source of sand and management actions to reduce impacts to fisheries resources.

5.3.5 Performance outcome 20

If it has been demonstrated that an erosion control structure is required to address an immediate and significant threat of erosion, the erosion control structure should be located to minimise impacts to existing tidal lands and marine plants. Generally, this means locating the structure as far landward as possible to reduce the development footprint over tidal lands and marine plants.

In some cases, an erosion control structure that is desirable to manage a demonstrated risk may be constructed and buried in a trench within an appropriate landward boundary that is the final line of defence beyond the zone where coastal and other natural processes are maintained.

Performance solutions to this performance outcome can also be considered where erosion control structures are located further into the tidal lands to reduce adverse impacts to tidal land and marine plants. Innovative erosion control structure designs may achieve the objectives of providing erosion control as well as protecting existing tidal fish habitat. For example, in some cases the use of rock gabions and/or pre-cast concrete armour units such as A-jacks placed seaward of an eroding bank to stabilise the shoreline could allow sediment to accumulate and encourage marine plant colonisation landward of the structure. Fish passage must be considered in any such design.

Performance outcomes	Acceptable outcomes
PO20 Erosion control structures are located as far landward as possible to reduce adverse impacts to tidal land and marine plants .	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Details of any adjacent marine plants and the location of highest astronomical tide in relation to the proposed development.
- ✓ Information to demonstrate that the proposed erosion control structures have been located as far landward as possible to reduce adverse impacts to tidal lands and marine plants.

5.4 Dredging

Depending upon the proposed locations for dredging and dredge spoil disposal, or the purpose of the works, it may not be possible to obtain approval to dredge and/or dispose of dredge material in a fish habitat.

Consideration of the policy and regulatory environment will be required and this should include consideration of *The strategy for the conservation and management of Queensland's wetlands* (1999). The first objective of the strategy is to 'avoid further loss or degradation of natural wetlands, unless overriding public interest can be shown'.

Particularly relevant to the Great Barrier Reef Marine Park and World Heritage Area is consideration of the international Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (the London Protocol), the Australian *Environment Protection (Sea Dumping) Act 1981*; *Great Barrier Reef Marine Park Act 1975* and subordinate legislation, and the Great Barrier Reef Marine Park Authority's *Dredging and dredge spoil material disposal policy*. The Australian and Queensland governments support the *Reef 2050 long-term sustainability plan*, which refers to restrictions on dredging for the development of new, or expansion of existing, port facilities within the regulated port limits of Gladstone, Hay Point/Mackay, Abbot Point and Townsville, and prohibits the sea-based disposal of this dredge material in the Great Barrier Reef World Heritage Area.

Placement of dredge spoil may also be inconsistent in wetlands within other World Heritage Areas and zones within the Great Sandy and Moreton Bay marine parks. The requirements of the Ramsar Convention (1971) should also be considered, including sites listed under the Convention (Bowling Green Bay, Currawinya Lakes, Moreton Bay, Shoalwater Bay, Corio Bay and the Great Sandy Strait).

5.4.1 Performance outcome 21

Disposal of dredge spoil on tidal lands causes an initial and ongoing loss of existing benthos, or organisms that live at the bottom of an aquatic habitat, by altering habitats in the disposal area. Disposal of dredge spoil on tidal lands can have ongoing effects on natural processes with subsequent impacts. For example, the resuspension of deposited spoil material can increase turbidity and suspended solids that can shade marine plants and may smother marine plants and fish on settling. Other chemical indicators of water quality can also be changed, with impacts that may include toxic effects.

Alternatives with lesser impact to disposing of dredge spoil on tidal land and other fish habitats exist. These include placing spoil on terrestrial land away from marine plants or at an approved, designated spoil disposal site. Wherever possible, a dredge disposal strategy that involves beneficial reuse of the material on terrestrial land should be implemented.

If a proposal involves works that require future dredging, details of the location/s for future disposal of dredged spoil should be considered and identified. For example, this is applicable to proposed construction of marinas, new navigation channels or basins, and developments that may include features like canals or artificial waterbodies.

Refer to the fish habitat management operational policy, *Dredging, extraction and spoil disposal activities (FHMOP 004)*.

Performance outcomes	Acceptable outcomes
PO21 Disposal of dredge spoil does not cause adverse impacts on marine plants .	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Demonstrate that dredge spoil disposal will avoid impacts to marine plants.
- ✓ Demonstrate that the disposal is the option with the least impact on tidal fish habitats and fisheries resources.
- ✓ Provide details of measures to minimise and mitigate impacts from dredge spoil disposal.
- ✓ Where a proposal involves works that will require future dredging, such as construction of marinas or developments including artificial waterbodies or canals, provide details of locations for future disposal of dredged spoil.

5.5 Temporary works

Whether proposed impacts to marine plants are considered likely to be temporary is a subject of assessment. The finding may depend upon the nature and condition of the marine plant communities present. For example, established trees and forests can take a very long time to regrow to a previous condition if removed, and the removal of such marine plants may not technically be considered to be temporary even if restoration actions are proposed as a mitigation that might deliver a different marine plant community or marine plants providing different habitat conditions. Similarly, very diverse marine plant communities may be very difficult and unlikely to be restored to their former level of diversity and hence habitat complexity and value.

The finding may also depend on the level of risk around the anticipated regeneration, colonisation and growth of the marine plant community. If works are likely to make the conditions that the marine plants occur in less likely to deliver their successful return, this impact may not be considered temporary. For example, a proposed disturbance is less likely to be considered temporary if works will change the condition of the substrate the marine plants grow in, the tidal inundation pattern and/or the water quality they are adapted to and they have previously occurred within.

5.5.1 Performance outcome 22

Development may require temporary disturbance or temporary structures involving the removal, destruction or damage of marine plants.

Such temporary works can have impacts and cause the loss of fisheries productivity. Temporary structures can reduce or restrict tidal flushing, causing the stress or mortality of fisheries resources including fish and marine plants.

Temporary disturbance, including the placement of temporary structures, can cause long-term impacts such as sediment compaction, prohibiting the ability of marine plants and other fisheries resources to naturally regenerate/colonise the area.

Performance outcomes	Acceptable outcomes
PO22 Temporary works are designed, constructed and maintained to be in place for the shortest possible time or are undertaken for a specified period.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Details of the extent (areas m²) of temporary disturbance, including details of any temporary structures.
- ✓ Detailed work methodology, including the period of the temporary disturbance or the period the temporary structure is to be in place. Provide justification for these periods of disturbance; however, ensure that consideration is given to circumstances that could reasonably be expected to occur that would affect the timing of works (e.g. rainfall).

5.5.2 Performance outcome 23

Temporary works have the potential to impact on fish habitats by direct removal or smothering of marine plants and fish habitat, altering tidal profiles, compacting soils, increasing sedimentation to waterways, removing shade and destabilising the bed and banks of waterways or foreshores through removal of vegetation. The value and condition of fish habitats is to be restored immediately following the temporary works regardless of the disturbance period.

Temporary structures should be completely removed from tidal lands or waterways and pre-existing profiles restored to promote recolonisation of marine plants and to re-establish tidal and freshwater inundation patterns.

Where the use of temporary access tracks or heavy machinery results in the compaction of soils, works should be undertaken to mitigate this and leave the soil in a condition that allows marine plants to recolonise.

Performance outcomes	Acceptable outcomes
PO23 A temporary structure is in place for a specified period and is designed to be completely removed, and fish habitat is restored to pre-existing or improved condition on completion.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Identify how any temporary structure will impact on pre-existing fish habitats.
- ✓ Provide information documenting the actions to be undertaken to restore fish habitat to pre-existing or improved condition after complete removal of any temporary structure.

5.6 Restoration

Restoration of fish habitats involves undertaking management actions to return a site to a pre-existing natural condition, including associated habitat values. These can be stand-alone works or associated with other development works that result in a temporary disturbance. Identifying and treating the cause of any degrading or threatening processes is critical to the success of any restoration project.

5.6.1 Performance outcome 24

The primary purpose of restoration works is to reinstate tidal fish habitats. Substituting one existing, largely natural and functioning fish habitat for another is not considered restoration or rehabilitation and is not generally supported as all fish habitats are valuable—they provide a mosaic of habitat diversity for aquatic species to be able to complete their life cycles.

The construction or modification of waterways, tidal land or other wetlands for alternative purposes such as water treatment is not considered restoration. Examples of habitat modification may include wader bird roosts, the creation of sandy beaches for amenity or the creation of mangrove lands from other tidal fish habitats.

Restoration should not:

1. compromise condition of fish habitats or fisheries productivity; or
2. substitute a particular fish habitat for another type of habitat, for example, creation of mangrove communities from other tidal fish habitats; or
3. substitute a natural fish habitat for artificial fish habitat; or
4. deliver fish habitats that are likely to be regularly disturbed, such as through predictable sediment removal or dredging; or
5. deliver fish habitats that will predictably be at a high risk of contamination and/or further disturbance.

Reference should be made to the fish habitat guidelines for *Restoration of Fish Habitats* (FHG 002) and *Mangrove Nurseries: Construction, Propagation and Planting* (FHG 004).

Performance outcomes	Acceptable outcomes
<p>PO24 Restoration works do not result in:</p> <ol style="list-style-type: none"> 1. substitution of fish habitats and 2. adverse impacts to the condition of fish habitats or fisheries productivity. 	<p>No acceptable outcome is prescribed.</p>

Information to be submitted with development application

- ✓ Submit details of proposed restoration works, usually in the form of a restoration plan that includes:
 - background, including detailed information describing the existing fisheries resources and fish habitat values of the restoration site
 - information on the degrading factors affecting the site that will be managed to ensure successful restoration

- objectives and milestones
- specific restoration activities, including plans and drawings
- details of the species and number of marine plants for revegetation and identification of collection sites
- monitoring and evaluation appropriate to the scale and risk of the restoration project
- reporting
- measures to address issues
- an evaluation and discussion of the impacts to the marine plant collection site
- measures to be undertaken to minimise and mitigate impacts to tidal fish habitats and fisheries resources.

5.6.2 Performance outcome 25

Where natural regeneration of marine plants and other fish habitat values will not naturally occur, revegetation may be appropriate. In these instances, marine plants used for revegetation purposes must have local provenance, meaning they must be sourced from within the local area and preferably within the same catchment as the restoration site. This is to maintain the genetic integrity of plants at, and adjacent to, the restoration site and to reduce the potential for transfer of pathogens and parasites. It also ensures that environmental conditions of the donor site the plants are adapted to match that of the restoration site.

Marine plant material, including seeds or seedlings, should only be collected within the local area. The local area is usually considered to be within 100 km of the proposed restoration site. This ensures a higher likelihood of successful revegetation occurring.

Movement of marine plants within their accepted distribution is supported, providing:

- the removal of individuals is unlikely to pose an unjustifiable risk to the source population
 - the host area has suitable and sufficient habitat for the survival of the species
 - the species being translocated is likely to have no unjustifiable adverse impact, including the spread of disease or parasites, upon the host area
 - the factors that caused the species decline in the host area have been identified, are being reversed and are unlikely to recur
- and
- the genetic viability is not compromised at the host area.

Performance outcomes	Acceptable outcomes
PO25 Marine plants to be used for revegetation purposes have local provenance.	No acceptable outcome is prescribed.

Information to be submitted with development application

- ✓ Provide location details for the marine plant collection site or evidence of where the seed stock was obtained by an authorised nursery.

Glossary

Declared fish habitat area see the *Fisheries Act 1994*.

Note: Declared fish habitat area means an area that is declared under the *Fisheries Act 1994* to be a fish habitat area. Section 120 of the *Fisheries Act 1994* deals with declaration of fish habitat areas.

Ecologically sustainable development see section 3 of the *Fisheries Act 1994*.

Note: Ecologically sustainable development means using, conserving and enhancing the community's fisheries resources and fish habitats so that—

- (a) the ecological processes on which life depends are maintained; and
- (b) the total quality of life, both now and in the future, can be improved.

Environmental offset see the *Environmental Offsets Act 2014*.

Environmental offset means an activity undertaken to counterbalance a significant residual impact of a prescribed activity on a prescribed environmental matter, delivered in accordance with the Environmental offsets framework, Department of Environment and Heritage Protection, 2014. The prescribed environmental matters assessed under the State Development Assessment Provisions are matters of state environmental significance.

Fish see section 5 of the *Fisheries Act 1994*.

Note: Fish:

1. means an animal (whether living or dead) of a species that throughout its life cycle usually lives:
 - a. in water (whether freshwater or saltwater); or
 - b. in or on foreshores; or
 - c. in or on land under water
2. includes:
 - a. prawns, crayfish, rock lobsters, crabs and other crustaceans
 - b. scallops, oysters, pearl oysters and other molluscs
 - c. sponges, annelid worms, bêche-de-mer and other holothurians
 - d. trochus and green snails
3. does not include:
 - a. crocodiles, or
 - b. protected animals under the *Nature Conservation Act 1992*; or
 - c. pests under the *Pest Management Act 2001*; or
 - d. animals prescribed under a regulation not to be fish
4. also includes:
 - a. the spat, spawn and eggs of fish
 - b. any part of fish or spat, spawn or eggs of fish
 - c. treated fish, including treated spat, spawn and eggs of fish
 - d. coral, coral limestone, shell grit or star sand
 - e. freshwater or saltwater products declared under a regulation to be fish.

Fish habitat see the *Fisheries Act 1994*.

Note: Fish habitat includes land, waters and plants associated with the life cycle of fish, and includes land and waters not presently occupied by fisheries resources.

Fisheries resources see the *Fisheries Act 1994*.

Note: Fisheries resources includes fish and marine plants.

Fishery see section 7 of the *Fisheries Act 1994*.

Note: Fishery means activity by way of fishing, for example, activities specified by reference to all or any of the following:

1. a species of fish
2. a type of fish by reference to sex, size or age or another characteristic
3. an area
4. a way of fishing
5. a type of boat
6. a class of person
7. the purpose of an activity

8. the effect of the activity on a fish habitat, whether or not the activity involves fishing
9. anything else prescribed under a regulation.

Fishing see the *Fisheries Act 1994*.

Note: Fishing includes:

1. searching for, or taking, fish
2. attempting to search for, or take, fish
3. engaging in other activities that can reasonably be expected to result in the locating, or taking, of fish
4. landing fish (from a boat or in another way), bringing fish ashore or transshipping fish.

Foreshore see the *Fisheries Act 1994*.

Note: Foreshore means parts of the banks, beds, reefs, shoals, shore and other land between high water and low water.

Highest astronomical tide means the highest level of the tides that can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions.

Land includes foreshores and tidal and non-tidal land.

Legally secured offset area see the *Environmental Offsets Act 2014*.

Note: An area of land is a legally secured offset area if:

1. the area is:
 - a. an environmental offset protection area; or
 - b. an area declared as an area of high nature conservation value under section 19F of the *Vegetation Management Act 1999*; or
 - c. another area prescribed under a regulation; and
2. under the *Environmental Offsets Act 2014* or another Act, the area is subject to a delivery or management plan or agreement (however described in this Act or the other Act) to achieve a conservation outcome for a prescribed environmental matter.

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

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
2. material of a tidal plant, or other plant material on tidal land
3. 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 schedule 2 of the *Environmental Offsets Regulation 2014*.

Note: Matters of state environmental significance are prescribed environmental matters under the *Environmental Offsets Regulation 2014* that require an offset when a prescribed activity will have a significant residual impact on the matter. A matter of state environmental significance is any of the following matters:

1. regional ecosystems under the *Vegetation Management Act 1999* that:
 - a. are endangered regional ecosystems
 - b. are of concern regional ecosystems
 - c. intersect with a wetland shown on the vegetation management wetlands map
 - d. contain areas of essential habitat shown on the essential habitat map for an animal that is endangered wildlife or vulnerable wildlife or a plant that is endangered wildlife or vulnerable wildlife
 - e. are located within the defined distances stated in the *Environmental Offsets Policy*, Department of Environment and Heritage Protection 2014 from the defining banks of a relevant watercourse or drainage feature as shown on the vegetation management watercourse and drainage feature map; or
 - f. are areas of land determined to be required for ecosystem functioning ('connectivity areas'); or
2. wetlands in a wetland protection area or wetlands of high ecological significance shown on the map of referable wetlands under the *Environmental Protection Regulation 2008*
3. wetlands and watercourses in high ecological value waters as defined in schedule 2 of the *Environmental Protection (Water) Policy 2009*
4. designated precincts in strategic environmental areas under the *Regional Planning Interests Regulation 2014*
5. threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the *Nature Conservation (Wildlife) Regulation 2006*
6. protected areas under the *Nature Conservation Act 1992*, excluding coordinated conservation areas
7. highly protected zones of state marine parks under the *Marine Parks Act 2004*
8. declared fish habitat areas under the *Fisheries Act 1994*.
9. waterways that provide for fish passage under the *Fisheries Act 1994* if the construction, installation or modification of waterway barrier works carried out will limit the passage of fish along the waterway
10. marine plants under the *Fisheries Act 1994*; or
11. legally secured offset areas.

Offset means environmental offset unless otherwise specified

Prescribed environmental matters see the *Environmental Offsets Act 2014*.

Note: A prescribed environmental matter is any species, ecosystem or other similar matter protected under Queensland legislation for which an offset may be provided. A prescribed environmental matter may be a matter of national, state or local environmental significance, however, assessment criteria in the State Development Assessment Provisions only relate to matters of state environmental significance. Each of the prescribed environmental matters are listed under the *Environmental Offsets Regulation 2014*.

Public infrastructure means infrastructure constructed, owned and maintained by or on behalf of a public sector entity.

Public sector entity see the *Planning Act 2016*.

Note: A public sector entity means:

1. a department or part of a department; or
2. other than in chapter 4 (of the *Planning Act 2016*) – a distributor-retailer; or
3. an agency, authority, commission, committee, corporation (including a government owned corporation), instrumentality, office, or other entity, established under an Act for a public or state purpose (for example: a local government, a government owned corporation or a rail government entity under the *Transport Infrastructure Act 1994*).

Public use means available for free use by any member of the public without prior permission.

Rehabilitation involves actions that return a site to a state where natural succession can continue the recovery process and allow fisheries values of the site to be returned.

Restoration involves actions to return a site to an agreed pre-existing condition. Implies a final objective to return all aspects of the previous system.

Significant erosion means where erosion has resulted in, or if left uncontrolled would result in, the loss of one or both of the following in the short term:

- The ability to exercise the existing as-of-right or approved use of the property; and
- Buildings structures or infrastructure that are not expendable or which cannot be relocated.

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

Note: 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.

Guidance for determining if a prescribed activity will have a significant residual impact on a matter of state environmental significance is provided in the *Significant Residual Impact Guideline*, Department of State Development, Infrastructure and Planning, 2014.

Tidal land see the *Fisheries Act 1994*.

Note: Tidal land includes reefs, shoals and other land permanently or periodically submerged by waters subject to tidal influence.

Waterway see the *Fisheries Act 1994*.

Note: Waterway includes a river, creek, stream, watercourse, drainage feature or inlet of the sea. For further guidance see fact sheet *Maintaining Fish Passage in Queensland: What is a waterway?*, Department of Agriculture, Fisheries and Forestry, 2014.

Wetland see Queensland Wetlands Program wetland definition.

Note: Wetlands are areas of permanent or periodic/intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6 metres. To be a wetland the area must have one or more of the following attributes:

- at least periodically the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle, or
- the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or
- the substratum is not soil and is saturated with water, or covered by water at some time.

The wetland definition used on WetlandInfo is based on the Ramsar Convention (1971) and is consistent with the definition used in the Strategy for conservation and management of Queensland's wetlands (1999). Visit <https://wetlandinfo.des.qld.gov.au>

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Appendices

Appendix 1: Criteria and capabilities of a suitably qualified and experienced marine plant professional

Specialised knowledge is required to understand the biology of native marine plants and associated fish habitats. Engaging a marine plant professional helps an applicant identify marine plants and they can provide input about how a development could be designed to appropriately avoid, minimise and mitigate removal, destruction or damage of marine plants and impacts to fish habitat.

A marine plant professional will help accurately identify and map marine plants and provide advice to help achieve development that meets the relevant performance outcomes for a development application, involving removal, destruction or damage of marine plants.

There are certain key capabilities and experience that should be considered when selecting a capable marine plant professional, including:

- knowledge of the biology and ecology of Queensland's marine plants, fish habitats and the fish species that depend on them
and
- personal experience in marine plant and fish habitat identification and mapping
and
- personal experience in conducting field investigations in the range of environments that marine plants are likely to be located
and
- experience with relevant geographic information system mapping and tools.

For restoration proposals, a marine plant professional must also be able to demonstrate:

- personal experience in successful marine plant and fish habitat restoration under similar conditions as those being applied for (e.g. similar restoration methodology, marine plant community composition and proven monitoring of success
or
- if the proposed restoration is a new concept or design that has not yet been undertaken by the professional, evidence of how such concepts will work.

It is important to note that not all botanists, biologists or ecologists will have experience specific to marine plants and fish habitats at the location of a specific development proposal. Any marine plant professional engaged must have the relevant experience for the type of marine plants and fish habitats at the proposed development site.

As a regulator, the Department of Agriculture and Fisheries will not endorse or recommend marine plant professionals. Instead, the above information has been provided to assist the applicant in their selection process.

The following appendices include some more technical content that will assist in preparing an application. A suitable marine plant professional will be capable in applying this information in a development application where necessary.

Appendix 2: Inherent and potential marine plant species

As detailed in section 2.1, some species of plants are 'inherent' marine plants. Inherent marine plants are protected regardless of their location being on or above tidal land. Other plants that are known to grow on, and adjacent to, tidal lands may or may not be considered marine plants depending on where they are located and their associated hydrological connection in relation to tidal lands. The table below provides examples of inherent marine plants and other plants that are often located on, or adjacent to, tidal lands. The *Field guide to mangroves of Queensland*, *Field guide to common saltmarsh plants of Queensland* and *Australia's mangroves: the authoritative guide to Australia's mangrove plants* are useful resources to help identify marine plants.

Marine algae are considered to be marine plants. There are over 500 species of marine algae found within Queensland waters and for this reason they are not listed in the table below.

Table 1: Examples of inherent* and potential marine plants

Mangroves and adjacent trees/shrubs	Saltmarsh	Seagrass
<i>Acanthus ebractiatus</i> * (holly mangrove)	<i>Atriplex semibaccata</i> (creeping saltbush)	<i>Cymodocea rotundata</i> *
<i>Acanthus ilicifolius</i> * (holly leafed mangrove)	<i>Batis argillicola</i>	<i>Cymodocea serrulate</i> *
<i>Acrostichum speciosum</i> * (mangrove fern)	<i>Baloskion pallens</i> (didgergy sticks)	<i>Enhalus acoroides</i> *
<i>Aegialitis annulate</i> * (club mangrove)	<i>Baloskion tetraphyllum</i> (tassel cord rush)	<i>Halodule pinifolia</i> *
<i>Aegiceras corniculatum</i> * (river mangrove)	<i>Baumea juncea</i>	<i>Halodule uninervis</i> *
<i>Avicennia marina</i> * (grey mangrove)	<i>Baumea rubiginosa</i>	<i>Halophila capricorni</i> *
<i>Barringtonia asiatica</i> * (freshwater mangrove)	<i>Baumea teretifolia</i>	<i>Halophila decipiens</i> *
<i>Barringtonia racemose</i> * (Brackish water mangrove)	<i>Blechnum indicum</i> (swamp water fern)	<i>Halophila ovalis</i> *
<i>Bruguiera cylindrica</i> * (orange mangrove)	<i>Carpobrotus edulis</i> (pigface)	<i>Halophila ovata</i> *
<i>Bruguiera exaristata</i> * (orange mangrove)	<i>Carpobrotus glaucescens</i> (pigface)	<i>Halophila spinulosa</i> *
<i>Bruguiera gymnorhiza</i> * (large leaf orange mangrove)	<i>Cynodon dactylon</i> (green couch)	<i>Halophila tricostata</i> *
<i>Bruguiera X hainesii</i> * (Haines's orange mangrove)	<i>Cyperus alopecuroides</i> (foxtail flatsedge)	<i>Halophila</i> sp (undescribed)*
<i>Bruguiera X rhynchoptala</i> *	<i>Cyperus difformis</i> (small-flowered nutsedge)	<i>Syringodium isoetifolium</i> *
<i>Bruguiera parviflora</i> * (small leaf orange mangrove)	<i>Cyperus lucidus</i> (leafy flatsedge)	<i>Thalassia hemprichii</i> *
<i>Bruguiera sexangular</i> * (orange mangrove)	<i>Cyperus polystachyos</i> (bunchy sedge)	<i>Thalassodendron ciliatum</i> *

Mangroves and adjacent trees/shrubs	Saltmarsh	Seagrass
<i>Camptostemom schultzei</i> * (kapok mangrove)	<i>Dissocarpus biflorus</i> (twin flower saltbush)	<i>Zostera capricorni</i> *
<i>Casuarina glauca</i> (swamp sheoak)	<i>Dysphania littoralis</i> (red crumbweed)	
<i>Ceriops australis</i> * (smooth fruited yellow mangrove)	<i>Empodisma minus</i> (wire rush)	
<i>Ceriops decandra</i> * (yellow mangrove)	<i>Enchylaena tomentosa</i> var. <i>glabra</i> (ruby salt bush)	
<i>Ceriops tagal</i> * (yellow [or spurred] mangrove)	<i>Fimbristylis ferruginea</i> (rusty sedge)	
<i>Clerodendrum inerme</i> (mangrove vine)	<i>Fimbristylis nutans</i> (nodding fringe rush)	
<i>Crinum pedunculatum</i> (mangrove lily)	<i>Fimbristylis polytrichoides</i> (rusty sedge)	
<i>Cynometra iripa</i> * (wrinkle pod mangrove)	<i>Gahnia sieberiana</i> (red fruit saw sedge)	
<i>Derris trifoliata</i> (derris vine)	<i>Ficinia nodosa</i> (knobby club rush)	
<i>Diospyros littoralis</i> * (ebony mangrove)	<i>Ischaemum austral</i> (large bluegrass)	
<i>Dolichandrone spathacea</i> * (trumpet mangrove)	<i>Isolepis cernua</i> (nodding club rush)	
<i>Excoecaria agallocha</i> * (milky [blind-your-eye] mangrove)	<i>Juncus bufonius</i> (toad rush)	
<i>Heritiera littoralis</i> * (looking glass mangrove)	<i>Juncus kraussii</i> (jointed rush)	
<i>Hibiscus tiliaceus</i> (cotton tree)	<i>Lepidosperma longitudinale</i> (pithy saw sedge)	
<i>Lumnitzera littorea</i> * (black mangrove)	<i>Lepironia articulata</i> (grey sedge)	
<i>Lumnitzera racemosa</i> * (black mangrove)	<i>Limonium australe</i> (native sea lavender)	
<i>Lumnitzera x rosea</i> * (black mangrove [a hybrid])	<i>Limonium solanderi</i> (native sea lavender)	
<i>Melaleuca cajuput</i> (cajuput)	<i>Paspalum vaginatum</i> (seashore paspalum)	
<i>Melaleuca leucadendra</i> (weeping paperbark)	<i>Philydrum lanuginosum</i> (frogmouth)	
<i>Melaleuca quinquenervia</i> (broad leaved paperbark)	<i>Phragmites australis</i> (common reed)	
<i>Nypa fruticans</i> * (mangrove palm)	<i>Portulaca bicolor</i> (pigweed)	

Mangroves and adjacent trees/shrubs	Saltmarsh	Seagrass
<i>Osbornia octodonta</i> * (myrtle mangrove)	<i>Portulaca oleracea</i> (purslane/pigweed)	
<i>Pemphis acidula</i> * (reef barrier mangrove)	<i>Portulaca pilosa</i> (purslane/pigweed)	
<i>Rhizophora apiculate</i> * (tall stilted mangrove)	<i>Salsola australis</i> (prickly saltwort)	
<i>Rhizophora mucronate</i> * (red mangrove)	<i>Samolus repens</i> (creeping bushweed)	
<i>Rhizophora stylosa</i> * (red mangrove)	<i>Sarcocornia quinqueflora</i> * (beadweed, tree samphire)	
<i>Rhizophora x lamarckii</i> * (red mangrove)	<i>Schoenoplectus subulatus</i>	
<i>Scyphiphora hydrophyllacea</i> * (yamstick mangrove)	<i>Schoenus brevifolius</i> (zigzag bogrush)	
<i>Sonneratia alba</i> * (mangrove apple)	<i>Sesuvium portulacastrum</i> (sea purslane)	
<i>Sonneratia caseolaris</i> * (mangrove apple)	<i>Sporobolus virginicus</i> * (saltwater couch / sand couch)	
<i>Sonneratia lanceolata</i> * (red flower mangrove apple)	<i>Suaeda arbusculoides</i> * (samphire or jelly bean plant or seablite)	
<i>Sonneratia x gulngai</i> * (white flower mangrove apple)	<i>Suaeda australis</i> * (saltbush/samphire bush or seablite)	
<i>Thespesia populnea</i> (portia tree)	<i>Tecticornia australasica</i> * (grey samphire)	
<i>Xylocarpus granatum</i> * (cannonball mangrove)	<i>Tecticornia halocnemoides</i> (glasswort)	
<i>Xylocarpus moluccensis</i> * (cedar mangrove)	<i>Tecticornia indica</i> (<i>Salicornia indica</i>) (glasswort)	
	<i>Tecticornia pergranulata</i> (glasswort)	
	<i>Triglochin striatum</i> (streaked arrow-grass)	
	<i>Xerochloa imberbis</i> (rice grass)	
	<i>Triglochin striatum</i> (streaked arrow-grass)	
	<i>Xerochloa imberbis</i> (rice grass)	
	<i>Zoysia macrantha</i> (prickly couch)	

Appendix 3: Information to help prepare an appropriately scaled plan showing the location and extent of marine plants

There are a number of spatial data layers that will assist in identifying marine plants when planning and preparing a development application. These are outlined below, along with basic recommendations for how they are used in this context.

On-site surveys are to be conducted in areas likely to contain marine plants to confirm the location and type of fish habitats and marine plants within, and adjacent to, the proposed development. The following mapping layers can be used in conjunction with aerial imagery to help identify areas that are fish habitats and those that are more likely to contain marine plants:

- Queensland waterways for waterway barrier works (tidal) mapping, available on the Development Assessment Mapping System (DAMS) and Queensland Globe, provides guidance on areas likely to be considered tidal waterways providing for fish passage. Marine plants are likely to grow within, and adjacent to, the areas mapped on this layer.
- Queensland wetlands mapping, available on Queensland Globe, shows the extensive wetland systems that occur throughout Queensland. Marine plants are likely to be found in, and adjacent to, marine and estuarine wetlands, and may be present in other types of adjacent hydrologically connected wetlands such as those classified as riverine, lacustrine and palustrine.
- Highest astronomical tide, available on Queensland Globe, represents an approximation of the land–tidal water interface at the highest water level that can be predicted to occur under any combination of astronomical conditions. At the available scale and currency of the spatial layer, this can be used to get an idea of where this may be on a given site.
- Queensland waterways for waterway barrier works mapping, available on DAMS or Queensland Globe, is the second part of this spatial data layer additional to the tidal part of the layer that is mentioned above.

Although some of the above spatial data is available on DAMS, it is recommended that applicants undertake this review in Queensland Globe as all of the above layers are available and can be more readily compared. The mapping layers can be downloaded from QSpatial for incorporation into plan-making software.

It is recommended that when the information available in these spatial data layers is applicable to a development proposal, the development application should show how this information has been considered in preparing an appropriately scaled plan. It is important to understand that the scale and accuracy of this spatial data is unlikely to be ideal for interpretation at property level, as required for a development application. A marine plant survey is still likely to be required in many cases as indicated below. Nonetheless, this spatial data should be used to inform the design of a marine plant survey for the site.

It is recommended that a suitably qualified professional, with experience in marine plant and fish habitat identification and mapping, is engaged (See Appendix 1).

For any development application, the area of marine plants to be removed, damaged or destroyed is to be clearly calculated and provided. Supporting information is to clearly show the location of the various marine plant communities to be removed, damaged or destroyed, including whether the disturbance is temporary or permanent. The best way to do this is on a plan linked to survey information at an appropriate scale to the development being proposed. Any such plan is likely to be referenced in the conditions of any given development approval and could be used for compliance purposes.

All areas of removal, destruction or damage of marine plants are to be provided in square metres (m²) or hectares (ha). If provided in square metres, numbers should be provided to the nearest metre and if provided in hectares, to the nearest 0.0001 ha.

The total area of removal, destruction or damage of marine plants is to be broken up into areas for each marine plant species or community type (e.g. mangrove, seagrass, saltmarsh, casuarina or other vegetation located below the highest astronomical tide) and further broken down into temporary or permanent impacts.

Temporary impacts are those that, once completed, will allow marine plants to recolonise or grow back to pre-disturbance condition in a timely manner and in a situation where they will not be impacted again.

If ongoing removal, destruction or damage of marine plants is proposed or could occur via maintenance provisions of the Department of Agriculture and Fisheries accepted development requirements, the impact is considered to be permanent. For example, constructing a marina or navigation channel may allow seagrass to grow back within the footprint of development; however, future removal, destruction or damage of marine plants due to dredging is likely and can be authorised under accepted development requirements for maintenance of a lawful structure.

Calculating area of marine plant removal, destruction or damage for common marine plant community types

If uncertain how to apply these at a specific site, advice can be provided at pre-lodgement.

Mangroves

The area of mangroves within an impact area should be calculated by measuring the canopy. If marine plants have stilt roots or pneumatophores that extend beyond the footprint of the canopy, the entire area covered by the canopy and exposed root system is to be included when calculating the impact area. Any partial removal of a plant that may result in the death of the entire plant should include the area of the entire plant. For example, it is common to leave the extensive root systems of mangroves in situ if the entire canopy of a mangrove is to be removed. Even if the root system is to be left in situ to stabilise sediments, the root system will eventually die as a result of the removal, destruction or damage of the rest of the plant.

When trimming mangroves, the area of canopy to be removed should be used to calculate the area of removal destruction or damage of marine plants. Any partial removal of a plant that may result in the death of the entire plant should include the area of the entire plant.

Seagrass

Areas where seagrasses grow can rapidly change in density/percentage of cover from year to year or even between seasons. Furthermore, even at low percentage of coverage, seagrass areas can have well-established root and rhizome systems in the sediment that allow rapid growth of stems and leaves during favourable conditions.

The entire area to be impacted by development containing any seagrass cover should be used to calculate the total area of removal, destruction, or damage of seagrass, regardless of the percentage of seagrass cover found in that area.

Saltmarsh

Saltmarsh vegetation on tidal lands is often scattered and the composition and percentage of coverage can change over time. The entire area to be impacted by development containing any saltmarsh cover should be used to calculate the total area of removal, destruction, or damage of saltmarsh marine plants, regardless of the percentage of saltmarsh cover found in that area.

Other plant material on tidal lands

All of the plants/plant material that are tidally connected and located below the level of the highest astronomical tide contour are marine plants, unless they are weeds specifically excluded by section 8(2) of the *Fisheries Act 1994*. All of this category of marine plants are to be identified and their area calculated and provided.

It is essential to identify tidal lands and all waterways by accurately determining the highest astronomical tide contour/s and where waterways exist on a site.

Adjacent marine plants

Marine plants growing adjacent to tidal lands can include:

- inherent marine plants
- adjacent marine plants with seasonal connectivity to tidal waters that occur in waterways or other wetlands that are hydrologically connected to tidal lands or tidal waterways.

Connectivity of the adjacent marine plants can be provided by any type of inundation pattern that connects the plants to the tidal habitat. For example, freshwater flows from upstream or overland flows and/or seasonal or other inundation from tidal waters. Fish surveys conducted at appropriate times and meeting a suitable standard may be required to verify an absence of connectivity.