

The Eastern Kuku Yalanji and Yirrganydji Peoples are the Traditional Custodians and Owners of the land and sea country that encompass the Douglas Shire region.

Douglas Shire Council acknowledges the 'Bama', the traditional rainforest Aboriginal coastal people of our region who hold the unique position of being the First Peoples of this country. We recognise and respect Bama cultural heritage, values, beliefs and continuing relationships and responsibility to their land and sea country. We honour and respect your Elders past, present and future.

We commit to maintaining and strengthening our partnerships and respectful relationships with Bama in the spirit of reconciliation so that together we can increase the opportunities for successful and positive outcomes to the advantage of everyone in our communities.

Council respectfully acknowledges other Aboriginal and Torres Strait Islander people who call our region 'home'.

This report has been prepared by Alluvium Consulting Australia Pty Ltd and Wild Environmental for Douglas Shire Council under the contract titled 'WO5429 Foreshore Management Plan'.

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# 1 Introduction

The coastline is an important place for many Australians, providing significant social and cultural value. This is especially so for many residents of the Douglas Shire who have identified these unique coastal landscapes and natural ecosystems among some of the most important factors attracting people to this coastline (DSC 2019a). The Douglas Shire coastline also has high tourism value, attracting many visitors to the area.

The Eastern Kuku-Yalanji and Yirriganydji Peoples are the Traditional Custodians of the Land and Sea Country within the Douglas Shire. They have lived in and cared for this region for thousands of years, represented in important cultural sites throughout the Shire, and the memories and experiences of its people; past, present and future.

Douglas Shire Council (DSC) has an extensive 111 km long coastline that extends from Degarra in the north to south of Wangetti. The Shire is well known for its diverse coastline and its proximity to the Great Barrier Reef. Much of the Shire is within the Wet Tropics World Heritage Area and its dynamic coast consists of a variety of sandy beaches, rocky headlands and coastal rainforests.

The region's beaches and foreshore areas are important both to people and to the ecosystems around them. Coastal landscapes provide essential habitat for life on the foreshore and provide visual and recreational amenity to the people. Healthy coastal ecosystems are necessary to promote the resilience of plant and animal communities to coastal hazard impacts. Denser vegetation types are also effective in reducing the destructive forces of a storm tide for communities and infrastructure landward of the foreshore.

However, these ecosystems are experiencing ongoing disturbance as a result of erosion, vehicle and pedestrian access, weeds and pest species, illegal dumping, and runoff from stormwater and agricultural land. These factors threatening dune stability and reducing the erosion buffer often result in vegetation loss, impacts to native fauna species, and changes in ecosystem structure.

To help manage and protect these important coastal zones, DSC has developed five Foreshore Management Plans (FMPs) for the Wonga, Newell, Cooya, Four Mile and Oak Beaches.

# 1.1 Purpose

In 2019, DSC developed the Resilient Coast Strategic Plan 2019-2029 (referred to henceforth as the Strategy) and has committed to undertake actions to reduce the impacts of coastal hazards, such as erosion and coastal flooding, and activities in the coastal zone. A priority outcome of the Strategy is to undertake dune protection, maintenance and monitoring. This encompasses the foreshore area and is the focus of the FMP.

The FMPs will help to guide Council in the protection, maintenance and management of the coastline and foreshore, while maintaining the natural character of the area and respecting ecological, cultural and social values of these coastal reserves. Funding has been secured through the Queensland Government Reef Assist Program which will be used to support some of the implementation of the management actions outlined in the FMP.

The plans will:

- Ensure there is a shared understanding of the social, cultural, environmental and economic values and
  uses of the foreshore zone
- Identify options for the **proactive management** of vulnerable areas of the foreshore zone over the next 5 years
- Help **improve and maintain** the vegetation cover and condition in the foreshore zone.

The Interim Wonga Beach Foreshore Management Plan was developed in 2020 primarily to manage the use of all-terrain vehicles (ATVs) on the beach for recreational purposes (DSC 2020). The Interim FMP set out the approval process for ATV use on the beach and actions for dune protection and maintenance. It is intended that

the Wonga Beach FMP will incorporate the actions set out in the Interim FMP to maintain the values of the community.

# 1.2 Foreshore Management Plan area

Wonga Beach is a coastal community located on a broad sandy embayment that extends along the coastline south of the Daintree River for approximately 10 km and represents almost 10 % of the Shire's coastal length (Figure 1) (DSC 2019b, DSC 2020). The sandy embayment that forms Wonga Beach is part of a beach ridge system.

Wonga Beach is one of the main coastal settlements in the Douglas Shire. There are more than 500 residential dwellings and a number of tourist facilities, including Pinnacle Village Holiday Park. The settlement is located at the southern end of the sandy embayment. The most recent census data from 2016 indicates there were 975 residents at Wonga Beach (ABS 2017), most of whom reside there permanently. However, it is likely that Wonga Beach has seen some population growth in the following years.

# 1.3 Implementation

This FMP has been developed following a series of site inspections, including vegetation mapping, species identification and coastal morphology assessments, as well as public engagement with residents and ratepayers from Wonga Beach and the greater Douglas Shire. The site inspections, survey results and public engagement sessions have informed the management actions and planning decisions for the Wonga Beach foreshore area. The management actions have been tailored to incorporate what the community values about their foreshore and how the foreshore is used.

The Wonga FMP outlines actions for dune protection, including weed species for removal, native vegetation species for revegetation, and pedestrian and vehicle access management. It also provides a schedule for implementation to allow Council to prioritise actions for the area. This FMP remains non-statutory but once approved by Council provides an informed and proactive guide for the future management of Wonga Beach over a five-year timeframe.



**Figure 1.** Wonga Beach foreshore management area.

# 2 Study area and planning context

Wonga Beach is a coastal community located on a sandy beach between Rocky Point and the Daintree River. It is bordered by the Great Barrier Reef Marine Park to the east and the Wet Tropics World Heritage Area to the west. As a result, there are a variety of land zoning uses and ecological communities at Wonga Beach. The following section outlines the DSC land zoning and vegetation and faunal communities identified in the literature review and supported by the findings of the site visits and surveys.

# 2.1 Legislative, policy and strategy setting

Coastal management is guided by Commonwealth, State and local legislation. The legislation results in a complex structure of rights and responsibilities. Key legislation, plans, policies and strategies relevant to foreshore management are summarised in Table 1.

Table 1. Summary of the legislation, policy, plans and strategies relevant to foreshore management

Legislation	Relevance
Biosecurity Act 2014	<ul> <li>This Act provides a comprehensive biosecurity framework to manage the impacts of animal and plant diseases and pests.</li> <li>The purpose of this Act is to:         <ul> <li>Provide a framework for an effective biosecurity system for Queensland</li> <li>Ensure the safety and quality of animal feed, fertilisers and other agricultural inputs.</li> <li>Help align responses to biosecurity risks in the State with national and international obligations and requirements.</li> </ul> </li> <li>The purpose of the Act is also to manage risks associated with emerging, endemic and exotic pests and diseases.</li> </ul>
Coastal Protection and Management Act 1995	<ul> <li>This Act aims to provide for the protection, conservation, rehabilitation and management of the coastal zone, including its resources and biological diversity.</li> <li>This Act considers the goal, core objectives and guiding principles of the National Strategy for Ecologically Sustainable Development in the use of the coastal zone.</li> <li>This Act ensures that decisions about land use and development safeguard life and property from the threat of coastal hazards.</li> <li>This Act encourages the enhancement of knowledge of coastal resources and the effect of human activities on the coastal zone.</li> </ul>
Planning Act 2016	<ul> <li>This Act provides for an efficient, effective, transparent, integrated, coordinated and accountable systems of land use planning and development assessment to facilitate the achievement of ecological sustainability by:         <ul> <li>Coordinating and integrating planning at the local (i.e., planning schemes), regional and State scales</li> <li>Managing the process and effects of development on the environment (including managing the use of premises).</li> </ul> </li> </ul>
Native Title Act 1993	<ul> <li>The purpose of this Act is for the recognition and protection of native title.</li> <li>It covers:         <ul> <li>Acts affecting native title.</li> <li>Determining whether native title exists and compensation for acts affecting native title.</li> </ul> </li> </ul>

Legislation	Relevance
Aboriginal Cultural Heritage Act 2003	The main purpose of this Act is to provide effective recognition, protection and conservation of Aboriginal cultural heritage.
Vegetation Management Act 1999	<ul> <li>This Act aims to regulate the clearing of vegetation by:         <ul> <li>Managing the environmental effects of clearing.</li> <li>Regulating clearing in a way that conserves remnant vegetation that is an endangered regional ecosystem, an of concern ecosystem, or a least concern regional ecosystem.</li> <li>Ensuring clearing does not cause land degradation and allows for sustainable land use.</li> <li>Preventing the loss of biodiversity, maintain ecological processes, and reduce greenhouse gas emissions.</li> </ul> </li> </ul>
Environmental Protection Act 1994	<ul> <li>This Act aims to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, and that maintains the ecological processes on which life depends.</li> <li>The Act defines environmental value, environmental harm and best practice environmental management.</li> </ul>
Nature Conservation Act 1992	<ul> <li>This Act aims to conserve nature while allowing for the involvement of indigenous people in the management of protected areas.</li> <li>This is to be achieved by a conservation strategy for Queensland that declares and manages protected areas, protects native wildlife and habitats, ensures use of protected wildlife and areas to be ecologically sustainable, and allows cooperative involvement of Aboriginal and Torres Strait Islander people.</li> </ul>
Environment Protection and Biodiversity Conservation Act 1999	<ul> <li>This Act aims to provide protection of the environment, promote ecologically sustainable development and the conservation of biodiversity.</li> <li>The Act aims to promote the use of indigenous knowledge of biodiversity through a cooperative approach to the protection and management of environments.</li> </ul>
Queensland Local Government Act 2009	<ul> <li>This Act provides a system of local government in Queensland, including:         <ul> <li>The way in which a local government is constituted and the nature and extent of its responsibilities and powers.</li> </ul> </li> <li>A system of local government in Queensland that is accountable, effective, efficient and sustainable.</li> </ul>
Marine Parks Act 2004	<ul> <li>The main purpose of this Act is to provide for conservation of the marine environment.</li> <li>This purpose as it relates to this plan can be achieved through:         <ul> <li>Cooperative involvement of public authorities and other interested groups and persons, including members of Aboriginal and Torres Strait Islander communities.</li> <li>Recognition of the cultural, economic, environmental and social relationships between marine parks and other areas, whether of water or land.</li> </ul> </li> </ul>

Legislation	Relevance
Local Laws	<ul> <li>Local laws sit within the Local Government Act 2009 and under the Act a local government may make and enforce any local law that is necessary or convenient for the good rule and local government of its local government area.</li> <li>This legislation sets out the laws for the Douglas Shire Council area, including animal management, community and environmental management, local government areas, and facilities.</li> </ul>

# 2.2 Zoning

#### Land use

The DSC Planning Scheme (2018) has been used to understand the boundaries between different land uses (Figure 2) (DSC 2018a). At Wonga Beach, the primary land uses within or immediately adjacent to the foreshore area are conservation, recreation and open space, and residential, including low density and rural. These land uses have implications for the management of the foreshore area. Changes within these zones can have flow-on impacts to the foreshore area, including:

- habitat fragmentation (loss of habitat into smaller, isolated areas)
- runoff
- illegal clearing and planting, including weed dispersal and growth
- impacts on fauna (light and noise pollution, road/beach kills).

#### Conservation zone

The conservation zone provides for the protection, restoration and management of areas identified to support significant biological diversity and ecological integrity (DSC 2018a). Relevant outcomes identified in the Douglas Planning Scheme for the conservation zone include (DSC 2018a):

- Protection of biological diversity, ecological integrity and scenic amenity.
- Recreational or other uses of areas are consistent with the management plans of the controlling authority so that conservation and scenic values of these areas are not adversely affected.
- Any use of land in private ownership does not affect the environmental, habitat, conservation or scenic values of that land or surrounding area.
- Any low intensity facilities based on the appreciation of the natural environment or nature based recreation only establish where there is a demonstrated need and provided they have a minimal impact on the environmental and scenic amenity values of the site or surrounding area.
- The provisions of the Return to Country Local Plan facilitate economic and social opportunities on traditional Indigenous lands.
- Further lot reconfigurations other than amalgamations, boundary realignments to resolve encroachments, or for the practical needs of essential community infrastructure, or to facilitate Return to Country outcomes do not occur.

#### Recreation and open space

The purpose of the recreation and open space zone is to provide for informal recreation where the built form is not essential to the enjoyment of the space, parks that serve the recreational needs of residents and visitors, and a range of organised activities that require a level of built infrastructure (DSC 2018a). Relevant outcomes to the recreation and open space zone include (DSC 2018a):

- Areas are provided for active sport and recreation to meet community needs.
- Open space is accessible to the general public for a range of outdoor sport and recreation activities.
- A range of functional and accessible open spaces, including local and regional parks and linkages, are available for the use and enjoyment of residents and visitors.

- Ancillary structures and buildings such as shelters, amenity facilities, picnic tables and playgrounds are provided where necessary.
- Sport and recreation areas are planned and designed to enhance community liveability, scenic amenity and provide a retreat from developed areas.
- The use of sport and recreation areas does not unduly affect the amenity of adjacent areas particularly residential areas.

#### Residential

Within Wonga Beach, there are low density and rural residential areas adjacent to the foreshore area. Low density residential areas provide for predominantly dwelling houses supported by community uses and small-scale services and facilities that cater for local residents (DSC 2018a). The purpose of the low density residential zone will be achieved through the following relevant outcomes (DSC 2018a):

- Development maintains a high level of residential amenity having regard to traffic, noise, dust, odour, lighting and other locally specific impacts.
- Development reflects and enhances the existing low density scale and character of the area.
- Development is reflective and responsive to the environmental constraints of the land.
- Development is supported by necessary community facilities, open space and recreational areas and appropriate infrastructure to support the needs of the local community.

Rural residential areas provide for rural residential development on large lots (DSC 2018a). Relevant outcomes to the rural residential land zone include (DSC 2018a):

- Development preserves the environmental, scenic amenity and topographical features of the land by integrating an appropriate scale of residential activities among these features.
- Development provides a high level of residential amenity.
- Development provides for the safe use of on-site wastewater treatment systems for effluent disposal with systems designed for varied soil type, slopes and prolonged periods of wet weather.

## **Native Title**

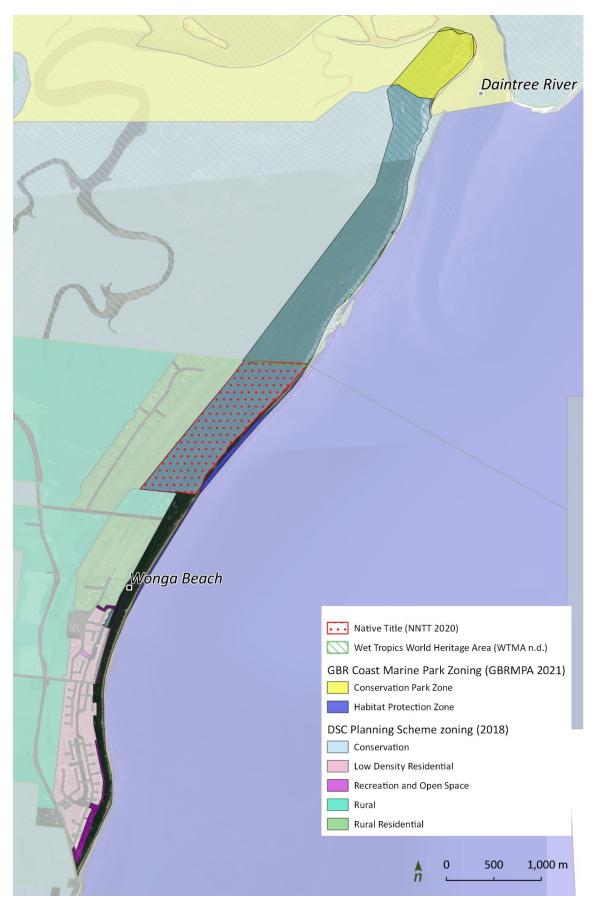
Native Title determination recognises the holders to exercise their rights to traditional law and customs. A section of Wonga Beach is held under Native Title by the Eastern Kuku Yalanji People (see Figure 2) (NNTT 2020).

## **Great Barrier Reef Coast Marine Park Zoning**

The Great Barrier Reef (GBR) Coast Marine Park Zoning classifies the land and waters below the high tide mark within the Wonga Beach FMP area as Habitat Protection Zone (Figure 2). This zoning protects and manages sensitive habitats and ensures that they are generally free from damaging activities (GBRMPA 2021).

#### Wet Tropics World Heritage Area

A small section at the northern end of the Wonga Beach foreshore precinct falls under the Wet Tropics World Heritage Area (Figure 2) (WTMA n.d.). The goal of this status is to conserve, protect, rehabilitate, present and transmit to future generations. Activities undertaken along the Wonga Beach foreshore may have an impact on the Wet Tropics area and needs to be considered accordingly.



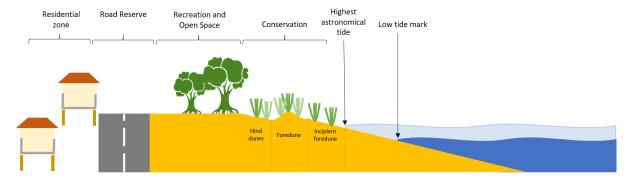
**Figure 2.** Wonga Beach foreshore area land use zoning (DSC 2018, NNTT 2020, GBRMPA 2021, WTMA n.d.).

#### 2.3 Coastal hazards

The upper section of Wonga Beach is vulnerable to coastal erosion (DSC 2019b). This erosion may be temporary or permanent. Temporary erosion is generally caused by storms, winds or waves, and the beach rebuilds during calmer periods. Permanent erosion is more likely to occur over the longer-term due to rising sea levels or significant changes to sediment transport dynamics where sand becomes lost to the coastal system. Erosion may impact the foreshore area, including the vegetation, wildlife habitats, infrastructure, recreational uses or values.

# 2.4 Foreshore management precinct

The foreshore precinct at Wonga Beach, which is the focus of this FMP, has been designated as the zone between the low tide mark, landward to the edge of the low density residential zone. The area between the low tide mark and highest astronomical tide (HAT) line has been included in the foreshore area in order to accommodate for the use of ATVs along the beach in this intertidal zone.



**Figure 3.** Graphic representation of the Wonga Beach foreshore management precinct.

The foreshore area includes the dune system behind the beach, immediately landward of the HAT mark and is made up of the following three key sections (Figure 3):

- **Incipient foredune:** a windblown platform that forms in front of the foredune, however is not present on all beaches. This is where vegetation such as grasses and creepers first establish and provides a protective buffer to erosion, and storm effects, including winds and waves.
- **Foredune:** the main sandy formation and is of greater height than the incipient dune. Larger vegetation species establish here, including shrubs, which provide greater wind protection.
- **Hind dune:** a smaller dune system behind the foredune. These systems tend to be well established, including larger vegetation species such as trees.

# 3 Foreshore values

The Wonga Beach foreshore is valued for a number of reasons. The long length of Wonga Beach and the near-pristine condition of the northern end of the beach support a number of habitats for vulnerable marine species. The foreshore and beach areas are also enjoyed for their recreational value. These values support the management of the foreshore area. The following section outlines the social, cultural and environmental values that have been identified for the Wonga Beach foreshore area, as well as describing any threats or challenges to these values.

# 3.1 Knowledge sharing and community engagement

The Wonga Beach community has previously been engaged through the Strategy and as part of the development of the Interim Wonga Beach Foreshore Management Plan. The findings from the survey as part of the Strategy found anecdotal reports of sand loss from the northern end of Wonga Beach (DSC 2018b).

An additional community survey was undertaken as part of a Draft Vehicles on Beaches General Policy. A draft policy was distributed to households for comment, publicised on Council's website, advertised in the local paper and physical copies were made available at Wonga Beach Servo (DSC 2019c). Council received 85 submissions, representing 187 residents. Over two-thirds (69 %) of the respondents were supportive of the use of ATVs/quad bikes along the beach, while the remainder of respondents were neutral (3 %) or against (28 %) their use. There was the belief amongst some residents that the conditions set out in the interim plan were too limiting.

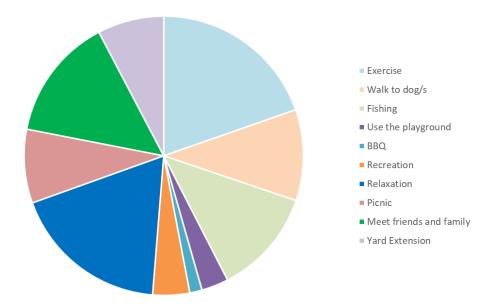
For the current FMP, a survey was distributed to the Wonga Beach community and wider Douglas Shire residents and ratepayers to understand how they use and what they value about the foreshore zone, and how they would like to see it managed. The survey was advertised through the Council Foreshore Management Plans page, Facebook, community noticeboards, emails to residents and community groups, and physical copies were made available at Council offices. The survey ran from 31<sup>st</sup> March to 23<sup>rd</sup> April 2021 and received a total of 317 responses from residents and community groups throughout the Douglas Shire. The largest response was received from residents and ratepayers at Wonga Beach, with 86 responses received, most being permanent residents (homeowners).

In addition to the survey, there was also a period of public consultation following the release of the draft FMP for Wonga Beach. A four-week public comment period provided residents and ratepayers with an opportunity to submit feedback on the draft FMP. A number of drop-in sessions were also held at numerous locations throughout the Shire, including at Wonga Beach State School, to allow people to discuss the FMP in greater detail. Feedback from the public consultation has been used to further understand the values and shape the management actions for the final FMP.

#### Social values

The majority of survey respondents at Wonga Beach live adjacent to or within 1 km of the foreshore area. Most of the respondents also visit the foreshore at least once a week. This information indicates the foreshore area is significant to residents and ratepayers at Wonga Beach.

Residents predominantly use the Wonga Beach foreshore for exercise and relaxation (Figure 4). The next most common uses for the foreshore area are meeting family and friends, fishing and walking the dog. Wonga Beach residents use ATVs along the beach for recreation and to access fishing spots on the Daintree River. The foreshore is used less often for BBQs, recreation and using the playground. In some cases, the residents are using the foreshore area as an extension of their yard.



**Figure 4.** The most common uses of the foreshore area at Wonga Beach.

#### Sense of place

Wonga Beach residents most value the unspoilt natural beauty, peace and serenity of the foreshore, including ocean views and proximity to the Daintree River. They also value the abundance of wildlife, including shorebirds, turtles and other marine animals. The vegetation and space that the beach provides for recreation and as a meeting place is also highly valued.

The northern end of Wonga Beach is referred to as the "North Wonga Beach Protection Reserve" and is recognised as Native Title land held by the Eastern Kuku Yalanji people (CRC 2012). Traditional uses for this land include camping and hunting (CRC 2012). Marine turtles are very important for the Eastern Kuku Yalanji people. Turtles connect the tribes at Wonga Beach and further afield. They are also an important traditional food source. There are also a number of culturally significant sites along the foreshore. These include graves near Lifu Close and at the southern end of Marlin Drive.

There are anecdotal reports of environmentally significant sites at Wonga Beach. These require further investigation and monitoring to understand the numbers and species that are present. However, they are likely to include bird nesting and feeding sites at the northern end of Wonga Beach, a variety of crab species and turtle nesting sites.

#### Concerns and threats

The survey raised some concerns, particularly around infrastructure and threats to the foreshore, including vegetation. It identified a lack of infrastructure to support residents, including walking paths, exercise equipment and places to socialise. The residents feel that more needs to be done to protect the vegetation along the foreshore in order to preserve the natural amenity of Wonga Beach and provide habitat for native animals.

Some residents also identified the use of vehicles, including four-wheel drives (4WD) and ATVs, on the beach as a concern and threat to the overall beach state. It is believed these vehicles have contributed to the destruction of vegetation and widening of access paths, loss of habitat for native animals and cause noise pollution. Illegal camping is also contributing to noise pollution and results in rubbish dumping. However, it can be noted that vegetation loss may also be caused by erosion during storms and through illegal clearing. Weeds along the foreshore also pose a threat to the native vegetation.

#### 3.2 Environmental values

The vegetation cover varies along Wonga Beach. The most developed areas in the southern-most management precincts of Old Wonga, New Wonga and Giblin Street north to Pinnacle Village have only a narrow area of mapped remnant foreshore vegetation between 80 to 100 m wide. The vegetation in these areas is heavily impacted by illegal clearing to maintain views and access for ATVs and pedestrians. From Pinnacle Village north to the Daintree River there is more intact remnant vegetation with good connectivity to surrounding vegetation and few illegal access tracks.

# Flora composition

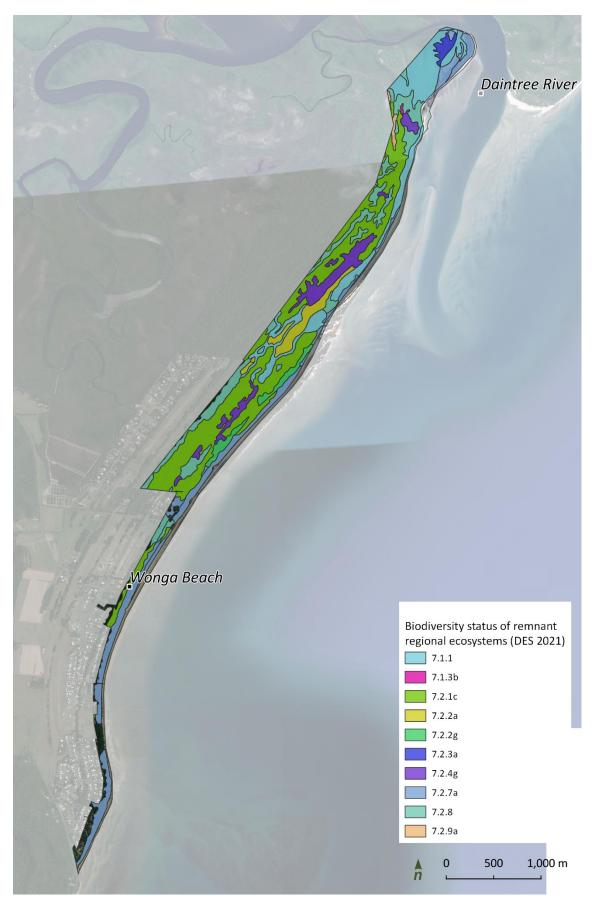
Vegetation mapping of the northern section of Wonga Beach indicates that approximately 17 different Regional Ecosystems (RE) types are supported (DOR 2020). The three REs that dominate the foreshore vegetation community at Wonga Beach are 7.2.1c, 7.2.2g and 7.2.7a, as confirmed by ground-truthing of the vegetation mapping. The RE descriptions, Vegetation Management (VM) Class, Biodiversity (BD) Status and local representation are summarised in Table 2 and Figure 5. A full list of the REs at Wonga Beach is provided in Attachment A. The local representation of vegetation in the dune system at Wonga Beach is summarised in Table 3.

Table 2. Regional Ecosystems (RE) of Wonga Beach

RE	Mapped RE description	VM Class <sup>1</sup>	BD Status <sup>2</sup>	Local representation
7.2.1c	Closed forest with Calophyllum inophyllum, Terminalia arenicola, Dillenia alata, Myristica insipida, Planchonella obovata, Millettia pinnata, and Hibiscus tiliaceus. Beach ridge deposits adjacent to the foredune, in the very wet rainfall zone.	E	E	A closed to semi-closed woodland dominated by <i>Terminalia catappa</i> , <i>Calophyllum innophyllum</i> and <i>T. Arenicola</i> . Also present were <i>Ptychosperma elegans</i> , <i>Ficus microcarpa</i> , and <i>Entada rheedii</i> .
7.2.2g	Vine forest with <i>Hibiscus tiliaceus</i> and <i>Calophyllum australianum</i> . Intermittently inundated narrow dune swales	OC	Е	Hibiscus tiliaceus and Calophyllum inophyllum is present through much of the assessed areas however impacts in the hind area are higher and the lower strata are frequently removed or the vegetation has been replaced with stands of coconut trees (Cocos nucifera).
7.2.7a	Complex of open shrubland to closed shrubland, grassland, low woodland and open forest. Includes pure stands of Casuarina equisetifolia, and Acacia crassicarpa, Syzygium forte subsp. forte, Calophyllum inophyllum and Pandanus spp. woodland to open forest. Beach strand and foredune.	OC	E	Casuarina equesitifolia, Thespesia populnea and Terminalia spp. form the dominant tree layer with occasional Pandanus cookii. The coastal facing edge is dominated by shrubs, Scaevola taccada, Wollastonia uniflora and Vitex rotundafolia, vines Vigna marina and Ipomoea pes-caprae, and grasses and sedges Ischaemum muticum, Thuarea involuta and Cyperus pedunculatus.

 $<sup>^{\</sup>rm 1}$  VM Class: LC – Least Concern, OC – Of Concern, E – Endangered.

 $<sup>^{\</sup>rm 2}$  BD Status: NC – No Concern, OC – Of Concern, E – Endangered.



**Figure 5.** Remnant regional ecosystems at Wonga Beach (DES 2021).

Table 3. Dune vegetation composition and condition at Wonga Beach

Zone	Vegetation	Comments
	Beach vines – coastal jack bean ( <i>Canavalia rosea</i> ), coastal morning glory ( <i>Ipomoea pes-caprae</i> ) and dune bean ( <i>Vigna marina</i> )	Most exposed area
Incipient dune	Grasses and sedges – Ischaemum muticum, Thuarea involuta, Paspalum vaginatum and Cyperus pedunculatus	Prone to atypical erosion –     vegetation removed or impacted     by anthropogenic activity
	Shrubs – sea daisy ( <i>Wollastonia uniflora</i> ) and sea lettuce ( <i>Scaevola taccada</i> )	.,,
Foredune	Trees and shrubs – beach she oak ( <i>Casuarina equestifolia</i> ), beach almonds ( <i>Terminalia catappa</i> , <i>Terminalia arenicola</i> ), beauty leaf ( <i>Calophyllum inophyllum</i> ), boxwood ( <i>Planchenella obovata</i> ) and pandanus ( <i>Pandanus cookii</i> )	Supports larger trees and shrubs
	Vines – match box bean (Entada rheedii) and Smilax calophyllum	
Hind dune	Littoral rainforest and vine forest	Little vegetation in residential precincts

#### Conservation significance

A number of conservation significant flora species have been mapped for Wonga Beach. These species are listed as threatened or near threatened by the *Nature Conservation Act (NCA) 1992*, the *Environment Protection and Biodiversity Conservation Act (EPBC Act) 1999* or under an international treaty. The full list of these species is provided in Attachment B.

The remnant vegetation is mapped as 'Essential Habitat' for the southern cassowary. Wonga Beach vegetation is also mapped as a high-risk area for protected plants under the VM Act and vegetation clearing in these areas triggers the requirement for a protected plant survey by a suitably qualified person.

### Habitat fragmentation

The foreshore vegetation in the less urbanised areas of Wonga Beach is well connected to surrounding vegetation communities allowing fauna movement within and between these communities and, as a result, minimising impacts that result from population isolation. The altered vegetation in the urbanised areas often lacks the shrub layer that would allow for protected movement of fauna through the coastal vegetation and beach front areas minimising connectivity in these areas. Canopy dwelling and nesting species may still inhabit these areas and the impacts are more likely to be associated with other anthropogenic activity such as noise from recreational vehicles. Vegetation at either end of this narrow strip of vegetation however remains well connected to remnant vegetation that is in good condition.

Towards the southern end of Wonga Beach where the vegetation is more disturbed, there are a number of factors that may be causing this. These factors and their potential impacts on the area's ecology are listed in Table 4.

Table 4. Disturbances and their impacts to the flora and fauna of Wonga Beach

Disturbance	Potential impacts to ecology
Dune erosion	<ul> <li>Further loss of vegetation and fauna habitat</li> <li>Loss of sea turtle nesting habitat through loss of the foredune vegetation</li> <li>Increase foredune slope and decreasing suitability for nesting sea turtles</li> <li>Reduced biodiversity</li> </ul>
Vegetation loss	<ul> <li>Increases in foreshore dune erosion</li> <li>Exposure of hind dune systems and vegetation that are less adapted to extreme weather events</li> <li>Loss of breeding and roosting habitat for nesting shorebirds and sea turtles</li> <li>Loss of food trees for southern cassowary</li> </ul>
Vehicular/ATV access	<ul> <li>Impacts to vegetation, including removal</li> <li>Increased potential for erosion within the foreshore area</li> <li>Damage to turtle nests</li> <li>Noise disturbance to fauna</li> <li>Introduction of weed species</li> <li>Potential petrochemical spills</li> </ul>
Weeds	<ul> <li>Compete with native species for resources – light, nutrients, space</li> <li>Reduced biodiversity of flora</li> <li>Loss of habitat and food plants for conservation significant species</li> <li>Create barriers for connectivity and fauna population dispersal</li> <li>Increased fuel loads</li> </ul>
Pest animals	<ul> <li>Predation of native animals</li> <li>Sea turtle nest predation</li> <li>Reduced fauna populations and diversity</li> </ul>
Stormwater and agricultural runoff	<ul> <li>Impacts to marine fauna</li> <li>Increased sediment runoff and resulting increases in nearshore turbidity</li> <li>Increased nutrient loads and subsequent algal blooms</li> </ul>
Coconut debris	<ul> <li>Fallen fronds and fruit reduce recruitment of native species</li> <li>Reduced opportunity for sea turtle nesting</li> <li>Increase habitat for rodents and potential bird egg predation</li> </ul>

#### Fauna

Wonga Beach provides habitat features for many fauna of conservation significance, including nesting turtles, shorebirds and other notable species. The foreshore vegetation provides a number of ecological services for coastal fauna. Larger tree species within the foredune areas provide marine turtle nesting habitat as the vegetated areas provide the ideal temperature and protection for incubation and hatchling survival. These larger tree species also provide roosting habitat for shorebirds during the intertidal period. The littoral rainforest contains food tree species for the endangered southern cassowary, including *Terminalia sp., Syzigium sp., Barringtonia sp.* and fig species. The full list of these species is provided in Attachment B.

# Pest species

During the site inspection, a number of environmental weeds were identified at Wonga Beach, one of which is the coconut palm. According to the most recent audit, there are approximately 3,665 coconut palm specimens on Wonga Beach (DSC 2015). Coconut palms will continue to be managed by the Coconut Management Plan (DSC 2015). Other environmental weeds identified at Wonga Beach are summarised in Table 5. Environment weeds pose a threat to biodiversity by outcompeting native vegetation with respect to available resources such

as nutrients and light, establishing monocultures and increasing fuel loads. This additionally results in reduced habitat value for fauna.

Table 5. Weed species identified at Wonga Beach (BQ 2020, Conn 2021, DSC 2015, Murphy et al. 2016)

Scientific name	Common name	Dispersal Method	<b>Environmental Impacts</b>
Cocos nucifera	Coconut palm	<ul><li>Large nuts which fall from trees</li><li>Nuts germinate if uneaten</li></ul>	<ul> <li>Identified as a transformer weed in littoral (coastal) rainforests</li> <li>Outcompetes native species for space, light and nutrients</li> <li>Falling nuts and fronds cause physical damage to species below</li> </ul>
Sphagneticola trilobata	Singapore daisy	<ul> <li>Spreads by cuttings from slashing and pruning</li> </ul>	<ul> <li>Outcompetes native species for space, light and nutrients</li> <li>Invades lawns, irrigated areas, and around drains</li> </ul>
Sansevieria trifasciata	Mother-in-law's	<ul> <li>Spreads by dumping of garden waste</li> <li>Seeds spread by birds and other animals</li> </ul>	<ul> <li>Forms dense infestations</li> <li>Outcompetes native species for space, light and nutrients</li> <li>Tends to form monoculture</li> </ul>
Bryophyllum delagoense	Mother of millions	<ul> <li>Spread by floodwaters</li> <li>Spread by animals, vehicles and garden waste</li> </ul>	<ul> <li>Invades coastal dunes, grasslands and woodlands</li> <li>Outcompetes native species for space, light and nutrients</li> <li>Very poisonous to humans and livestock</li> </ul>
Opuntia sp.	Detables	<ul> <li>Spread by birds and animals eating the fruit</li> <li>Spread by animals and floods moving broken stems</li> </ul>	<ul> <li>Outcompetes native species for space and nutrients, esp. in hot, dry conditions</li> <li>Can harm animals and prevent them from eating</li> </ul>
Cenchrus echinatus	Mossman River grass	<ul> <li>Spreads via spiny burrs         which become         attached to animals,         vehicles and clothing         Burrs can also be         dispersed by water</li> </ul>	<ul> <li>Outcompetes native plants for light, moisture and nutrients</li> <li>Burrs can injury or irritate animals and humans</li> </ul>

# Vegetation management

Douglas Shire Council has a number of instruments to manage the vegetation at Wonga Beach. The Coconut Management Plan (DSC 2015) defines the objectives for the management of coconut palms on Council-controlled land. The plan identifies the coconut trees within a given location and provides an assessment of the potential risk, distribution, impacts and associated costs of management.

The Douglas Shire Biosecurity Plan (2017-2021) guides the management of invasive biosecurity matter as well as locally declared pests (plants and animals) as outlined in the *Biosecurity Act 2014*. Under this plan, there are programs being undertaken by DSC to eradicate pest species. Prioritisation of pest species is based on several factors, including (DSC 2017):

- Existing plans and priorities on a national, state and local level
- Impacts and threats
  - Conservation and biodiversity
  - o Riparian or aquatic environment
  - o Agricultural or production
  - o Residential and urban areas
- Capacity to manage
  - o Achievability
  - o Current extent

These programs include (relevant to vegetation) (DSC 2017):

- Siam Weed Eradication Program
- Hiptage eradication Program
- Miconia Species (Four Tropical Weeds Eradication Program)

# 3.3 Amenity and liveability

There are a number of facilities and access points for residents and tourists to engage in recreational activities at Wonga Beach. The

accessibility and recreational uses of the Wonga Beach foreshore area are summarised in this section and the management implications are discussed.

### Infrastructure

There is limited infrastructure at the northern end of Wonga Beach due to its minimal development. North of Pinnacle Village the only infrastructure is one informal beach access track. South of Pinnacle Village, the number of access tracks increases, including formal, private and informal beach access tracks.

The Old Wonga Esplanade is the closest road running parallel to the beach and forms the landward limit of the foreshore area. There is a stormwater drain along Marlin Drive at the southern end of Wonga Beach. Anecdotally, runoff from the drain appears to be causing erosion along the foreshore and is contributing to vegetation loss, particularly of larger trees.

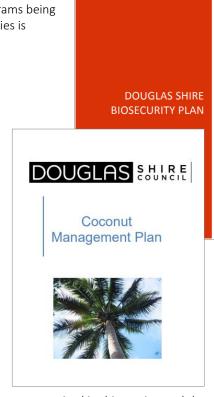
Boat access at Wonga Beach is limited to the boat ramp at the Council Caravan Park along the Esplanade. Four-wheel drives are able to launch boats from the beach at this point. However, there is the concern that motorists are using this point to illegally access and drive 4WDs and other vehicles along the beach. These vehicles have the potential to cause erosion and negatively impact vegetation and wildlife.

#### Passive recreation

Wonga Beach also offers the opportunity for residents and tourists to engage in passive recreational activities. Examples of such activities include:

- walking along the beach and foreshore
- bird watching
- horse riding
- fishing at the Daintree River mouth.

These activities are relatively low impact but can still affect the foreshore condition. If foreshore users create informal access tracks through the vegetation to access the foreshore and beach, this can lead to a loss of vegetation, destabilisation of the sand or soil which may lead to erosion or dune destabilisation, and it could also contribute to habitat loss and destruction. Activities such as bird watching and horse riding will have similar



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impacts on the foreshore in relation to access. The impact of fishing will largely be a result of vehicle access to the Daintree River mouth, including vegetation clearing for access tracks and driving on the sand where there are important and sensitive wildlife habitats. Dumping of fishing nets or waste may also occur, negative affecting marine animals or attracting wildlife such as crocodiles.

#### Pedestrian access

There are a number of known access tracks to Wonga Beach. Based on the latest data from a Council survey, there is a total of 48 recorded access beach tracks. Of these 48 tracks, six are formalised access paths, three are private accessways to houses, and the remainder are informal access tracks. The creation of informal access tracks presents challenges to foreshore management, particularly with regards to illegal vegetation clearing and dune destabilisation.

# Vehicular use of beaches, trail bikes and horse riding

Wonga Beach residents highly value the freedom to use recreational vehicles on the beach, including ATVs. For many years, residents have been using ATVs along the beach and it is considered a significant aspect of their lifestyle (DSC 2020a). Residents also use ATVs to access the Daintree River mouth, which is a highly valued recreational fishing amenity. Prior to the Interim FMP for Wonga Beach, ATV use had not been approved but was generally accepted within the community. Following community consultation alongside the development of the Interim FMP, ATV use has been allowed along Wonga Beach for residents only through a permit application process which came into effect in July 2021 (DSC 2020a). This permit system is outlined in Subordinate Local Law No. 1, Schedule 26 and is restricted to ATVs only (DSC 2020b).

Vehicle use along the foreshore and beach can impact vegetation, beach condition and wildlife habitats. Vegetation can be impacted through clearing for access as well as direct vehicle impacts when habitats, such as dunes, are driven over. The sand can be more easily eroded when driven over, particularly the soft sand above the intertidal zone (between the low tide mark and HAT). Additionally, faunal habitats are placed under pressure or destroyed if driven over. There is anecdotal evidence of vulnerable wildlife habitats, such as turtles and shorebirds. Therefore, the impacts of vehicle use on the beach could be mitigated by limiting use to the hard sand only and within a certain width of the beach ('highway').

#### Dog off-leash areas

At North Wonga Beach, from Giblin Street to Vixies Road, there is an off-leash dog area along the beach. Dogs pose a risk to fauna as they may attack or scare vulnerable species, particularly when off-leash.

#### Camping

There are two locations at Wonga Beach where public and private camping may occur. These sites are located outside of the foreshore area, however, visitors to these campgrounds access the foreshore area for a variety of uses. There is a beach access point on the beachfront near Pinnacle Village at the northern end of Wonga Beach Esplanade, which is used by pedestrians and ATVs. There is also a boat ramp and pedestrian beach access points at the Council Caravan Park. These access points may cause loss of vegetation and dune destabilisation. Additionally, there is anecdotal evidence of illegal camping in other areas along the foreshore and rubbish dumping has been observed. Illegal camping may also result further vegetation clearing, and habitat loss and fragmentation.

# 4 Management precincts

The Wonga Beach foreshore area has been divided into six management precincts to tailor management actions specific to each precinct. The six precincts are (Figure 6):

- Precinct 1 Daintree River to North Wonga Beach
- Precinct 2 Native Title area
- Precinct 3 Pinnacle Village to Giblin St
- Precinct 4 Giblin St to Wonga Beach Rd
- Precinct 5 Wonga Beach Rd to Janbal St
- Precinct 6 Janbal St to Wonga Beach Park.



**Figure 6.** Wonga Beach foreshore management precincts.

The threats and challenges within each management precinct are summarised in Table 6. These threats and challenges have been identified through the background review, site inspections and community engagement feedback.

#### Table 6. Wonga Beach foreshore precinct threats and challenges

#### Precinct

#### Key foreshore threats and challenges

## <u>1 – Daintree River to</u> <u>North Wonga Beach</u>

Unpopulated precinct and falls under land for conservation.

- ATVs driving on soft sand above the intertidal zone driving on the hard packed sand between the HAT and low tide marks reduces the likelihood of erosion.
- Vehicle, pedestrian and other access along foreshore within potential sensitive and vulnerable habitats, including turtle and shorebird nesting areas – access above the intertidal zone during nesting and hatching season may pose a threat to vulnerable species.

## <u>2 – Native Title area</u>

Encompasses the Native Title area and is designated to conservation.

- ATVs driving on soft sand above the intertidal zone driving on the hard packed sand between the HAT and low tide marks reduces the likelihood of erosion.
- Informal access tracks through land designated to conservation, including illegal vegetation clearing these activities may not meet the outcomes of the conservation zone code, including biological diversity, ecological integrity and scenic amenity.
- Vehicle, pedestrian and other access along foreshore within potential sensitive and vulnerable habitats, including turtle and shorebird nesting areas – access above the intertidal zone during nesting and hatching season may pose a threat to vulnerable species.

### <u>3 – Pinnacle Village to</u> Giblin St

Includes land for conservation and recreation and open space.

- ATVs driving on soft sand above the intertidal zone driving on the hard packed sand between the HAT and low tide marks reduces the likelihood of erosion.
- Illegal clearing to create informal beach access tracks through the vegetation in the foreshore area these activities may not meet the outcomes of the Conservation zone code, including biological diversity, ecological integrity and scenic amenity.
- Environmental weeds present may impact the conservation value within the precinct.

### <u>4 – Giblin St to Wonga</u> Beach Rd

Land designated for recreation and open space, including Council Caravan Park, and pedestrian and boat access points.

- ATVs and other vehicles driving on soft sand above the intertidal zone driving on the hard packed sand between the HAT and low tide marks reduces the likelihood of erosion.
- Vehicle, pedestrian and other access along foreshore within potential sensitive and vulnerable habitats, including turtle and shorebird nesting areas – access above the intertidal zone during nesting and hatching season may pose a threat to vulnerable species
- Environmental weeds present may impact the conservation value within the precinct.
- Illegal clearing to create informal beach access tracks through the vegetation in the foreshore area – these activities may not meet the outcomes of the Conservation zone code, including biological diversity, ecological integrity and scenic amenity.

# <u>5 – Wonga Beach Rd to</u> Janbal St

Small area of land for recreation and open space.

- ATVs driving on soft sand above the intertidal zone driving on the hard packed sand between the HAT and low tide marks reduces the likelihood of erosion.
- Vehicle, pedestrian and other access along foreshore within potential sensitive and vulnerable habitats, including turtle and shorebird nesting areas – access above the intertidal zone during nesting and hatching season may pose a threat to vulnerable species.
- Illegal clearing to create informal beach access tracks through the vegetation in the foreshore area – these activities may not meet the outcomes of the Conservation zone code, including biological diversity, ecological integrity and scenic amenity.

# <u>6 – Janbal St to Wonga</u> <u>Beach Park</u>

Includes land designated for recreation and open space.

- Vehicle, pedestrian and other access along foreshore within potential sensitive and vulnerable habitats, including turtle and shorebird nesting areas – access above the intertidal zone during nesting and hatching season may pose a threat to vulnerable species.
- Illegal clearing to create informal beach access tracks through the vegetation in the foreshore area and designated Recreation and Open Space land use zone – these activities may impact the biological diversity, ecological integrity and scenic amenity.

# 5 Management plan

The following section outlines the adaptive management approach to address the threats and challenges that have been identified for the Wonga Beach foreshore area. The objectives for management have been identified in order to inform measures for management success. Priorities have also been set to appropriately guide management of the foreshore threats and challenges over the immediate, medium and longer-term timeframes. The objectives and priorities shape the management actions for each precinct. In addition, any monitoring and evaluation activities that are to take place following the implementation of the actions will also be summarised to measure the progress of the foreshore management.

# 5.1 Management objectives

Objectives are useful for measuring the success of the management actions undertaken. They are based on the community values identified through the engagement process. The objectives will guide the metrics for monitoring and evaluation of the management actions. They can be applied at the whole of foreshore (community) and precinct scale.

#### Management objectives for Wonga Beach foreshore

- Maintain the overall natural form and function of the beach.
- Enhance and maintain vegetation condition littoral rainforests, dune vegetation for vulnerable species and to prevent dune erosion.
- Build positive behaviour change outcomes to minimise adverse impacts of foreshore use.
- Proactively undertake weed management to restore native vegetation habitats
- Monitor the presence and health of potential turtle and shorebird nesting sites in foreshore areas.
- Enforce illegal clearing local laws to prevent further establishment of unauthorised and informal beach access tracks.

# 5.2 Management prioritisation

Prioritisation of the management actions has been assigned as immediate, medium-term or future.



Immediate (recommend implementation within next 12 months)

Actions for immediate prioritisation include sites where weeds are present and it is necessary to eradicate the weeds and revegetate the site with native vegetation cover. Environmental weeds pose a significant threat to the values of the Wonga Beach residents, including the natural habitats and wildlife. Actions also revolve around access and use of the foreshore area, such as for ATVs, fishing or pedestrians and encouraging behaviour changes to reduce the impact of these activities. The uses may pose a threat to the sensitive habitats and management actions are focussed on minimising the impact.



**Medium-term** (recommend implementation within next 2-3 years)

Medium term priority actions are recommended to be implemented within the next two to three years. These actions are important for the management of the foreshore precinct, however, they require community engagement and education to understand their benefits. There is an element of community involvement with the medium-term actions.



# **Future** (recommend implementation within 5 years)

Future management actions are those that first require an evaluation of the outcomes from immediate to medium-term actions that have been undertaken before being implemented. It is recommended that future actions are implemented within five years of the plan's adoption. This timeframe allows sufficient time for immediate actions to be implemented and their progress and success to be evaluated.



Wonga Beach.

# 5.3 Management actions

Management actions and their priorities for the Wonga Beach foreshore are summarised in Table 7. Maps of the management actions for each precinct are provided in Attachment C. Community consultation will be undertaken prior to the implementation of any management actions.

Table 7. Wonga Beach foreshore precinct management actions

	All precincts	Precinct 1	Precinct 2	Precinct 3	Precinct 4	Precinct 5	Precinct 6
<u>Outcome 1:</u> Reduce the likelihood of erosion of sand from the foreshore area	and impact to vu	Ilnerable species	s and ecosystem	s resulting from	vehicle access.		
<u>A1.1:</u> Enforce ATV driving to Wonga Beach residents with approved permits under the following conditions:							
<ul> <li>Driving on hard packed sand only along a corridor between 5 and 15 m below HAT within a two-hour window either side of low tide.</li> <li>ATVs to be driven in a direct line only to reach destination. No reckless driving across the sand.</li> <li>Driving during daylight hours only.</li> <li>Establish diversions around sensitive areas where necessary (e.g., nests).</li> <li>Full details, including Community Group terms of reference, in Attachment D.</li> </ul>		1	1	1	1	1	
Local Laws Officers to undertake random beach patrols as part of enforcement to issue warnings and/or fines. Information to be provided directly to permit holders to communicate when there are active nesting sites to avoid.							
<ul> <li>Speed limit of 20 km/hr along the beach between Janbal Street and Giblin Street and ATV use only for residents in New Wonga for the purpose of accessing the main recreation area north of Giblin Street.</li> </ul>					1	1	
<ul> <li>Speed limit of 40 km/hr for the main recreation area (Giblin St north to the Daintree River mouth).</li> </ul>		1	1	1			

	All precincts	Precinct 1	Precinct 2	Precinct 3	Precinct 4	Precinct 5	Precinct 6
<u>A1.2:</u> Review ATV use on Wonga Beach following an assessment of two years of beach monitoring to determine the impact of vehicle use on the sensitive flora and faunal habitats and to residents (noise pollution, safety, access, lifestyle).		2	2	2	2	2	
A1.3: Establish a regulated access system for the boat launching area to restrict 4WD access to the beach. Vehicles are strictly prohibited on or around the vegetated area. Formalise boat ramp area with wooden slats and chains if necessary.					1		
A1.4: Retain this precinct as off-limits to ATVs. Install fencing and signs on the beach and at access points to note this is an ATV prohibited zone. Local Laws Officers to undertake random beach patrols as part of enforcement.							1
Outcome 2: Protect sensitive and vulnerable habitats, including dune vegetat access in the foreshore area.	ion, turtle and sh	orebird nesting	sites, and cultura	al sites, from the	impacts of vehi	cle, pedestrian a	nd other
A2.1: Undertake beach monitoring of turtle and shorebird nesting sites during nesting and hatching seasons to understand the impact foreshore access may have on these habitats. Survey vegetation cover to assess revegetation requirements and progress to support nesting habitats.		2	2	2	2	2	
A2.2: Establish a platform on the DSC Environmental Hub that gives residents and visitors the ability to upload information and photos about flora and fauna species they have noticed in the foreshore.	1						
<u>A2.3:</u> Collaborate with Traditional Owners to maintain and preserve cultural heritage sites within the foreshore area.	1						

	All precincts	Precinct 1	Precinct 2	Precinct 3	Precinct 4	Precinct 5	Precinct 6
<u>A2.4:</u> Establish zones of management along the foreshore at Marlin Drive:							
1) Establish a 10 m buffer zone landward of HAT to stabilise the							
dune and prevent erosion by revegetating with native species.							
2) Zone reserved for recreation and open space that is maintained							
by DSC and establishes a grassed and native vegetation buffer							
between the dune and residential area. Fencing to restrict access							
for homeowners and prevent illegal vehicle access to the beach and foreshore.							1
Develop a Memorandum of Understanding (MoU) and undertake							
community consultation to discuss how the shared management							
responsibilities will work. Ensure that the area is cleared and maintained							
free of invasive species and green waste dumping. The MoU will also outline							
clear guidelines on the infrastructure that will be accepted within the							
recreation and open space zone.							
<u>A3.1:</u> Undertake revegetation with native species (see Attachment E) within a 10 m buffer landward of the HAT mark to begin regeneration of land designated to Conservation that has been cleared for informal access and to protect against erosion. Install fencing around the revegetated area to			3	2	2	2	2
reduce damage or clearing and encourage regrowth.							
A3.2: Formalise and maintain defined access tracks and appropriately sign							
at beach and land entrances. This is to minimise the impact on the frontal			1			1	1
dune. Issue fines for people found to be illegally clearing under Local Law							
No. 4 (Local Government Controlled Areas, Facilities and Roads).							
<u>A3.3:</u> Undertake an audit of the access points on a yearly basis to determine whether illegal access tracks are being established.	1						

# 5.4 Monitoring and evaluation

The success of the management actions is measured through monitoring and evaluation mechanisms. The monitoring focusses on the sensitive and vulnerable environments, including turtle and shorebird nesting habitats, and key coastal vegetation habitats, as well as the adherence to ATV use in the intertidal zone and boat ramp access.

#### **Nesting habitats**

The habitat monitoring should be undertaken to observe where turtle and shorebird nesting habitats are present in the foreshore area and to understand the vegetation composition of these habitats. Turtle monitoring should be undertaken based on the Queensland Marine Turtle Field Guide (Attachment F) between October and May to understand the seasonal use of these habitats by turtles (QPWS, DES 2016). Guidelines for shorebird monitoring will need to be developed based on local knowledge.

It is recommended that the monitoring be undertaken in partnership with the Indigenous Rangers and local community groups. In addition, a platform on the DSC Environmental Hub website should be created for residents and visitors to submit photos and information regarding any turtle or shorebirds they notice when using the foreshore. The purpose of the habitat monitoring is to understand which species are accessing the foreshore area for nesting and hatching, as well as the vegetation composition of these habitats.

### Vegetation

The vegetation monitoring is a simple measure for the percentage of cover and survival success. This monitoring should be conducted on a yearly basis to record the survival rate, particularly when undertaking revegetation activities. It is recommended that vegetation is monitored on a yearly basis at the end of the wet season.

The purpose of collecting information about the success of revegetation and other site management issues such as exotic plants (environmental weeds), other threats, habitat quality and connectivity, and significant species values is to be able to refine and direct resources accordingly. Flexibility in program delivery is required to maintain the condition of assets such as plantings, respond to threats as they change through time and account for new values if they emerge during the delivery of the project.

#### Monitoring and evaluation metrics

Table 8 outlines the monitoring and evaluation metrics for the corresponding management action to evaluate the progress and success of implementation. Detailed methods for turtle monitoring and rapid vegetation assessment are provided in Attachment F.

Table 8. Foreshore management action monitoring and evaluation metrics

Management action	Monitoring	Evaluation	Timing	
ATV use	<ul> <li>Compliance of ATV use only in permitted areas</li> <li>Number of permits issued</li> </ul>	<ul> <li>Compliance with location of ATV tracks – whether within or outside of permitted intertidal zone (community group)</li> <li>Community survey to gauge attitudes around restrictions</li> <li>Warnings or fines that have been issued</li> </ul>	Random compliance and track monitoring, quarterly review of monitoring	
Fauna monitoring	<ul> <li>Nesting species</li> <li>Vegetation composition of nesting habitats</li> </ul>	<ul> <li>Turtle tracks, bird nests</li> <li>Population dynamics</li> <li>Animal health and numbers</li> </ul>	Nesting season	

Management action	Monitoring	Evaluation	Timing
Vegetation monitoring	<ul> <li>Species specific         observations to identify         which species may be         doing poorly</li> <li>Weed cover within each         of the canopy layers (top         5 transforming weed         species)</li> </ul>	<ul> <li>Measure of the percentage survival of revegetation, including key species</li> <li>Percentage cover over canopy layers of weeds</li> <li>Percentage of bare/disturbed ground</li> <li>Natural recruitment</li> <li>Habitat connectivity</li> <li>Significant species</li> </ul>	Annual

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# 6 References

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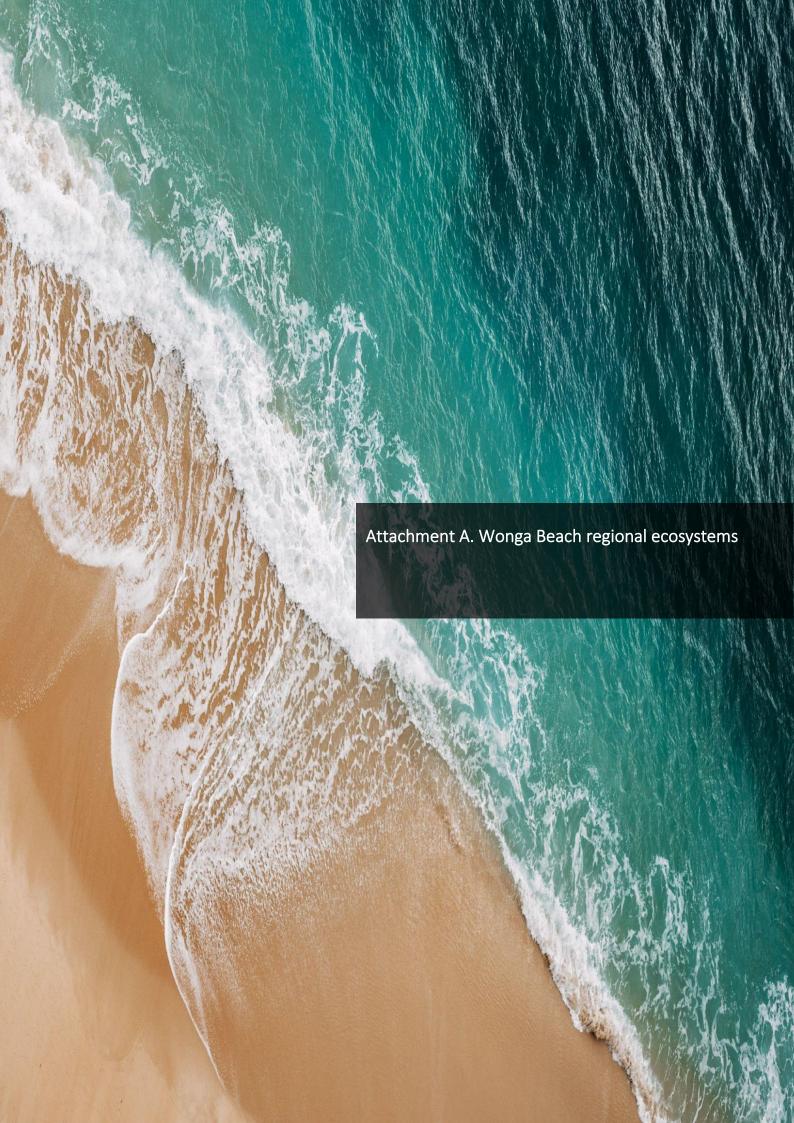
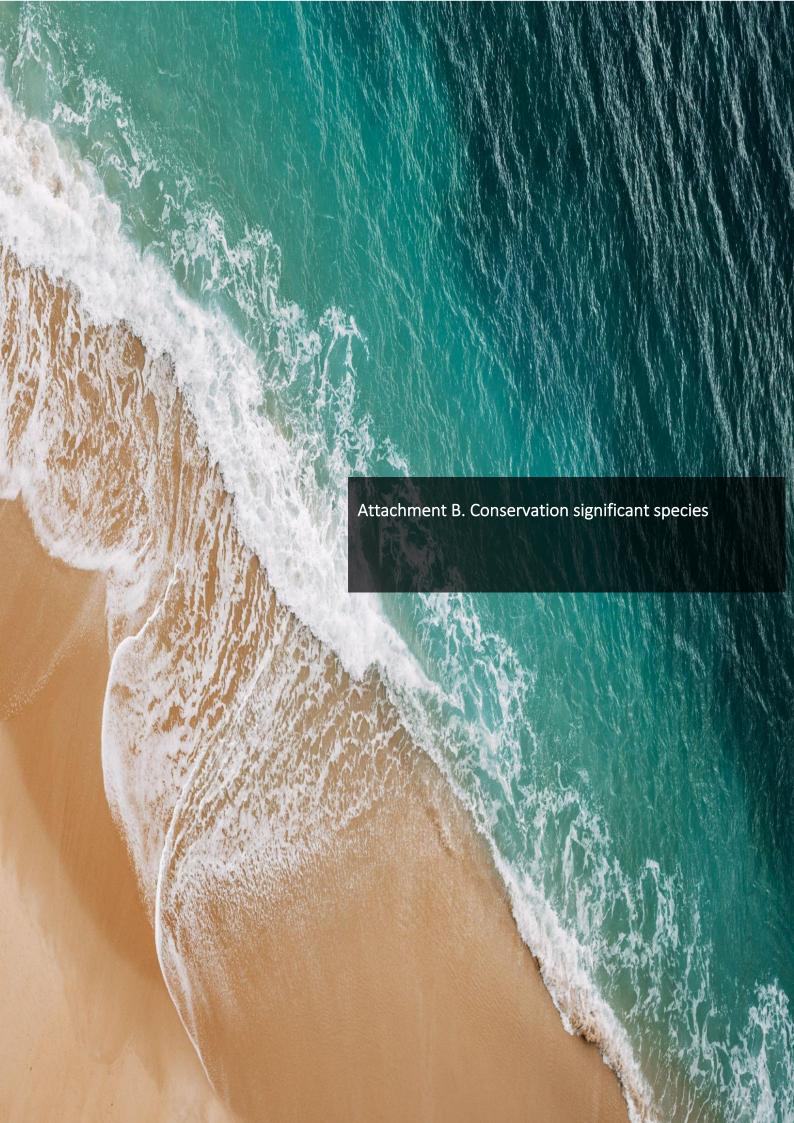


Table 9. Wonga Beach regional ecosystems (REs)

RE	Description	VM Class	BD Status
7.1.1	Mangrove closed scrub to open forest. Sheltered coastlines, estuaries, and deep swales between dunes, on fine anaerobic silts, inundated with saline water at high tide.	LC	NC
7.1.2a	Sporobolus virginicus grassland, samphire open forbland to sparse forbland and bare saltpans on plains adjacent to mangroves	OC	OC
7.1.3b	Melaleuca quinquenervia open forest to woodland, and shrubland to closed scrub. Transitional saline areas. Palustrine wetland (e.g., vegetated swamp).	OC	E
7.2.1c	Closed forest with <i>Calophyllum inophyllum</i> , <i>Terminalia arenicola</i> , <i>Dillenia alata</i> , <i>Myristica insipida</i> , <i>Planchonella obovata</i> , <i>Millettia pinnata</i> , and <i>Hibiscus tiliaceus</i> . Beach ridge deposits adjacent to the foredune, in the very wet rainfall zone.	E	E
7.2.1e	Simple notophyll vine forest with <i>Syzygium angophoroides</i> , on sands of beach origin. Dune sands. Floodplain (other than floodplain wetlands)	E	E
7.2.2a	Notophyll vine forests, often with <i>Acacia</i> emergents. Species commonly include <i>Cupaniopsis anacardioides</i> , <i>Diospyros geminata</i> , <i>Canarium australianum</i> , <i>Alphitonia excelsa</i> , <i>Acacia crassicarpa</i> , <i>Pleiogynium timorense</i> , <i>Chionanthus ramiflorus</i> , <i>Mimusops elengi</i> , <i>Polyalthia nitidissima</i> , <i>Millettia pinnata</i> , <i>Geijera salicifolia</i> , <i>Ficus opposita</i> , <i>Sersalisia sericea</i> , <i>Terminalia muelleri</i> , <i>T. arenicola</i> , <i>Drypetes deplanchei</i> , and <i>Exocarpos latifolius</i> . Lowlands on dune sands, of the moist and dry rainfall zones.	OC	E
7.2.2g	Vine forest with <i>Hibiscus tiliaceus</i> and <i>Calophyllum australianum</i> . Intermittently inundated narrow dune swales.	OC	E
7.2.3a	Corymbia tessellaris, C. clarksoniana (and/or C. intermedia), Melaleuca dealbata +/- Lophostemon suaveolens woodland to closed forest, with Acacia mangium, A. crassicarpa, Canarium australianum and Deplanchea tetraphylla. Unweathered low prograding beach dunes, predominantly of Holocene age.	OC	OC
7.2.3e	Corymbia intermedia open forest, with a very well-developed vine forest understorey (due to infrequent burning). Beach ridges, predominantly of Holocene age. (BVG1M: 9e)	OC	OC
7.2.4g	Melaleuca dealbata +/- M. leucadendra woodland to open forest. Weathered relict beach ridges. Palustrine wetland (e.g., vegetated swamp).	OC	ОС
7.2.7a	Complex of open shrubland to closed shrubland, grassland, low woodland and open forest. Includes pure stands of <i>Casuarina equisetifolia</i> , and <i>Acacia crassicarpa</i> , <i>Syzygium forte</i> subsp. <i>forte</i> , <i>Calophyllum inophyllum</i> and <i>Pandanus</i> spp. woodland to open forest. Beach strand and foredune.	OC	E
7.2.8	Melaleuca leucadendra (weeping tea tree) open forest to woodland. Sands of beach origin.	OC	E

7.2.9a	<i>Melaleuca quinquenervia</i> open forest to woodland and shrubland. Dune swales and swampy sandplains of beach origin. Palustrine wetland (e.g., vegetated swamp).		
7.3.10f	Simple notophyll vine forest with <i>Syzygium angophoroides</i> . Swampy alluvial plains. Floodplain (other than floodplain wetlands).	ОС	Е
7.3.46	Lophostemon suaveolens (swamp mahogany) open forest to woodland. Alluvial plains.	Е	Е
7.3.5a	Melaleuca quinquenervia open forest, woodland and shrubland. Lowlands of the very wet and wet rainfall zone, on poorly drained peaty humic gley soils where the water table is near or above the ground for most of the year. Palustrine wetland (e.g., vegetated swamp).	LC	E
7.3.9b	Corymbia tessellaris, Acacia crassicarpa, Melaleuca leucadendra, M. viridiflora woodland to open forest. Coastal flats and broad drainage lines. May include areas with some mixing with marine sediments and dune sands. Floodplain (other than floodplain wetlands).	E	E

• • •



# Flora

Table 10. Conservation significant flora at Wonga Beach

Botanical name	Common name	EPBC Status <sup>3</sup>	NC Act⁴
Acriopsis emarginata	Pale chandelier orchid	V	V
Canarium acutifolium		V	V
Vappodes lithocola	Dwarf butterfly orchid	E	
Carronia pedicellate		E	E
Chingia australis		E	E
Cyclophyllum costatum		V	V
Dendrobium mirbelianum	Dark-stemmed antler orchid	E	E
Dendrobium nindii	Blue antler orchid	E	E
Endiandra cooperana		E	E
Myrmecodia beccarii	Ant plant	V	V
Phaius australis	Lesser swamp orchid	E	E
Phaius pictus	Forest swamp orchid	V	V
Phalaenopsis amabilis subsp. rosenstromiil	Native moth orchid	E	
Phlegmariurus dalhousieanus	Blue tassel-fern	E	CE
Vappodes phalaenopsis	Cooktown orchid		

<sup>&</sup>lt;sup>3</sup> Environment Protection and Biodiversity Conservation (EPBC) Act score: V – Vulnerable, NT – Near Threatened, E – Endangered, CE – Critically Endangered

<sup>&</sup>lt;sup>4</sup> Nature Conservation (NC) Act score: V – Vulnerable, NT – Near Threatened, E – Endangered, CE – Critically Endangered

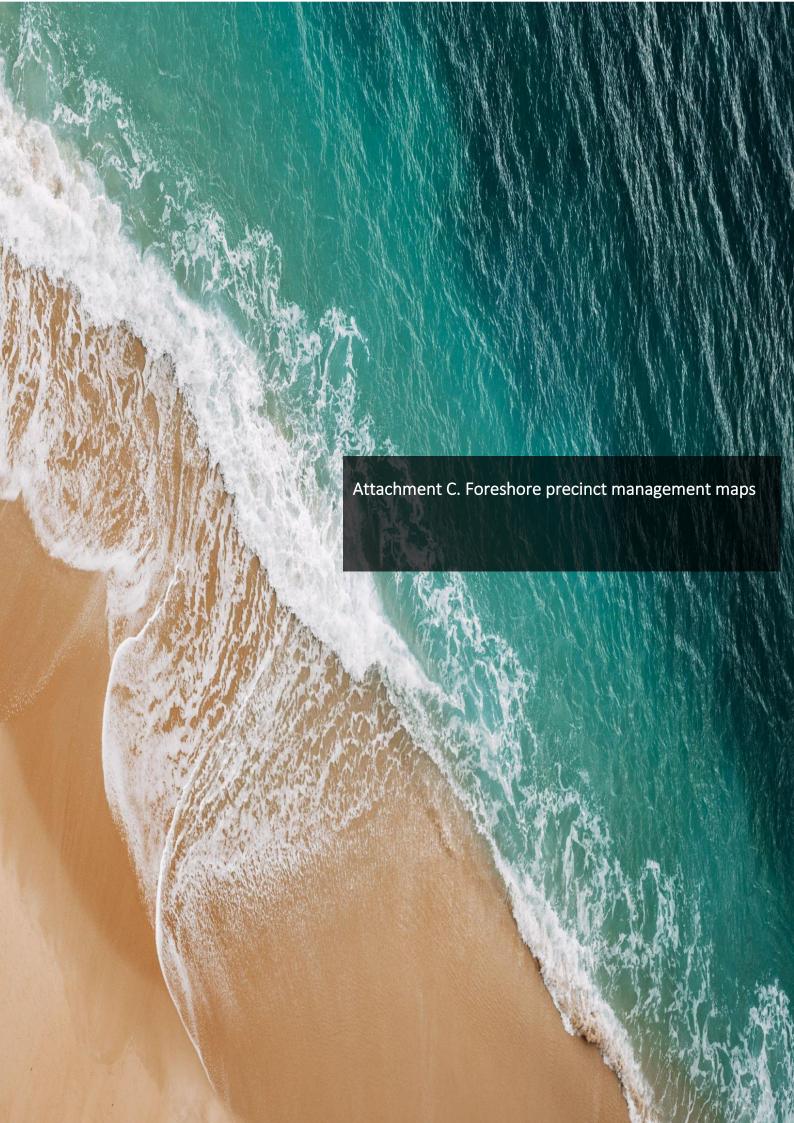
### Fauna

Table 11. Conservation significant fauna at Wonga Beach

Scientific name	Common name	EPBC Act <sup>5</sup>	NC Act <sup>6</sup>	Likelihood of occurrence
		Shorebirds		
Esacus magnirostris	Beach-stone curlew	_	V	Likely
Casuarius casuarius johnsonii	Southern cassowary	E	E	Possible
Calidris ferruginea	Curlew sandpiper	CE	CE	Likely
Numenius madagascariensis	Eastern curlew	CE	E	Likely
Charadrius mongolus	Lesser sand plover	E	E	Likely
Charadrius leschenaultii	Greater sand plover	V	V	Likely
Calidris canutus	Red knot	E	E	Likely
		Sea turtles		
Natator depressus	Flatback turtle	V	V	Likely
Chelonia mydas	Green turtle	V	V	Likely
Eretmochelys imbricata	Hawksbill turtle	V	E	Likely
Dermochelys coriacea	Leatherback turtle	E	E	Possible
Caretta caretta	Loggerhead turtle	E	E	Likely
Lepidochelys olivacea	Olive ridley turtle	E	E	Likely
		Other		
Hirundapus caudacutus	White-throated needletail	V	V	Likely
Crocodylus porosus	Estuarine crocodile	_	V	Likely

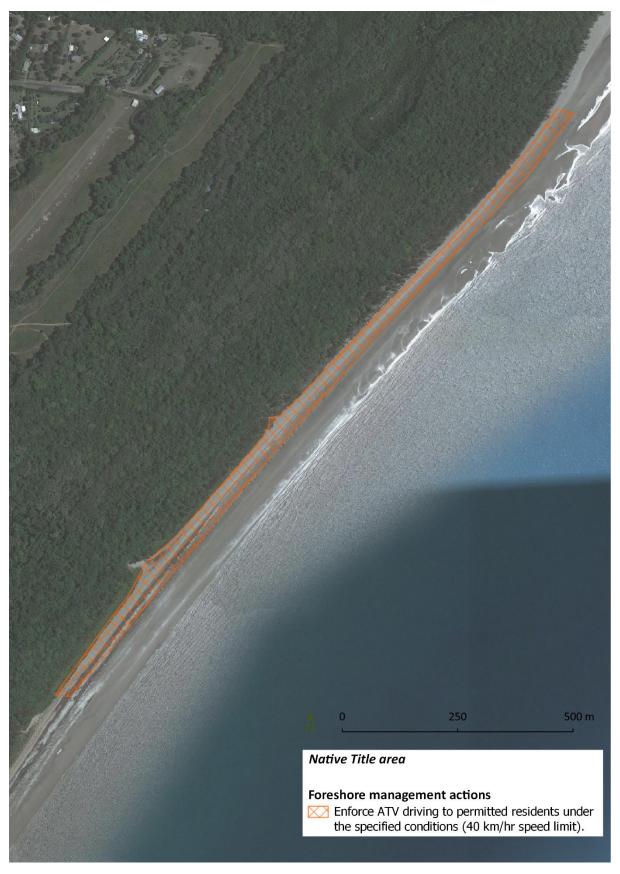
<sup>&</sup>lt;sup>5</sup> Environment Protection and Biodiversity Conservation (EPBC) Act score: V – Vulnerable, NT – Near Threatened, E – Endangered, CE – Critically Endangered

<sup>&</sup>lt;sup>6</sup> Nature Conservation (NC) Act score: V – Vulnerable, NT – Near Threatened, E – Endangered, CE – Critically Endangered

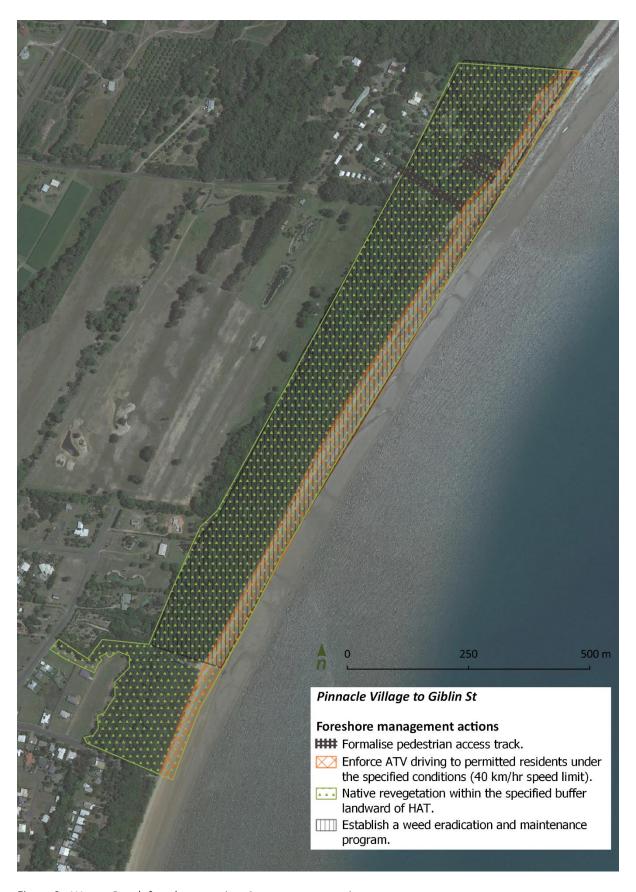




**Figure 7.** Wonga Beach foreshore precinct 1 management actions.



**Figure 8.** Wonga Beach foreshore precinct 2 management actions.



**Figure 9.** Wonga Beach foreshore precinct 3 management actions.



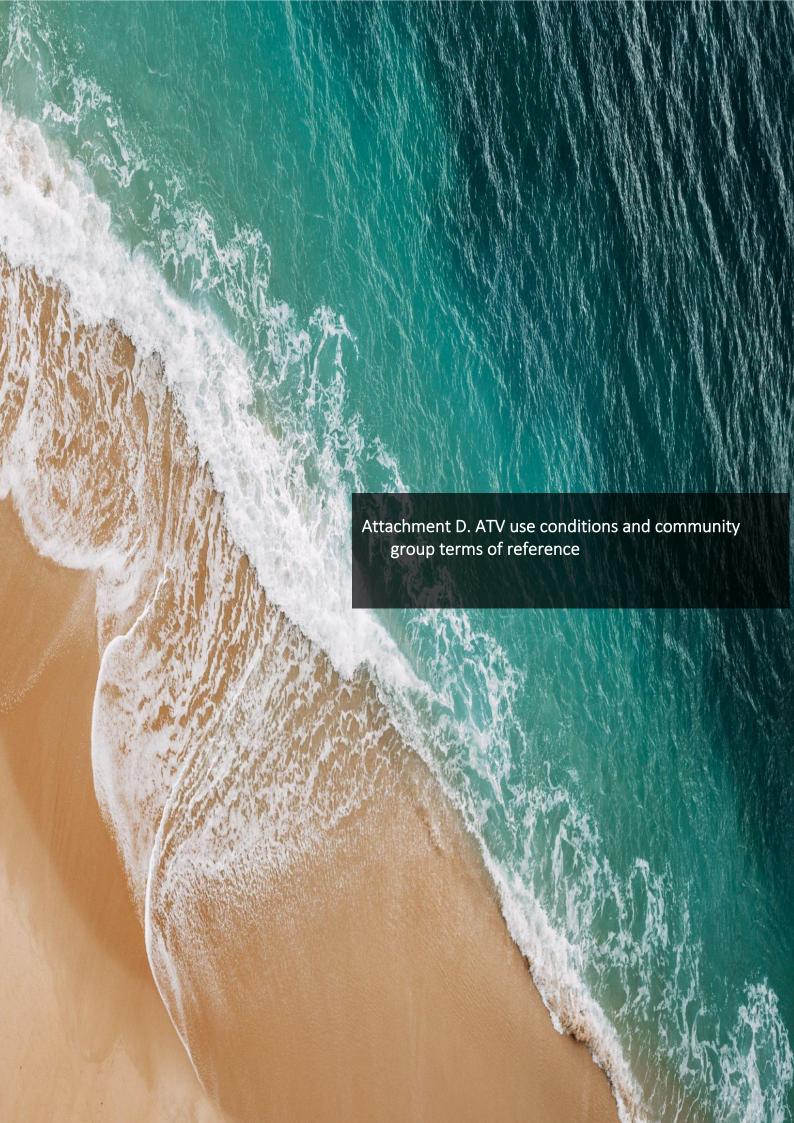
**Figure 10.** Wonga Beach foreshore precinct 4 management actions.



**Figure 11.** Wonga Beach foreshore precinct 5 management actions.



**Figure 12.** Wonga Beach foreshore precinct 6 management actions.



The following outlines the conditions and approval criteria for ATV use. This information has been adapted from the Interim Wonga Beach Foreshore Management Plan (DSC 2020a).

Table 12. ATV use conditions by foreshore management precinct

Precinct	Conditions
1	<ul> <li>ATV use is permitted by approval only – use prohibited on or near riparian zones, vegetated areas and dune area</li> <li>ATV use is permitted only on hard packed sand</li> </ul>
	ATV use to be limited to speeds of 40 km/hr
	ATV use is permitted by approval only – use prohibited on or near riparian zones,
2	vegetated areas and dune area
	<ul> <li>ATV use is permitted only on hard packed sand</li> <li>ATV use to be limited to speeds of 40 km/hr</li> </ul>
	ATV use to be limited to speeds of 40 km/hr
	No access via Council-controlled land, except for guests of Pinnacle Village Caravan Park
2	ATV use is permitted by approval only – use prohibited on or near riparian zones,
3	vegetated areas and dune area
	<ul> <li>ATV use is permitted only on hard packed sand</li> <li>ATV use to be limited to speeds of 40 km/hr</li> </ul>
	• ATV use to be limited to speeds of 40 km/m
	ATV use is permitted by approval only – use prohibited on or near riparian zones,
	vegetated areas and dune area
4	ATV use to be limited to are add of 20 km /km.
	<ul> <li>ATV use to be limited to speeds of 20 km/hr</li> <li>ATV use in this precinct limited to residents of New Wonga for the purpose of accessing</li> </ul>
	the main ATV recreation area north of the Giblin St access point
	the main ATV recreation area north of the dibilit of decess point
	ATV use is permitted by approval only – use prohibited on or near riparian zones,
	vegetated areas and dune area
5	ATV use is permitted only on hard packed sand     ATV use to be limited to speeds of 20 km/hr.
	<ul> <li>ATV use to be limited to speeds of 20 km/hr</li> <li>ATV use in this precinct limited to residents of New Wonga for the purpose of accessing</li> </ul>
	the main ATV recreation area north of the Giblin St access point
6	No ATV use in this precinct
O	No All Vase in this predict

# ATV approval criteria:

- Recreational ATV use limited to Wonga Beach only
- Foreshore and beach access restricted to access points
- Only residents of Wonga Beach are eligible for approval; proof must be provided by a current provisional or full driver's licence with the applicant's current residential address clearly visible
- Only the ATV nominated on the approval is to be driven on the beach
- Two (2) wheeled vehicles, such as trail bikes, or large four wheel drive passenger vehicles will not be considered for approval
- Applicants must have and be able to prove that they have undertaken some form of recognised ATV safety training
- Parents or legal guardians of minors (children 11 years or older) may apply for a permit on behalf of the minor conditions apply (more details below)

#### Conditions additional to Subordinate Local Law No. 1, Schedule 26:

- ATVs are not to be driven above the high tide mark, on or over frontal dunes or foreshore areas, except when travelling to and from the beach at designated access points
- ATVs will be restricted to travelling on the beach between 8 am and 6:30 pm
- ATVs must not be driven by persons under the influence of intoxicating liquor or drugs
- Hooning, fishtailing and racing of ATVs is not permitted
- Only the ATV nominated on the approval is to be driven on the beach
- ATVS must give way to pedestrians and wildlife at all times
- ATVs must be kept in a good state of repair or an approval will be revoked
- Approval holders will be issued an approval identification sticker or similar which must be visible on the ATV at all times
- ATVs that cannot be registered and legally driven on a road must be pushed or transported by utility or trailer to the designated access point
- Approval holders operating ATVs must wear an approved motorbike helmet and not carry a passenger unless on a seat designated for that purpose, as per Queensland State Law
- Passengers on a vehicle approved for passengers must be at least 8 years of age, as per Queensland State
   Law
- Approval holders must carry their drivers licence at all times when conducting the activity and provide to an authorised officer on request

#### Approval for minors (children 11 years or older):

- Parents or legal guardians of minors (children aged 11 years or older) may apply for an approval on behalf of the minor
- Parents or legal guardians must supervise the minor at all times when the ATV is being used on the beach, including any movement of the ATV between home and the beach
- Parents or legal guardians will be responsible for the conduct and behaviour of the minor at all times when the ATV is being used on the beach, including any movement of the ATV between home and beach
- When making an application for approval for a minor, the parent or legal guardian will become legally liable and responsible for any enforcement action taken by Douglas Shire Council with respect to any breaches of the approval (enforcement action may include the issue of a Penalty Infringement Notice)
- ATVs must be the appropriate size for the user and must not be designed to be operated by an adult
- No passengers will be permitted

# Wonga Beach Foreshore Management Plan Community Group - Draft Terms of Reference

# **Purpose**

The purpose of these Terms of Reference is to outline:

- 1. Function
- 2. Membership
- 3. Role of community group members
- 4. Operation
- 5. Role of the Chair
- 6. Evaluation

# **Function**

The Community Group's sole function to assist with the management of any issues arising from the use of vehicles on Wonga Beach.

# **Membership**

There will be nine\* members, comprising six Wonga Beach residents, two Council officers and one person from Queensland Police.

- The six Wonga Beach residents will include at least three vehicle permit holders.
- The two Council officers will include a representative from the local laws team and one from the community development team

Residents will be invited to nominate to join the group.

\*If more than six residents nominate there are two options:

- 1. If 7-8 people nominate, there's no reason not to have 11 members, and in this case, all nominations would be accepted.
- 2. If there lots of people interested, nominees will be invited to vote on who they prefer, and those with the most votes would be appointed.

# **Role of Community Group Members**

- Gather feedback and queries from the community to share in the meetings;
- Raise concerns and issues related to the use of vehicles on Wonga Beach.
- Discuss solutions to issues and indicate preferences
- Share information with other community members
- Make recommendations to Douglas Shire Council relating to the use of vehicles on Wonga Beach.

Members will be asked to:

- Attend three meetings per year in a Wonga Beach location;
- The role is voluntary and there is no remuneration.

# **Operation**

The Community Group will operate in the following way:

- The Chair will determined by members at the first meeting.
- The Draft Terms of Reference will be discussed, finalised and adopted.
- Douglas Shire Council's community development team will provide a secretariat.
- The secretariat will prepare a record of meetings and agreed actions
- Once approved by members, the record of meetings and agreed actions will be published on Douglas Shire Council's Wonga Beach Foreshore Management Plan webpage.
- Alternate delegates are allowed to attend meetings however as a courtesy, attendance should be notified in advance to the secretariate or to the Chair.
- Additional delegates may be invited, as necessary, at the discretion of Douglas Shire Council or the Chair.
- No members can make public statements purporting to represent the views of the Group.
- The Group can make recommendations to Douglas Shire Council related to the use Recreational ATV Approval Process and Conditions.

# Role of the Chair

The chairperson will be selected by members at the first meeting. The broad responsibilities of the chairperson will be to:

- manage the Community Group meeting in accordance with the agenda
- ensure discussion items reach an agreed conclusion and outcomes are documented and assigned for further action
- review and approve record of meeting notes before distribution to members.

#### **Evaluation**

After two years, the need for the continuation of the Community Group will be evaluated.

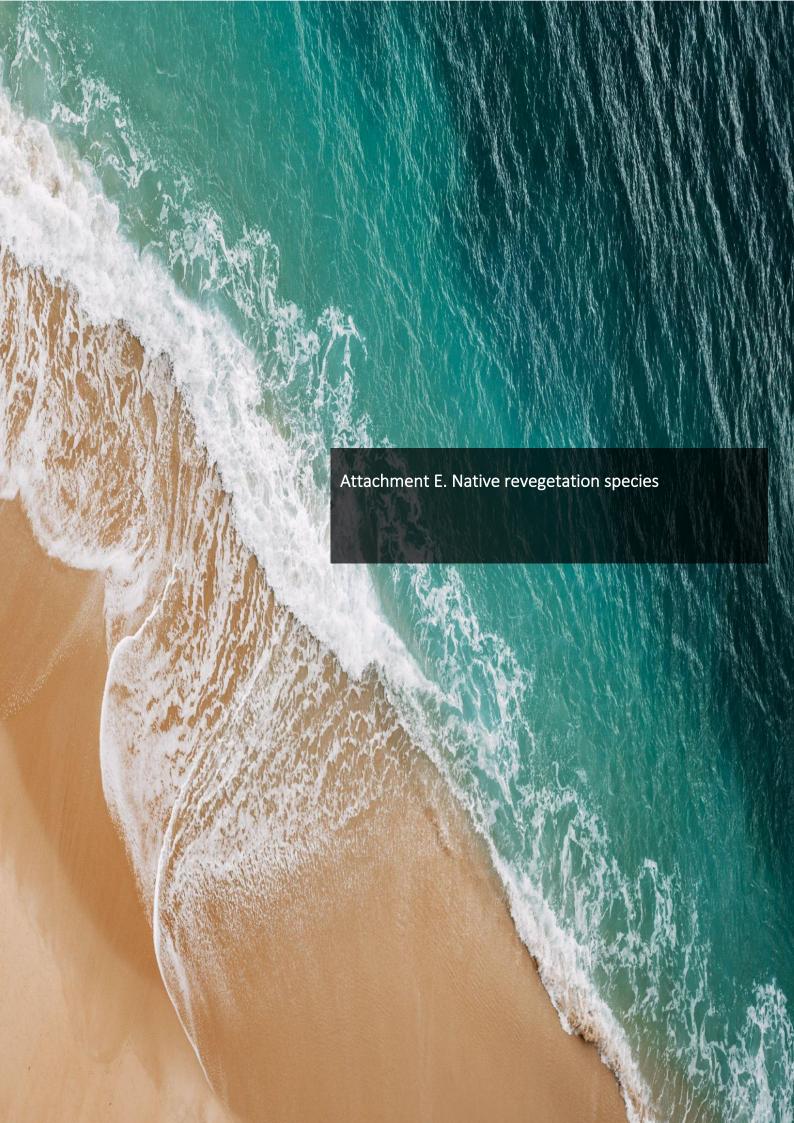


Table 13. Native revegetation species (highlighted species are key components of remnant ecosystems) (Florentine, Pohlman and Westbrooke 2015)

Botanical name <sup>7</sup>	Common name	Precinct 1	Precinct 2	Precinct 3	Precinct 4	Precinct 5	Precinct 6
Acacia crassicarpa*	Northern golden wattle			•	•		
Acacia mangium*	Broadleaf salwood			<b>~</b>	•		
Acacia oraria*	Coastal wattle			•	<b>✓</b>		
Aglaia elaeagnoidea	Coastal boodyarra	•	•	•	•	•	•
Alphitonia petriei*	Sarsaparilla			~	~		
Alyxia spicata	Chain fruit	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>~</b>
Atractocarpus fitzalanii	Brown gardenia	<b>~</b>	•	•	•	•	~
Barringtonia asiatica	Mango bark, Mango pine	<b>~</b>	•	•	•	•	•
Barringtonia calyptrata	Mango pine	<b>~</b>	•	•	•	•	•
Beilschmiedia obtusifolia	Blush walnut	~	•	•	•	•	~
Blepharocarya involucrigera	Rose butternut	~	•	•	•	•	•
Brachychiton acerifolius	Illawarra flame tree	•	•	•	•	•	<b>~</b>
Breynia cernua	Fart bush	~	~	~	<b>✓</b>	~	~
Calophyllum inophyllum	Beach calophyllum	•	•	•	•	•	•
Calophyllum sil	Blush touriga	~	<b>✓</b>	•	•	•	<b>~</b>
Canarium vitiense	Canarium	<b>~</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	•
Canavalia rosea	Beach bean	•	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	•
Carallia brachiata	Corky bark, Fresh water mangrove	<b>~</b>	•	•	•	•	<b>~</b>

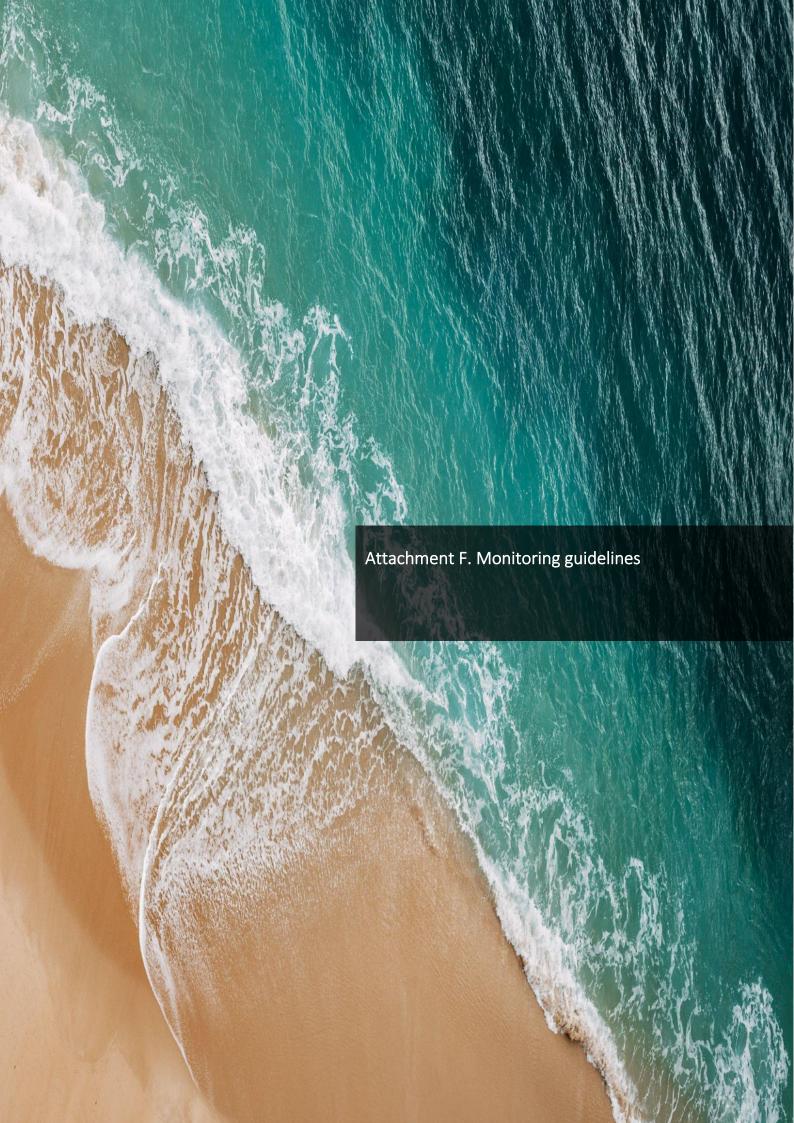
 $<sup>^{7}</sup>$  \* denotes pioneer species that will grow and establish quickly, allowing for natural recruitment or planting of secondary species.

Botanical name <sup>7</sup>	Common name	Precinct 1	Precinct 2	Precinct 3	Precinct 4	Precinct 5	Precinct 6
Casuarina equisetifolia*	Beach casuarina			~	~		
Cerbera manghas	Dog bane	<b>~</b>	<b>✓</b>	~	<b>✓</b>	~	•
Chionanthus ramiflora	Native olive	<b>~</b>	~	~	~	~	<b>~</b>
Clerodendrum floribundum*	Lolly bush			<b>✓</b>	•		
Clerodendrum inerme	Scrambling clerodendrum	•	~	~	~	~	•
Clerodendrum longiflorum*	Long flowered clerodendrum			•	•		
Colubrina asiatica*	Beach berry bush			•	•		
Cordia subcordata*	Sea trumpet			~	~		
Crinum pedunculatum	Beach lily, Swamp lily	~	~	~	~	~	~
Cupaniopsis anacardioides	Beach Tamarind	•	•	<b>~</b>	•	<b>~</b>	•
Cyperus pedunculatus		V	•	•	•	•	•
Deplanchea tetraphylla	Golden bouquet tree	•	~	~	~	~	~
Dillenia alata	Red beech	<b>✓</b>	<b>✓</b>	~	<b>✓</b>	~	<b>✓</b>
Diospyros compacta	Australian ebony	~	~	~	~	~	~
Dodonea viscosa*	Hop bush			~	~		
Elaeodendron melanocarpum	False olive	~	~	~	~	~	~
Eucalyptus plattyphylla	Ghost gum	•	~	•	~	•	<b>~</b>
Euroschinus falcata*	Pink poplar			~	~		
Ficus benjamina	Weeping fig	<b>~</b>	~	~	~	~	~
Ficus drupacea	Drupe fig	•	•	<b>~</b>	•	<b>~</b>	•

Botanical name <sup>7</sup>	Common name	Precinct 1	Precinct 2	Precinct 3	Precinct 4	Precinct 5	Precinct 6
Ficus microcarpa	Small fruited fig	~	~	~	~	~	~
Ficus opposita	Sandpaper fig	~	~	~	~	~	~
Ficus racemosa	Cluster fig	~	~	~	~	~	<b>✓</b>
Ganophyllum falcatum*	Daintree hickory			~	~		
Glochidion harveyanum	Harvey's buttonwood	<b>~</b>	~	~	~	~	~
Glochidion philippicum	Daintree cheese tree	<b>~</b>	•	•	•	•	•
Gmelina dalrympleana	White beech	•	•	•	•	•	~
Gomphandra australiana	Buff beech	~	•	~	~	~	~
Guioa acutifolia*	Glossy tamarind			•	•		
Haemodorum coccineum	Blood root	~	•	~	~	~	~
Hibiscus tiliaceus*	Coast cottonwood			~	~		
Intsia bijuga	Kwila	~	~	~	~	~	~
Ipomoea pes- caprae*	Coastal morning glory			<b>~</b>	•		
Jagera pseudorhus	Foambark	•	~	~	~	~	~
Livistona muelleri	Northern Cabbage Tree Palm	<b>~</b>	•	•	•	•	•
Lophostemon suaveolens	Swamp mahogany, swamp box	<b>~</b>	~	<b>~</b>	~	<b>~</b>	~
Macaranga tanarius*	Kamala, Blush macaranga			•	•		
Mallotus philippensis	Red Kamala	•	•	•	~	~	~
Maytenus fasciculiflora	Orangebark	~	~	~	~	~	~

Botanical name <sup>7</sup>	Common name	Precinct 1	Precinct 2	Precinct 3	Precinct 4	Precinct 5	Precinct 6
Melaleuca leucadendra	Weeping paperbark	•	•	•	•	~	•
Melaeuca viridiflora	Broad leaved paperbark	•	•	•	•	•	•
Melia azederach	White cedar	~	~	~	~	~	~
Micromelum minutum	Lime berry	~	~	~	~	~	~
Miliusa brahei	Rasberry jelly plant	•	•	•	•	~	~
Millettia pinnata*	Pongamia tree			<b>✓</b>	<b>✓</b>		
Mimusops elengi	Red coondoo	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>
Mischocarpus exangulatus	Red bell mischocarp	•	•	•	•	•	•
Morinda citrifolia	Rotten cheesefruit	<b>✓</b>	•	<b>✓</b>	•	•	•
Pandanus tectorius	Beach pandan	•	•	•	•	•	•
Pittosporum ferrugineum*	Rusty pittosporum			•	•		
Planchonia careya	Cocky apple	~	~	~	~	~	~
Pleiogynium timorense	Burdekin plum	•	~	•	•	•	•
Polyscias elegans*	Celerywood			•	•		
Pouteria chartacea	Thin leaved coondoo	•	•	•	•	•	•
Pouteria obovata	Yellow boxwood	•	<b>✓</b>	•	•	•	•
Premna serratifolia*	Coastal premna			~	~		
Ptychosperma elegans	Solitaire palm	•	•	•	•	•	•
Rhus taitensis	Sumac	<b>✓</b>	<b>✓</b>	~	•	<b>✓</b>	<b>✓</b>
Scaevola taccada*	Beach lettuce			•	•		

Botanical name <sup>7</sup>	Common name	Precinct 1	Precinct 2	Precinct 3	Precinct 4	Precinct 5	Precinct 6
Schefflera actinophylla	Umbrella tree	•	•	<b>~</b>	•	•	<b>~</b>
Scolopia braunii	Brown birch	~	~	~	~	~	<b>✓</b>
Sporobolus virginicus	Salt couch	•	•	<b>~</b>	•	~	•
Sterculia quadrifida	Peanut tree	•	~	<b>~</b>	<b>✓</b>	~	<b>~</b>
Syzygium angophoroides	Yarrabah satinash	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	•
Syzygium hemilamprum (Syn. Acmena hemilampra)	Blush satinash	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	•
Tarenna dallachiana	Tree ixora	~	~	~	~	~	~
Terminalia arenicola	Brown damson	~	~	~	~	~	<b>~</b>
Terminalia catappa*	Indian almond			•	~		
Terminalia microcarpa	Damson plum	~	~	~	~	~	•
Terminalia muelleri	Mueller's damson	<b>~</b>	<b>~</b>	<b>~</b>	•	<b>~</b>	<b>~</b>
Thespesia populneoides*	Tulip tree			~	~		
Thurea involuta	Tropical beachgrass	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	•
Timonius timon	False fig	•	~	~	~	~	<b>~</b>
Vitex rotundifolia	Beach vitex	<b>✓</b>	<b>✓</b>	•	•	<b>✓</b>	<b>✓</b>
Vigna marina*	Beach pea			~	<b>✓</b>		

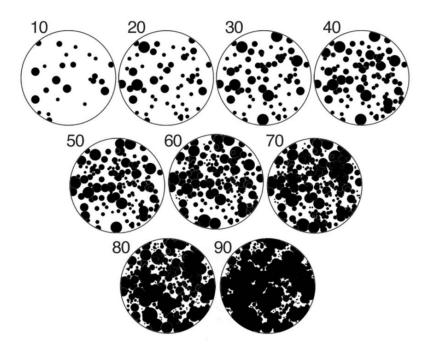


# Rapid Vegetation Assessment Method Data collection

	Survey ID	Description of survey					
	Sarvey ID	Description of survey					
survey ation	Assessor Name/s	Descriptive text					
General survey information	Date of record	Date					
G	Assessment number	Assessment	1	2	3	4	5
	General Location	Descriptive text					
Specific location	Easting	GPS spatial data					
ecific lo	Northing	GPS spatial data					
δ	Spatial uncertainty	GPS spatial data					
		Desi	red cover by year !	<u> </u> 5			
	Present	1 (1-5)	2 (6-25)	3 (26-50)	4 (51-75)	5 (76-100)	Absent
Under							
Mid							
Over							
		Cur	rent overall cover				
	Present	1 (1-5)	2 (6-25)	3 (26-50)	4 (51-75)	5 (76-100)	Absent
Under							
Mid							
Over							
		Percenta	 ge survival of each	layer			
	Present	1 (1-5)	2 (6-25)	3 (26-50)	4 (51-75)	5 (76-100)	Absent
Under							
Mid							
Over							
Ovei							
		Species	specific observati	ons			
	% Un	derstorey	% Mid-	storey	% Ove	erstorey	%
Sp. 1							
Sp. 2							
Sp. 3							
Sp. 4							
							<u> </u>

Sp. 5							
		Env	vironmental weeds co	ver			
	Present	1 (1-5)	2 (6-25)	3 (26-50)	4 (51-75)	5 (76-100)	Absent
Under							
Mid							
Over							
		High t	hreat environmental v	weeds			
	0/41	Inderstorey	% Mid-		% Ove	erstorey	%
	76 C	muerstorey	76 IVIIU-	storey	76 OVE	ristorey	/0
Sp. 1							
Sp. 2							
Sp. 3							
Sp. 4							
Sp. 5							
		Bare gr	ound created by distu	rbance			
	Present	1 (1-5)	2 (6-25)	3 (26-50)	4 (51-75)	5 (76-100)	Absent
Vehicles							
People							
Erosion							
Other							
			Natural recruitment				
		Absent	Pres	sent		%	
Under							
Mid							
Over							
			Connectivity				
	Patch size (ha)		Distance (km)		Connection		
Patch 1	, ,				Н	M	L
Patch 2					Н	М	L
Patch 3					Н	М	L
		Sigr	nificant species identif	ied			
	Location	Population size	Threat		Proposed res	sponse	
	1						

Sp. 1		
Sp. 2		
Sp. 3		



**Figure 13.** Schematic representation of percentage cover categories.

# Queensland Marine Turtle Field Guide











Queensland's coast has some of the most important marine turtle nesting sites in the world. Six species of threatened marine turtles nest along our idyllic beaches. These rookeries support significant nesting populations of green, loggerhead, hawksbill, flatback and olive ridley turtles.

One of the most serious threats to nesting turtle populations is the destruction of their eggs and hatchlings by predators. Feral pigs have been found to be responsible for destroying over 70 per cent of turtle nests at nesting beaches on Cape York, continued loss at this rate is not sustainable. Other predators include foxes, dogs, dingoes and goannas.

To reduce predation on marine turtle nests and help the recovery of threatened marine turtle populations, the Australian and Queensland Governments have together invested nearly \$7million in the Nest to Ocean Turtle Protection Program. The program supports predator control and turtle monitoring at priority nesting beaches. It also assists Traditional Owner and

community groups to increase their participation in these important activities.

This field guide has been developed as part of the Nest to Ocean Turtle Protection Program. Correctly identifying marine turtles, and the animals that prey on their nests, provides valuable information about turtle populations and shows where predator control activities are most needed.

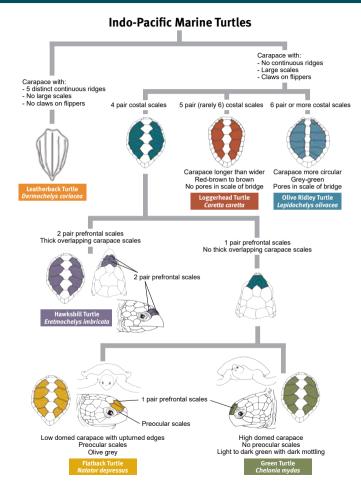




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# **Marine Turtle Species Identification Key**



# **Photographs of Adults and Hatchlings**







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Hawksbill Turtle Eretmochelys imbricata

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Loggerhead Turtle Caretta caretta

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Flatback Turtle Natator depressus

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Leatherback Turtle Dermochelys coriacea

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# Marine Turtle Track Identification Key

#### **Alternating Stroke**

Flipper marks alternate



#### **Track Features**

Early morning monitoring is best as tracks will deteriorate over time. The clarity of tracks can be affected by flipper damage, terrain, sand moisture, tides, wind and weather. Look for several key identifying features, along different sections of track.

The key track identification features are:

- Stroke Style
- · Track Width
- · Hind Flipper Marks
- Front Flipper Marks
- Plastron Drag
- · Tail Drag



#### Loggerhead

Track Width Less than 1 meter

**Hind Flipper** 

Front Flipper

Plastron Drag

Tail Drag Not present



#### Hawksbill

Track Width
Approx. 70-80 cm

Hind Flipper

Front Flipper

Plastron Drag

Tail Drag



#### Olive Ridley

Track Width Approx. 70-80 cm

Hind Flipper

Front Flipper

Plastron Drag

Tail Drag





Flipper marks side by side





#### Green

Track Width Approx. 94-144 cm

Hind Flipper

Front Flipper

Plastron Drag

Tail Drag



Track Width Approx. 90-100 cm

Hind Flipper

Front Flipper

Plastron Drag

Tail Drag

#### **Track Direction**

Clues to determine track direction:

Turtles push sand backwards, the higher sand mound is at the back

If track overlaps, the top track is the returning track.

Sand is always thrown back over the emerging track when digging.

#### Measuring Width

Measure from outer edge of track. This may be the front or rear flipper, depending on species.

#### Leatherback

Track Width Greater than 2 meters

Hind Flipper

Front Flipper

Plastron Drag Not Visible

Tail Drag



# **Basic Beach Monitoring**

Guidelines on how to **Record** data and implement **Action** during a basic beach survey (see page 9). These may be tailored to suit individual monitoring programs and implemented in accordance with training.

#### Record

**Species Identification:** Use track or sighting to identify species.

**GPS Nest Location:** Note GPS coordinates & waypoint number.

False Crawl: Track with no nest.

**Extent of Damage:** Partial or complete destruction of nest.

**Evidence of Predation:** Diggings, tracks, sighting.

**Predator Identification:** Use track or sighting to identify species.

**Hatchlings Emerged:** Yes, hatchling tracks or sighting.

**Tag Information:** Note tag ID number and its location on turtle.

Curved carapace length (CCL): From front (where skin and carapace meet), down midline to back edge of carapace (over tail).



#### Action

**Photograph:** To verify species and/or nest damage/predation.

**Mark Nest:** Install marker to indicate nest location (if required).

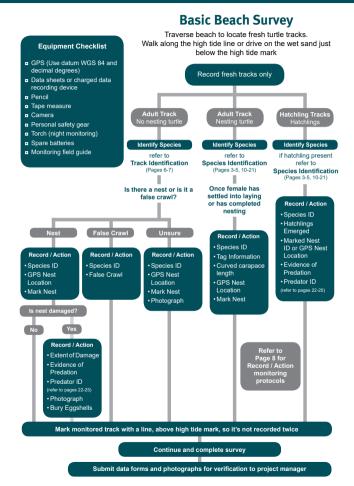
Bury Eggshells and Mark Track: To avoid record duplication; mark track line above the high tide mark.

**Submit Data:** Project manager to submit data to the relevant Queensland Department.











# Green Turtle, Chelonia mydas

Status: Nationally Vulnerable, Queensland Vulnerable



# **Key Identification Features**











Breast Stroke Track

Carapace Scales

4 Pair Costal Scales

1 Pair Prefrontal es Scales

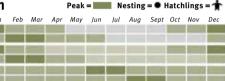
rk areen with dark

**Adult**: Carapace is a high dome. Colour is light to dark green with dark mottling. Plastron colour is cream-white.

Hatchling: Black-dark brown with white margins, white plastron.

# **Breeding Season**













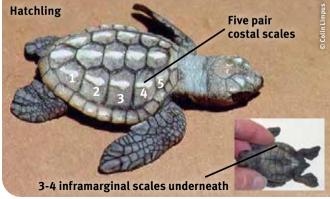




# Loggerhead Turtle, Caretta caretta

Status: Nationally Endangered, Queensland Endangered





# Loggerhead Turtle

# **Key Identification Features**









Alternating Track

Carapace Scales

5 Pair Costal Scales

Qld Nesting Sites

**Adult**: Carapace is longer than wider. Colour is red-brown to brown. Plastron colour is yellow.

**Hatchling**: Dark brown with 5 costal scales and dark plastron with 3-4 inframarginal scales.

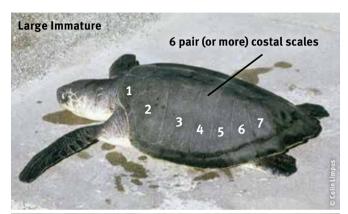
# Breeding Season Peak = Nesting = Hatchlings = The start of the start





# Olive Ridley Turtle, Lepidochelys olivacea

Status: Nationally Endangered, Queensland Endangered





# **Olive Ridley Turtle**

## **Key Identification Features**









Alternating Track

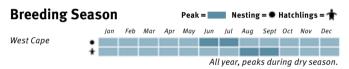
Carapace Scales

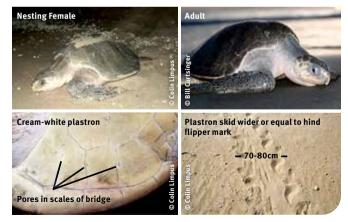
6 Pair (or more) Costal Scales

**Qld Nesting Sites** 

**Adult:** Carapace is circular. Colour is grey-green with no conspicuous markings. Plastron colour is cream-white.

Hatchling: Charcoal-grey/black-brown on both sides.



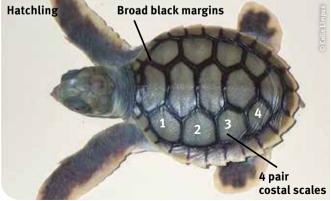




# Flatback Turtle, Natator depressus

Status: Nationally Vulnerable, Queensland Vulnerable





# **Key Identification Features**











Breast Stroke Track

Carapace Scales

4 Pair Costal Scales

1 Pair Prefrontal Scales

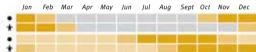
**Qld Nesting Sites** 

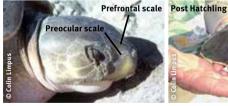
Nesting = ● Hatchlings = ★

Adult: Carapace is a low dome, smooth with upturned edges. Colour is grey to pale-grey or olive. Preocular scales. Plastron is creamy-yellow. Hatchling: Olive-green, scales with broad black margin. Plastron is a solid white.

# **Breeding Season**









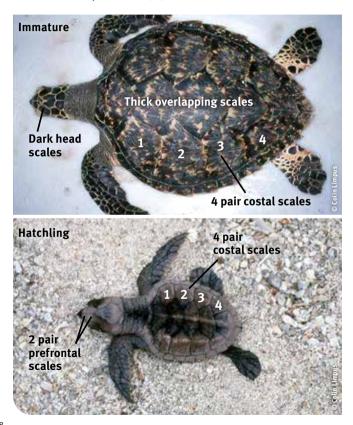






# Hawksbill Turtle, Eretmochelys imbricata

Status: Nationally Vulnerable, Queensland Vulnerable



# **Key Identifcation Features**











Alternating Track

Scales Thick Overlapping

4 Pair Costal Scales

2 Pair Prefrontal Scales

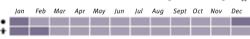
**Qld Nesting Sites** 

**Adult**: Carapace has thick overlapping scales. Colour is olive green or brown and is extensively variegated with brown/black markings. Adult plastron is yellow or white with black spots.

Hatchlings: Dark brown.

## **Breeding Season**

Northern Great Barrier Reef and Torres Strait









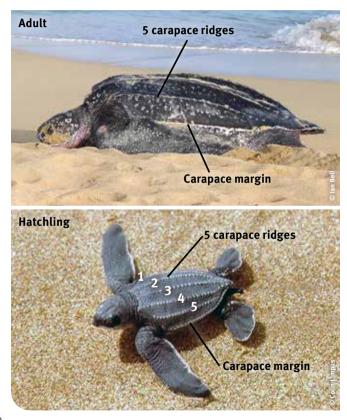
Peak = Nesting = Hatchlings = ★





# Leatherback Turtle, Dermochelys coriacea

Status: Nationally Vulnerable, Queensland Endangered



## Leatherback Turtle

# **Key Identification Features**









Breast Stroke Track

No Carapace Scales

5 Carapace Ridges

**Qld Nesting Sites** 

**Adult:** Carapace is long and pointed. Long ridges run down the length of carapace. Colour is a uniform black-brown. Soft leathery skin.

**Hatchlings:** Finely beaded, black with white markings on the carapace ridges and plastron.

Apr

# **Breeding Season**







South Eastern Queensland

Adult





Aug





## **Predator Track Identification**

#### **Fox**





#### **Track Identification Features**

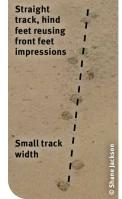
- Front foot is larger than back foot.
- Elongated oval shaped claws, may not show on track.
- Substantial foot hair, sometimes visible on track impression.
- Large space between centre pad and toe pads.
- Centre pad has a distinct inverted V shape.
- Tracks are straight, hind feet reusing front feet impressions.
- · Small track width.







- Den detection and fumigation
- Ground shooting
- TrappingBaiting
- Exclusion fencing
- Nest protection (cages)





# Wild Dog or Dingo





#### **Track Identification Features**

- Front foot is larger than back foot.
- Little or no foot hair in between pads.
- Small space between centre pad and toe pads.
- Centre pad almost triangular.
- Foot imprint rounded.
- Tracks are straight but not as neat and aligned as a fox's track.







Front



Back

- Ground shooting
- Leg hold trapping
- Baiting (1080 or strychnine)
- · Exclusion fencing
- Nest protection (cages)

## **Feral Pig**



Pigs eat 100 percent of nest eggs, predating many nests per night

#### **Track Identification Features**

- Back feet slightly larger than front.
  - Foot print consists of a two toe hoof and two dew claws.
  - Dew claws distinctive identification feature but may not be present in harder soils.
  - Small stride and narrow straddle.



Dew claw visible in sand impression









- Ground/aerial shooting
- Trapping
- Baiting
- Exclusion fencing
- Nest protection (cages)



## Goanna



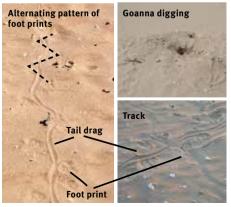
#### **Track Identification Features**

- Both walk and run tracks have alternating foot prints.
- Trail drag usually visable.



#### Nest Predation Identification

- Goannas burrow into nest at an angle from the side of the nest, not vertical from directly above.
- The burrow is typically domed shape, not circular.



- Trapping
- Exclusion fencing
- Nest protection (cages)

# **Principles of Pest Management**

Managing pest animals requires long-term control programs and a variety of approaches. Effective programs are designed around these eight principles:

#### 1. INTEGRATION

Ensuring pest management programs are an integral part of the management of natural areas.

#### 2. PUBLIC AWARENESS

Raising public awareness and knowledge of pests to increase community and individual participation in pest management.

#### 3. COMMITMENT

Gaining a commitment to long term programs by the community, industry groups and government entities.

# 4. CONSULTATION AND PARTNERSHIP

Establishing partnerships between local communities, industry groups, state government agencies and local governments to achieve a collaborative approach.

#### 5. PLANNING

Consistent planning at local, regional, state and national levels ensures combined resources target the agreed priorities.

#### 6. PREVENTION

Preventing the spread of pests, and using early detection and intervention to control pests.

#### 7. BEST PRACTICE

Using ecologically and socially responsible pest management practices to protect the environment and natural resources.

#### 8. IMPROVEMENT

Research and regular monitoring and evaluating of programs helps improve and refine pest management practices.



## **Threats to Marine Turtles**

Marine turtles are long-lived and slow to mature. Depending on the species they can take anywhere between 8–50 years to reach breeding age. Due to the range of threats, at their different life stages, it is thought that only 1 in 1000 hatchlings will survive to adulthood and then return to the beach to nest. For this reason it is critical to address the range of threats throughout their lifecycle.

### Threats include:

- Native and introduced animals predating turtle eggs and hatchlings.
- Vehicles compacting turtle nests or forming tyre ruts that trap hatchlings.
- Humans taking turtle eggs.
- Bycatch of marine turtles in fisheries.
- · Marine debris.
- Impact to breeding habitat from coastal development and artificial lighting.
- Deteriorating water quality.
- Unknown and possibly unsustainable levels of turtle harvesting, in and outside Australian waters.

## What you can do:

- Support the management of predators such as pigs, dogs and foxes around turtle nesting beaches.
- Report turtle nests and predated turtle nests to your local ranger.
- Keep your dogs on a lead when walking on the beach during nesting/hatchling season.
- Drive slowly on beaches and avoid driving over nests. Drive on the wet sand below the high tide mark to avoid making wheel ruts.
- Pick up marine debris from the beach and waterways.
- Report ghost nets to your local ranger.
- At night, minimise lights on the beach, including campfires.
- Support sustainable, traditional use of adult turtles and turtle eggs.

## **Acknowledgements**

The Queensland Parks and Wildlife Service Nest to Ocean Turtle Protection Program Team would like to acknowledge the contribution of staff from the following organisations in the development of the field guide: Western Cape Turtle Threat Abatement Alliance supported by Cape York Natural Resource Management, Balkanu Cape York Development Corporation, Aak Puul Ngantam, Feralfix, World Wildlife Fund for Nature, and University of Oueensland, Also acknowledged is the input and advice of staff from our partnering Australian and Queensland Government departments.

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Green Turtles on Raine Island © Duncan Limpus