Mackay Coasts and Communities

Ball Bay

Beach Plan

2010

Mackay Regional Council

Reef Catchments Mackay Whitsunday Inc

Caring for our Country

Queensland Government

Contents

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1. Beach unit description

The Ball Bay beach unit runs from McBrides Point in the north, to an unnamed creek in the south, which enters the middle of the bay (Figure 1). Ball Bay beach runs the length of the unit, and is a low gradient sand beach of approximately 2 kilometres (Short, 2000).

The Ball Bay residential area stretches much of the length of the beach, being predominantly Freehold tenure and zoned as Village (Figures 2, 3). An Esplanade, zoned as Open Space, of between 20 and 90 metres exists along the length of this residential settlement, and the southern 700 metres of beach front are free of settlement. Cape Hillsborough National Park borders the beach and residential area to the north. Aproximately 15 hectares of State Land under the management of the Department of Environment and Natural Resource Management exists in the centre of the beach unit some 200 metres from the foreshore, however is not included in these recommendations.

Figure 1: Extent of Ball Bay beach unit

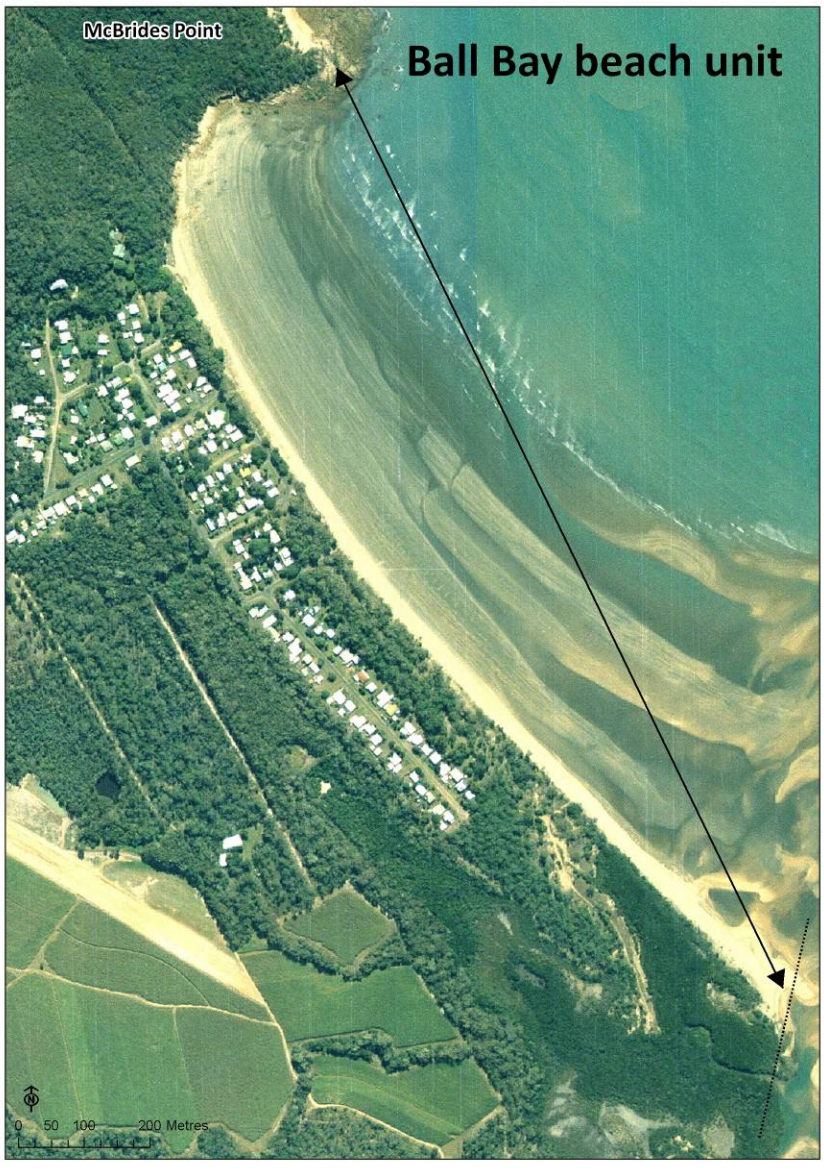


Figure 2: Land tenure Ball Bay

ACKNOWLEDGMENTS: Digital Cadastral Data 2008 supplied by Mackay Regional Council.

Figure 3: Planning scheme zonation Ball Bay

ACKNOWLEDGMENTS: Planning Scheme Zone Data 2008 supplied by Mackay Regional Council.

2. Conservation and Management Issues

2.1 Vegetation

2.1.1 Remnant vegetation

The largest amount of remnant vegetation remains at the northern end of Ball Bay beach under National Park tenure (Figure 6, Table 1). These mixed-eucalypt open to woodland forests are protected under Queensland legislation (Figure 4).

Remnant vegetation has been largely removed from the residential frontage, and pre-clearing mapping shows that this area was previously a combination of eucalypt and acacia open forest with beach scrub understorey (RE 8.2.6a, 90%); melaleuca species woodland (RE 8.2.11, 5%); and casuarina open forest with spinifex dominated ground layer on foredunes (RE 8.2.1, 5%) (Environmental Protection Agency, 2003). Localised stands of these communities are still present along with Esplanade (Figure 5), which would have reached some 350 metres inland.

Mangrove and salt flat communities extend in behind the creek in the south of the beach unit (Figure 6).

A bushfire is an uncontrolled fire burning in forest, scrub or grassland vegetation and may occur in most vegetation types in Queensland where there is a fuel path of sufficient dryness to be flammable (Queensland Government, 2003). State Planning Policy 1/03 under the *Sustainable Planning Act 2009* deals with the mitigation of adverse impacts of bushfire, and includes a natural hazard assessment for bushfires and the subsequent provision of safety buffers. According to this policy, a low hazard score and no prescribed safety buffer width is allocated to "narrow strips of coastal vegetation with a linear shape, less than 50 hectares in area and more than one kilomere from the nearest extensive vegetation, on 0-5% slope, with an eastern aspect" (Queensland Government, 2003). All rehabilitation activities undertaken as part of this plan will be done so with consideration of this State Planning Policy.

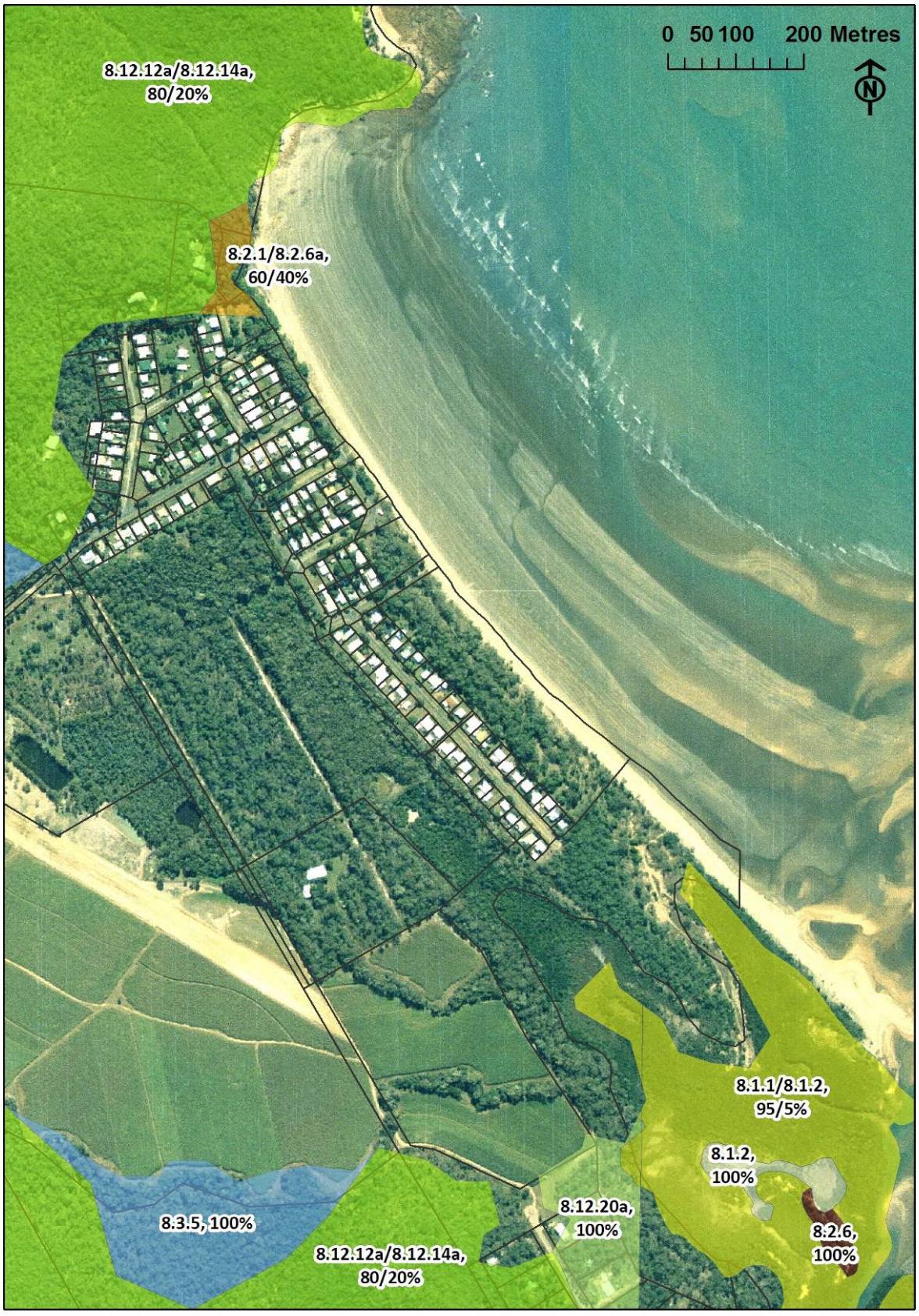
Figure 4: Mixed-eucalypt open to woodland forests on McBrides Point are protected by Queensland legislation.

Figure 5: Stands of *Melaleuca spp.* along the Esplanade of Ball Bay beach are representative of pre-clearing vegetation.

Table 1: Remnant vegetation (Regional Ecosystem) communities at Ball Bay

Regional Ecosystem (RE)	Short description (Environmental Protection Agency, 2005)	Approximate area (ha) on Council tenure	Vegetation Management Act status 2005	Biodiversity status	EPBC Status
8.2.1	*Casuarina equisetifolia* open forest to woodland with *Ipomoea pes-caprae* and *Spinifex sericeus* dominated ground layer on foredunes.	0.5 ha	Of concern	Of concern	n/a
8.2.6a	*Corymbia tessellaris* ± *Acacia leptocarpa* ± *Banksia integrifolia* ± *Melaleuca dealbata* ± beach scrub species open forest on coastal parallel dunes.	0.5 ha	Of concern	Of concern	n/a
8.1.1	Mangrove vegetation of marine clay plains and estuaries. Estuarine wetland.	Other tenure. Not included in beach unit recommendations.	Not of concern	No concern at present	n/a
8.1.2	Samphire open forbland to isolated clumps of forbs on saltpans and plains adjacent to mangroves.	Other tenure. Not included in beach unit recommendations.	Not of concern	Of concern	n/a
8.3.5	*Corymbia clarksoniana + Lophostemon suaveolens + Eucalyptus platyphylla* woodland, or *E. platyphylla* woodland on alluvial plains.	Other tenure. Not included in beach unit recommendations.	Of concern	Endangered	n/a
8.12.12a	Mixed open forest to woodland of *Corymbia intermedia* ± *Eucalyptus portuensis* ± *E. platyphylla* ± *E. drapanophylla* ± *E. tereticornis*. Occurs on lower and mid-slopes of mountains and hills formed on Mesozoic to Proterozoic igneous rocks.	Other tenure. Not included in beach unit recommendations.	Not of concern	No concern at present	n/a
8.12.14a	*Eucalyptus drepanophylla* and *Lophostemon confertus* woodland. Occurs on exposed hill slopes of islands on Mesozoic to Proterozoic igneous rocks.	Other tenure. Not included in beach unit recommendations.	Not of concern	No concern at present	n/a
8.12.20a	*Eucalyptus drapanophylla* and/or *E. platyphylla* ± *Corymbia clarksoniana* ± *C. dallachiana* woodland on low gently undulating landscapes on Mesozoic to Proterozoic igneous rocks.	Other tenure. Not included in beach unit recommendations.	Not of concern	Of concern	n/a

Figure 6: Remnant vegetation Ball Bay



ACKNOWLEDGMENTS: Orthophotos from digital aerial photography 0.6m pixel 2004, and Digital Cadastral Data 2008 supplied by Mackay Regional Council. 2003 Remnant Vegetation Communities and Regional Ecosystems of Queensland version 5, 2005, supplied by Environmental Protection Agency.

2.1.2 Vegetation zonation

Natural vegetation zonation has largely been removed along the length of the Ball Bay residential settlement. At the northern end of the beach, Ward Esplanade is in close proximity to the foredune and precludes the existence or reinstatement of natural dune vegetation zonation (Figure 7). In the central section of Ball Bay beach the Esplanade widens, and large expanses of dunes are being maintained as mown laws, preventing the re-establishment of the full complex of native vegetation (Figures 8, 9). Fencing off a suitable foredune buffer zone south from Sivyer Street, and managing this area to encourage the rehabilitation of native vegetation, is recommended.

Beyond the residential settlement, at the southern and northern ends of Ball Bay beach, natural vegetation zonation is present. This variously includes strand thickets, colonising spinifex and casuarina woodland, and mangroves communities (Figure 10). The condition of parts of this vegetation is reduced in some areas owing to inappropriate access and weed invasion.

Figure 7: At the northern end of the beach, natural dune vegetation zonation has been removed and Ward Esplanade is in close proximity to the foredune.

Figure 8: In the centre of Ball Bay beach, the dunal Esplanade is being maintained as parkland, preventing natural regeneration.

Figure 9: In some areas along Ball Bay beach, the dunal Esplanade is being mown to the foredune, preventing natural regeneration and vegetation zonation.

Figure 10: Natural vegetation zonation remains south of the residential settlement of Ball Bay beach.

2.1.3 Non-native vegetation

Many non-native species are present along Ball Bay beach, reflecting the high levels of past disturbance and proximity to urban residence. These include a variety of both garden escapees, and environmental weeds such as Guinea grass (*Megathyrsus maximus*) which increase fuel loads and smother native vegetation (Figure 11). Declared weeds recorded along the length of the beach include prickly pear (*Opuntia sp.*) and mother of millions (*Bryophyllum sp.*) (*Land Protection Pest and Stock Route Management Act, 2002*). Dense stands of coconut palms (*Cocos nucifera*) are present in some areas of the Esplanade (Figure 12). These trees drop fronds which smother native vegetation, do not reduce wind erosion, and accelerate wave erosion when they fall (Environmental Protection Agency, 2004).

Figure 11: Dense stands of Guinea grass (*Megathyrsus maximus*) along the frontal dunes smother native vegetation and increase the risk of fire.

Figure 12: Dense stands of coconut palms (*Cocos nucifera*) pose problems with the risk of falling coconuts and fronds, and fronds which smother native vegetation.

2.1.4 Waste dumping

Vegetative waste is present on dunes along Ball Bay beach, particularly where there are adjacent residential areas (Figures 13, 14). This leads to the smothering of native vegetation, increases the risk of fire, and encourages the spread of non-native species.

Figure 13 and 14: The dumping and accumulation of vegetative waste on dunes along Ball Bay beach, increases the risk of fire and spread of non-native species.

2.2 Public access and facilities

There are six designated beach access points provided with various fencing, signage, and associated infrastructure along Ball Bay beach (Figures 15, 19). Vehicle access to the beach for boat launching is permitted at two of these access points (Figures 16, 19). Recreational facilities and a camping reserve are provided at the northern end of Ball Bay beach, with barbeques, tables, and amenities.

Fencing has been installed along the Esplanade to protect foredune vegetation and direct pedestrian access, from the northern extent of the Esplanade to just south of Smith Street (Figure 19). Open access to the beach is available south of this point, and many unofficial pedestrian access tracks have been created (Figure 17). Additionally, vehicle access through the Esplanade, foredunes, and salt flats south of the residential community causes disturbance to dune and salt marsh vegetation and can lead to localised erosion (Figure 18).

The formalisation and fencing of pedestrian access points south from the current Esplanade fenceline is recommended to direct pedestrian access, prevent vehicle access, and protect native vegetation on dune and salt flat communities.

Figure 15: Access 1, from Ball Bay campground.

Figure 16: Access 5 includes boat access to beach.

Figure 17: Unofficial access tracks to the beach exist along central Ball Bay beach where no direction to official access tracks is provided.

Figure 18: Unofficial vehicle access through Council land to the beach front disturbs dunal and salt flat communities at the southern end of Ball Bay beach.

Figure 19: Ball Bay access points and recreational areas

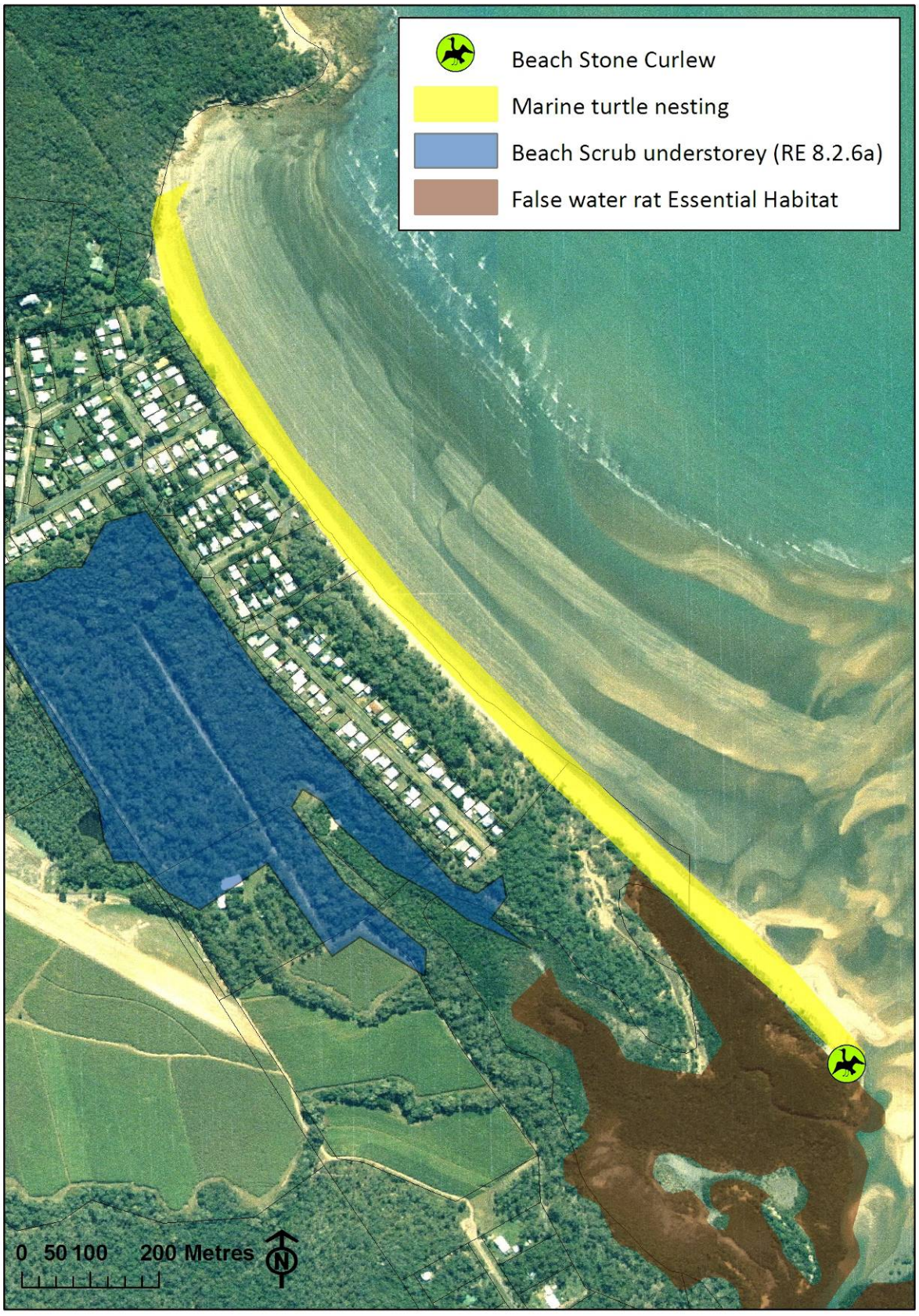
2.3 Wildlife

The two kilometre long Ball Bay beach provides important habitat for nesting marine turtles. An average of 7.3 flatback turtle (*Natator depressus*) nests per year were recorded along Ball Bay beach between 1993 and 2003 with a maximum of 15 occurring in one year (Mackay District Turtle Watch Association, 2003). An interpretive sign highlighting the value of Ball Bay beach as turtle nesting habitat is installed at the Coconut Grove access point (Figure 19). Additional signage has also been installed at the second boat access point to combat ongoing issues with vehicle access through the Esplanade and on foreshore areas (section 2.2). "Vehicles can damage marine turtle nests and habitat by compacting sand, crushing nests and creating wheel ruts that impede or trap hatchlings" (Environment Australia, 2003, p. 24). The formalisation and fencing of pedestrian access points south from the current Esplanade fenceline is recommended to prevent unrestricted vehicle access to the beach. Street lighting along the Ball Bay beach front has been fitted with turtle-friendly fixtures to reduce the effects of light pollution in the northern residential area. There are opportunities along the length of the beach to thicken dune vegetation to reduce the instances of residential light pollution, and promote the success of marine turtle nesting.

Although no official shorebird roosts are recorded in the Ball Bay beach unit, the intertidal zone is important habitat for foraging waders on the low tide. Sightings of the vulnerable beach stone curlew (*Esacus magnirostris*) have been recorded at the southern end of Ball Bay beach (Andrews, M. 2009, pers. comm., 2 July). Such species will also benefit from the installation of fencing to prevent unrestricted vehicle access to the foreshore at the southern end of the beach.

Essential Habitat mapping for the false water rat (*Xeromys myoides*) covers the mangroves adjacent to the creek at the southern end of Ball Bay beach. Although no other Essential Habitat mapping is currently available, beach scrub ecosystems are considered to provide habitat for the listed northern quoll (*Dasyurus hallucatus*), rusty monitor (*Varanus semiremex*), and coastal sheathtail bat (*Taphozous australis*). The Ball Bay beach unit has approximately 14 ha of eucalypt and acacia open forest with beach scrub understory (RE 8.2.6a) in the centre of the unit which is State Land under the management of Department of Environment and Resource Management (Figure 20).

Figure 20: Wildlife values Ball Bay



ACKNOWLEDGMENTS: Orthophotos from digital aerial photography 0.6m pixel 2004; and Digital Cadastral Data 2008 supplied by Mackay Regional Council. 2008 Central Queensland remnant beach scrub mapping 1:12,000; and 2006 False Water Rat Essential Habitat mapping, supplied by Environmental Protection Agency. 2009 Beach Stone Curlew records pers comms M. Andrews.

2.4 Cultural heritage

The Ball Bay area was previously occupied by Traditional Owners and the retention and rehabilitation of natural areas remains of significance to the Yuibera people (Mooney, G. 2009, pers. comm., 9 March). Middens, fish traps or other items of cultural significance may be present in the area.

2.5 Erosion

Development has occurred within the erosion prone area within the Ball Bay beach unit (Figure 23). The retention and maintenance of the Esplanade buffer zone is important to prevent threats to property boundaries and infrastructure into the future. Some sections of frontal dune along Ball Bay beach are lacking native vegetation, leaving them vulnerable to erosion processes (Figure 21). Frontal dunes being maintained as an extension of residential lawns and lacking natural dune vegetation zonation along the length of the beach face a greater risk of erosion into the future. Fencing off a suitable foredune buffer zone south from Sivyer Street, and managing this area to encourage the rehabilitation of native vegetation, is recommended.

Unofficial vehicle and pedestrian access points result in disturbance to coastal vegetation and subsequent localised erosion (Figure 22). Restriction of inappropriate vehicle access to the foreshore and formalisation of official pedestrian beach access tracks at the southern end of the Ball Bay beach residential area, are recommended.

Figure 21: Frontal dunes which lack native vegetation are more vulnerable to erosion processes.

Figure 22: Inappropriate vehicle access at the southern end of Ball Bay disturbs native vegetation and opens up bare sand areas to erosion and weed invasion.

Figure 23: Erosion Prone Area Ball Bay

ACKNOWLEDGMENTS: Orthophotos from digital aerial photography 0.6m pixel 2004; and Digital Cadastral Data 2008 supplied by Mackay Regional Council. Central Queensland erosion prone area mapping supplied by Environmental Protection Agency 2008. Erosion Prone Area is "the width of the coast that is considered to be vulnerable to coastal erosion and tidal inundation over a 50-year planning cycle" (Environmental Protection Agency (2007) *Coastal erosion and assessment of erosion prone area widths,* Information sheet, p5.)

2.6 Climate change

The presence of an Esplanade buffer zone along much of Ball Bay beach means it is has some potential to protect against the predicted impacts of climate change. Stabilising the dunes and improving their structure and condition through weed control and rehabilitation activities along the length of the beach is recommended.

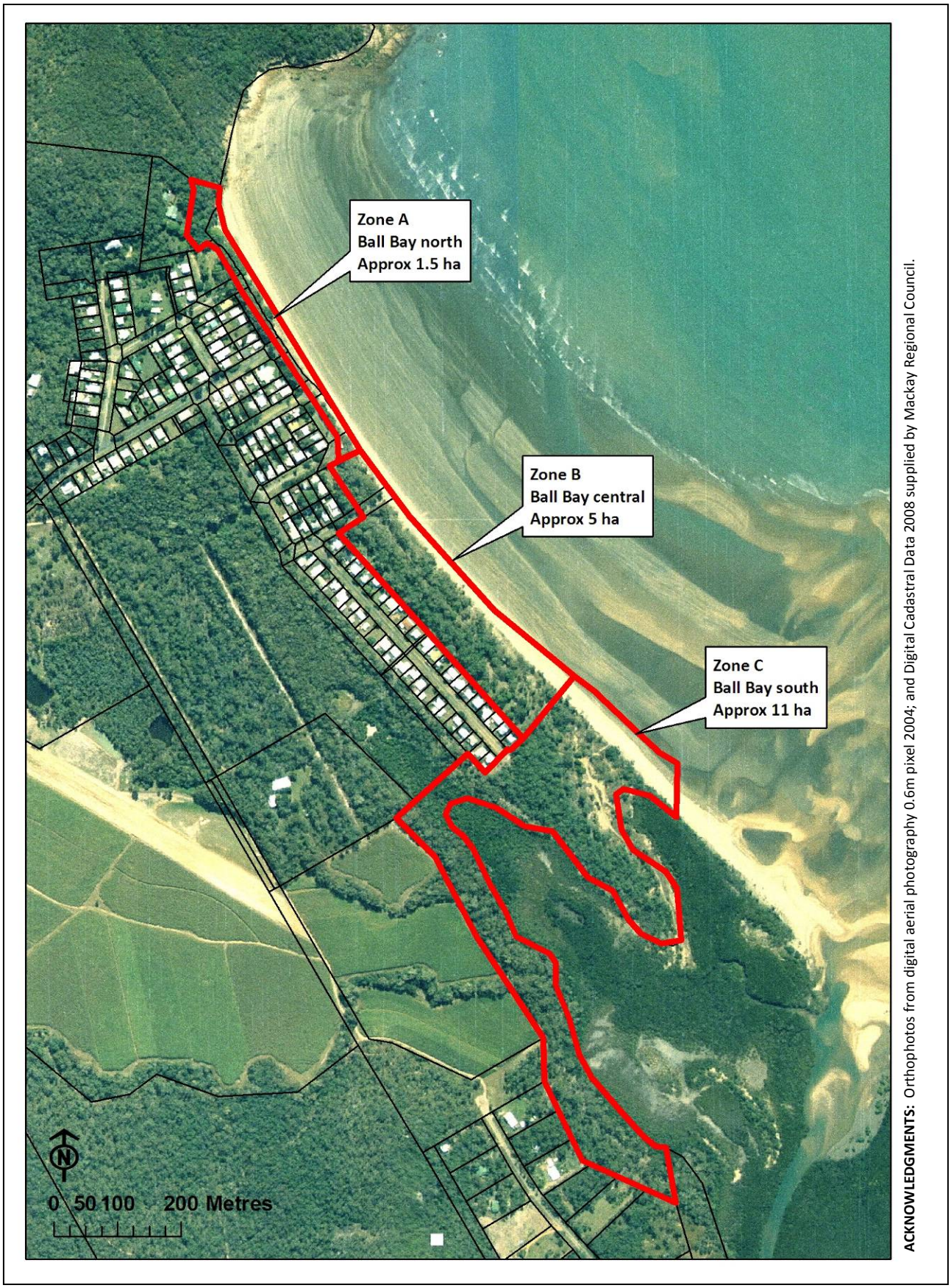
Tidal flat communities extend in behind the creek to the south of Ball Bay Beach (Figure 24). Adjacent land should remain free of development and infrastructure to allow for migration of these communities as sea level changes occur.

Figure 24: Current extent of tidal flat communities Ball Bay (Landzone 1)

3. Recommended activities

#	**On-ground activity details** (Figure 25)
Zone A | Ball Bay north (1.5 ha).	
1	**Weed control, revegetation, remove waste dumping, remove private infrastructure.** Major target weed species include Guinea grass (*Megathyrsus maximus*), mother of millions (*Bryphyllum sp.*), agave (*Agave sp.)*, coconut palms (*Cocos nucifera*), mother-in-laws tongue (*Sansevieria trifasciata*), and various other herbaceous garden escapees. Revegetation to replace removed weed species, and support frontal dune to the east of current fenceline. Remove waste dumping on dunes.
2	**Fencing.** Fencing, with appropriate pedestrian access points, to continue south to Sivyer Street to complete the Esplanade fencing within this zone.
Zone B | Ball Bay central (5 ha).	
3	**Weed control, revegetation, remove waste dumping, remove private gardens and infrastructure.** Major target weed species include Guinea grass, coconut palms, agave, and various herbaceous garden escapees. Weed removal to be completed in a staged process and include replacement with local native species. Encourage natural regeneration where possible, with revegetation to replace weed species and support frontal dune. Remove vegetative waste dumping, and private infrastructure on Council tenure.
4	**Fencing and formalisation of pedestrian access points.** Fencing (Appendix 2) along the length of the Esplanade from Sivyer Street to the southern end of the residential development. Pedestrian access points and current beach vehicle access point to be incorporated into the fencing. This will provide a vegetation zone to define the revegetation area, limit mowing to the fenceline, provide a fire break from freehold properties, and define pedestrian access points.
Zone C | Ball Bay south (11 ha)	
5	**Weed control, revegetation.** Major target weed species include Guinea grass, prickly pear (*Opuntia sp.*), and agave. Encourage natural regeneration, and use revegetation to replace weed species, support the frontal dune, and provide a buffer to the remnant vegetation.
6	**Fencing.** Fencing at the southern end of Buoro Street to restrict vehicle access to Council land, to protect coastal vegetation.
Other activities across multiple zones	
7	Update and rationalise current regulatory and information signage; dogs on leads, vehicle and pedestrian access points, waste dumping, camping, and fire signage.
8	Monitor and use available legislation to protect existing native vegetation on Esplanade tenure as required.
9	Educate coastal community on local weed species and promote the use of local native species in residential gardens.
10	Educate coastal community on requirement to dispose of garden waste and other debris at designated Council refuse sites.
11	Land adjacent to tidal flats communities to remain free of infrastructure to allow migration of these communities as sea level rises.

Figure 25: Zones for recommended activities Ball Bay



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Appendix 1: Recommended species for dune revegetation

This is a generic list of recommended species for dune revegetation on Mackay beaches compiled from *Sarina Shire Beaches Management Guidelines for Coastal Zones*, Regional Ecosystem 8.2.1, 8.2.2, 8.2.6a revegetation recommendations, and field observations.

A distinction is made below between front and hind dune species for revegetation. However, the species selected for revegetation at any particular location will ultimately depend on current and pre-clearing Regional Ecosystem mapping, and site-specific conditions (such as aspect, topography, existing vegetation, soil condition, etc).

Front Dune (seaward)		
Species name	**Common name**	**Habit**
Canavalia rosea	Beach bean	Groundcover
Carpobrotus glaucescens	Angular pigface	Groundcover
Ipomoea pes-caprae	Goats foot convolvulus	Groundcover
Sporobolus virginicus	Marine couch	Groundcover
Vigna marina	Vigna	Groundcover
Cyperus pedunculatus	Pineapple sedge	Sedge
Spinifex sericeus	Beach spinifex	Grass
Thuarea involuta	Birds beak grass	Grass
Vitex trifolia	Coastal vitex	Shrub
Argusia argentea	Octopus bush	Tree
Casuarina equisetifolia	Coastal she oak	Tree

Front Dune (top and landward side)		
Species name	**Common name**	**Habit**
Clerodendum inerme	Coastal lollybush	Shrub
Dodonaea viscosa subsp. *viscosa*	Sticky hop bush	Shrub
Sophora tomentosa	Silver bean	Shrub
Vitex trifolia	Coastal vitex	Shrub
Casuarina equisetifolia	Coastal she oak	Tree
Hibiscus tiliaceus	Cottonwood	Tree
Pandanus tectorius	Pandanus	Tree

Hind dune and further landward		
Species name	**Common name**	**Habit**
Crinum pedunculatum	Spider lilly	Lilly
Eragrostis intrrupta	Coastal love grass	Grass
Eustrephus latifolius	Wombat berry	Climber
Stephania japonica	Tape vine	Climber
Clerodendrum inerme	Coastal lolly bush	Shrub
Dodonaea viscosa subsp. viscosa	Sticky hop bush	Shrub
Eugenia reinwardtiana	Beach cherry	Shrub
Jasminum didymium	Native jasmine	Shrub
Sophora tomentosa	Silver bean	Shrub
Acacia leptocarpa		Tree
Acacia oraria		Tree
Acronychia laevis	Glossy acronychia	Tree
Alphitonia excelsa	Soapy ash	Tree
Banksia integrifolia	Coastal banksia	Tree
Calophyllum inophyllum	Ball nut	Tree
Chionanthus ramiflora	Native olive	Tree
Clerodendrum floribundum	Lolly bush	Tree
Corymbia tesselaris	Moreton bay ash	Tree
Cupaniopsis anacardioides	Tuckeroo	Tree
Diospyros geminata	Scaly ebony	Tree
Drypetes deplanchei	Yellow tulip	Tree
Euroschinus falcata	Ribbonwood	Tree
Hibiscus heterophylus	Native hibiscus	Tree
Hibiscus tiliaceus	Cottonwood	Tree
Jagera pseudorhus	Foam bark	Tree
Macaranga tanarius	Macaranga	Tree
Mallotus phillipensis	Red kamala	Tree
Mimusops elengi	Red coondoo	Tree
Morinda citrifolia	Smelly cheese tree	Tree
Pandanus tectorius	Pandanus	Tree
Pittosporum ferrugineum	Rusty pittosporum	Tree
Planchonia careya	Cocky apple	Tree
Pleiogynium timorense	Burdekin plum	Tree
Sterculia quadrifida	Peanut tree	Tree
Terminalia cattapa	Beach almond	Tree
Terminalia muelleri		Tree
Thespesia populnoides	Tulip tree	Tree

Appendix 2: Coastal fencing specifications