Mission Beach Habitat Network Action Plan

Coordinated community, industry and government action for conserving the natural, cultural and lifestyle values of Mission Beach

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This report is available for download from http://www.terrain.org.au/programs/biodiversity/mission-beach.html

Contents

Acronyms

ARF ..... Australian Rainforest Foundation
AWC..... Australian Wildlife Conservancy
BAU ..... Business As Usual
BHA ..... Bush Heritage Australia
CRC..... Cooperative Research Centre
C4 ..... Community for Coastal and Cassowary Conservation
CCRC ..... Cassowary Coast Regional Council
CHIA ..... Collaborative Habitat Investment Atlas
CRP ..... Cassowary Recovery Plan
CSC ..... Cardwell Shire Council (now part of Cassowary Coast Regional Council)
CSIRO ..... Commonwealth Scientific and Industrial Research Organisation
CVA ..... Conservation Volunteers Australia
DCP ..... Development Control Plan
DEEDI..... Department of Employment, Economic Development and Innovation
DERM ..... Department of Environment and Resource Management
DEWHA ..... Commonwealth Department of the Environment, Water, Heritage and the Arts
DT&MR ..... Department of Transport and Main Roads
EPA ..... Environmental Protection Agency (now part of Department of Environment and Resource Management, but acronym still appears in past publications)
EPBC..... Environment Protection and Biodiversity Conservation Act 1999 (Cth)
FNQ..... Far North Queensland
FNQ2031..... Far North Queensland Regional Plan 2009-2031
GBR..... Great Barrier Reef
GDM..... Generalised Dissimilarity Modelling
GIS ..... Geographic Information Systems
IPA ..... Integrated Planning Act (Queensland 1997); also Indigenous Protected Area
IUCN ..... International Union for the Conservation of Nature and Natural Resources
JCU..... James Cook University
JSC ..... Johnstone Shire Council (now part of Cassowary Coast Regional Council)
MBA&CC ..... Mission Beach Agriculture and Conservation Committee
MBCA ..... Mission Beach Community Association
MBHNAP..... Mission Beach Habitat Network Action Plan
MOU..... Memorandum of Understanding
MTSRF..... Marine and Tropical Sciences Research Facility
NRM..... Natural Resource Management
Qld……Queensland
QPWS..... Queensland Parks and Wildlife Service
RRRC ..... Reef and Rainforest Research Centre Limited
RPAC..... Regional Planning Advisory Committee
TLJV..... Tropical Landscapes Joint Venture (of JCU and CSIRO)
UNESCO..... United Nations Educational Scientific and Cultural Organisation
VMA..... Vegetation Management Act (Queensland 1999)
WQIP..... Water Quality Improvement Plan
WPSQ..... Wildlife Preservation Society of Queensland
WTMA ..... Wet Tropics Management Authority
WTWHA ..... Wet Tropics World Heritage Area
WWF ..... World Wide Fund for Nature

EXECUTIVE SUMMARY

The Mission Beach Habitat Network Action Plan coordinates community[1], industry and government action to protect a network of habitat that is ecologically viable and protects community identified values related to lifestyle, culture and the natural environment. A Community Vision for the future of Mission Beach, developed through the collaborative efforts of all parties, lies at the heart of the Action. The Plan is underpinned by rigorous biodiversity and planning system science, developed through co-research partnerships supported by the Australian Government's Marine and Tropical Science Research Facility. Mission Beach is a key site within the Wet Tropics World Heritage Area (WTWHA), a region of global biodiversity significance.

The Action Plan identifies the need to protect, connect and reduce critical threats in all remaining cassowary habitat at Mission Beach through a variety of measures, and to restore degraded habitat in key sites. Currently 40% of habitat occurs on land with relatively low levels of protection and connectivity is disrupted. Protection of cassowary habitat ensures protection of other significant biodiversity, and of aesthetic/lifestyle and Djiru cultural values of great importance to many people.

The Action Plan is critically important for four reasons: Mission Beach has national and international biodiversity significance in its own right; these values are urgently threatened by pressures of human population growth and coastal development; the local Mission Beach and regional communities have a strong history of and ongoing motivation to act; and the Action Plan will build ecological resilience in a vital rainforest corridor and key site for climate change response in the wet tropics bioregion.

Central to the Plan are community partnerships to implement projects within each of 8 strategies:

1. Habitat Protection and Restoration
2. Traffic Management
3. Exotic Species Management
4. Agricultural Management
5. Management by Traditional Owners
6. Residential and Infrastructure Management
7. Tourism Management
8. Building Community Strength.

Habitat and cassowary conservation values at Mission Beach have effectively declined over recent years despite a raft of plans and community efforts – implementation has not been supported by a sufficient level of investment or coordination. During the period that the Action Plan has been underway, the Australian and Queensland Governments strengthened their habitat protection efforts under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* and the *Integrated Planning Act (IPA) 1997 (Qld)* respectively, which has begun the process of turning around the decline. The Queensland Government has since replaced the *IPA* with the *Sustainable Planning Act 2009 (Qld)* which provides opportunities for further strengthening of institutional arrangements to protect cassowaries and their habitat. Nevertheless, cassowary deaths from traffic strike and dog attacks continue to alarm the community. Protection and restoration of cassowary habitat is urgently needed. The Action Plan provides a vital opportunity for strong innovative partnerships between community, industry and government to achieve this important goal.

[1] The term 'community' here refers to *civil society actors* (a term not commonly used in Far North Queensland); in other places in the document 'community' encompasses civil society, industry and government actors; the context makes the difference clear.

This document presents the Strategic Framework for the Action Plan. The Action Plan is a living web-based document (www.terrain.org.au/missionbeach).

Mission Beach Habitat Network Action Plan: Strategic Framework

Purpose of the Action Plan

The Mission Beach Habitat Network Action Plan coordinates community[2], industry and government action to protect a network of habitat that is ecologically viable and protects community identified values related to lifestyle, culture and the natural environment. A Community Vision for the future of Mission Beach, developed through the collaborative efforts of all parties, lies at the heart of the Action:

> ***Mission Beach is a sanctuary for wildlife and habitat; its defining feature is a strong human community that acts to protect its special values. Mission Beach is an exemplar of sustainable living, both environmentally friendly and culturally diverse. Mission Beach has a tropical landscape character where urban, farming, and forest communities blend to maintain a harmonious setting with strong visual appeal.***

Mission Beach is located within the Cassowary Coast Regional Council local government area of far north Queensland (Figure 1). Parts of Mission Beach lie within the greater Wet Tropics World Heritage Area which provides protection for some 900,000 ha of rainforest, associated floral communities and fauna. Figure 2 illustrates the extent of the current habitat network at Mission Beach. The area is under the jurisdiction of the Cassowary Coast Regional Council formed (on March 15, 2008) following the State Government local government reform process which amalgamated the former shires of Cardwell and Johnstone. The MBHNAP development is supported and primarily funded by the Australian Government through its Arrangements for Regional Delivery of Natural Resource Management. It is linked to the FNQ NRM Plan *Sustaining the Wet Tropics Regional Plan for Natural Resource Management 2004-2008* (FNQ NRM Ltd and Rainforest CRC 2004)[3]. Terrain NRM has the key role of championing the MBHNAP and facilitating the partnerships required for Action.

It is a non-regulatory plan, focused on incentives-based approaches to environmental management and protection. Nevertheless, attention has been paid throughout the planning process to ensuring alignment with the statutory planning system. Some changes to statutory mechanisms are suggested that would value-add to achieving the goal.

[2] The term 'community' here refers to *civil society actors* (a term not commonly used in Far North Queensland); in other places in the document 'community' encompasses civil society, industry and government actors; the context makes the difference clear.

[3] The FNQ NRM Plan is consistent with the National Framework for NRM Standards and Targets (Natural Resource Management Ministerial Council 2002)

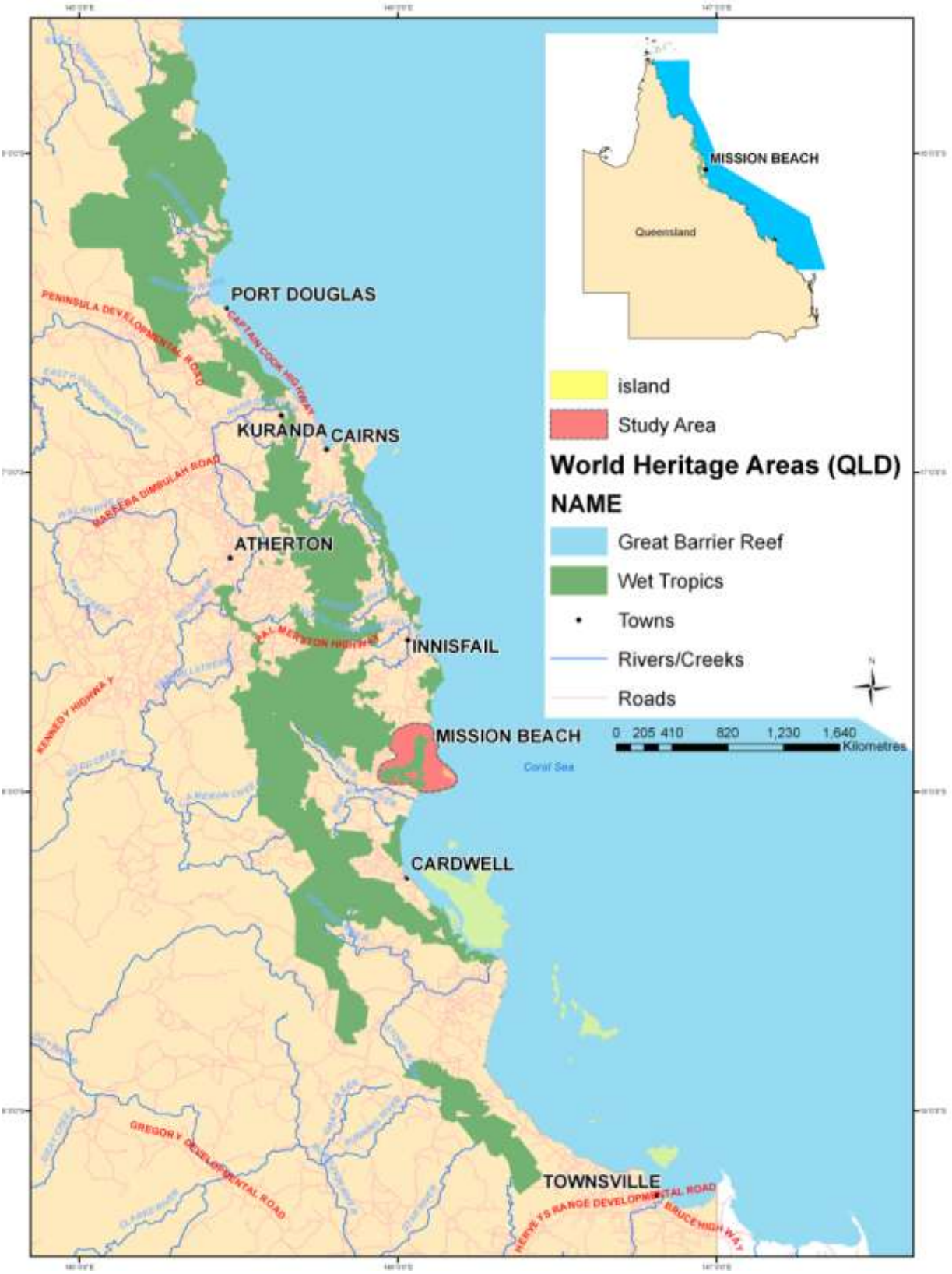


Figure 1: Mission Beach in the Wet Tropics World Heritage Area. The area in dark pink is the focus of this Action Plan.

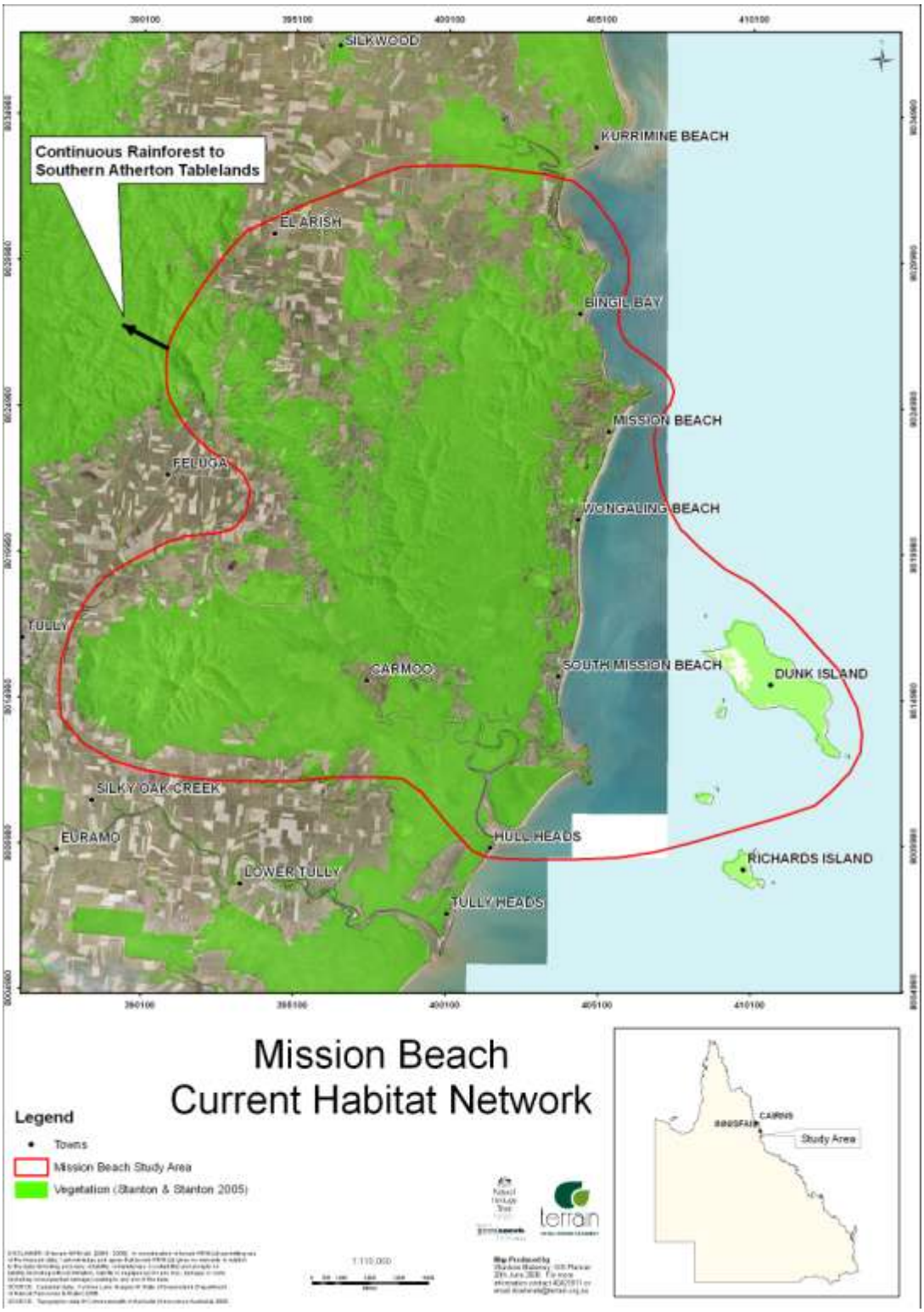


Figure 2: Mission Beach Current Habitat Network

Champions of the Action Plan

Terrain NRM is championing the plan using *local area biodiversity planning*, a contemporary, integrated, landscape-scale approach to conservation (Hill *et al.* 2010). Terrain NRM has brought together a broad community of interested parties, including industry, government and civil society organisations and individuals into the Mission Beach Habitat Network Action Committee, to guide plan development and implementation. "Stakeholders[4]" or groups with interests in habitat and biodiversity at Mission Beach were identified to ensure their participation in the plan through consultation and other involvement. Many of these groups and individuals within them have been active on conservation for a long time, including through private efforts in habitat protection and restoration. The Committee Terms of Reference appears in Appendix Two. As well as these groups, there are numerous unaffiliated individuals within the community who undertake pest management, revegetation activities and habitat restoration.

Mission Beach Habitat Network Action Committee members:

- *Australian Rainforest Foundation*
- *Cassowary Coast Regional Council*
- *Commonwealth Scientific and Industrial Research Organisation*
- *Community for Coastal and Cassowary Conservation (C4)*
- *Department of Transport and Main Roads (Queensland Government)*
- *Department of Environment, Water, Heritage and the Arts (Australian Government)*
- *Department of Environment and Resource Management (Qld)*
- *Department of Infrastructure and Planning (Qld)*
- *Djiru Traditional Owners*
- *Terrain Industry Advisory Group and GrowCom (agricultural industry representatives)*
- *James Cook University*
- *Mission Beach Agriculture and Conservation Committee*
- *Mission Beach Community Association*
- *Mission Beach Business and Tourism*
- *Northern Development Industry Association/The 20/20 Group and MiCorp (development industry representatives)*
- *Wet Tropics Management Authority*

The Action Committee worked with Terrain NRM and CSIRO to design the Action Plan through a six-stage cycle (see Figures 4-6). This cycle includes: (1) exploratory analysis of the natural resources and human community; (2) facilitation of community ownership and a shared community vision, using a collaborative focal species approach and scenario analysis; (3) identification and prioritisation of strategies and projects, using science brokering partnerships and a collaborative habitat investment atlas; (4) forging of implementation partnerships through institutional brokering and incentives (offsets, auctions, competitive grants, tenders) to secure habitat protection and restoration; (5) participatory monitoring to build common understandings of the efficacy of actions on cassowaries, biodiversity and other identified values; and (6)

[4] Including civil society, government and industry actors.

updating and refining that relies on social learning and empowerment (Hill *et al.* 2010).

Community engagement is integral to the Action Plan to: raise awareness of the planning process and Mission Beach values; increase engagement and involvement; find out community needs; respond to community input; provide feedback on their input; and facilitate the development of implementation partnerships and networks. The collaborative planning approach facilitates the community to be at the centre of decision-making in relation to the Action Plan.

Mission Beach had a population of 5749 at the time of the 2006 census (4103 residents and 1646 tourists). Mission Beach residents are predominantly employed in 6 main sectors:

- 17% Agriculture, forestry, fishing
- 12% Retail
- 11% Service Restaurants, cafes, accommodation (73 tourist establishments)
- 11% Construction
- 8% Manufacturing
- 7% Education

Traffic movements on the entry road to Mission Beach from Tully are currently around 3600 vehicles per day and on the road from El Arish, 1400 per day (Hill *et al.*, 2008). The Cassowary Coast region has around 2300 registered dogs, with 349 currently registered in the Mission Beach towns (Geoff Wilson, Manager of Environmental Services, CCRC, pers. comm. 17 March 2010). These figures are likely to be below actual numbers as they do not reflect dogs on rural properties, which, at the time of data collection, did not require registration.

Rigorous biodiversity science is incorporated into the Action Plan, the product of a strong research co-partnership between the Marine and Tropical Sciences Research Facility (MTSRF), Terrain NRM, and both CSIRO and James Cook University within the context of their Tropical Landscapes Joint Venture.

Community engagement and awareness activities included:

- *Formation of Plan governance group of community members – The Mission Beach Habitat Network Action Committee*
- *One-to-one meetings with, and presentations to, stakeholder groups*
- *Posting of relevant information on the Terrain NRM web-site*
- *Letters to local and environment elected government representatives outlining the process and the rationale behind the Mission Beach Habitat Network Action Plan*
- *Scenario development to assist the community in considering the future of Mission Beach*
- *Public release of reports on Mission Beach, including the significance reports and scenarios in 2007*
- *Ongoing media releases as key aspects of the plan were developed, including Community Workshop Outcomes in 2008*
- *A mail out of the Mission Beach values and a plan information booklet to Mission Beach residents and businesses (November 2007)*
- *A community workshop to establish targets for the Action Plan in December 2007 with telephone and letter follow-up*
- *Public release for input into Draft Action Plan in 2009*
- *Revision of the Draft Action Plan based on the community feedback*

Why the Action Plan is important

The National and International Significance of Mission Beach

Biodiversity values and significance of Mission Beach

Mission Beach has many significant natural environmental attributes that qualify it as a location of regional, national and global biodiversity significance (Chenoweth EPLA 2007). The area has the largest single block of lowland rainforest south of the Daintree River (see box). Vegetation of Mission Beach forms part of the only lowland to highland rainforest link across the Wet Tropics bioregion. This "corridor" contains an altitudinal gradation of different rainforest types, providing the best wildlife corridor between the coast and the highlands south of the Daintree River. Other ecosystems of high significance are the *Licuala* Fan Palm Forests and the wetland complexes; one of the remaining Fan Palm patches is the largest surviving remnant in the Wet Tropics. The wetlands of Mission Beach are also considered to be of high natural integrity and contribute to four wetlands that have been mapped as nationally significant. Figure 2 shows the current habitat network at Mission Beach, while Appendix 1 maps present a summed model of biodiversity sensitivity (Pert *et al.* 2009a), threat and current level of protection.

Mission Beach is an important location for cassowaries, recognised as the site with Australia's highest density of cassowaries. The cassowary is a unique disperser of some forest tree species and thus integral to their persistence (Westcott *et al.* 2005). The cassowary conservation requirements are such that it can also be considered an ecological focal species—protection of the ecological and habitat requirements of which will secure the future of multiple species and communities in the same area (Lambeck 1997).

Unique Biodiversity Attributes of the Mission Beach Area

- *Australia's highest density of Cassowaries*
- *Very high diversity of vegetation communities*
- *Very high diversity of birds, mammals and insects*
- *Has 12.8% of all remaining lowland rainforest in the Wet Tropics and the largest contiguous stand of lowland rainforest south of the Daintree River*
- *Half of Australia's remaining Licuala Fan Palm Forests including the largest single stand*
- *Habitat for around 36% of Australia's bird species*
- *Supports at least 5% of all Australian vascular plant species*
- *A wide east-west corridor of rainforest that allows the movement of animals and plant propagules across the landscape from the coast to the highlands*
- *Wetlands of National and international significance*
- *Unique geological features such as the basaltic headland at Clump Point and Ordovician Tam O'Shanter Granite at Tam O'Shanter Point*
- *The largest suite of mainland fringing reefs between Port Douglas and Bowen*
- *Marine areas support 20% of the world's seagrass species and close to 35% of the world's mangrove species(Chenoweth Environmental Planning and Landscape Architecture 2007)*

Mission Beach was recognised in the FNQ 2010 Plan (FNQ RPAC 2000) and the FNQ NRM Plan 2004-2008 (FNQ NRM Ltd and Rainforest CRC, 2004) as one of four regional priority biodiversity hot-spots alongside Daintree, Southern Atherton Tableland and the Ingham lowlands. The Cassowary Recovery Plan identified Mission Beach as a key site for local area action (Latch 2007). Far North Queensland Regional Plan 2009-2031 (FNQ2031) recognises that Mission Beach contains significant areas of ecological significance including essential habitat of the endangered southern cassowary whose survival is critically threatened by continuing habitat loss and car strikes (Minister for Infrastructure and Planning 2009).

Djiru cultural values and significance of Mission Beach

The Mission Beach area has very important Aboriginal cultural values associated with the living traditions and practices of the Djiru Traditional Owners (The Djiru Traditional Owners and Girringun Aboriginal Corporation 2007). The Djiru are Aboriginal rainforest people whose traditional laws, customs, beliefs, cultural systems and lifestyle were shaped by the rainforest environment that provided them with shelter and sustenance. Djiru have a sense of identity as 'rainforest people' defined by a spiritual and cultural inter-relationship with all plant and animal species, and particularly with *gunduy* (the cassowary). The *gunduy* is important to the health of rainforest and the wellbeing of the people. For Djiru people, the cassowary could be considered a 'cultural keystone' species (Garibaldi and Turner 2004).

As with Indigenous people throughout Australia, colonisation by Europeans led to a dramatic disruption of Djiru traditional lifestyle and culture. From 1914 onwards most Djiru people and those from neighbouring tribes within the region were forcibly settled at the Hull River Aboriginal Settlement at South Mission Beach, under the provisions of legislation that placed all Aboriginal people living in Queensland under government control. When that settlement was destroyed by a cyclone in 1918 residents were transferred to Palm Island where many descendants still live.

Despite the severe cultural dislocation for the Djiru people which resulted in the unavoidable loss of a good deal of cultural knowledge, Djiru people have strong responsibilities and obligations to look after their traditional land. They regularly return to their country to practice traditional fishing and hunting and to fulfil their rights and responsibilities as custodians and land managers and to pass cultural knowledge to the next generation. Clump Point is one location with a very strong cultural importance to the Djiru people who visit there frequently for cultural education and other activities. Material evidence of the early residents' activities there exists in the form of middens, artefact scatters, and fish traps (The Djiru Traditional Owners in conjunction with Girringun Aboriginal Corporation, 2007). Cultural values

important to the Djiru people include places, environments, events and oral history and tangible archaeological evidence of their connection to country.

Aesthetic and lifestyle values and significance of Mission Beach

Visitors and residents of the Mission Beach region value the area for a range of attributes that contribute to a lifestyle centred on villages in coastal rainforest with cassowaries and farms. Natural features contributing to this lifestyle include: the topography, the climate, the vegetation, the native animals, beach, reef and islands. These provide a visual amenity and an opportunity for a range of recreational hobbies and activities such as walks, fishing, bird watching, boating, snorkelling and swimming. Mission Beach's special attributes have inspired a range of artistic endeavours; there are a number of art galleries, local artists and writers, and there was previously a famous artist's colony on Dunk Island (Falco-Mammone 2007). In addition, Mission Beach has an important heritage of conservation activism—John Busst led the battle to protect the North Queensland rainforests and Great Barrier Reef in the 1960s from Mission Beach, an early part of a strong history of community-driven conservation activities aimed at protecting the area's important natural and cultural values (Valentine and Hill 2008). The cassowary has a special place in this value system as an icon that reflects the aesthetic and lifestyle values of Mission Beach for the wider community (Falco-Mammone, 2007).

The urban landscape consists of small shopping and tourist precincts, small to medium hotels and resorts, restaurants and entertainment venues situated mainly in the Mission Beach, Wongaling and South Mission Beach coastal villages. Much of

the architecture and landscape design has a "tropical character" with low rise buildings interspersed with tropical gardens against a backdrop of natural vegetation and beside the sea. Mission Beach is some distance from the Bruce Highway so low volumes of traffic contribute to a slow pace and quiet atmosphere. The overall impression is of quiet and relaxing coastal villages (Falco-Mammone, 2007).

Tourism contributes greatly to the economy of the Mission Beach area and contributes to the ambience of the settled areas. Thousands of tourists per year visit the area; a recent study indicated that over 90% were attracted by the region's natural attributes (Falco-Mammone *et al.* 2006). Surveys conducted by JCU researchers in 2007 at Mission Beach through the MTSRF project on sustainable tourism further reinforced the outstanding importance of the area's natural attractions for this industry. Mission

Beach and Daintree were identified as the most preferred areas to visit due to their natural beauty and ease of access (Carmody & Prideaux 2008).

Agriculture in the area includes sugar cane, banana plantations, other tropical fruit orchards and beef production. The relative isolation of Mission Beach from the main road and rail transportation has resulted in only selective agricultural development, most of which is situated on the flat and fertile lands leaving the foreshores, wetlands, foothills and mountains forested. Over time, the relatively fertile soils and the tropical climate have resulted in the reforestation of historically abandoned farms contributing to the extent of the natural vegetation. Many farmers in the area have actively protected habitat on their lands.

The agricultural landscape provides a visual amenity for the visitors and residents, complementary to the natural forests. The crops also provide locally grown tropical produce and bush tucker which add to the diversity of the local experience for visitors (Falco-Mammone, 2007). Agriculture and tourism are critical components of the economy of Mission Beach, providing the majority of employment.

***The Cassowary** is a large flightless bird. It eats rainforest fruit and is an active disperser of many of the larger rainforest seeds and therefore critical for forest persistence (Westcott et al. 2005). The Cassowary is territorial and solitary and requires a very large foraging range – around 7 sq km.*

Cassowary numbers in the Mission Beach lowland forests are recognised as the highest anywhere in Australia. However, the existing habitat at Mission Beach has been so reduced and fragmented that negative impacts on the cassowary population are readily and frequently apparent. Cyclone Larry in 2006 highlighted the inadequacy of the remaining habitat at Mission Beach, with 11 verified cassowary deaths in the following 12 months, primarily as a result of road strikes and from dog attack. The human induced changes to the Cassowary's habitat in the Mission Beach region dramatically impacted population recovery following the cyclone, resulting in at least one cassowary dying from malnutrition, despite the feeding program (Moore 2008). There were a total of 28 verified cassowary deaths in the greater Mission Beach, Tully and Innisfail area in the 12 months following Cyclone Larry.

The cassowary as a "collaborative focal species"

Cassowaries at Mission Beach rate highly in all value categories: biodiversity, Djiru cultural and aesthetics/ lifestyle values. The term *collaborative focal species* encapsulates this combined capacity as an ecological focal species, a cultural keystone species, and a flagship species, providing community ownership and a unifying focus for transformation of this linked social and ecological system. The success of the cassowary in providing this unification is evident through public and agency enthusiasm for numerous cassowary events during the period of developing the Action Plan, including a Cassowary Summit, an art exhibition "This is Cassowary Country", a DVD "No *wabu*, no *wuju*, no *gunduy* (no rainforest, no food, no cassowary)", and a number of community-based cassowary surveys (Hardesty & Westcott 2008). The recently amalgamated Cardwell and Johnstone Shire Councils were named the Cassowary Coast Regional Council. The cassowary has been identified as very sensitive to habitat loss and degradation (Latch, 2007). Nevertheless, a focus on cassowary and its habitat alone cannot meet all the requirements of all species and other biodiversity values

have also been given scientific attention in the development of the biodiversity and threat sensitivity analyses for this Action Plan.

Urgent threats to the values of Mission Beach

The nationally and internationally significant values of Mission Beach are urgently threatened by pressures of human population growth and coastal development. Before European settlement the vegetation of the Mission Beach area was dominated by tropical forests and woodlands with smaller areas of scrub, grassland and wetland. By 2004 over 30% of the forests had been cleared mainly from the fertile and accessible areas; around 50% of the original woodlands and open forests, and around 30% of the closed rainforest have been lost. Two thirds of the original Fan Palm forests that occur near Stony Creek, North Hull River and O'Donnell Creek have been cleared. Of the remaining forest, 60% is protected within formal conservation reserves, leaving 40% threatened by development and other activities (Williams *et al.* 2009).

Five major categories of direct threat endanger valuable habitat in the region: habitat fragmentation; climate change; environmental pests; altered fire regimes; and altered water quality, flow regimes and drainage patterns (WTMA 2004). Despite some regrowth, habitat loss and fragmentation at Mission Beach is ongoing as new residential, tourist, infrastructure and other developments are permitted, significantly altering available habitat for biodiversity. A scenario for the future in 2025 based on a continuation of current trends in human population and land use change was developed to consider likely impacts of these continuing changes (Williams *et al.* 2009). Forward projections for habitat loss by 2025 identified that conversion of 470-528 ha of existing forested habitat to intensive land use, on top of the 2004 intensive land use area of 622 ha, would be required by 2025, an increase of 75-85%. The change in quality of vegetation cover was similarly dramatic with the clearing of a further 302 ha of remnant vegetation required, with most losses of coastal forests, recognised as critically endangered habitat. Further degradation of native vegetation through agricultural land use was also projected within the important rainforest corridor for connectivity from the coast to the uplands in the wet tropics (Williams *et al.* 2009).

Cassowaries are particularly vulnerable to habitat loss and degradation because: they naturally exist at relatively low population densities; are long lived; slow to reproduce; and have naturally low rates of juvenile survival. Ongoing clearing for development not only reduces the already compromised amount of habitat, it disrupts individual cassowary's movement paths, can segregate feeding and breeding sections of an individual's range, and predisposes the species to genetic isolation and local extinctions. The Cassowary Recovery

Plan notes that at Mission Beach incremental losses to the already severely fragmented habitat may eventually render the cassowary population there unviable due to a range of threats (Latch, 2007). The eight main threats to cassowaries are:

1. **Habitat loss from clearing:** more than 80 per cent of coastal lowland habitat has gone.
2. **Habitat fragmentation:** much of remaining habitat is fragmented, isolating groups and disrupting movement.
3. **Habitat degradation:** through invasion of weeds such as pond apple, and changed fire regimes.
4. **Roads and traffic:** cassowaries are killed by vehicles on roads.
5. **Dog attacks:** development brings more dogs.
6. **Hand feeding:** brings cassowaries closer to vehicle traffic and dogs.
7. **Diseases:** aspergillosis, avian tuberculosis and parasites.
8. **Natural catastrophic events:** cyclones.

Many residents are concerned about the impacts on cassowaries and biodiversity habitat which forms an integral part of the character of the area. They are also concerned about the current and potential aesthetic impacts of development on the region, fearing the "character" will be lost (FNQ RPAC 2000).

The habitats of the wet tropics bioregion are particularly vulnerable to negative impacts from climate change. Rapid and catastrophic environmental changes are possible that could lead to the extinction of many of the region's fauna and flora (Hilbert *et al.* 2001; Williams *et al.* 2003; Hilbert 2008; Queensland Government Environmental Protection Agency Office of Climate Change 2008; Williams *et al.* 2008; WTMA 2008).

Community and government motivation and action at Mission Beach

As noted above Mission Beach has a long and ongoing history of a highly motivated community taking action directly to protect the area, and enlisting the support of governments for a range of initiatives. However, habitat and cassowary conservation values at Mission Beach have effectively declined over recent years despite this history of community efforts and government planning initiatives. The key objective of the initial stage of the Action Plan was to identify the reasons for this past lack of success, and the optimal set of actions that would reduce threats. Factors that have hampered effective outcomes from past habitat conservation efforts were identified as: divergent goals of local, State and Federal agencies; insufficient resources for responsible organisations and authorities; diverse aspirations of community groups, individuals, industries and others; gaps in current institutional arrangements (e.g. development exemptions under the *Integrated Planning Act 1997*, inability to prohibit actions in local government planning schemes); and a lack of coordination and collaboration between institutions (Hill *et al.* 2008).

Past endeavours to overcome institutional fragmentation through government coordination and focus on habitat fragmentation have been hindered by different factors at different times. The award-winning Mission Beach Coastal Area Development Control Plan's mechanisms to prevent strip development were not implemented due to changes in Queensland legislative arrangements in 1997. The FNQ Regional Plan 2010 (FNQ RPAC, 2000) key implementation action of a rolling

fund to buy land at Mission Beach was never implemented as financial resources were not made available to the project. The Australian Rainforest Foundation's Cassowary Rescue Package, which received $4 million in funds from the Australian Government's National Heritage Trust, has resulted in the purchase and protection of 30 ha of important cassowary habitat at Mission Beach, and substantial investments in land purchases in the Daintree (Australian Rainforest Foundation 2008). However, the local shire plans in place in 2006 potentially allowed development within 5,600 ha or 40% of the remaining habitat at Mission Beach and ongoing habitat clearing and fragmentation—ARF's effectiveness was hampered by issues of scale and poor institutional support for protection of habitat from development (Williams *et al.* 2009).

The recent FNQ2031 (Minister for Infrastructure and Planning 2009) has achieved a much more effective planning framework to control the impacts of development on habitat. The urban footprint at Mission Beach will be constrained to minimise future impacts on ecological values, coastal hazard risks and loss of the village character. Densities are to be kept low and building heights limited to avoid increasing traffic generation and urban impacts. Future development should occur around village nodes and avoid linear form, maintain and restore cassowary habitat, and ensure good corridor connectivity (Minister for Infrastructure and Planning 2009). Future planning work is required to implement these outcomes within the new Cassowary Coast Regional Council planning scheme under the *Sustainable Planning Act 2009 (Qld).*

New initiatives by the Australian government under the EPBC Act have also helped achieve a more effective planning framework to control the impact of development on habitat. DEWHA have prepared Significant Impact Guidelines for the endangered southern cassowary (*Casuarius casuarius johnsonii*) Wet Tropics Population, EPBC Act policy statement 3.15 to provide guidance on actions that will have, or are likely to have, a significant impact on cassowaries and therefore require approval. Additionally, Littoral Rainforest and Coastal Vine Thickets of Eastern Australia have been listed as a Critically Endangered ecological community under the EPBC Act. This community is likely to occur extensively at Mission Beach.

These experiences have taught us that a sustained effort over a number of years is required, focusing on the most strategic actions and optimal sites for investment, underpinned by rigorous science, coordinated across multiple agencies with responsibility and jurisdiction, and supported by the community.

Re-doubling our efforts through optimal investment at Mission Beach

Key actions to address threats

The very destructive Cyclone Larry (in 2006) highlighted the urgent need to re-double efforts despite these past poor outcomes—Mission Beach habitat and cassowary populations showed low resistance to cyclonic impact and there was a dramatic visual amenity change. Research identified that building ecological resilience and landscape health at Mission Beach through more effective natural resource management response strategies is required (Turton & Dale 2007; WTMA 2008). Factors that contribute to ecological resilience include:

- Biological diversity – ecological systems with high biological diversity generally have greater inherent resilience
- Connectivity - capacity for recovery depends largely on the ability of plant and animal populations and ecological processes to move or disperse across the landscape
- Refugia – refugia are areas where ecosystems are buffered from pressures or disturbance; important features include adequate extent and diversity of habitat.

The key measures to strengthen ecological resilience of habitat and reduce threats include:

- Protecting wildlife corridors;
- limiting further clearing;
- rehabilitating previously cleared areas;
- protecting important habitat refuges and
- managing the threat of environmental pests (WTMA 2008).

In relation to cassowaries, specific additional measures that are required to strengthen resilience include:

- Reducing traffic strikes and dog attacks
- Raising people's awareness of the risks to cassowaries from cassowary-human interactions (Latch 2007).

These science-based measures have been brought together through the work of the Action Committee and community collaboration into the eight strategies that form the basis of the Action Plan (see "Strategies and Projects" on the next page).

Optimal habitat investment in key actions

Resources to invest in conservation of habitat are always insufficient for the scale of the task (Joseph *et al.* 2009). Optimal biodiversity investment analysis to ensure the most appropriate actions are being undertaken through the Action Plan occurred at two levels:

1. The identification of Mission Beach as a priority within the larger wet tropics bioregion; and
2. Prioritisation of key sites for investment in actions through a collaborative habitat investment atlas incorporating models of biodiversity sensitivity, level of protection, threat and habitat condition. Other data regarding costs of land for acquisitions, costs of incentives, land-owner willingness to be involved, levels of entrepreneurship and social capital are being incorporated over time.

The high biodiversity of Mission Beach, and its location in an important rainforest corridor from the lowlands to the highlands (Figure 2), as well as its habitat diversity, underpin its significance as a regional biodiversity priority hot-spot and therefore optimal site for investment in habitat action within the bioregion (WTMA 2004). Mission Beach was recognised in the FNQ 2010 Plan (FNQ RPAC 2000) and the FNQ NRM Plan 2004-2008 (FNQ NRM Ltd and Rainforest CRC, 2004) as one of four regional priority biodiversity hot-spots alongside Daintree, Southern Atherton Tableland and the Ingham lowlands. The Cassowary Recovery Plan identified Mission Beach as a key site for local area action (Latch 2007). Substantial investment

has occurred in the Daintree and is ongoing. Terrain NRM and its partners have prioritised the Southern Atherton Tableland as the next site for similar concentrated efforts as are occurring at Mission Beach, reflecting program logic within the twenty to thirty year time frame required to re-build ecological resilience in the wet tropics (WTMA 2004).

Prioritisation of key sites for investment is an ongoing process using the Collaborative Habitat Investment Atlas (Pert *et al.* 2009b). The atlas is a participatory tool that promotes dynamic interaction among stakeholders through two aspects: variables whose weightings in the analysis can be altered to reflect different biodiversity protection requirements; and formula-based dynamic attributes that are automatically updated as changes are made in the weighting of variables (Oroton Family Foundation and Placeways 2009). Three sub-models have been brought together to facilitate an optimal decision making process:

1. Biodiversity (Conservation) Sensitivity Model—which incorporates and weights up to 15 biodiversity attributes as decided by the Expert Panel.
2. Threat Model—which incorporates and weights areas potentially cleared in the previous Business as Usual 2025 scenario analysis, areas currently affected by intensive and pervasive land use using a vegetation condition classification based on the VAST (Vegetation Assets States and Transition) framework (Thackway & Lesslie 2006), likely climate change patterns and other data.
3. Protection level model—which summarise and weights protection levels from the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*; *Vegetation Management Act 2000 (Qld)* and *Integrated Planning Act 1997 (Qld)*, as well as using the urban and rural living footprints of the Far North Queensland Regional Plan 2009-2031 (Minister for Infrastructure and Planning 2009).

Maps 1, 2 and 3 in the Appendix show the outputs from these models.

Strategies and Projects—the Action Plan

Central to the Plan are community partnerships to implement projects within each of 8 strategies:

1. Habitat Protection and Restoration
2. Traffic Management
3. Exotic Species Management
4. Agricultural Management
5. Management by Traditional Owners
6. Residential and Infrastructure Management
7. Tourism Management
8. Building Community Strength.

The detail of the strategies and projects that form the core of the Action Plan can be found in the Tables at www.terrain.org.au/missionbeach. The Tables are also included at the end of this document, but are best accessed on the web, as they contain hot-links and are periodically updated. The intention is that the Tables be updated at least annually. The copy of the Tables at the end of this document is current at the publication date. The Tables contain agreed targets (10-20 years), measures of progress, objectives (1-5 years), projects, partners, tasks and outputs. The MBHNAP

is a community plan with no set time frame for revision. The targets have been set with a 10-20 year timeframe, and should ideally be revised in five years, and certainly no later than 10 years. Within this timeframe, the measures of progress, objectives, projects, partners, tasks and outputs will be updated as appropriate.

Our priority projects and their delivery

Mission Beach Habitat Network Action Plan does not have just a single "owner" who is responsible for implementation—the plan coordinates, and seeks greater investment in, actions by community, industry and government. Responsibility and accountability is achieved through implementation partnerships. Projects to deliver actions have been developed in partnership with the key government, community and industry agencies who will lead those projects. Mission Beach Habitat Network Action Committee (hereafter Action Committee) consider that all the projects are integral to achieving the community vision. Rather than a set of options, the projects should be viewed as an integrated portfolio that in totality will achieve landscape-scale conservation that is socially inclusive.

Comprehensive community consultation, including a workshop with the Action Committee, and the technical tool "Investment Framework for Environmental Resources" (Pannell & Roberts 2009) were used to prioritise the projects for investment. The INFFER process provides a systematic means of assessment against multiple criteria including technical feasibility, public benefit, likely adoption and value for money. The following projects were recommended for immediate investment:

- Action Plan implementation—led by Terrain NRM.
- Incentives for habitat protection and restoration—led by Terrain NRM
- Planning mechanisms for cassowary habitat protection at Mission Beach—led by Department of Infrastructure and Planning.
- Voluntary acquisition of habitat—led by Rainforest Rescue, C4 and Department of Environment and Resource Management.
- Collaborative habitat investment atlas—led by CSIRO.
- Cassowary traffic strategy—led by the Department of Main Roads.
- Management by Traditional Owners—led by Djiru Aboriginal Corporation and Girringun Aboriginal Corporation.
- Exotic species management (including weeds and feral pigs)—led by Cassowary Coast Regional Council and Terrain NRM.
- Mission Beach biodiversity values, cassowary ecology and monitoring—led by CSIRO/Terrain (MTSRF partnerships central to science input).
- Ecotourism strategy—led by Mission Beach Business and Tourism.

Our success barometer

A critical part of the Plan implementation is monitoring and evaluation. This allows the community and other implementation partners to assess our success in achieving the identified management objectives and the overall goal of the Plan. This information can then be fed into the revision and tailoring of tasks to obtain better outcomes. Our monitoring and evaluation is based on hierarchical structuring from activities through to long term goals (Figure 3). Spatial display of the ongoing monitoring of status and condition of Mission Beach habitat, including results from cassowary faecal DNA population project, through the Collaborative Habitat Investment Atlas will be useful and requires more investment to ensure efficacy.

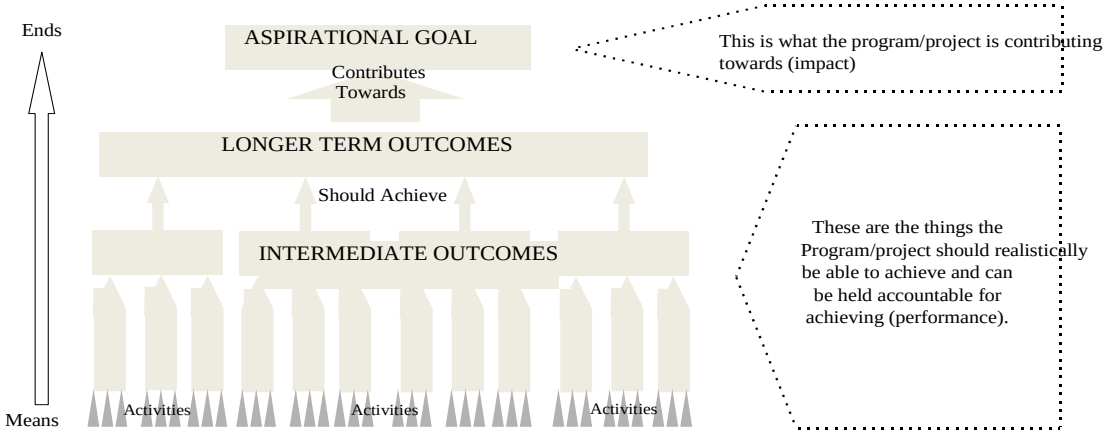


Figure 3: The conceptual framework used as a basis for considering appropriate monitoring and evaluation protocols for various elements of the Mission Beach Habitat Network Action Plan implementation.

The aspirational goal for this plan is achievement of the vision defined by the community for a future in which Mission Beach is a sanctuary for wildlife with a strong, environmentally responsible human community living sustainably and valuing cultural diversity—urban, farming, and forest ecosystems blend to maintain a harmonious setting with strong visual appeal. The longer term outcome is the action plan goal to protect a network of habitat that is ecologically viable and protects community identified values related to lifestyle, culture and the natural environment. Monitoring mechanisms for the aspirational goal and longer term outcome have been selected by systematic application of monitoring questions, and interrogation of underlying risks and assumptions. Table 1 below summarises this approach for the aspirational goal and the longer-term outcome related to ecological viability of habitat.

Intermediate outcomes from the Plan were considered to be those changes in the condition of habitat, including its ecological, social, cultural and economic dimensions that could be expected to be achieved within 10-20 years. These intermediate outcomes are shown as targets alongside the monitoring mechanisms in our Action Plan Tables. These monitoring mechanisms have been selected through a similar process to those for the aspirational goal and longer term outcome. They

include, for example, the CSIRO participatory faecal DNA survey that uses genetic identification of the DNA in cells in cassowary faeces to ascertain cassowary numbers and distribution across the landscape and habitat types (Hardesty & Westcott 2008).

Table 1: The Aspirational goal and longer term outcomes for the Mission Beach Habitat Network Action Plan

Objective Hierarchy	Monitoring Questions, Indicators	Monitoring Mechanisms	Assumptions and Risk
Aspirational Goal			
Healthy, diverse and connected regional landscape that continues to support the high biodiversity values of the wet tropics and their heritage significance to regional, national and international communities	Best landscape design and habitat management principles under climate change Best landscape design and habitat management principles for ecosystem and species population health Ecosystems response to climate change Threats (exotic species, disease) responses to climate change	Population census Ecosystem condition assessment Habitat extent and linkage value Management responses based on established best-practice principles	Positive assumption: the identified landscape design and habitat management principles apply rigorous biodiversity science and are sufficient to support continued high biodiversity values Risk: catastrophic climate-change events e.g. serial category 5 cyclones or drought-induced fires push habitat beyond thresholds
Longer-term outcomes			
Improvement in the ecological viability of habitat at Mission Beach through increased extent, connectivity and condition, with a focus on high biodiversity values, cassowary habitat, threatened species and refugial areas	Cassowary population dynamics are well understood in priority areas Cassowary population models are developed and applied to priority areas Cassowary land use and effectiveness of restored corridors assessed Priority regional high biodiversity hotspots and refugia within the cassowary habitat matrix maintain their ecological integrity Viability of threatened species populations maintained Baseline extent, connectivity (linkage value) and condition have improved	Database of progress of program outputs e.g. ha planted; landholders, MOUs, covenants, management principles achieved Cassowary population viability and trends monitored using faecal DNA technique and modelling (cassowary numbers) Native vegetation cover monitored and analysed through remote sensing (includes cassowary habitat extent and condition)	Positive assumption: planned program outputs including MOUs etc. are able to be delivered Risk: planned program outputs not undertaken due to a lack of government and community commitment in the face of other emerging urgent priorities (e.g. immediate cyclone response)

Alignment with Australian government priorities

The Action Plan aligns with several Australian government priorities for investment in their 2008-2013 Caring for our Country Outcomes document (Australian Government 2008).

Biodiversity and Natural Icons:

- Increasing native habitat—Increase by at least one million hectares, the area of native habitat and vegetation that is managed to reduce critical threats to biodiversity and enhance the condition, connectivity and resilience of habitats and landscapes.
- Reduce the impact of invasive species

Coastal Environments and Critical Aquatic Habitats: Increasing coastal community engagement:

- Increase the community's participation in protecting and rehabilitating coastal environments and critical aquatic habitats.

Sustainable Practices:

- Improving management practices—Increase the number of farmers who adopt stewardship, covenanting, property management plans or other arrangements to improve the environment both on-farm and off-farm.
- Improving knowledge and skills of land managers—Improve the knowledge, skills and engagement of at least 30 per cent of land managers and farmers in managing our natural resources and the environment.

Community skills, knowledge and engagement: Increasing participation in natural resource management:

- Increase the engagement and participation rates of urban and regional communities in activities to manage natural resources and to help protect the environment.
- Ensure the continued use, support, and reinvigoration of traditional ecological knowledge to underpin biodiversity conservation.

How we did the Action Plan

We used an adaptive community-based biodiversity conservation design cycle of six stages (Figure 4) to develop the Mission Beach Habitat Network Action Plan (Hill *et al.* 2010).

1. *Exploratory analysis*

During this phase:

- Stakeholder groups were identified, consulted and included;
- Biodiversity, cultural and aesthetic lifestyle features of the regions were explored through workshops and/or research;
- Issues with the potential to impact on biodiversity (including cassowaries) (such as residential developments, traffic, feral animals, etcetera) were identified through collation of existing research and undertaking new research; and
- An analysis of relevant laws, policies and plans was made and all relevant organisations identified, and the relationship of the Action Plan to other plans was clarified (Figure 5).

2. *Community Ownership*

During this phase:

- A governance system for the process was established in the form of the Mission Beach Habitat Network Action Committee;
- Consultations were undertaken through community workshops complemented by releases through the media and other avenues of a range of reports, booklets and information articles; and,
- Scoping activities were undertaken to develop an informed picture of the state of the landscape in 2025 under current "business as usual" practices.
- Shared community vision for desired future was formulated, recognising multiple values
- Issues (threats, barriers and opportunities) relevant to achieving the vision were identified.

3. *Strategy and Project Identification*
    - Biodiversity conservation goals and priorities were developed using analysis of landscape scale biodiversity/habitat connectivity, habitat condition, and significance
    - Draft strategy targets were developed using the community-derived vision and issues as the starting point and incorporating analysis of values and scientific reports
    - Draft management strategies were identified—tourism, traffic, habitat protection and restoration, exotic species, residential, agricultural, Djiru traditional owner, and building community strength;
    - Draft strategies were developed in partnerships with science, community and traditional owners, and circulated for public comment through the Mission Beach Habitat Network Action Committee process
    - The Collaborative Habitat Investment Atlas (CHIA) was developed to display and interact with spatial information on habitat condition, significance, protection and opportunity for investment.

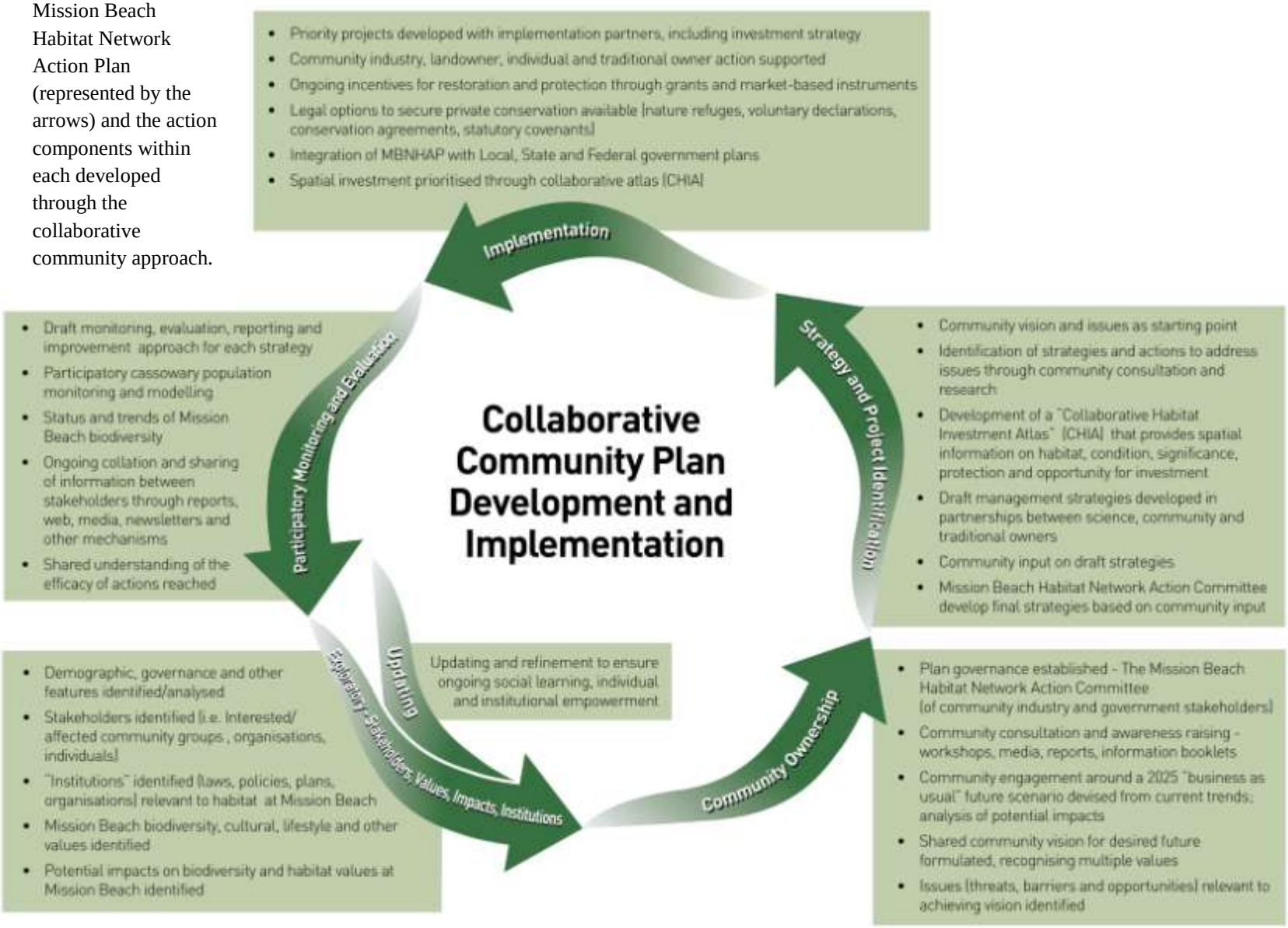
4. *Implementation partnerships*
    - Investment strategy and priority projects were identified (ongoing progress)
    - Community, industry, landowner, individual and traditional owner actions were supported
    - Incentives are being made available for restoration and protection through grants and market-based instruments
    - Legal options to secure private conservation have been identified (nature refuges, voluntary declarations, conservation agreements, statutory covenants)
    - MBHNAP is being integrated and aligned with Local, State and Federal government plans (Figure 6)
    - Spatial investment is prioritised through collaborative atlas (CHIA).

5. *Participatory Monitoring and Evaluation*
    - Draft monitoring, evaluation reporting and improvement approach is underway for each strategy
    - Participatory cassowary population monitoring and modelling has commenced
    - Ongoing collation and sharing of information between stakeholders through reports, web, media, newsletters and other mechanisms is occurring
    - Shared understanding of the efficacy of actions reached is an important goal.

6. *Updating*
    - Updating and refinement is occurring to ensure ongoing social learning, individual and institutional empowerment.

Our August 2009 MBHNAP Public Consultation Draft provides substantial detailed information about how we did the Plan, including all the biodiversity and planning science that underpins it.

Figure 4: The six steps within the Mission Beach Habitat Network Action Plan (represented by the arrows) and the action components within each developed through the collaborative community approach.



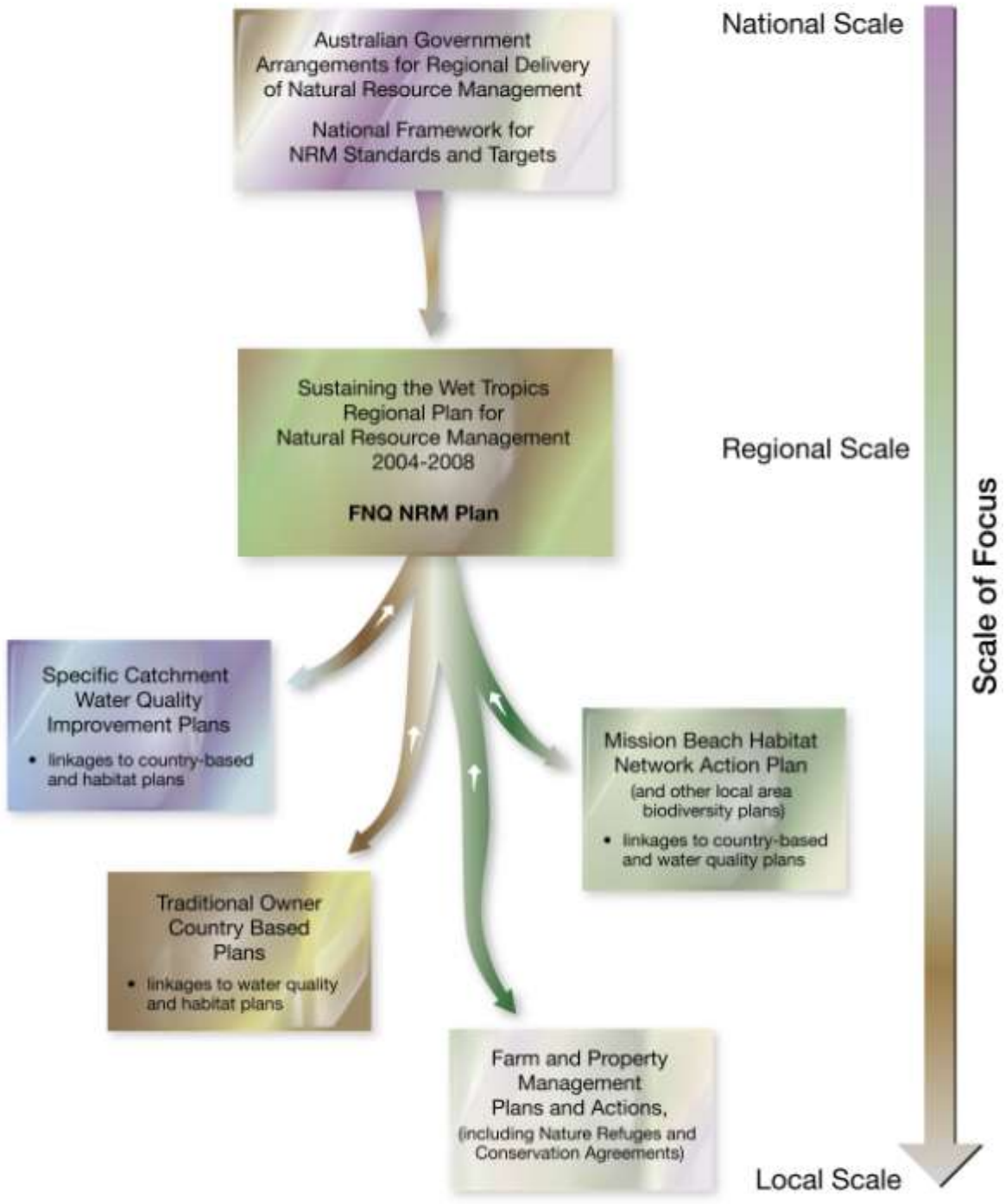


Figure 5: The relationship between the Mission Beach Habitat Network Action Plan and other plans at the local and regional scale

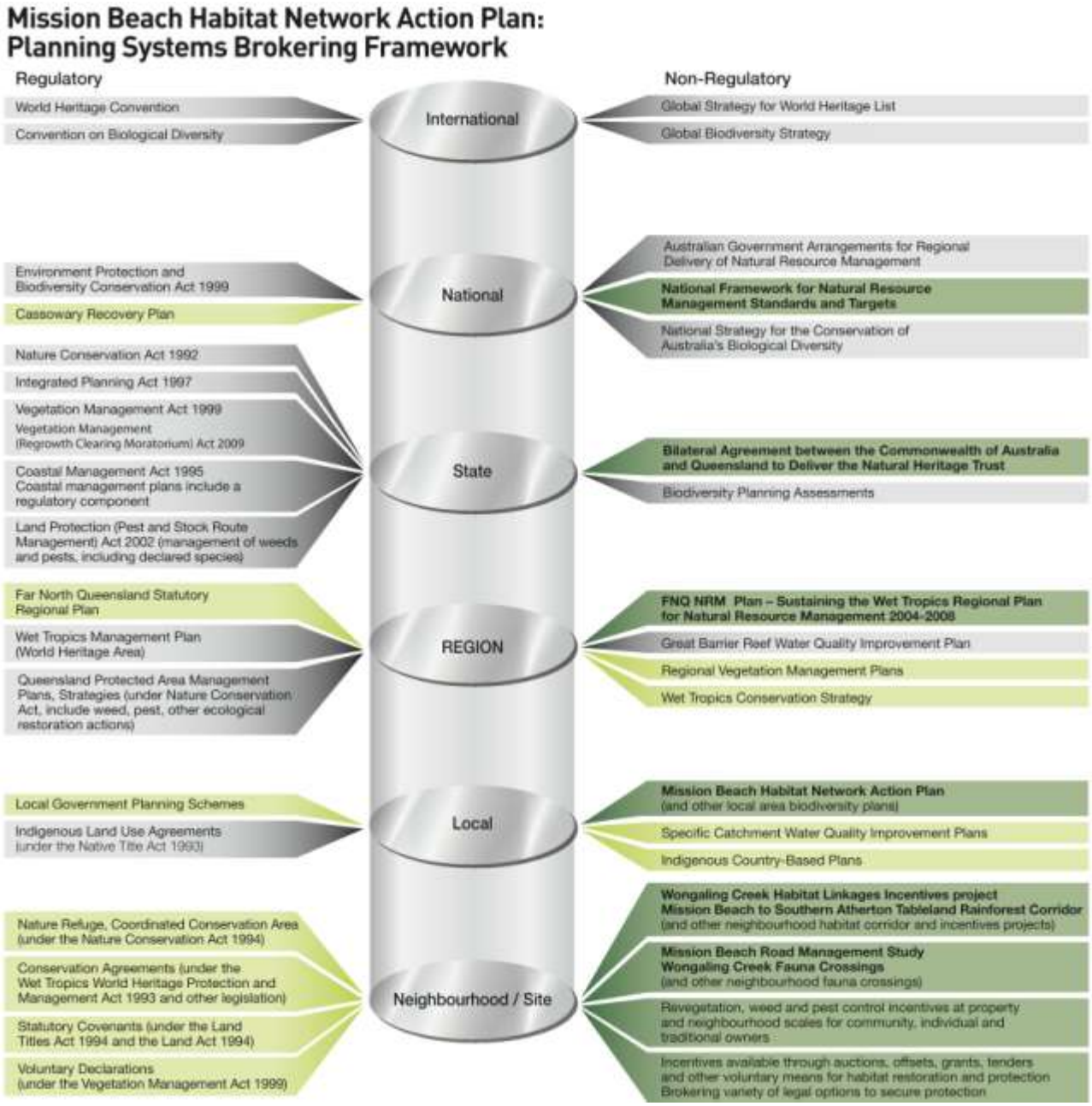
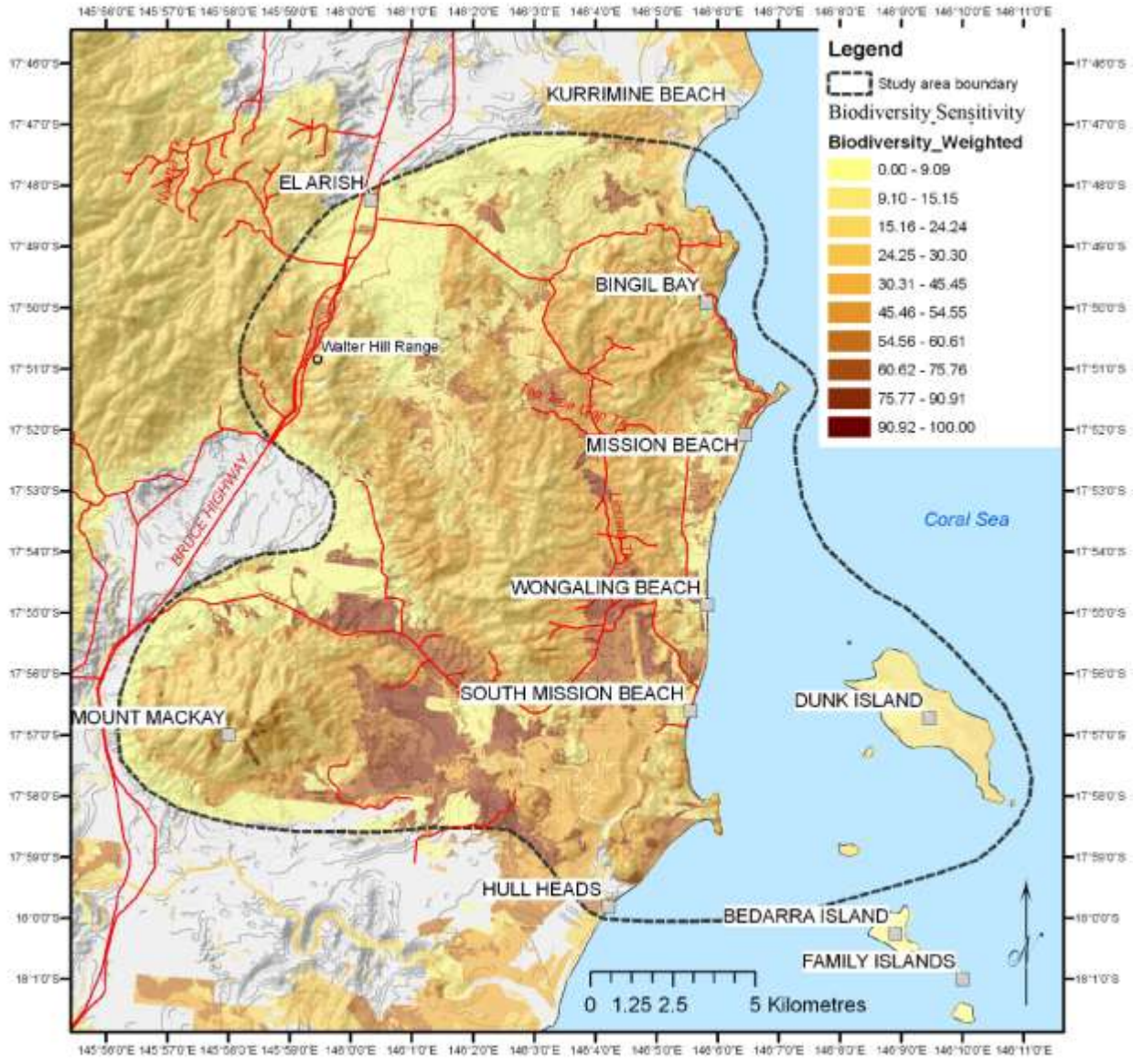
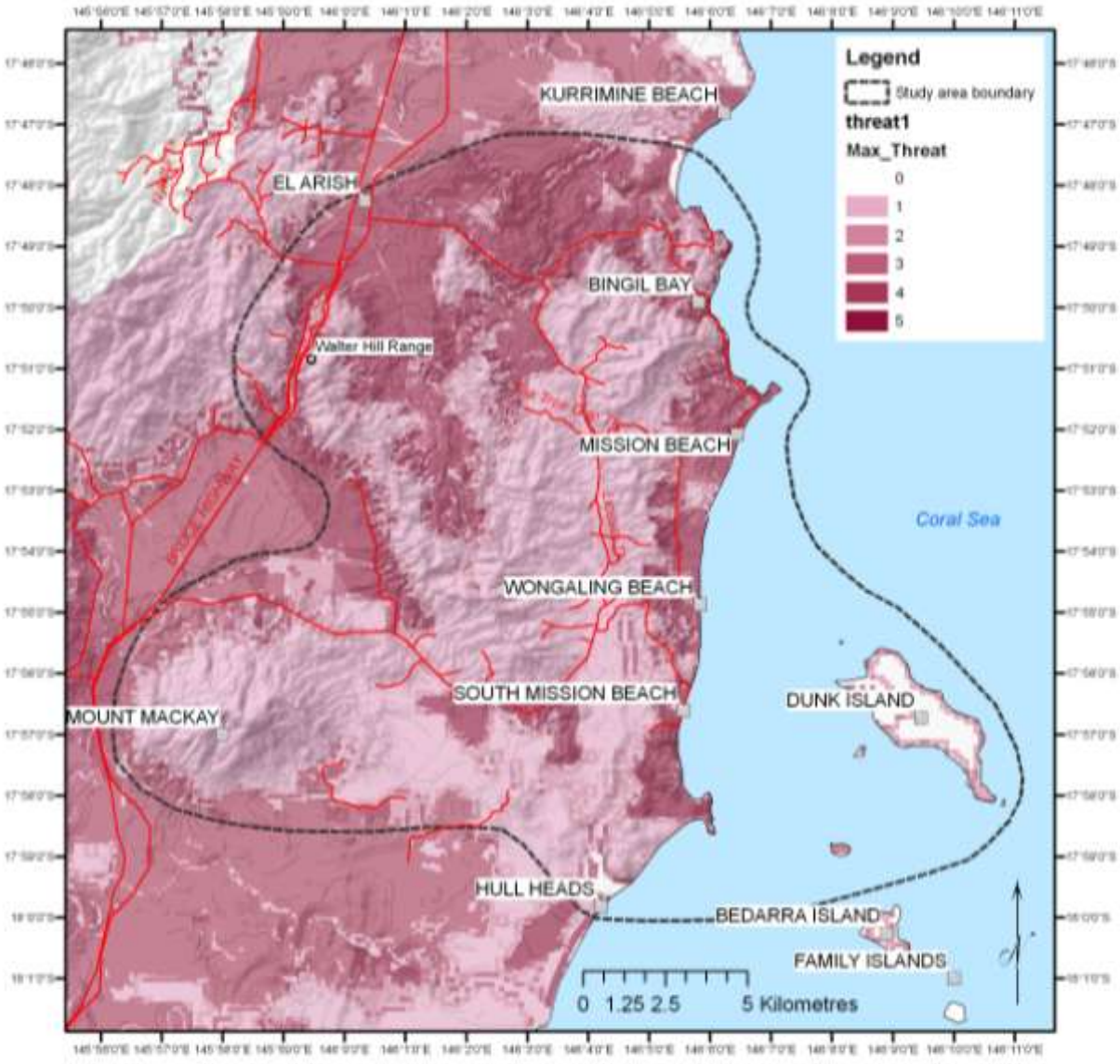


Figure 6: The relationship between the Mission Beach Habitat Network Action Plan and other plans, acts and instruments from the neighbourhood scale through to the international scale. The instruments highlighted in dark and light green represents spheres of direct and indirect interest (Peterson *et al.* 2007).

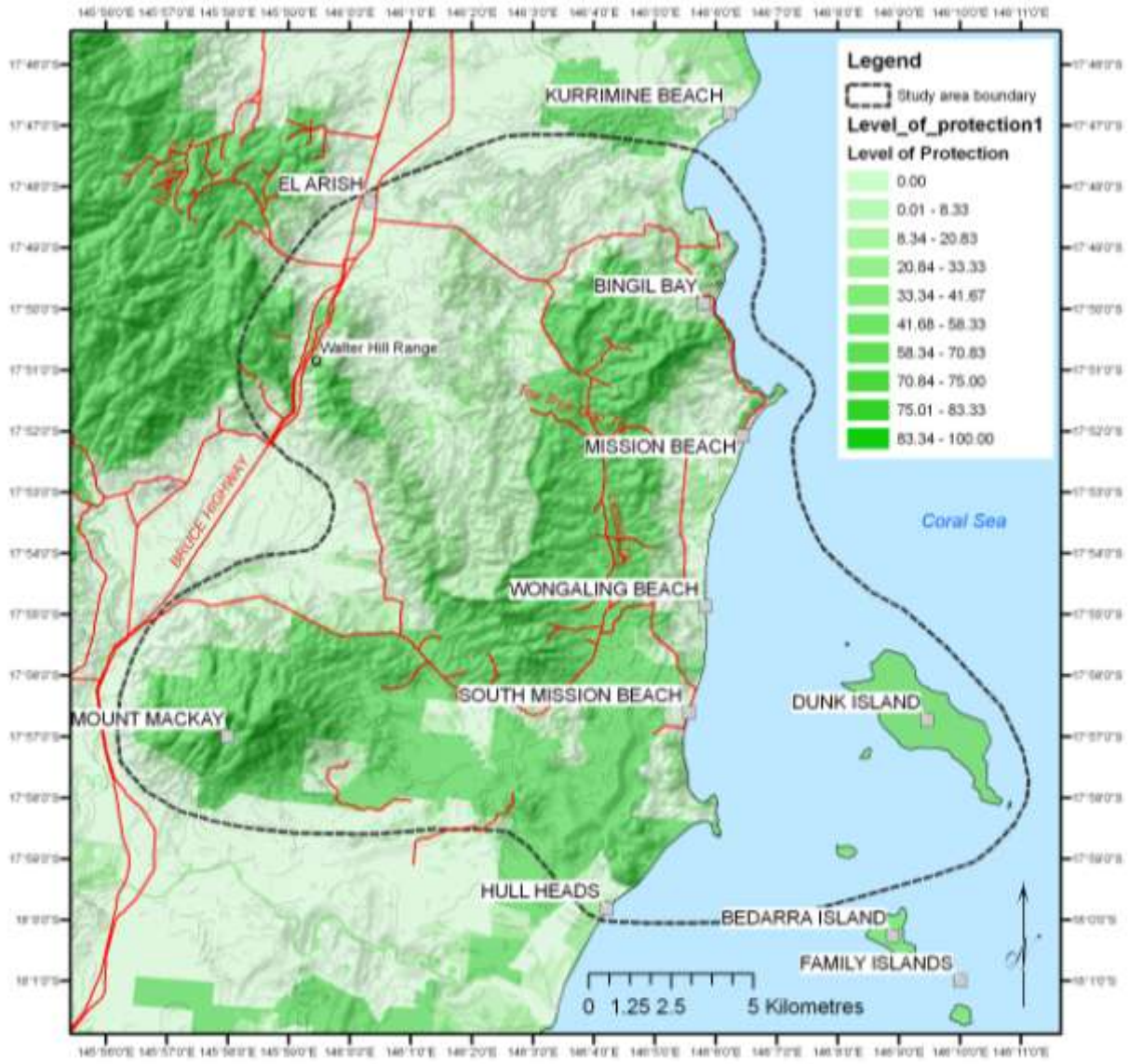
Appendix One: Maps



Map 1: Summed biodiversity sensitivity model for Mission Beach (0 to 100 increasing sensitivity based on rarity, diversity and connectivity)



Map 2: Summed threat model for Mission Beach (0 to 5 increasing level of threat)



Map 3: Summed level of protection model for Mission Beach (0 to 100 increasing level of protection)

Appendix Two: Action Committee Terms of Reference

MISSION BEACH HABITAT NETWORK ACTION PLAN
COMMITTEE
TERMS OF REFERENCE

Mission Beach Habitat Network Action Plan
Terrain NRM is a non-government organisation working with government, industry and the community to coordinate natural resource management in Far North Queensland. Terrain NRM's Regional Plan identifies Mission Beach as an area of outstanding biodiversity significance requiring a coordinated conservation effort. Terrain NRM is working with stakeholders to identify, protect, restore and manage a habitat network at Mission Beach that is ecologically viable and protects cultural values. This body of work is known as the Mission Beach Habitat Network Action Plan. Mission Beach is shown in Figure 1.

Membership
The Committee consists of members from the major Mission Beach biodiversity stakeholders, including the following government, industry and community groups:

- Mission Beach Community Association
- Community for Coastal and Cassowary Conservation (C4)
- Djiru Traditional Owners
- Australian Rainforest Foundation
- Mission Beach Business &Tourism
- Northern Development Industry Association (development industry representative)
- FNQNRM Industry Advisory Group (agricultural industry representative) & Growcom
- Cassowary Coast Regional Council (formerly Johnstone Shire Council and Cardwell Shire Council)
- Department of Infrastructure and Planning
- Department of Environment & Resource Management
- Wet Tropics Management Authority
- Department of Environment, Water, Heritage and the Arts
- James Cook University
- Commonwealth Scientific & Industrial Research Organisation
- Department of Transport and Main Roads
- Mission Beach Agriculture & Conservation Committee

Members will liaise with their organisation and provide advice on behalf of their organisation.

A Chair will be provided by Terrain NRM.

Purpose
Terrain NRM has established the Committee to guide the development of the Mission Beach Habitat Network Action Plan, specifically to.

- facilitate community ownership of the Action Plan;
- provide a forum for stakeholders to inform the development of the Action Plan;

- provide a strong foundation to ensure the Action Plan is resourced and implemented;
- work in partnership with Terrain NRM; and
- provide opportunities to contribute to securing the outstanding natural and cultural values of Mission Beach, including through a two-way flow of information.

Function
Terrain NRM will provide Mission Beach Habitat Network Action Plan proposals to the Committee for the Committee's consideration.
The Committee will consider the proposals and provide recommendations on the proposals, using a consensus-based decision-making process. (Where consensus is not forth-coming, Terrain NRM will initiate a process to resolve the issue.)
Terrain NRM will refine the proposals to reflect the recommendations of the Committee.

Meetings
The Committee will meet approximately quarterly throughout 2007 and 2008 as needed at significant points in the development of the Mission Beach Habitat Network Action Plan.

Administration
Terrain NRM will undertake all administrative and organisational support for the Committee.

Remuneration
The Committee is voluntary, where members are generally not remunerated for their time spent in performing Committee activities. Meetings will be held in Mission Beach to minimise travel for most members. Committee members who are not paid to attend MBHNAP Committee meetings as a part of their normal work functions are eligible to claim:

- an honorarium of $50/day/Committee meeting, and
- private vehicle expenses for a return journey between their residence and the meeting venue at the rate of $0.60/km/Committee meeting.

Payments will be made by Terrain NRM's Mission Beach Local Area Planning Officer on request.

Insurance
Unless covered by other insurance policies, Committee members shall be covered by Terrain NRM's insurance policies whilst engaged in the business of the Committee.

Mission Beach Habitat Network Action Plan: Tables

The Action Plan is founded on community partnerships to implement projects within each of 8 strategies:

1. Habitat Protection and Restoration
2. Traffic Management
3. Exotic Species Management
4. Agricultural Management
5. Management by Traditional Owners
6. Residential and Infrastructure Management
7. Tourism Management
8. Building Community Strength.

The tables on the following pages set out targets, measures of progress, objectives, projects, partners, tasks and outputs in each strategy. For clarity, we provide the following definitions.

Strategy	A theme that collects groups of projects that address a particular component of the work required to achieve the overall goal of a network of habitat that is ecologically viable and protects community-identified values related to lifestyle, culture and the environment. Themes are related to specific threats such as habitat loss and degradation, traffic strike, or opportunities such as Traditional Owner and agricultural management.
Targets	Desired outcomes (10-20 yr) for the condition of habitat, including its ecological, social, cultural and economic dimensions. Similar to "Resource Condition Targets" in the Australian NRM framework (Natural Resource Management Ministerial Council NRMMC 2002).
Measures of progress	These measures will inform us about progress towards the achievement of the target. A range of practical and scientific indicators are used, including stakeholder-defined indicators that are suitable to support social learning about change.
Objectives	Intended actions (1-5 yrs) that will deliver the targets. These are what the Action Plan should realistically achieve and Terrain NRM as the champion be held accountable for catalysing. Similar to "Management Action Targets" in the Australian NRM framework.
Projects	Projects are the groups of feasible tasks that will achieve the objective, identified in collaboration with the partners. Projects will be implemented through partnerships.
Partners	Partners are stakeholders, many of whom are already implementing or committed to projects. However, partners are not obliged to endorse or implement the list of tasks. Lead partners, shown in bold, are those organisations that have been identified as the most appropriate to lead project implementation.
Tasks	Specific activities identified as necessary to implement the project.
Outputs	Outputs are tangible. Two types of outputs are listed - results from the specific activities (e.g. reports, workshops) and ongoing programs associated with the specific activities (e.g. Action Committee).

HABITAT PROTECTION AND RESTORATION STRATEGY

Targets		**Measures of progress**	
• The extent, condition, connectivity and resilience of habitat is increased at Mission Beach • Native animals can move between habitat areas through native vegetation along corridors and creeks • The contribution of Mission Beach habitat as a key large-scale corridor in the bioregion is stronger as a result of protection of existing habitat and revegetation that ensures effective linkages across all habitat. • Cassowaries are thriving in native habitat at Mission Beach • The protected area estate is expanded to meet the targets of the National Reserve System • Habitat has sufficient condition and connectivity to resist the impacts of climate change and extreme events • Habitat protection and restoration is based on the most up-to-date and rigorous biodiversity science		• Number of priority properties with active works • Number of conservation agreements secured • Meeting the targets of the National Reserve System • Results from the faecal DNA cassowary monitoring (trends in cassowary numbers) • Results from MTSRF biodiversity status and trends project • Collaborative Habitat Investment Atlas is widely available and used • Predicted ecosystem response to climate change is factored into landscape design and management principles • Offsets demonstrate habitat and cassowary population outcomes	
Objective	**Projects and partners**	**Tasks**	**Outputs**
Spatially explicit priorities are identified at fine scale based on best evidence	**Collaborative Habitat Investment Atlas (CHIA)** **CSIRO** Terrain NRM, WTMA, DERM, DIP, MTSRF, JCU	• Develop an interactive mapping atlas incorporating biodiversity significance, threat, condition, level of protection, conservation opportunity and other parameters • Use the atlas to prioritise investments in habitat protection and restoration • Regularly update the information, data and models • Engage biodiversity science experts in review of the data, models and their applications	• Conservation significance and biodiversity condition and status assessment for collaborative investment (report) • Current and Business-As-Usual 2025 Scenarios
Habitat is protected through alignment and capacity of the Federal, State and local government planning mechanisms that regulate development	**Planning mechanisms for cassowary habitat protection at Mission Beach** **DIP** CCRC, Terrain NRM, DEWHA, DERM, Djiru Traditional Owners, Development Industry	• Review and update development approvals report (CCRC) • Assess potential risks of cassowary habitat and corridor loss and statutory planning response options (DIP/DERM) • Assess options for strategic assessment under EPBC (DEWHA) • Broker information into relevant Federal, State and local government planning processes (Terrain NRM) • Ensure offset policy restricts offsets to	• Mission Beach Development Mapping 2008 (Report) • EPBC Act Policy Statement 3.15 Significant Impact Guidelines for the endangered southern cassowary (*Casuarius casuarius johnsonii*) Wet Tropics Population • FNQ2031

		non-cassowary habitat residual impacts	• Queensland Government Offset Policy • Terrain NRM Offset Policy • WTMA Offset Policy • CCRC Planning Scheme
High priority habitat for investment in protection (as identified through CHIA) is voluntarily acquired and included into the National Reserve System (NRS)	**Voluntary acquisition of habitat** **Rainforest Rescue and C4 (non-government)** **DERM (government)** WTMA, DEWHA, Djiru Traditional Owners, Rainforest Information Centre, Queensland Trust for Nature, Bush Heritage Australia, Australian Wildlife Conservancy, landholders and other non-government conservation organisations	• Voluntarily acquire habitat on private lands to assist in meeting the NRS targets, based on priorities identified through CHIA and habitat linkage mapping • Acquire habitat for joint management with Djiru people • Resolve tenure on the Unallocated State Lands including recognition of Djiru interests and ensure habitat is managed consistent with inclusion in the NRS in accordance with agreed outcomes • Ensure protected area estate has sufficient resources for ongoing management to standards consistent with the NRS	• Mission Beach Buy-Back
The habitat network, including corridors and cassowary, is maintained and restored through protection and rehabilitation projects supported by voluntary incentives	**Incentives for habitat restoration and protection** **Terrain NRM** DERM, WTMA, CCRC, Djiru Traditional Owners, C4, Conservation Volunteers Australia, MBA&CC, landholders and other non-government conservation organisations	• Use CHIA and habitat linkage reports to identify priority properties for restoration and protection • Provide information and incentives to priority landholders for habitat protection using Private Conservation Mechanisms • Provide information and incentives to priority landholders for habitat restoration to agreed regional standards and ensure the restored area is maintained in the landscape using Private Conservation Mechanisms • Enable government agencies to implement Private Conservation Mechanisms agreed with land holders • Ensure protection and restoration incentives cover survey costs, long-term maintenance costs, monitoring and	• Private Conservation Mechanisms Factsheets Series 1-6 (Report) • Wongaling Creek Habitat Linkage Report • Wongaling Corridors Conservation Incentives • Wongaling-South Mission Beach Habitat Linkage Report • Collaborative Habitat Investment Atlas (Maps) • Regional Revegetation Guidelines (Draft) • Mission Beach Revegetation Projects • Council-managed Reserves at Bingil Bay • Council-managed Reserves

		opportunity costs • Monitor the health and condition of restored habitat guided by the Revegetation Toolkit • Ensure any restoration required off-site in association with development approvals is targeted to properties identified as priorities using CHIA and the habitat linkage reports • Develop guidelines on desired corridor characteristics and use them to guide restoration and protection projects • Investigate appropriate mechanisms for incentive delivery including auctions, grants, ecosystem service payments, tax relief and other measures	at Clump Point • South Mission Beach-Kennedy Bay Habitat Linkages Map
Habitat protection and restoration actions at Mission Beach are updated and refined by improved understanding of cassowary ecology	**Cassowary ecology** **CSIRO** MTSRF, WTMA, Terrain NRM, JCU, DERM, C4, Djiru Traditional Owners, University of Queensland	• Undertake a population study of cassowaries at Mission Beach • Determine the population genetic structure, survival rates and causes of mortality through the population study • Investigate cassowary movements in relation to use of habitat, landscape characteristics and roads • Maintain and make available data bases relevant to cassowary ecology including cassowary profiles, deaths, incidents, movement, sightings and other relevant information • Investigate the epidemiology and prevalence of disease in cassowary populations	• Pilot participatory cassowary faecal-DNA survey • DERM Cassowary Database and Map • C4 Cassowary Sightings Data incorporating University of Queensland Project Cassowary
Information on the full range of Mission Beach biodiversity values is available	**Mission Beach biodiversity values studies** **Terrain NRM** CSIRO, DERM, CCRC, JCU, Djiru	• Study vegetation on coastal basalt • Map the distribution of EPBC listed littoral rainforest • Identify littoral rainforest transformer weeds[5] • Conduct mammal surveys for	• Council-managed Reserves at Clump Point • Council-managed Reserves at Bingil Bay • Biodiversity Significance of Mission Beach

[5] Transformer weeds are highly invasive taxa with the potential to seriously alter the structure and function of the ecological community.

		mahogany gliders, quolls, green possums, tree kangaroos • Conduct surveys of reptiles, amphibians and invertebrates • Report on the ecological significance of the Mission Beach-Southern Atherton Tablelands Rainforest Corridor • Assess impacts of road verge management on arboreal species • Wongaling Creek coastal complex ecological study • Communicate new information on flora and fauna to the community	• Mission Beach-Southern Atherton Tablelands Rainforest Corridor (information sheet)
Ensure cassowaries under stress are managed using methods that are supported by science and the community	**Cassowary disaster management, rescue, rehabilitation and release** **DERM** Veterinarians, Terrain NRM, Community individuals and organisations, CSIRO	• Review, with community and scientific input, operation of Garner's Beach cassowary rehabilitation facility • Ensure any cassowary translocations are conducted in accordance with IUCN best-practice guidelines and respect Djiru cultural protocols • Prepare a guideline for post-cyclone cassowary recovery	• DERM Wildlife Hotline and cassowary rescue program
Monitoring of habitat and cassowary status and trends is sufficient to determine whether the Mission Beach Habitat Network Action Plan targets have been met	**Monitoring of habitat and cassowary status and trends** **Terrain NRM** MTSRF, CSIRO, WTMA, DERM, JCU, CCRC	• Monitor and assess the status and trends in habitat quality and quantity, including connectivity, incorporating MTSRF status and trends tools and data • Monitor and assess the status and trends of restored areas guided by the Revegetation Toolkit • Monitor and assess the status and trends in cassowary populations using participatory cassowary faecal-DNA sampling • Update the CHIA with results from the monitoring	• MTSRF Status and trends • Monitoring Revegetation Projects in Rainforest Landscapes Toolkit: Version 2

TRAFFIC MANAGEMENT STRATEGY

Targets		**Measures of progress**	
• Cassowaries are not killed by vehicle strikes • Fewer motor vehicles per person are using the road		• Cassowary road death numbers, locations and factors from the DERM cassowary mortality data base • Cassowary population status and trends (faecal DNA monitoring) • Vehicle road counters and population census • Speed limit compliance • Tully-Mission Beach Road cassowary crossing trial monitoring results	
Objective	**Projects and partners**	**Tasks**	**Outputs**
Cassowaries and other native fauna are able to move through the landscape without negative impacts from vehicles	**Cassowary Traffic Strategy** **DT&MR** WTMA, CCRC, Terrain NRM, JCU, MTSRF, Qld Police Service, DEWHA, DERM, Mission Beach State School, C4	• Assess the factors associated with vehicle strike of cassowaries and other fauna and identify appropriate measures to address these factors • Enhance the capacity of fauna crossings and local movement corridors to ensure cassowary safety in local areas with high threats • Implement traffic calming measures including lowering and enforcement of speed limits, road verge management, education (signage) • Assess the efficacy of engineered cassowary crossings at key points (e.g. Smith's Gap on the Bruce Highway) in relation to enhancing cassowary and other fauna survival • Implement engineering solutions that are shown to enhance cassowary and other fauna survival • Identify and cost necessary fauna crossing infrastructure, informed by traffic projections • Consider an infrastructure charging regime for cassowary and other fauna crossing infrastructure, including traffic calming measures • Consider implementing a rates levy to fund retrofitting existing roads with fauna crossing infrastructure • Involve community in selection and	• Mission Beach Cassowary Road Management (Report) • Wongaling Corridors Fauna Crossings • Mission Beach Film Festival Wildlife Awareness Signage • Fauna Sensitive Road Design Manual • Tully-Mission Beach Road cassowary crossing trial • Mission Beach vehicle related cassowary deaths data

		design of traffic calming measures and consideration of engineering solutions • Ensure road designs aim to minimise potential impact on fauna	
The per capita use of public transport, bicycles and walking for transport within Mission Beach is increased	**Bicycles and Walkways Project** **CCRC** DT&MR, MBCA, MB Bicycles Users Group, DITRD (Federal)	• Implement cycleways and walkways to provide a network of transport corridors throughout the Mission Beach villages and to visitor attractions • Encourage use of local courtesy buses provided by tourism operators and local council • See Residential and Infrastructure Management Strategy for a range of objectives regarding localisation of service provision to minimise the need for travel and design to enhance public transport uptake.	• Wongaling Beach Cycleway and Walkway Plan • Cassowary Coast Cycle and Pedestrian Strategy • Principal Cycle Network Plan

EXOTIC SPECIES STRATEGY

Targets		**Measures of progress**	
• Cassowaries and other native fauna experience reduced death, injury and disturbance from dogs and cats • Impacts of feral pigs on habitat has been reduced • Impacts of weed species on habitat has been reduced		• Cassowary deaths caused by dogs are reduced according to the DERM data • Habitat condition is improved by reduction of weediness according to MTSRF status and trends reports • Extent of activity deployed against threatening processes is increased according to Terrain NRM and CCRC project reports • Natural Disaster Environmental Response Mitigation agreements in place and activity against weeds deployed following cyclones	
Objective	**Projects and partners**	**Tasks**	**Outputs**
Impacts of domestic dogs and cats on cassowaries and other native fauna are reduced through improved control measures and education	**Domestic Animals Control** **CCRC** DIP, Terrain NRM, DERM, WTMA	• Develop sub-ordinate local laws under the new Animal Management Act relevant to Mission Beach in partnership with the local community • Support CCRC implementation of approved inspection program at Mission Beach relevant to Animal Management Act • Support DIP to implement education measures relevant to the new Act and new local law • Facilitate community discussion about responsible animal ownership in association with the DIP education measures for the new Act • Consider dog-free and off-leash areas to protect key habitat and ensure dog health and well-being	• Animal Management (Cats and Dogs) Act 2008 • EPBC Act Policy Statement 3.15 Significant Impact Guidelines for the endangered southern cassowary (Casuarius casuarius johnsonii) Wet Tropics Population
Impacts of feral pigs on habitat is reduced	**Cassowary Coast Integrated Feral Pig Project** **Terrain NRM** CCRC, DERM, Tully Canegrowers, Australian Banana Growers, ITC Limited, Djiru Traditional Owners, WTMA, landowners	• Support distribution for community use (including through approved commercial providers) of a pig trapping tool box of equipment and training • Support trapping of pigs on government lands, through appropriate private and public mechanisms • Support landholders to eradicate feral pigs on their properties • Integrate pig trapping efforts across all	• Tully-Mission Beach Integrated Feral Pig Management

		tenures with all stakeholders • Target pig eradication into key areas using best available biodiversity science • Implement new effective science-based pig control methods when available at Mission Beach • Consult with RSPCA about animal well being issues	
Improve the quality of habitat on public and private lands by reducing the impact of exotic species	**Exotic Species Management** **CCRC** Terrain NRM, DERM, Djiru Traditional Owners, FNQROC, DEEDI	• Enhance the capacity of CCRC, DERM and Djiru Traditional Owners to manage weeds and pests on reserve lands and State-held lands • Develop rapid response to allow removal of dog packs in State-lands • Provide assistance and incentives to manage environmental weeds, Weeds of National Significance and feral animals • Ensure responses to natural disasters (including cyclones) consider environmental impacts and implement environmentally sound remediation measures • Provide technical advice to landholders on weed control • Control identified transformer weeds[6] • Develop and distribute a guide to appropriate plantings in gardens, including both plants to avoid and plants to promote • Apply legislation regarding land holder responsibility to eradicate declared pests • Target weed and pest eradication into key areas using best available biodiversity science • Develop and promote proposals for legislative change to give greater control over nursery introduction of new species	• Mission Beach Revegetation Projects • FNQROC Local Government Disaster Management Weed Spread Prevention Code of Practice • Cassowary Coast Regional Council Recovery Plan • FNQ Regional Pest Management Plan • Cassowary Coast Local Government Pest Species Action Plan

[6] Transformer weeds are highly invasive taxa with the potential to seriously alter the structure and function of the ecological community.

AGRICULTURAL MANAGEMENT STRATEGY

Targets		**Measures of progress**	
• Agriculture maintains its significant role in the landscape at Mission Beach. • The agricultural economy continues to diversify and strengthen. • Agricultural and urban landholders have mutual understanding and good neighbour relations.		• Results from the Australian Bureau of Statistics regarding agricultural business and employment numbers; results from wellbeing and livelihoods surveys. • Numbers of farmers accessing incentives for habitat protection and restoration. • Number of complaints about rural land use practices.	
Objective	**Projects and partners**	**Tasks**	**Outputs**
Farm practices that contribute to habitat protection and restoration are rewarded and supported	**Habitat-Friendly Farming** **Terrain NRM** Tully-Murray Water Quality Improvement Plan Partners, landholders, Growcom, Qld Primary Industries and Fisheries, Mission Beach Agriculture & Conservation Committee, DERM, C4, CCRC	• Support implementation of the Reef Water Quality Improvement Plan • Support habitat management that improves water quality • Support industry bodies and farmers to develop and implement Farm Management Systems • Provide information, incentives and eco-accreditation that recognise the contribution that rural landholders make to habitat protection and management • Seek ecosystem services payments that reward the public habitat benefit provided by private landholders • Design incentives programs in conjunction with rural landholders • Encourage participatory research partnerships between scientists and farmers on cost-lowering technologies (e.g. use of microbes for soil fertility) • Ensure provisions in FNQ2031 to retain good quality agricultural land for agriculture are maintained and reflected in local government plans	• Mission Beach-Southern Atherton Tablelands Rainforest Corridor (Brochure) • Mission Beach Revegetation Projects • Wongaling Corridors Conservation Incentives • Water Quality Improvement Plan • Integrated Feral Pig Management Program • Caring For Our Country funding application
Future rural land use options that are habitat friendly and allow rural prosperity are encouraged.	**Rural Futures Strategy** **Terrain NRM** Mission Beach Agriculture and Conservation Committee, Growcom, Regional Development Australia, Landholders, DIP, CCRC	• Develop a strategy for rural futures, considering diversification options including alternative crops, options for mixed land use (e.g. farm tourism, health resorts, healing centres), research and development, integrated catchment-scale farm management systems	

		planning, and any other necessary components • Address urban-rural relations and interactions as part of this strategy • Assist participation in appropriate leadership training programs for rural business	

MANAGEMENT BY TRADITIONAL OWNERS STRATEGY

Targets		**Measures of progress**	
• Djiru natural and cultural resources, values and practices are recognised, respected and supported		• Number of local community based Traditional Owner work crews carrying out habitat actions • Numbers of Traditional Owners accessing incentives for habitat protection and restoration	
Objective	**Projects and partners**	**Tasks**	**Outputs**
The relationships between Djiru people and habitat at Mission Beach are documented and Djiru people are involved in habitat planning and management	**Djiru Natural and Cultural Resources Management** **Djiru Aboriginal Corporation**, Girringun Aboriginal Corporation, Terrain NRM	• Document the specific role and relationships of cassowary and habitat with Djiru people in Mission Beach and ensure these are recognised and respected in habitat management • Involve Djiru Rangers in habitat planning and management, including on-ground threat abatement activities and monitoring • Enable Girringun Aboriginal Rangers employed by Girringun to deliver on-ground works, including on Djiru-managed land • Support on-country trips for Djiru elders and youth for cultural education and habitat management activities • Develop Clump Mt as an ongoing centre for Djiru management of country under Djiru control • Voluntary acquire forested lands for Djiru management and co-management (links to voluntary acquisitions project) • Support school-based Djiru cultural education programs • Encourage and support co-research partnerships between Djiru people and scientists at Mission Beach, including Djiru people as field assistants • Ensure researchers and development proponents consult with Traditional Owners from the project planning stage • Ensure all research adheres to Djiru	• Djiru people • Girringun Aboriginal Rangers • Indigenous Cultural Significance Assessment: Mission Beach • Girringun Region Indigenous Protected Area Co-management Consultation Project 2009-2012

		protocols, including cassowary research • Implement a Djiru cassowary art, language and culture project • Continue and support Djiru participation in the Girringun Cultural Heritage Mapping Project • Ensure Djiru involvement in cassowary research projects • Investigate development of a Djiru Cultural Centre and Natural History Museum in partnerships with others (links to eco-tourism project) • Consult with Djiru about wider use of Djiru interpretation material and language names within Mission Beach • Review and update the Caring for Djiru Country natural and cultural resource management plan • Assist Djiru people to scope land use and land management opportunities and develop an intergenerational business plan based on ecologically sustainable development principles and best practice natural and cultural resource management	

RESIDENTIAL AND INFRASTRUCTURE MANAGEMENT STRATEGY

Targets		**Measures of progress**	
• Residential, commercial and infrastructure development protects habitat and corridors • Residential, commercial and infrastructure development protects the cultural, lifestyle and aesthetic values • Ecological footprint, water use and greenhouse gas pollution per person at Mission Beach is reduced		• Results from the MTSRF status and trends project regarding habitat extent • ACF Consumption Atlas	
Objective	**Projects and partners**	**Tasks**	**Outputs**
The "villages in coastal rainforest with cassowaries and agriculture" character of Mission Beach is maintained and enhanced	**Planning mechanisms for environmental character protection** CCRC**,** DIP, DERM, MBCA, Development industry, Visual Amenity Advisory Group, C4, Djiru Traditional Owners. MBA&CC, Ergon Energy, Terrain	• Broker opportunities to engage the Mission Beach community in planning that identifies and protects the "villages in coastal rainforest with cassowaries and agriculture" character, which may include consideration of options for future lot configurations, building design, streetscapes, foreshores, native plant landscaping, community facilities, aircraft flight paths, population and employment mix • Ensure development is restricted to existing cleared areas that are outside the identified habitat network and within the urban footprint • Refer street and other sources of light pollution to Ergon Energy for amelioration of impacts	• CCRC Planning Scheme • CCRC foreshore management plans • Liveable Cassowary Coast Whole of Community Plan • CCRC Community Plan
Mission Beach is a model community for sustainability using best-practice eco-friendly technology	**Sustainable Lifestyle** **MBCA** CCRC, C4, DERM, CAFNEC, DIP, Visual Amenity Advisory Group, Ergon Energy	• Investigate power conservation options, including solar options. • Promote building design compatible with the Mission Beach climate and desired visual amenity • Broker information into relevant plans to ensure inappropriate development in areas affected by natural hazards and climate change scenarios does not occur • Support sustainable plastic bag alternatives • Promote waste reduction and improved	• Mission Beach Community Program of MBCA • State of Mission Beach 4852 Report

		waste management practices, including through recycling and composting • Support and encourage community actions to enhance sustainability including provision of affordable housing, basic community services, cultural services (e.g. restaurants, cafes, cinemas), retail and market hubs, farmers' markets, accessible public transport and energy-efficient transport • Establish belts of native trees that provide screens between industry, residential, agriculture and native habitat land uses, mindful of on-site business advertising needs	

TOURISM MANAGEMENT STRATEGY

Targets		**Measures of progress**	
• Tourism maintains and enhances the landscape and village character of Mission Beach • Tourism sector is focused on habitat-friendly tourism, incorporating cultural, farm and ecotourism		• Results from the ongoing WTMA/MTSRF visitor surveys • Numbers of eco-accredited tourism businesses • Numbers of visitors to ecotourism products and destinations • Number of jobs in eco-accredited tourism businesses	
Objective	**Projects and partners**	**Tasks**	**Outputs**
To create a strong eco-tourism future for Mission Beach	**Mission Beach Ecotourism Strategy** **Mission Beach Business and Tourism** WTMA, TTNQ, Tourism Qld, CCRC, Ecotourism Australia, DERM, Terrain NRM, C4, Djiru Traditional Owners	• Report on the importance of the natural environment to the Mission Beach tourism industry • Conduct an audit of existing ecotourism facilities and visitor access per habitat type • Develop visitor opportunities for the diversity of habitat types • Provide ecotourism information for tourism operators (including eco-certification programs) and visitors (including strategies for co-existence with cassowaries, crocodiles and stingers) • Include limits-of-acceptable-change[7] approach within the tourism strategy • Present the World Heritage Areas and values, particularly where the Wet Tropics and Great Barrier Reef WHAs meet. • Promote a Mission Beach-Southern Atherton Tablelands ecotourism cluster, including habitat-friendly farm tourism • Interpret the history of reef and rainforest conservation by the community • Promote academic and educational tourism	• Sustainability Film Festival including climate-friendly certification • Value of the Mission Beach Natural Environment Visitor Survey • Wet Tropics Visitor Survey

[7] "Limits-of-acceptable change" management is based on establishing objectives for the condition of a visitor site, constantly monitoring the condition of the site, and taking remedial action (such as temporary closure) if the site condition deteriorates past the target condition. This management approach is applied by the Wet Tropics Management Authority (1997).

		• Prepare concept plans for a cassowary natural history museum and an international cassowary festival mixing cassowary science, art and culture • Support the Mission Beach Film Festival "sustainability" theme • Liaise with Traditional Owners regarding a Djiru Cultural Centre • Seek funding for an ecotourism officer • Broker opportunities for additional local employment-generation based on protection and enjoyment of the natural environment	

BUILDING COMMUNITY STRENGTH STRATEGY

Targets		**Measures of progress**	
• The Mission Beach community is vibrant, eco-friendly and diverse and supported by services and networks • Local, State and Australian government, community and industry actions are integrated and coordinated to support implementation of the Mission Beach Habitat Network Action Plan • Implementation partnerships between community, industry, government and the research sectors deliver habitat action that is effective and accountable		• Number of community groups active in implementing habitat protection and management identified actions • Numbers of independent Traditional Owner work crews • Number and extent of industry codes of practice that incorporate habitat management outcomes • Communities and government agencies implementing strategies and targets, successfully seeking funds and aligning their activities to priority actions within the MBHNAP	
Objective	**Projects and partners**	**Tasks**	**Outputs**
The MBHNAP is delivered with effective community collaboration and brokering across government, industry, community and research partners.	**Mission Beach Habitat Network Action Plan Implementation** **Terrain NRM** CSIRO, CCRC, MTSRF, DERM, Djiru Traditional Owners, community	• Support Terrain local area planning/brokering ongoing role to coordinate implementation of the Action Plan, including effort alignment • Complete trialling of local area biodiversity planning framework through the Mission Beach case study, including research, development and trialling of tools for the latter three phases (strategy and project identification, implementation, monitoring and evaluation), including better integration with WQIP • Ensure ongoing community engagement through workshops, media, and web-based tools to reach identified relevant actors • Ensure funds for restoration and neighbourhood corridor designs • Support ongoing operation of the Action Committee to guide MBHNAP implementation • Support contracts for restoration and corridor implementation • Ensure an ongoing program of community engagement and communication • Ensure measures of progress on the MBHNAP are readily available and	• MBHNAP • MBHN Action Committee • MBHNAP community events- launches, consultation, workshops

		regularly updated • Incorporate measures of progress into a MBHNAP Progress Synthesis when appropriate • Develop appropriate Memoranda of Agreement or other mechanisms between Terrain NRM and lead agencies to support project implementation	
A strong, consistent community education and visitor facility program promotes understanding of the heritage values (including natural values) of Mission Beach, and appropriate visitor and resident behaviours regarding cassowaries and habitat	**Community Education and Engagement** **WTMA, MBCA, C4** MBB&T, CCRC, DERM, Terrain NRM, Djiru Traditional Owners, Mission Beach State School	• Provide information to visitors about values • Develop a community education program that enhances habitat protection and addresses the potential impacts of threats such as climate change • Provide information to residents regarding cassowary risk factors • Source funding to revise and reprint the Landholder's Handbook: Johnstone Shire Living with World Heritage • Improve the entry to Mission Beach signage with an emphasis on the unique values of cassowary country. • Enhance existing and expand/create new visitor facilities to provide for greater use and understanding of Mission Beach habitat and its values. • Report on the socio-economic benefits of cassowaries and other natural values at Mission Beach	• Cassowary Recovery Team • Community for Coastal and Cassowary Conservation Environment Centre • Mission Beach Visitor Information Centre
The Mission Beach community has the capacity to provide ongoing stewardship to the habitat network	**Empowering community action for habitat** **MBCA** CCRC, C4, MBB&T, Terrain NRM, JCU	• Develop, in collaboration with Mission Beach community, measures of the capacity for stewardship, building on the community resilience indicators project • Empower community action through increasing knowledge (e.g. information	• Understanding and enhancing community resilience (MTSRF) • Liveable Cassowary Coast Whole of Community Plan • CCRC Community Plan • CCRC Disaster Management Plan

		for new residents, habitat discussions at electoral and public forums, information about regulations, research partnerships, Djiru culture), acknowledgement (e.g. sustainability awards), innovation (e.g. community festivals), service provision (e.g. education, health, aged care, sport and recreation) , economic development and networks (e.g. local habitat champion) • Ensure the Liveable Cassowary Coast Whole of Community Plan and CCRC Community Plan processes and outcomes build capacity in Mission Beach community to provide ongoing habitat stewardship • Ensure responses to natural disasters (including cyclones) consider environmental impacts and implement environmentally sound remediation measures	• Aesthetic and Lifestyle Significance of Mission Beach • Mission Beach Nature Conservation History • Mission Beach Bulletin • CCRC Recovery Plan

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