

An aerial photograph of a coastal village. A dirt road winds through green fields and clusters of houses with various roof colors (red, white, green). The road leads to a sandy beach that meets the turquoise ocean. The water has white foam from waves breaking. The top and bottom of the image feature decorative borders with repeating geometric patterns in shades of green and brown.

hammond

Sustainable Land Use Plan

PART 2

hammond

Hammond Island is also known to Kiriri” which is part of the Prince of Wales (Muralag) group of islands traditionally owned by the Kaurereg people. The Kaurereg were forcibly removed from Hammond in the early 1900’s to Kubin Village on Moa Island, returning in 1947 to nearby Nurupai (Horn Island).

In 1881 the Sacred Heart Fathers established a mission to would serve as a stop over station and provide a vital link between the Australian and Papua New Guinea missions. Hammond Island community was established in 1927 to offer stability to the men engaged as pearl divers and their families.

Waubin: the origin of Hammond Rock

Waubin of Muralag (Prince of Wales Island) fought men and killed them. The weapons Waubin used were kubai (a throwing stick used with a woomera), a kalak (a spear) and baidamal baba, which made all men fear and hate Waubin. This weapon was made from a single piece of wood and was shaped in the middle to fit a grip. Each end was as deadly as a baidami’s (shark’s) cruel mouth and its edges were studded with baidam’s own teeth. With baidamal baba, Waubin thrust, parried, hacked and ripped into his opponents.

As the years went by, Waubin collected many wives, for each time he killed a man, he took the widow back with him to Rabau Nguki.

Waubin said to his wives: “My enemies will kill me if I stay in this place. We will leave our home and go to another island.” So Waubin led his wives from Rabau Nguki to Badukut on the western side of Muralag, then from Badukut to Gialag (Friday Island) to Palilag (Goode Island) to Nomi (Round Island) to Koimilai, a place on Kiriri. Waubin left some of his wives at Palilag and others at Nomi. They all turned to stone.

To those who went with him all the way, he said: “Stay where you are, I am going to deep water to fish.” With baidamal baba clasped firmly in his right hand, he walked across the reef into the blue sea outside. He liked east best, so after planting his left leg firmly in the seabed, raised baidamal baba above his head and threw it as far as he could to the east. It fell into the sea near Gobau Ngur, a rocky headland of Kiriri and became a reef, its edges sharp and jagged like the teeth of baidam’s jagged bones.

“Stay where you are! Do not move!” Waubin called to his wives. “I am going to stay here forever. The tide will flow past me from the east and from the west, the wind will strike at my head and my chest. Stay where you are!” Then he and his wives turned to stone.

Source: Adapted from “Myths & Legends of the Torres Strait”, Lawrie, 1970



Land Use Plan Structure



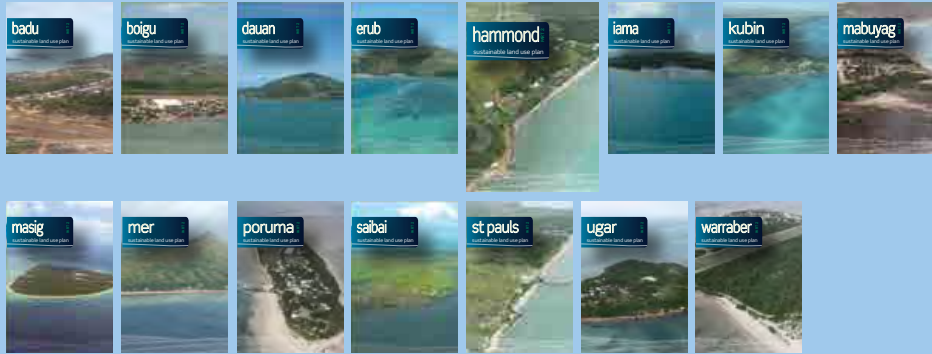
PART 1

Context & Background

- Introduction, Background and Overview of the Torres Strait
- How to Use the Sustainable Land Use Plan

PART 2

Island Overview

**A separate section of each island will detail the following topics–**

- Island Overview
- Land Tenure & Native Title
- Natural Environment
 - plants, animals and birds
 - coastline
 - tides and storm surge
 - waterways and wetlands
 - land and soil
 - bushfire
- Cultural Heritage
- Community
 - population
 - housing
- sustainable community expansion
- community facilities and services
- Infrastructure
 - water
 - sewer
 - waste
 - electricity
 - telecommunications
 - roads
 - drainage
 - air access
 - sea access

Each topic includes best practice principles, an island overview, and an overview of the topic in the context of each island, land use strategies, land use projects, land use considerations, strategic outcomes and useful links.

PART 3

Interim Planning Assessment Process

A non-statutory framework for assessing development on the islands.

An aerial photograph of a tropical coastline. In the foreground, a large, dense forest of green trees covers a hillside that descends towards a bay. The bay's water is a calm, light blue-grey color. Along the shoreline, there are several small, simple buildings with white walls and dark roofs, some with red-tiled roofs. A dirt road or path runs along the edge of the forest. In the background, the coastline continues with more forested hills, and further out, a series of islands and peninsulas are visible in the distance under a clear sky. A dark blue banner with a white border is positioned at the top of the image, containing the text 'Executive Summary' in a white, sans-serif font.

Executive Summary

In past years, the establishment of new communities and the growth of existing communities has often proceeded in a manner perceived as being unplanned and ad-hoc. Such an uncoordinated approach in remote communities has led to land management problems such as inappropriate locations of housing and inefficient, costly and haphazard provision of services such as water supply, sewerage, power and roads.



The primary objective of reviewing land uses on Hammond is to provide a support decision making tool and guideline for the community to plan for and manage the impacts of future development and that such development is sustainable.

Hammond is an area of significant cultural heritage value to the Traditional Owners and the community. Many sites are not recorded and are only known to the Traditional Owners (the Karuareg). Consultation and liaison with Traditional Owners, engagement of cultural heritage observers and preparation of cultural heritage investigations are recommended for all development proposals.

Hammond Island, known also traditionally as Kiriiri, is located immediately north-west of Thursday Island within the Torres Strait.

Hammond Island is approximately 3km wide and 6km long and is loosely described as a

'granitic' island. In places the coastline consists of mangroves and mudflats, elsewhere granite hills slope down to the waters edge and near the community there are sandy beaches running down to coral reefs. It is essentially part of an unsubmerged remnant of an Australian mountain chain.

The terrain is quite hilly except for a narrow coastal strip on the eastern side where part of the community lies around a sandy bay. The coastal strip dictates that this area will develop as a long narrow ribbon broken up by headlands that extend to the shoreline. The remainder of the community is elevated above the shore on a plateau between hills further inland. This plateau slopes gently westward and is drained by a creek that becomes tidal 200 metres west of the community.

The Hammond Island community is located in the south-eastern area of the island.

The **key environmental** assets of Hammond are:

- Large tracts of undisturbed vineforest with many habitat features and unique vegetation types.
- Sheltered coastal habitats for rare and threatened birds.
- Coastal vine thickets on hind dunes.
- Inland sand plains and salt pans fringed by mangrove shrubland.

Notable rare or threatened fauna species have been historically recorded on Hammond Island, including:

- Beach Stone Curlew (*Esacus magnirostris*) – Vulnerable (NCA);
- Spectacled flying-fox (*Pteropus conspicillatus*) – Vulnerable (EPBC);
- Eastern Curlew (*Numenius madagascariensis*) – Rare (NCA);
- Jabiru/Black-necked Stork (*Ephippiorhynchus asiaticus*) – Rare (NCA);
- Fawn Leaf Nosed bat (*Hipposideros cervinus*)- Vulnerable (NCA);
- Coastal Sheath-tail Bat (*Taphozous australis*)- Vulnerable (NCA); and
- Rufous Owl (*Ninox rufa*)- Rare (NCA);
- Radjah Shelduck (*Tadorna radjah*)- Rare (NCA);
- Little Tern (*Sternula albifrons*) – Endangered (NCA);
- Brush-tailed Tree Rat (*Conilurus pencillatus*) – Vulnerable; and
- *Lepidodactylus pumilus* – Rare.

Identified **land issues** are:

- development along the south-eastern coastline;
- potential acid sulfate soils;
- bushfire hazard;
- the changing system of land tenure;
- limited available land for future expansion of existing residential area; and
- increasing tide and storm surge levels.

Identified **infrastructure issues** are:

- the dump needs to be better managed in sorting and segregating non-putrescible materials. This will increase its life to between 5 and 10 years;
- the need to find a solution for the handling, sorting and disposal of waste;
- Water supply generated from within Hammond is insufficient and the community relies on water piped and purchased from Thursday Island;
- A reticulated sewerage system is being designed (2010); and
- limited opportunity for viable alternative sources of energy.

Identified **population issues** are:

- Current population is 244 persons;
- In the decade from 1996-2006, population growth has increased at an average annual rate of 0.6%;
- The growth rate 2003-2008 is 2.0% p.a.
- population profile will change over the next 25 years, with a doubling of the 65 plus age group and a decrease of young people; and
- median household size of 2.9 persons.

Identified **housing issues** are:

- existing 16 vacant lots cater for a population growth of 80 persons;
- the existing lots are sufficient to cater for the predicted population increase to past 2019;
- need to use existing vacant lots for either dual occupancies (duplex) or townhouses or units to maximise land availability;
- need to supply diverse, affordable and sustainable housing to meet population changes and move towards a sustainable environment;
- village needs to have areas designated for denser development outside the areas impacted by natural hazards;
- there is one area to the west suitable for future development, yielding approximately 33 new lots; and
- the investigation area require major studies and significant investment

Identified **growth issues** are:

- a low growth rate of 1% which will generate:
 - an extra 26 persons over ten years;
 - an additional housing of 0.5 houses per year; and
 - an additional 5 houses over ten years;
- a high growth rate of 2% which will generate:
 - an extra 53 persons over ten years;
 - additional housing of 1.1 houses per year; and
 - an additional 11 houses over ten years;
- by adopting either the low or high growth rates, growth pressure on Hammond will be generated;
- based on the existing landfill capacity, Hammond will reach 'full house' in five to ten years;
- options available to manage growth on Hammond are:
 - utilise existing serviced lots prior to encouraging development in the investigation area;
 - to increase residential density; and
 - expansion of the residential areas; and
- studies are required to determine whether the identified investigation area is suitable for development.

Together the identified assets and issues above provide the basis for land use strategies, questions to ask for any proposed development and key land use outcomes. In summary:

- vacant land will be consumed in ten years or more;
- Hammond's current infrastructure will limit Hammond population growth between 2012 and 2019;
- The community must decide how they are going to adjust development on Hammond for climate change. What strategies are they going to adopt?
- if further development is to occur it:
 - should not be permitted in any area:

- identified as an environmental asset;
- identified as water catchment or in a known water catchment area;
- encompassing head waters of waterways and wetlands;
- where it has detrimental impact on natural flow regimes and quality water systems;
- in areas affected by tides and storm surges;
- in areas of medium bushfire risk or part of areas identified as medium bushfire risk;
- near major infrastructure such as the Telstra Tower, sewerage treatment plants and generators;
- identified as affected by natural hazards such as tides, storm surges or acid sulfate soils;
- adjacent to areas identified as subject to high prone erosion; and
 - should be contained with the village and the identified investigation area which will require an increase in residential density;
 - must include diverse, affordable and sustainable housing to meet the needs of current and future residents and visitors. One area is to be investigated for potential development; and
 - must incorporate all processes, policies and decisions that protect and enhance the natural and made environments including cultural values and beliefs.

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Island Overview

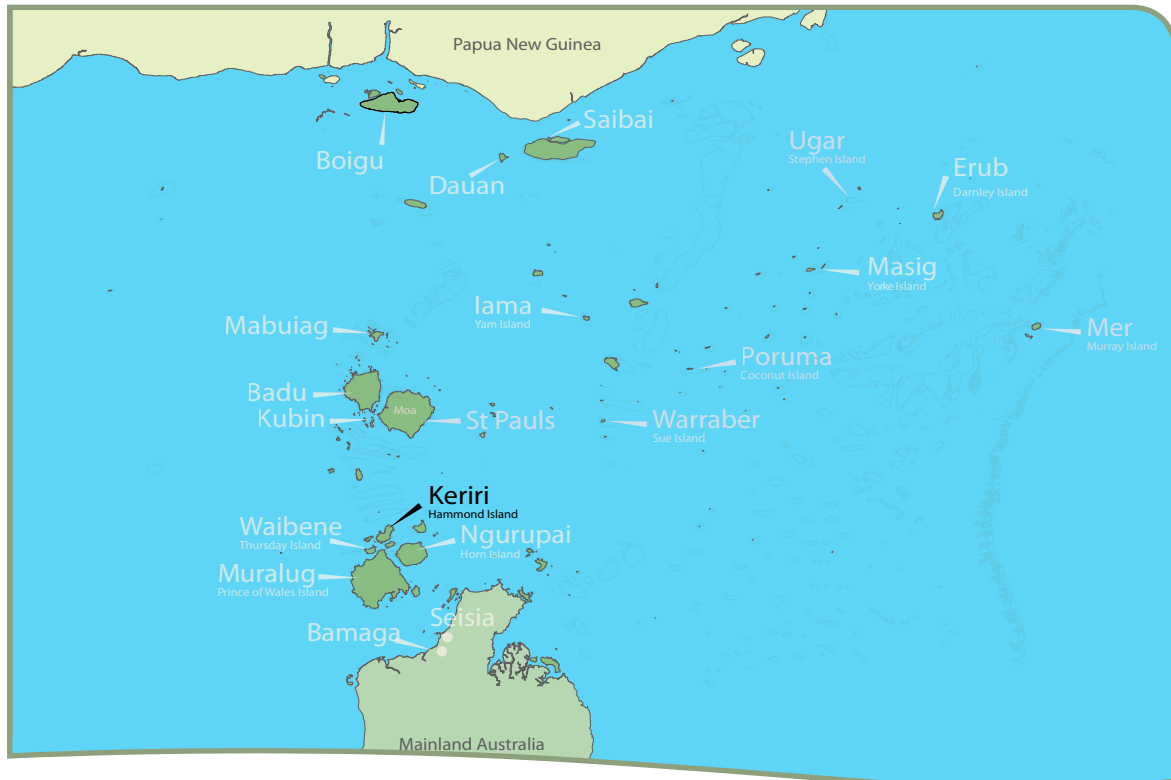


1.1 Location

Hammond Island is located immediately northwest of Thursday Island in the Torres Strait. The Hammond Island community is located on the eastern side of the island.

Map 1 shows the location of Hammond in relation to the Torres Strait region.

Map 1 Regional Location



"approximately latitude 10° 33' south and longitude 142° 12' east."

1.2 Physical Characteristics

The following is an overview of the physical characteristics of Hammond.

1.2.1 Topography

Hammond Island is part of an unsubmerged remnant of an Australian mountain chain and the terrain is quite hilly, except for a narrow strip along the eastern coast, where part of the community adjoins a sandy bay. The remainder of the community is elevated above the shore on a plateau between hills further inland. This plateau slopes gently westward and is drained by a creek that becomes tidal 200 metres west of the community.

The island is approximately 3km wide and 6km long and is loosely described as a 'granitic' island. In places the coastline consists of mangroves and mudflats, while elsewhere, granite hills slope down to the water's edge and sandy beaches run from near the village down to coral reefs.

Map 2 shows a satellite image of Hammond.

1.2.2 Geology

The island is formed on volcanic rocks – a factor shaping much of its rugged topography. Many slopes on the island are strewn with diorite boulders (an intrusive volcanic rock formed under great heat) and support semi-deciduous vine forests and woodlands. The flattest section of the island is on land at the lowest elevation and is characterised by sand plains, salt pans and mangrove shrubland. This land, which more or less dissects the east from the west of the island, has developed through marine processes and tidal influx, and stands in contrast to the hillier country both sides of this semi-marine environment.

With the exception of the lowest lying land (the sand plains and salt pans of the interior, as well as the coastal strip of land north of the wharf), coastal hills and the remainder of the inland are relatively unaffected by ocean forces. Coastal erosion is therefore limited to those areas of lowest elevation, and has a periodic effect of shaping the vegetation of these areas.

The majority of the system is stabilised with vegetation ranging from sedgeland to eucalypt woodland, which has resulted in a suppressed and evenly graded morphology. In the area to



the south-west of the Badu township (in the vicinity of the current borefield), a large portion of the dunefield is in unstable form with the dominant surface area of the dune formed by exposed coarse silica sand demonstrating undulating morphologies which include shallow deflation basins, blowouts and low depositional mounds.

1.2.3 Vegetation

Large areas of Hammond Island are covered by vine forest. This community and distinct habitat type occurs predominantly on hilly granitic landforms characterised by angular, rock-strewn surfaces. Semi-deciduous trees assist with the development of a deep layer of leaf litter – itself a habitat niche for skinks such as *Carlia longipes* and species of geckos.

Numerous roost sites in the upper branches of canopy trees in vine forests were observed particularly along Goldmine Creek northwest of the town centre patch on the north-east of the airstrip. This association is likely to be a correlation of the undisturbed nature of the vine forest and limited availability of protected roost sites. The presence of wild dogs ensures competition for roost sites between seabirds.

Mango trees are found throughout a variety of vegetation types and around the town. Some of these trees have been planted many years ago in remote locations. For example, this species is found some distance upstream of Goldmine Creek and was probably introduced to a former mining camp site. Mangoes are readily available to fauna prior and during the wet season. These fruits are favoured by Black Flying Foxes (*Pteropus alecto*) as well as feral pigs (*Sus scrofa*). Flying Foxes may contribute to the dispersal of seed into remote vine forest areas.

There is a paperbark open forest is a widespread vegetation community occurring on slowly drained soils and chiefly on flat topography. Extensive areas of this type are found on and adjacent to the tidally influenced sand plains that approximately dissect the eastern and western halves of Hammond Island. This forest type is characterised by the distinctively figured

Broadleaf Paperbark trees (*Melaleuca viridiflora*) that sometimes form nearly monospecific stands. The vegetation reaches a height of approximately 6-10 metres,

Grasslands are represented across a range of land forms on Hammond Island ranging from associations with the paperbark open forests to the understorey of woodland communities and on exposed coastal slopes. The dominant species of plants in this habitat group is always grass, but patches of trees such as paperbarks or pandanus groves may occur in a mosaic with this habitat group. A majority of the grassland cover of the sand plains had been previously burnt and would have had an effect on the presence of fauna. Regrowth of these communities could result in an increased number of species being recorded – probably rodents such as *Melomys* species. Other factors affecting the presence of native fauna in grasslands are roaming dogs and pigs.



1.2.4 Waterways, Wetlands and Coasts

Numerous watercourses and seasonal drainage channels, as well as fresh water springs are found on Hammond Island. None of these features were observed to be flowing except for soakage from embankments and one spring with some shallow standing water. It was interesting to observe the importance of water in the landscape, where for example, the spring with a pool of surface water was an obvious focal point for birds, reptiles and pigs.

Goldmine Creek is an important watercourse with significant habitat values. Streams flowing into this system, particularly those upstream are considered equally important. Topographically, Goldmine Creek forms a central catchment area and therefore has high conservation significance.

A majority of the vegetation lining this watercourse is vine forest in reasonably sound condition, and it is possible that the feature becomes a seasonal refuge for a wide range of fauna when key resources of food and water are readily available.

Hammond is noted for its freshwater springs, and as mentioned earlier, these are important ecological features for wildlife. Several of these may have cultural and historical value and their conservation should be an important consideration for future planning.

Interestingly, the larger watercourses on the island are the habitat for a variety of reptiles, with a conspicuous representation of geckos and skinks that take advantage of the shelter and microhabitats afforded by the rock-strewn channels and embankments and also the pockets of trapped leaf litter.



Map 2 Satellite Image of Hammond



For more detail, refer to Map No 9964-700 contained in Maps.



For more detail, refer to Map No. 9964-1005 contained in Maps.

1.3 The Village

The village is substantially located within two distinct areas:

The Main Township & Coastal Strip

The main township is located on an elevated plateau and the other part of the township is located along a narrow coastal strip on the east side of the island, comprising a number of clusters of houses. Recent residential development has occurred on higher ground to the west of the main village.

The majority of the community consists of residential areas, supported by council offices, a church, primary school, a private store, community facilities and a community hall. A number of infrastructure facilities are also located in or adjacent the main township including Telstra facilities, water reservoirs, Ergon facilities and the council workshop.

The configuration of the main township and the coastal strip is somewhat irregular with allotments of varying allotment shapes and sizes.

Map 3 shows a satellite image of Hammond Village.

1.4 Population

The 2006 Census states a total population of Hammond was 231, a decrease of (13.8%) from the 2001 Census (203).

The growth rate was 2.6% or 5 persons per year in the 5 years between 2001-2006.

The growth rate was 0.6% over the 10 years to 2006.

- The latest population profile from Office of Economic and Statistical Research in 2010 gives the 2008 estimated population at 239 persons, and
- a growth rate of 2% between 2003-2008 and
- a growth rate of 2.6% 2007-2008.



Map 3 Satellite Image of Hammond Village



For more detail, refer to Map No. 9964-700 contained in Maps.



Land Tenure & Native Title



2.1 Land Tenure

2.1.1 Best Practice

- Recognise ownership of traditional lands.
- Understand land tenure systems, particularly customary systems, when development land.
- A co-operative approach between all parties to land tenure, native title, development and land-management issues.

2.1.2 Overview of Current Situation

The legal tenure of Hammond Island consists of a Deed of Grant in Trust (DOGIT) shown as Lot 155 on TS172, Parish of Port Kennedy, County of Torres in the State of Queensland.

As the land is held in DOGIT, the term 'lot', in this Plan refers typically to the land surrounding a house or a building.

Generally, the DOGIT covers most of the community including houses, council officers, shops and some roads and general infrastructure.

At the time of granting the DOGIT, some land was retained by the state of Queensland for specific purposes. Generally, these reservations were minor and may include land such as airstrips, some roads and community facilities such as schools. A search of the state government's land tenure system is required to determine the exact tenure of the land.

The Torres Strait Island Regional Council (TSIRC) is currently the trustee of the DOGIT, acting on behalf of the Torres Strait Islanders of the community. Council may issue leases over part of the DOGIT for various specific purposes including leases for infrastructure purposes (e.g. Telstra and Ergon Energy, Australian Customs Service facilities, health centres and commercial purposes). The existence of these leases is disclosed by searching the State's tenure database.

There are two freehold lots in existence on Hammond – being Lots 53 & 54 on Plan CP903337. These are located on the east coast approximately midway between the village and the waste depot site.

2.1.3 Issues Overview

Discussion is required with Traditional Owners and the TSRIC with regard to approval for the provision of new development and infrastructure on the island. However, consideration also needs to be given to those members of the community who do not possess traditional land to ensure they and their families have the opportunity for housing.

The Aboriginal and Torres Strait Islander Land Amendment Act 2008 was passed by the state government on 13 May 2008. The amendments in the Act aim to:

- encourage home ownership and provide long term leases for housing;
- assist the transfer of land not required for village purposes (outside of townships) to Indigenous land trusts;
- encourage economic development in Indigenous communities; and
- facilitate the construction of public infrastructure by providing a compulsory acquisition process.

This Act will change the land tenure on Hammond Island and, once in effect must be monitored.



2.1.4 Sustainable Land Tenure Outcomes

- Consultation with the TSIRC, Native Title Prescribed Body Corporate, Land Trusts and Traditional Owners occurs on a regular basis with their knowledge and values respected.
- Communities are in the best position to identify and priorities their needs and recommend how governments can best meet those need.

2.1.5 Useful Resources

Legislation

Aborigines and Torres Strait Islanders (Land Holding) Act 1985 (Qld) outlines the process for providing the grant of leases in perpetuity and other land to members of Torres Strait Island Communities.

www.legislation.qld.gov.au

Land Act 1994 (Qld) deals with the administration and management of non-freehold land and DOGIT and the creation of freehold land.

www.legislation.qld.gov.au

The Aboriginal and Torres Strait Islander Land Amendment Bill 2008 amends the Aboriginal Land Act 1991, the Torres Strait Islander Land Act 1991, the Land Act 1994, the Local Government (Aboriginal Lands) Act 1978 and the Native Title (Queensland) Act 1993.

www.legislation.qld.gov.au

Torres Strait Islander Land Act 1991 (Qld) provides for the grant and claim and grant, of land as Torres Strait Islander Land and for other purposes.

www.legislation.qld.gov.au

Native Title Act 1993 (Cth) provides for the recognition and protection of Native Title rights and interest and establishes mechanisms for how future development and actions affect Native Title.

www.comlaw.gov.au

Policies, Guidelines and Fact Sheets

A Guide to Land Tenure in Queensland outlines the types of tenure used in Queensland, including DOGITs, their characteristics and the various provisions of legislation, which apply to each.

www.derm.qld.gov.au/land/state/publications

Websites

Department of Environment and Resource Management

www.derm.qld.gov.au



2.2 Native Title

2.2.1 Best Practice

- Native title should respect, protect and identify the community's cultural heritage for present and future generations.
- A co-operative approach between all parties to land tenure, native title, development and land-management issues.
- Establish communication prior to starting a project to ensure inclusion and participation – involve the community in genuine negotiation at every stage of a project.
- Be sensitive of issues of language, naming and expression.
- Examine assumptions carefully – ask first, do not assume.
- Be informed about appropriate times to undertaken consultation and negotiation - be respectful fully of deaths in communities and cultural events.

2.2.2 Overview of Current Situation

Hammond is also known as Kirriri by the traditional people of the Kaurareg and belongs to the Thursday Island Group.

At the time of this report there was no native title claim or determination for the Hammond Island area. However it is generally accepted that the traditional owners of Kirriri (Hammond Island) are the Kaurareg people. Note that the Kaurareg people have had native title determined over parts of nearby Horn Island, Prince of Wales and Zuna islands, which are managed by the Kaurareg Native Title Aboriginal Corporation RNTBC.

A reserve was established by the Government on Hammond Island in 1881.

Members of the Kaurareg people were forcibly removed from Hammond to the village of Poid on Moa Island in 1921 and 1922.

The community is inhabited by both traditional owners (Kaurareg) and other persons, however the majority of Kaurareg people live on nearby Horn, Thursday and Price of Wales islands.

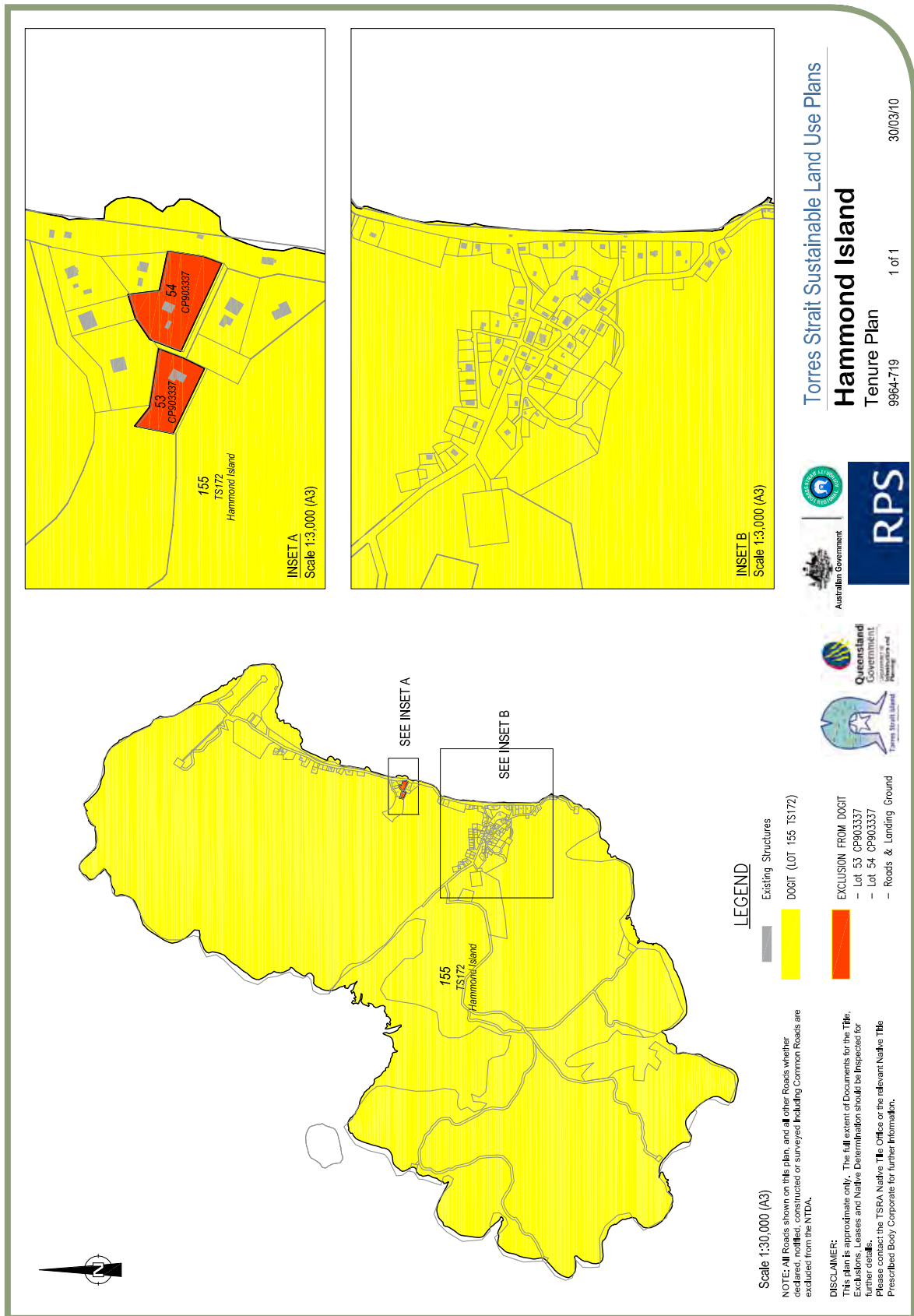
Communication with the relevant Native Title Prescribed Body Corporate (PBC) will assist developers to identify local areas and objects of significance and avoid or mitigate disturbance.

The Torres Strait Regional Authority (TSRA) through its Land and Sea Management Unit (LSMU) and Native Title Office can assist in contacting the relevant PBCs. The TSIRC will also be able to help with identifying the correct PBC contacts.

Map 4 shows the tenure and native title interests over the community.



Map 4 Tenure Plan



For more detail, refer to Map No. 9964-719 contained in Maps.

2.2.3 Issues Overview

Final decisions over native title claims can take time and it is essential to continue the provision of infrastructure to communities whilst a native title claim is being determined.

The Native Title Act 1993 provides a system or process to facilitate dealings that may affect native title. Both during the claim process and after native title is recognised.

Native title claimants and those recognised as native title holders have the right to negotiate about some future acts, such as the proposal of a proposed development. As native title has been determined, a PBC has been established to represent native title interests. In many cases, an agreement is made between the PBC, the TSIRC and the proponent of the development to allow a development to proceed. Such developments have typically included the provision of major infrastructure such as reticulated sewerage schemes, or areas of land for subdivision expansion.

Enquiries should be made with the TSRA's Native Title Office, the TSIRC and Kaurareg people to determine if there are any existing agreements.

Indigenous Land Use Agreements

ILUAs are voluntary agreements about the use and management of land and or water made between a native title party and other people who have an interest in the land and or water covered by the claim such as pastoralists, farmers, resource explorers and producers, fishers, local government and State government officers. ILUAs are registered with the National Tribunal making them legally binding on the people who are parties to the agreement and all native titleholders for that area. ILUAs achieve certainty over access to and sustainable use of land, water and resources through negotiated recognition and just settlement leading to the resolution of native title claims.

2.2.4 Sustainable Native Title Outcomes

- Consultation with the Prescribed Body Corporate, Land Trusts and Traditional Owners occurs on a regular basis with their knowledge and values respected.
- ILUAs are encouraged, implemented and respected.
- Promotion of effective communication and transparent processes that are flexible to reflect particular circumstances of the community.

2.3 Useful Resources

Legislation

Native Title Act 1993 (Cth) provides for the recognition and protection of Native Title rights and interest and establishes mechanisms for how future development and actions affect Native Title.

www.comlaw.gov.au

Indigenous Land Use Agreements

National Native Title Tribunal

www.nntt.gov.au

Policies, Guidelines and Fact Sheets

Guidelines for Negotiation of an Indigenous Land Use Agreement provides information on negotiating and registering an ILUA including the different types of ILUAs, the steps for negotiating an ILUA and the process for registering an ILUA. It also includes a sample ILUA.

www.derm.qld.gov.au/publications/nativetitle

Websites

Department of Environment & Resource Management

www.derm.qld.gov.au

National Native Title Tribunal

www.nntt.gov.au

Natural Environment



The natural environment, or the land and sea, is the core of Torres Strait communities' way of life, both now and in the future. Its existence, condition and health are essential to community health. Their future, economy and way of life cannot be separated from how the land and sea is managed

Land and sea is so fundamental to the Hammond Island community that the impacts on land and sea must be part of all decisions and plans.

This Plan addresses the following with regard to the natural environment:

- plants, animals and birds;
- coastline;
- tides and storm surges;
- waterways and wetlands;
- land and soil; and
- bushfire.

A report by RPS Environmental Scientists was undertaken on the community over a five day visit in early 2009. This report provides a snapshot in time and a base line for future studies and identified key natural assets, habitats, watercourses and natural land use issues

for the community. It is not intended to be a complete scientific analysis of Hammond's natural environment. The report is written for the Hammond Island community, the TSIRC and the TSRA. The Fauna and Habitat Assessment of Hammond, prepared by RPS Environmental Scientists, is included as Appendix 1.

Mapping of the Torres Strait regions remnant vegetation was undertaken in 2007/08 by 3D Environmental. The study identified vegetation communities across all islands and was undertaken to provide data suitable for adoption under the old State remnant vegetation regime administered by the Department of Natural Resources and Water (NRW). By late 2008, the draft mapping being provided by NRW had been completed but not made available to the public. The Vegetation Communities and Regional Ecosystem Assessment, prepared by 3D Environmental, is included as Appendix 2.



3.1 Plants, Animals and Birds

3.1.1 Best Practice

- The present generation ensure the health, diversity and productivity of the plants, animals and birds is maintained or enhanced for the benefit of future generations through:
 - the protection and conservation of native plants, animals, birds, habitat and habitat corridors;
 - conservation efforts focus on those plants, animals and birds which are uncommon and at risk;
 - clearing of native vegetation, which results in the loss of uncommon, at risk or threatened plants or the animals and birds that live in those areas, is minimised;
 - using renewable natural resources sustainably and sensibly without significantly impacting other land uses;
 - managing animals, pests, weeds and disease so that their impact on the land and sea is minimised or avoided; and
 - integrating land and sea planning and management to ensure the negative impacts of human actions (e.g. development, vegetation clearing) on plants, animals and birds is minimised or prevented.
- The pattern of development recognises the importance of plants, animals and birds, natural resources and their fundamental relationship to the quality of life and viability of Hammond and the wellbeing of its residents.
- Reduce the impacts of climate change on plants, animals and birds by:
 - recognising the importance of climate change on plants, animals and birds of the community;
 - avoiding decisions now that will make it more difficult to manage the impacts of climate change in the future; and
 - building understanding and knowledge of the community to address the impacts of climate change on the island's plants, animals and birds.

3.1.2 Overview of Current Situation

The land and sea of Hammond is the home or habitat of a range of plant and animal species. Apart from Traditional Owners knowledge, there is very little recorded data on Hammond. The preliminary fieldwork undertaken by RPS Environmental Scientists is part of the ongoing process of recording and identifying significant habitat, plants, birds and animals on Hammond.

The notable ecological and habitat features of Hammond are the:

- Large tracts of undisturbed vineforest with many habitat features and unique vegetation types.
- Sheltered coastal habitats for rare and threatened birds.
- Coastal vine thickets on hind dunes.
- Inland sand plains and salt pans fringed by mangrove shrubland.

Notable rare or threatened fauna species have been historically recorded on Hammond Island, including:

- Beach Stone Curlew (*Esacus magnirostris*) – Vulnerable (NCA);
- Spectacled flying-fox (*Pteropus conspicillatus*) – Vulnerable (EPBC);
- Eastern Curlew (*Numenius madagascariensis*) – Rare (NCA);
- Jabiru/Black-necked Stork (*Ephippiorhynchus asiaticus*) – Rare (NCA);
- Fawn Leaf Nosed bat (*Hipposideros cervinus*)- Vulnerable (NCA);
- Coastal Sheath-tail Bat (*Taphozous australis*)- Vulnerable (NCA); and
- Rufous Owl (*Ninox rufa*)- Rare (NCA);
- Radjah Shelduck (*Tadorna radjah*)- Rare (NCA);
- Little Tern (*Sternula albifrons*) – Endangered (NCA);

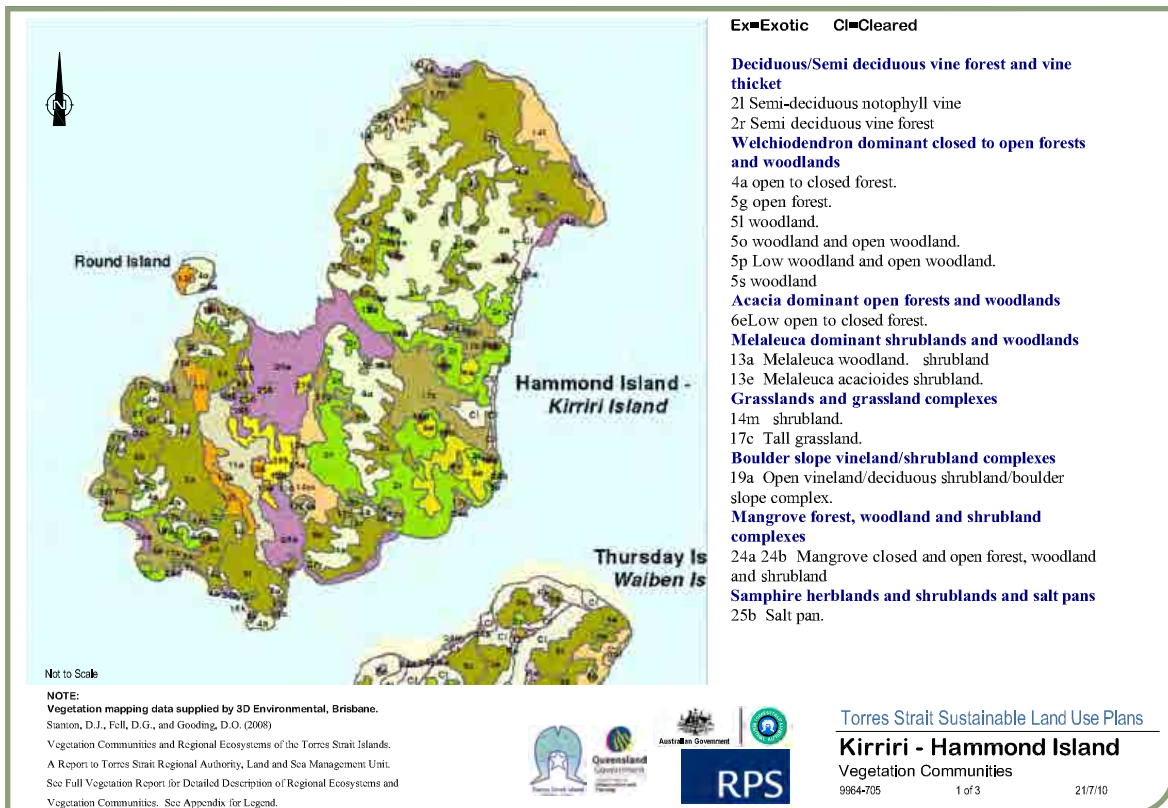
- Brush-tailed Tree Rat (*Conilurus pencillatus*) – Vulnerable; and
- *Lepidodactylus pumilus* – Rare.

Further details on habitat and fauna are included as Appendix 1.

Map 5 shows the significant vegetation communities on Hammond.



Map 5 **Vegetation**



For more detail, refer to Map No. 9964-705 contained in Maps.

“Plants, animals and birds are essential to the well being of the community as they are frequently associated with cultural significant activities and events. So, significant plants, animals and birds and their habitat need to be protected as they are part of the history and the future for the next generation.”

Several habitat types were identified at Hammond Island, including but not limited to:

Vine Forest

Vine forest vegetation is a prominent feature on Hammond Island, where it is found on elevated, volcanic soils above the influence of tidal water. These soils are characterised by their rocky surface and occur almost exclusively on sloping land. Key trees that characterise this vegetation type are the Milkwood (*Alstonia actinophylla*) and the deciduous Bat’s Wing Coral Tree (*Erythrina variegata*), as well as keystone species such as Figs (*Ficus* spp.).

Generally, remnants of vine forest form good continuity across the island and are therefore important for fauna given their naturalness and habitat function. Fauna observed in this habitat type include the litter skink *Carlia longipes*, Orange-footed Scrubfowl (*Megapodius reinwardt*), micro bats along flyways within creek lines (*Taphozous asutralis* and *Hipposideros cervinus*- Vulnerable NCA) plus a range of birds including the conservation significant Rufous Owl –Vulnerable NCA which occupy ecotones of open woodland and vine forest communities.

The trees and understorey plants of this vegetation type comprises many ‘rainforest’ species that provide food resources for birds like the Torresian Imperial Pigeon. Compared with other vegetation types on the island, vine forests contain the highest diversity of plant species. This is a vital factor that renders this vegetation type one of the most seasonally productive habitats on Hammond Island.

“Vine forest habitats contain the highest diversity of plant species on Hammond Island”

Woodland and Open Forest

Woodlands of mixed Eucalypt and Bloodwood trees as well as *welchidendron* dominated open to closed forest constitute the major vegetation assemblage on Hammond Island. They are featured mostly on freely drained hills and slopes on shallow, stony soils with low fertility. They are not as structurally complex as vine forests and comprise fewer woody species.

The shrub layer in woodlands on Hammond Island is sparse and poorly represented, and in some places comprise only saplings of canopy trees such as Bloodwoods (*Corymbia* spp.). Hollows provide habitat niche for nesting birds and reptiles however these are generally highly mobile or gregarious species able to persist within open grassy understorey habitats.

Paperbark Open Forest

Low open forest dominated by trees of Broadleaf Paperbark (*Melaleuca viridiflora*) and sometimes the Cajuput Tree (*Melaleuca cajuputi*). This community occurs on poorly drained, silty alluvial soils in low-lying areas adjacent to salt pans. It is a distinctive vegetation type characterised by the twisted stems of closely spaced paperbark trees.

These paperbark open forests provide ideal conditions for feral pigs (*Sus scrofa*), which because of their prolific digging and turnover of soil, have a profound effect on the ground flora, and no doubt, the niche availability for ground-dwelling fauna. It is expected that the highest representation of fauna in this environment is probably birds whose habitat is comparatively unaffected by the presence and effects of pigs.

“Habitat areas are the different places that plants, animals and birds live and grow. Habitat areas provide food, water and shelter for plants, animals and birds.”

Grassland

Grassland communities associated with poorly drained alluvial soils occur adjacent to paperbark open forests and the salt pans. They comprise species such as Blady Grass (*Imperata cylindrica*) and Giant Spear Grass (*Heteropogon triticeus*) and a plume grass (*Sarga* sp.). On these soils the grassland community is often interspersed with sections of Pandanus woodland (*Pandanus* sp.).

Very few species of fauna were observed in grassland communities, which could be a reflection of seasonal population fluctuations or recent burning. Evidence of feral pigs and Rusa Deer was observed where grasslands neighbour the paperbark open forests; whereas, pigs was considerably less evident in grasslands under Eucalypt/bloodwood woodlands due to the drier and shallower soil types.

Area is typically depauperate of fauna assemblages however nearby colonies of fruit bats (*Pteropus alecto*) utilise these vegetation assemblages for seasonal foraging of flowers and nectar.



Coastal & Tidal Environments

This complex of habitats is restricted to the immediate coastal environment with inland representation at the lowest elevations. The range of habitats in this group is characterised by distinct mangrove vegetation, small sandy coves and beaches, coastal mud and sand flats, and the inland salt pans and sand plains and hind dunes.

A majority of Hammond Island's coastline is made up of rocky headlands, which do not support conspicuous vegetation types except for patches of mangroves and associated coastal plants. Coastal Sand & Mudflats and Beaches are integral to the resource requirements for many birds that frequent the littoral fringe of the island and the sand and mudflats that are exposed at low tide. Away from the disturbances of human settlement, the coastal environment and isolated inland areas are important for a variety of migratory bird species.

Hammond Island, like other islands in the Torres Strait group is also an important “stepping stone” for migratory birds that periodically move through the region – many from Papua New Guinea, across the Torres Strait into Cape York Peninsula, or continue down the eastern coastline of mainland Australia via other islands.

The coastal environment therefore plays a vital role for birdlife and consequently hosts a high and fluctuating diversity of species. This is particularly evident for birds of conservation significance such as the Beach Stone Curlew and Eastern Curlew, which prefers undisturbed stretches of coastline or sheltered coves.

Inland Saltpans and Sand Plains

An extensive saltpan, sand plain and associated shrubland adapted to the inclusion of saline water forms the lowest inland point on Hammond Island and more or less dissects the island in a north-south orientation.

This land zone is clearly identifiable by its very flat surface with little if any relief. Vegetation of this area is either absent, very sparse or forms a shrubland of approximately 5 metres high where topography is marginally lower. The salt-encrusted surface in some areas is highly conspicuous and supports low-growing succulent plants adapted to hyper-saline conditions.

Fauna of the sand plains and saltpans include the Jabiru (*Jabiru mycteria*), Rusa Deer (*Cervus timorensis*) and feral pigs (*Sus scrofa*), plus a range of wading birds using similar habitat attributes as those found on mudflats in the coastal environment.

Sand Dunes are generally restricted to features occurring on the leeward side of mangrove forests in discrete locations. These dunes support low vine forest and thickets and offer a simplified suite of habitats than those present in the taller, more structurally developed vine forests on volcanic soils. A limited number of fauna species use these small dune features.

Reptiles such as the Robust Rainbow Skink (*Carlia longipes*) and Stout-tailed Skink (*Glaphyromorphus crassicaudus*) appear to use leaf litter and vegetation cover as a transition zone to more structurally developed vegetation such as vine forest or fringing mangroves.

Mangroves

Mangroves occur in a range of conditions on Hammond Island. Patches can be found settled in suitable substrates between rocky headlands or in association with inland sand plains and saltpans.

Mangrove vegetation forms an open to closed forest and provides an intricate combination of habitat niches. Mangrove communities provide roost habitat for black flying fox (*Pteropus alecto*) in more remote areas of Hammond Island and appears to support a relatively large day roost.

Modified Environments

The town and settled areas provide the modified environment which makes up a range of habitat niches for generalist fauna. Interestingly, modified habitats such as those formed by the development of the main residential zone and other areas of built infrastructure, support a relatively wide range of bird species.

A majority of the built development is focused just inland on the central eastern coastline of the island. It is in this location where the greatest representation of modified habitats is found.

Habitat resources are exploited opportunistically and mainly by birds, and their presence is an added aesthetic to community residents.

Dogs have an effect on the presence of native fauna in and around the town. Roaming animals will generally keep at bay terrestrial (ground-dwelling fauna) except for small reptiles.

Black Flying Foxes (*Pteropus alecto*) are common around the town and residential areas flying from roost habitats within mangrove areas to village areas where they can be found feeding on stands of Mangoes (*Mangifera indica*).

Feral pigs are also frequent visitors to urban areas and similarly can be found foraging in gardens as well as around Mango trees.

The modified environment also extends to the designated rubbish tip, which is located on the north-east of the island.

Map 6 shows the habitat areas on Hammond.



3.1.3 Issues Overview

The remaining and distinct vegetated character of Hammond relies on the retention of biodiversity and ecosystems. In addition, many of the fauna species identified on Hammond are habitat specific or specialist animals – often requiring particular resources to persist in a given environment. The presence of threatened birds highlights the regional significance of Hammond to provide high quality habitat and

long-term safe refuge for species of conservation importance.

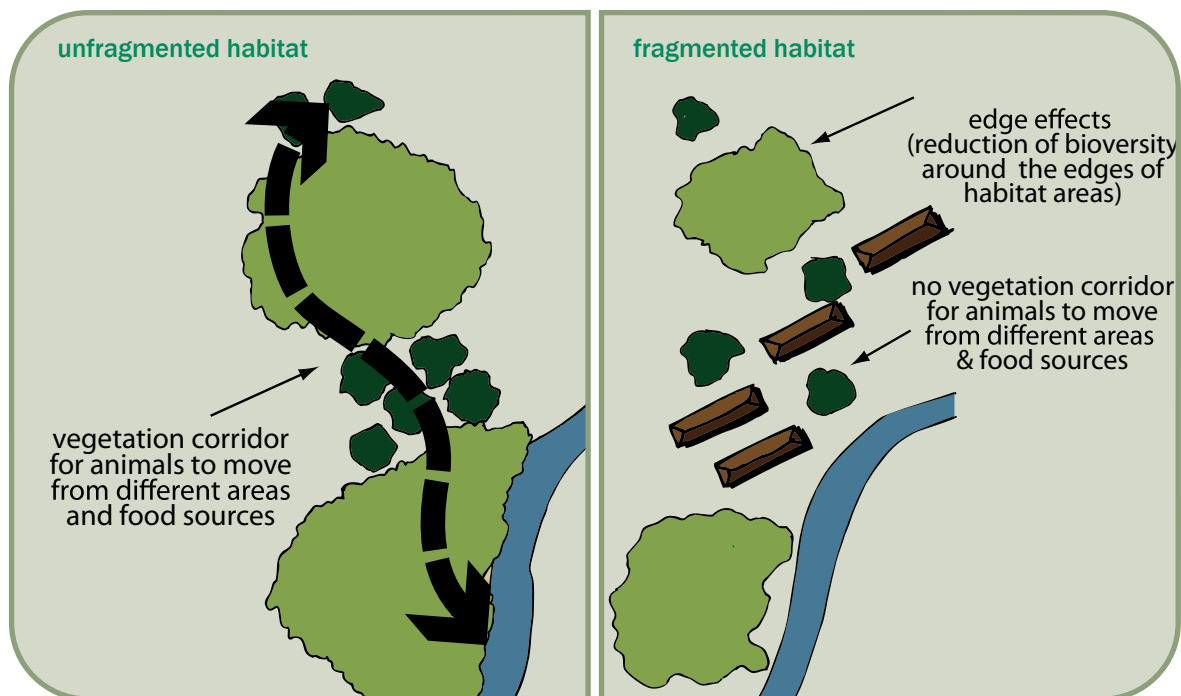
For these reasons, it is vital that land must be protected for conservation purposes.

The main risk to continued health and diversity of local species is from continued fragmentation and disturbance of the existing habitat and the introduction of weeds and pests.

Figure 1 shows the effects of fragmentation on vegetation

“biodiversity (biological diversity) is the variety of all life forms, including the different plants, animals and micro-organisms, the genes they contain and the ecosystem of which they form a part of”

Figure 1 Vegetation Fragmentation



Dogs are present in considerable numbers on the island and pose a risk to public and environmental health. Wild pigs are also present on the island and are likely to significantly affect the ground layer habitat structure, water quality and ground dwelling fauna (including significant species such as the emerald monitor). Regulated management of these animals is recommended.

The introduction of pests to Hammond Island is a major threat to the continued ecological health of the island. This is especially relevant for the introduction of cane toads that may come to the island in freight, and their potential impact to significant species such as varanids (emerald monitor).

An assessment of pest species and their impact on the local ecology is recommended.

“fragmentation is caused when vegetation and habitat areas are cleared resulting in these areas being divided into smaller, isolated patches”

3.1.4 Land Use Strategies

To minimise existing and future development on Hammond's plants, animals and birds, the following strategy is recommended:

- Those areas that are of critical environmental significance, host rare and endangered species, are in pristine condition and corridors that provide for the safe movement and successful breeding of wildlife should be protected:
 - from development
 - with a buffer of peripheral plantings of dense tree species to minimise encroachment into adjacent areas.

Housing and Infrastructure Expansion

- Opportunities on Hammond Island exist for the expansion of housing and infrastructure, without the need to clear large areas of important habitats such as vine forests or coastal marine systems. A portion of land at the base of Goldmine Creek, just outside of the existing town zone supports modified grasslands and sparse regrowth of woodland trees that is suitable for a logical expansion of the community. Although this land is relatively flat and more or less at a similar elevation as the nearby town and Council depot, flooding potential should be investigated as a number of creekline from larger catchments upstream exist within this area.
- A separation buffer from proposed development areas to the outfall of Goldmine Creek should be considered in order to maintain the biological integrity of this watercourse (which includes habitat for conservation significant species), and possibly limit indiscriminate access to culturally significant sites higher upstream.
- Small pockets of land with some suitability for single, residential housing are scattered along the base slopes and foothills on the eastern coastline. Each of these potential sites should be investigated for a range of matters including geological stability prior to development.
- Any development that proposes to clear native vegetation should consider the implications of loss or modification of habitat, increases in soil erosion and whether opportunities exist for revegetation of cleared or weed degraded land.
- Sections of the foreshore along the eastern coastline require revegetation for erosion protection. Although sections of this coastline are currently the subject of revegetation efforts, other opportunities are present that are suitable for similar efforts.

Landscape Health

- Many parts of Hammond Island, except for spot locations on the eastern coastline and some inland areas are in very high ecological condition, and support structurally well-developed vegetation communities with commensurately high levels of biological integrity. This is particularly so for the vine forest communities and woodlands on steep slopes and rugged landforms.
- The land of the lowest elevation which forms the sand flats and salt pans in the western interior of the island is also in very good landscape condition and has not been affected by human settlement due to periodic seawater inundation, and therefore its limited utility for settlement and establishment of infrastructure. A majority of this land supports dense shrublands of mangroves or stands of *Melaleuca acacioides* trees, or grasslands overtopped by paperbark trees (*Melaleuca viridiflora* and *M. cajuputi*). The network of vehicle tracks through this area has a short-term detracting effect from these values, although the surface appears to be 'self-repairing' after it is levelled by tidal inundation.
- The most seaward sections of land that form the interface between the town and coastal residences is often reduced to a narrow band of scattered mangrove trees or littoral vegetation on rocky and sandy substrates. Several areas have been cleared causing various stages of broken connectivity, and therefore this zone has lower ecological integrity and health. Nevertheless, vegetation in around the coastal fringe, provides a critical buffer from coastal elements and to some extent offers some protection from erosion.

- The town area has the lowest ecological integrity and condition due to its modification and the absence of large patches of remnant vegetation. It does however, provide habitat for a range of generalist fauna.
- Feral animals have a significant impact on the integrity of the natural landscape with springs sustaining populations of deer and pigs during the dry season. Opportunities exist for feral animal control through control of water points. Hunting is however an important cultural activity and source of food. Introduction of pest species (such as pigs and deer) from large Islands such as Prince of Wales has occurred to bolster feral animal populations. Dry season rodent populations were however very low and not expected to be a significant problem.

Habitat & Vegetation

- Vine forest remnants across the island are in good ecological condition with high levels of integrity. These forests provide important habitat, particularly for birds, micro bats and reptiles (mainly geckos and skinks). The vine forests surrounding Goldmine Creek are relatively undisturbed except for small-scale modification around former mining sites. Forest in close proximity provides significant habitat for the rare Rufous Owl.
- The coastal zone is a high value habitat area that provides resources for migratory birds including conservation significant species such as the Beach Stone Curlew and Eastern Curlew, as well as the Jabiru. These species have a preference for quiet, undisturbed habitats such as those found at Davies Beach and near Round Island.
- Modified habitat around the town area and rubbish tip provide habitat for generalist and gregarious species of fauna with wider habitat tolerances.
- The paperbark open forest, sand flats and salt pans of the interior of the island generally support fauna that are also found around the coastline in sheltered coves, beaches and mudflats. Conservation significant birds such as the Jabiru visit these habitats,

as do less desirable feral pigs and Rusa Deer that are sustained by springs.

- Grasslands support a relatively low diversity of vertebrate fauna and may have a fluctuating presence depending on factors such as burning and fire frequency and intensity. Seasonal population fluctuations may also account for the low count of fauna in this habitat type.

Animal Management

- Unregulated dogs are present mainly in the proximity of the town. They are also found in lower numbers elsewhere on the island, but accurate numbers are difficult to determine. Dogs pose a threat to migratory and resident seabirds, as well as local residents. Although dogs are euthanized on a periodic basis, their numbers should be monitored and regulated management is recommended to offset risks to public and environmental health, as well as resident fauna.



3.1.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Plants, Animals and Birds Best Practice, Land Use Strategy and Sustainable Outcomes?
- Has the development addressed its impact on the natural environment of Hammond?
- Has a minimum of 10 metres but up to 40 metres buffer been provided between the development and wading bird habitats and coastal vegetation (the buffer areas should consist of be coastal vegetation)?
- Is the development outside of areas identified for conservation particularly in areas such as forests in the western area of Hammond, along the southern and eastern tip of the island and the area south of the water storage area?
- Where new corridors are being created as part of a revegetation program do they:
 - have a minimum width of 50 metres
 - link remnant areas of bushland habitat
 - provide landscape connectivity
 - propose to revegetate using seed collected from plants that are indigenous to the Island
 - use plants grown from the area being revegetated
 - introduce inappropriate non-indigenous plants into the natural areas
 - propose to control weed growth and remove areas of infestation?
- If development is being proposed in the village, or around existing infrastructure or in proposed investigation areas:
 - are buffers, a minimum of 50 metres wide being provided between the development and the area requiring protection
 - does the proposed landscaping use plants native to Hammond
 - will it introduce inappropriate plants into the natural areas
 - does it propose to control weed growth and eradicate areas of festation?

3.1.6 Land Use Projects

To minimise existing and future impact to Hammond plants, animals and birds, the following projects are recommended:

- Revegetate and restore the vegetation along the sewer outfall line, including the establishment of other habitat corridors and linkages where opportunities exist
- Revegetate around the perimeters of existing development, landfill and infrastructure, with densely landscaped peripheral plantings of native plants be planted to minimise human encroachment into natural areas
- Implement a cat and dog management plan
- Commence a community environmental awareness program of the dangers of vehicular use of the beach and sand flat areas to the wader bird habitats.



3.1.7 Sustainable Plants, Animals and Bird Outcomes

- The unique environmental values of the community are maintained and enhanced for current and future generations.
- The ecologically significant systems, sensitive coastal systems, areas identified as rare, endangered or vulnerable or environmental value are preserved and protected for nature conservation, landscape/scenic quality, biodiversity and habitat values, to ensure the integrity of natural processes.
- Sustainable development practices minimise the effects of development on plants, animals and birds.
- Areas that have rare, endangered or vulnerable plants, animals and bird habitats should be protected from development.
- Intensification of land uses and new development sites should not reduce the community's plants, animals and birds.
- Encourage community participation in planning, restoring and protecting the community's natural environment.

3.1.8 Useful Resources

Legislation

Environmental Protection and Biodiversity Conservation Act 1999 (Cth) provides for the protection of the environment, particularly those areas of national significance, promotes the conservation of biodiversity and promotes a co-operative approach to the protection and management of the environment with Torres Strait Islanders.

www.comlaw.gov.au

Nature Conservation Act 1992 (Qld) provides a process to protect significant habitat areas and identify plants, animals and birds, which are rare, threatened or endangered and mechanisms to protect and conserve them.

www.legislation.qld.gov.au

Vegetation Management Act 1999 (Qld) deals with the management and conservation of remnant vegetation.

www.legislation.qld.gov.au

Policies, Guidelines and Fact Sheets

Biodiversity – on our agenda provides an overview of what is biodiversity and why it is important to conserve our plants, animals and birds

www.nrm.gov.au/publications/factsheets

National Strategy for the Conservation of Australia's Biodiversity outlines the processes and systems implemented by the federal government to protect biological diversity and maintain ecological processes.

www.environment.gov.au/biodiversity/publications/strategy

Queensland Biodiversity Policy Framework: sustaining our national wealth outlines the state government's approach to nature conservation, environmental protection and responsible land use planning to secure favourable environmental, economic and social outcomes.

www.derm.qld.gov.au/services_resources/index.php

Websites

Caring for our Country

www.nrm.gov.au

Department of Environment and Resource Management

www.derm.qld.gov.au



3.2 Coastline

3.2.1 Best Practice

- The natural dynamic processes that shape the coast and beaches are respected.
- Maintain and enhance connectivity between marine and coastal habitat to ensure the healthy function of the coastal zone and marine environments.
- Coastal resources are used sustainably and sensibly.
- The community's dependence on coastal resources for hunting and fishing is respected and integrated into the planning and management of the coastal zone.
- The ecological and cultural importance of the coastal zone is not compromised by inappropriate development and activities.
- Development within the coastal zone is managed in accordance with the principles of ecologically sustainable development and does not compromise access to the coastal zone.
- Reduce impacts of climate change on the coastline by:
 - recognising the importance of climate change on the coast;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the island's coastline.

3.2.2 Draft Queensland Coastal Plan

The Draft Queensland Coastal Plan was released for comment in late 2009.

Extracts from the Draft policy appear below...

The Draft Queensland Coastal Plan—which includes a Draft State Planning Policy Coastal Protection—makes a significant shift from the previous approach to ensure that coastal protection policies remain effective. The Draft Queensland Coastal Plan addresses planning for future urban development in and near coastal locations and—using the most up-to-date projections from climate change science—incorporates actions on the risks that climate change impacts pose to Queenslanders and our coastal resources.

The coastal zone is under significant and ongoing pressure—managing increasing demands to accommodate rapidly growing urban populations, maritime development, recreation and tourism facilities and long-term land management practices in coastal catchments.

These demands have accelerated the loss of coastal resources—such as biodiversity—along developed sections of the coast.

Modifications to the coast by various structures have also interfered with coastal processes such as the natural movement of sand and sediment. As a result, sand from beaches has been lost, foreshore vegetation lost, and the capacity of natural systems to adjust to the impacts of likely coastal hazards has been reduced.

The trend to establish development very close to the coast or in low-lying areas is placing many communities at risk from coastal hazards. These hazards include coastal erosion, storm tide inundation and permanent inundation as a result of sea level rise. The impacts of climate change—particularly accelerated sea level rise and cyclone and storm intensity—are increasing the coast's exposure to hazards within a relatively short timeframe.

The Draft Queensland Coastal Plan, which includes the Draft State Planning Policy Coastal Protection, aims to:

- *maintain physical coastal processes*
- *conserve and protect coastal resources*
- *continue public awareness and appreciation of coastal resources*
- *retain and enhance public access to the coast*
- *protect life and property from coastal hazards (such as coastal erosion and storm tide inundation)*
- *identify opportunities for suitably located maritime development*
- *ensure ecologically sustainable development of the coastal zone.*

The coastal zone encompasses Queensland's coastal waters and islands, ...and the area landward to five kilometres from the coast or to where the land is below 10 metres Australian Height Datum, whichever is further from the coast. The coastal zone extends beyond the foreshore to the coastal plains and hinterland where activities can also have a flow-on effect to the coast if not carefully managed.

Coastal management districts (CMD) are areas requiring particular development controls and management practices. The Department of Environment and Resource Management (DERM) has an assessment role as a concurrence agency, or as the assessment manager, under the Integrated Planning Act 1997 (IPA) within CMDs.

The Draft Queensland Coastal Plan proposes to adopt

- Coastal Zones – including all islands
- Coastal Management Districts - - appears to include all islands
- Sea level rise of 0.8m for climate change over the next 100 years
- Defined Storm Tide Event (default is HAT + 2.0m)
- High Hazard Inundation Area (areas with greater than 1m of inundation)
- Low Hazard Inundation Area (areas with less than 1m of inundation)

Some types of development within the Coastal Management Districts would require assessment by the Department of Environment and Resource Management (DERM).

Some types of development within the Coastal Zone and outside of the Coastal management districts would require assessment by the Torres Strait Island Regional Council (TSIRC).

Further details will be available if and when the Draft Queensland Coastal Plan is adopted.

The coastal mapping of the islands has been undertaken to show the extent of the proposed QCP zones although it is only approximate.

Further information is available at:

www.derm.qld.gov.au/coastalplan/index.html



3.2.3 Overview of Current Situation

Excluding the village area, the coastline has largely been undeveloped and is in relatively pristine condition.

The large shallow delta on the west of the island and south of the community becomes inundated in the wet season and by king tides. Traditionally, this land was occupied by the Kaurareg in the dry season, with the traditional owners retreating to other islands and the mainland in the wet season.

Development runs along the eastern coastline for approximately 3 kilometres, with an esplanade road separating the coastline from small groups of houses.

HAT is currently at or below the esplanade with no impact on the house structures. The main community is situated on an elevated saddle above the coast. However, this saddle falls to the west and becomes a shallow valley delta. It is very shallow and king tides encroach up to 900 metres from the edge of the mangroves.

The planning and management of the coastal and marine environment of Hammond is shared between the Commonwealth and state government and its agencies, the TSIRC and Traditional Owners. The Commonwealth government is responsible for waters beyond three nautical miles from low water mark of Hammond coastline.

Inside the three nautical mile limit and for coastal land, the State government exercises control of activities including licensing of waste disposal, protection of rare and endangered flora and fauna, oil pollution, mineral exploration and exploitation, water quality, marine navigation and provision of boating facilities.

The TSIRC is responsible for land above low tide watermark.

“Beaches are often referred to as the sandy area that separates the sea from the land. However, this area is only part of the beach system which beings in the sand dunes above the high water mark and stretches out to the sea past where the waves break.

3.2.4 Issues Overview

The primary consideration for the Hammond Island coastline is the conservation and protection of its coastal environments, which are subjected to urban pressure, increasing weeds and pest infestation, recreational use and the expansion of the village along the coast. The coastal expansion of the village could have a harmful impact on the existing landscape character of Hammond Island. The protection of the pristine natural environment along the coastline should be addressed in all planning documents and processes relating to Hammond Island.

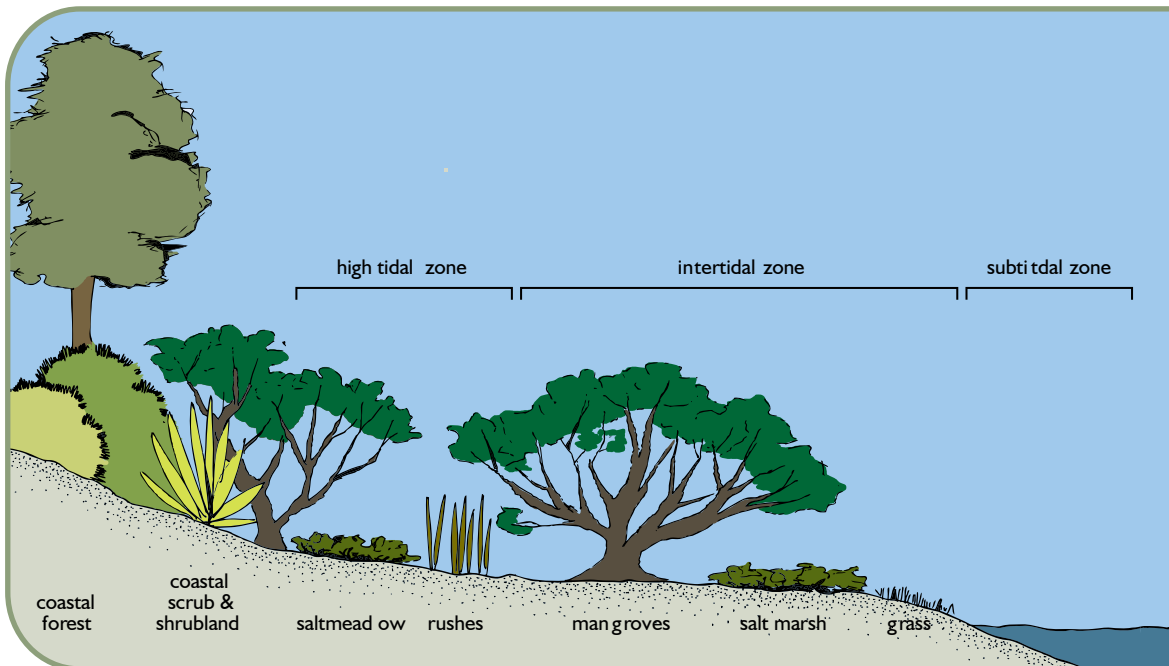
New development or changes to existing structures along the coast must be assessed for the long-term suitability of the site and the vulnerability to natural coastal processes (coastal erosion, storm events and projected sea level rises). When constructing, upgrading or maintaining coastal infrastructure, there must be an increasing focus on the principles of ecologically sustainable development to ensure that the values and the attributes of the coastline are not compromised by inappropriate use and development of the environment.

Land use planning can only make good decisions if the best information is available and is understood and supported by the community. The involvement of the community in the decision making process is essential for the successful implementation of any land use strategy.

Figure 2 shows all the different areas of the coastline, which form the ‘coastal zone’.

In areas where beaches occur, vegetation sand dunes provide coastal protection. Sand dunes absorb the erosive energy of waves generated by cyclones and storms. Dunes also hold reservoirs of sand to replenish the beach during periods of wave erosion. Vegetation on the dunes trap and hold sand blown from the beach aiding dune build up and stopping sand from being blown inland and lost from the active beach and dune system”

Figure 2 The Coastal Zone



3.2.5 Land Use Strategies

To minimise existing and future development on the coastline of Hammond and the impacts of natural hazards, the following strategies are recommended:

- Not permit urban development and infrastructure along the southern, western and northern coasts of Hammond.
- New development is contained within the village, identified residential expansion areas and the investigation area.
- All development proposals must:
 - include landscaping and/or revegetation plans that are in accordance with the Best Practice, Land Use Strategies and Sustainable Outcomes in Section 3.1 Animals, Plants and Birds;
 - be developed in an ecologically sustainable manner;
 - maintain or improve the values of coastal wetland, estuaries, inlets, riverine corridors, dunes, shorelines, high scenic qualities and retain visual continuity; and
 - address the proposals vulnerability to natural coastal processes (coastal recession, storm events and projected sea level rises);
 - utilising existing vacant lots above HAT 2100; and
 - protect the berm by not encouraging breaches or breaks.

3.2.6 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Coastline Best Practice, Land Use Strategies and Sustainable Outcomes?
- Is the development in the village? If so, does it
 - complement existing and multiple-use of suitable sites
 - reflect and enhance the coastal character of the village and surrounding areas
 - incorporate ecologically sustainable design
 - maintain or improve the values of the coastline, the high scenic qualities and visual continuity
 - address the proposal's vulnerability to natural coastal processes (coastal recession, storm events and projected sea level rises)
 - address the impact of the proposal on water resources, environmental and social needs, infrastructure and population capacity
 - identify and protect important coastal assets of ecological, visual and cultural significance?



3.2.7 Sustainable Coastline Outcomes

- Protect and maintain the community's coast, including the foreshore, coastal wetlands, dunes, marine ecosystems, coastal marine waters and areas of geological and geomorphological, cultural and historic significance.
- Coordinate the management and use of natural marine resources to enhance community, economic and environmental values.
- Land adjoining coasts and beaches are for community purposes.
- An integrated approach and application of best practice to catchment and coastal management, waterways and wetlands is utilised to provide for environmental flow and the highest quality of water within the community's inland waters, estuaries and the sea.
- The community is involved in the protection and management of the coastline to ensure the protection of their cultural heritage.

State Coastal Management Plan: Queensland's coastal policy outlines the state government policies for the protection and management of Queensland coastal resources.

www.derm.qld.gov.au/environmental_management/coast_and_oceans/index.html

Websites

Department of Environment and Resource Management

www.derm.qld.gov.au

Australian Maritime Conservation Society

www.amcs.org.au

CoastCare

www.coastcare.com.au

OzCoasts

www.ozcoasts.org.au

3.2.8 Useful Resources

Legislation

Coastal Protection and Management Act 1995 (Qld) provides for the protection, conservation, rehabilitation and management of the coast including resources and biological diversity.

www.legislation.qld.gov.au

Policies, Guidelines and Fact Sheets

Marine Debris Factsheet outlines the cause and potential aims of marine based pollution and debris.

www.amcs.org.au

Marine Pollution Factsheet outlines the causes and potential aims of marine based pollution and debris.

www.amcs.org.au



3.3 Tides & Storm Surge

3.3.1 Best Practice

- Natural dynamic processes that shape the coastline are respected.
- Reduce community risk, exposure and damage to the adverse impacts of natural hazards such as tides and storm surges by planning coastal use and development to ensure that significant adverse effects of tides and storm surges are avoided, mitigated or remedied.
- The impacts of tide inundation and storm surge are reduced by limiting development along the coast.
- Where development cannot be avoided in areas identified as affected by tides and storm surges, it is to be undertaken in a manner that minimises impacts.
- Reduce the vulnerability of the community to the impacts of climate change by:
 - recognising the importance of climate change on the sea and land environments of the community;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the tide and storm surge levels.

3.3.2 Overview of Current Situation

Due to the geographic location of the Torres Strait as the interface between the Coral Sea and the Arafura Sea, together with the regions shallow bathymetry, tides are extremely complicated varying widely particularly from east to west but can even vary significantly over a few kilometres. The tide range is up to around 5 metres, with the highest tides occurring over the summer months (January - March). This period coincides with the period of greatest likelihood of cyclone occurrence and storm surge adding to the potential for adverse inundation events. Other factors also affect water levels throughout the region including regional wind driven gradients (these slope across Torres Strait and reverse seasonally), water density, as well as the El Niño southern oscillation etc.

The low-lying nature of many islands means the region is particularly vulnerable to tropical cyclones and storms, as well as the potential impacts of climate change. The tropical cyclone and storm impacts on communities are exacerbated by poorly developed coastal

infrastructure, inappropriate development along coastlines, lack of scientific research and housing design. Due to the poor and infrequent transport, there is no escape strategy to temporarily relocate the community during extreme events.

Table 1 shows the predicted tide levels.

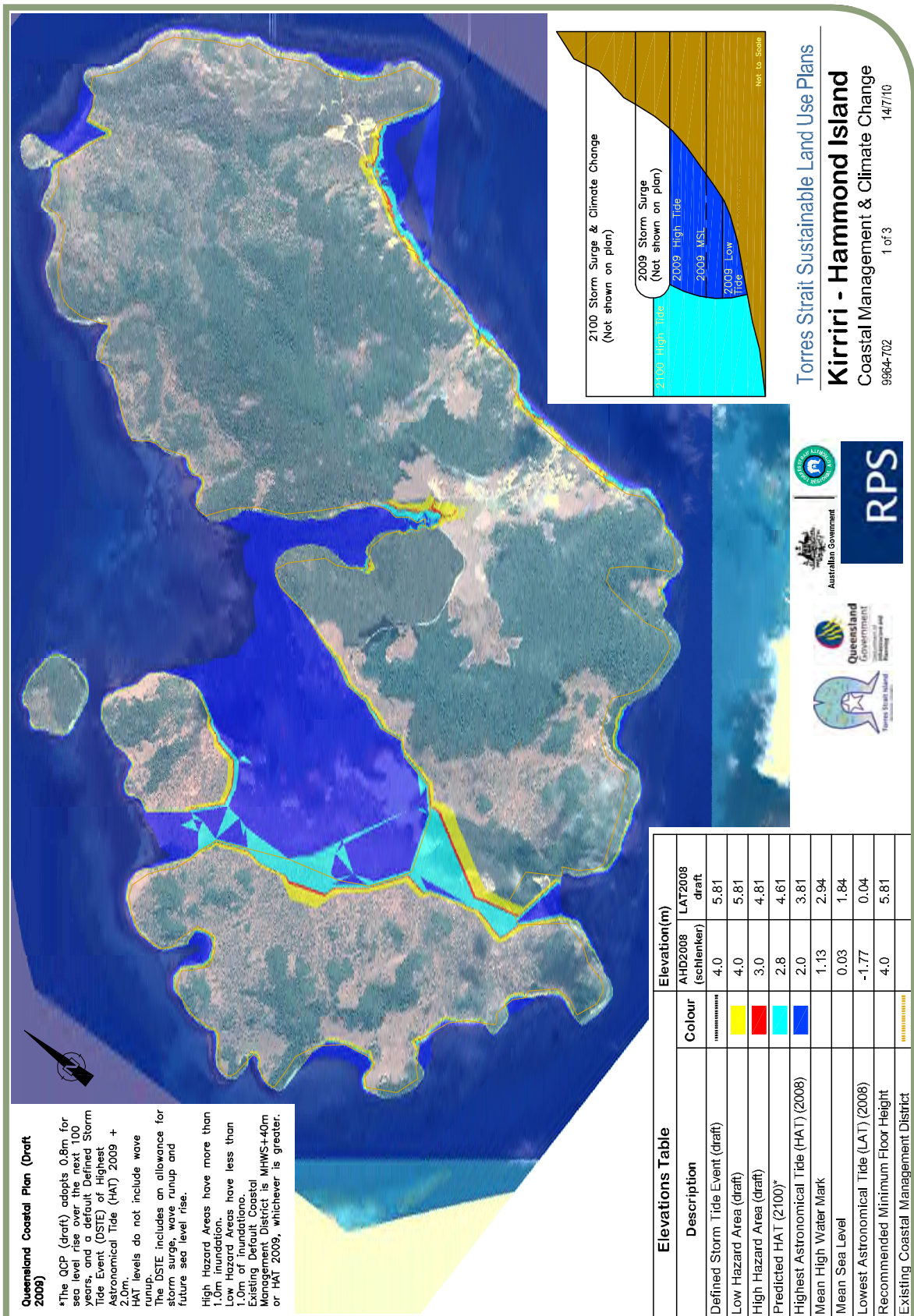
Map 7 shows the impact of coastal inundation and sea level rise.

Table 1 Present and Predicted Tide Levels

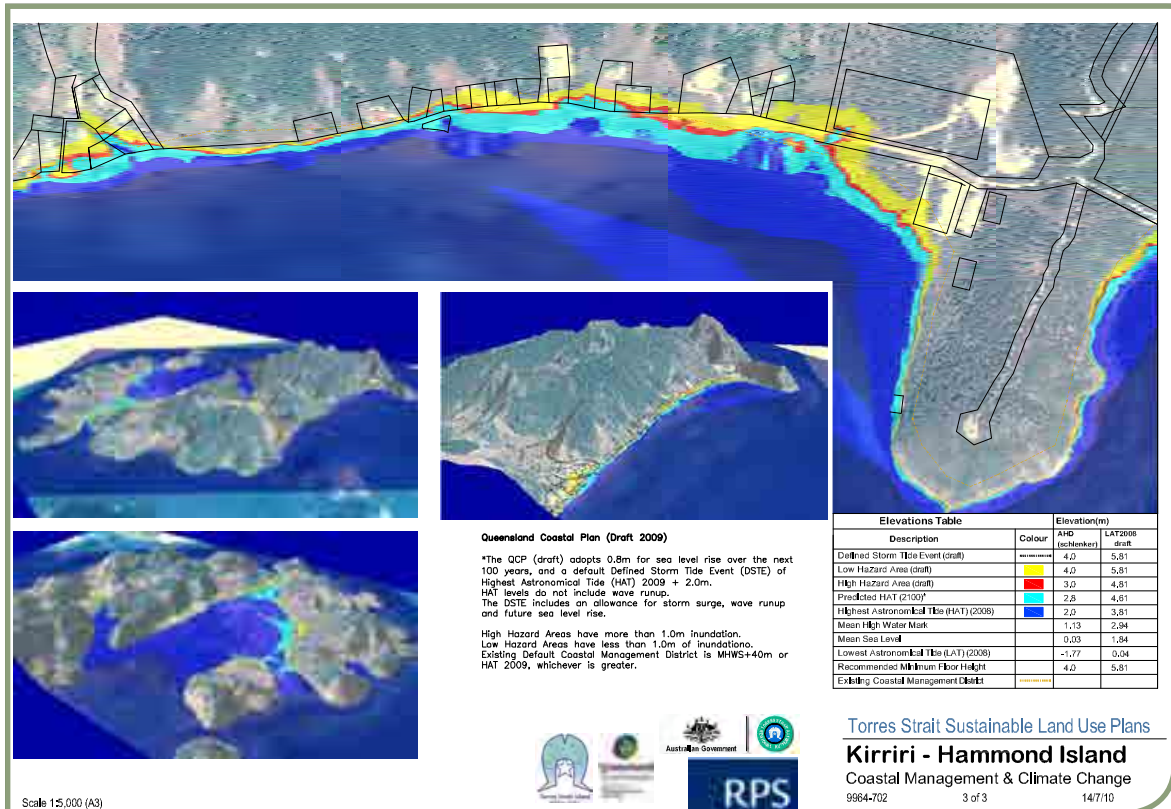
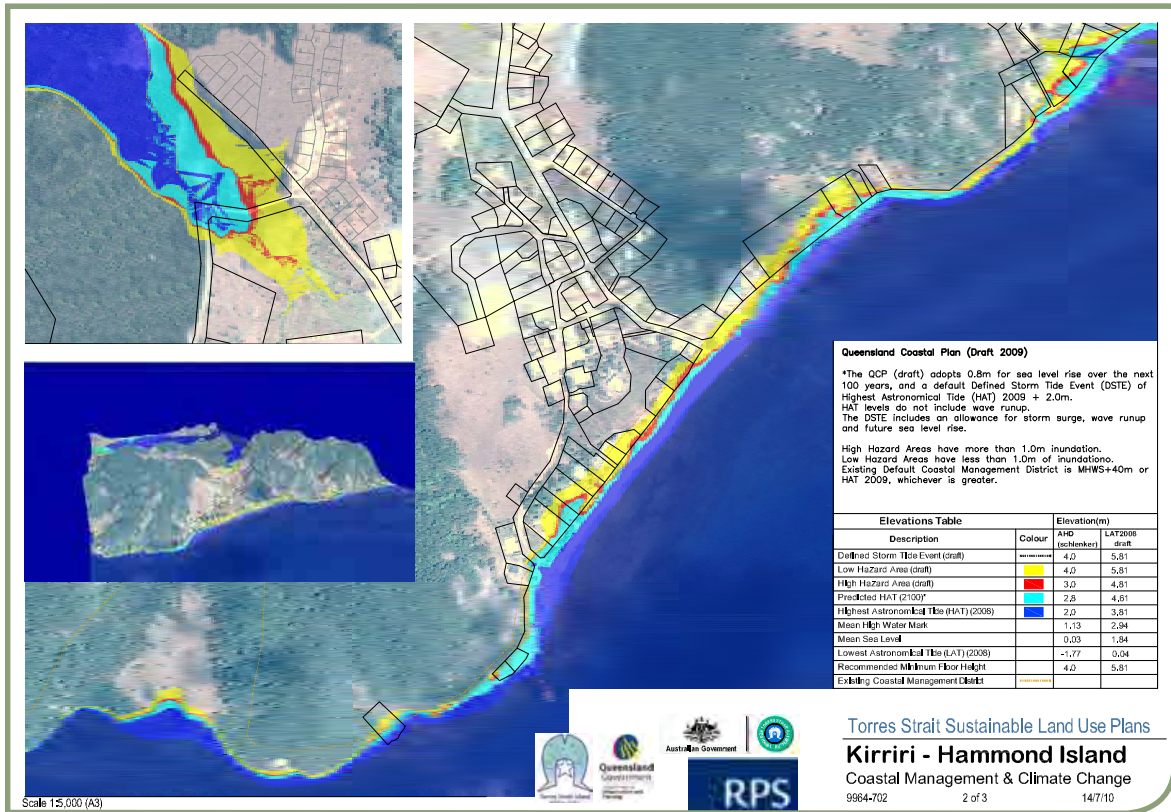
Description	Torres Strait Tidal Analysis MSQ2009 - LAT2008	Ausgoid AHD 2008	MSL2008	Schlenker Island Mapping c1998
Defined Storm Tide Event Draft DSTE	5.81	4.00	3.97	4.00
High Hazard Zone	4.81	3.00	2.97	3.00
Highest Astronomical Tide (HAT2100)	4.61	2.80	2.77	2.80
Highest Astronomical Tide (HAT2008)	3.81	2.00	1.97	2.00
MHHW	2.94	1.13	1.10	1.13
MLHW	2.26	0.45	0.42	0.45
Mean Sea Level MSL	1.84	0.03	0.00	0.03
MHLW	1.42	-0.39	-0.42	-0.39
MLLW	0.74	-1.07	-1.10	-1.07

Source: Parnell & Smith, 1997; Schlenker, 1998





For more detail, refer to Map No. 9964-702 contained in Maps.



For more detail, refer to Map No. 9964-702 contained in Maps.

3.3.3 Issues Overview

The Intergovernmental Panel on Climate Change (2007) has projected sea levels to rise by the end of the twenty first century by up to 0.8 metres. This projection allows for sea level rise due to ice melt and thermal expansion for various greenhouse gas emission scenarios and includes an allowance for accelerated ice melt, relative to 1990. The IPCC note higher rises cannot be ruled out owing to uncertainty

about the potential for additional ice melt, with recent scientific papers also suggesting higher levels may be possible. Current consensus also indicates ongoing rise beyond 2100 is likely for many centuries, independent of actions to stabilised greenhouse gases.

Figure 3 shows how storm surges impact on the village.

Figure 4 shows how with rising sea levels, storm surges will further impact on the village

Figure 3 Storm Surge Area

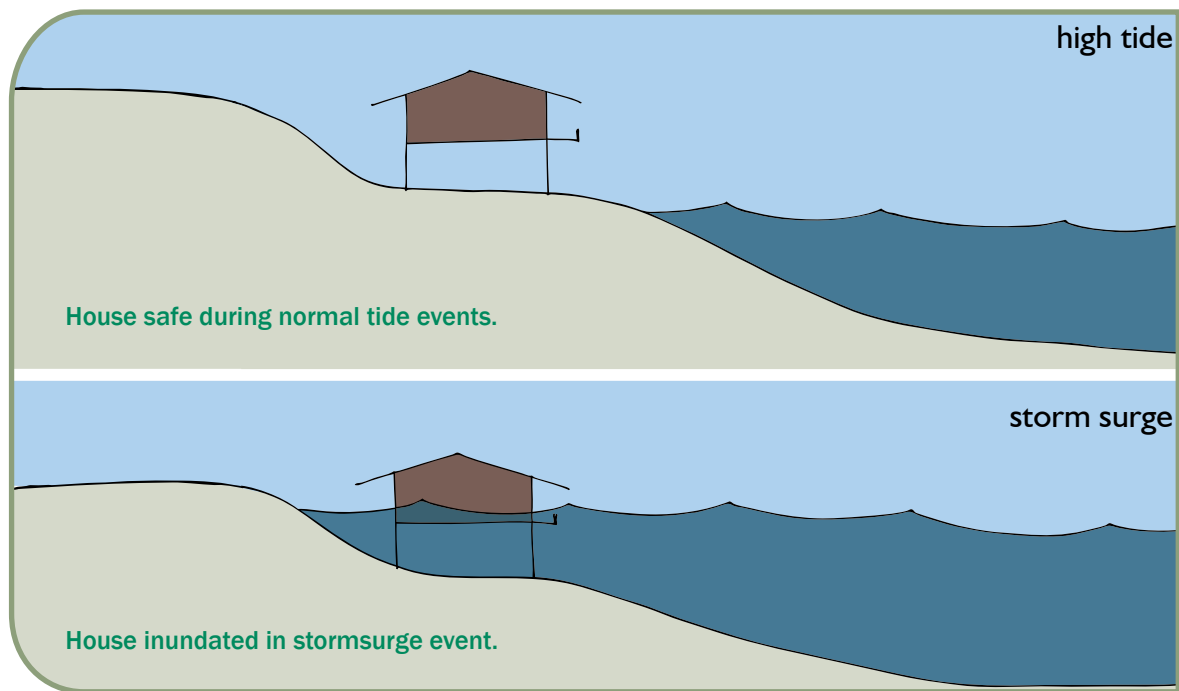
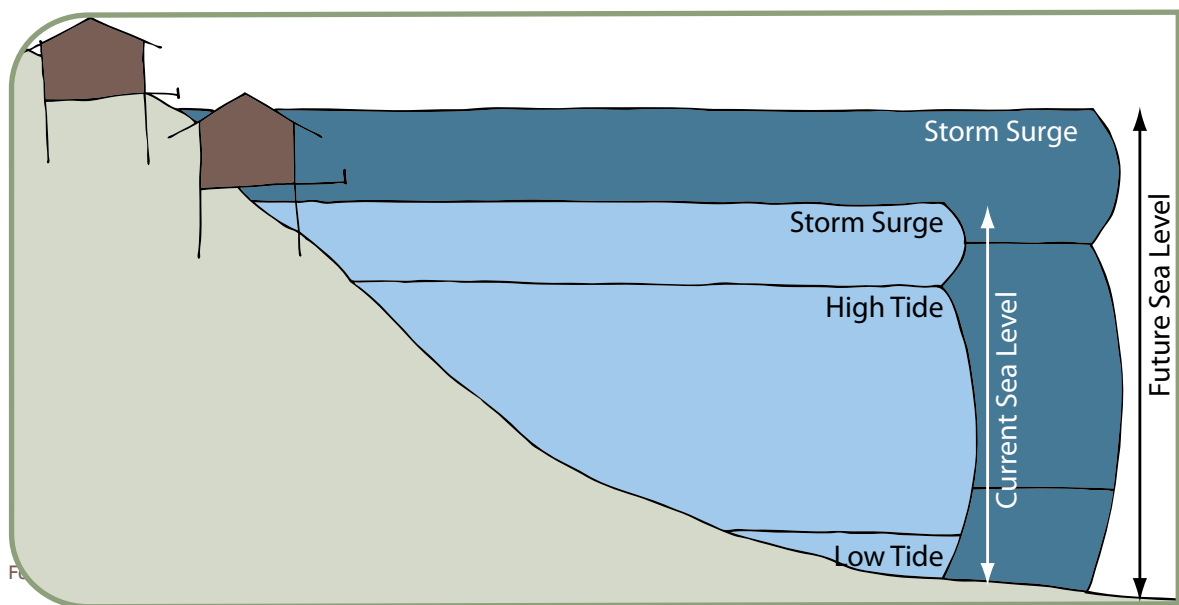


Figure 4 Climate Change and Sea Level Rise



Tidal information for Hammond is available from the predictions in the Seafarer Tide Charts published by the Australian Hydrographic Service 2009. The current island mapping is based on mean sea level (AHD 1998).

The Seafarer Tidal Predictions were analysed to see how many times the predicted high tide reached the level of the barge ramp each day. The barge ramp was predicted to be overtopped on zero days in 2010.

It should be noted however that the existing data and tidal predictions are known to be of questionable accuracy, thus the exact level of risk to the community is unknown. In addition, no assessment has been undertaken of storm surge, to assess the potential likelihood of inundation above mapped HAT values.

The current adopted amount for sea level rise over the next 100 years of 0.8 metres was then added to each high tide. When allowing for this sea level rise the predictions extrapolate to the seawall being overtopped 87 days a year by the year 2100.

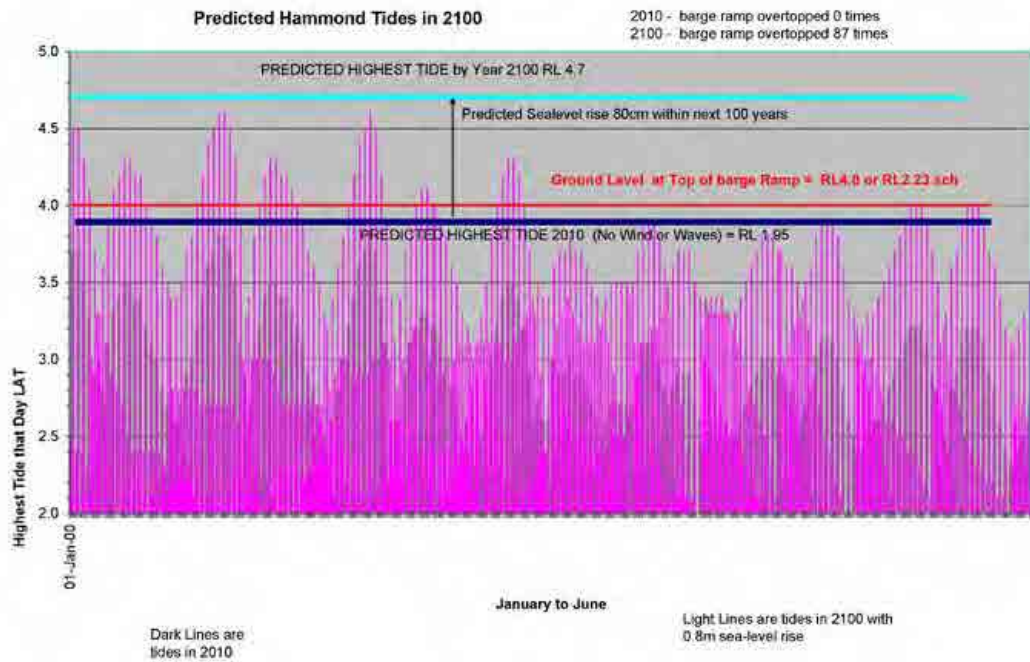
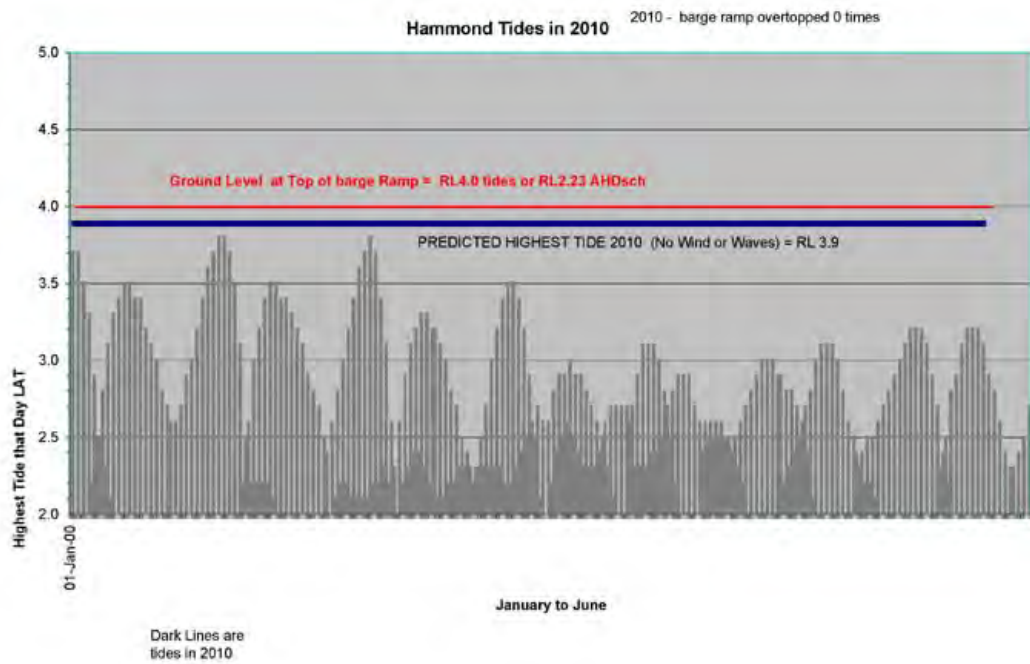
The sea level rise relates to a global worldwide average sea level rise and has been used, as there are no actual sea level predictions specifically for the Torres Strait. For this reason, this Plan has adopted a possible increase in sea level of 0.8 metres by 2100.

The adopted 0.8 metres should be revised at regular intervals to consider the current scientific consensus on sea level rise, as the impacts of sea level rising has a dramatic effect on Torres Strait communities. This is particularly important for the design and construction of infrastructure on the islands (such as sea walls, house slabs and desalination plants).

Figure 5 shows the present and predicted high tide occurrences.



Figure 5 Present and Predicted High Tide Occurrences



For this reason, the designs for new houses or modifications to existing houses should incorporate mitigation measures that include a 'refuge area' designed to withstand possible storm surge and tidal inundation in extreme events. This can be easily incorporated into existing designs by amending the walls of the existing ground floor toilet area from weatherboards to reinforced masonry/concrete walls that extend from the concrete slab to the upper ceiling of the first floor. These areas can contain toilet or laundry facilities downstairs and bathroom/toilet areas on the first floor. Ideally, access stairs should be located next to this core 'refuge' area.

Hammond Island's coastal ecosystems and fringe landforms — among them, coastal flood plains, forests, dunes, berms serve as natural shock absorbers for protecting coastal infrastructure and land uses against tropical storms; they also provide critical storage capacities for storm surges and floodwaters. When the functioning of these coastal and fringe systems is threatened and damaged, Hammond Island's coastal and urban areas are vulnerable. Action needs to be taken to conserve and enhance the ecological and human resilience to the sea level rise and storm surges through effective land use planning. However, there are no land-use planning and design guidelines in the Torres Strait to provide incentives for developers and their architects to recognise or accommodate vulnerability to climate variability and change.

For Hammond Island, this includes a combination of strategies that are addressed in the next section.

The Coastal Planning for Adaptation to Global Climate Change identified physical impacts that include:

- submergence of low-lying wetland and dry land areas;
- erosion of soft shores by increasing offshore loss of sediment (e.g. beaches);
- increased salinity of estuaries and aquifers;
- rising coastal water tables; and
- increased and more severe coastal flooding and storm damage.

The people of Hammond Island are prepared to participate in a process of adapting to environmental and climate change that may include:

- not building new infrastructure in hazardous locations unless absolutely essential;
- moving the focus of the island village towards higher parts of the island; and
- allowing some parts of the island to erode, where that erosion is not causing harm to people, infrastructure or important cultural sites, while monitoring the situation.



3.3.4 Land Use Strategies

The first strategy is to encourage the community to move from the low-lying coastal floodplains and high hazard areas to land beyond a 40-metre setback from the top of the beach, as stipulated by state government coastal planning requirements. Over time, land within the setback area would be used for general community purposes. This strategy would result in a buffer between the shoreline and the village, to minimise the impacts of tide inundation and storm surge to development and infrastructure beyond the 40-metre setback.

In some Torres Strait communities, development anywhere on the island may impact on the coastal environment. In such cases, the entire island should be designated as a 'Coastal Management District'.

At Hammond Island, there is minimal impact from coastal inundation, with the high tides generally occurring on the low side of the esplanade. However, the following strategy should be considered:

- Encouraging development to consider the physical coastal processes, in particular seeking to minimise:
 - erosion of adjacent coastal areas;
 - interference with the flow of water;
 - alteration of existing water flows; and
 - damage to existing coastal vegetation.
- The management and reduction of greenhouse gas emissions through improved community awareness, knowledge and behavioural changes.
- New house design and modifications to existing houses should incorporate mitigation measures, including:
 - provision of a 'refuge area' which is built on a concrete slab and includes reinforced masonry/concrete walls from the ground to the upper ceiling;
 - a 'strong area' that is generally a bathroom/toilet or laundry/toilet;
 - an upper floor living area; and

- habitable floor levels of a minimum 6.4 metres LAT (which is equivalent to the current HAT plus 1.5m for storm surge or where possible the equivalent allowance in 2100).

Or alternatively: adopt 100 year ARI level from inundation study when finalised (or where possible the equivalent allowance in 2100)

- Mechanical and electrical works (e.g. pump stations) are to be above predicted 2100 HAT, plus 2m storm surge; and

Or alternatively: about 500 year ARI level from inundation study when finalised (or where possible the equivalent allowance in 2100)

- Regular review of sea levels to take into account the most current predictions.
- Sea level monitoring to improve accuracy of data, tidal predictions, knowledge of storm surge and sea level rise.
- Immediate development of emergency response plans for storm surge and cyclone occurrence to manage risk to life and property.
- Considering the development of long term relocation plans should sea level rises exceed 0.8m.



3.3.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Tides and Storm Surge Best Practice, Land Use Strategies and Sustainable Outcomes?
- Is the development consistent with local and regional climate change response strategies?
- Where the development is proposed in an area identified as affected by tides and storm surges, is it:
 - accompanied by a detailed hydraulic study;
 - designed to resist water forces as a result of inundation;
 - designed to incorporate any recent sea level rise research that changes the current predicted sea level rise of 0.59 metres; and
 - designed to prevent the intrusion of floodwaters as a result of inundation?
- Does the development affect counter disaster operations?

3.3.6 Land Use Projects

To protect the environments on Hammond, a regular review of scientific data on predicted sea level rises is required. It is recommended an investigation be undertaken specifically for the Torres Strait region into predicted sea level rises due to climate change. This investigation would provide information that is more relevant than the global value of 0.59 metres which is currently adopted.

3.3.7 Sustainable Outcomes for Areas affected by Tides and Storm Surge

- Coastal use and development is planned and managed to ensure that significant adverse effects of tidal inundation and storm surges on the natural and man made environments are avoided, mitigated or remedied.
- Development and use of the coast is to maintain and, where possible, enhance the quality of life for residents and visitors by avoiding areas identified as being adversely affected by tidal inundation and storm surges.
- The level of storm tide risk is determined by the community.



3.3.8 Useful Resources

Legislation

Coastal Protection and Management Act 1995 (Qld) provides for the protection, conservation, rehabilitation and management of the coast including resources and biological diversity.

www.legislation.qld.gov.au

Policies, Guidelines and Fact Sheets

Mitigating the Adverse Impacts of Storm Tide Inundation provides advice and information on the interpretation and implementation of the Coastal Hazard Policy of the State Coastal Management Policy.

www.derm.qld.gov.au/register/p01698aa.pdf

2006 King Tides in the Torres Strait Factsheet gives an overview of king tides in the Torres Strait 2006 and how the (Environmental Protection Agency) EPA uses this information is king tide predictions for the rest of the state.

www.derm.qld.gov.au/register/p01864aa.pdf

Queensland Storm Tide Information Resource Factsheet provides an overview of the Queensland Storm Tide Information Resource, which seeks to compile and consolidate all available storm tide information in Queensland into a single, stand-alone and portable resource.

www.derm.qld.gov.au/register/p02295aa.pdf

Preparation of a Shoreline Erosion Management Plan Guideline provide advice to local governments in preparation a Shoreline Erosion Management Plan to proactively plan for erosion management in erosion hotspot areas.

www.derm.qld.gov.au/environmental_management/coast_and_oceans/index.html

Websites

Department of Environment and Resource Management

www.derm.qld.gov.au

National Tidal Centre

www.bom.gov.au

OzCoasts

www.ozcoasts.org.au



3.4 Waterways and Wetlands

3.4.1 Best Practice

- Natural waterways, wetlands, catchments and associated natural dynamic processes that shape them are respected, managed to protect the ecological processes, enhance the water quality, conserve riparian ecological values and landscape quality, while acknowledging nature based recreation opportunities.
- The quality of all water sources are protected and wherever possible, enhanced.
- The ecological and cultural importance of waterways and wetlands and their sources are not compromised by inappropriate development and activities.
- Maintain and enhance riparian corridors and buffers to ensure the healthy function of the riparian zone of waterways and wetlands.
- Reduce the vulnerability of the community to the impacts of climate change by:
 - recognising the importance of climate change on the waterways and wetlands environments of the community;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the community's waterways and wetlands.

3.4.2 Overview of Current Situation

A 1:100,000 topographic map of Hammond Island shows numerous watercourses and seasonal drainage channels, as well as fresh water springs found on Hammond Island.

None of these features were observed to be flowing except for soakage from embankments and one spring with some shallow standing water. It was interesting to observe the importance of water in the landscape, where for example, the spring with a pool of surface water was an obvious focal point for birds, reptiles and pigs.

Goldmine Creek is an important watercourse with significant habitat values. Streams flowing into this system, particularly those upstream are considered equally important. Topographically, Goldmine Creek forms a central catchment area and therefore has high conservation significance.

A majority of the vegetation lining this watercourse is vine forest in reasonably sound condition, and it is possible that the feature becomes a seasonal refuge for a wide range of

fauna when key resources of food and water are readily available.

Hammond is noted for its freshwater springs, and as mentioned earlier, these are important ecological features for wildlife. Several of these may have cultural and historical value and their conservation should be an important consideration for future planning.

Interestingly, the larger watercourses on the island are the habitat for a variety of reptiles, with a conspicuous representation of geckos and skinks that take advantage of the shelter and microhabitats afforded by the rock-strewn channels and embankments and also the pockets of trapped leaf litter.

Map 6 shows the identified significant watercourses and habitats.

“a waterway can be a creek, brook, river or stream and include a lake, estuary or inlet at its base. Waterways also include floodplains and wetland systems that overflow into rivers, as well as any lakes or swamps that are filled by streams rather than shallow groundwater”

3.4.3 Issues Overview

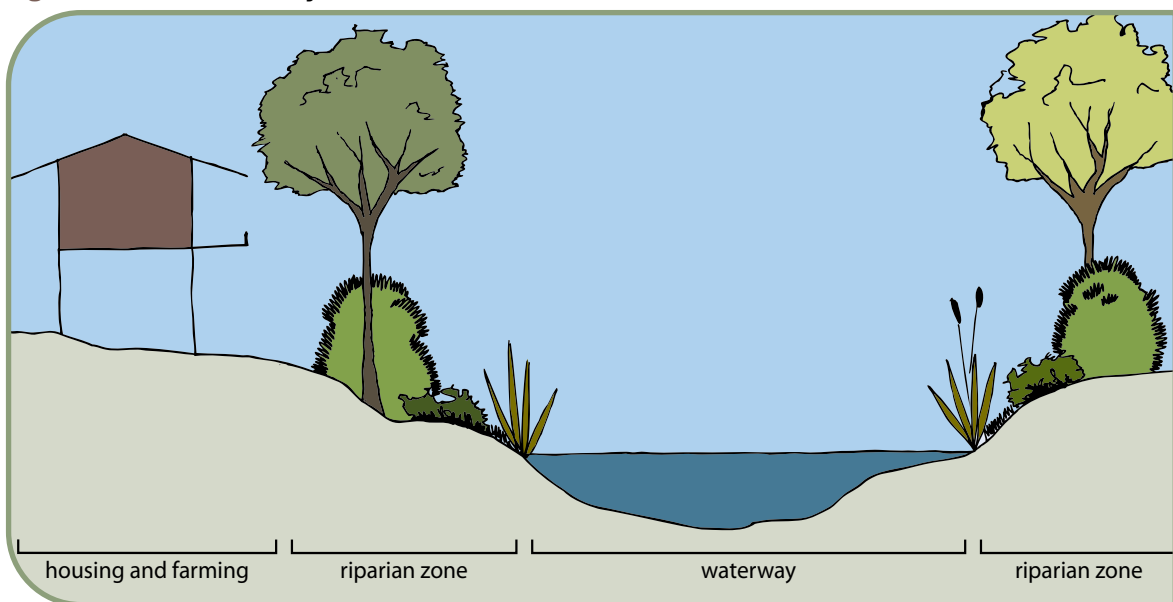
Waterways, associated floodplains and riparian areas support a range of natural and economic functions, including habitat for land and sea wildlife, nursery grounds for creek and bay fisheries, potable water supplies, stormwater conveyance, provision of sand for building materials, ecological linkages, scenic amenity and recreational opportunities.

A lack of a continuous water supply and the inefficient water use are a problem on

Hammond Island due to the transient nature of the waterways. Any new or intensification of existing land uses on Hammond Island should not utilise groundwater resources. The impact of Hammond Island’s water problem is discussed in 6.1 ‘Water’ of the Plan.

Figure 6 shows how if buffer areas are left between waterways and wetlands, it provides protection to the waterways and wetlands from the impacts of development.

Figure 6 Waterway and Wetland Buffer



“wetlands are predominately areas that are permanently, seasonally or intermittently waterlogged or inundated with water that may be fresh, saline, flowing or static. Seasonal wetlands, particularly seasonal waterlogged wetlands, often have a higher plant and animal species richness than permanent wetlands”

“a catchment area or basin is land which is bounded by natural features such as hills or mountains from which all runoff water flows to a low point. This low point will be a dam, a location in a river or the mouth of a river where the water enters the ocean.”

3.4.4 Land Use Strategies

To minimise existing and future development impacts on Hammond’s waterways and wetlands the following strategies are recommended:

- All development proposals must:
 - include landscaping and/or revegetation plans that are in accordance with the Best Practice, Land Use Strategies and Sustainable Outcomes of ‘3.1 Animals, Plants and Birds’.
 - be ecologically sustainable development;
 - maintain or improve the values of coastal estuaries, inlets, dunes, shorelines, high scenic qualities and retain visual continuity;
 - address the proposals vulnerability to natural coastal processes (coastal recession, storm events and projected sea level rises); and
 - where adjacent to a degraded riparian corridor, include rehabilitation plans for the corridor.
- Development controls based on the assessed risk for developments near waters include controls on minimum elevations, setbacks and lot sizes, as well as maximum densities and site coverage.
- Development is not encouraged:
 - at the head waters of waterways and wetlands;
 - where it has detrimental impact on natural flow regimes and quality water systems;
 - in areas within 40 metres of waterways to provide a buffer between riparian areas and development; and
 - to utilise groundwater resources.



3.4.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Waterways and Wetlands Best Practice, Land Use Strategies and Sustainable Outcomes?
- Does the development:
 - protect water supply catchments and significant underground waterways;
 - retain vegetation cover to assist in maintaining an enhancing water quality;
 - maintain the absorptive capacity of soils;
 - maintain existing waterways and wetlands as a means of absorbing peak flows from floods or the effects of cyclones and storm surge; and
 - implement management practices during and after development to protect waterways?

3.4.6 Sustainable Waterways and Wetland Outcomes

- Protect and where possible, restore catchments, waterways, water bodies, groundwater, water quality and dependent ecosystems such as marine environments while maintaining the economic and social values derived from water use.
- Development should not diminish the quality or quantity of water in groundwater systems, watercourses, nor should it diminish the volume of water flows in watercourses or wetlands.
- Water is managed in a sustainable and integrated manner to provide adequate supplies for human and environmental uses.



3.4.7 Useful Resources

Policies, Guidelines and Fact Sheets

Catchment and Water Quality provides an overview of the link between the health of a water catchment and water quality.

www.derm.qld.gov.au/factsheets/pdf/catchments/c2.pdf

Gully Erosion gives an overview of what is gully erosion and what we can do to minimise its impacts.

www.derm.qld.gov.au/factsheets/pdf/land/l81.pdf

How Healthy is your Waterway? Assessing stream bank vegetation describes how to find out if your waterways are healthy by ensuring a well vegetated riparian zone in order to minimise the impacts of erosion on water quality

www.derm.qld.gov.au/factsheets/pdf/river/r34.pdf

Overland Flow Water provides an overview of what is overland flow water and why it is important to manage overland flow.

www.derm.qld.gov.au/water/management/overland_flow/index.html

Strategic Plan for the Conservation and Management of Queensland's Wetlands sets out the state government's intent for the conservation, values and functions of wetlands.

www.derm.qld.gov.au/wetlandinfo/site/PPL/QldWetlandProgramme.html

Streambank Planting Guidelines and Hints describes what type of vegetation you should plant in riparian zones and where to plant it.

www.derm.qld.gov.au/factsheets/pdf/river/r31.pdf

Streambank Vegetation is Valuable provides an overview of why we need vegetation riparian zones along our watercourses.

www.derm.qld.gov.au/factsheets/pdf/river/r30.pdf

The Value of Wetlands talks about the role of wetlands in nature conservation.

www.wetlandcare.com.au/fact_sheets.asp

What, Why and How Wetlands Works provides an introduction to the important role that wetlands play and why we should protect them.

www.wetlandcare.com.au/fact_sheets.asp

What is Bank Erosion talks about what is bank erosion and how it is caused.

www.derm.qld.gov.au/factsheets/pdf/river/r2.pdf

Websites

Department of Environment and Resource Management

www.derm.qld.gov.au

WetlandCare Australia

www.wetlandcare.com.au



3.5 Land and Soil

3.5.1 Best Practice

- Minimise the impact of salinity and rising water tables on land uses, buildings and infrastructure by minimising land and soil disturbance.
- The management of the land and soil will be designed to work with nature rather than against nature and integrated with sea planning and management to ensure the negative impacts of human actions (e.g. development, vegetation clearing) on plants, animals and birds is minimised or avoided.
- Reduce the vulnerability of the community to the impacts of climate change by:
 - recognising the importance of climate change on the community's land, soil and slopes;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the community's land, soils and slopes.

3.5.2 Overview of Current Situation

Hammond Island has numerous soil types such as:

- Elevated volcanic soils characterised by their rocky surface occurring almost exclusively on sloping land;
- Freely drained hills and slopes on shallow and stony soils with low fertility; and
- Poorly drained silty alluvial soils in low-lying areas.

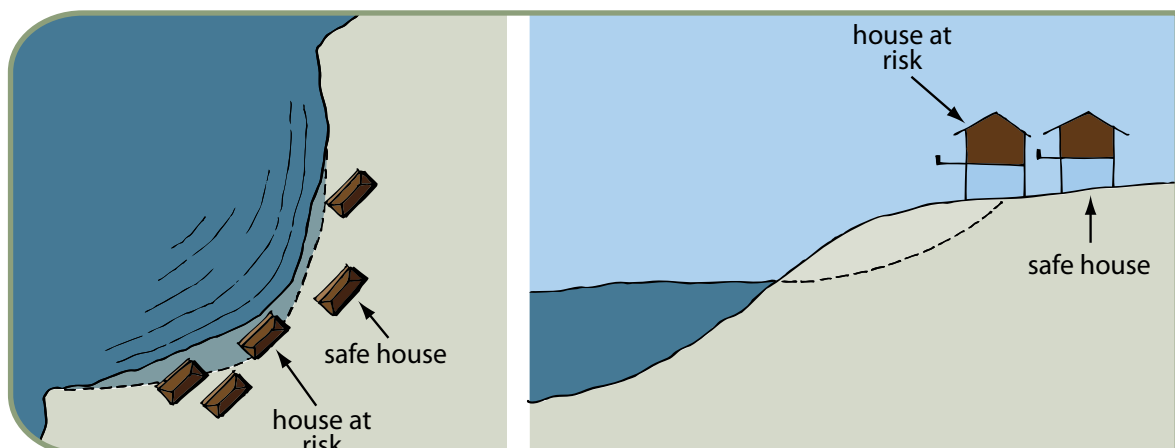
The extensive vegetation cover over flat parts of the island has meant that erosion is not a major issue in these areas. However if the vegetation is cleared for development or garden plots,

then the potential for land erosion to occur is increased significantly.

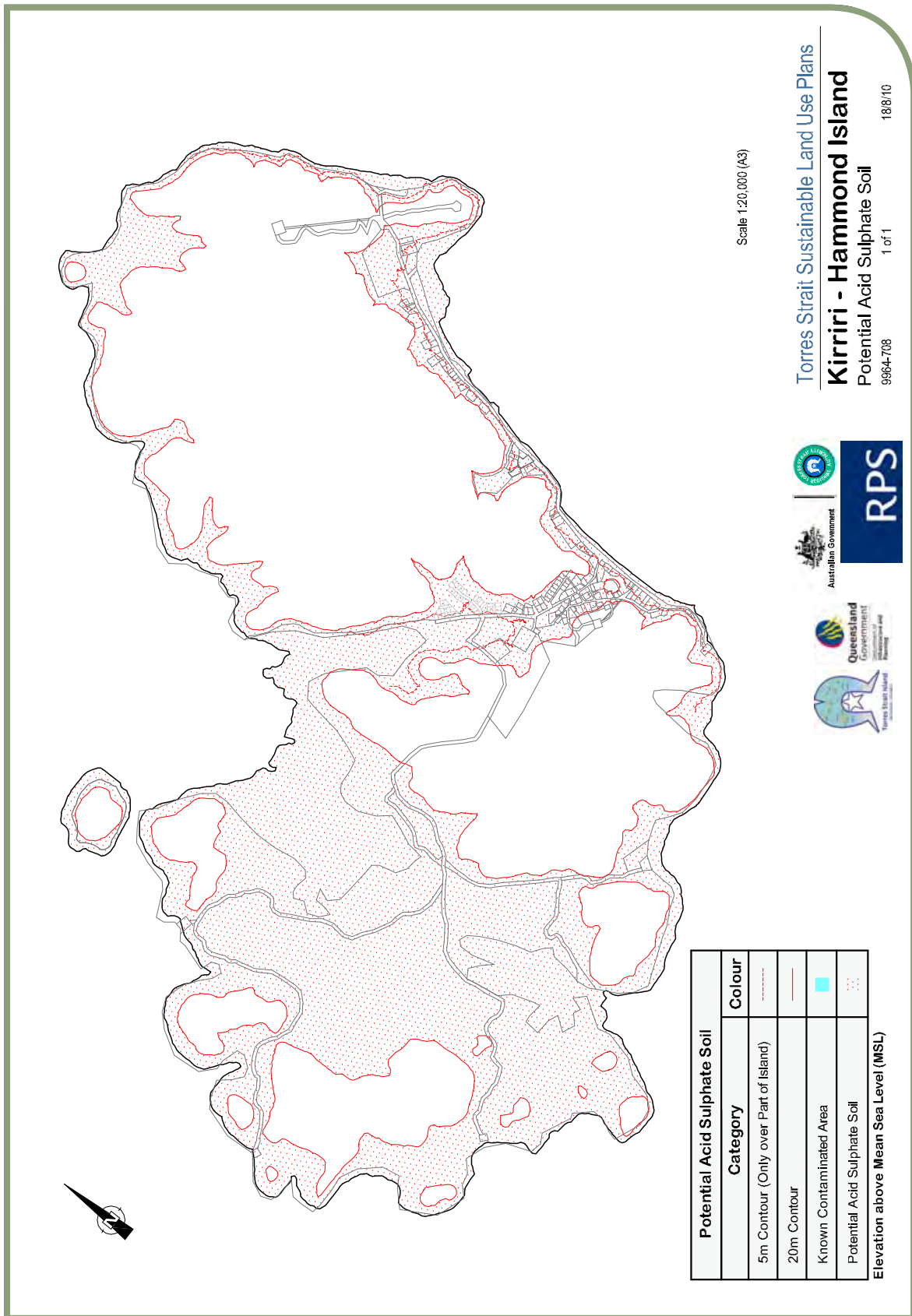
The flat coastal fringes are subject to coastal erosion due to natural forces, development and increasing tide levels. Generally, these areas provide a buffer between the inland areas and the coast, which allows for the natural variations of the coast to occur without the need for intervention to protect human life and property, however the proximity of the village to the eastern coastline is a cause for concern in this respect.

Figure 7 shows where the 'coastal erosion zone' can occur when there is no seawall.

Figure 7 Coastal Erosion



Map 8 Potential Acid Sulfate Soils



For more detail, refer to Map No. 9964-708 contained in Maps.

There is a lack of data available on soil types on Hammond Island. However, as large parts of the island are below 5 metres AHD, there is the potential for acid sulfate soils to be present.

“Acid sulfate soils are naturally occurring soils and sediment containing iron sulfides, most commonly pyrite. When acid sulfate soils are exposed to air, the iron sulfides in the soil react with oxygen and water to produce a variety of iron compounds and sulphuric acid. Initially a chemical reaction, the process is accelerated by soil bacteria. The resulting acid sulfate soils can release other substances, including heavy metals, from the soil and into the surrounding environment.

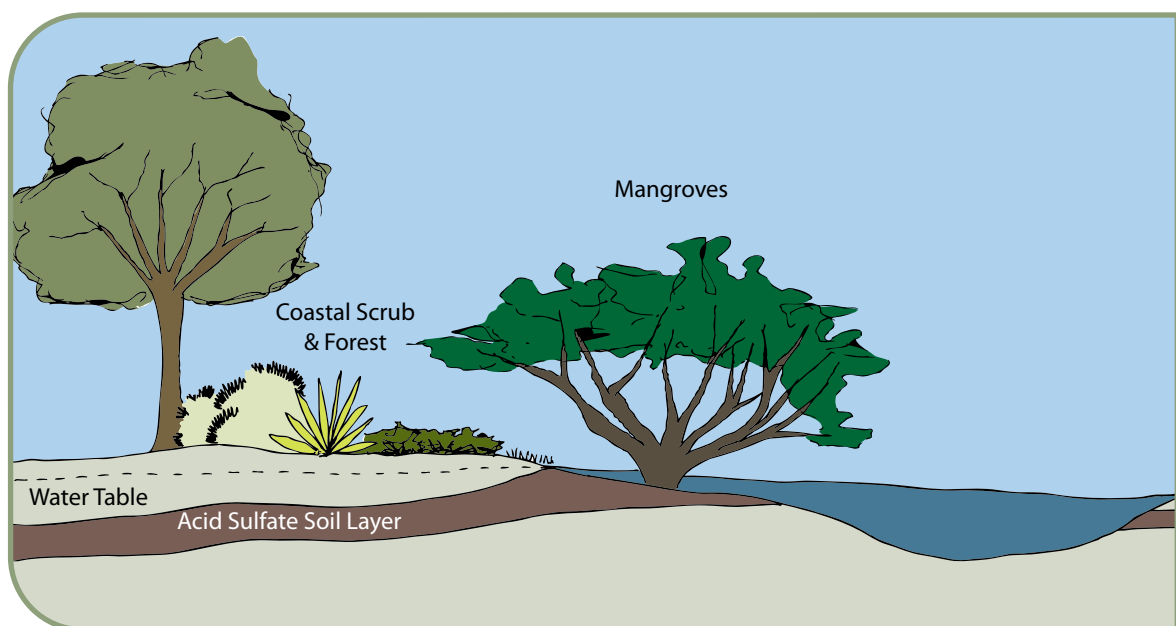
Map 8 shows the potential location of acid sulfate soils.

Acid sulfate soils can result in the corrosion of concrete, steel and some aluminium alloys used in buildings, drainage systems and roads. The use of acid sulfate soil material as site fill material or in embankments can affect plant growth and block pipe drainage systems due to the formation of iron oxides. Acid waters entering estuarine, coastal or riverine environments can kill fish and crustaceans and affect aquatic plants through direct acid exposure.

The presence of acid sulfate soil material produces an offensive odour, which smells like rotten eggs”

Figure 8 shows where acid sulfate soils are located within the soil layers.

Figure 8 Acid Sulfate Soils



3.5.3 Issues Overview

Some high erosion prone areas have been identified on the island, which may be affected by three possible pressures.

1. Erosion problems may occur at Hammond Island on or near the sandy beach system that are subject to natural phases of erosion and linked to the longer-term changes in climate. Also, modifications to the beach line such as rock walls, boat ramps and retaining walls have disrupted the natural sediment pathway and therefore the existing beach areas are being denied sand deposition.

2. The second impact on the erosion measures is climate change related to global warming. An increase in the frequency of major coastal storms or a rise in sea level can accelerate beach erosion.

3. The third impact on the high erosion prone areas is the loss of protective vegetation from fires, vehicle tracks (four-wheel drives) and pedestrian traffic.

Land erosion usually occurs where vegetation has been cleared. Native vegetation protects against erosion and pollution caused by subsequent runoff. To minimise these adverse impacts on the natural environment, new development near the vegetated areas must be effectively managed or where possible, avoided.

3.5.4 Land Use Strategies

To minimise existing and future development on Hammond land and soil, the following strategies are recommended:

- All development should include landscaping and/or revegetation plans that are in accordance with the Best Practice, Land Use Strategies and Sustainable Outcomes of Section 3.5.
- New development along the coast particularly in those areas adjacent to the areas identified as 'high erosion prone' should be discouraged.
- The use of vehicles on the beach or sandy flats as any form of thoroughfare should be discouraged.

- Adequate services and access must be provided where development is located on steep slopes.
- For development proposed in areas at or below 5 metres AHD, an acid sulfate soil investigation is to be undertaken and where necessary, an environmental management plan prepared.
- Highly erodible or unstable soils are to be left in their natural condition to prevent erosion, sedimentation and water quality degradation problems.
- During construction of a development, soil erosion and sedimentation control measures must be in place prior to and during construction and maintenance.

3.5.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Land and Soil Best Practice, Land Use Strategies and Sustainable Outcomes?
- If the development is adjacent to the areas identified as 'high erosion prone', does it address its impact on the identified area?
- Where development occurs on land below 5 metres AHD are the acid sulfate soils disturbed when excavating or otherwise removing soil or sediment, extracting groundwater or filling land? If so, is the development proposal accompanied by a report on an:
 - acid sulfate soil investigation;
 - environmental management plan; and
 - ongoing management program for treating disturbed acid sulfate soils and drainage waters?

3.5.6 Sustainable Land and Soils Outcomes

- Development and use of the coast is to maintain and, where possible, enhance the quality of life for residents and visitors by avoiding areas identified as being adversely affected by acid sulphate soils, steep slopes, erosion and landslides.
- Drainage activities should avoid or minimise land degradation, including soil erosion, compaction, land instability, contamination, acidity, water logging, decline of native vegetation or, where appropriate, salinity and, where possible, land should be rehabilitated.
- Development involving acid sulfate soils should be planned and managed to avoid potential adverse effects on the natural and built environment (including infrastructure) and human health.

3.5.7 Useful Resources

Legislation

Coastal Protection and Management Act 1995 (Qld) provides for the protection, conservation, rehabilitation and management of the coast including resources and biological diversity.

www.legislation.qld.gov.au

Policies, Guidelines and Fact Sheets

State Planning Policy 1/03 – Mitigating the Adverse Impacts of Flood, Bushfire and Landslide sets out the state government’s interest in ensuring the natural hazards of flood, bushfire and landslide are adequately considered when making decisions about development.

www.dip.qld.gov.au/policies/index.php

State Planning Policy 2/02 – Planning and Managing Development Involving Acid Sulfate Soils sets out the state interest concerning development involving acid sulphate soils in coastal areas.

www.dip.qld.gov.au/policies/index.php

What is Bank Erosion talks about what is bank erosion and how it is caused.

www.derm.qld.gov.au/factsheets/pdf/river/r2.pdf

Gully Erosion gives an overview of what is gully erosion and what we can do to minimise its impacts.

www.derm.qld.gov.au/factsheets/pdf/land/l81.pdf

Acid Sulfate Soils in Queensland explains what acid sulfate soils are, how they are formed, where they occur and what happens when they are disturbed.

www.derm.qld.gov.au/land/ass/index.html

Identifying Acid Sulfate Soils describes the scientific process for identifying is acid sulfate soils are in the soil.

www.derm.qld.gov.au/land/ass/identifying_ass.html

Managing Acid Sulfate Soils provides an overview of the techniques that can be used to manage acid sulfate soils if they are disturbed.

www.derm.qld.gov.au/factsheets/pdf/land/l62.pdf

Coastal Erosions introduces what is coastal erosion and what are the causes of coastal erosion.

www.bom.gov.au/pacificsealevel

Websites

Department of Environment and Resource Management

www.derm.qld.gov.au

OzCoasts

www.ozcoasts.org.au

3.6 Bushfire

3.6.1 Best Practice

- The management of areas prone to bushfire is to work with nature rather than against nature.
- The location and design of development is undertaken in a manner that:
 - does not alter natural fire regimes;
 - significantly increase the risk to human life, property and infrastructure from bush fire; and
 - minimises the potential risk to the safety and health of the community as a result of bushfire.
- Reduce the vulnerability of the community to the impacts of climate change by:
 - recognising the importance of climate change on the community's bushfire environment;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change the community's bushfire environment.

3.6.2 Overview of Current Situation

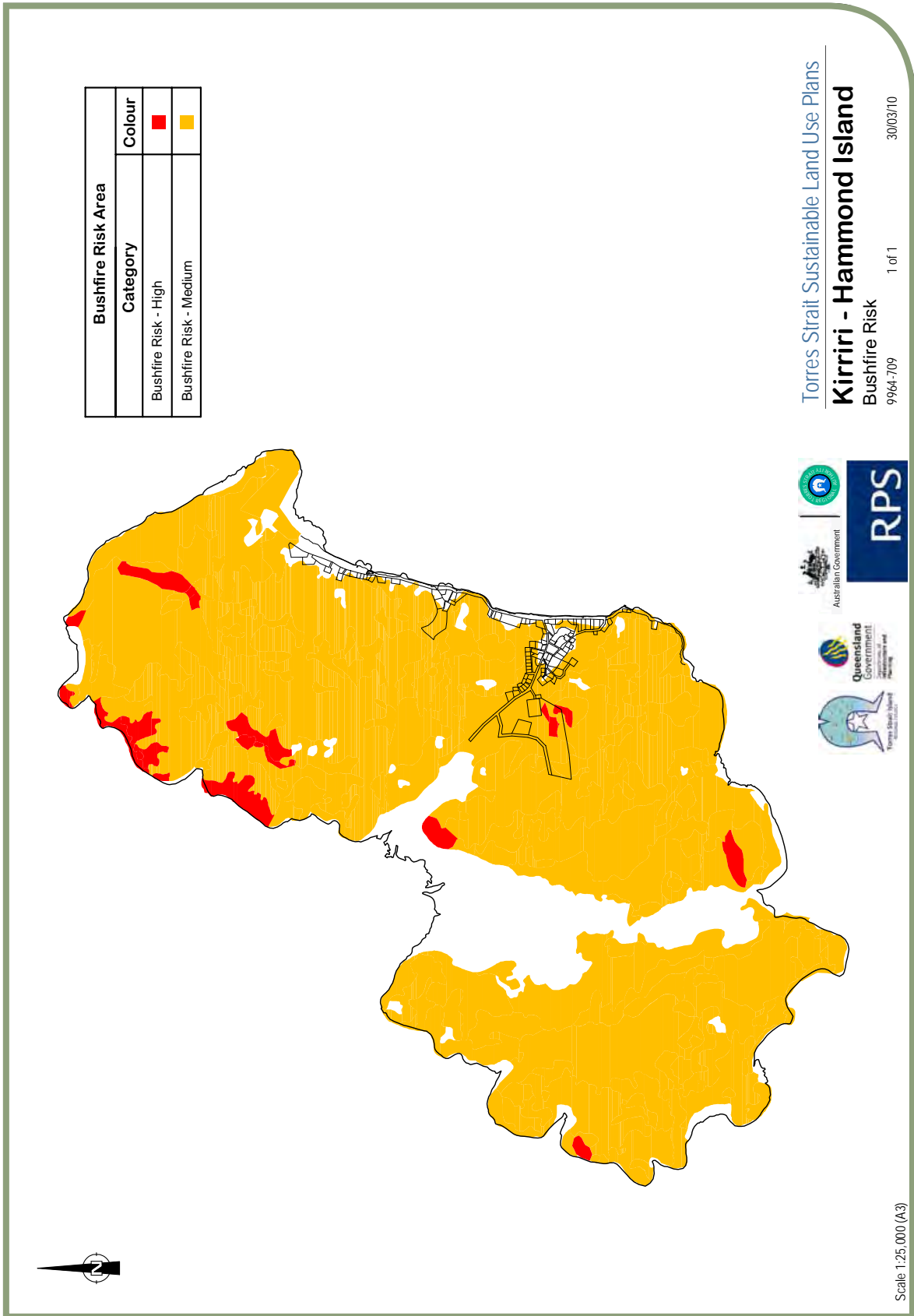
Hammond appears to be extensively covered with natural vegetation. These areas are subject to bushfire. The presence of human occupation raises the likelihood and frequency of fire, which may significantly alter the ecological characteristics of the island. Inappropriate burning of the forests could cause the margins of this vegetation type to contract, effectively reducing its area and function as habitat.

Using the State Planning Policy 1/03 "Mitigating the Adverse Impacts of Flood, Bushfire and Landslide" methodology, areas of Hammond are identified as low, medium and high bushfire risk.

Map 9 shows the location of bushfire hazard areas.

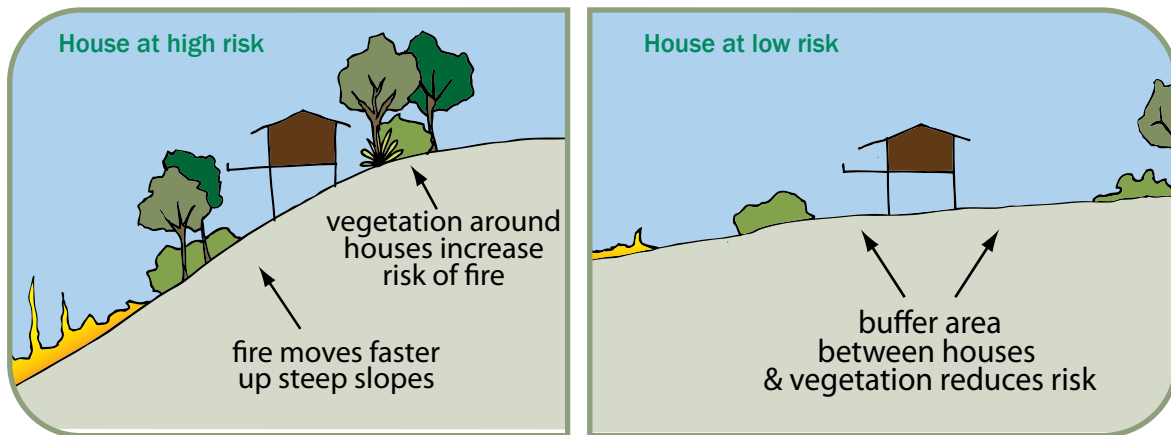


Map 9 Bushfire Risk



For more detail, refer to Map No. 9964-709 contained in Maps.

Figure 9 Bushfire Risk



3.6.3 Issues Overview

Bushfires represent an ever present risk to life, property and the environment. While the obvious answer would be to avoid development near bushfire hazards or to prevent bushfires from occurring, neither are realistic options due to the growing demands for residential land and the growing understanding of the ecological processes dependent upon bushfire.

One of the ways of managing risks to life, land, property and the environment from bushfire is through appropriate land use planning strategies. Identifying bushfire prone areas across Hammond will inform future generations and guide where development should or should not occur at the beginning of the planning process.

Figure 9 shows how providing a firebreak between dwellings and bushfire hazard areas assists in reducing the threat of bushfire.

3.6.4 Land Use Strategies

To minimise the impacts of bushfire on existing and future development, the following strategies are recommended:

- Development is not permitted in areas of medium bushfire risk otherwise; development must be compatible with the natural hazard where there is no other site suitable and reasonably available.
- New development must have access to and is accessible by sealed roads or high quality unsealed roads to facilitate emergency vehicle access.
- All development adjacent to or within an identified bushfire risk area must:
 - have setbacks as a firebreak which is maintained on an ongoing basis;
 - have access to adequate water supply;
 - not increase bushfire hazard or public safety risk;
 - maintain the health, safety and wellbeing of the community; and
 - minimise the impacts from bushfire on existing development.

3.6.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Bushfire Best Practice, Land Use Strategies and Sustainable Outcomes?
- Does the development consider:
 - alternative sites where it is in an area of medium bushfire risk; and
 - the risk to people and property?
- Is the development constructed of appropriate materials?
- Are appropriate firebreak setbacks provided between buildings and structures, including houses and infrastructure and bushfire risk areas?
- Is there adequate water supply and pressure and other appropriate infrastructure to protect a building or infrastructure from a fire?
- Does the development have a bushfire management plan, which includes the type of fire regime required to manage the ecological processes within the natural environments?

3.6.6 Land Use Projects

To protect Hammond's existing development and infrastructure and to assist in further studies of the Investigation Areas, the following projects are recommended:

- Implement a bushfire management plan that covers at a minimum:
 - the establishment of firebreaks or control lines around grassland areas and long-term dry vegetation types in areas adjacent to human settlements;
 - controlled burning outside of the driest periods when slow, low-intensity fires can be managed;
 - mosaic burning (e.g. small patches of controlled burning to reduce excess fuel load accumulation so that there is always habitat connectivity provided); and

- fuel load maintenance; and
- the need for fire trails and the potential impact on pristine natural environments.
- undertake community capacity building on:
 - sustainable fire management; and
 - property preparedness including planning for and maintenance requirements.

3.6.7 Sustainable Bushfire Outcomes

Development is planned and managed to ensure that significant adverse effects of bushfire on the natural and man made environments are avoided, mitigated or remedied.

3.6.8 Useful Resources

Policies, Guidelines and Fact Sheets

State Planning Policy 1/03 – Mitigating the Adverse Impacts of Flood, Bushfire and Landslide sets out the state government's interest in ensuring the natural hazards of flood, bushfire and landslide are adequately considered when making decisions about development.

www.dip.qld.gov.au/policies/index.php

Your Bushfire Action Checklist provides a list of tasks individuals and the community should do both during the bushfire season and out of season to ensure that if a bushfire occurs, minimum damage is done to property.

<http://www.fire.qld.gov.au>

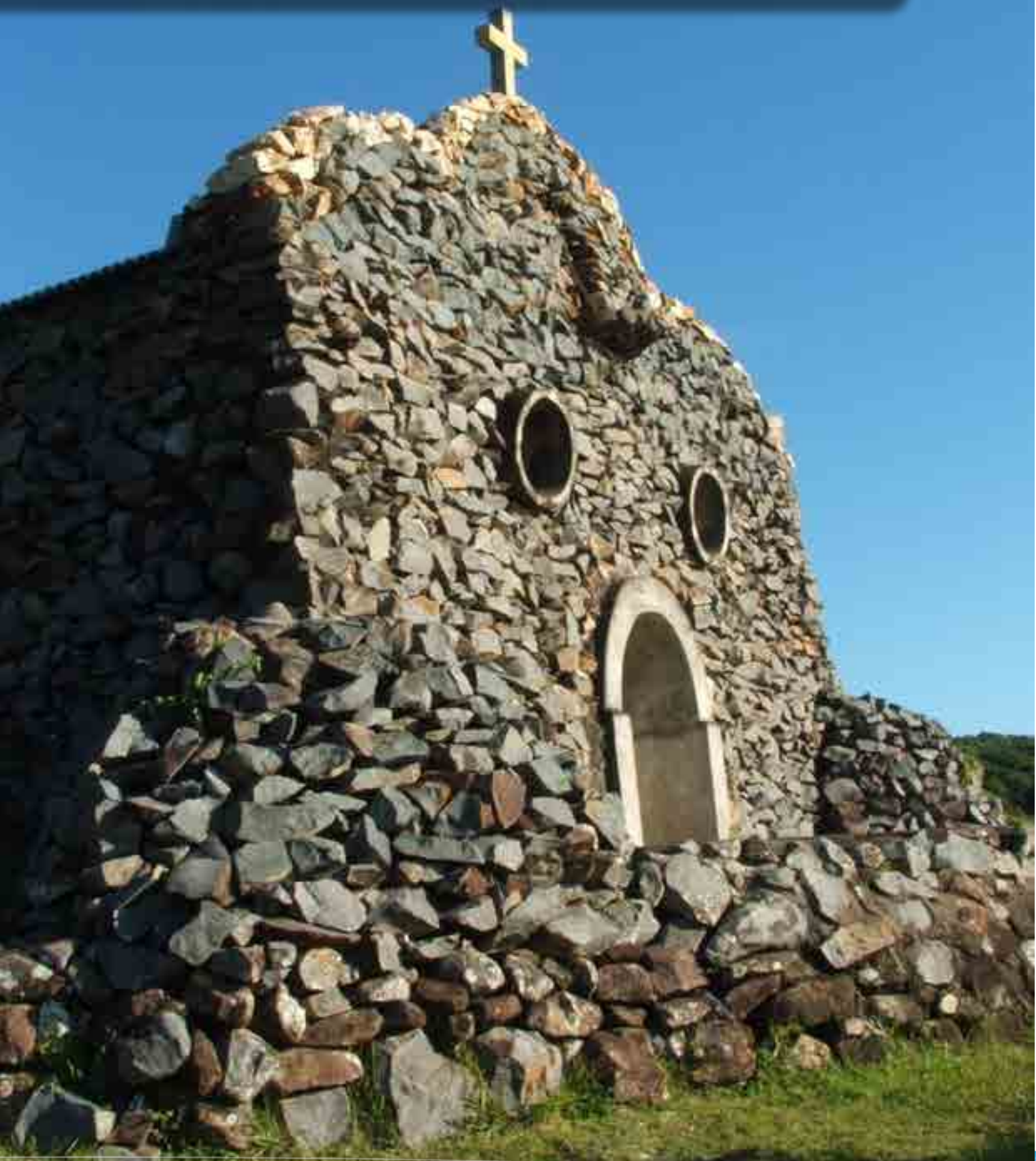
Websites

Queensland Fire & Rescue Service

www.fire.qld.gov.au



Cultural Heritage



4.1 Best Practice

- Places of cultural heritage significance are identified, protected and retained for the benefit of present and future generations.
- Traditional Owners:
 - are the primary source of information on the value of their heritage and how this is best conserved;
 - must have an active role in any heritage planning process;
 - own intellectual property and other information relating to their culture and heritage; and
 - are the key stakeholders in land use planning through their relationship with land and sea management and resources.
- Reduce the impacts of climate change on the community's cultural heritage by:
 - recognising the importance of climate change to the community's cultural heritage;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the Island's cultural heritage

4.2 Overview of Current Situation

Hammond is also known as Kirriri by the traditional people of the Kaurareg and belongs to the Thursday Island Group. Members of the Kaurareg people were forcibly removed from Hammond to the village of Poid on Moa Island in 1921 and 1922.

The community is inhabited by both traditional owners (Kaurareg) and other persons. As such there is a complex mix of cultural heritage on Hammond Island.

Hammond became the pearling station headquarters for a short time until its relocation to Thursday Island, and earlier in the 20th century, gold was mined here. A cattle industry was set up later to supply the population of Thursday Island. A Catholic Mission was established on Hammond for the children of the Filipinos and Malays whose forefathers were brought to the Torres Strait as indentured labour.

The entire island of Hammond is an area of significant cultural heritage value to the Traditional Owners and the people of Hammond.¹

1

Source: State Library Queensland

While many significant and sacred sites are only known to Traditional Owners, a number of sites have been made known to the general public including:

- middens;
- wells – Mai, Katana May, Loey May and Thgeraw May and Maikibu;
- stone fish traps;
- zogo sites;
- skull sites (finding skulls in crevices in rocks), burial caves and sites; and
- rock art sites.

To protect the cultural significance of these sites, the locations of these sites have not been disclosed. Other heritage sites are:

- An 'impressive church' was built by Islanders in 1952 from local rock and exhibits windows made from bottle glass;
- A 'gold mine' on the west of the island but the gold 'rush' ended a few years prior to 1892; and
- A pearling station (now abandoned).

Hammond Island also has an Indigenous Knowledge Centre, which provides a community

hub for sharing information, knowledge and cultural heritage and a place for the community to gather, to socialise, to learn and to celebrate.

The Indigenous Knowledge Centre provides access to conventional library services as well as an array of community-generated activities that will assist lifelong learning, improve social well-being and develop work and life skills for people of all ages.

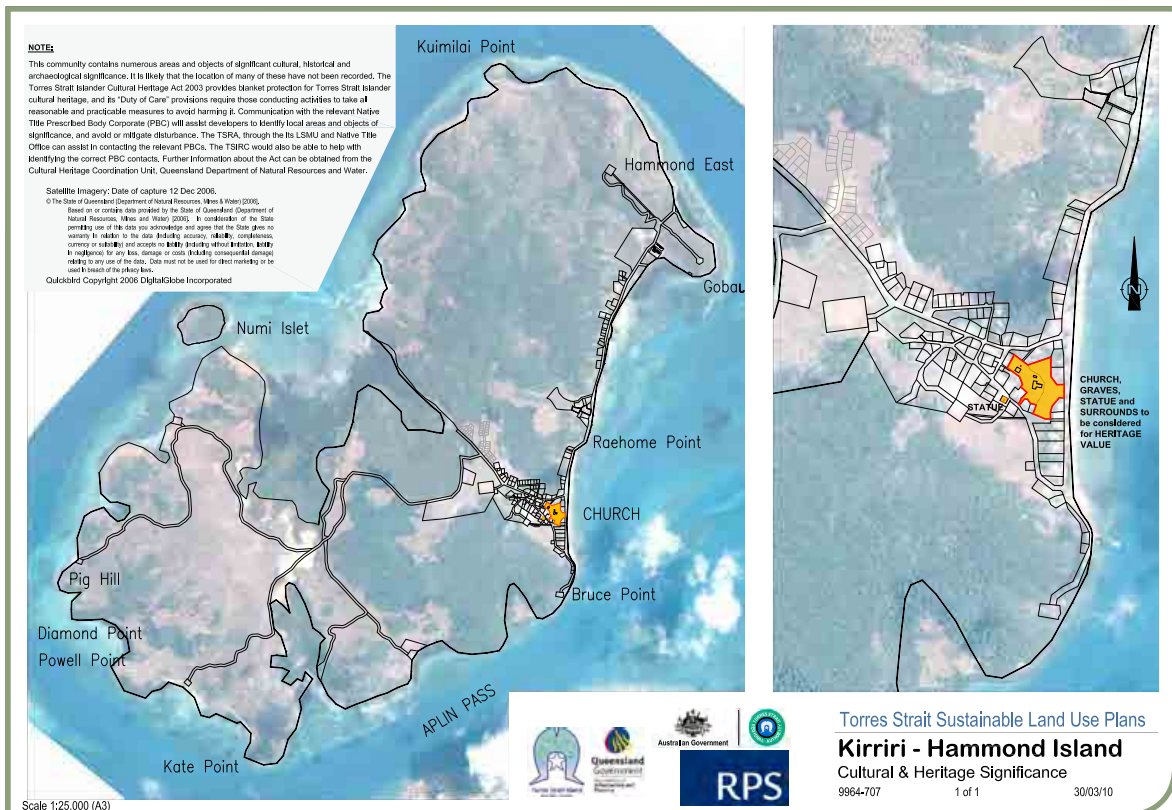
The centres are a shared initiative between the local communities and the State Library of Queensland and are owned, managed and staffed by the local Council.

Further details on Hammond’s culturally significant places and sites are included in Appendix 3.

Map 10 shows the traditional place names for Hammond.

“In the Torres Strait, cultural heritage includes all traces of human activity in the physical environment. These are irreplaceable sources of information on people’s lives and activities and on the historical development of crafts, techniques and art. Because monuments, site and culturally significant environments are non-renewable resources, their management must have a long-term focus. Cultural monuments and significant sites are a source of emotional and aesthetic experiences for many people and today Island Communities can benefit from the preservation and active use of its cultural heritage”

Map 10 Traditional Place Names (Hammond)



For more detail, refer to Map No. 9964-707 contained in Maps.

4.3 Issues Overview

Cultural heritage is about places of significance to people and to help us understand the past and enrich the present. In the Torres Strait there are areas of particular significance to people because of island custom (Kaurareg) and history, including contemporary history. They may be meeting places, monuments and landscapes. Areas of cultural significance may not be physically evident. With regard to Torres Strait Islander tradition, given the sacred nature of areas of significance, many sites have not been recorded on official heritage inventories and registers that are accessible to the public. Hence, without consultation and liaison with Traditional Owners, engagement of cultural heritage observers and preparation of cultural heritage investigations, areas of significance may be inadvertently damaged or destroyed.

On Hammond, there are numerous areas and objects of significant cultural, historical and archaeological significance. It is likely that the location of many of these have not been recorded. The Torres Strait Islander Cultural Heritage Act 2003 provides blanket protection for Torres Strait Islander cultural heritage and its “Duty of Care” provisions require those conducting activities to take all reasonable and practicable measures to avoid harming it. Communication with the relevant PBC will assist developers to identify local areas and objects of significance and avoid or mitigate disturbance. The TSRA, through its LSMU and Native Title Office can assist in contacting the relevant PBC.

Given the nature of major development projects in the Torres Strait, the reality is that development often proceeds without undertaking appropriate studies, consultation or engagement of observers. As such, it is vital that any applicant of a development undertake their duty of care obligations and engage with Hammond’s Traditional Owners in order to manage and protect their unique areas of cultural significance.

Engagement and partnerships with community provides opportunities for information sharing and effective management of cultural values and

heritage. Information about places of cultural heritage significance must be managed in a way that satisfies the custodians of the area and ensuring that there is access to sufficient data to ensure proper management and protection of Hammond’s cultural heritage.

Not only are areas of significance at risk from development but also from impacts from storm surge, inundation and erosion, particular sites which are located close to the coastline such as middens and other low lying sites. The intensification of environmental impacts associated with climate change may result in some areas of significance being submerged or eroded.

For further information on Cultural Heritage on Hammond Island, enquiries should be made with:

- Kaurareg People (generally based on nearby Horn and Thursday Islands);
- Hammond Island Council of Elders (Non-Traditional owners);
- Torres Strait Regional Authority – Land and Sea Management Unit; and
- Torres Strait Regional Authority Native Title Office.



4.4 Land Use Strategies

To protect Hammond's cultural heritage from proposed development, the following strategies are recommended:

- All proposed developments must be discussed with the PBC on the potential impacts of the development on cultural heritage.
- A written agreement (e.g. cultural heritage management plan) be prepared as part of the development proposal which addresses:
 - genuine consultation with the community to determine how they wish to safeguard and control their culture and/or heritage;
 - how the development will protect the culture and heritage item or place;
 - the requirement for a cultural heritage survey prior to development proceeding;
 - the role of the PBC and Traditional Owners as observers during construction to monitor the impact on the culture and heritage items;
 - methods such as temporary markers that identify a buffer zone around the heritage item or place that must be removed after the building has been completed;
 - a remediation plan which outlines how and when a cultural heritage item or place will be reinstated if removed or damaged during construction; and
- a 'sign off' process after construction is completed. This sign off must ensure that all parties are satisfied with the condition of the cultural heritage item or place is left in after construction is completed.
- All proposed developments must:
 - include the written agreement such as a cultural heritage management plan; and
 - undertake a site inventory including a search of NRW and the PBC's records.
- The community must identify, conserve and manage places of significant cultural heritage particularly those affected by natural hazards and determine which information is readily or not available for general public knowledge.
- The precautionary principle should be adopted where there is uncertainty about the cultural significance of an area or a site.
- All processes, policies and decisions that protect and enhance the natural and man made environments must incorporate cultural values and beliefs and the role of Traditional Owners in Hammond's cultural heritage.



4.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Cultural Heritage Best Practice, Land Use Strategies and Sustainable Outcomes?
- Hammond is a significant area of cultural heritage to the community, so have all appropriate persons and State agencies been consulted?
- Does the development have an agreed cultural heritage management plan for the affected area and/or site?
- Where the development threatens a cultural heritage item, does it have a disaster mitigation plan? If it does, does it address where disturbance is unavoidable, the temporary relocation of the implement to a safe place?
- Does the development threaten the integrity and setting of heritage items through water run off, soil erosion or soil movement?



4.6 Land Use Projects

To protect Hammond's cultural heritage, the following projects are recommended to be undertaken.

- A systematic, island focused cultural heritage survey. This survey should:
 - identify the nature and location of major cultural heritage sites and their likelihood of being affected by changes in land use; and
 - consider the confidentiality of such information (should it remain confidential solely for the use of the PBC, or be made publicly available).
- Facilitate opportunities for young people to build understanding and capacity about Hammond's areas of cultural significance.

4.7 Sustainable Indigenous Cultural and Heritage Outcomes

- Development is planned and managed to ensure impact on the culture and heritage of the community is avoided, mitigated or remedied.
- The impact of climate change on the community cultural heritage is managed in a sustainable and integrated way to provide appropriate solutions.
- Ensure the community is involved in ongoing consultation to support the protection and healing of country and culture for future generations.



4.8 Useful Resources

Legislation

Torres Strait Island Cultural Heritage Act 2003 (Qld) provides for the effective recognition, protection and conservation of Torres Strait Island cultural heritage.

www.legislation.qld.gov.au

Queensland Heritage Act 1992 (Qld) provides for the conservation of historical (non-indigenous) cultural heritage

www.legislation.qld.gov.au

Policies, Guidelines and Fact Sheets

Duty of Care and Management Plan Guidelines – Aboriginal Cultural Heritage Act 2003 sets out reasonable and practical measures for meeting the duty of care obligations established in the Aboriginal Cultural Heritage Act 2003.

www.derm.qld.gov.au/cultural_heritage/legislation/duty_of_care.html

Cultural Heritage – Your Duty of Care explains the duty of care provisions under the Aboriginal Cultural Heritage Act 2003.

www.derm.qld.gov.au/factsheets/pdf/cultural_heritage/ch16.pdf

Cultural Heritage provides an overview of the Torres Strait Islander Cultural Heritage Act 2003.

www.derm.qld.gov.au/cultural_heritage

Aboriginal and Torres Strait Islander Cultural Heritage Places introduces the different types of cultural heritage places and sites e.g. middens, grinding groves etc.

www.derm.qld.gov.au/cultural_heritage/significant_places/records_management.html

Cultural Heritage Management Plan explains what a cultural heritage management plan is and when one is required.

www.derm.qld.gov.au/cultural_heritage/legislation/cultural_heritage_management_plans.html

Cultural Heritage Database and Register explains what the cultural heritage database and register is and how entries are processed.

www.derm.qld.gov.au/factsheets/pdf/cultural_heritage/ch5.pdf

Cultural Heritage Studies provides an overview of why it is important to include sites of cultural significance on the cultural heritage register.

www.derm.qld.gov.au/factsheets/pdf/cultural_heritage/ch6.pdf

Ask First: a guide to respecting Indigenous heritage places and values is a guide to providing effective recognition, protection and conservation of Indigenous cultural heritage.

www.environment.gov.au/heritage/ahc/publications

Publications

Cordell, J. and McNiven, I. (1999). Torres Strait Community Socio-Cultural Interests and Heritage Study: PNG gas project consultancy report. Prepared for the Island Co-ordinating Council (Pipeline Reference Group), Torres Strait

Lawrie, M. (1970). Myths and Legends of Torres Strait. St. Lucia: University of Queensland Press.

McNiven, I.J. and Quinnell, M. (eds) (2004). Torres Strait Archaeology and Material Culture. Memoirs of the Queensland Museum (Cultural Heritage Series) 3(1).

Websites

Department of Environment and Resource Management

www.derm.qld.gov.au

National Native Title Tribunal

www.nntt.gov.au

Australian Heritage Council

www.environment.gov.au/heritage/ahc



The Community



Demographic trends and changes have significant influence on future development needs, the provision of community services and infrastructure. For example, if the population is ageing, then planning must ensure that the housing choice reflects the needs of an ageing population as well as ensuring the right community services, facilities and infrastructure is in place to support the ageing.

Other topics such as community belonging, crime and safety, disability, food security and health are not addressed in this Plan as it is outside the scope of the project. It is recommended that a community wellbeing report be developed through a comprehensive community engagement process, as it would highlight the needs, concerns and aspirations of the community that will influence future development.

This Plan addresses the following with regards to the community:

- population;
- housing;
- sustainable community expansion; and
- community facilities and services.



5.1 Population

5.1.1 Best Practice

- Population and development are dealt with in a unified and comprehensive way with each community developing its own solutions to population trends that reflect their values and cultural heritage.
- Land use development aligns with population profiles and trends..

5.1.2 Overview of Current Situation

The resident population of Hammond has increased in the past ten years as indicated in Table 2.

In 2006, the total population of Badu was 896, an increase of (3.6%) from the 2001 Census (750 persons).

As confirmed by the figures in Table 2, in the last decade (1996-2006), Hammond Island's population increased by around 6%.

In 2006, the total population of Hammond Island was 231, an increase of 12.1% (28 persons) from the 2001 Census (203).

The growth rate was 2.6% or 5.6 persons per year in the 5 years between 2001-2006.

The growth rate was 0.6 over the 10 years to 2006.

The 2006 Census indicates following population characteristics:

- A median age of 27.5 years.

The estimated population at 30 June 2008 was 239 persons with a growth rate of 2.0% in the years between 2003-2008.

Table 2 Population Growth

Year	Population	Growth / Year (%)	Population Density: persons/km ²
1996	217	NA	NA
2001	203	(-1.3)	NA
2006	231	2.6	14.7
2008	239	2.0	15.2

Source: ABS, 1996, 2001 and 2006, OESR 2010

Table 3 Population Characteristics

	Persons	%	Queensland Average
Population under 15yrs	81	34%	20%
Population 15 - 24yrs	36	15%	14%
Population 25 - 45yrs	69	29%	28%
Population 45 - 65yrs	33	14%	25%
Population over 65yrs	20	8%	13%
Total	239	100%	

Source: data from OESR 2010

Further population information is available at the Qld Region Profile OESR.

5.1.3 Land Use Strategy

To ensure that population trends and profiles are reflected in land use planning on Hammond it is recommended the population capacity, profiles and trends are reviewed regularly and appropriate adjustments made to ensure that an appropriate land supply and housing types are maintained.



5.1.4 Sustainable Population Outcomes

- Population profiles and trends are used to inform land use policy planning and development decision-making processes.
- Population and development capacity support a sustainable environment.

5.1.5 Useful Resources

Websites

Australian Bureau of Statistics (Census data)
www.abs.gov.au



5.2 Housing

5.2.1 Best Practice

- Provide a range of housing choices and opportunities in locations where there is a cost effective and efficient use of existing infrastructure and not be adversely impacted by natural hazards and climate change.
- Housing choices and stock matches demand and supply.
- Identifying new areas for residential development that provides a mix of housing types and densities without an adverse impact on existing infrastructure and the natural environment.
- Promotion and incorporation of sustainable design.
- Reduce the impacts of climate change on the community housing by:
 - recognising the importance of climate change on the community's housing;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on housing.

5.2.2 Overview of Current Situation

There are 71 houses within the village. This equates to a current density of 3.5 persons/house. When compared to the Torres Strait average, Hammond has fewer persons per house and fewer persons per bedroom. At a density of 5 persons per house, approximately 11 to 24 houses will be required by 2019 to house the population. There are currently 16 vacant, serviced allotments on Hammond Island.



Family Composition

The 2006 Census indicates following characteristics of family composition on Hammond:

- 16 couples with no children;
- 19 families with children under 15 years;
- nil families with children over 15 years;
- 14 one parent families with children under 15; and
- nil one parent families with children over 15 years.

Household Composition

The 2006 Census indicates the following characteristics about Hammond households:

- 58 households of which 13 consist of two people, 9 consist of three people, 6 consist of four people, 6 consist of five people and 13 consist of six more people;
- 11 lone person households; and
- an average household size of 2.9 persons per dwelling.

However, a count of the number of dwellings on Hammond Island in 2009 gives 71 houses.

Housing Rental and Ownership

The 2006 Census indicates the following characteristics on Hammond's housing rental and ownership:

- 3 households paying rent to a State or Territory housing authority
- 34 households paying rent to a housing cooperative, community or church group;
- 12 households paying rent to a non-stated landlord;
- no household paying a housing loan repayment;
- 9 privately owned dwellings (either fully owned or being purchased); and
- the average rent is \$60 per week.²

In summary, housing on Hammond is mainly community housing with a small number of privately owned dwellings.

From the 2006 Census data, Hammond has an average household size of 4.0 persons per dwelling.³ However, due to seasonal population fluctuations an average of 5.0 persons per dwelling is used to assist in the calculation of the number of lots and dwellings required.

² In comparison, in Queensland, 31.6% of the population rent a house (predominately via either a real estate agency or third party), with an averagely weekly rent of \$200.00.

³ In comparison, in Queensland, the average household size is 2.6 persons per dwelling.

5.2.3 Issues Overview

Growth pressure on Hammond will be generated through population increases and the changing population structure.

Refer to Section 5.3 Sustainable Community Expansion for more information.

As part of meeting population changes and preserving the land and sea relationship, providing diverse, sustainable, affordable housing options and a range of site sizes is a significant issue and key challenge for the community. Providing a range of housing choice assists in creating diverse communities and preventing social polarisation and displacement as well as protecting the natural environment. For example, it is important that affordable housing not be marginalised to fringe areas. It should be well located in relation to transport, community facilities and services, open space and recreation and education and employment opportunities.

In providing housing stock and choice to cater for the population growth and relocation of existing residents, the impact on the capacity of the existing landfill or dump and water supply must be taken into account.

Refer to Section 6.1 Water and Section 6.3 Waste for more information.



5.2.4 Land Use Strategies

To enable housing demand and supply to meet the population growth, the following strategy is recommended:

- Provide residential land to enable a supply of diverse, affordable and sustainable housing to meet the needs of current and future residents and visitors.

5.2.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Natural Environment, Cultural Heritage, Community and Infrastructure Best Practice, Land Use Strategies and Sustainable Outcomes?
- Is the development integrated with the landform and landscape?
- Does the development use:
 - energy efficiency principles in design;
 - minimise the reliance on fossil fuels for thermal comfort and water heating; and
 - minimise the use of materials, which deplete natural resources or create toxic pollution in their manufacture, use or disposal?
- If the development requires the demolition of an existing building, are the materials of the existing building to be reused? If so, where? If not, how are the materials to be disposed?
- Does the development provide sufficient onsite vehicle, boat parking and access areas for residents?
- If the development is in the nominated investigation area, is all necessary infrastructure in place and operational for the development to proceed?
- Are all existing serviced lots utilised prior to developing new lots?

5.2.6 Sustainable Housing Outcomes

- Plan and manage urban area growth by limiting development along the coast and encouraging new development inland.
- Provide suitable residential land to enable a supply of diverse affordable and sustainable housing to meet the needs of current and future residents and visitors.
- The provision of a diverse choice of sustainable housing which:
 - provides a high standard of sustainable living;
 - provides a variety of different residential lifestyle opportunities; and
 - is responsive to climate, landscape and the changing population structure of the community's population while being affordable.
- Areas for residential use are developed to be consistent with the planned capacity for roads, community services and infrastructure for the island.



5.2.7 Useful Resources

Policies, Plans & Guidelines

Demographic Profile, Queensland Torres Strait Islander Communities provides an overview of the 1996 to 2001 Census data for the 17 Torres Strait Islands.

www.dip.qld.gov.au/population-forecasting/indigenous-population-trends.html

State Planning Policy 1/07 – Housing and Residential Development sets out the state government’s interest in ensuring that local governments identify their community’s housing needs and analysis and modify if necessary, their planning schemes to remove barriers and provide opportunities for housing options that respond to identified needs.

www.dip.qld.gov.au/policies/index/php

Websites

Australian Bureau of Statistics (Census data

www.abs.gov.au



5.3 Sustainable Community Expansion

5.3.1 Current and Predicted Growth Overview

Using the 2006 Census figure of 231 persons, the 2009 population is estimated to be 250 persons.

This Plan considers two growth scenarios based on a low growth rate of 2.0% and a high growth of 4.0 % for the next ten years.

- a low growth rate of 2.0% which will generate:
 - an extra 55 persons over ten years;
 - an additional 11 houses over ten years; and
 - additional housing need of 1.1 houses per year at an average of 5 persons per household.
- a high growth rate of 4.0% which will generate:
 - an extra 120 persons over ten years;
 - an additional 24 houses over ten years; and
 - additional housing need of 2.4 houses per year at an average of 5 person per household.

In summary, in 2019, the population of Hammond is predicted to be between 304-370 people.

Table 4 shows the estimate population growth and housing demand for Hammond over the next 10 years.

Table 4 Estimated Population Growth and Housing Demand

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	addit. persons over ten years	addit. houses @5pph over ten years
Low growth 2.0%	250	255	260	265	270	276	281	287	292	298	304	55 persons over ten years	11 houses over ten years
High growth 4.0%	250	260	270	281	292	304	316	328	342	355	370	120 persons over ten years	24 houses over ten years

Source: ABS 2006

5.3.2 Issues Overview

Under any scenario, it is considered that the population of Hammond will increase over time.

Some of the options available to manage growth on Hammond are:

- using existing vacant lots
- increasing residential density in the village
- expanding the residential areas.

Using Existing Serviced Lots

If the population on Hammond continues to increase, the existing vacant lots in the village will need to be developed to provide houses for the growing population.

- 7 lots are available in the main village area (Lots 3,221,909,104,108,109);
- 9 lots are available along the coastline (Lots 77,301,59,61,92,917,918,919,921); and
- A further 5 lots are possible with new minor services required (Lots 906,907,908,200 & 201).

The existing serviced lots will cater for an additional 80 people.

Increase Residential Density

Increasing density is generally undertaken by providing a mix of housing types that use less land than a 3-bedroom dwelling house. Examples include dual occupancies (duplex or a house with two units), townhouses or units. The benefits of increased residential density include:

- More suitable housing for elderly people or young adults;
- more economic use of existing infrastructure and serviced land;
- reduced need for investment in new infrastructure;
- better access to existing services and facilities;
- combining existing land patterns whilst increasing the number of people living on Hammond; and
- more sustainable housing patterns.

Expansion of the Residential Areas Along Coastline

The coastal expansion of the village along the esplanade needs to manage the negative impacts on the environment and the potential risks from tides and storm surge inundation or other natural hazards. Therefore, residential development needs to occur inland from the coast. Potential areas for expanding the village have been identified.

We understand that Council does not permit new housing between the esplanade road and the coastline and preserves this land for general community use (open space). Housing above and landward of the esplanade needs to set floor levels high enough to avoid king tides, storm surges and future sea level rises.

Investigation Area

This area is an extension of the village from its western boundary past the Council depot into the shallow valley west of the community and up to the base of Goldmine Creek.

This investigation area will need to address as a minimum the following:

- storm surge and predicted sea levels;
- acid sulfate soils;
- bushfire risk;
- impact on cultural heritage;
- impact on vegetation and habitat corridors; and
- storm water management of the shallow gullies, low areas and Goldmine Creek.

The area can yield approximately 33 new lots.





5.3.3 Land Use Strategies

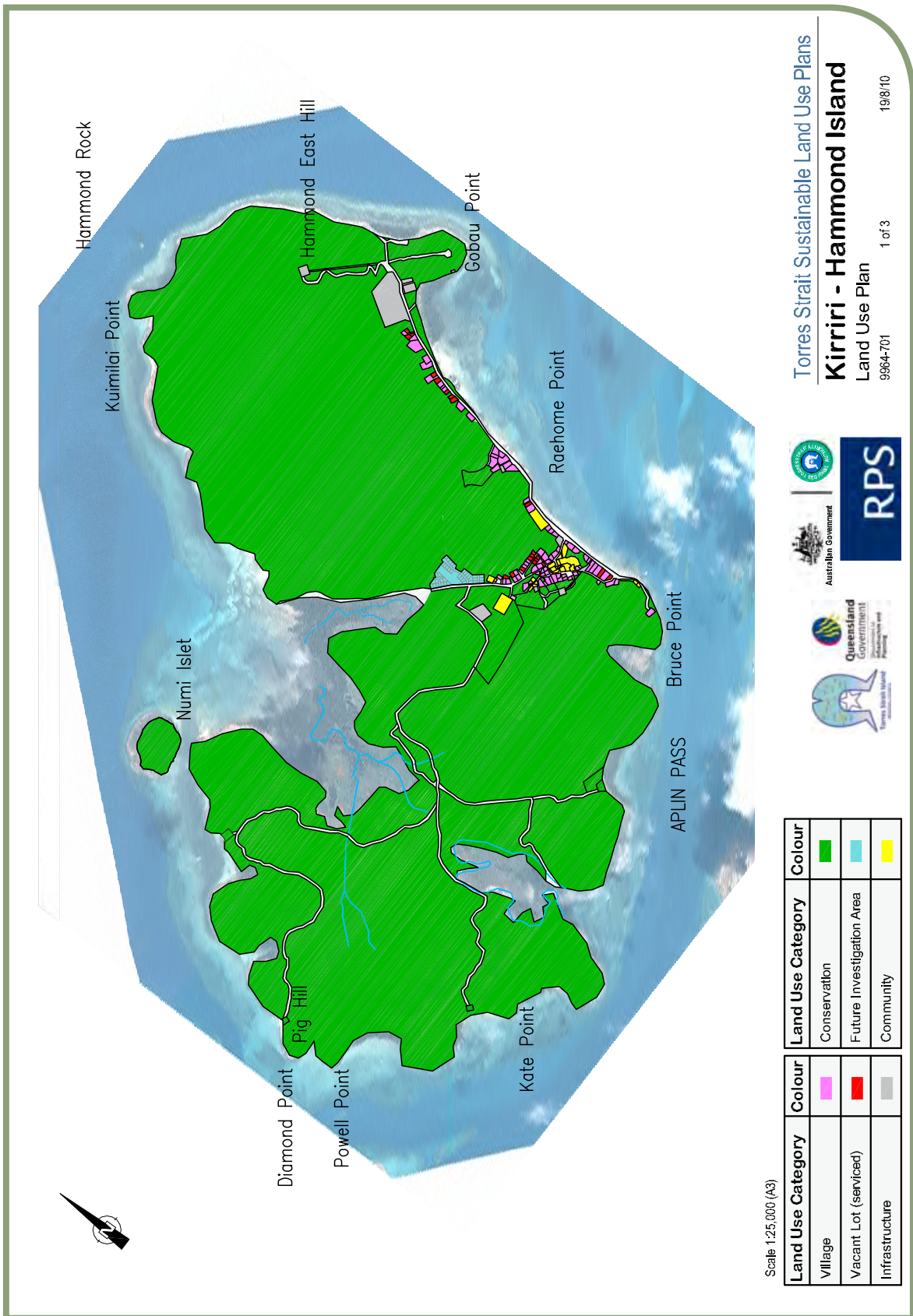
The population trends and profiles and infrastructure limitations mean that the land use strategies must be developed to:

- Manage the total population trend in a way that retains urban and island character.
- Identify and locate land suitable for urban development in non-coastal areas.
- Undertake an efficient subdivision design to the west of the main village.
- Provide choice in housing form and affordability in appropriate locations.
- Increase the residential density in the village without comprising the amenity and character of the village and increasing the risk to natural hazards such as storm surge and tides.

Maps 11 & 12 shows the future land use intent for lots within the village.

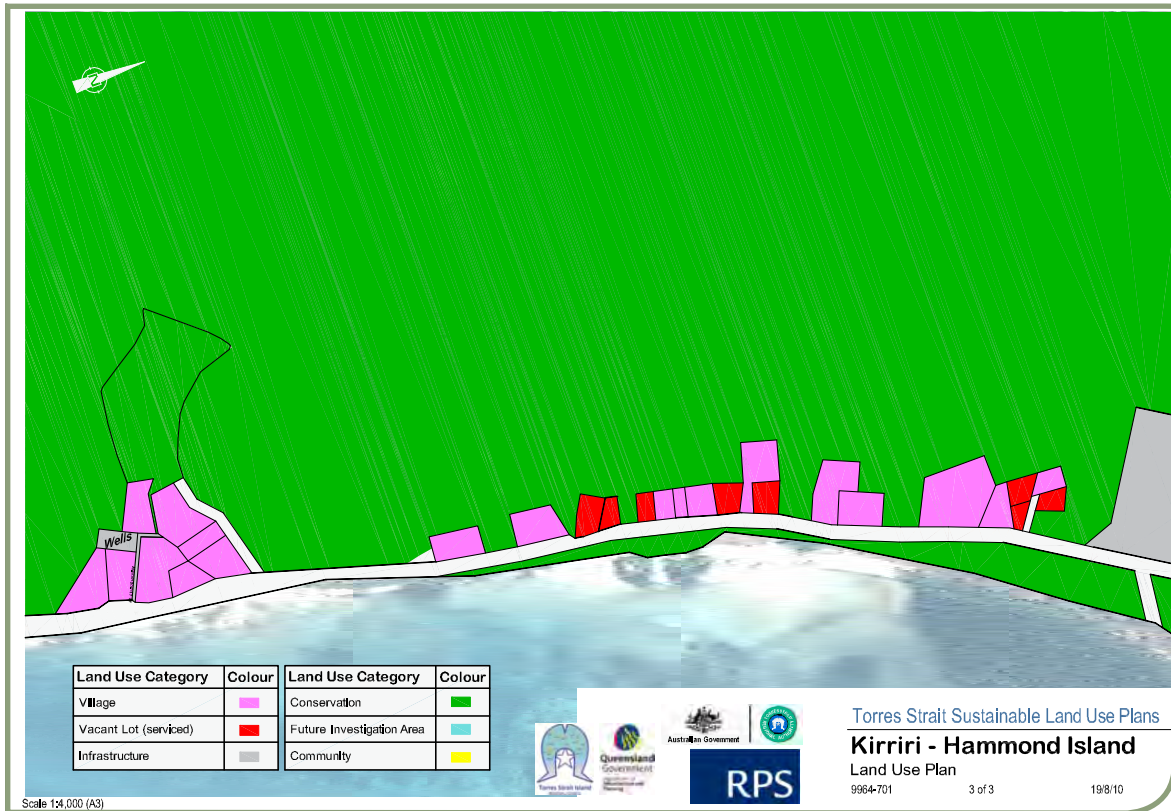
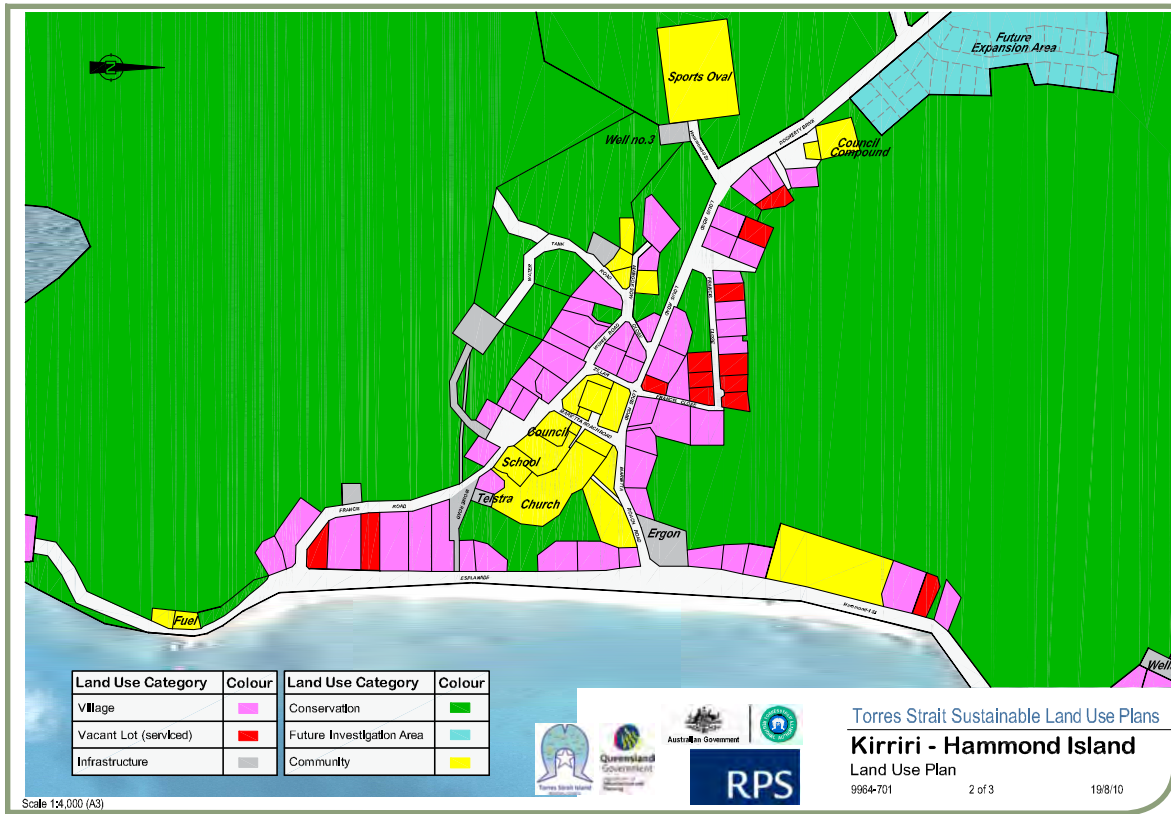
Map 13 shows the lots, which are presently suitable for development due to access to services. These lots are shown as “Village”. Areas that may be suitable for development in the future, subject to further investigation and/or once services have been provided, are shown as “Investigation Area”.





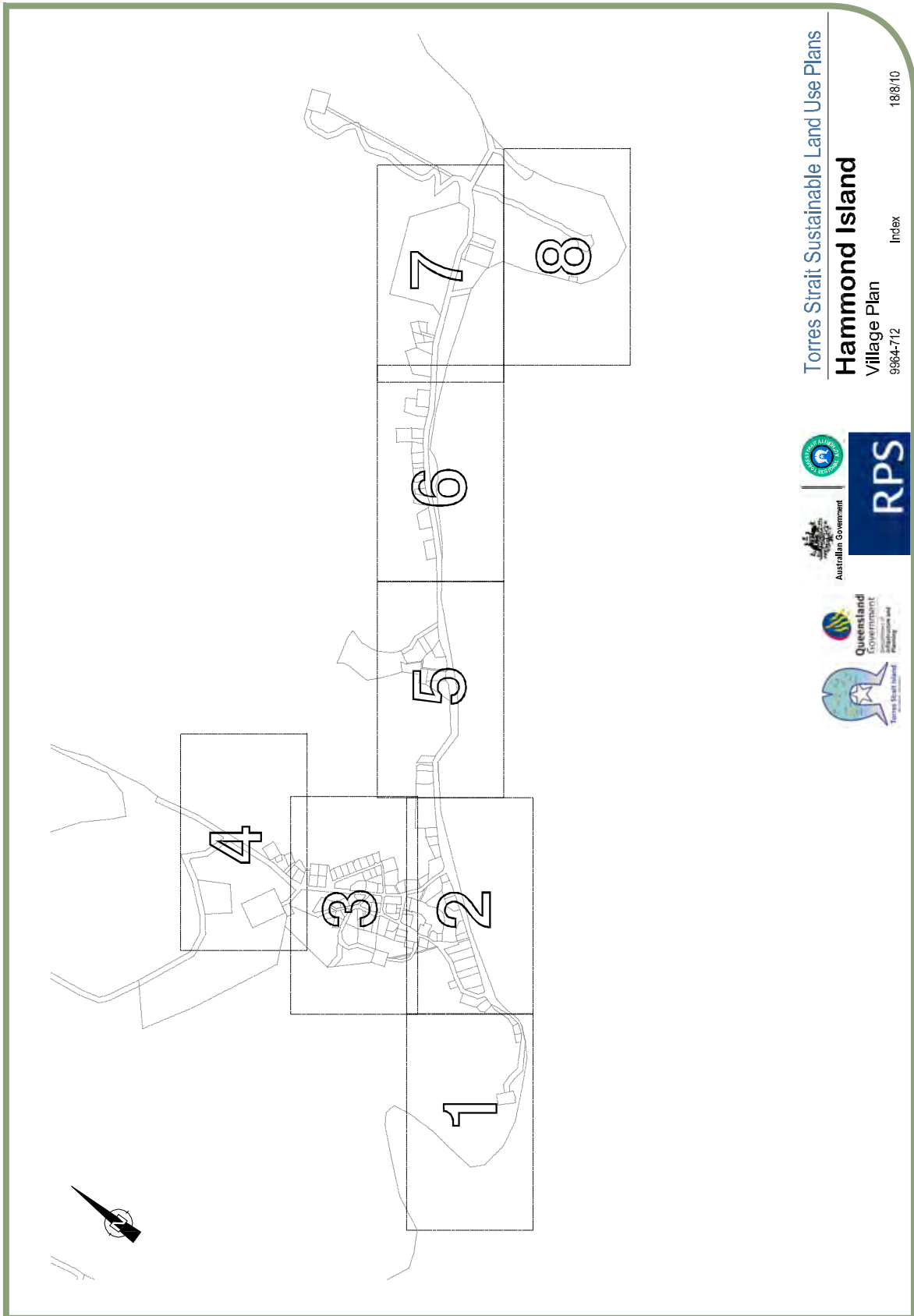
For more detail, refer to Map No. 9964-701 contained in Maps.

Map 12 Land Use (Village)



For more detail, refer to Map No. 9964-701 contained in Maps.

Map 13 Village



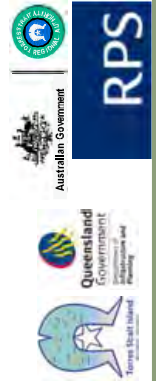
For more detail, refer to Map No. 9964-712 contained in Maps.

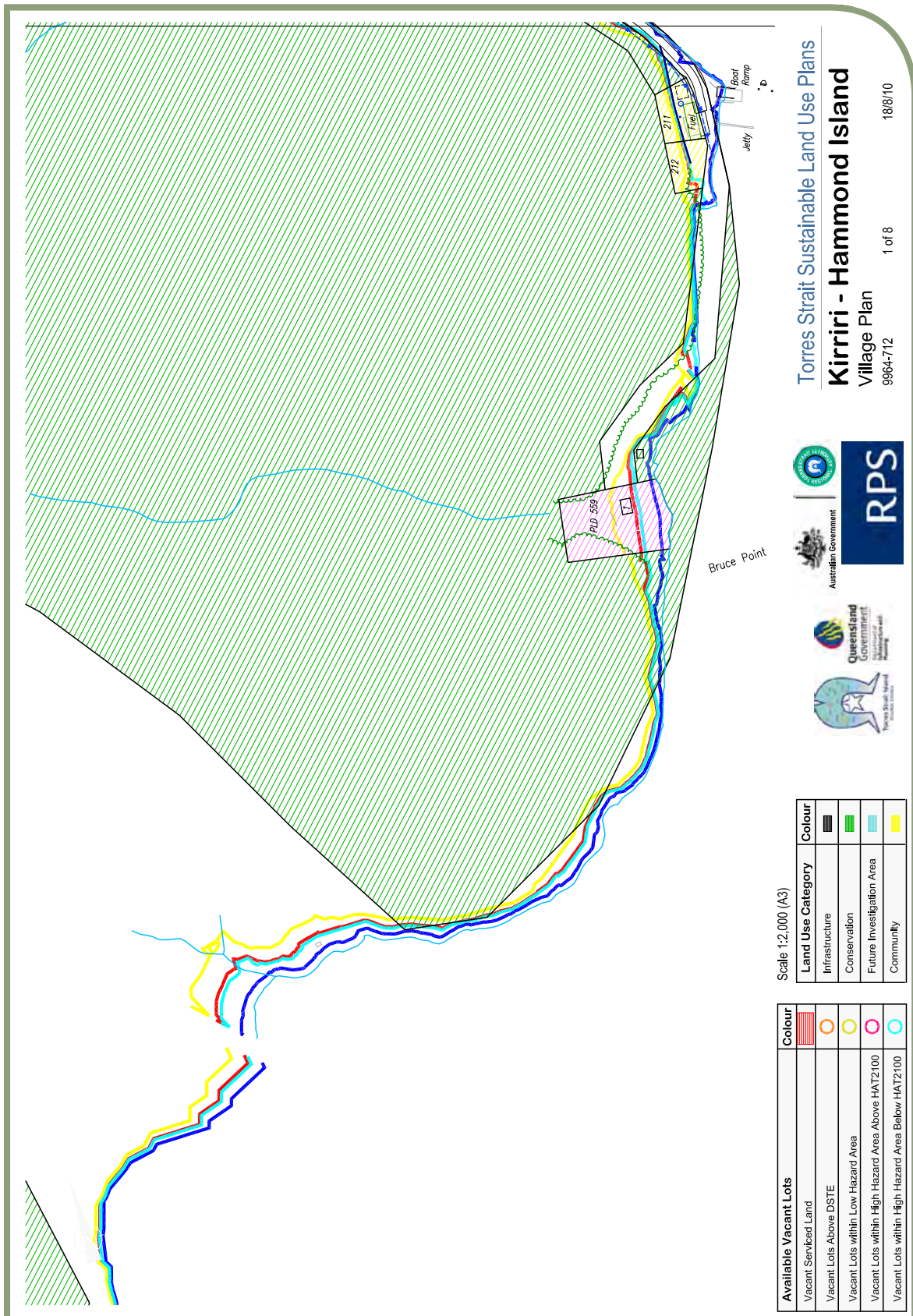
Torres Strait Sustainable Land Use Plans

Hammond Island
Village Plan
9964-712

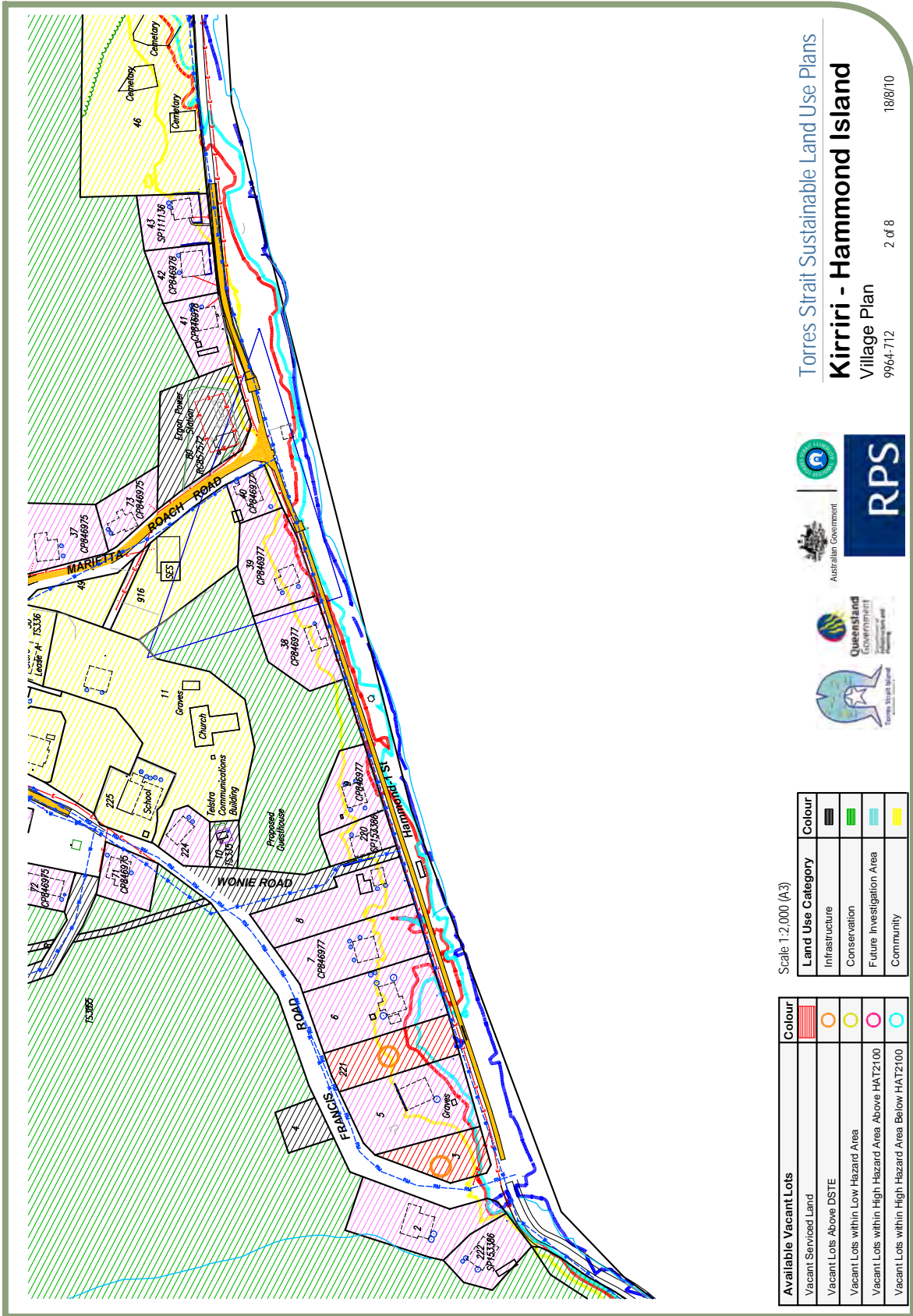
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For more detail, refer to Map No. 9964-712 contained in Maps.



For more detail, refer to Map No. 9964-712 contained in Maps.

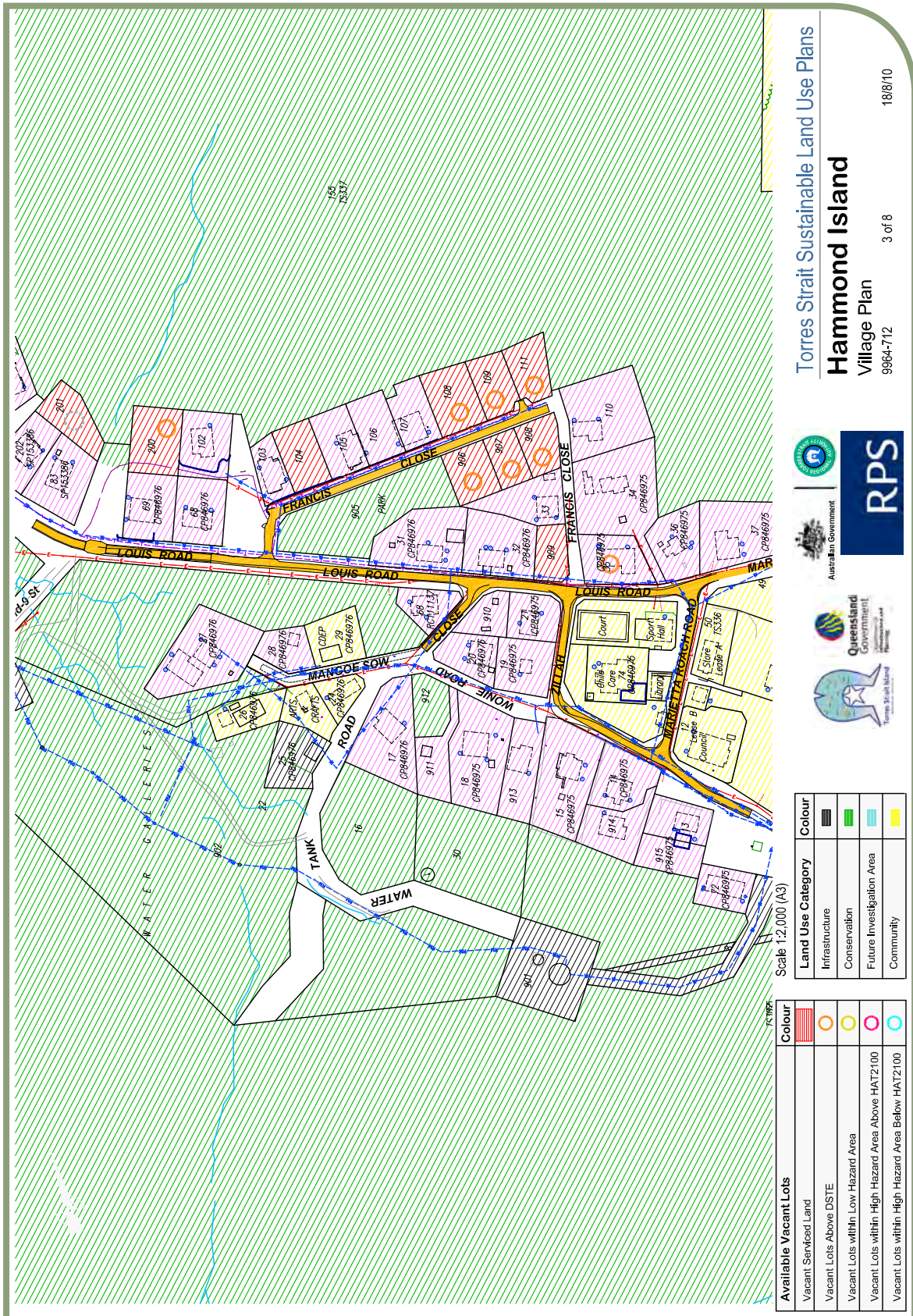
Torres Strait Sustainable Land Use Plans
Kirriiri - Hammond Island
 Village Plan
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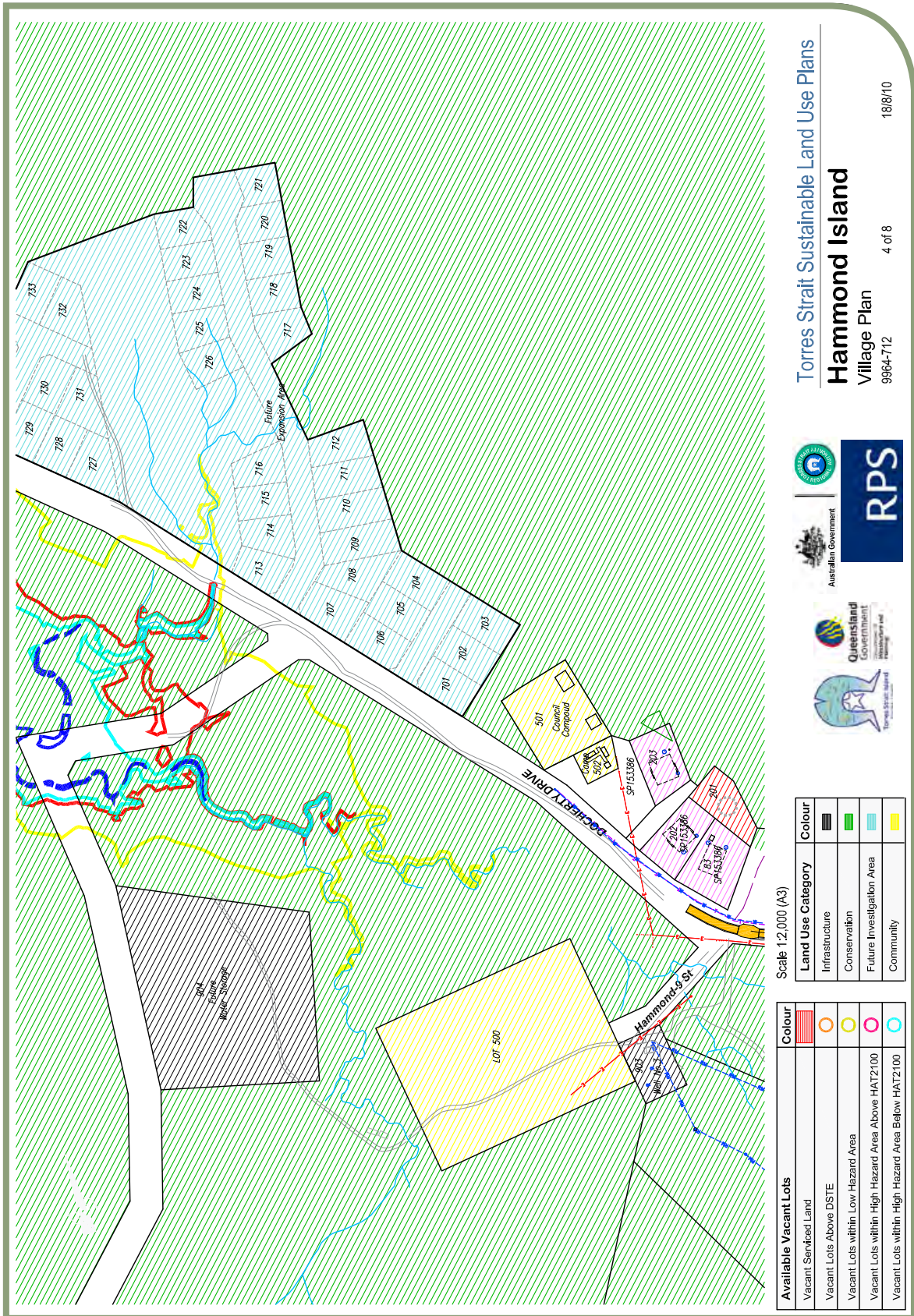
Scale 1:2,000 (A3)

Land Use Category	Colour
Infrastructure	[Red]
Conservation	[Green]
Future Investigation Area	[Blue]
Community	[Yellow]

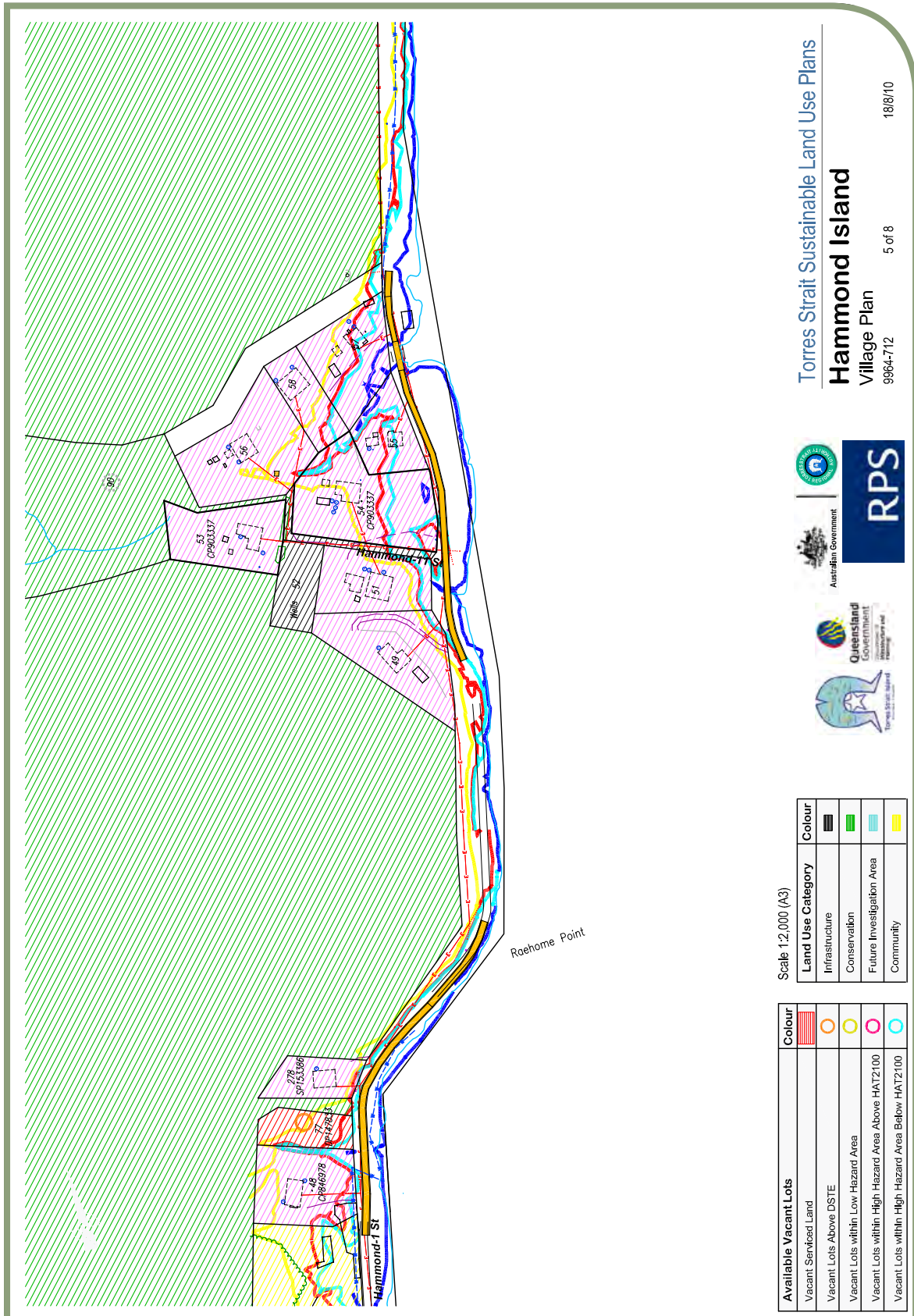
Available Vacant Lots	Colour
Vacant Serviced Land	[Red]
Vacant Lots Above DSTE	[Orange]
Vacant Lots within Low Hazard Area	[Yellow]
Vacant Lots within High Hazard Area Above HAT2100	[Pink]
Vacant Lots within High Hazard Area Below HAT2100	[Light Blue]



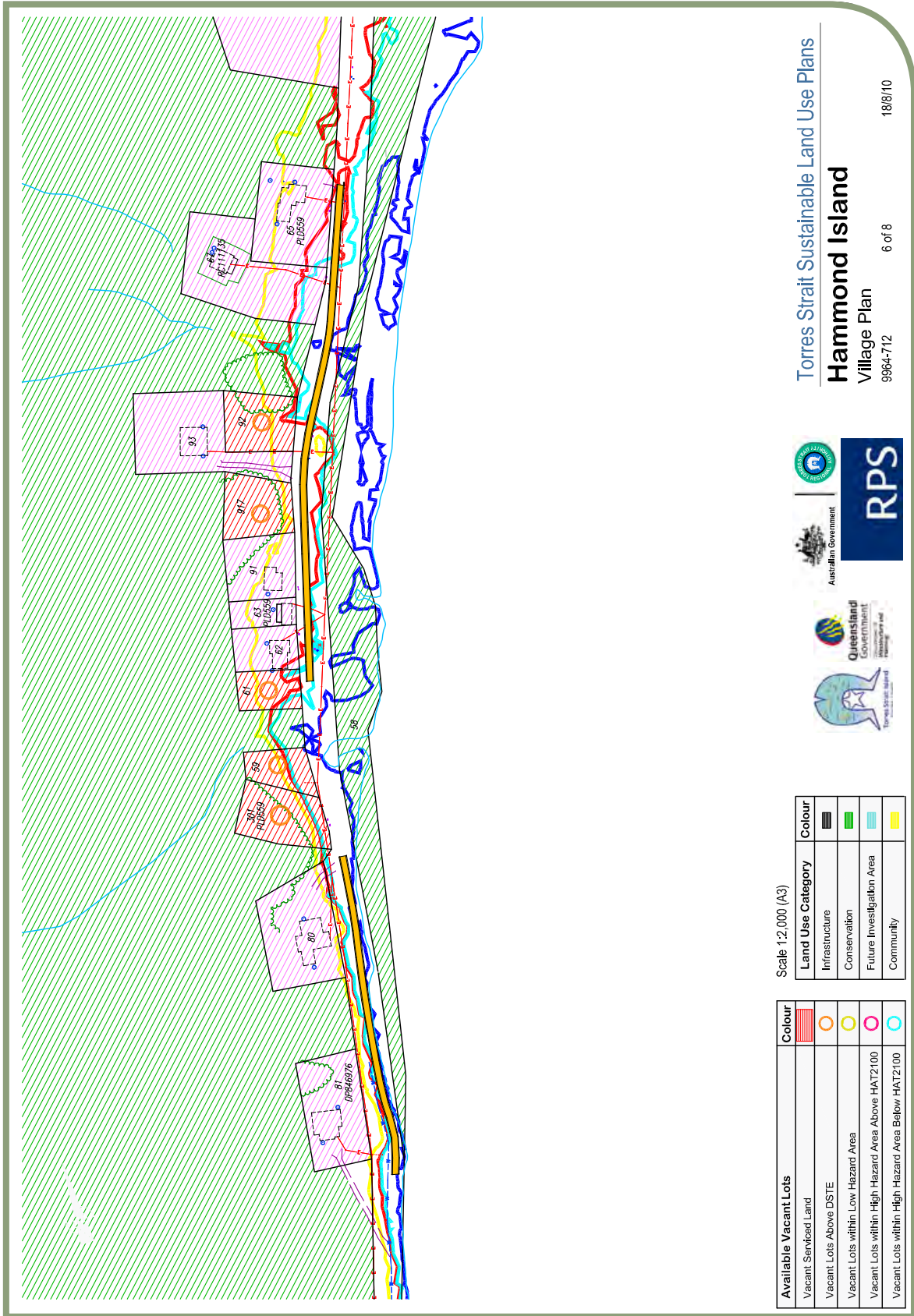
For more detail, refer to Map No. 9964-712 contained in Maps.



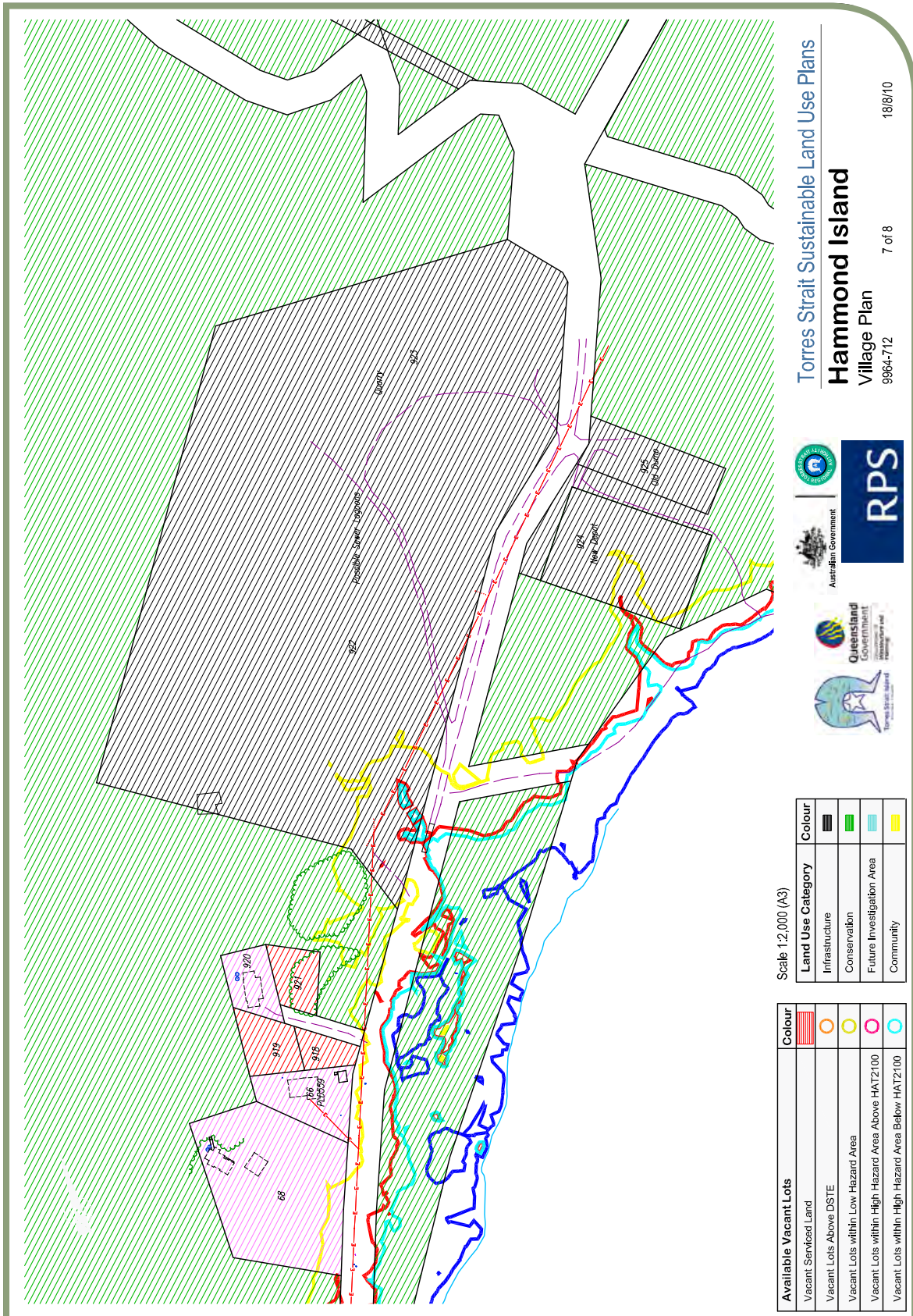
For more detail, refer to Map No. 9964-712 contained in Maps.



For more detail, refer to Map No. 9964-712 contained in Maps.



For more detail, refer to Map No. 9964-712 contained in Maps.



Scale 1:2,000 (A3)

Land Use Category	Colour
Infrastructure	
Conservation	
Future Investigation Area	
Community	

Available Vacant Lots	Colour
Vacant, Serviced Land	
Vacant Lots Above DSTI	
Vacant Lots within Low Hazard Area	
Vacant Lots within High Hazard Area Above HATZ100	
Vacant Lots within High Hazard Area Below HATZ100	

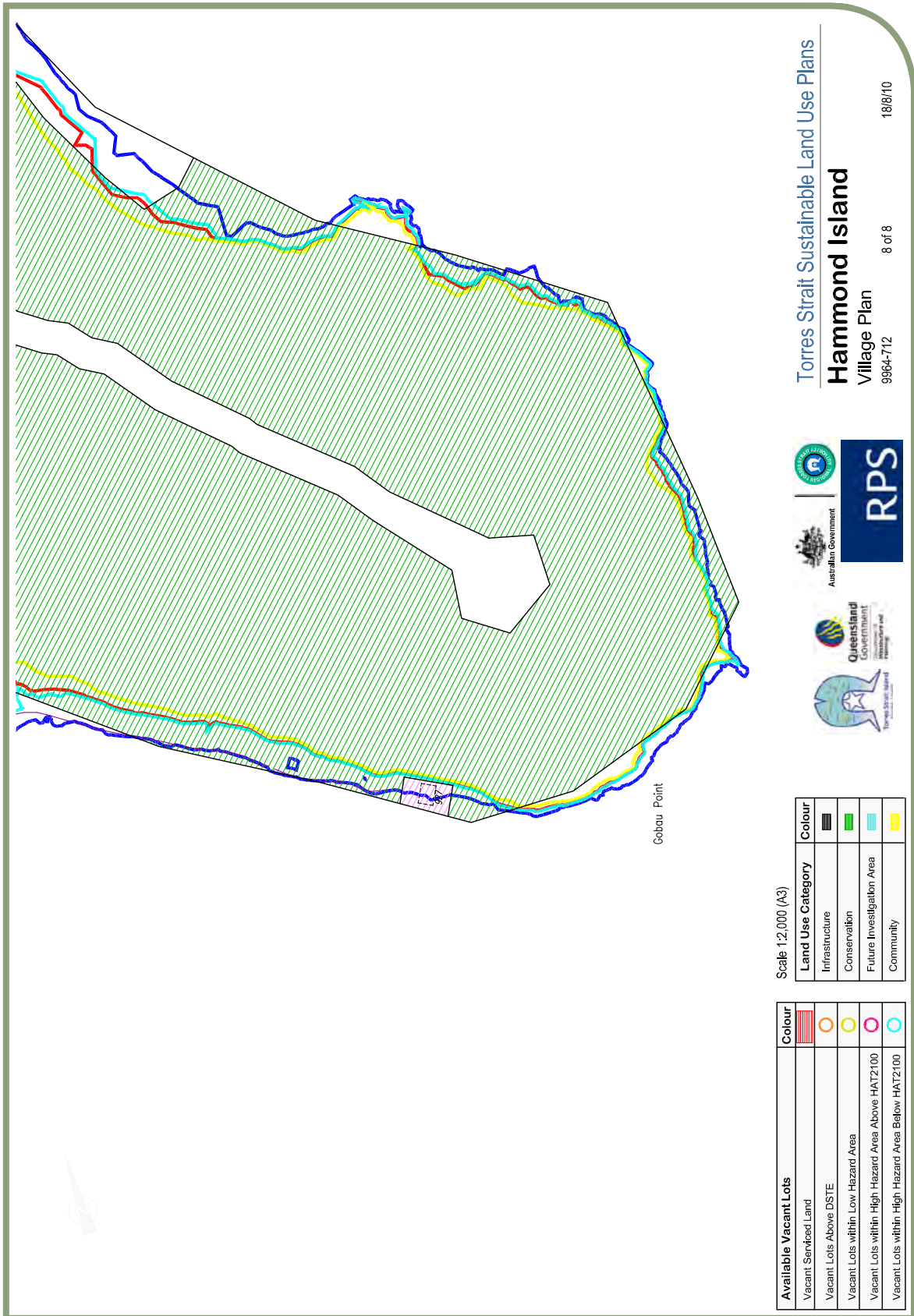


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For more detail, refer to Map No. 9964-712 contained in Maps.



For more detail, refer to Map No. 9964-712 contained in Maps.

5.3.4 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Sustainable Community Expansion Best Practice, Land Use Strategies and Sustainable Outcomes?
- Does the development consider its impact on population capacity, profile and trends and the effects of growth and change on Hammond?
- Is the development consistent with the strategies developed to address development growth?
- Does the development satisfactorily address its impact on the 'dump', water supply and the cemetery?

5.3.5 Land Use Projects

To determine where high density, residential development should occur in the village, a residential strategy should be undertaken.

Sustainable Community Expansion Outcomes

- Decision making focuses on reducing the impacts of population growth and development on natural resources and the environment.
- A highly liveable community where there are a range of services and activities for all people who work together to identify, prioritise and address community issues.



5.4 Community Facilities and Services

5.4.1 Best Practice

- Communities are created with a recognisable character and sense of place which have a high level of amenity, safety, connectivity and integration between existing and new places.
- Create well-designed, safe and healthy environments that encourage active community participation, promote healthy lifestyles, prevent crime and maintain social equity and diversity.
- Maximise access to appropriate social and retail infrastructure for all residents.
- Reduce the vulnerability of existing and future community facilities and services to the impacts of climate change by:
 - avoiding decisions now that will make it more difficult to manage climate change risks in the future;
 - building understanding and capacity of the community to deal with the impacts of climate change on their community facilities and services; and
 - providing community facilities and services in locations not adversely impacted by natural hazards.

5.4.2 Overview of Current Situation

The 2006 Census indicated the following statistics:

Employment and Volunteering

The 2006 Census indicates the following characteristics for employment and volunteering:

The 2006 Census indicates the following characteristics for employment and volunteering:

- 79 people living on Hammond are employed;
- an average household weekly income of \$819.00;
- an average individual income of \$361.00;
- 12.7% of those working were between the ages of 15 to 24 years;

- 69.6% of those working were between the ages of 25 to 54 years; ⁴
- 10.8% of the community (over 15 years) undertake some form volunteer work in the 2006 Census. Volunteer work in the 2006 Census is someone who worked for an organisation or a group doing unpaid voluntary work in the 12 months prior to the Census;
- 16.0% of those undertaking volunteer work were between the ages of 15 and 24 years; and
- 48.0% of those undertaking volunteer work were between the ages of 25 and 54 years. ⁵

Table 5 shows the types of employment sectors people work in.



⁴ In comparison, in Queensland, the average weekly household income is \$1,033.00 and weekly individual income is \$476.00. Of those working, 18.1% are between the ages of 15 - 24 years, and 67.1% are between the ages of 25-54 years.

⁵ In comparison, in Queensland, 18.3% of the community undertaken some form of volunteer work. Of those volunteering, 14.1% are between the ages of 15 - 24 years, and 56.5% between the ages of 25 - 54 years.

Table 5 Employment Sectors

Employment Industry	Construction	Public Administration & Safety	Education & Training	Health Care & Social Assistance	Wholesale Trade	Retail Trade	Other	Not Stated
People	0	30	0	0	0	0	7	4

Source: : ABS 2006

Training and Education

From the 2006 Census, 69 people were studying or undertaking some form of further education program or training. This is 29.9% of the total population. Of those undertaking education:

- 4.3% were attending pre school;
- 58.0% were attending primary school;
- 20.3% were attending secondary school;
- 8.7% were attending a technical or further educational institution;
- none were attending university or tertiary institution; and
- 8.7% were undertaking another form of educational program or training. ⁶

⁶ In comparison, in Queensland, 4.9% of students were attending pre-school, 29.1% were attending primary school, 19.8% were attending secondary school, 5.7% were attending a technical school or college, 11.5% were attending university and 1.9% were attending another form of educational program or training.

The 2006 Census also shows that those that left school were over the age of 15, 38.8% left after completing Year 12, with another 23.1% leaving after completing Year 10. This means that 74.6% completed schooling after the age of 15 years. ⁷

Table 6 shows the community facilities that are available on Hammond.

Table 7 shows the retail and public office facilities and services that are available on Hammond.

Table 8 shows the recreational facilities that are available on Hammond.

⁷ In comparison, in Queensland, 41.3% of people complete Year 12, 35.1% of people leave school after completing Year 10 or 11. A total of 76.4% of students completed at a minimum Year 10.



Table 6 Community Facilities

Facility	Provided (✓ = Yes; ✘ = No)	Location
Pre school	✘	
Primary School	✓	Lot 225
Health Care Centre	✘	Travel to Thursday Island required
High school	✘	Travel to Thursday Island required
Child Care Centre	✓	Lot 74

Table 7 Retail and Public Office Facilities and Services

Facility	Provided (✓ = Yes; ✘ = No)	Location
Administration offices/Workshop	✓	Lot 12
Community hall	✓	Lot 74
Guest House	✓	Lot 74
Contractor Accommodation	✓	Lot 502
Churches	✓	Lot 11
SES depot	✓	Lot 916
Supermarket (IBIS store and or Convenience store)	✘	Small store on Lot 12
Banking facilities	✘	
Custom Depot	✘	
Police Station	✘	

Table 8 Recreational Facilities

Facility	Provided (✓ = Yes; ✘ = No)	Location
Picnic Grounds	✘	
Sports Oval	✓	Lot 500
Sports courts	✓	Lot 74



5.4.3 Issues Overview

On Hammond, there are strong links between the physical environment, socio-economic issues and community health and wellbeing. Best practice planning and design of the built environment encourages physical activity and healthy lifestyle choices, provides a sense of community safety and assists in crime prevention. Communities that contain a broad mix of housing choices, appropriate local support services, adequate social infrastructure and strong community networks tend to be safer communities. This makes it vital that planning policies for community facilities and open space encourage multiple use and flexible design to allow for changing needs.

The community needs to accommodate services for convenience goods and services that meet the normal daily needs of its residents (e.g., food, personal services and prescription drugs). At the same time, due to the limited land supply, a mix of uses need to be balanced and contribute to the sense of a complete neighbourhood offering a variety of housing types, supporting convenience commercial, job opportunities, schools, parks and open spaces. This should be encouraged on Hammond as the community facilities and services are scattered.

The central area of Hammond has a good planning structure. The church and school are separated by good open space with shade trees and sitting areas. West of the Council, the central area contains a shop, rural transaction centre – a library, and outdoor basketball court. Further to the west, but within walking distance is the arts and craft building.

The community is close to Thursday Island (15 minutes by ferry) and many of the community members use Thursday Island for shopping, banking and other services.



5.4.4 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Natural Environment, Cultural Heritage, Community and Infrastructure Best Practice and Sustainable Outcomes?
- Can the development respond to changing and emerging community needs?
- If the development is for a new residential area, is there adequate provision made for public spaces and places for community activities?

5.4.5 Sustainable Community Facilities and Services Outcomes

- Community facilities that recognise and reflect the needs of the resident population including people with special needs such as older people, children, low-income earners and people with disabilities.
- New and existing residential areas are provided with community and social facilities that are convenient and highly accessible to the community's residents.
- The community is involved in the planning of community building and spaces to promote ownership and pride.
- Existing and new community facilities are multiple use buildings and not located in areas identified as impacted by natural hazards.
- Local sport and recreational opportunities continue to focus on natural and cultural activities.

5.4.6 Useful Resources

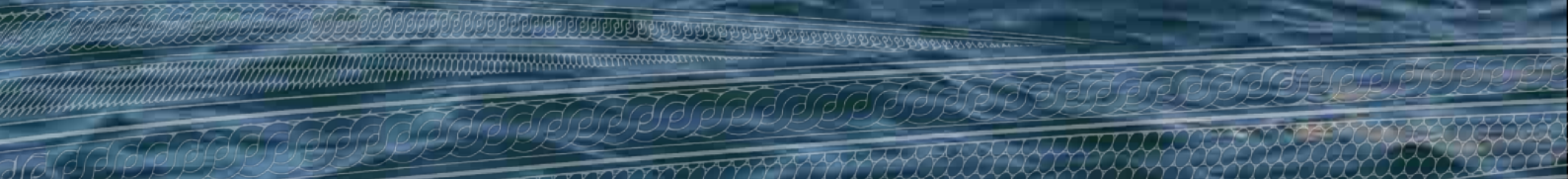
Websites

Australian Bureau of Statistics (Census data)
www.abs.gov.au





Infrastructure



Providing and managing infrastructure is a key issue facing the Torres Strait and Hammond is no exception. For sustainable land uses and a healthy community, a close and strong relationship between policies and strategies is required.

Infrastructure plays a vital role in linking island communities within the region and mainland Australia. As a physical resource of strategic importance, infrastructure needs to be protected from any adverse effects (that may arise from land uses, natural hazards and climate change) that could affect the provision of an integrated, safe, responsive and sustainable infrastructure system. Similarly, negative environmental effects on land use activities resulting from infrastructure also need to be managed.

Infrastructure also has a significant role in the community and therefore land use and infrastructure planning whether for existing or future development must be provided in a way that is efficient, equitable, accessible and timely. On the other hand, demand and consumer behaviour must not be ignored to enable the maximisation of existing infrastructure and to minimise the need for additional infrastructure and services.

This Plan addresses the following with regard to infrastructure:

- water;
- sewer;
- waste;
- electricity;
- telecommunication;
- roads;
- drainage;
- air access; and
- sea access.



6.1 Water

6.1.1 Best Practice

- Water infrastructure is expensive to install and consideration must be given to the proximity of existing water infrastructure when planning future development.
- Protect and enhance the ecological health and water quality of surface and groundwater, including regional waterways, wetlands and estuaries.
- Development should not occur in water catchments.
- Water use should avoid or minimise land degradation, including soil erosion, compaction, geomorphic instability, contamination, acidity, water logging, decline of native vegetation or, where appropriate, salinity and, where possible, land should be rehabilitated.
- Water planning is based on a total water cycle management, which is reflected in all policy and decision-making and provides assured supplies of water to meet the reasonable needs of development and the community.
- Promote efficient use of water by improving demand management and reusing and recycling water.
- All new infrastructure with a life of 10+ years should consider climate change risks now for function, design and location.
- Reduce the impacts of climate change on the community by:
 - recognising the importance of climate change on Hammond Island's water infrastructure;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the island water infrastructure.

6.1.2 Overview of Current Situation

The existing water infrastructure has the following features:



Source:	<p>Water on Hammond is sourced from:</p> <ul style="list-style-type: none"> • Infiltration gallery systems connected to three wells, • A 150mm submarine pipeline connecting Thursday Island to Hammond Island. A changeover valve system allows the Water Officer to select the source of supply • Household rainwater tanks on some houses for drinking purposes
Treatment:	<p>Water is treated via cartridge element filtration and chlorination at the treatment plant located at the Well 3 pump station. Water arriving via the submarine pipeline has already been treated in Thursday Island</p>
Storage:	<p>Water collected at Well Number 3 is pumped through a rising main to a 430kl concrete tank and 90kl fibreglass tank located on an elevated site to the west of the town area.</p> <p>Water coming from the pressure main from Thursday island enters the rising main between the pump station and the reservoirs.</p>
Delivery:	<p>Potable water is delivered to the community from the reservoirs via 80mm underground mains. All facilities are connected to the mains via branch lines and all facilities are individually metered.</p>
Capacity:	<p>The main source of water for Hammond is intended to come from the ground water infiltration gallery system. During the wet season and for a period of a few weeks/ months after the wet season has stopped, the infiltration gallery system has generally sufficient capacity to meet demand. The back-up water supply from Thursday island is mainly used during this period to cover for the infiltration gallery and well system being offline for repairs and maintenance.</p> <p>Towards the end off the dry season, Hammond has to rely predominantly on water purchased from Thursday Island via the submarine pipeline.</p> <p>Over the past few years the flow delivered by the infiltration galleries has declined considerably to a point where the Hammond island water sources can only meet 30% of the community's yearly water demand. It is expected that this is probably due to the collapse of the gallery systems and inspection and repair works is anticipated in the near future.</p> <p>Even if repaired, the water supply from the infiltration gallery systems is considered marginal for the existing population and inadequate for future growth. Consequently, the reliance on purchased water from Thursday Island will continue unless another local source of water is secured in the long term.</p> <p>The total existing elevated water storage capacity is 520kL. For the current population estimate of 250 persons and the adopted average daily consumption rate of 300L/ person per day, there is approximately 7 days storage capacity, which is considered sufficient to meet water demand during periods of treatment plant or supply pipework breakdown and/or maintenance provided water maintenance staff are available on the island.</p>
Usage:	<p>The current population is estimated to be about 250 people. The most recent water consumption data from the reservoir meter readings indicates an average daily water consumption of about 90,000 litres which equates to an average daily consumption of 360l/person/day. There is scope to reduce water consumption towards the target of 300 litres per person per day, however such a reduction will still not remove the reliance on purchased water from Thursday Island.</p>

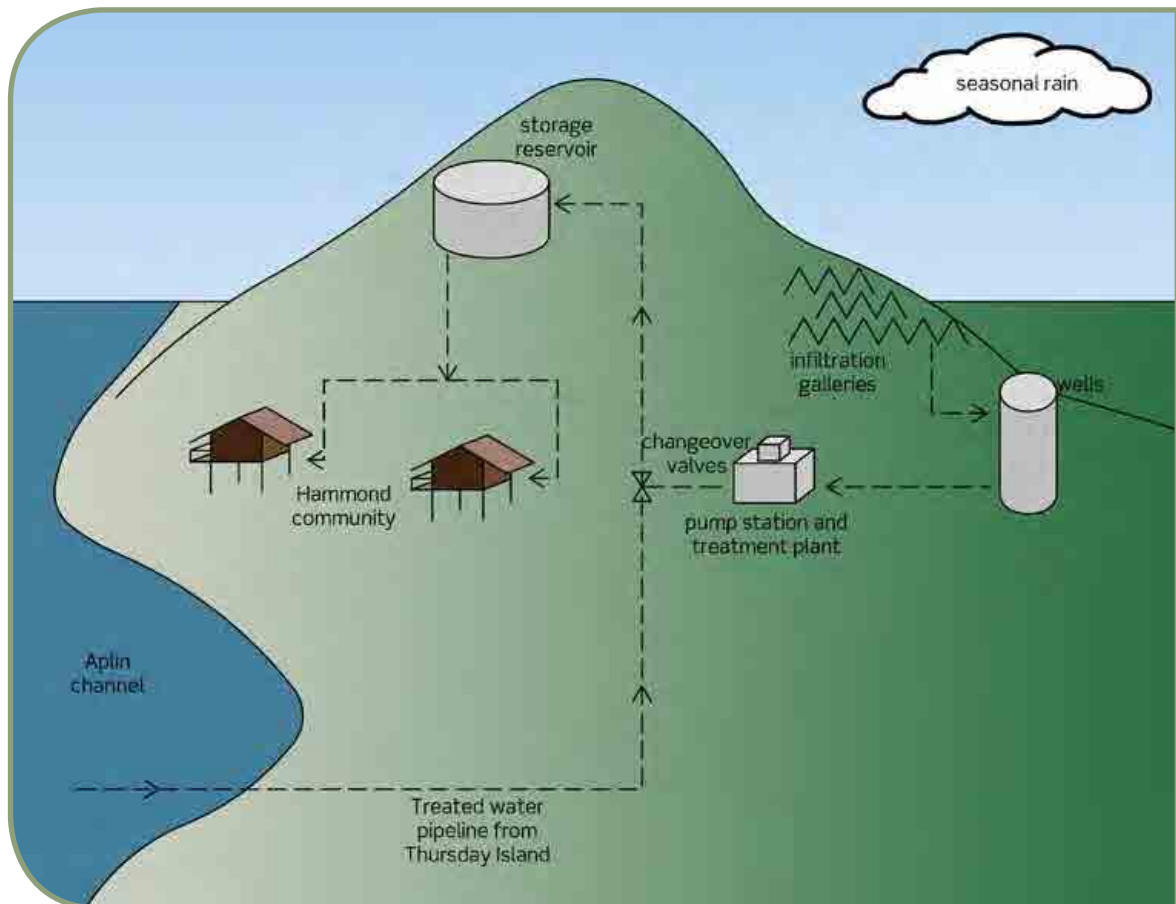
As with remote island communities, Hammond Island's water is expensive to source and treat and water infrastructure is expensive to install and operate. At 2008 prices, the cost to supply barged water is \$14 per kilolitre (about 26 times the national average) and desalinated water is \$7 per kilolitre (about 10 times the national average).

Water purchased from Thursday Island is currently being supplied by Torres Shire Council.

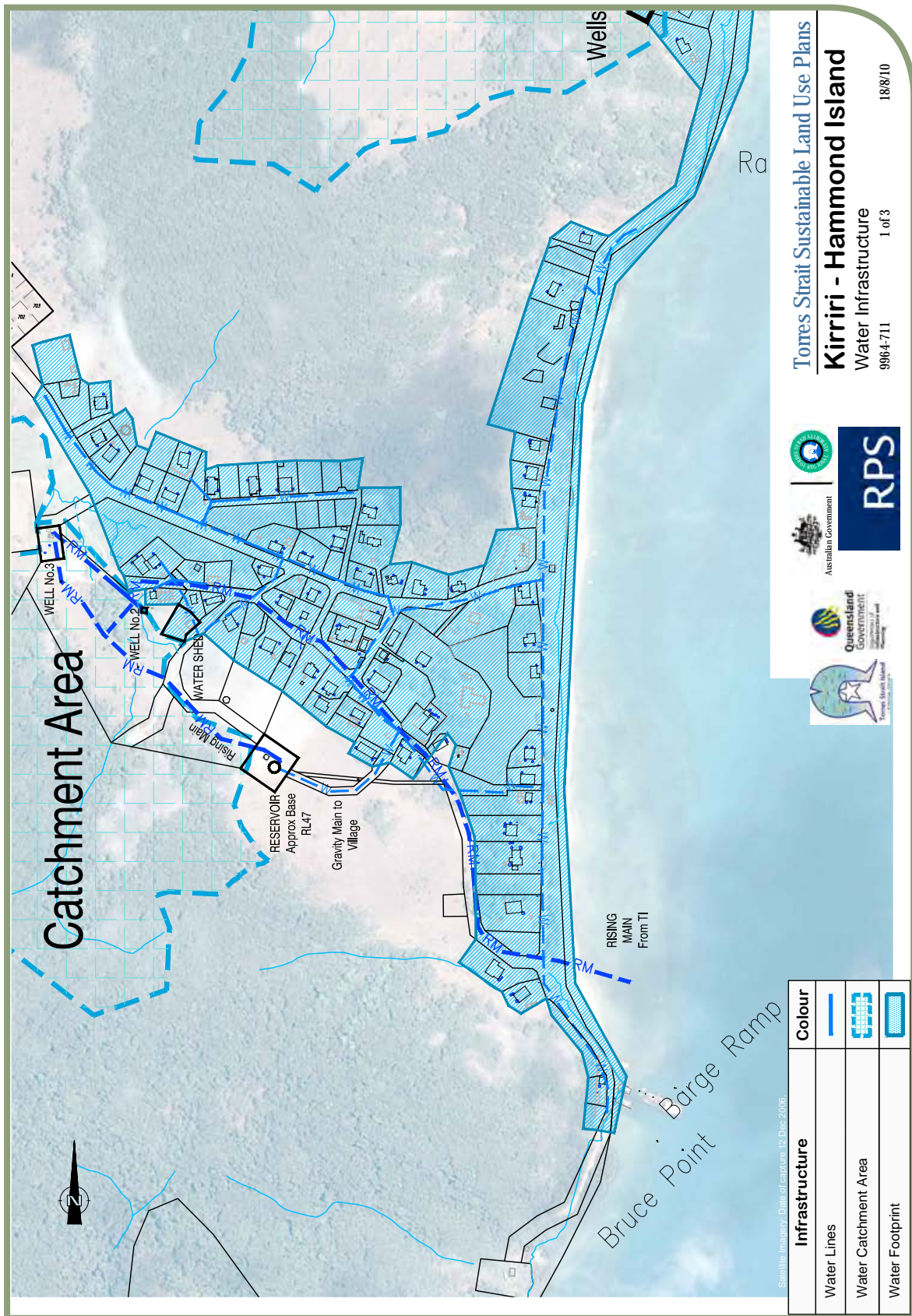
Figure 10 shows the water scheme process.

Map 14 shows the areas serviced by the existing water infrastructure.

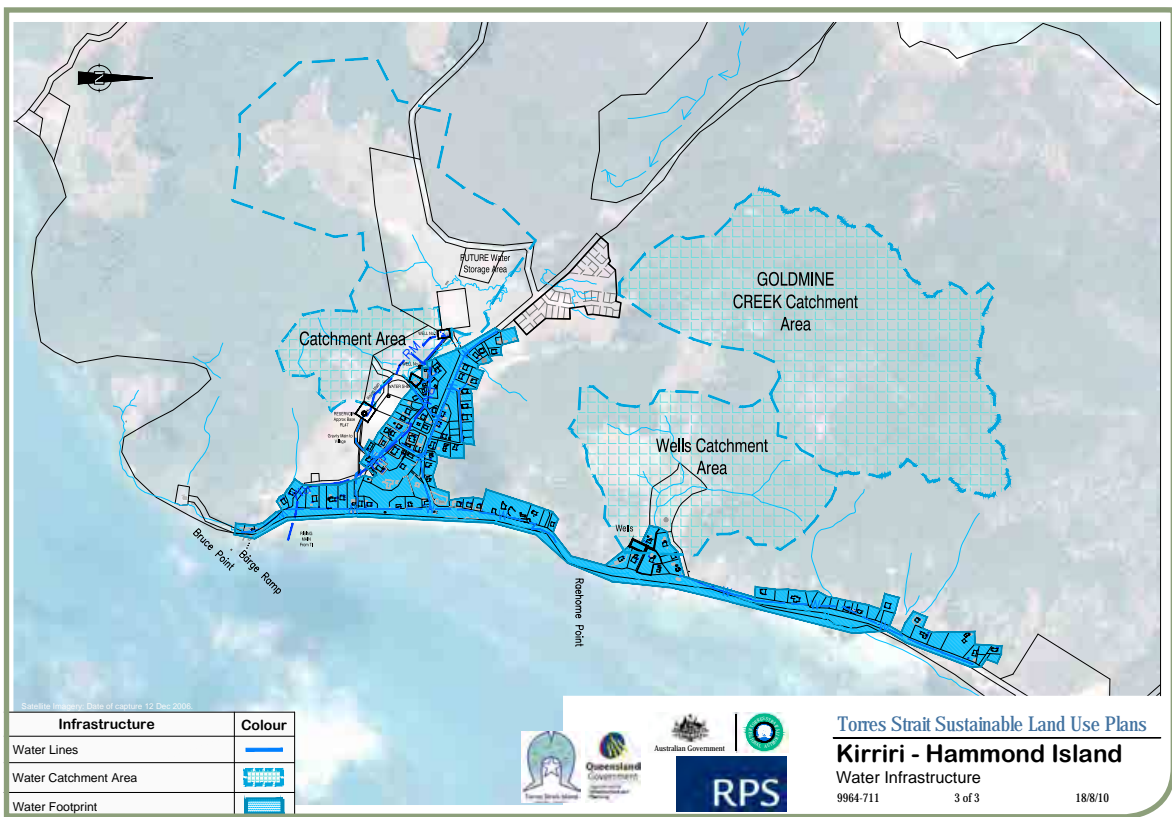
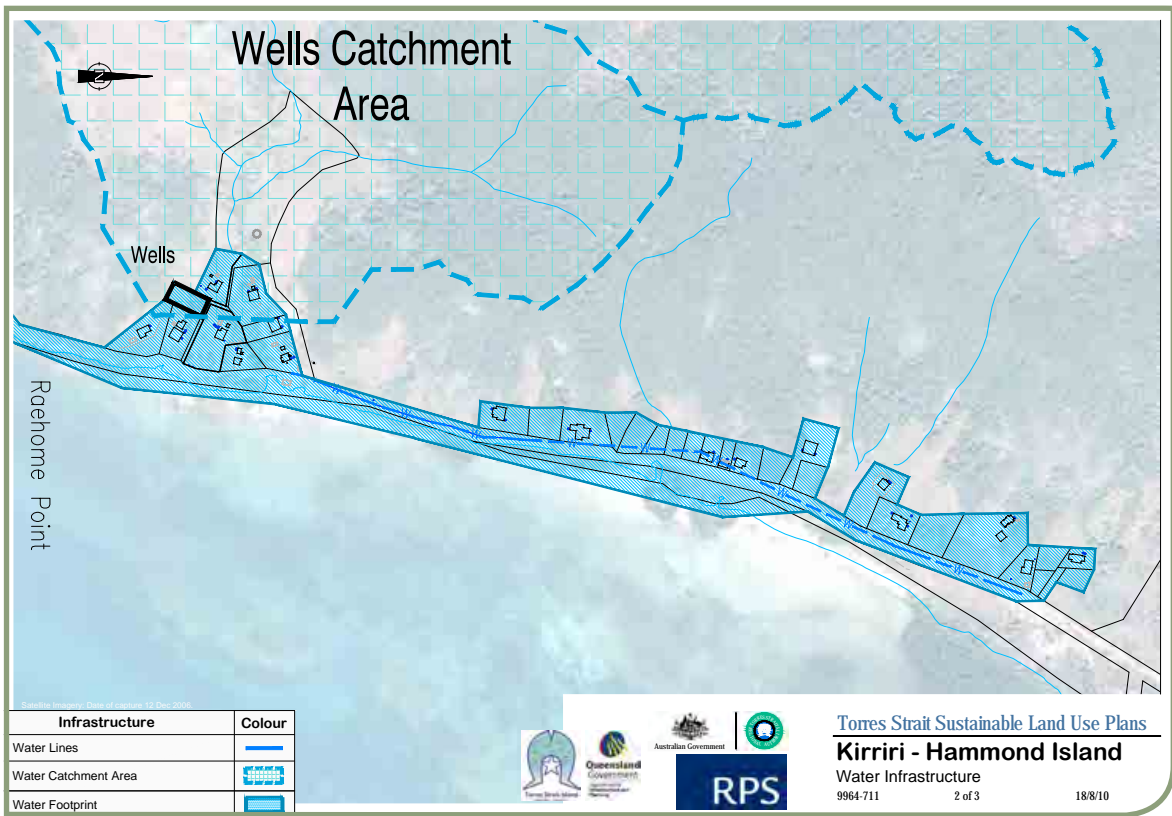
Figure 10 Water Scheme



Map 14 Water Infrastructure



For more detail, refer to Map No. 9964-711 contained in Maps.



For more detail, refer to Map No. 9964-711 contained in Maps.

6.1.3 Issues Overview

For the purposes of determining the existing and future capacity of the water infrastructure, the following population growth forecast is used:

Existing Population	2009	= 250 persons
Predicted Population	2018	(Low Growth Estimate of 2.0% = 298 persons)
Predicted Population	2018	(High Growth Estimate of 4.0% = 355 persons)

Water supply at Hammond is currently at a level where the collected groundwater from the infiltration galleries is insufficient to meet the current demand without the assistance of the supplementary purchased water from Thursday Island.

Consequently, future expansion will require an increasing demand on the purchased water. The pipeline from Thursday Island was only intended to be a backup source of water during periods of maintenance and to cover for the low groundwater yield towards the end of the dry season, and not as base water supply source for the long term. Consequently, any significant population increase may require the consideration of an alternative local source of water. The community has expressed their long term desire to considering capturing water from the Goldmine Creek catchment and storing the water in covered lagoons.

All proposed areas for future development are within close proximity to the existing water reticulation system under sufficient mains pressure.

6.1.4 Land Use Strategies

To minimise the impact of water infrastructure on the natural and man made environments and to ensure that the current and future efficiency and effectiveness of Hammond Island water infrastructure, the following strategies are recommended:

- Development is not to occur in existing and future water catchments.
- A target of 300 litres per person per day or less is achieved by using water efficiently and managing consumer behaviour and demand for water.
- On reaching a population of 300 persons and the target consumption of 300 litres per person per day or less is achieved on a regular basis, a permanent upgrade to the water plant capacity is to be considered.
- An area of land, (Lot 904) west of the sports oval has been set aside for a future water storage.
- The availability and feasibility of fresh water from Goldmine Creek (e.g. by wells or bores) should be investigated, should the reliance on water purchased from Thursday Island become an issue.



6.1.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Water Best Practice, Land Use Strategies and Sustainable Outcomes?
- Does the development adopt best practice principles in the planning, design and construction of water cycle infrastructure (including water supply, sewerage, drainage and water quality)?
- Does the proposal address its impact and cumulative impact on the existing water infrastructure?
- If the development is for a residential or community building,
 - is there a total water cycle management system addressing demand, reuse and recycling including the use of rainwater tanks for use within the building; and
 - are water saving devices proposed?
- Is the water catchment area (if one exists) affected by the development?
- Is the development located within the area serviceable by current infrastructure? If not, is the required additional infrastructure adequately funded?

6.1.6 Sustainable Water Infrastructure Outcomes

- Achieve targeted reductions in water consumption by using water efficiently and managing consumer behaviour and demand for water.
- Protect the quality of water draining from urban development and water infrastructure.
- All water infrastructure is inspected regularly and maintained to ensure that it is in effective working order.



6.2 Sewer

6.2.1 Best Practice

- Sewerage infrastructure is expensive to install and consideration must be given to the proximity of existing and/or future sewerage infrastructure when planning future development.
- Sewerage treatment plant design must accommodate specific design capacities and the impact of additional loading from future development.
- All new infrastructure with a life of 10+ years should consider climate change risks now for function, design and location.
- Reduce the impacts of climate change on the sewer infrastructure by:
 - recognising the importance of climate change on Hammond Island's sewer infrastructure;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the community's sewer infrastructure.

6.2.2 Overview of Current Situation

Hammond Island is not currently serviced by a reticulated sewerage system. All community sewage is treated via septic tanks and underground absorption techniques. The majority of septic tanks are reportedly operating satisfactorily, however there are problems experienced on some lots where the low permeability of the soil is causing the absorption trenches to fail during the wet season

Hammond Island is currently in the stages of having a reticulated sewerage system designed to replace the septic tank system. The new sewerage system will include underground

gravity sewers, sewerage pump stations, rising mains and a treatment facility. Consideration is being undertaken into the type of treatment plant most suitable for Hammond Island, including packaged sewerage treatment plant or sewerage treatment lagoons.

The proposed area for the treatment system is to the north of the island, north of the existing solid waste depot. An ocean outfall is proposed to discharge treated effluent to an environmentally appropriate discharge point north of the island

Map 15 shows the latest proposed sewerage system design.



Map 15 Sewer Infrastructure



For more detail, refer to Map No. 9964-716 contained in Maps.



For more detail, refer to Map No. 9964-716 contained in Maps.

6.2.3 Issues Overview

The proposed new sewerage system is currently being designed to serve Hammond Island. The proposed treatment plant will have the capacity to treat effluent for population of 600 persons. Consequently, there will be sufficient capacity to meet the sewerage treatment needs well into the future.

For future development, the extent of infrastructure needs will depend on the exact location of the development in relation to the proposed gravity sewers. If development is contained the edges of the existing town as proposed, infrastructure will be limited to the construction of sewers and house connections

Effluent Re-use

Effluent from the treatment plant will be treated to a secondary level only and as such, is unsuitable to be considered for potable use. The treatment plant is unlikely to be designed to be readily modifiable to enable effluent treatment to a tertiary level.

There may be an opportunity to use the secondary treated water to irrigate recreational or similar areas during the dry season; however, this would involve the provision significant infrastructure and the need for strict environmental health management systems to be implemented.

6.2.4 Land Use Strategies

To minimise the impact of sewer infrastructure on the natural and man made environments and to ensure that the current and future efficiency and effectiveness of Hammond sewer infrastructure, the following strategies are recommended:

- Development in close proximity to a sewerage treatment plant is discouraged.
- Where development occurs outside the area serviced by the existing sewer infrastructure, sewer infrastructure must be provided in accordance with the Queensland Plumbing and Wastewater Code and AS/NZS1546:2008 On-site domestic wastewater treatment units – aerated wastewater treatment systems.

6.2.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Sewerage Best Practice, Land Use Strategies and Sustainable Outcomes?
- Does the development adopt best practice principles in the planning, design and construction of sewerage infrastructure (including water supply, sewerage, drainage and water quality)?
- Does the proposal address its impact and cumulative impact on the existing sewerage infrastructure?
- Is the development near or adjacent to an existing or proposed sewerage treatment plant?
- Is the development located within the area serviceable by the current infrastructure? If not, is the required additional infrastructure adequately funded?

6.2.6 Land Use Projects

To maximise the use of secondary treated water, it is recommended that an investigation into the feasibility and costs of using the secondary treated water to irrigate the recreational or similar areas during the dry season be undertaken.

6.2.7 Sustainable Sewer Infrastructure Outcomes

- Waste water conservation should be practised and waste water production should be minimised.
- All sewer infrastructure is inspected regularly and maintained to ensure that it is in effective working order.

6.2.8 Useful Resources

Policies, Plans & Guidelines

Queensland Plumbing and Wastewater Code sets out the framework for Queensland's plumbing and drainage standards.

www.dip.qld.gov.au/plumbing/2.html

AS/NZS 1546:2008 is the Australian Standard for on-site wastewater treatment units.

www.standards.org.au

6.3 Waste

6.3.1 Best Practice

- The siting and maintenance of waste disposal facilities (dump or tip) must not have a detrimental impact on the natural environment.
- Removal of waste from the island is expensive and the minimisation of waste and associated environmental impacts and maximisation 'reduce, reuse, recycle' of waste generated occurs on a daily basis.
- All new infrastructure with a life of 10+ years should consider climate change risks now for function, design and location.
- Reduce the impacts of climate change on the island's waste generation and disposal facilities by:
 - recognising the importance of climate change;
 - avoiding quick decisions now that will make it more difficult to manage Hammond Island's waste generation and disposal facilities; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the island's waste generation and disposal facilities.

6.3.2 Overview of Current Situation

Hammond Island currently has a waste depot located at the northern end of the island approximately 2km from the town area. The waste depot is setback approximately 100 metres from the coastline and is surrounded by vegetation that has some habitat value.

Waste is currently collected by a minipactor rubbish truck and deposited in within a fenced compound. The method of disposal is by Trench-and-cover.

In April 2006, the previous waste dump located immediately north of the current dump was closed. A new waste depot was fenced and an initial trench dug and left for the community to manage.

In 2009, the dump was in good condition and had good management and sorting of rubbish.



6.3.3 Issues Overview

Management:	The dump needs to be better managed to sort and segregate non-putrescible materials (such as cars, timber, building demolition waste etc). This would allow the trenches to contain only household rubbish.
Vehicles:	<p>A significant issue for all Torres Strait Islands is the impact of disused vehicles once they have reached the end of their usable life. Typically, these vehicles are in poor condition when they reach the Torres Strait. Once broken down, they consume valuable space in the landfill sites. This space should be reserved for general domestic rubbish. Materials other than general domestic waste, should be separated and stocked piled so that they can be re-used or transported off the island.</p> <p>Quarantine restrictions imposed for the Torres Strait protected zones mean that any material transported between zones requires Australian Quarantine and Immigration Service clearance that usually involves removal of any dirt from old car bodies. This can be logistically difficult and expensive. Additional requirements of the Department of Primary Industries apply to the transfer of putrescibles matter between islands.</p> <p>Given the above, consideration should be given to imposing a levy on all vehicles brought onto the island. Such a levy could pay for the ultimate removal of the vehicle from the island.</p>
Future Expansion:	The existing dump has a planned life of 5-10 years, depending on the amount of management and separation of materials that is undertaken. There is land available for expansion of the waste depot on Hammond Island immediately east of the new existing waste depot. This is the most suitable location on Hammond Island however; it requires the further destruction of vegetation and habitat of the western half of the island. At this stage, it is premature to investigate the impacts of this expansion, but the effect upon vegetation, habitat, Cultural Heritage and traditional ownership will need to be addressed when the expansion becomes necessary.

Alternative options such as the introduction of a waste transfer station and removal of waste from Hammond Island to another site (such as Cairns, Horn Island or a yet to be determined regional waste depot) for the Torres Strait.



6.3.4 Land Use Strategies

To minimise the impacts of waste infrastructure on Hammond Island's natural and man made environments, the following strategies are recommended:

- Future landfills are located in geologically stable areas, not flood prone or adjacent to areas of high ecological significance or in areas identified as affected by natural hazards.
- Waste generation is avoided in the first instance. Where waste generation cannot be avoided, practices are implemented to reuse, recycle or recover wastes and materials prior to disposal.
- A voluntary target of reducing waste through recycling.
- Waste disposal to landfill is minimised through applying waste recovery techniques that gain optimum recovery of reusable and recyclable materials.
- Materials other than general domestic waste, should be separated and stocked piled to enable their re-use or transportation off Hammond.
- The waste depot should be operated on an "area-fill" method, where waste is spread out in sections or cells and progressively covered.

6.3.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Waste Best Practice, Land Use Strategies and Sustainable Outcomes?
- Does the development encourage conservation, composting and recycling of waste?
- Has the development considered the impact it will have on the capacity of the landfill site?
- If the development involves demolition of an existing structure, is the removal of

- material from the island or its reuse; and
- contractor's vehicles from Hammond Island at the end of the project addressed?

6.3.6 Land Use Projects

The following projects are recommended to be undertaken:

- A study to quantify the need for waste management capacity for all waste streams until 2020.
- Consider the cost and feasibility of a 'vehicle disposal levy' to cover the cost of removing abandoned vehicles from Hammond Island.

6.3.7 Sustainable Waste Infrastructure Outcomes

- The development of an integrated and strategic approach to regional and local waste management.
- The volume of waste requiring disposal is reduced to a minimum, while maximising the economic value of resources during their life cycle through reuse, recycling, reprocessing and energy recovery.
- Any future landfills are located in geologically stable areas and are not flood prone or adjacent to areas of high ecological significance.
- Achieve targeted reductions in waste consumption by using waste efficiently and managing consumer behaviour and demand for waste.
- All waste infrastructure and landfill sites are inspected regularly and maintained to ensure that they are in effective working order.



6.4 Electricity

6.4.1 Best Practice

- Electric infrastructure is expensive to install and consideration must be given to the proximity of existing electricity infrastructure when planning future development.
- Provide energy generation production, transmission and distribution capacity to meet the needs of the population and support the use of viable alternative energy sources where appropriate.
- All new infrastructure with a life of 10+ years should consider climate change risks now for function, design and location.
- Reduce the impacts of climate change on the island's electricity infrastructure by:
 - recognising the importance of climate change on the island's electricity infrastructure;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the island's electricity infrastructure.

6.4.2 Overview of Current Situation

Electricity is supplied to Hammond Island from a central power station located just east of the village. The generation, distribution and supply of electricity is undertaken by Ergon Energy on behalf of the State government.

Electricity is generated through multiple diesel generator sets (gensets), which are sized to match the load as it fluctuates during the day. The gensets are modular and interchangeable and as such, are relatively easy to repair or relocate without disturbance to the continuity of electricity supply.

The cost to generate electricity on remote islands is significantly higher than the income received from the consumers, between a factor of 5 – 10. The State Government Community Service Obligation, as an equalised tariff, covers the difference in generation costs and income.

Although the cost of electricity to consumers at Hammond Island is the same as for anywhere in Queensland, there is a pressing need for the all people on the island to conserve electricity. Electricity generated by the combustion of diesel fuel causes significant greenhouse gas

emissions and the burning of fossil fuels, is not a sustainable practice.

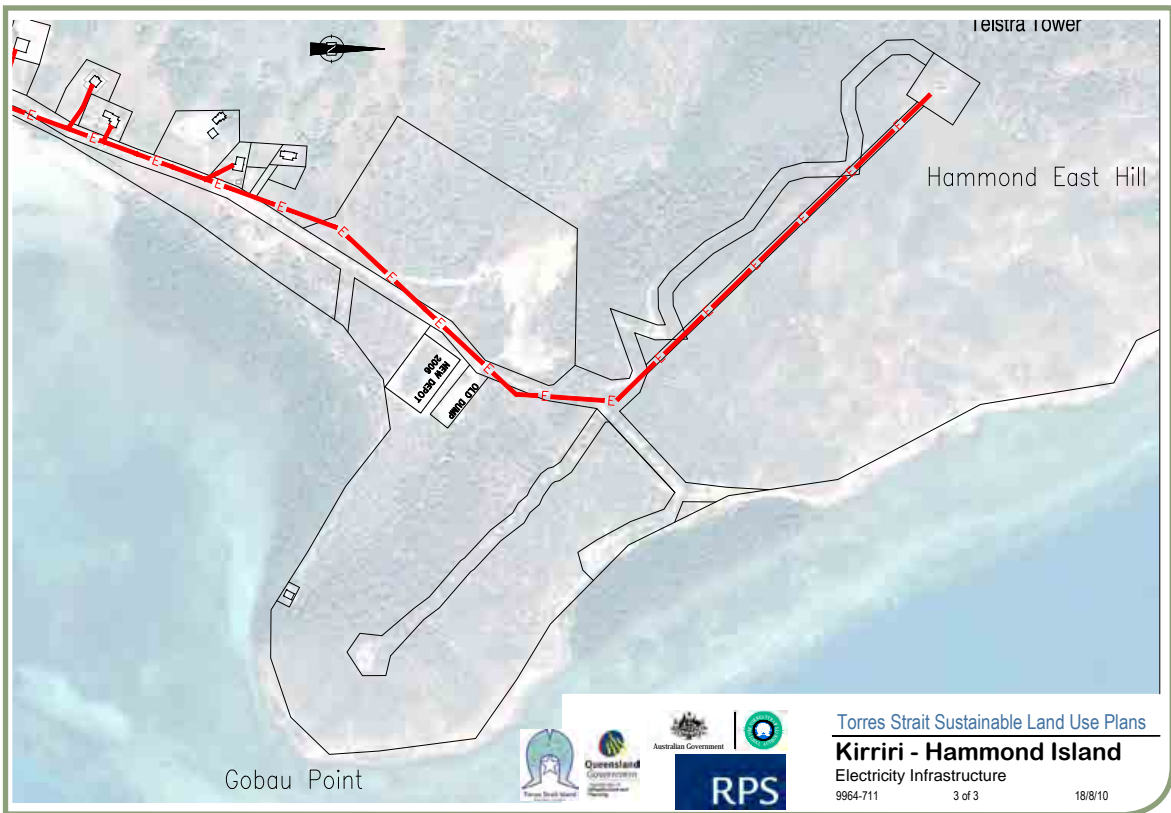
Map 16 shows the areas serviced by the existing electricity infrastructure.



Map 16 Electricity Infrastructure



For more detail, refer to Map No. 9964-717 contained in Maps.



For more detail, refer to Map No. 9964-1017 contained in Maps.

6.4.3 Issues Overview

There is limited opportunity for viable alternative sources of energy on remote islands. It may be feasible to use gas to fire the gensets, as gas is a lower emitter of Greenhouse gas, however it is impractical and expensive to barge in large gas bottles for power generation.

Renewable energy sources such as wind and solar could be considered as a supplement to the base power supply. However, any renewable resource would not be able to completely replace the existing base diesel generator sets as, the demand on the island is too high for a renewable supply to support and there is no realistic method of storing generated electricity during periods of low generation (lack of wind or solar radiation).

From a land use perspective, gradual increase in population and the corresponding increase in demand is generally met by the inherited scalability in the system, i.e. the modular gensets can be reshuffled to suit. Large-scale increases in demand might require the upgrade of a switching and distribution infrastructure. Any new development away from the main powerlines may require a contribution to Ergon for the installation of powerlines/transformers etc, however this is generally considered on a case-by-case basis.

Although the cost of electricity to consumers at Hammond Island is the same as for anywhere in Queensland, there is a pressing need for the all people on the island to conserve electricity. Electricity generated by the combustion of diesel fuel causes significant greenhouse gas emissions and the burning of fossil fuels, is not a sustainable practice.

There is limited opportunity for viable alternative sources of energy on Hammond Island. It may be feasible to use gas to fire the gensets, as gas is a lower emitter of greenhouse emissions; however, it is impractical and expensive to barge in large gas bottles for power generation.

Renewable energy sources such as wind and solar could be considered as a supplement to the base power supply and the Hammond

island community has expressed their interest in renewable sources, particularly wind turbines. However, any renewable resource would not be able to completely replace the existing base diesel generator sets as the demand on the island is too high for a renewable supply to support and there is no realistic method of storing generated electricity during periods of low generation (lack of wind or solar radiation).

From a land use perspective, gradual increase in population and the corresponding increase in demand are generally met by the inherited scalability in the system, i.e. the modular gensets can be reshuffled to suit. Large-scale increases in demand might require the upgrade of a switching and distribution infrastructure. Any new development away from the main powerlines may require a contribution to Ergon for the installation of powerlines/transformers etc, however this is generally considered on a case-by-case basis.

Hammond Island community has expressed a desire for the installation of approximately 20 additional street lights, mainly in the central town area for security and safety reasons. The town area is currently serviced by five street lights attached to power poles. An increase in street lighting will require payment to Ergon for the installation and an additional annual tariff increase.



6.4.4 Land Use Strategies

To ensure the effectiveness and efficiency of the electric infrastructure network, the following strategies are recommended:

- Development should not occur in areas in close proximity to the generators.
- If development occurs adjacent or nearby to the generators, noise retention measures must be incorporated in the design of the development.
- Development must not impede the supply and access to the electric infrastructure network.
- The visual impact of electricity infrastructure on development and the natural environment is to be minimised through the provision of landscaping.
- Inappropriate land uses such as a school or a play area should not be located in an electricity easement or within close proximity of the generators.

6.4.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Electricity Best Practice, Land Use Strategies and Sustainable Outcomes?

- Can the existing electric infrastructure cater for the development without requiring an upgrade of the system?
- If the development is adjacent to or near a generator, does it include noise attenuation measures?
- If the development is for a new system or an enlargement of the existing infrastructure, have noise and landscape studies being undertaken?
- Has an agreement with Ergon regarding the supply of electricity been reached?

6.4.6 Sustainable Electricity Infrastructure Outcomes

- An efficient, sustainable and reliable electricity infrastructure.
- Energy efficient principles are included in the design and layout of new urban areas and developments.
- The visual and noise impact of electricity infrastructure on the natural and man made environments is minimised through landscaping and appropriate noise attenuation measures.
- All electricity infrastructure is inspected regularly and maintained to ensure that they are in effective working order.



6.5 Telecommunication Infrastructure

6.5.1 Best Practice

- Telecommunication facilities are expensive to install and consideration must be given to the proximity of existing telecommunication infrastructure when planning future development.
- The land around a telecommunication facility or service should be integrated and maintained to protect the land and marine environments.
- Planning around a telecommunication facility or service should aim to achieve and maintain a high standard of environmental quality and minimise noise to adjacent residential areas.
- All new infrastructure or modification to existing infrastructure with a life of 10+ years should consider climate change risks now for function, design and location.
- Reduce the impacts of climate change on the community by:
 - recognising the importance of climate change on existing and future telecommunication facilities or services;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on the Islands natural environments.

6.5.2 Overview of Current Situation

A Telstra communications equipment building is located on the high ground to the south of the church. There is mobile phone coverage over Hammond Island.

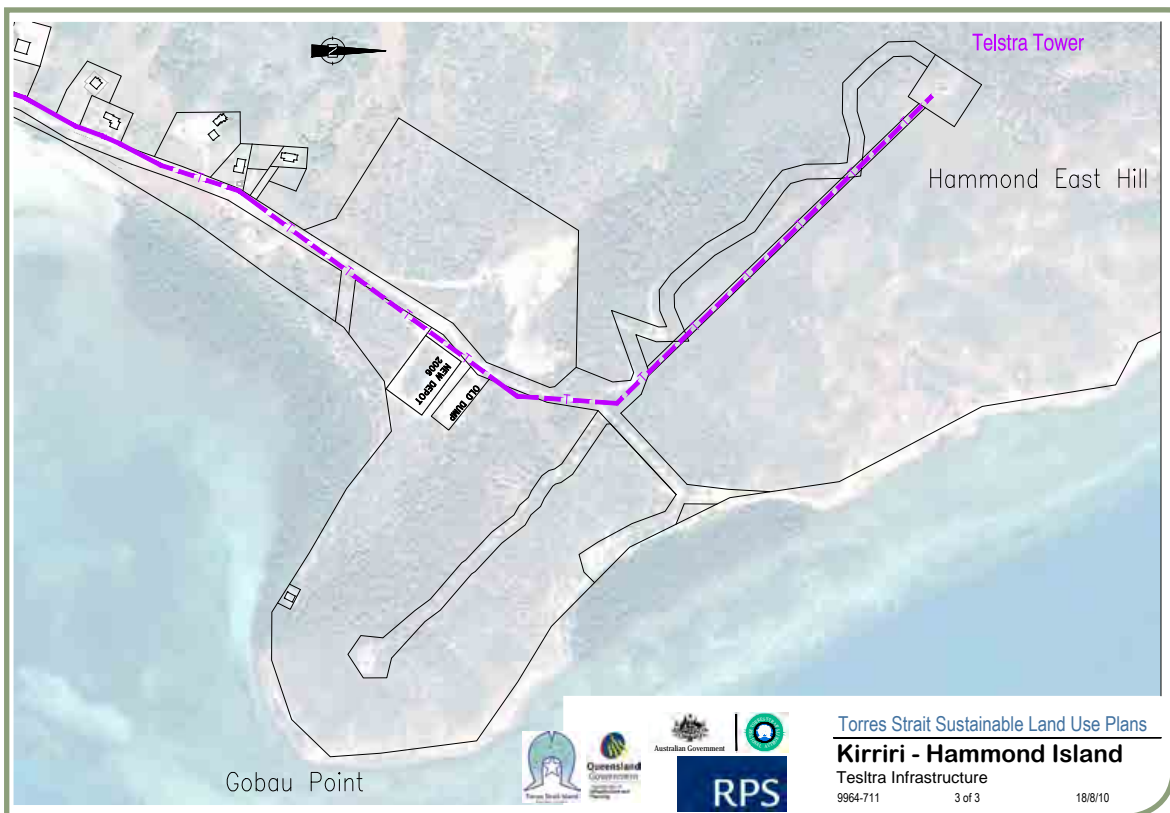
Map 17 shows the location of telecommunication infrastructure



Map 17 Telstra Infrastructure



For more detail, refer to Map No. 9964-718 contained in Maps.



For more detail, refer to Map No. 9964-718 contained in Maps.

6.5.3 Issues Overview

There are no known issues regarding telecommunications on Hammond Island.

It is sound land use planning practice to ensure that compatible development occurs near telecommunication infrastructure. Residential development should not be permitted to close to the Telstra Communications Building.

6.5.4 Land Use Strategies

The following strategy is recommended:

- The Telstra building is protected from urban encroachment, including noise sensitive development and any other development that may impact on current or future operations.

6.5.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Telecommunication Best Practice, Land Use Strategies and Sustainable Outcomes?
- Does the development provide affordable access to reliable telecommunication services?

6.5.6 Sustainable Telecommunication Outcomes

All telecommunications infrastructure is inspected regularly and maintained to ensure that they are in effective working order.



6.6 Roads

6.6.1 Best Practice

- Roads are expensive to construct and maintain so consideration must be given to the proximity of existing roads when planning future development.
- Foster investment in road improvements to ensure a high standard of road and adjoining environments.
- Encourage the use of walking and cycling rather than the use of vehicles.
- All new infrastructure with a life of 10+ years should consider climate change risks now for function, design and location.
- Reduce the impacts of climate change on Hammond Island's road infrastructure by:
 - recognising the importance of climate change on the existing and future road infrastructure on Hammond Island;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on Hammond Island's road infrastructure.

6.6.2 Overview of Current Situation

Roads on Hammond Island consist of concrete paved sections and formed unsealed sections. The roads can generally be trafficked in all weather, except for short periods of localised flooding along the Esplanade after heavy downfalls. There are no defined stormwater drainage systems on the island apart from minor culverts and above ground crossing of some roads.

The town area has recently received an upgrade to the internal road system, with the main trafficable roads now having been sealed with concrete pavers. In addition, more sections of the Esplanade have been sealed with concrete pavers, generally in areas where houses are close to the road.



The 2006 Census indicates the following statistics:

- 21 privately owned vehicles;
- 39 households did not have a vehicle;
- 13 households had one vehicle; and
- 4 households had two vehicles.

Note: there are more vehicles on Hammond Island than the Census indicates as it does not include vehicles used by the Council or construction workers.



6.6.3 Issues Overview

Council has expressed a desire to complete all sections of the Esplanade to reduce dust and water ponding, including the section of road between the town and the barge ramp.

The access track to the water supply reservoirs is barely trafficable and requires a major upgrade.

6.6.4 Land Use Strategies

To minimise existing and future development on the natural environment of Hammond Island and the impacts of natural hazards, the following strategies are recommended to be implemented:

- All development proposals must include landscaping and/or revegetation plans that are in accordance with the Best Practice, Land Use Strategies and Sustainable Outcomes outlined in this Plan.
- Transport planning considers the risk of natural hazards such as cyclones, tides, storm surges and acid sulfate soils with transport infrastructure located and designed to avoid or minimize the impact of such events.
- A network of functional, legible and convenient street signs is established.
- A safe and convenient network for pedestrians is provided along street networks, linking residences and providing access to points of attraction within and beyond the urban areas.
- Parking areas do not affect the unique characteristics of sites and are linked to more sensitive features of each site with safe pedestrian and cycle ways.
- The beaches along the northern and southern coasts not be used by any form of vehicle.
- Encourage alternative forms of transportation around the community such as bicycle, scooter to reduce the reliance on petrol driven vehicles. This would also improve the problem of disused and abandoned vehicles consuming valuable space in the dump.

6.6.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Roads Best Practice, Land Use Strategies and Sustainable Outcomes of this land use plan?
- Does the development integrate the land use, efficient movement of people and goods and growth for Hammond Island?
- If the development is in a natural hazard area or adjacent to the northern and southern coastline, is the road located and designed to avoid or minimize the impact of such events?
- If a new street or road is proposed,
 - does it provide for vehicles, pedestrians and cyclists adequately
 - is it highly connected within the development, with the surrounding area and between settlements
 - does it propose road signage in keeping with Hammond Island's signage network?

6.6.6 Sustainable Road Infrastructure Outcomes

- The integration of land use and an efficient, safe and sustainable road network that minimises adverse impacts on the environment and reflects the needs of the community.
- Development encourages lower impact modes of travel such as walking and cycling
- All vehicles bought onto Hammond Island are to be removed from the island after construction is completed.
- All road infrastructure is inspected regularly and maintained to ensure that it is in effective working order.

6.7 Drainage

6.7.1 Best Practice

- Protect drainage infrastructure and receiving waters from sedimentation and other contaminants.
- Ensure that streets operate adequately during major storm events and provide for public safety and minimise the drainage infrastructure cost of development.
- All new infrastructure with a life of 10+ years should consider climate change risks now for function, design and location.
- Manage quality and quantity of urban runoff by using stormwater in the landscape by incorporating multiple-use corridors that maximise the visual and recreational amenity of Hammond Island.
- Reduce the impacts of climate change Hammond Island's drainage system and infrastructure by:
 - recognising the importance of climate change on Hammond Island's drainage system and infrastructure;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change on Hammond Island's drainage system and infrastructure.

6.7.2 Overview of Current Situation

There is no piped drainage system currently servicing Hammond Island. The village area generally has natural favourable slopes however, stormwater runoff does present a problem during extended periods of rainfall. New paved roads in the town area have recently been constructed, which has improved water ponding problems, although formal spoon drains to the sides of the roads have not been constructed, resulting in minor scouring and flooding during the wet season.

6.7.3 Issues Overview

The Council has expressed a desire to construct spoon drains near the areas where scouring is occurring to alleviate the damage and to divert stormwater away from buildings.

For future development, Council has identified an area to the west of the town. The proposed area is located in the vicinity of existing creeks, so careful consideration will be required regarding stormwater diversion and stormwater easements.



6.7.4 Land Use Strategies

The following strategy is recommended:

- That development is not permitted in overland flow paths or drainage paths.

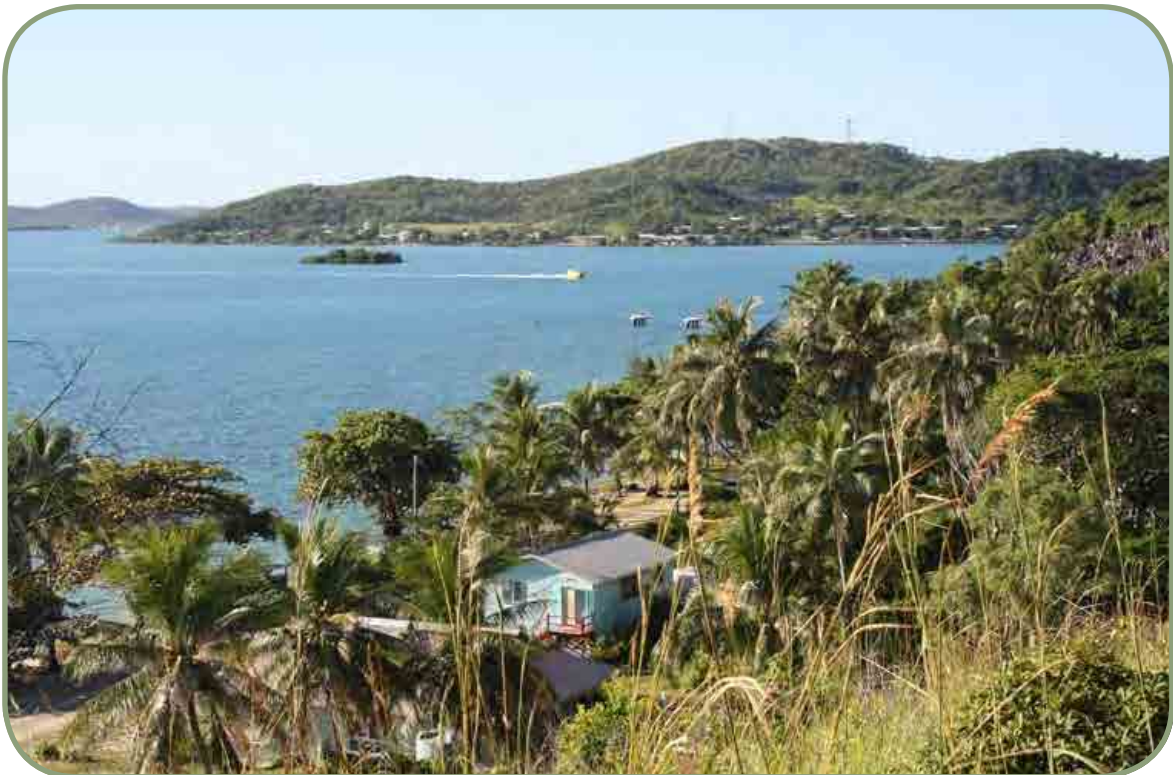
6.7.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Drainage Best Practice, Land Use Strategies and Sustainable Outcomes?
- Is the development designed to minimise its impact on the existing drainage network. Down stream catchment and adjoining properties?

6.7.6 Sustainable Drainage Infrastructure Outcomes

- Minimise damage to properties and inconvenience to residents from urban runoff by integrating stormwater treatment into the landscape.
- All drainage infrastructure is inspected regularly and maintained to ensure that it is in effective working order.



6.8 Air Access

6.8.1 Best Practice

- Efficient air transport to service both freight and passenger needs is provided.
- Freight and passenger air access is integrated and maintained to protect the adjoining natural and man made environments.
- Adjoining land uses and development are compatible with the operation of airstrip with houses shielded from the impact of aircraft noise by requiring appropriate noise attenuation measures.
- All new infrastructure or modification to existing infrastructure with a life of 10+ years should consider climate change risks in now for function, design and location.
- Reduce the impacts of climate change and fuel costs on air access to and from Hammond Island by:
 - recognising the importance of climate change and fuel costs on air access to and from Hammond Island;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change and fuel costs on air access.

6.8.2 Overview of Current Situation

There are no aircraft landing facilities at Hammond as the topography of the island prevents the construction of an airstrip and air access is available at nearby Horn island. Residents and visitors catch the ferry to Thursday Island and on to Horn island in order to access transport to other islands

Emergency access is available via medivac rescue helicopter (day and night) if required. Helicopters can land on the football oval during the day and are guided in at night via vehicle headlights in an emergency.

6.8.3 Issues Overview

Council has expressed a desire for a formal helipad to be constructed to the west of the town area. A formal hardstand helipad with appropriate marking and lighting would assist in safer emergency medivac operations

6.8.4 Land Use Strategies

The following strategy is recommended:

- The proposed helicopter site west of the community (perhaps near the oval) is protected from urban encroachment, including noise sensitive development and any other development that may impact on current or future operations.

6.8.5 Land Use Projects

Studies that are undertaken to determine the suitability of the investigation area for development must address the impact of the airstrip and measures required to be implemented to ease these impacts.

6.8.6 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Air Access Best Practice, Land Use Strategies and Sustainable Outcomes?
- If the development is located near or adjacent to the airstrip is it:
 - a compatible land use with the airstrip; and
 - if so, does it incorporate noise attenuation measures?
- Does the development impact on the approach/take-off areas of the runway?

6.8.7 Sustainable Air Infrastructure Outcomes

- Recognise the importance of the airstrip to the community and the Torres Strait Islands.
- The integration of land use and air access purposes to ensure that there is minimal adverse impact on the development.
- All air infrastructure is inspected regularly and maintained to ensure that it is in effective working order.



6.9 Sea Access

6.9.1 Best Practice

- Planning around a barge ramp and jetty should aim:
 - to achieve and maintain a high standard of environmental quality;
 - minimise noise to adjacent village areas;
 - to protect land around a barge ramp and jetty to preserve their value for uses which depend upon proximity to the sea for access to services and facilities; and
 - to integrated and maintained sea access infrastructure to protect the land and marine environments.
- Provide efficient sea transport to service both freight and passenger needs.
- All new infrastructure or modification to existing infrastructure with a life of 10+ years should consider climate change risks now for function, design and location.
- Reduce the impacts of climate change and fuel costs on sea access to and from Hammond Island by:
 - recognising the importance of climate change and fuel costs on sea access to and from Hammond Island;
 - avoiding quick decisions now that will make it more difficult to manage climate change risks in the future; and
 - building understanding and capacity of the community to deal with the impacts of climate change and fuel costs on sea access.

6.9.2 Overview of Current Situation

The marine facilities at Hammond Island consist of a concrete barge ramp located on the northern side of the island at the end of the airstrip and a timber finger pier adjacent to the ramp. The barge ramp and finger facilities are accessed from the deep water by a dredged channel.

The barge ramp provides access for all goods transported to the island and is an essential part of the community's infrastructure.

Hammond Island is serviced weekly by a barge service from Port Kennedy.

The barge ramp provides access for all goods transported to the island and is an essential part of the community's infrastructure.

Badu is serviced weekly by a barge service from Port Kennedy.



6.9.3 Issues Overview

The finger pier is a narrow timber deck that is supported on timber piles. The structure is suitable for the mooring of small vessels, however it is understood that there is limited mooring space at certain periods.

The barge channel through the reef needs to be dredged to remove the sand build up. Ideally, a specific set down area for the storage of goods being loaded/unloaded onto the barge would remove the short-term congestion around the barge ramp whenever the Barge is at the island. However, limited space on Hammond Island makes this task difficult to achieve.

6.9.4 Land Use Strategies

The following strategy is recommended:

- Land use and barge ramp purposes are to be integrated to ensure that development is compatible with adjacent village development.



6.9.5 Land Use Considerations

In assessing the impacts of future development on Hammond Island, the following key questions are to be raised. If the answer to any of the questions is 'NO', the proposal must, a) justify the inconsistency, b) be amended, or c) not be accepted.

- Is the development in accordance with the Sea Access Best Practice, Land Use Strategies and Sustainable Outcomes?
- Does the development provide efficient access to the barge ramp and jetty?
- If the development is located near or adjacent to the barge ramp and the desalination plant is it a compatible land use for port activities?

6.9.6 Sustainable Sea Access Outcomes

- Recognise the importance of sea access to the community and the Torres Strait Islands.
- Develop and implement an integrated management plan for land uses around the barge ramp and jetty.
- All sea infrastructure on or abutting Hammond Island is inspected regularly and maintained to ensure that they are in effective working order.





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