

5 VALUES & USES OF THE STUDY AREA

This section builds upon the analysis of constraints and opportunities on shoreline erosion management by considering the existing values and uses of the study area. It has been based on a review the data sources identified in Table 2.1, and considers:

- Land use and land tenure (Section 5.1);
- Critical infrastructure (Section 5.2);
- Environmental values (Section 5.3); and
- Socio-economic values (Section 5.4).

It is noted that this section of the report does not intend to present an exhaustive list of all values and uses of the study area, rather it aims to identify the key overarching values and uses.

5.1 Land Use and Land Tenure

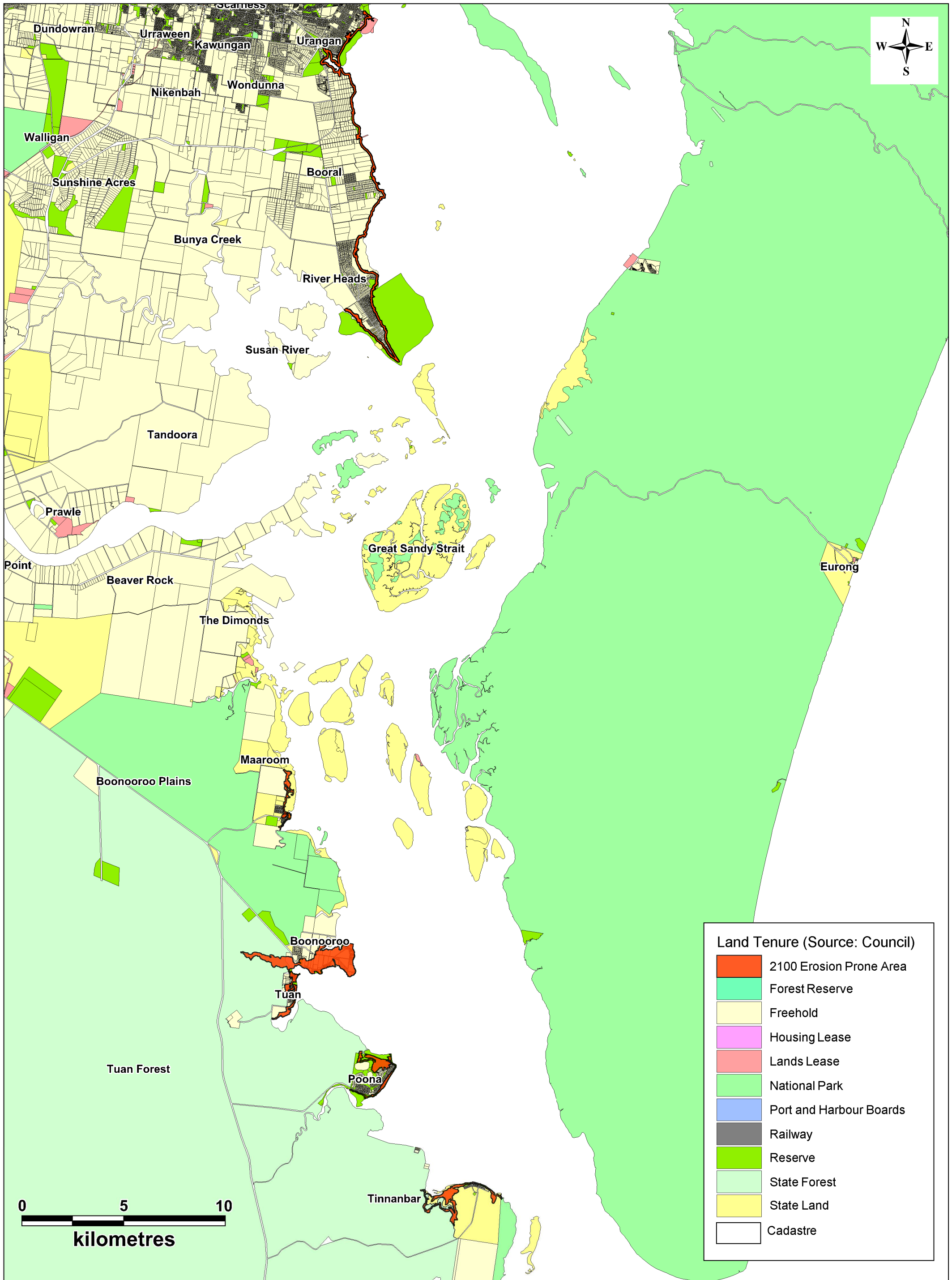
Land tenure provides information on whether the land is public or private (i.e. held under tenure), and the general types of activities that may be undertaken on that land. In particular, land tenure has important implications for how coastal land may be managed and the type of development that is assessable. This relates back to the statutory and non-statutory framework (Section 4).

Tenure for lands falling within the EPAs is defined by FCRC's Digital Cadastral Database (source: FCRC, file name: DCDB.tab) and is mapped in Figures 5.1 and 5.2. Land tenures within the study area include:

- Freehold land – privately owned land;
- State Land – Land held by the State of Queensland as Unallocated State Land and other areas vested in the State (or Crown);
- Lands Lease – State land held under lease and administered by DEHP in accordance with the *Land Act 1994*;
- Reserve – Land reserved by DEHP for community or public purposes;
- National Park – Land reserved by DEHP for a National Park, Conservation or Resource Reserve; and
- State Forest – Land reserved by DEHP for State Forest purposes.

'Land use' refers to the types of activities that are undertaken in a particular location, and this is tightly linked to the land tenure.





A review of Figures 5.1 and 5.2 highlights that a large amount of both public and freehold land falls within the EPAs, and the use of and development associated with these areas would be at risk from shoreline erosion. Further discussion on the risk of shoreline erosion to development, including a breakdown of the number of lots per land tenure falling within the EPAs, can be found in Section 6. Respondents to the community survey conducted for this project are concerned about the impact of shoreline erosion on both public and private property.

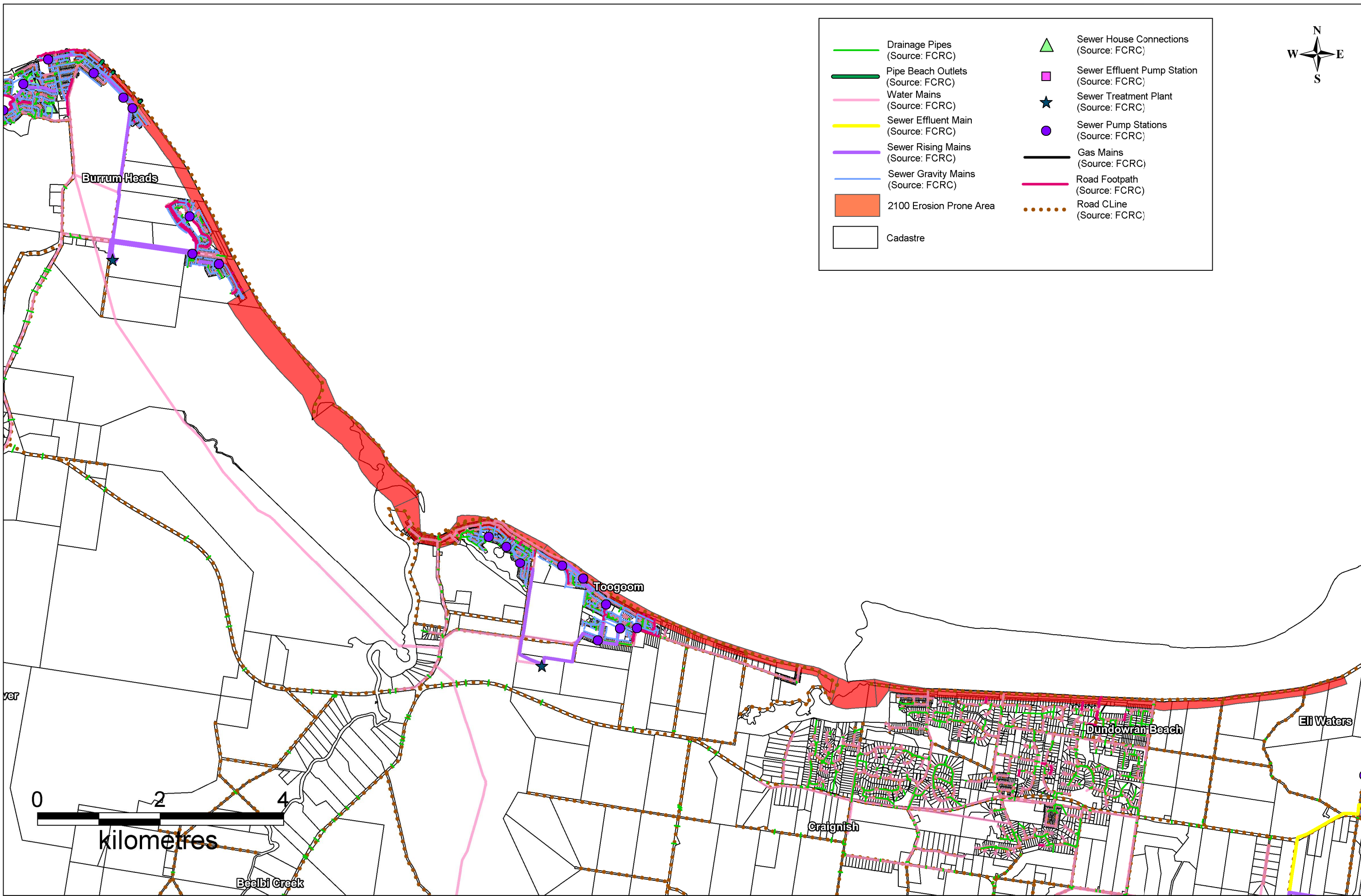
Some land uses may be coastal dependent activities, that is, they can only be undertaken in the coastal zone. Coastal-dependent development (as defined under the QCP) requires proximity to tidal waters to function, and includes developments such as marinas, minor public transport infrastructure (including boat ramps and ports), private marine access structures, aquaculture and dredging activities. Maritime development areas fall under this category and are mapped under the QCP (source: DEHP, file name: Maritime Development Area.shp). These areas are mapped as occurring in all five Management Zones within the study area, but are limited in extent, except for Zone 3, where larger areas correspond to the Urangan Pier and Urangan Boat Harbour.
















The Wide Bay-Burnett region, including the Fraser Coast LGA, is one of Australia's preferred residential destinations. To provide for future generations and the amenity of current residents and visitors, human activities in the coastal zone should be balanced against the need to provide for the continued healthy functioning of coastal processes and ecosystems and the protection of high value assets (DLGPSR, 2006).

5.2 Critical Infrastructure

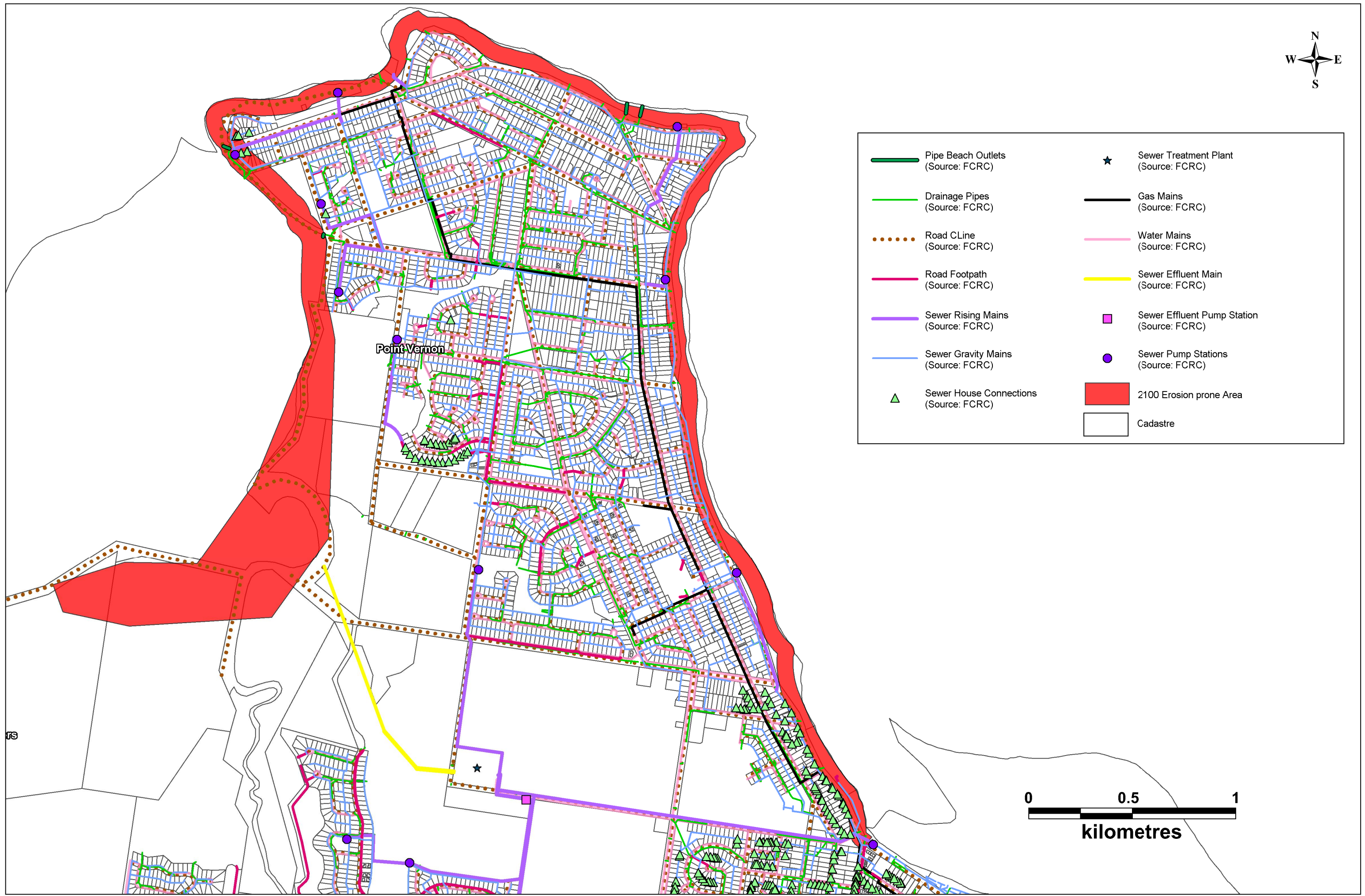
The *State Development and Public Works Act 1971* and *Queensland Reconstruction Authority Act 2011* define critical infrastructure as that which is "essential to the State for economic, environmental or social reasons", but a more detailed definition as to what types of infrastructure would constitute "critical infrastructure" is not provided in the legislation. More broadly speaking, the term "critical infrastructure" is typically used to describe any infrastructure that is essential for the functioning of a society and economy, such as power, water, health, communications systems, transport networks and banking. If there is disruption to a service provided by critical infrastructure, social and economic impacts are likely to result, ranging from interruption or inconvenience to peoples' daily activities, to loss of life. Often, one or more of these elements of critical infrastructure are interlinked, such that if one element experiences disruption, other elements will also be affected. For the purposes of this report, the term 'critical infrastructure' has been used with reference to essential utilities and services for which mapping was available for the study area, noting that there may be some limitations with the data provided to Cardno (see Table 2.1).

Figures 5.3-5.7 show the critical infrastructure present in each Management Zone and where it intersects with the EPAs. It is apparent that a significant amount of critical infrastructure lies within the 2100 EPA extents and is vulnerable to shoreline erosion. Further discussion on this issue can be found in Section 6. The townships in Management Zone 5 (and parts of Management Zone 4) are more isolated and are not subject to as high levels of service by critical infrastructure as the more populous areas. Lot-based systems for potable water supply (e.g. rainwater tanks) and wastewater treatment are more common in Management Zone 5. In addition, it may be that some of the data sets provided to Cardno do not all cover these parts of the study area.

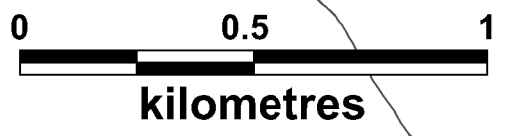


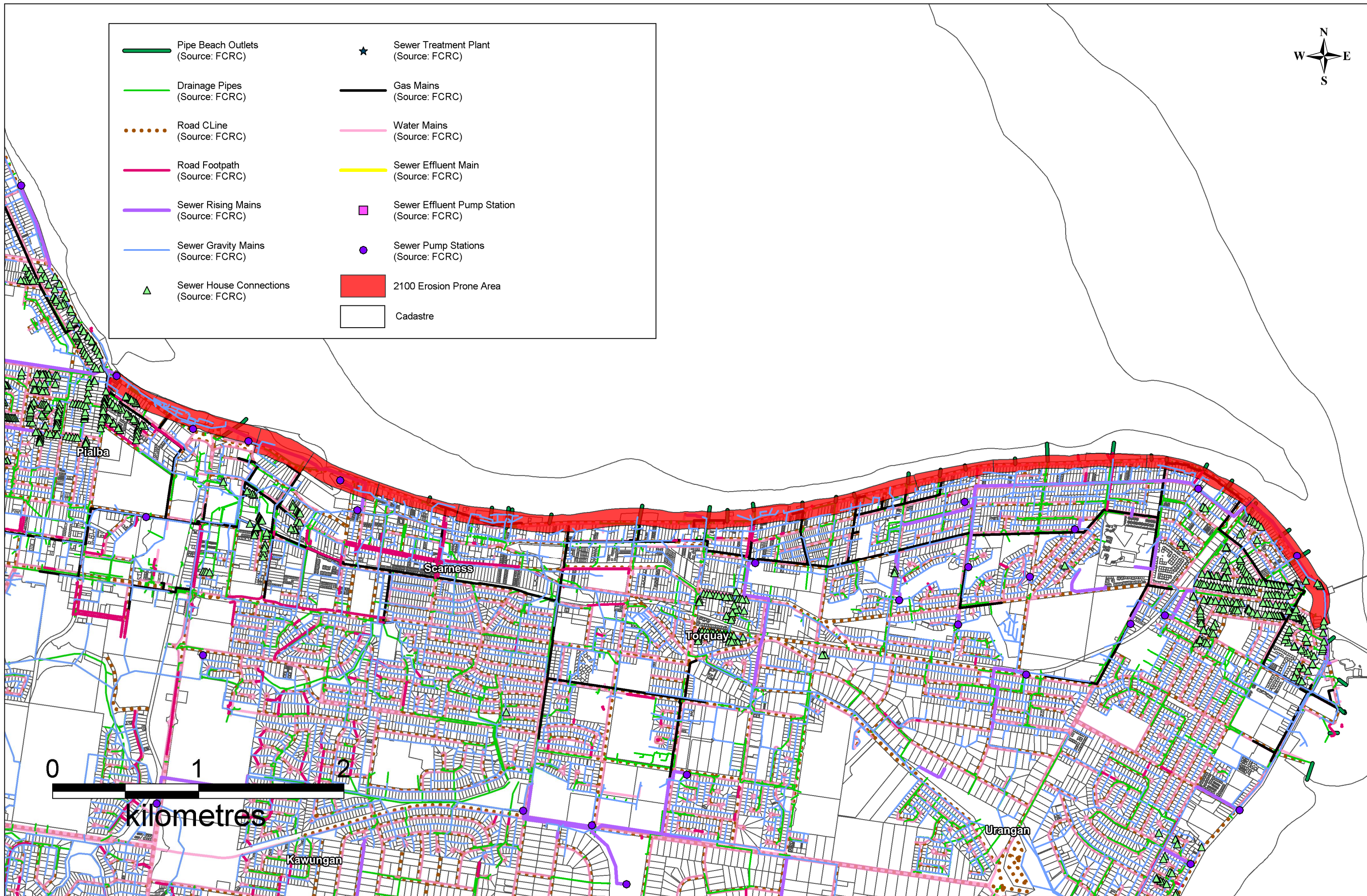
- | | | | |
|---|---------------------------------------|---|---|
|  | Drainage Pipes
(Source: FCRC) |  | Sewer House Connections
(Source: FCRC) |
|  | Pipe Beach Outlets
(Source: FCRC) |  | Sewer Effluent Pump Station
(Source: FCRC) |
|  | Water Mains
(Source: FCRC) |  | Sewer Treatment Plant
(Source: FCRC) |
|  | Sewer Effluent Main
(Source: FCRC) |  | Sewer Pump Stations
(Source: FCRC) |
|  | Sewer Rising Mains
(Source: FCRC) |  | Gas Mains
(Source: FCRC) |
|  | Sewer Gravity Mains
(Source: FCRC) |  | Road Footpath
(Source: FCRC) |
|  | 2100 Erosion Prone Area |  | Road CLine
(Source: FCRC) |
|  | Cadastre | | |

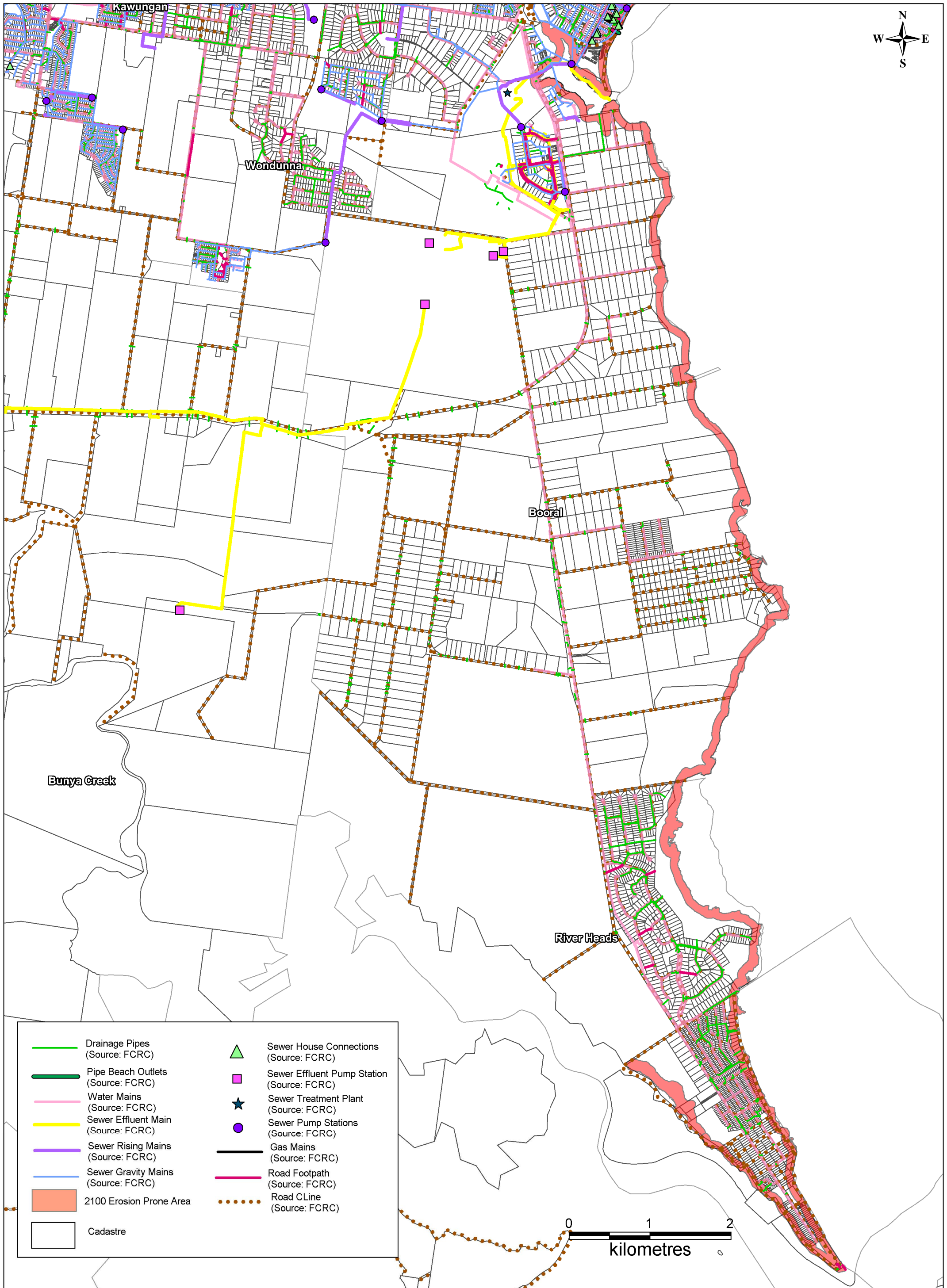


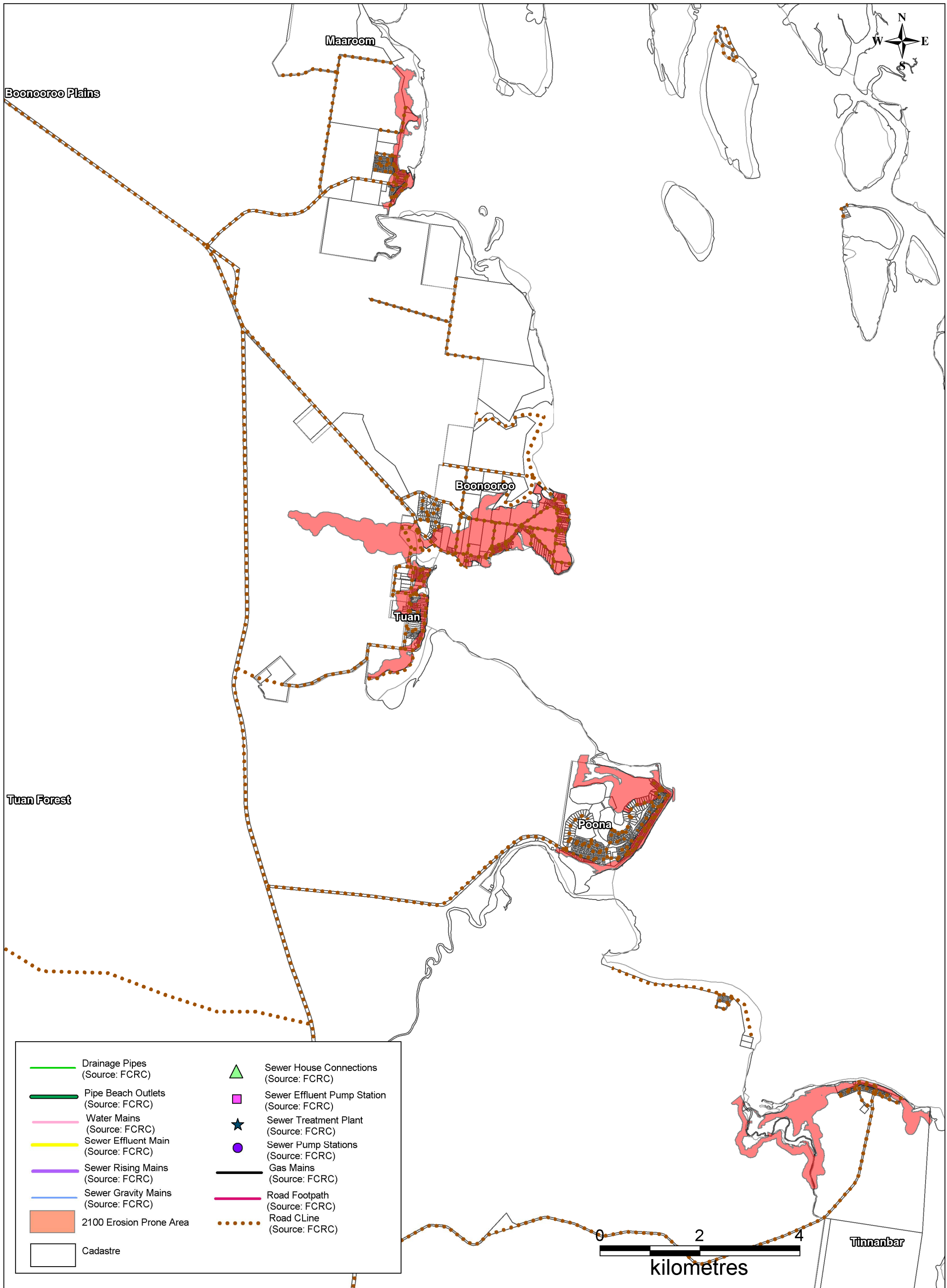


- | | |
|---|---|
| Pipe Beach Outlets
(Source: FCRC) | Sewer Treatment Plant
(Source: FCRC) |
| Drainage Pipes
(Source: FCRC) | Gas Mains
(Source: FCRC) |
| Road CLine
(Source: FCRC) | Water Mains
(Source: FCRC) |
| Road Footpath
(Source: FCRC) | Sewer Effluent Main
(Source: FCRC) |
| Sewer Rising Mains
(Source: FCRC) | Sewer Effluent Pump Station
(Source: FCRC) |
| Sewer Gravity Mains
(Source: FCRC) | Sewer Pump Stations
(Source: FCRC) |
| Sewer House Connections
(Source: FCRC) | 2100 Erosion prone Area |
| | Cadastre |









5.3 Environmental Values

Mapping of the legislative constraints (Section 4 and Figures 4.1- 4.2) highlights some of the more significant environmental values associated with the study area including:

- Nationally and internationally significant wetlands listed on the Directory of Important Wetlands and under the Ramsar Convention;
- Fish Habitat Areas and the Great Sandy Strait Marine Park, both of which are significant at the regional and State scale;
- Essential Habitat protected under the *Vegetation Management Act 1999*, which represents areas that are important for the recovery of threatened species.

There are also a number of Endangered Ecological Communities and threatened and migratory marine species listed under the EPBC Act and relevant Queensland legislation that are common to the study area that have significance at the State, national and in some cases the international levels. It is expected that a large number of species (including threatened or protected species) inhabit the study area for part or all of the year, and many more transit the area on occasion.

In addition, in May 2009 the Great Sandy Biosphere Reserve (including much of the study area) was declared, conferring on the subject land national and international significance. The Burnett Mary Regional Group has identified the following special features of the Biosphere Reserve:

- A natural and unique environment;
- Diverse human environment;
- Profitable business base; and
- Strong cultural awareness

Further information on the environmental values of the study area can be found in the *Gap Analysis Report* (Cardno, 2011).

Community surveys conducted for the preparation of the *Hervey Bay Foreshore Management Plan* (HBCC, 2007) highlighted the importance of the environmental values of the Hervey Bay area to the local community, including remnant natural vegetation and other habitats, intertidal wetlands and, in some locations, turtle nesting. Management Zone 1 incorporates a number of creeks and their associated wetland areas, including the Burrum River, Martins Creek, O'Regans Creek and Eli Creek. The shoreline typically has a low foredune vegetated with spinnifex and other grasses, with low coastal shrubs, eucalypt or melaleuca trees present on the hind dune. As previously indicated, in those locations currently impacted by shoreline erosion, a number of trees and other vegetation have been lost and have fallen on to the beach. There are Fish Habitat Areas located along the coastline from Burrum Heads to Toogoom and seagrass beds offshore of Burrum Heads.

The natural environmental attributes of the beach, including birdlife, are highly valued by the community, and they are concerned about the impacts of fallen trees (Figure 5.8) and shoreline erosion (Figure 5.9) more generally. Respondents to the public exhibition of the draft report have noted that a great deal of illegal

clearing has taken place along the foreshore at Toogoom and it appears that mangroves have been illegally removed up river of Lions Park at Burrum Heads. They feel there is a need to protect the flora and fauna by addressing erosion of the shoreline, but that any shoreline erosion management options should have minimal environmental impact.

Shoreline erosion is causing the loss of vegetation, which is an immediate concern to Council and residents for reasons of safety. The fallen trees also impact on the visual amenity of the foreshore and public access along the beach, however, they are considered to constitute aquatic habitat under the *Fisheries Act 1994* and it is not permissible to remove them from the beach.

Management Zone 2 generally has steeper, rocky shorelines. There is a rocky intertidal zone, backed in some locations by a narrow beach and a thin band of mangroves. Otherwise the foreshore vegetation is limited to grass or low ground cover on the foredune and some sparse tree cover. Respondents to the community survey identified that they valued the presence of natural vegetation and its screening effect.

Management Zone 3 is characterised by sandy beaches with a low foredune. The foreshores are subject to higher levels of development and there are also large portions that are protected with rock seawalls. As such, the natural foreshore ecology has been extensively modified. Much of the extant foreshore vegetation has been cleared to develop the shoreline for public open space areas, although some pockets of foreshore vegetation remain. Toon Toon Creek and the associated wetlands run roughly parallel with the shoreline from Urangan to Scarness, where it enters the sea. Respondents to the community survey valued the presence of native vegetation and other wildlife, and supported the preservation of natural habitats with coastal protection works.

There are a range of intertidal environments located within Management Zone 4. Sandy beaches are more common in the north, and mudflat areas more common in the south, with coffee rock present in some locations. There are large intertidal areas of mangroves, saltmarshes and mudflats, backed in many locations by grassed areas and/or eucalypt and casuarina forests. The topography rises sharply to form a low escarpment at River Heads. There are Fish Habitat Areas adjacent the Susan River in the south.

Management Zone 5 has a combination of sandy beaches and intertidal mudflat areas. There are some large areas of mangrove and saltmarsh, and the extant foreshore vegetation has been retained in many locations. A large number of trees have also been lost to shoreline erosion in Management Zone 5. There are Fish Habitat Areas adjacent to Maaroom and Tinnanbar, and a Shorebird Roosting and Feeding Area designated under the *Marine Park Act 2004* covering much of Management Zone 5. Respondents to the community survey indicated that they valued the foreshore vegetation and dune system, and also undertook bird watching in the area.

The aquatic environment in the study area is characterised largely by mobile sand shoals and it is understood that there are also approximately 600 ha of coral reefs within Hervey Bay. However, these coral reefs are unlikely to be directly impacted by any shoreline protection works, unless they are located in close proximity to the shoreline.

There are a number of large seagrass beds in the Great Sandy Strait area. The waters off the study area are all classified as Dugong Protection Areas under the *Fisheries Act 1994*.



Figure 5.8 Fallen Trees



Figure 5.9 Shoreline Erosion

5.4 Socio-economic Values

This section presents an overview of the socio-economic values of the study area. A preliminary assessment of the value of land falling within the EPAs has been undertaken as part of the quantitative risk assessment (**Section 6.2**), however, consideration of the potential indirect economic losses associated with shoreline erosion is beyond the scope of the current study.

5.4.1 Cultural Heritage

Heritage sites within the study area have been presented in **Figures 5.10-5.11** using GIS data sets (refer to **Table 2.1**) relating to:

- Local heritage sites/items;
- Sites/items listed in the Queensland Heritage Register (incl. provisionally listed items) and protected under the provisions of the *Queensland Heritage Act 1992*; and
- Sites/items listed on the Register of the National Estate and protected under the provisions of the EPBC Act.

The abovementioned datasets have been assumed to be correct at time of preparation of this report, although it is noted that they may fail to capture all heritage items/sites and that additional sites may be listed after publication of this document. However, the data sets held by Cardno are considered adequate for the purposes of this assessment. A more exhaustive heritage assessment would be required as part of an environmental impact assessment of any works at the implementation stage of the SEMP.

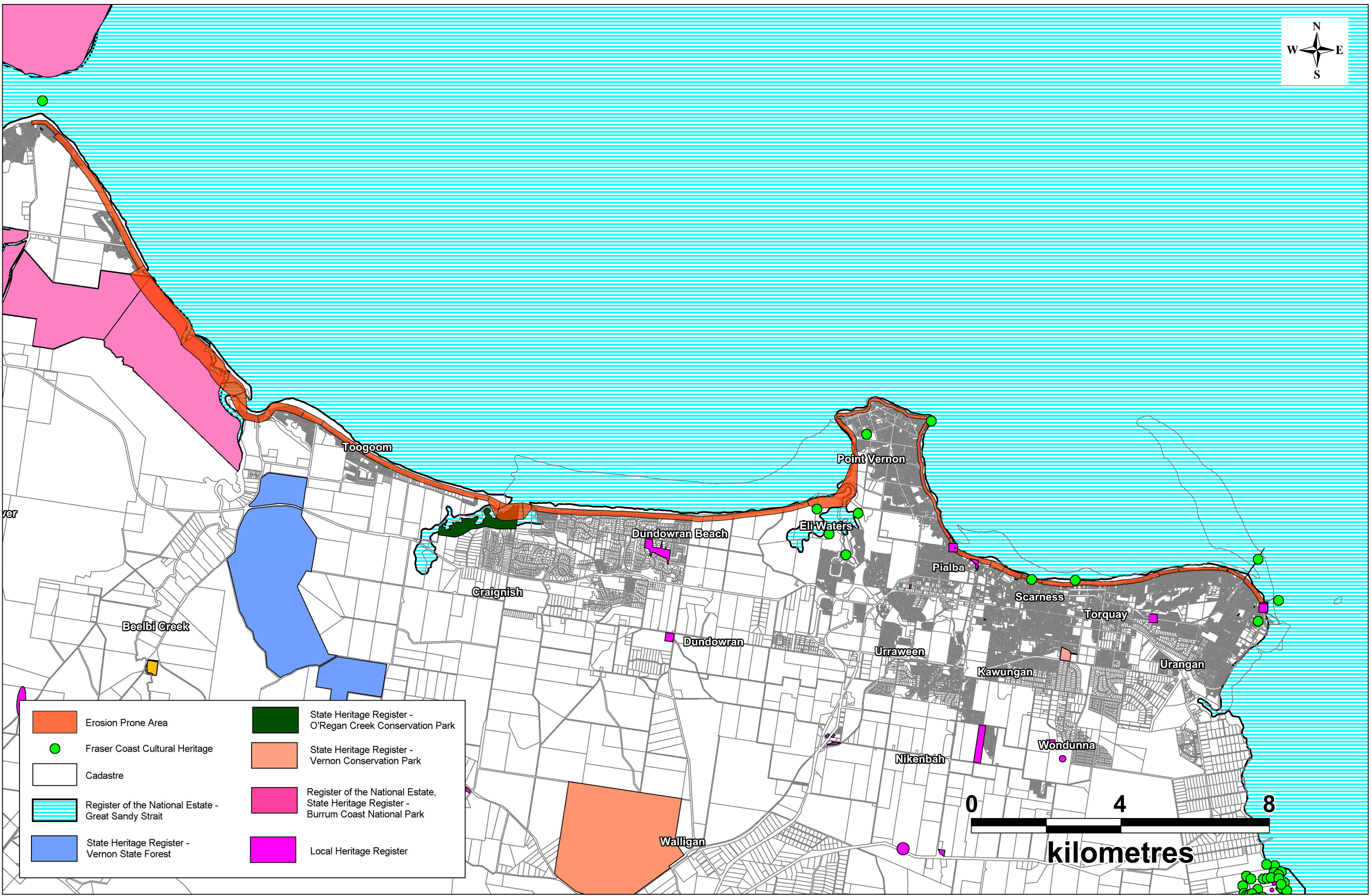
There are a number of large heritage conservation areas located in the study area, particularly in Management Zones 1 and 5. The 'Woody Island Lighthouses and Ancillary Building Site' is probably the most notable heritage listed site within the study area. Surveys undertaken to inform the *Hervey Bay Foreshore Management Plan* (HBCC, 2007) found that the community valued the Aboriginal and European cultural heritage sites and stories associated with the area.

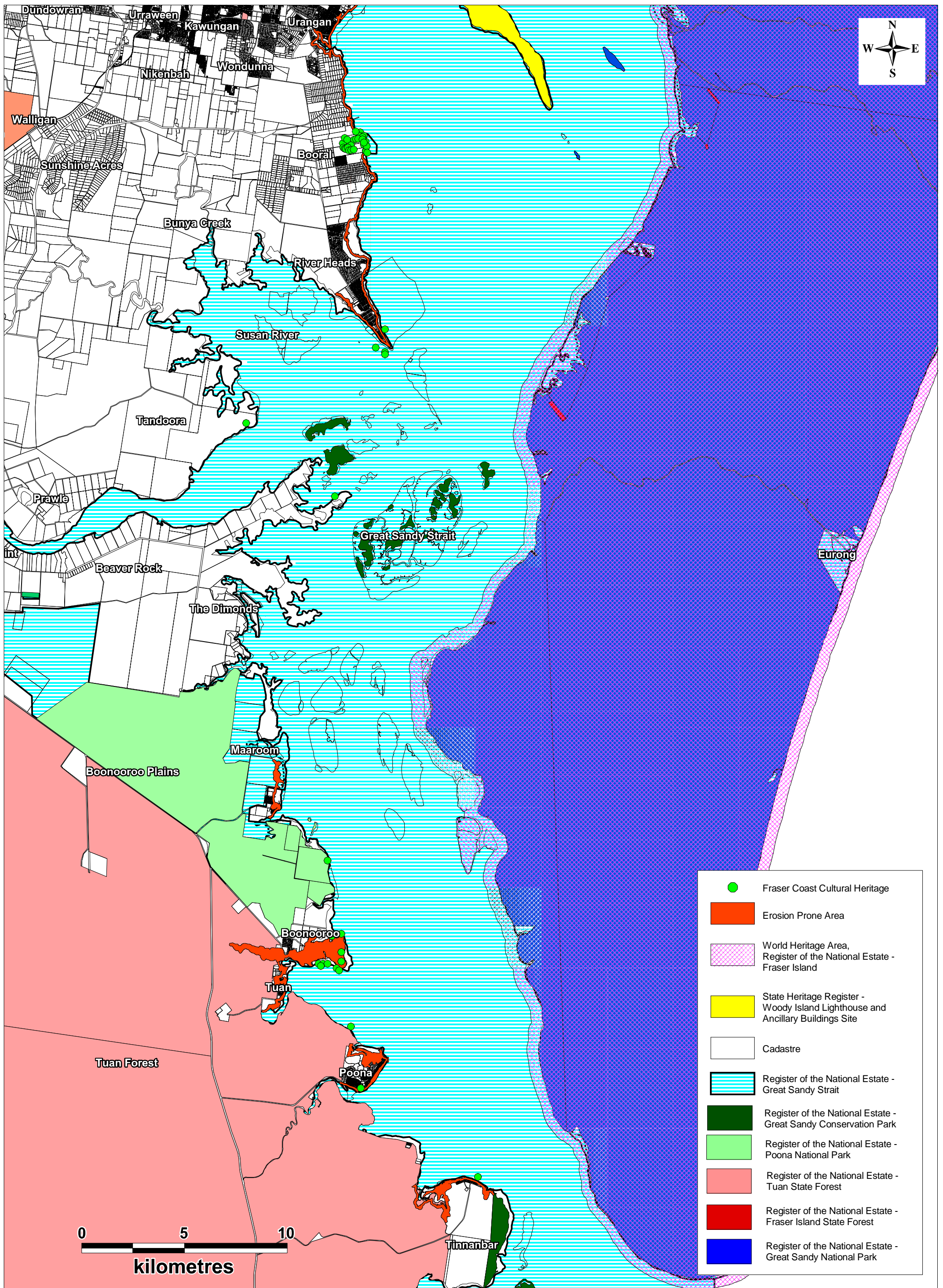
DEHP, in association with the Queensland Heritage Council, has prepared the *Queensland Heritage Strategy – a 10 Year Plan* (2009) which establishes a framework for managing Queensland's heritage over the next 10 years to allow for growth and development of the State, while also conserving its valuable heritage places. One of the guiding principles of the strategy is to ensure policies and processes for identifying, assessing, conserving and managing Queensland's heritage are embedded in state, regional and local planning and policy making.

5.4.2 Visual Amenity

The visual character and general visual amenity of the study area is very important to a large number of people. HBCC (2007) reports that "*the aesthetic benefits that are derived from views along the beaches and foreshore and out to sea – this includes vistas of forests and trees as well as panoramic views at Dayman Point that also have cultural significance*".

The Queensland Coastal Plan (DERM, 2011a) has a strong emphasis on the importance of visual amenity and aims to protect the scenic values of the coast by ensuring that any development is undertaken in context with the surrounding visual environment. The high value associated with the visual amenity of the study area was also a recurring theme in the survey undertaken for this project, with a large number of respondents identifying it as highly valued and expressing concern about the impact of shoreline erosion (and particularly the associated loss of vegetation) on visual amenity. Some respondents also expressed concern about the potential visual impacts of any erosion management options that might be implemented under the SEMP. Although, it should be noted that there are varying perceptions of visual amenity within the community. Some community members favour a natural vegetated dune and beach over a hard structure, whereas others consider that vegetation impinges on their views of the water.





5.4.3 Recreational Access and Amenity

An effort has been made to map the key recreational features of the study area using the available mapping (Figures 5.10-5.11), which includes foreshore parks, bathing reserves, beach access points, boat ramps and jetties.

Foreshore Parks

There are a number of foreshore parks located in the study area. FCRC defines specific use categories for its foreshore parks (source: FCRC, file name: Foreshore Parks.tab, does not cover Management Zone 5), as mapped in Figures 5.12-5.13. This mapping identifies a total of six foreshore parks that describe different types of parkland settings (after HBCC, 2007), including:

- Undeveloped parkland;
- Nature-based recreation;
- Semi-developed parkland;
- Developed parkland;
- Natural dune and foreshore;
- Leased areas; and
- Tourist park.

Reference should be made to HBCC (2007) for further information on the management approach adopted for each of these types of parkland setting under the *Hervey Bay Foreshore Management Plan*. Further discussion on the areal extent of foreshore parks and their associated economic value can be found in Section 6.2.

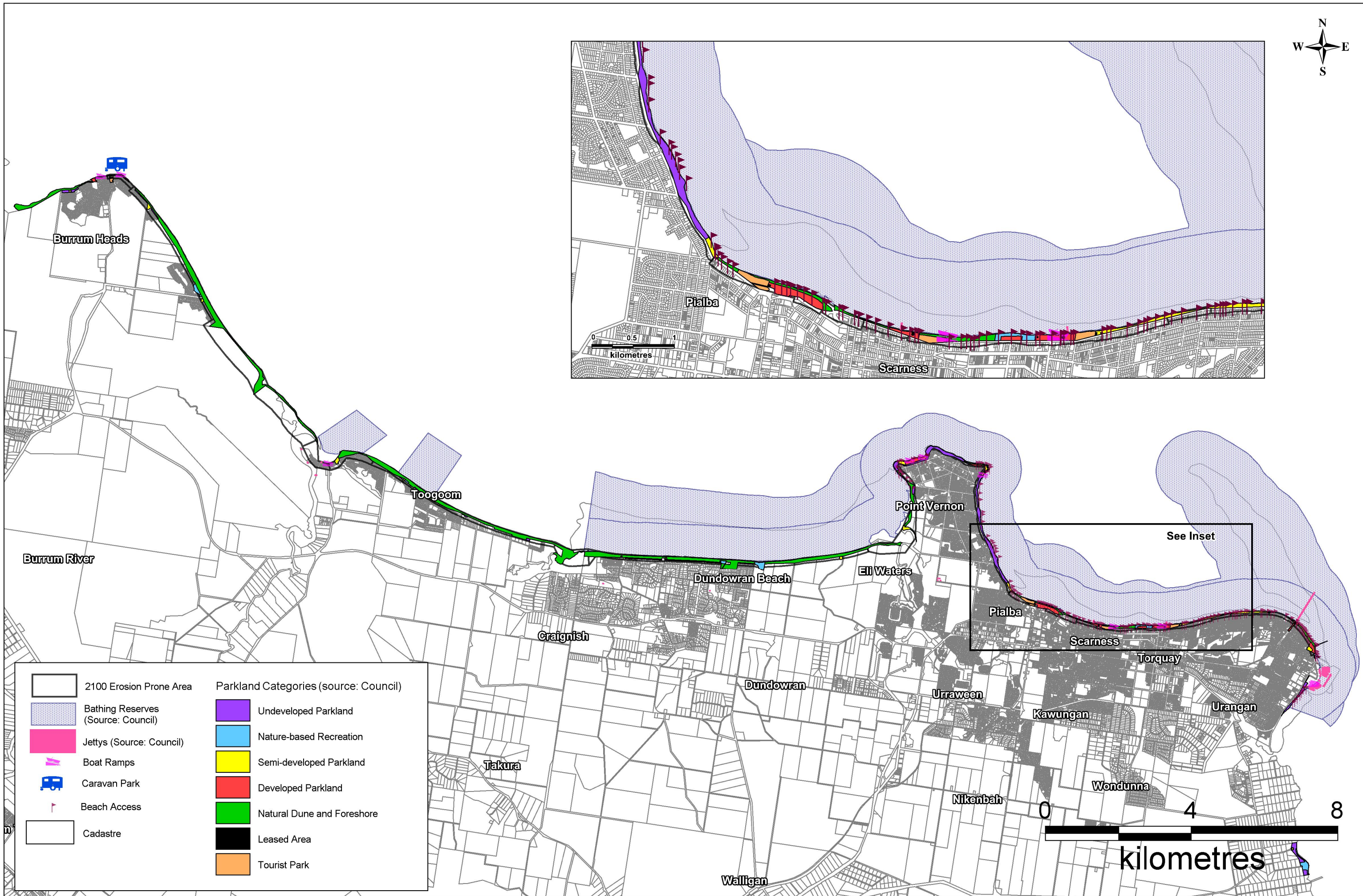
Bathing Reserves

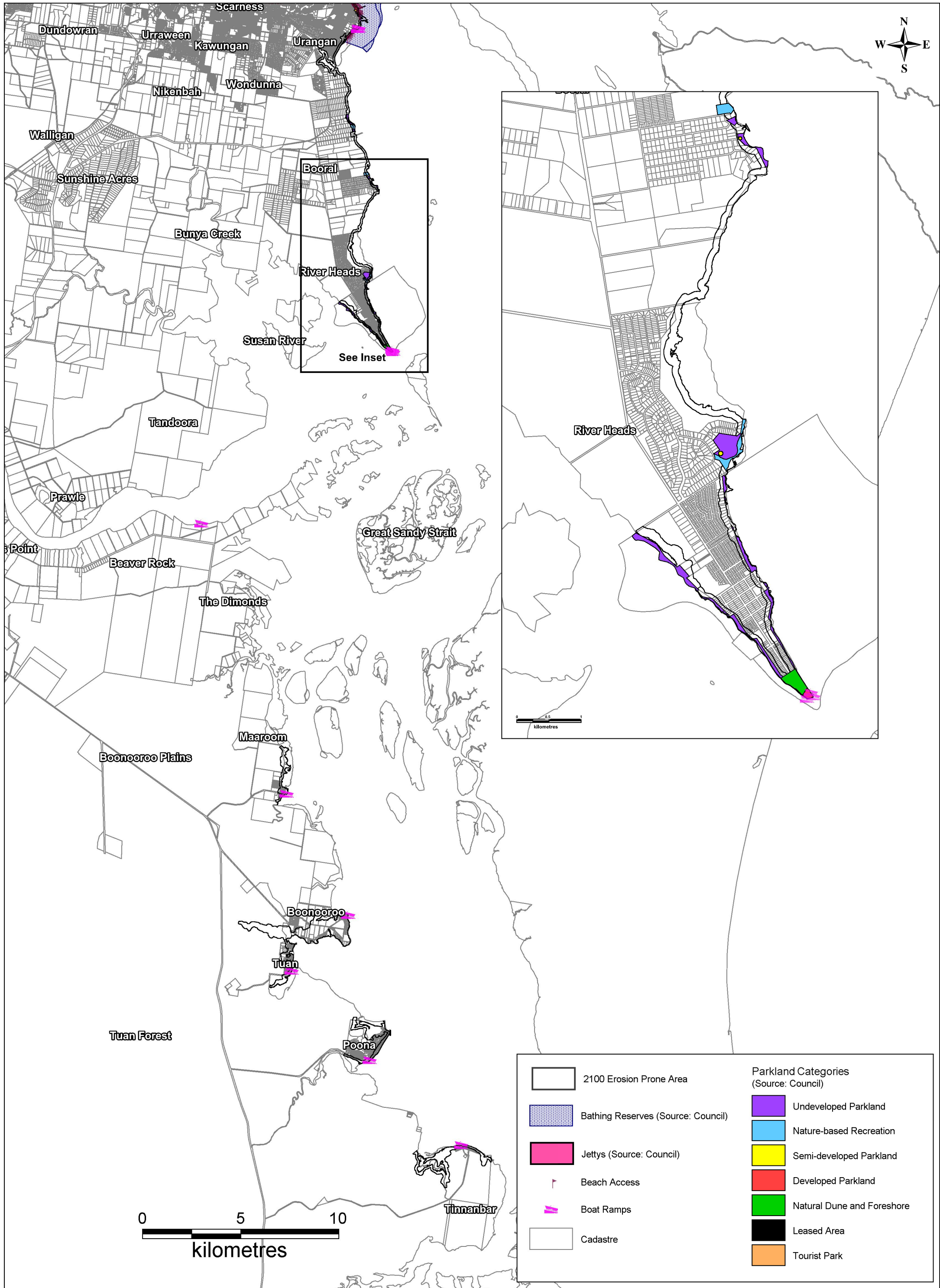
There are also a number of designated bathing reserves located in the study area, which have also been mapped in Figures 5.12-5.13 using mapping provided by FCRC. There are bathing reserves covering:

- Parts of Toogoom and Dundowran Beach in Management Zone 1;
- All of Management Zones 2 and 3; and
- The very northern-most extent of Management Zone 4.

Recreational Amenity

There is a range of recreational facilities in these foreshore parks, and they provide access both along the foreshore and between the foreshore and the water. Generally speaking, the highest concentration of recreational facilities can be found in those parks located in Management Zone 3, which is subject to a higher rate of utilisation by the community – many respondents to the survey indicated they visited the beach almost daily. The iconic pier was identified as a highly valued feature.





The main recreational activities reported in the community survey conducted for this project were:

- Walking and jogging;
- Dog exercising;
- Family gatherings and picnics;
- Swimming;
- Canoeing and sailing;
- Fishing; and
- Bird watching.

The quiet, clean beaches in Management Zones 1 and 5 were highly valued.

Some community members have expressed an interest in conserving the coast and a willingness to contribute their time to volunteering on coastal projects (e.g. dune revegetation). There are concerns amongst community members about the impacts of erosion on public safety, fishing, tourism and the economy. Changes in beach volume were also identified as an issue for access by members of Scarness Surf Life Saving Club, who have difficulties getting equipment on the beach at times. The community is also concerned about the impact of boat wake on shoreline erosion, and is concerned about public safety in relation to failing coastal protection works.

5.4.4 Tourism and Other Commercial Activities

There are a number of commercial activities undertaken in the study area, including a number what may be considered coastal dependent activities. These include:

- Restaurants, cafes and kiosks;
- Visitor accommodation including hotels and tourist parks;
- Sporting clubs and equipment hire operators;
- Diving and whale watching operators; and
- Fishing tours and events.

In the case of the Fraser Coast LGA, tourism may also be classed as a coastal dependent activity because the primary services and features that attract visitors to the region are the beaches, Marine Park, Fraser Island and other natural assets associated with the coastline such as dive sites and whale migration routes. The protection of these coastal features, maintenance of public access to the coast and beach amenity is therefore of significance for the tourism industry.

There are a number of hotels and other tourist accommodations in the study area, concentrated primarily in the Scarness/Urangan region. There are also a number of tourist parks in both the Hervey Bay and Great Sandy Straits areas (Figures 5.12 and 5.13), and houses and apartments to rent in a number of locations, such as Burrum Heads.

The tourism industry is an important part of the regional and State economy. In the Fraser Coast LGA (Tourism Queensland, 2010):

- Tourism employs 2,800 people;
- Contributes \$222 million to the Queensland economy;
- Attracts 933,000 overnight visitors and 947,000 day trips to the region on an annual basis; and
- Generated \$63 million in tax revenue for the local, State and Federal Governments.

The Port of Maryborough is also an important part of the regional economy and access to the Port via the Great Sandy Strait needs to be maintained. The Port covers an extensive area from Inskip Point, north to Woodgate beach and east to Fraser Island, including approaches via Tin Can Bay, the Great Sandy Strait, the Mary River, the Burrum River and Hervey Bay.

5.5 Discussion Benefits from Values and Uses of the Study Area

A summary of this section of the report has been provided in Table 5.1, with a comment on the key beneficiaries associated with each key value and use of the study area.

Table 5.1: Summary of Key Values and Uses

Section Reference	Key Value or Use	Main Beneficiaries
5.1	Residential freehold land.	Individual landholders.
5.1	Commercial and industrial freehold land.	Individual landholders and businesses, some benefit to the regional and State economy.
5.1	Land lease land.	Individual lease holders, the State Government also benefits from revenue generated from leases/rents.
5.1	State Forest lands.	State Government and members of the local community employed in forestry.
5.1	Reserves, State Land and National Park lands.	The community at large, the State Government. These areas also benefit visitors to the area, the residential property market, the tourism industry and some commercial operators.
5.2	Critical Infrastructure	The community at large, although in some small number of locations, the benefits of a particular piece of infrastructure may only accrue to a small sector of the community.
5.3	Environmental Values	The community at large. The wider national and international community also benefit where the environmental feature has very high significance (e.g. the Biosphere Reserve and World Heritage Area). The environmental values of the study area also benefit visitors to the area, the residential property market, the tourism industry and some commercial operators.
5.4.1	Cultural Heritage	Generally the community at large, although some cultural heritage sites/items may have a greater benefit to some sectors of the community due to their specific cultural associations/uses (e.g. Aboriginal community). Cultural

Section Reference	Key Value or Use	Main Beneficiaries
		heritage sites/items can also have benefit to the wider State, national and international community depending on their level of significance. The cultural heritage of the study area can also benefit the tourism industry.
5.4.2	Visual Amenity	Primary beneficiaries are the local community, although visitors to the area also benefit. The visual amenity of the study area also benefits the residential property market, the tourism industry and some commercial operators.
5.4.3	Recreational Access and Amenity	Primary beneficiaries are the local community. The recreational value of Management Zone 3 is generally of benefit to a broader sector of the local community. The recreational value of the study area is also of benefit to visitors to the area, the residential property market, the tourism industry and other commercial operators.
5.4.4	Tourism and Other Commercial Activities	Benefits the local community through employment, and individual tourism/business operators. Economic benefits also accrue to the region and State of Queensland, and all levels of Government benefit through revenue generation. The other beneficiaries are the visitors to the study area.