## SECTION C: WAIKATO'S EAST COAST MARINE AND TERRESTRIAL AREAS

#### **Coastal Marine and Coastal Terrestrial Areas**

The Study Team determined that within the East Waikato Region there are three Coastal Marine Areas and 14 Coastal Terrestrial Areas. These are identified in the tables below, illustrated on Map 2 and described in this section of the report. These Coastal Marine and Coastal Terrestrial Areas are essentially mapped at the Level 3 scale, as outlined within Section B of this report.

For each of the Coastal Marine and Coastal Terrestrial Areas the collective characteristics of the Areas' abiotic, biotic and experiential attributes are described first. Following this, an explanation around the size of the Area is given. A description of the adjacent Coastal Context follows which will provide relationships associated with the Areas' broader setting.

Further to this, each specific Area is discussed and evaluated. Freshwater aspects are covered within the Coastal Terrestrial Areas. An evaluation table at the end of each Area subsection summaries the values and ratings at the Level 3 scale for Coastal Marine and Coastal Terrestrial Areas. Finally, any specific values within the 'Area' are listed, mapped and rated at the Level 4 scale (or local/ specific scale). Refer to Figure 2 for an explanation of the Levels. An overall evaluation map is provided at the end of this section, illustrating the ratings for the Level 3 and Level 4 areas (refer again to Figure 2)

An overall summary of all values is presented at the end of this Section.

Waipapa Island and coastline north of Tairua Harbour Natural Character Study of the Waikato Coastal Environment



#### Above: Mud flats of the Firth of Thames

Coastal Marine Areas			
А	Firth of Thames		
В	Western Coromandel		
С	Eastern Coromandel		

Coastal Terrestrial Areas			
1	Whakatiwai		
2	Hauraki		
3	Thames Coast		
4	Coromandel Harbour		
5	Colville		
6	Port Jackson		
7	Kennedy Bay		
8	Whangapoua		
9	Opito		
10	Whitianga		
11	Hot Water Beach		
12	Tairua		
13	Whiritoa		
14	Outer Island Groups		

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## Map 2: Coastal Marine & Coastal Terrestrial Areas of the East Coast

Legend —— Extent of Coastal Environment

В

Natural Character

ne Waikato Coastal Environment

10 km



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## **COASTAL MARINE AREAS**

| Coast | Coastal Marine Areas |  |  |
|-------|----------------------|--|--|
| А     | Firth of Thames      |  |  |
| В     | Western Coromandel   |  |  |
| С     | Eastern Coromandel   |  |  |

Below: The deep blue waters off Pukenui Point, south of Waikawa Bay



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# Firth of Thames

## COASTAL MARINE AREA A:



#### **Collective Characteristics**

The southern part of the Firth of Thames is shallow with low water clarity at times and high sedimentation. Shell barrier beaches, shell banks and saline vegetation habitat internationally important for migratory wading birds.

#### Abiotic

The Firth of Thames lies within the southern part of the Hauraki Gulf. The Waihou and Piako rivers drain into this area. Pastoral land use dominates the catchments of these rivers, including dairy farming.

The northern half of the Firth of Thames has an average water depth of 24m whereas average water depth in the southern half is around 5m. Tidal currents are moderately strong (Snelder et al., 2005). Tidal currents are strong in central areas of the Hauraki Gulf extending into the Firth of Thames (Gorman, R., referenced in SeaSketch). Tidal height in the Firth of Thames is low.

The shell barrier beach (Chenier Plain) at Miranda is the largest in New Zealand and is the only one of its type in the world that is actively aggrading. This is also a naturally rare ecosystem type.

Benthic sediment in the Firth of Thames is dominated by mud and muddy sands, with the intertidal area on the south and west sides comprising mud and muddy sand (Jackson, 2014, referenced in SeaSketch).

Dredging and/or disposal is carried out on the coastal edge at Wharekawa and to the north of Wharekawa. Dredging is also carried out at Kaiaua to maintain access to a boat ramp.

Boat ramps are present at Wharekawa, south of Whakatiwai, Kaiaua, south of Tararu, Ngarimu Bay, Te Puru, Waiomu, Ruamahunga and Waikawau.

#### Biotic

The Firth of Thames contains a Ramsar site of international importance to migratory waders. The Ramsar site covers the intertidal area of the southern and western shores of the Firth of Thames between Kaiaua and the west bank of the Waihou River, adjacent to the township of Thames (Sagar, 2008). 132 species of birds use the Ramsar site either as residents or at various stages of their migration pattern. Of these species, some are endemic or threatened including bar-tailed godwits, pied oystercatchers, pied stilts, black stilts, New Zealand dotterels and wrybill. Open water foraging species include Australasian gannet, Caspian tern, white-fronted tern, pied shag, spotted shag, flesh-footed shearwater, blue penguin, red-billed gull and black-billed gull (Sagar, 2008).

Above: Mangroves and mud of the Firth of Thames



Numerous important high tide roost sites exist in the Firth of Thames (Dowding, 2013) e.g. the mouth of the Miranda Stream and the Kauaeranga River.

There are a number of sites between Thames and Manaia where the threatened New Zealand dotterel breed (Dowding, 2013).

Common fish species in the Firth of Thames include snapper, red gurnard, john dory, spotted stargazer, barracouta, rig, rays, sand and yellow-bellied flounder, kahawai and yellow-eye mullet (Snelder et al., 2005). The richness of reef fish species in the Firth of Thames is relatively low, with up to approximately 18 species predicted to occur in southern parts and up to Matariki Bay (Smith et al., 2013, referenced in SeaSketch).

With respect to demersal fishes, the Firth of Thames primarily includes areas of very high and high conservation value, with smaller areas of moderate conservation value<sup>8</sup>.

Orca and common dolphin have rarely been observed in the Firth of Thames<sup>9</sup>.

Mangrove forest area has expanded significantly in the Firth of Thames.

Estuary monitoring has indicated that there has been little change in estuary health in the Firth of Thames over the past ten years (Needham et al, 2014).

Two large approved aquaculture areas (mussel farms) are present in the Firth of Thames adjacent to Kereta and a smaller area to the north of Kirita Bay. Additionally, there are numerous applications submitted for marine farm areas adjacent to Wharekawa.

Recreational fishing is a common practice within the Firth of Thames, with a greater density of boats per square kilometre in northern areas.



 Predicted conservation value for demersal fish is sourced from
 SeaSketch, where we refer to the top 10% of areas that have the highest conservation value as "very high",
 10-30% as high, 30-50% as moderate and 50-100% as low. This data is a modelling output informed by numerous studies of demersal fish (see metadata for demersal fish in SeaSketch).

 SeaSketch references the Department of Conservations marine mammal sightings database, which is informed by reports from the public, scientific research and DOC surveys.

Below: Boating activity around the offshore mussel farms in the Firth of Thames

#### **Experiential**

Accessible from a number of coastal settlements the sheltered Firth of Thames is frequented with activity associated with recreational and commercial fishing and aquaculture. The shallow harbour creates large open areas of sea floor exposure at low tide, including exposure of the shell banks between Miranda and Kaiaua. This is a habitat for a number of shorebirds including the rare NZ Dotterel.

This southern end of the Firth remains largely remote and void of human activity and modification on the water body. Near Miranda, the coastal waters and shoreline are a popular location for bird watching, emphasising the perceptions of naturalness in this area.

The eastern edge of the Firth comprises frequent settlements which have resulted in jetties, seawalls, boat ramps, reclamation and marine markers scattered along the coastline and marine environment. The rocky shoreline, where unmodified, displays a striking intertidal zone between the sandy beach bays that are pocketed along this coastline.

At the northern extent of this area expansive marine farming is visually apparent from the coastline and on the water body itself. Activity from mussel farm boats is constantly visible around the farm all year and during fine weather acts as a popular location for recreational fishing. This constant activity and permanent and visible marine farming structures detract from the perceptions of naturalness and are considered relatively low in this area.

| Rating at Level 3 |                              |                  |              |  |  |
|-------------------|------------------------------|------------------|--------------|--|--|
| Degree of Natural | Natural Character Attributes |                  |              |  |  |
| Character         | Abiotic                      | Biotic           | Experiential |  |  |
| Very High         |                              |                  |              |  |  |
| High              |                              | $\checkmark$     |              |  |  |
| Moderate to High  | $\checkmark$                 |                  | $\checkmark$ |  |  |
| Moderate          |                              |                  |              |  |  |
| Moderate to Low   |                              |                  |              |  |  |
| Low               |                              |                  |              |  |  |
| Very Low          |                              |                  |              |  |  |
|                   | Overall<br>Characte          | Moderate to High |              |  |  |

### Coastal Marine Area A: Frith of Thames Specific Characteristics at Level 4

#### These are mapped with reference to Map 3

| Area            | Rating    | Key Values                                                                                                                                                                            | Additional Comments                                                                                  |
|-----------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Southern Shores | Very High | • The shell barrier beach (Chenier<br>Plain) at Miranda is the largest in<br>New Zealand and is, abiotically,<br>the only one of its type that is<br>actively aggrading in the world. | • Excludes more modified trafficked parts of the Firth, including large areas of aquculture mid bay. |
|                 | •         | <ul> <li>The Firth of Thames contains<br/>a Ramsar site of international<br/>importance to migratory wading<br/>birds</li> </ul>                                                      |                                                                                                      |
|                 |           | <ul> <li>Largely remote southern<br/>unmodified shores covered with<br/>mangroves amplifies perceived<br/>naturalness</li> </ul>                                                      |                                                                                                      |
|                 |           | <ul> <li>Collectively, this area retains<br/>unmodified inner waters that<br/>amplify naturalness</li> </ul>                                                                          |                                                                                                      |
|                 |           |                                                                                                                                                                                       |                                                                                                      |





# Western Coromandel

### COASTAL MARINE AREA B:



#### **Collective Characteristics**

There are a range of marine habitat types present. Estuaries and near shore waters, with often muddy sand and rocky shore towards Fantail Bay northwards. Low level of modification from Papaaroha northwards.

#### Abiotic

This coastline comprises a variety of environments, including mixed sand and gravel beaches, harbours and estuaries. Estuaries on the west coast typically have wide, unconstructed entrances (e.g. Manaia, Coromandel, Te Kouma).

Water depth increases gradually from the coast along the western side of the Coromandel, whereas the bathymetry is steeper around the Port Jackson headland. Tidal currents are strong around the Port Jackson headland and in central areas of the Hauraki Gulf extending into the Firth of Thames (Gorman, R., referenced in SeaSketch). Tidal height is low along the western coast and moderate around Port Jackson.

Benthic sediment varies in character along the west coast of Coromandel. The Manaia and Coromandel Harbours are predominantly muds and sands, whereas from Golden Bay to Papaaroha sediment is mixed grain size. Sediment is mud from Papaaroha to just south of Fantail Bay. Rocky shore is present on the immediately coastal margin along this coast in many places, particularly from south of Fantail Bay to Port Jackson. Seaward of the rocky shore sediments are mud and muddy sand. The Pork Jackson headland has mixed and coarse sand with rock shore present immediately adjacent to the land in some areas (Jackson, 2014, referenced in SeaSketch).

Shipping traffic is busy around the Port Jackson headland and along the east coast where vessels move along the coast of New Zealand to various Ports. The wharf at Te Kouma (Sugarloaf wharf) in southern Coromandel Harbour has busy shipping traffic as mussel barges regularly offload shellfish and is a popular yacht anchorage during summer. A passenger ferry service from/to Auckland and Waiheke Island also operates within this harbour.

There are numerous boat ramps along the west coast of the Coromandel, including Te Kouma Harbour, Waipapa Bay, Coromandel township, Wyuna Bay, Long Bay, Oamaru Bay and Amodeo Bay. Elsewhere along parts of this coast boats are launched directly off the beach.

A linear reclamation is present within Coromandel Harbour, accommodating numerous jetties and moorings for commercial vessels most likely associated with the aquaculture industry.

Below: The remote Channel Island in the Western Coromandel Coastal Marine Area



#### Biotic

Within Coromandel Harbour and Colville Bay there are several important shorebird high tide roost sites and breeding sites for New Zealand dotterel (Dowding, 2013). North of Coromandel there are a number of New Zealand dotterel breeding sites. Brown teal also flock in Whangaahei Bay within Colville Bay.

The richness of reef fish species from Matariki Bay to Port Jackson is variable but in general increases from around 15 in Manaia Harbour to 25 at Port Jackson (Smith et al., 2013 referenced in SeaSketch).

Areas of very high conservation value for demersal fish occur at Te Kouma, around Whanganui, Waimate and Motuoruhi Islands and to the west of Port Jackson in deeper water. High conservation areas for demersal fish dominate Coromandel Harbour and adjacent to Colville Bay. The coastal water immediately seaward of Otautu Bay and to the north, up to and around Port Jackson, is of moderate to low conservation value for demersal fish (Smith et al., 2013, referenced in SeaSketch).

Orca, bottle-nose dolphin and common dolphin have been observed along the western coast of the Coromandel, with common dolphin being the most numerous. Whale sightings in the Firth of Thames are very rare.

Whale sightings from Manaia Harbour to Port Jackson have primarily been Bryde's Whale, with occasional sightings of southern right, minke and humpback whales.

Coastal vegetation sequences in parts of Manaia Harbour, Te Kouma Harbour and Coromandel Harbour grade from terrestrial vegetation to saltmarsh to mangroves and to seagrass. Mangroves and saltmarsh are present within Colville Bay and Whangaahei Bay. All of these estuarine vegetation types are important habitats for indigenous species.

Between Manaia Harbour and Moturua Island (Rabbit Island) there are a large number of approved aquaculture areas where mussels and oysters are currently cultured. There are no new marine farm areas currently applied for along the western side of the Coromandel Peninsula, however some have been extended recently.

Below: The NZ dotterel

Recreational fishing is commonly undertaken along the west coast of the Coromandel Peninsula, with hot spots adjacent to Kereta, Coromandel township and Papaaroha.



#### **Experiential**

The coastal waters are accessible from numerous locations along this coast. Manaia harbour and its margins remain largely untouched with a large intertidal zone dominated by mangrove population and some boat ramps and the coastal road.

Coromandel Harbour is sheltered by a series of islands, (Rangipukea,Cow and Calf, Whanganui, Motutapere, Waimate and Motukakarikitahi), that are surrounded themselves by rocky shelves that are popular locations for recreational fishing. Scattered around these islands are smaller mussel farms that are also frequented by recreational fishing.

The intertidal shoreline of Coromandel Harbour is modified with Oyster farms and the shoreline also modified with coastal roading, reclamation and boat ramps and the main jetty at McGregor Bay. This harbour also supports the home of commercial fishing, the Auckland / Coromandel passenger ferry and its sheltered waters enable it to be frequented with recreational boating, fishing and swimming.

The modified harbour edges, marine farming, commercial use and frequented recreational use combine to lessen the experiential values of natural character in this area.

Further north along the coast, the islands of Motuoruhi, Motuokino, Motukaramea, Motumorirau, Hautapu Rocks are surrounded by rocky shelves and unmodified coastal waters. Whilst popular fishing spots, these areas are less frequented than Coromandel Harbour and provide a sense of isolation and remoteness when amongst them. Similarly the cluster of islands around Motukaramea, Motuwi and Motukahaua Islands provide a similar environment and experience.

The coastal edge of Long Bay to Koputauaki Bay is relatively unmodified with some boat ramps within the bays and isolated moorings. Further north the waters become more inaccessible from the coast and the sense of remoteness greatens. From Colville to Port Jackson the coastal edge is remote and human activity on the water sparse. For this extent of the coastal waters the perceptions of naturalness are high.

| Rating at Level 3 |                              |                  |              |  |  |
|-------------------|------------------------------|------------------|--------------|--|--|
| Degree of Natural | Natural Character Attributes |                  |              |  |  |
| Character         |                              | Biotic           | Experiential |  |  |
| Very High         |                              |                  |              |  |  |
| High              | $\checkmark$                 |                  | $\checkmark$ |  |  |
| Moderate to High  |                              | $\checkmark$     |              |  |  |
| Moderate          |                              |                  |              |  |  |
| Moderate to Low   |                              |                  |              |  |  |
| Low               |                              |                  |              |  |  |
| Very Low          |                              |                  |              |  |  |
|                   | Overall<br>Characte          | Moderate to High |              |  |  |

### Coastal Marine Area B: Western Coromandel Characteristics at Level 4

#### These are mapped with reference to Map 4

| Area                      | Rating    | Key Values                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Additional Comments                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Northwestern<br>Coastline | High      | <ul> <li>Biotically, north of Coromandel,<br/>there are a number of New<br/>Zealand dotterel breeding<br/>sites. Brown teal also flock in<br/>Whangaahei Bay within Colville<br/>Bay.</li> <li>North of Papaaroha (including<br/>near shore islands) – there are<br/>low level of modification to the<br/>Coastal Marine Area and high<br/>perceived naturalness values</li> </ul>                                                                         | • Excludes more modified trafficked parts of the Firth.                                                                                                                                                                                                                                                                                                                    |
| Motukawao<br>Group        | Very High | <ul> <li>Abiotically, Islands are<br/>surrounded by unmodified<br/>rocky shelves and open waters<br/>providing a sense of isolation<br/>and remoteness</li> <li>Area is of very high conservation<br/>value for demersal fish occur<br/>around Mouoruhi Island</li> <li>This body of water including<br/>its submarine environment<br/>provides an unmodified<br/>connection and interplay with<br/>the island group amplifying<br/>naturalness</li> </ul> | <ul> <li>Southern extent determined by<br/>aquaculture off Motukopake Island and<br/>by shipping area.</li> <li>This area of very high natural character<br/>includes the small scale aquaculture<br/>off Moturua Island (Rabbit Island).<br/>This scale of aquaculture does not<br/>diminish the overall very high levels of<br/>naturalness of the whole area</li> </ul> |

Below: Colville Bay





# Eastern Coromandel

## COASTAL MARINE AREA C:



Natural Character Study of the Waikato Coastal Environmen

#### **Collective Characteristics**

Marine habitats include rocky headlands, sandy beaches, harbours and estuaries. Erosive steep catchments leading to infilling of estuaries. Breeding habitat for threatened wading birds present in many locations along the coast. Relatively unmodified marine environments between populated beach areas.

#### Abiotic

This coastline is characterised by embayed sandy beaches separated by rocky headlands and cliffs. The catchments of the east coast estuaries are erosive due to steep topography, high intensive rainfall events and the presence of barriers at estuary mouths. Estuaries on the east coast of the Coromandel Peninsula are at various stages of infilling (e.g. Tairua, Whitianga, Wharekawa, Whangamata, Whangapoua). Infilling of estuaries can impede navigation and may be perceived by some communities as leading to reduced visual effects and reduced aesthetic value (ARC, 1996).

Bathymetry indicates that between Port Jackson and Tuateawa sediment drops away rapidly, whereas from Whangapoua southwards the bathymetry is less steep. Tidal currents are high around the headland to the north of Opito Bay and from Port Charles around the Port Jackson headland. Wave height is moderate to high from Port Jackson to Taiharuru Bay and low to north of Tairua. South of Tairua wave height is moderate. Wave height is high around the offshore islands particularly on the eastern side.

Benthic sediment along the eastern coast of the Coromandel is predominantly coarse or sandy, with muddy sediment further seaward.

The Te Whanganui-A-hei (Cathedral Cove) Marine Reserve is located between Hahei and Cook Bluff. The reserve is approximately 9km2 and contains a variety of habitats including hard rock, soft sediment, caves and arches.

Boat ramps are present at Tuateawa, Whangapoua Harbour, Matarangi, Kuaotunu Beach, Opito Bay, Ohuka Beach, Whitianga Harbour (3), Cooks Beach, Tairua Harbour (5) and Whangamata Harbour,

Dredging is carried out in Whitianga Harbour associated with the canal housing development, in Whangamata harbour adjacent to the boat ramp and in Tairua Harbour to maintain a navigable channel. Dredging is also carried out to maintain access to the marinas.

Marine vegetation removal sites exist throughout the Tairua Harbour and in Whangamata Harbour, presumably for mangrove management. There are also numerous areas of disturbance and beach scraping areas within the Coastal Marine Area along this coast.

Whangamata Bar is one of New Zealand's premier surf breaks and is also located within this Coastal Marine Area.

Below: Whale Rock looking towards Ohinau Island

Natural Character Study of the Waikato Coastal Environment

#### Biotic

The biotic values along the east coast of Coromandel Peninsula are variable and depend on degree of modification.

Waikawau Bay comprises breeding areas for New Zealand dotterel and variable oystercatchers. Towards the mouth of the estuary there a wetland that is important habitat for bittern, banded rail and fernbird (Dowding, 2013).

Whangapoua Harbour is recognised in the Waikato Regional Coastal Plan as an area of outstanding wildlife habitat and valued by the Department of Conservation and Regional/ District Councils as an Area of Significant Conservation Value. The intertidal areas, seagrass, saltmarsh and mangroves support a variety of benthic invertebrates, fish and wading birds (Jones, 2008). New Zealand dotterel breed around Whangapoua Harbour and high tide roost habitat for wading birds is also present on the northern end of Matarangi Beach (Dowding, 2013).

Extensive New Zealand dotterel breading habitat is present at Otama Beach and Opito Bay. The wetland behind Otama Beach supports bittern (Dowding, 2013).

Between Opito Bay and Mercury Bay there are areas where New Zealand dotterel breed (Dowding, 2013).

Tairua Harbour has extensive saltmarsh, seagrass and mangrove habitat. Tairua Harbour has a high diversity of estuarine invertebrates (cockles, wedge shell, pipi), fish (rockfish, yelloweyed mullet, kahawai, variable triplefin, trevally, flounder, parore, grey mullet, eel, snapper and stingray) and coastal bird species (including threatened species such as reef heron, New Zealand dotterel, grey duck) (Jones, 2008). New Zealand dotterel and variable oystercatcher breed along Pauanui Beach, within the canal development within Tairua Harbour and the beach to the north

Below: Banded Rail, Graham's Creek



of Tairua Harbour (Dowding, 2013). The intertidal flats within Tairua Harbour provide extensive roosting habitat for New Zealand dotterel, banded dotterel and variable oystercatcher.

Whitianga Harbour is the largest on the Coromandel Peninsula and has high wildlife values. The estuary consists of a number of sheltered inlets and bays. Whitianga marina and more recently a canal housing development have been constructed within the harbour (Jones, 2008). Buffalo Beach provides breeding habitat for New Zealand dotterel and variable oystercatcher (Dowding, 2013).

Reef fish species richness between Port Jackson and Tuateawa varies between 21 and 27. South of Tuateawa, including Kennedy Bay, Whangapoua and Matarangi to Kuaotunu reef fish species richness is lower between 19 and 23 species predicted. Areas around the headlands at Opito Bay, Whitianga and Hahei have approximately 22 to 27 reef fish species present. To the south of Hot Water Beach to Whiritoa the richness of reef fish is lower (between 18 and 24 species). Off shore islands, including Cuvier Island, the Mercury Islands, Ohinau island, Castle Island, Shoe and Slipper Islands and the Alderman Islands had the highest species richness of reef fish (between 22 and 30) (Smith et al., 2013, referenced in SeaSketch).

Areas of low demersal fish conservation areas dominate the western coastline of the Coromandel. Areas of moderate to very high conservation value occur within Whangapoua harbour, adjacent to Matarangi Beach, around the Opito Bay headland southward including Whitianga Harbour, adjacent to Hot Water Beach and also in deeper water adjacent to Onemana and Whiritoa (based on predictive modelling in SeaSketch).

Within the Te Whanganui-A-Hei Marine Reserve species include crayfish, corals, brittle stars, paua, kina, sponges, ascidians, bryozoans, macroalgal species and coastal fish (including black angel fish, red moki and leather jacket).

Orca have infrequently been observed at Poley Bay, adjacent to Lonely Bay and off the southern end of Hahei Beach, whereas common dolphin have been sighted more frequently along the entire eastern coast of the Coromandel. Bottle-nose dolphins have been seen adjacent to Tairua, Cooks Beach, Matapaua Bay and Karaka Bay.

Whale sightings have infrequently been reported on the east coast of the Coromandel. Those sighted include Bryde's, southern right, minke, humpback, pilot, sei and false killer whales.

Saltmarsh and small areas of mangrove are present at the Waikawau stream mouth and at stream mouths within Kennedy Bay. Whangapoua, Tairua, Wharekawa and Whangamata Harbours contains areas of intact estuarine vegetation sequences from saltmarsh to mangroves to seagrass. Saltmarsh is present at the stream mouth at Otama Beach. Whitianga Harbour and the inlets at Purangi and Parakiwai contain areas of saltmarsh and mangroves but seagrass is absent.

Opoutere sandspit provides breeding habitat for New Zealand dotterel and variable oystercatcher, while a number of shorebird species forage at the mouth of Wharekawa harbour. Banded rail are present at the mouth of Wahitipu Creek, Whangamata and Tairua Harbours and Hikunui Island provides breeding habitat for reef heron, red-billed gull and white-fronted tern (Dowding, 2013).

Whangamata Harbour provides foraging habitat for New Zealand dotterels, variable oyster catchers and bar-tailed godwits (Dowding, 2013). Mangrove habitat has increased significantly in Whangamata Harbour due to rapid sedimentation and in recent years consented and unconsented mangrove removal has occurred (Jones, 2008).

New Zealand dotterel breed in the foredunes at Whiritoa and Mataora Bay (Dowding, 2013).

Cuvier Island is a volcanic nature reserve. Tuatara and Pycrofts petrel chicks have been released on the island.

The seven islands that make up the Mercury Islands are home to many threatened bird species, reptiles and terrestrial invertebrates. Six of the islands (excluding Great Mercury Island) are nature reserves.

Approved marine farms on the east coast of the Coromandel Peninsula include oyster farms within Whitianga Harbour and Whangapoua Harbour, a mussel and rock lobster farm within Kennedy Bay and a mussel farm at Port Charles.

Recreational fishing is commonly undertaken all along the east coast of Coromandel Peninsula. Boat cruising is common to the north of Pauanui including around the Mercury Islands.

Above: Oyster farming is familiar in many of the enclosed bays in the waters off the western side of the Coromandel



#### **Experiential**

The open coastal waters along this extent of coast are largely unmodified with recreational fishing focused along the shoreline of the peninsula and the offshore islands. From Port Jackson to Port Charge the immediate coastal waters remain largely remote, with settlements less frequent and steep rocky shoreline limiting access.

Curvier Island, a DOC reserve, is highly remote with the waters surrounding it remaining unmodified. Its distance from the main coastline reinforces a sense of remoteness in the waters that surround the island.

Some small marine farms are consented and sited within Port Charles, Kennedy Bay, Whangapoua Harbour and Whitianga Harbour. These features create an increased level of human modification to the water body, in turn lessening the perceptions of naturalness. Despite these small marine farms the harbours comprise natural intertidal margins untouched by human activity. The display of the natural vegetation patterns provide an experience of naturalness less modified that the adjoining terrestrial coastal edge.

The waters surrounding the Mercury Islands are frequented by passenger vessels with the commercial shipping movements further offshore. The waters surrounding the islands are frequented by recreational fishing and diving activities. Despite this, the waters surrounding these islands have a high level of visual amenity and the surrounding rocky reefs are visually distinctive.

Cooks Beach and Whitianga Harbour are surrounding by residential and rural residential settlement. The coastal edge on Cooks Beach and Whitianga harbour are subject to modification for coastal erosion protection. Cooks Beach and Whitianga Beach are popular recreational locations for water based activities including kayaking, swimming and boating. Whitianga includes a waterways development supporting private boat jetties.

The rocky shoreline that extends from Cooks Beach to Hot Water Beach has areas of the coastline that are inaccessible from land. A popular iconic Coromandel Peninsula tourist destination is Cathedral Cove and its adjoining marine reserve, Whanganui A Hei. This area is a popular snorkelling, diving and kayaking location with significant numbers of visitors to the area. The coastal waters display high levels of ecological naturalness and modification is limited. However, the popularity of the natural features increase the presence of human activity and in turn lessen the perceptions of remoteness and isolation.

Similarly, as a result of accessibility the coastline of Hahei, Hot Water Beach, Pauanui, Whangamata and Whiritoa are popular visitor destinations. Water based recreation is supported by Marina in Tairua and Whangamata and the water ways development within Pauanui. The coastal waters are popular locations for recreational boating, jet-skis, waka ama, canoeing, kayaking, swimming, diving and snorkelling.

Further offshore the Alderman Islands are a popular location for recreational fishing and are relatively remote and inaccessible. The sense of isolation and the marine environment creates a sense of remoteness from the mainland and unmodified environment.

| Rating at Level 3 |                                     |              |              |  |  |
|-------------------|-------------------------------------|--------------|--------------|--|--|
| Degree of Natural | Natural Character Attributes        |              |              |  |  |
| Character         | Abiotic                             | Biotic       |              |  |  |
| Very High         | $\checkmark$                        |              |              |  |  |
| High              |                                     | $\checkmark$ | $\checkmark$ |  |  |
| Moderate to High  |                                     |              |              |  |  |
| Moderate          |                                     |              |              |  |  |
| Moderate to Low   |                                     |              |              |  |  |
| Low               |                                     |              |              |  |  |
| Very Low          |                                     |              |              |  |  |
|                   | Overall Natural<br>Character Rating |              | High         |  |  |

Below: Pauanui marina



## Coastal Marine Area C: Eastern Coromandel Characteristics at Level 4

#### These are mapped with reference to Map 5 (overleaf)

| Area                      | Rating | Key Values                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Additional Comments                                                                                                          |
|---------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Northeastern<br>Coastline | High   | <ul> <li>Entire coastal near shore<br/>indented coastal waters hold an<br/>array of high biotic habitats with<br/>limited modification</li> <li>Waikawau Bay comprises<br/>breeding areas for New<br/>Zealand dotterel and variable<br/>oystercatchers. Towards the<br/>mouth of the estuary there<br/>a wetland that is important<br/>habitat for bittern, banded rail<br/>and fernbird;</li> <li>High reef fish richness between<br/>Port Jackson and Tuateawa</li> <li>Unmodified coastal edge forms<br/>majority of coastline, amplifying<br/>perceived naturalness;</li> <li>Wild and remote feel within<br/>more open waters.</li> </ul> | <ul> <li>Recreational use is reasonably low.</li> <li>Areas of aquaculture in Port Charles included within rating</li> </ul> |
| Whangapoua<br>Harbour     | High   | <ul> <li>Whangapoua Harbour is<br/>recognised as an area of<br/>outstanding wildlife habitat and<br/>valued as an Area of Significant<br/>Conservation Value with limited<br/>modification. This harbour<br/>also contains areas of intact<br/>estuarine vegetation sequences<br/>from saltmarsh to mangroves<br/>to seagrass; and a variety of<br/>benthic invertebrates, fish and<br/>wading birds</li> <li>Experientially, the waters of this<br/>harbour are unmodified</li> </ul>                                                                                                                                                         | Some recreational use in the area                                                                                            |
| Central coastline         | High   | <ul> <li>Te Whanganui-A-hei (Cathedral<br/>Cove) Marine Reserve contains a<br/>variety of unmodified habitats<br/>including hard rock, soft<br/>sediment, caves and arches<br/>with high levels of ecological<br/>naturalness;</li> <li>South of Cooks Bay to north of<br/>Hahei and South of Hot Water<br/>Beach to North of Tairua – low<br/>level of modification to the<br/>Coastal Marine Area.</li> <li>Coastal waters, notably<br/>around the nearby offshore<br/>islands provides unmodified<br/>connections to the land</li> </ul>                                                                                                    | <ul> <li>Popular recreational destination for<br/>snorkelling, kayaking and other marine-<br/>based activities</li> </ul>    |

Table continues overleaf
Natural Character Study of the Waikato Coastal Environment

## Coastal Marine Area C: Eastern Coromandel Characteristics at Level 4

These are mapped with reference to Map 5

|                                 | · · ·     |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                |
|---------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Area                            | Rating    | Key Values                                                                                                                                                                                                                                                                                                                                                   | Additional Comments                                                                                                                            |
| Southern<br>Coromandel<br>Coast | High      | <ul> <li>South of Whangamata to the<br/>southern extent of the region         <ul> <li>low level of modification to<br/>the Coastal Marine Area, which<br/>amplifies perceived naturalness</li> </ul> </li> </ul>                                                                                                                                            | <ul> <li>High level of recreational use within<br/>the coast and the shoreline including<br/>surfing, boating and kayaking</li> </ul>          |
| Aldermen Islands                | Very High | <ul> <li>The Alderman islands are<br/>a nature reserve/wildlife<br/>sanctuary comprising five main<br/>islands with high reef fish<br/>numbers;</li> <li>Very high remote values evident,<br/>including darkness of the sky</li> <li>Unmodified bathymetry</li> </ul>                                                                                        | <ul> <li>Sparsely visited island group, mostly visited for recreational fishing.</li> <li>Coastal waters are free from modification</li> </ul> |
| Mercury Island<br>Group         | High      | <ul> <li>The seven islands that make up<br/>the Mercury Islands are home<br/>to many threatened bird species<br/>with high reef fish richness. Six<br/>of the islands (excluding Great<br/>Mercury Island) are nature<br/>reserves.</li> <li>High perceived naturalness<br/>values due to limited<br/>modification</li> <li>Unmodified bathymetry</li> </ul> | <ul> <li>Evidence of recreational boating activity<br/>within area reduces perceived levels of<br/>naturalness.</li> </ul>                     |
| Shoe and Slipper<br>Island      | Very High | <ul> <li>High species of reef fish and<br/>intact habitats around islands;</li> <li>High perceived naturalness<br/>values due to limited<br/>modification</li> <li>Unmodified bathymetry</li> </ul>                                                                                                                                                          |                                                                                                                                                |
| Cuvier Island                   | Very High | <ul> <li>High species of reef fish and<br/>intact habitats around islands;</li> <li>High perceived naturalness<br/>values due to limited<br/>modification amd remoteness</li> <li>Unmodified bathymetry</li> </ul>                                                                                                                                           | <ul> <li>Sparsely visited island group, mostly visited for recreational fishing.</li> <li>Coastal waters are free from modification</li> </ul> |



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## COASTAL TERRESTRIAL AREAS

| Coastal Terrestrial Areas |                     |  |  |
|---------------------------|---------------------|--|--|
| 1                         | Whakatiwai          |  |  |
| 2                         | Hauraki             |  |  |
| 3                         | Thames Coast        |  |  |
| 4                         | Coromandel Harbour  |  |  |
| 5                         | Colville            |  |  |
| 6                         | Port Jackson        |  |  |
| 7                         | Kennedy Bay         |  |  |
| 8                         | Whangapoua          |  |  |
| 9                         | Opito               |  |  |
| 10                        | Whitianga           |  |  |
| 11                        | Hot Water Beach     |  |  |
| 12                        | Tairua              |  |  |
| 13                        | Whiritoa            |  |  |
| 14                        | Outer Island Groups |  |  |



Below: Exposed geology on Red Mercury Island

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# Whakatiwai

### COASTAL TERRESTRIAL AREA 1:



#### Coastal Characteristics, Coastal Environment Extent and Coastal Context Area

This Coastal Terrestrial Area is located on the western side of the Firth of Thames from the Auckland Council boundary south, over a distance of some 9km. The area comprises two main landforms. The northern landform portion comprises the steep to rolling Hunua Ranges foothills that slope down towards the coast and end at or close to the coastal margin. They are covered in indigenous shrubland on steeper slopes and gullies. Further south, rural production land is sited on the easier southern landform which comprises flat coastal plains, located between the foot of the Hunua Ranges and the coast.

Key coastal characteristics include: the East Coast Road and small coastal settlements, the expansive rural land with notably depleted indigenous biodiversity, the steep headlands where the Hunua Ranges meet the coast, the Whakatiwai gravel ridges and the gravel quarry lakes.

Beyond this Coastal Terrestrial Area, the Coastal Context land rises into the Hunua Ranges to the Waharau Ridge and the peak at Jews Clearing. This elevated and steep land is predominantly covered in indigenous shrubland and forest and managed by the Department of Conservation and Auckland Council. Two regional parks extend from the Coastal Context land into the Coastal Terrestrial area south of Wharekawa and at Waihihi Bay. On the lower, more accessible slopes, the land use changes abruptly to rural production land with small areas of pine plantation

> Above: Forested hills of the Hunua Ranges flank the most elevated parts of this Coastal Terrestrial Area



#### Abiotic

The principal land form of this Coastal Terrestrial Area comprises the gently undulating low coastal foothills and lowland plain of the Hunua Ranges, where the highest part of this Coastal Terrestrial Area rises to approximately 100 metres above sea level behind the small Waharau settlement. The terrain is dominated by the underlying volcanic rock into which unmodified streams have incised numerous gullies. Streams typically maintain a natural meandering course through the landscape, although many are more heavily modified at lower elevations and dams are a feature of some.

Comprised predominantly of old sea cliff terraces and gravel ridges, the most significant of these is the Whakatiwai gravel ridges, which is also a Geopreservation Site. Much of these ridges have been extensively modified by coastal development and gravel mining.

South of Wharekawa, the 500-750m strip of land adjacent to the coast tends to be the flattest and most highly modified by channelization, land cultivation, roads and structures. North of Wharekawa, this modified strip narrows significantly to only 150-300m from the coastline. The modification is limited to roads and structures because the terrain makes access and modification of landform and watercourses more difficult.

Watercourses in the northern portion are steep and relatively short and water quality is likely to be high due to the extensive riparian cover and forested headwater catchments within the Regional Parks. Watercourses in the southern portion are flatter and longer and water quality is likely to be poorer due to depleted riparian vegetation, channel modification and inputs from rural land use.



Below: Kaiaua

#### **Biotic**

Land cover analysis: The total land area of the Whakatiwai Coastal Terrestrial Area is 930 ha. Over 80% of the land cover is rural production land. Of the remainder, 6% is indigenous shrubland, 6% is artificial surfaces, 4% is waterbody, 2% is exotic treeland and 1% of the land cover is indigenous forest. There are only a few hectares of indigenous wetland and no exotic scrub, mangroves or bare surfaces. The total indigenous land cover is 8%.

The entire Coastal Terrestrial Area would originally have been completely covered in indigenous forest. Several shrubland assemblages would have occurred on the steeper faces following slips and in association with natural river erosion processes. Wetlands would have been naturally uncommon due to the fall towards the coast combined with the gravel substrate, although forested gully floor wetlands would have been a feature of streams at lower elevations with poorly drained sediments. Instead of the typical coastal dune environment, the coastal gravel ridges would have supported unique floristic assemblages from the forest margins to the high tide mark.

Much of this Coastal Terrestrial Area is now in rural production land, with indigenous shrubland confined to steep slopes and stream gullies. However, the indigenous shrubland and forest in the northern portion includes the Hunua Ranges Recommended Area for Protection and associated SSWI areas, as well as two Regional Park areas. This forest and shrubland can be expected to be modified by past clearance, grazing and weed and pest impacts, but will retain moderate to high ecological values for its biodiversity and habitat. The shrubland is a dominant feature of the northern portion and rural production land is carved into the shrubland between stream gully systems. In the southern portion, rural production land is dominates, with the Hunua Ranges as a more distant backdrop.

Watercourses tend to have steep short gradients until they reach the plains, where channelizing and straightening is more common. Riparian vegetation has been removed across most of the rural production land, but there is substantial riparian vegetation remaining throughout the steeper country and where the gully systems are more deeply incised. Freshwater fish populations can be expected to be diverse. The streams will provide a conduit for migratory species to move to and from the sea and to allow species that prefer cool mountain streams with good water quality to move upstream to the Hunua Ranges. Freshwater macroinvertebrate communities will vary depending on location, with diverse communities of sensitive species occurring where riparian vegetation is more extensive, transitioning to less diverse pollution-tolerant communities where land drainage is more common, riparian vegetation depleted and rural production is more intensive.

A reserve covers part of the Chenier Plains, north of which the Whakatiwai Gravel ridges are sited. The area is important for both international and internal migratory birds.

#### Experiential

Residential and rural residential settlement are focused to the coastal edge, following the East Coast Road, with a highly modified rural landscape forming the backdrop to this landscape. The area includes the Whakatiwai Gravel Quarry which includes man-made quarry pits, now lagoons. These lower foothills and plains of the Hunua Ranges are highly modified displaying low levels of perceived naturalness. Boat access is gained from Wharekawa and just south of Whakatiwai.

One remaining area of high levels of perceived naturalness is the native bush that extends down from the Hunua Ranges, as part of Waharau Regional Park, to meet the adjoining farmland. This remains the only coastal native bush cover within the area and is contiguous with the native bush of the Hunua Ranges, within the coastal context zone beyond the coastal environment.

Below: Small settlements pepper this coastline



| Rating at Level 3 |                              |              |              |  |
|-------------------|------------------------------|--------------|--------------|--|
| Degree of Natural | Natural Character Attributes |              |              |  |
| Character         | Abiotic                      | Biotic       | Experiential |  |
| Very High         |                              |              |              |  |
| High              |                              |              |              |  |
| Moderate to High  |                              |              |              |  |
| Moderate          | $\checkmark$                 | $\checkmark$ |              |  |
| Moderate to Low   |                              |              | $\checkmark$ |  |
| Low               |                              |              |              |  |
| Very Low          |                              |              |              |  |
|                   | Overall<br>Characte          | Moderate     |              |  |

Below: Whakatiwai Gravel Quarry and ponds



## Coastal Terrestrial Area 1: Whakatiwai Specific Characteristics at Level 4

#### These are mapped with reference to Map 6

| Area           | Rating | Key Values                                                                                                                                                                                                                                                                                                 | Additional Comments                                                                                                                                                                                                                                                                    |
|----------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waharau Stream | High   | <ul> <li>Unmodified abiotic stream catchment</li> <li>Large extent of indigenous bush cover around stream, forms part of a continuous extension from Hunua Ranges to the west.</li> <li>High perceived naturalness due to lack of modification, which is rare in this Coastal Terrestrial Area.</li> </ul> | <ul> <li>Includes tracks and small buildings<br/>within forested area.</li> <li>Excludes modified rural land.</li> <li>Is part of larger Hunua Ranges to the<br/>west and represents an important<br/>tract of unmodified naturalness in this<br/>Coastal Terrestrial Area.</li> </ul> |







#### Legend

- Extent of Coastal Environment
   Coastal Terrestrial Area 1: Whakatiwai Whakatiwai Coastal Natural Character Ratings: Level 4
- High Very High



# Hauraki

### COASTAL TERRESTRIAL AREA 2:



#### Coastal Characteristics, Coastal Environment Extent and Coastal Context Area

This Coastal Terrestrial Area forms the northernmost extent of the broader Hauraki Plains that continue to extend southwards, beyond the coastal environment. This broad area encompasses the low foothills to the immediate west of Miranda as well the flat, modified plains and the large settlement of Thames. There are numerous river mouths that intersect this Coastal Terrestrial Area, including the Waitakaruru, Piako and Waihou Rivers as well as extensive wetlands that support thousands of wading and shorebirds.

Key coastal characteristics include: extensive flat and open farmed land, pierced by numerous water channels and irrigation canals; large river mouths draining the inland plains; low-lying land prone to flooding; internationally significant wetland at Miranda being a seasonal home to thousands of wading and shorebirds; numerous roads and settlements make this Coastal Terrestrial Area very accessible.

As outlined, beyond the coastal environment are the extensive farmed lowlands of the Hauraki Plains. The largest wetland in New Zealand, Kopuatai Peat Dome (covering nearly 8,800ha), is located centrally within these plains.

Above: Mangroves line the edges of the Firth of Thames and the mouth of the Piako River



#### Abiotic

The Hauraki Coastal Terrestrial Area includes the northernmost section of the alluvial Hauraki Plains and its small foothills, rising to 136 metres above sea level immediately to the south of Miranda. The Plains are essentially a downfaulted rift valley extending from the Hauraki lowlands further south, out into the Firth of Thames, with a typical elevation of between 0-6 metres. The Waikato River once flowed northwards to the Firth of Thames, depositing vast quantities of muds, sands and gravels. Volcanic debris from an eruption in Rotorua some 20,000 years ago blocked the river's northerly course and diverted it west towards Hamilton. Recent alluvial deposits are resultant from both the Piako and Waihou Rivers, with much of the land being peat-heavy and partly swampy, most of which has been converted for dairy purposes.

The original flat contours of the plains remain the dominant landform. However, the elevation and natural gentle undulations of the plains have been modified by extensive land drainage and cultivation, resulting in lowering of groundwater and peat shrinkage. Stopbank networks control the movement of water into and over the plains, except during large flood events and extended rainfall when the larger river systems and high groundwater table cause extensive flooding. The terrain is dominated by the historic coastal and alluvial origins of the Hauraki Basin, with drainage networks replacing the original wetland and river systems.

Below: Modified land north of the Waihau River, including the Gun Club Aerodrome and settlement of Thames



Watercourses are typically highly modified by channelisation and stopbanks. Water quality is likely to be ubiquitously poor due to the almost total lack of riparian cover, channel modification and high mass loads of nutrients and sediment from rural land use and industrial/municipal point sources.

Almost the entire length of what would originally have been "beach", saltmarsh or mangrove shrubland at the coastal margin is now a highly modified and straightened coastal edge comprised of a stopbank, access and drain network with pumping stations.

A specific feature of this Coastal Terrestrial Area is a shell barrier beach (or Chenier Plains), which is a prograded coastal plain comprising shell fragments and coarse sand that is moved by longshore drift and carried landwards through wash action to form bars on the foreshore (Woodroffe et al. 1983). This feature is a noted Geopreservation Site. Much of this feature is intact, although small elements have been eroded through the construction of groynes, landfill and shoreline armouring. Another noted feature is the Miranda Hot Springs.

Below: The slender wetlands at Miranda are contained by the agricultural land inland and the Firth of Thames



#### Biotic

Land cover analysis: The total land area of the Hauraki Coastal Terrestrial Area is 11,129ha. This includes 2ha of islands. Over 91% of the land cover is rural production land. Of the remainder, 4% is artificial surfaces, 1% is indigenous wetland and 1% is indigenous shrubland. There are very small areas (<1% each) of exotic treeland, indigenous forest, mangroves, bare surfaces and waterbodies, in aggregate covering only 1.29%. There is no exotic scrub cover. The total indigenous land cover is 3%.

The entire Coastal Terrestrial Area would originally have been covered in indigenous wetlands and coastal forest. The wetland species assemblages would have been strongly influenced by sea level, groundwater levels and peat soils which affect salinity, pH and soil saturation. Wetlands would have been the dominant cover with river systems meandering through to the coast. On higher ground, indigenous wetland forest would have formed in relatively localised patches.

Almost all of this Coastal Terrestrial Area is now in rural production land, with indigenous vegetation of any type being almost completely removed. The 2% of indigenous vegetation remaining can be expected to be highly modified.

Watercourses tend to have very flat gradients, where channelising and straightening of even the largest rivers is ubiquitous. Riparian vegetation has been almost completely removed. Fish populations can be expected to be relatively diverse however, as saltwater incursion will allow estuarine and marine species to penetrate some distance inland and migratory species will use the rivers as a conduit to more suitable upstream habitat. However fish passage is generally severely obstructed by flood gates and pumping systems that prevent fish ingress beyond the stopbanks. Resident fish will be limited to those species tolerant of high sediment loads and turbidity and disturbance associated with drain management. Freshwater macroinvertebrate communities can be expected to be dominated by pollution-tolerant communities of low diversity,

The areas with greatest indigenous biodiversity are the Miranda Wildlife Management Reserve, several small QEII covenants, the Orongo Conservation Area and the remnant areas of coastal flats between the stopbanks and mangroves. These coastal flats are vegetated with a variable community of saltmarsh and mangrove assemblages responding to changes in salinity and water level. These areas are likely to provide notable habitat and food resources for a wide range of marsh and coastal bird species.





#### **Experiential**

The natural harbour edge of the Firth of Thames has been modified as a result of historical reclamation and sea wall protection. The sand shoreline form pockets along the coastal edge with the remaining terrestrial extent being a heavily modified pastoral landscape.

The landward extent displays high levels of human modification from land use change, harbour edge modification and dwellings, exotic tree cover and road networks. The natural patterns of this landscape are largely lost to the pattern of paddocks that extend throughout this area.

The township of Thames is included in this Coastal Terrestrial Area and, much like the rural farmland, it too is a heavily modified landscape as a result of reclamation. The natural patterns are not evident and the extent of human modification is high.

| Rating at Level 3              |                                     |              |              |  |  |
|--------------------------------|-------------------------------------|--------------|--------------|--|--|
| Degree of Natural<br>Character | Natural Character Attributes        |              |              |  |  |
|                                | Abiotic                             | Biotic       | Experiential |  |  |
| Very High                      |                                     |              |              |  |  |
| High                           |                                     |              |              |  |  |
| Moderate to High               |                                     |              |              |  |  |
| Moderate                       |                                     |              |              |  |  |
| Moderate to Low                |                                     |              |              |  |  |
| Low                            | $\checkmark$                        | $\checkmark$ | $\checkmark$ |  |  |
| Very Low                       |                                     |              |              |  |  |
|                                | Overall Natural<br>Character Rating |              | Low          |  |  |

**Below:** Thames



## Coastal Terrestrial Area 2: Hauraki Specific Characteristics at Level 4

These are mapped with reference to Map 7

| Area    | Rating    | Key Values                                                                                                                                                | Additional Comments                                                                                                                                                                                 |
|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Miranda | Very High | • Chenier Plains are an<br>Internationally significant<br>landform at Miranda, with the<br>most unmodified part closest to<br>the Firth of Thames.        | <ul> <li>Area defined by East Coast Road<br/>and Coastal Marine Area extent and<br/>includes any tracks, boardwalks and<br/>bird hides associated with the Miranda<br/>Wildlife Reserve.</li> </ul> |
|         |           | <ul> <li>Saltmarsh and mangrove<br/>provide important habitats for<br/>wading birds</li> </ul>                                                            |                                                                                                                                                                                                     |
|         |           | <ul> <li>Impressive expansive and open<br/>mangrove mudflats</li> </ul>                                                                                   |                                                                                                                                                                                                     |
|         |           | <ul> <li>Remote-like characteristics due<br/>to openness of area and lack<br/>of modification. High natural<br/>transient values due birdlife.</li> </ul> |                                                                                                                                                                                                     |
|         |           |                                                                                                                                                           |                                                                                                                                                                                                     |

Above: The wetlands and Chenier Plain at Miranda

