

# Schedule I: Coastal Marine Area<sup>^</sup> Activities and Water Management

Schedule I is a component of the Regional Coastal Plan.

The *coastal marine area<sup>^</sup>* (CMA) is as defined in the RMA. This Schedule comprises:

- Part A:** CMA Boundaries: Figures I:1-I:2 show a regional overview of the CMA and Figures I:3-I:9 depict the location of the *mouth<sup>^</sup>* and the cross-river CMA boundary of identified *rivers<sup>^</sup>*. These figures also show the Estuary *Water Management Sub-zones<sup>\*</sup>* relevant to Part C.
- Part B:** Activity Management Areas: Figures I:10-I:13 show the Port and Protection Activity Management Areas and the part of the General Activity Management Area in the vicinity of the Port. Table I.1 lists the ecological and other important characteristics in the Protection Activity Management Areas.
- Part C:** Water Quality Management: *Water Management Zone<sup>\*</sup>* and *Sub-zones<sup>\*</sup>*, Values, management objectives, and *water<sup>^</sup>* quality targets: Tables I.2-I.7. Note that the Estuary *Water Management Sub-zones<sup>\*</sup>* are shown in Figures I:3 to I:9.

A description of the figures contained in this Schedule is provided below:

| Area   | Figure | Description of Area   |
|--|--------|---|
| <i>Coastal Marine Area<sup>^</sup></i>   | I:1    | The west coast CMA, beaches and some <i>rivers<sup>^</sup></i> of the Manawatu-Wanganui Region. |
|  | I:2    | The east coast CMA and some <i>rivers<sup>^</sup></i> of the Manawatu-Wanganui Region.          |
| <i>Coastal Marine Area<sup>^</sup> - river<sup>^</sup> mouths<sup>^</sup> and cross-river CMA boundaries.</i><br><br>These figures also show the Estuary <i>Water Management Sub-zones<sup>*</sup></i> relevant to Part C. | I:3    | Kai Iwi Stream and Mowhanau Stream.   |
|  | I:4    | Whanganui River and Whangaeu River.   |
|  | I:5    | Turakina River and Rangitikei River.  |
|  | I:6    | Manawatu River and Hokio Stream.  |
|  | I:7    | Ohau River and Waikawa Stream.  |
|  | I:8    | Akitio River and Owahanga River.  |
|  | I:9    | Wainui River.   |
| Activity Management Areas  | I:10   | Port Activity Management Area.  |
|  | I:11   | Protection Activity Management Areas:   |
|  | I:12   | • Whanganui River and Whangaeu River.   |
|  | I:13   | • Turakina River and Rangitikei River.<br>• Manawatu River and Cape Turnagain.                  |

## Part A: CMA Boundaries

Figures I:1-I:2 depict the extent of the CMA within the Manawatu-Wanganui Region. On the open coast, the CMA extends from the line of mean high water springs (MHWS) seaward to the 12 nautical mile outer limit of the *territorial sea<sup>^</sup>*.

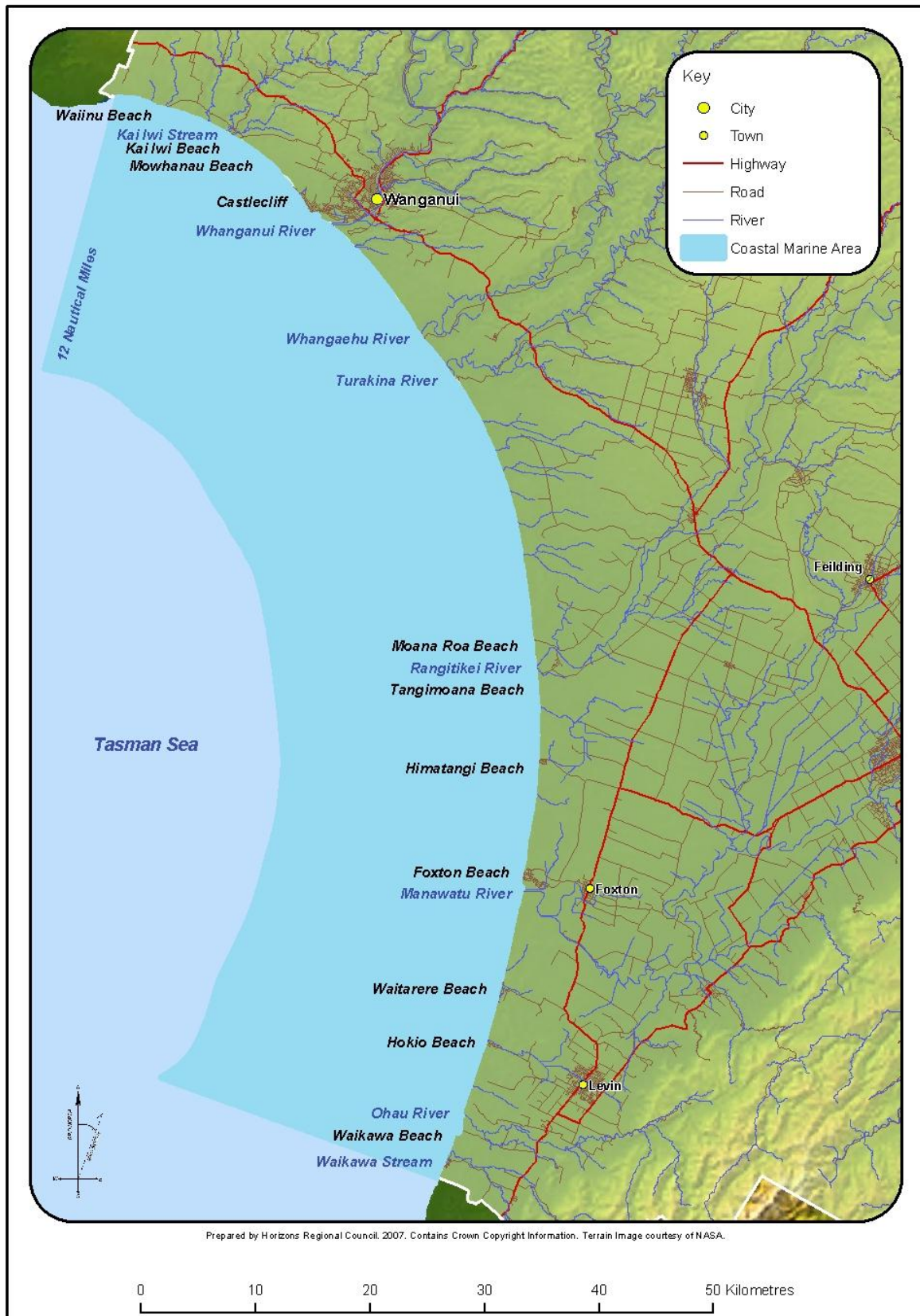
Figures I:3-I:9 depict the *mouth<sup>^</sup>* of identified *rivers<sup>^</sup>* as was agreed between the Minister of Conservation, the *Territorial Authorities<sup>^</sup>* and the Regional Council in 1994 in accordance with s2 RMA. The figures additionally show where the CMA boundary lies up the identified *rivers<sup>^</sup>* (which include streams). That is called the cross-river CMA boundary in this schedule.

For any *river<sup>^</sup>* which is not shown in the figures, the location of the *mouth<sup>^</sup>* was agreed between the Minister of Conservation, the *Territorial Authorities<sup>^</sup>* and the Regional Council in 1994 to be a straight line representing a continuation of the line of MHWS on

each side of the *river*<sup>^</sup>. The upstream location of the cross-river CMA boundary on these *river*<sup>s</sup><sup>^</sup> is not mapped, but it is consistent with s2 RMA. It is the lesser of:

- (a) one kilometre upstream from the *mouth*<sup>^</sup> of the *river*<sup>^</sup>; or
- (b) the point upstream that is calculated by multiplying the width of the *river*<sup>^</sup> *mouth*<sup>^</sup> by five.

The *rules*<sup>^</sup> in Chapter 18 apply to the CMA.



**Figure I:1** West Coast CMA and some Rivers<sup>^</sup> of the Region.



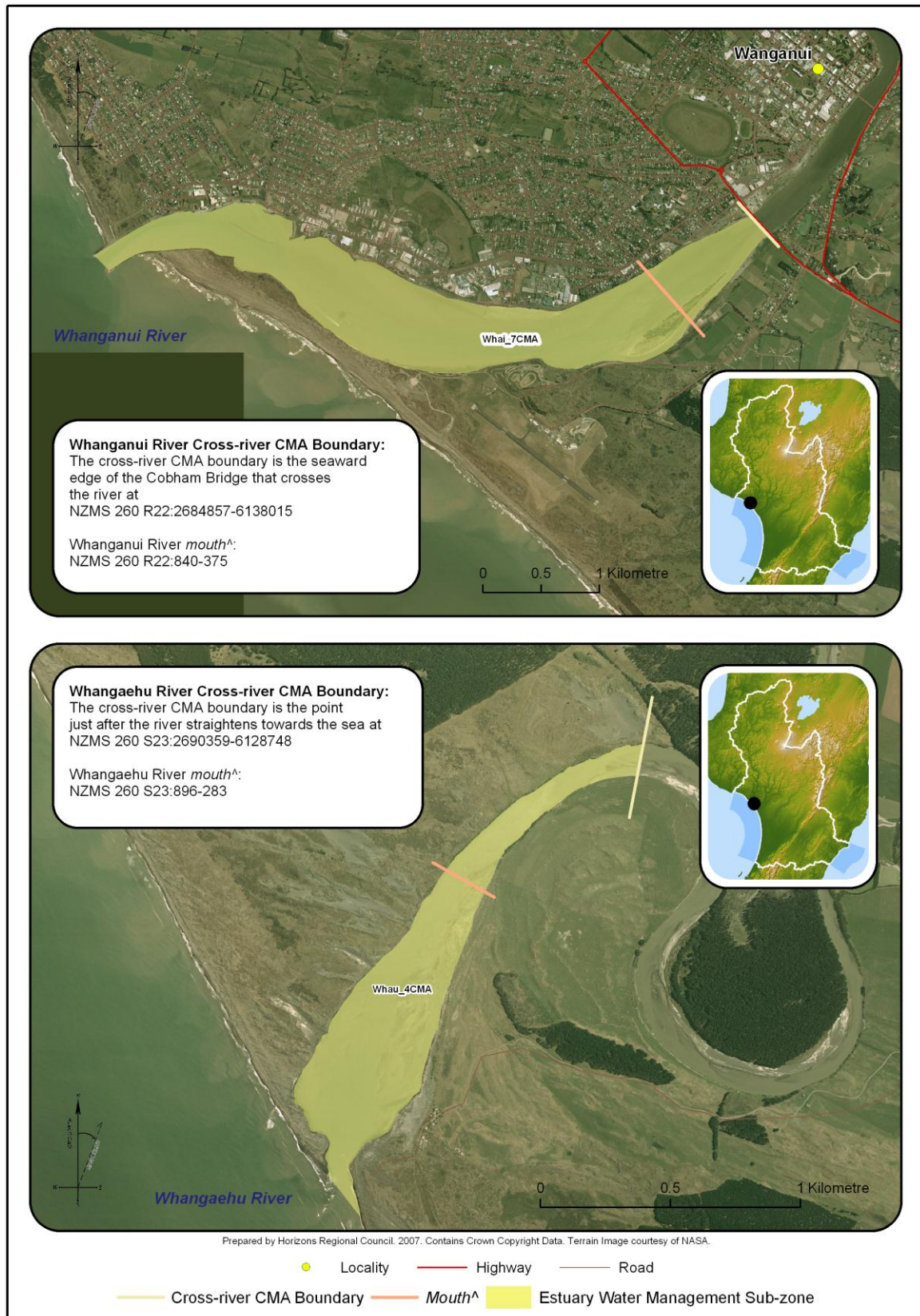
**Figure I:2** East Coast CMA and some Rivers<sup>^</sup> of the Region.





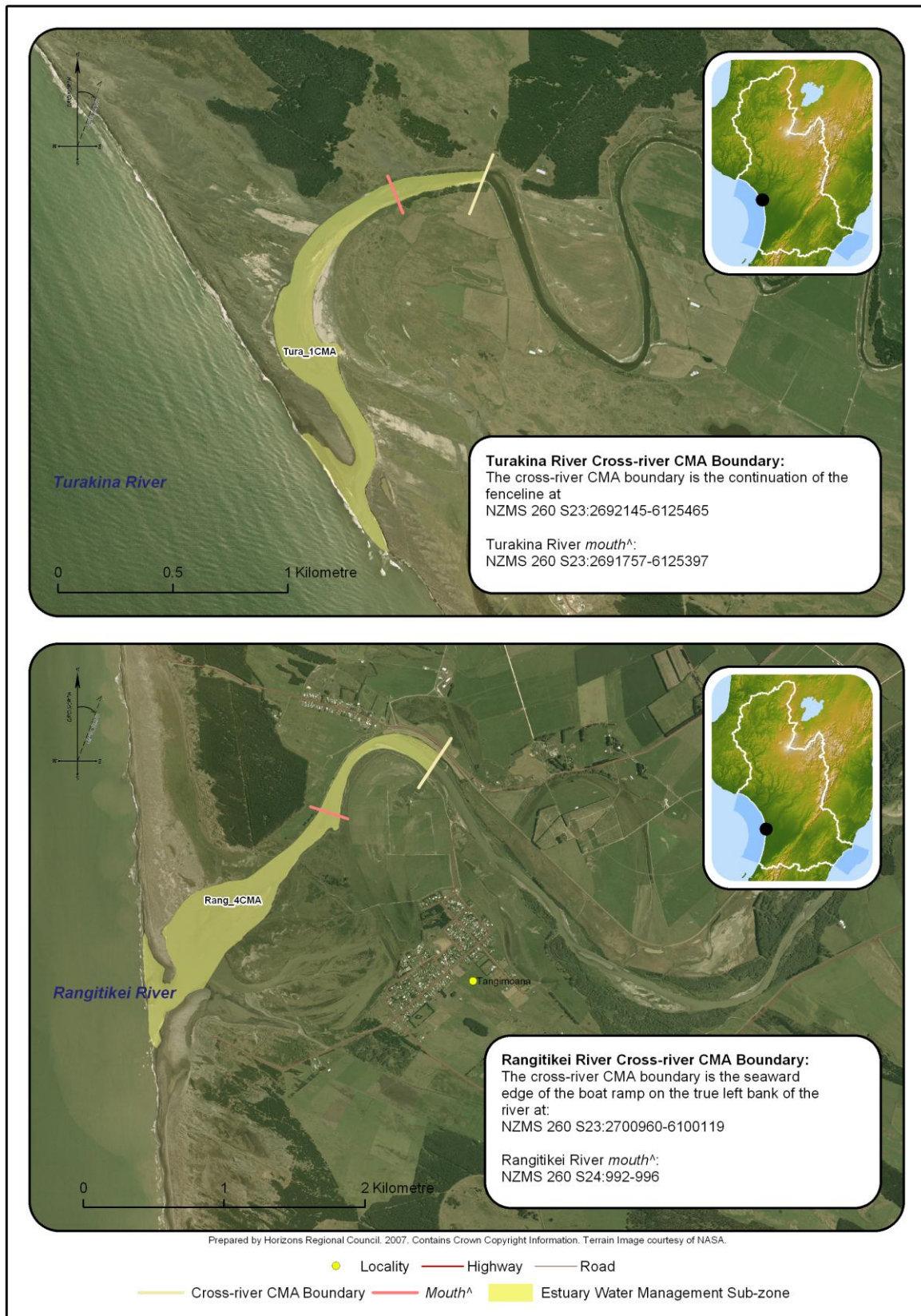
**Figure I:3** Kai Iwi Stream and Mowhanau Stream *mouth*<sup>^</sup> locations, cross-river CMA boundaries and extent of the Estuary Water Management Sub-zones\*.





**Figure I:4** Whanganui River and Whangaehu River *mouth*<sup>^</sup> locations, cross-river CMA boundaries and extent of the Estuary Water Management Sub-zones\*.





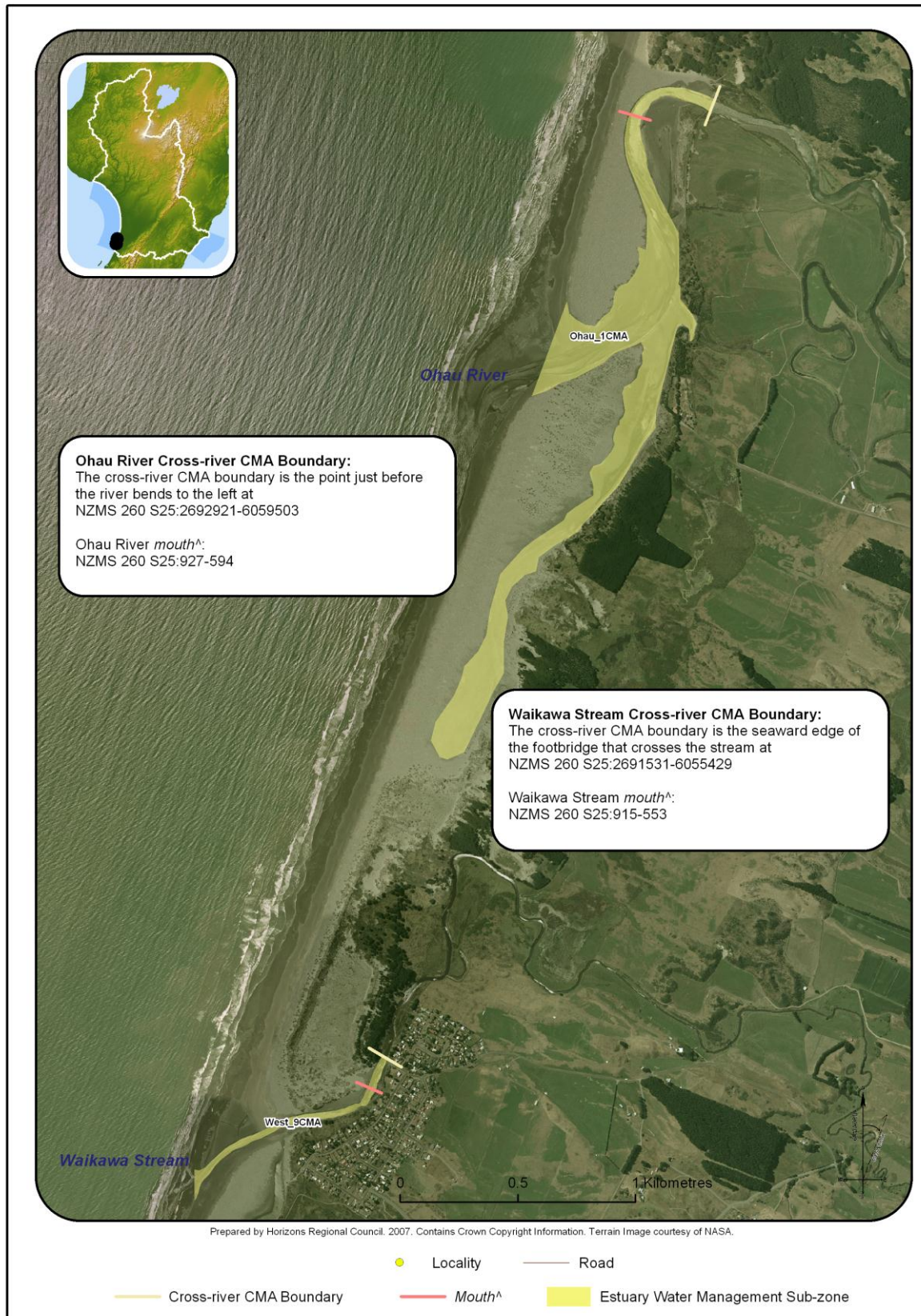
**Figure I:5** Turakina River and Rangitikei River *mouth*<sup>^</sup> locations, cross-river CMA boundaries and extent of the Estuary Water Management Sub-zones\*.





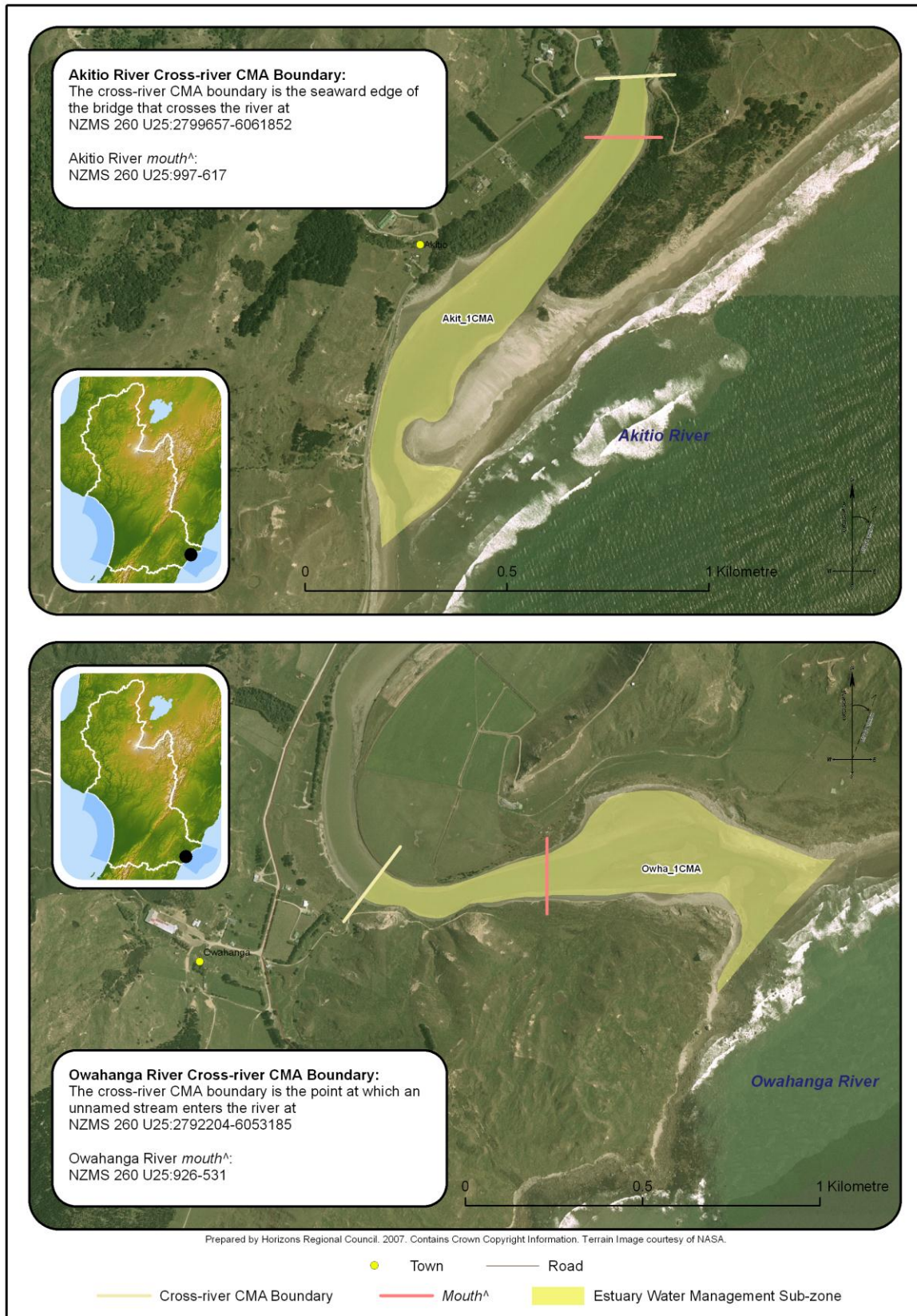
**Figure I:6** Manawatu River and Hokio Stream *mouth*<sup>^</sup> locations, cross-river CMA boundaries and extent of the Estuary *Water Management Sub-zones*<sup>\*</sup>.





**Figure I:7** Ohau River and Waikawa Stream *mouth*<sup>A</sup> locations, cross-river CMA boundaries and extent of the Estuary *Water Management Sub-zones*\*.





**Figure I:8** Akitio River and Owahanga River *mouth*<sup>^</sup> locations, cross-river CMA boundaries and extent of the Estuary *Water Management Sub-zones*<sup>\*</sup>.





**Figure I:9** Wainui River *mouth*<sup>^</sup> location, cross-river CMA boundary and extent of the Estuary Water Management Sub-zone\*.

## Part B: Activity Management Areas

This Plan includes three different Activity Management Areas being the Port, Protection and General Activity Management Areas. These Activity Management Areas delineate discrete areas of the CMA within which different presumptions apply regarding the protection, use and development of the *foreshore*<sup>^</sup> and seabed.

**The Port Activity Management Area** is depicted in Figure I:10. There are some *rules*<sup>^</sup> in Chapter 18 which apply specifically to this Area.

For clarification:

- the **Port Activity Management Area** extends 50 m to the outside of the *river*<sup>^</sup> training wall as shown in Figure I:10.
- the identified dredging and discharge areas relate to Rule 18-28 and indicate that these activities are considered under this *rule*<sup>^</sup> (and not under Rule 18-29).

**The Protection Activity Management Areas** are shown in Figures I:11-13.

There are some *rules*<sup>^</sup> in Chapter 18 which apply specifically to these Areas.

For clarification:

- the landward edge of each Protection Activity Management Area is the line of MHWS.
- the seaward boundary of the Cape Turnagain Protection Activity Management Area extends seaward for a maximum distance of 100 m.
- the characteristics relating to each Protection Activity Management Area and as referred to in Policy 8-2 of the Regional Policy Statement are shown in Table I.1 below. It is these characteristics that have led to each Area being identified as a Protection Activity Management Area and regard must be had to the characteristics by decision-makers considering use and development proposals in those Areas.

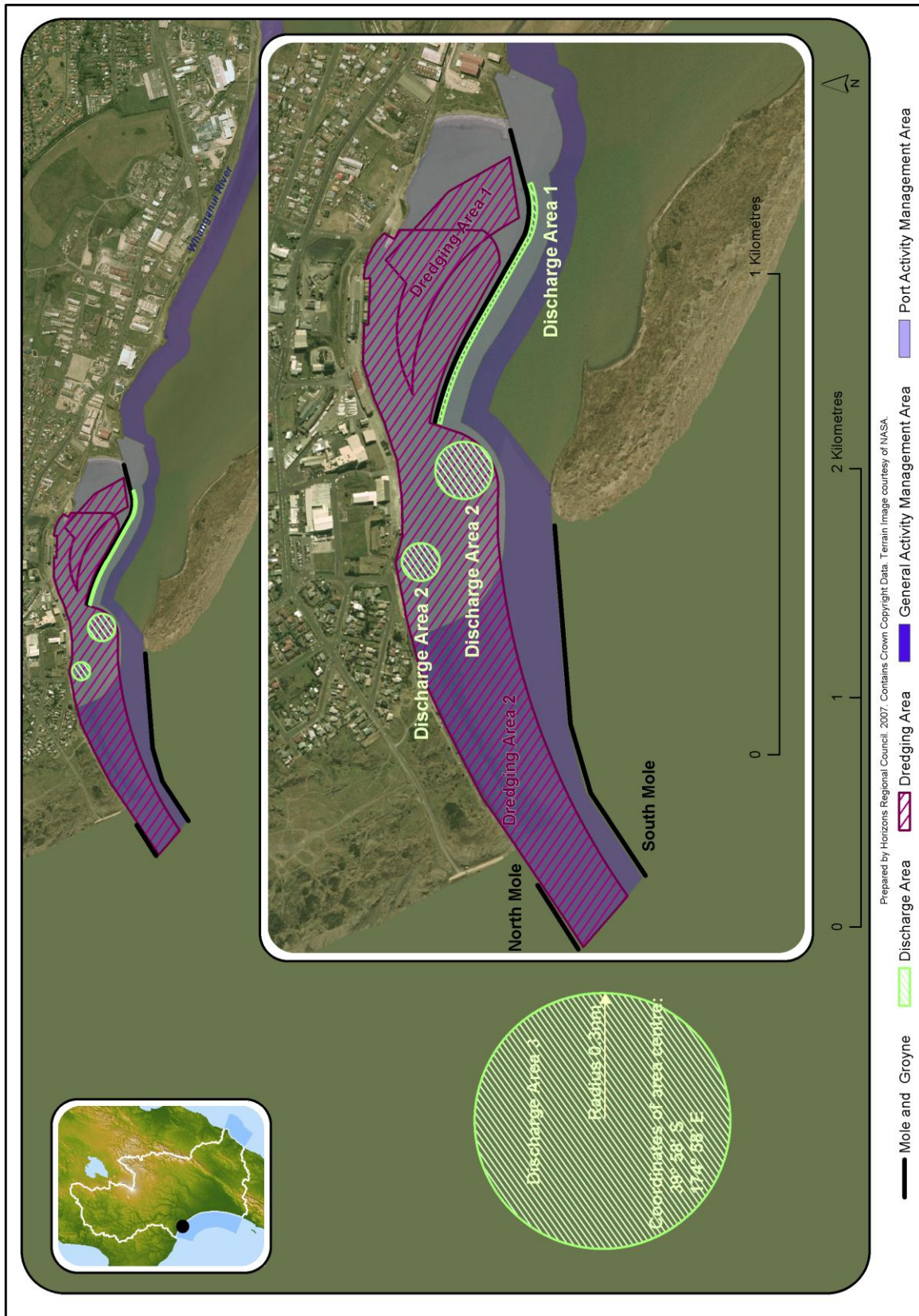
**The General Activity Management Area** is not mapped. It comprises the entire CMA except those parts of the CMA covered by the Port Activity Management Area and the various Protection Activity Management Areas. In the Whanganui River, the General Activity Management Area includes part of the CMA comprising a band of 100 m from the line of MHWS of the northern bank of the River, as well as a band of 50 m from the edge of the Port Activity Management Area and includes the *river*<sup>^</sup> entrance between the South Mole and the North Mole and northern *river*<sup>^</sup> bank as shown in Figure I:10.

**Table I.1: Protection Activity Management Areas: ecological and other important characteristics**

| Protection Activity Management Area | Ecological and other important characteristics  |
|-------------------------------------|---|
| Whanganui River                     | <ul style="list-style-type: none"> <li>• Nationally important as a nursery for freshwater and estuarine species.</li> <li>• Nationally important ecosystem for bird species.</li> <li>• Nationally important strategic <i>site</i><sup>*</sup> for migratory bird species.</li> <li>• Provides habitat for threatened species.</li> <li>• Important roosting and feeding area for wading birds (especially shellfish beds).</li> <li>• Important feeding and breeding ground for many fish species (especially access ways for <i>whitebait</i><sup>*</sup> and lamprey).</li> <li>• Corliss Island has a saltmarsh fringe and is important for hawks.</li> </ul> |

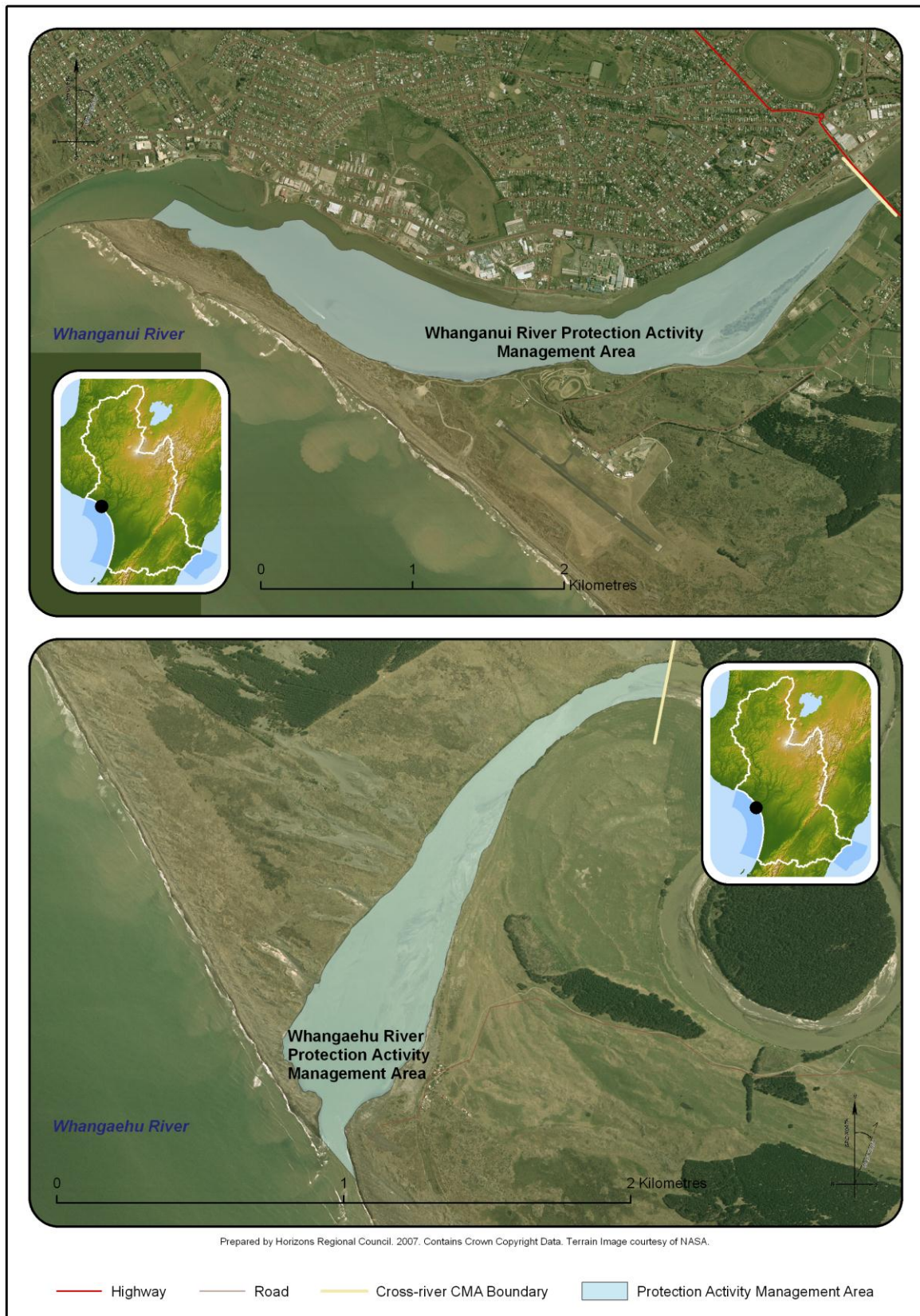


| Protection Activity Management Area | Ecological and other important characteristics  |
|-------------------------------------|---|
|                                     | <ul style="list-style-type: none"> <li>Landguard Bluff comprises a nationally important sequence of Pleistocene sedimentary strata and pecten shells.</li> <li>Coastal landforms and adjacent dunes are important nesting habitat.</li> <li><i>Historic heritage</i><sup>^</sup>.</li> </ul>  |
| Whangaeahu River                    | <ul style="list-style-type: none"> <li>Nationally important strategic <i>site</i>* for migratory bird species.</li> <li>Provides habitat for threatened bird species.</li> <li>Important roosting and feeding area for wading birds.</li> <li>Regionally important for its high degree of naturalness.</li> </ul> <p>Note:</p> <ul style="list-style-type: none"> <li>The Whitiua Scientific Reserve is located adjacent to the true right bank of the estuary.</li> <li>There is a dense concentration of archaeological sites adjacent to the estuary.</li> </ul>   |
| Turakina River                      | <ul style="list-style-type: none"> <li>Nationally important strategic <i>site</i>* for migratory bird species.</li> <li>Provides habitat for threatened bird species.</li> <li>Important roosting and feeding habitat for wading birds.</li> <li>Regionally distinct vegetation communities.</li> <li>Regionally important for its high degree of naturalness.</li> <li>Locally rich in archaeological sites.</li> </ul>  |
| Rangitikei River                    | <ul style="list-style-type: none"> <li>Contains regionally important plant species.</li> <li>Regionally important for bird species.</li> <li>Regionally important for saltmarsh communities and estuarine native turf species.</li> <li>Provides habitat for rare and threatened bird species.</li> <li>Important roosting and feeding area for wading birds.</li> <li>Important for <i>whitebait</i>* spawning.</li> <li><i>Historic heritage</i><sup>^</sup>.</li> </ul>  |
| Manawatu River                      | <ul style="list-style-type: none"> <li>Nationally important as a nursery for freshwater and estuarine species.</li> <li>Internationally important strategic <i>site</i>* for migratory bird species.</li> <li>Provides habitat for rare and threatened bird species.</li> <li>Important roosting and feeding area for wading birds.</li> <li>Contains regionally important plant species.</li> <li>Internationally recognised as a <i>wetland</i><sup>^</sup> of international importance under the RAMSAR Convention.</li> <li>Regionally important for its high degree of naturalness and diversity.</li> </ul> |
| Cape Turnagain                      | <ul style="list-style-type: none"> <li>Important haul out area for marine mammals.</li> <li>Important feeding, roosting and breeding area for birds (especially blue penguins).</li> <li><i>Site</i>* of high value to <i>iwi</i>*.</li> <li><i>Site</i>* of geological importance.</li> <li><i>Historic heritage</i><sup>^</sup>.</li> </ul>   |



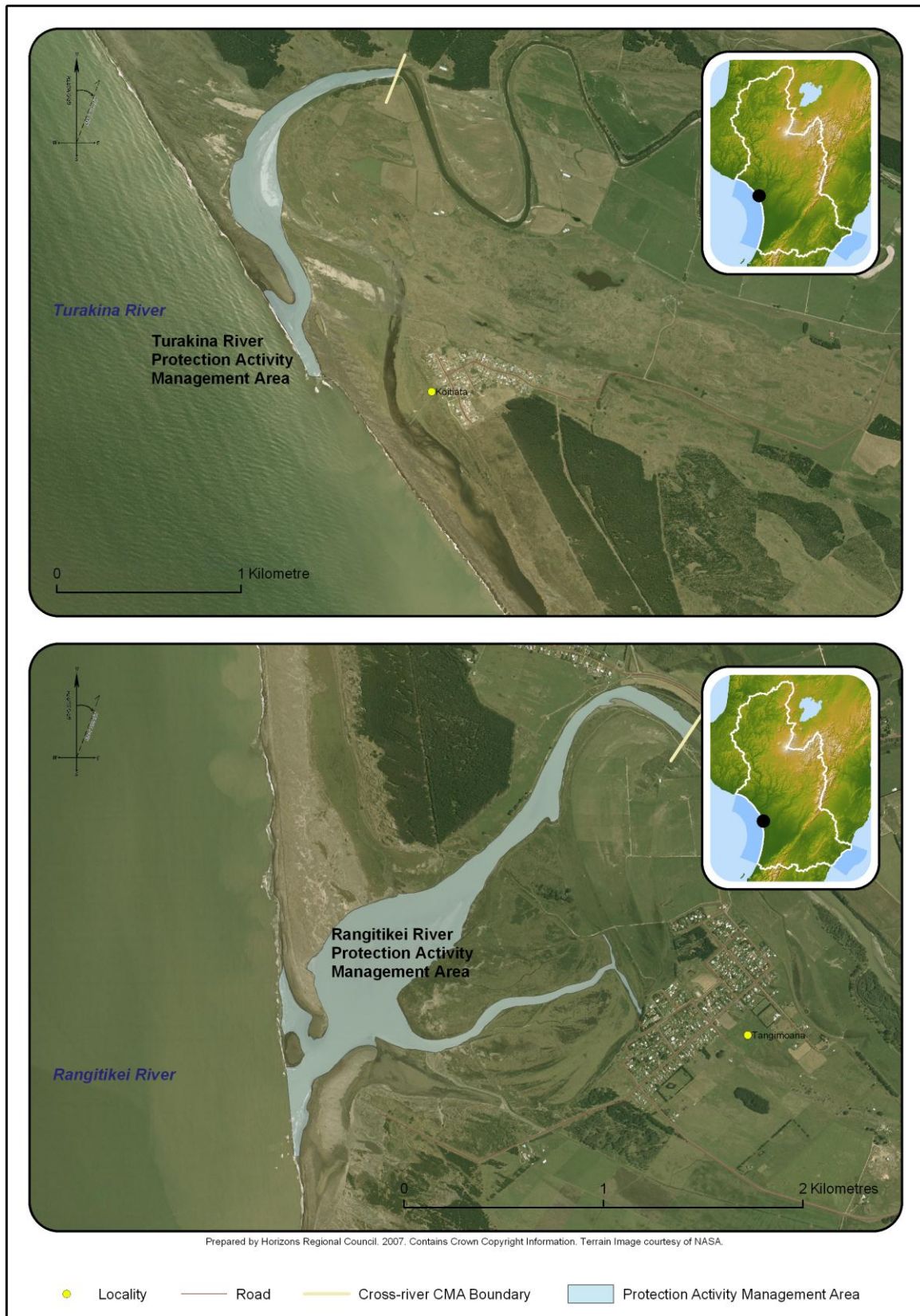
**Figure I:10** Port Activity Management Area.





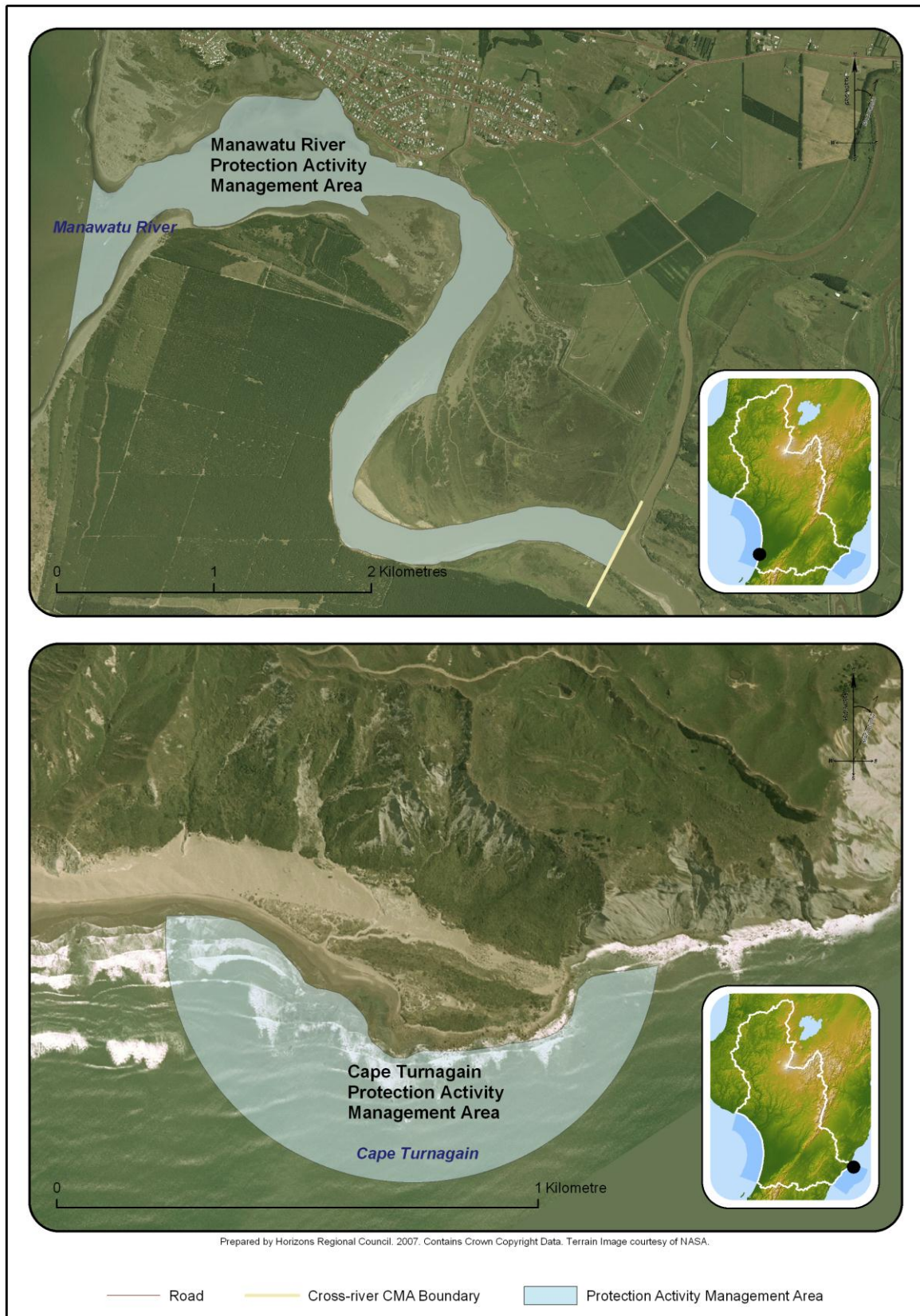
**Figure I:11** Protection Activity Management Areas.





**Figure I:12** Protection Activity Management Areas.





**Figure I:13** Protection Activity Management Areas.

## Part C: Water Quality Management.

### ***Water Management Zones\* and Sub-zones\*, Values, Management Objectives and Water^ Quality Targets***

For *water^* quality management purposes, the CMA is divided into:

- (a) one *Seawater Management Zone\** which comprises the entire CMA other than the Estuary *Water Management Sub-zones\**;
- (b) 13 Estuary *Water Management Sub-zones\** associated with specified estuary *waters^* as shown on Figures I:3 to I:9. The term *Sub-zone\** is used because the estuary *waters^* are part of a larger *Water Management Zone\** for each *river^* (see Schedule A).

### **List of Tables relating to the *Seawater Management Zone\** and Estuary *Sub-zones\**:**

| Table Number | Description   |
|--------------|---|
| Table I.2    | <i>Seawater Management Zone*</i> and Estuary <i>Water Management Sub-zones*</i> : Values and Management Objectives. |
| Table I.3    | <i>Seawater Management Zone*</i> and Estuary <i>Water Management Sub-zones*</i> : Where the Values apply.           |
| Table I.4    | Estuary <i>Water Management Sub-zones*</i> : <i>Water^</i> Quality Definitions.                                     |
| Table I.5    | Estuary <i>Water Management Sub-zones*</i> : <i>Water^</i> Quality Targets.   |
| Table I.6    | <i>Seawater Management Zone*</i> : <i>Water^</i> Quality Definitions.   |
| Table I.7    | <i>Seawater Management Zone*</i> : <i>Water^</i> Quality Targets.   |

**Table I.2: Seawater Management Zone\* and Estuary Water Management Sub-zones\*: Values and Management Objectives**

The following Values and Management Objectives apply in the *Seawater Management Zone\** and *Estuary Water Management Sub-zones\** listed in Table I.3.

| Value group                      | Values |   | Management Objective   |
|----------------------------------|--------|---|--|
| Ecosystem Values                 | LSC    | Life-supporting Capacity                    | The CMA supports healthy aquatic life / ecosystems.  |
|                                  | SOS-A  | Sites of Significance - Aquatic             | Sites of significance for indigenous aquatic biodiversity within the CMA are maintained or enhanced.   |
|                                  | SOS-R  | Sites of Significance - Riparian            | Sites of significance for indigenous riparian biodiversity within the CMA are maintained or enhanced.  |
|                                  | IS     | Inanga Spawning                             | The CMA sustains healthy inanga spawning and egg development.  |
|                                  | WM     | <i>Whitebait*</i> Migration                 | The CMA is maintained or enhanced to provide safe passage of inwardly migrating juvenile native fish known collectively as <i>whitebait*</i> . |
| Recreational and Cultural Values | CR     | Contact Recreation                          | The CMA is suitable for contact recreation.  |
|                                  | Am     | Amenity                                     | The amenity values of the CMA are maintained or enhanced.  |
|                                  | Mau    | <i>Mauri*</i>                               | The <i>mauri*</i> of the CMA is maintained or enhanced.  |
|                                  | SG     | Shellfish Gathering                         | The CMA is suitable for shellfish harvesting.  |
|                                  | SOS-C  | Sites of Significance - Cultural            | Sites of significance for cultural values are maintained.  |
| <i>Water</i> <sup>^</sup> Use    | IA     | Industrial Abstraction                      | The CMA is suitable as a <i>water</i> <sup>^</sup> source for industrial abstraction or use.   |
| Social and Economic Values       | CAP    | Capacity to Assimilate Pollution            | The capacity of the CMA to assimilate pollution is not exceeded.   |
|                                  | EI     | Existing <i>Infrastructure</i> <sup>^</sup> | The integrity of existing <i>infrastructure</i> <sup>^</sup> is not compromised.   |



**Table I.3: Seawater Management Zone\* and Estuary Water Management Sub-zones\*: Where the Values apply****Legend:**

Table Headings: **LSC**: Life-supporting Capacity; **SOS-A**: Sites of Significance - Aquatic; **SOS-R**: Sites of Significance - Riparian; **IS**: Inanga Spawning; **WM**: *Whitebait*\* Migration; **CR**: Contact Recreation; **Am**: Amenity; **Mau**: *Mauri*\*; **SG**: Shellfish Gathering; **SOS-C**: Sites of Significance - Cultural; **IA**: Industrial Abstraction; **CAP**: Capacity to Assimilate Pollution; **EI**: Existing *Infrastructure*<sup>A</sup>.

Key for LSC Classes: **M**: Marine; **LM**: Lowland Mixed; **HSS**: Hill Soft Sedimentary; **HM**: Hill Mixed; **LS**: Lowland Sand.

The LSC Classes are listed as the geology of the catchment influences *water*<sup>A</sup> quality and life-supporting capacity.

| Water Management Zone*   | Estuary Water Management Sub-zone*               | Zone-wide Values |       |                  |    |    |    |    |     |    |                |    |     |    |
|--|--|------------------|-------|------------------|----|----|----|----|-----|----|----------------|----|-----|----|
|  |  | LSC              | SOS-A | SOS-R            | IS | WM | CR | Am | Mau | SG | SOS-C          | IA | CAP | EI |
| Seawater Management Zone* (entire CMA excluding Estuary Water Management Sub-zones*) | N/A  | M                |       |                  | ✓  | ✓  | ✓  | ✓  | ✓   | ✓  |                | ✓  | ✓   | ✓  |
| Coastal Manawatu (Mana_13)   | Manawatu Estuary (Mana_13CMA)<br>See Figure I:6  | LM               |       | ✓ <sup>1,2</sup> | ✓  | ✓  | ✓  | ✓  | ✓   |    | ✓ <sup>4</sup> | ✓  | ✓   | ✓  |
| Coastal Rangitikei (Rang_4)  | Rangitikei Estuary (Rang_4CMA)<br>See Figure I:5 | LM               |       | ✓ <sup>1</sup>   | ✓  | ✓  | ✓  | ✓  | ✓   |    |                | ✓  | ✓   | ✓  |
| Lower Whanganui (Whai_7)   | Whanganui Estuary (Whai_7CMA)<br>See Figure I:4  | LM               |       | ✓ <sup>1,2</sup> | ✓  | ✓  | ✓  | ✓  | ✓   |    |                | ✓  | ✓   | ✓  |
| Coastal Whangāehu (Whau_4)   | Whangāehu Estuary (Whau_4CMA)<br>See Figure I:4  | HSS              |       | ✓ <sup>1,2</sup> | ✓  | ✓  | ✓  | ✓  | ✓   |    |                | ✓  | ✓   | ✓  |
| Turakina (Tura_1)  | Turakina Estuary (Tura_1CMA)<br>See Figure I:5   | HSS              |       | ✓ <sup>1,2</sup> | ✓  | ✓  | ✓  | ✓  | ✓   |    |                | ✓  | ✓   | ✓  |

1 Gravel and sand (dotterel).

2 Mud / silt habitat and estuarine roosts (waders).

3 Shortjaw kokopu and redfin bully.

4 Density of cultural and historical *sites*\* of significance including *wāhi tapu*\* and *taonga*\*. Details of the particular location of these *sites*\* are available from Rangitane o Manawatu.

| Water Management Zone*   | Estuary Water Management Sub-zone*             | Zone-wide Values |                |                   |    |    |    |    |     |    |       |    |     |    |
|--------------------------|--|------------------|----------------|-------------------|----|----|----|----|-----|----|-------|----|-----|----|
|                          |  | LSC              | SOS-A          | SOS-R             | IS | WM | CR | Am | Mau | SG | SOS-C | IA | CAP | EI |
| Ohau (Ohau_1)            | Ohau Estuary (Ohau_1CMA)<br>See Figure I:7     | HM               |                | ✓ <sup>1, 2</sup> | ✓  | ✓  | ✓  | ✓  | ✓   |    |       | ✓  | ✓   | ✓  |
| Lake Horowhenua (Hoki_1) | Hokio Estuary (Hoki_1CMA)<br>See Figure I:6    | LS               |                |                   | ✓  | ✓  | ✓  | ✓  | ✓   |    |       | ✓  | ✓   | ✓  |
| Owahanga (Owha_1)        | Owahanga Estuary (Owha_1CMA)<br>See Figure I:8 | HSS              |                |                   |    |    | ✓  | ✓  | ✓   |    |       | ✓  | ✓   | ✓  |
| East Coast (East_1)      | Wainui Estuary (East_1CMA)<br>See Figure I:9   | HSS              |                | ✓ <sup>2</sup>    |    |    | ✓  | ✓  | ✓   |    |       | ✓  | ✓   | ✓  |
| Akitio (Akit_1)          | Akitio Estuary (Akit_1CMA)<br>See Figure I:8   | HSS              |                |                   | ✓  | ✓  | ✓  | ✓  | ✓   |    |       | ✓  | ✓   | ✓  |
| Kai Iwi (West_2)         | Kai Iwi Estuary (West_2CMA)<br>See Figure I:3  | HSS              |                |                   | ✓  | ✓  | ✓  | ✓  | ✓   |    |       | ✓  | ✓   | ✓  |
| Mowhanau (West_3)        | Mowhanau Estuary (West_3CMA)<br>See Figure I:3 | LM               |                |                   | ✓  | ✓  | ✓  | ✓  | ✓   |    |       | ✓  | ✓   | ✓  |
| Waikawa (West_9)         | Waikawa Estuary (West_9CMA)<br>See Figure I:7  | HM               | ✓ <sup>3</sup> | ✓ <sup>1, 2</sup> |    | ✓  | ✓  | ✓  | ✓   |    |       | ✓  | ✓   | ✓  |

1 Gravel and sand (dotterel).

2 Mud / silt habitat and estuarine roosts (waders).

3 Shortjaw kokopu and redfin bully.

**Table I.4: Estuary Water Management Sub-zones\*: Water<sup>A</sup> Quality Definitions**

The *water<sup>A</sup>* quality targets for the Estuary Water Management Sub-Zones\*, as defined in **Table I.5** must read as follows (the numerical values in Table I.5 are indicated by [...]):

| Abbreviations used in Table I.5                      |                         | Full wording of the target   |
|--|-------------------------|--|
| Header   | Sub-header              |  |
| Temp (°C)  | <                       | The temperature of the <i>water<sup>A</sup></i> must not exceed [...] degrees Celsius.   |
| DO (%SAT)  | >                       | The concentration of dissolved oxygen must exceed [...] % of saturation.   |
| Algal biomass Chl <i>a</i> (mg/m <sup>3</sup> )      | <                       | The annual average algal biomass must not exceed [...] milligrams of chlorophyll <i>a</i> per cubic metre.   |
| Macro-algae (% cover)                                | <                       | The maximum cover of visible shore surface by macro-algae must not exceed [...] %.   |
| DRP (g/m <sup>3</sup> )                              | <                       | The annual average concentration of dissolved reactive phosphorus (DRP) when the <i>river<sup>A</sup></i> flow is at or below the 20 <sup>th</sup> <i>flow exceedance percentile*</i> must not exceed [...] grams per cubic metre.   |
| SIN (g/m <sup>3</sup> )                              | <                       | The annual average concentration of soluble inorganic nitrogen (SIN) <sup>1</sup> when the <i>river<sup>A</sup></i> flow is at or below the 20 <sup>th</sup> <i>flow exceedance percentile*</i> must not exceed [...] grams per cubic metre.   |
| Ammoniacal nitrogen <sup>2</sup> (g/m <sup>3</sup> ) | <                       | The average concentration of ammoniacal nitrogen must not exceed [...] grams per cubic metre.  |
| Tox.   | %                       | For toxicants not otherwise defined in these targets, the concentration of toxicants in the <i>water<sup>A</sup></i> must not exceed the trigger values for coastal waters defined in the 2000 ANZECC guidelines Table 3.4.1 as the level of protection for [...] % of species. For metals the trigger value must be adjusted for hardness and apply to the dissolved fraction as directed in the table. |
| <i>E.coli</i> / 100 ml                               | < 50 <sup>th</sup> %ile | The concentration of <i>Escherichia coli</i> must not exceed [...] per 100 millilitres 1 November - 30 April (inclusive) when the <i>river<sup>A</sup></i> flow is at or below the 50 <sup>th</sup> <i>flow exceedance percentile*</i> .   |
|  | < 20 <sup>th</sup> %ile | The concentration of <i>Escherichia coli</i> must not exceed [...] per 100 millilitres year round when the <i>river<sup>A</sup></i> flow is at or below the 20 <sup>th</sup> <i>flow exceedance percentile*</i> .  |
| Euphotic depth                                       | %Δ                      | The euphotic depth must not be reduced by more than [...] %.   |
| Visual clarity (m)                                   | %Δ                      | The visual clarity of the <i>water<sup>A</sup></i> measured as the horizontal sighting range of a black disc must not be reduced by more than [...] %.   |
|  | >                       | The visual clarity of the <i>water<sup>A</sup></i> measured as the horizontal sighting range of a black disc must equal or exceed [...] metres when the <i>river<sup>A</sup></i> is at or below the 50 <sup>th</sup> <i>flow exceedance percentile*</i> .  |

<sup>1</sup> Soluble Inorganic Nitrogen (SIN) concentration is measured as the sum of nitrate nitrogen, nitrite nitrogen and ammoniacal nitrogen or the sum of total oxidised nitrogen and ammoniacal nitrogen.

<sup>2</sup> Ammoniacal nitrogen is a component of SIN. SIN standards should also be considered when assessing ammoniacal nitrogen concentrations against the standards.



**Table I.5: Estuary Water Management Sub-zones\*: Water<sup>A</sup> Quality Targets**

The following water<sup>A</sup> quality targets apply to the Estuary Water Management Sub-zones\*:

| Water Management Zone*      | Estuary Sub-zone*              | Temp (°C) | DO (%SAT) | Algal Biomass              | Macro-algae | DRP (g/m <sup>3</sup> ) | SIN (g/m <sup>3</sup> ) | Ammoniacal Nitrogen (g/m <sup>3</sup> ) | Tox. | E.coli / 100 ml        |                        | Euphotic Depth | Visual Clarity (m) | Visual Clarity (m) |
|-----------------------------|--------------------------------|-----------|-----------|----------------------------|-------------|-------------------------|-------------------------|---|------|------------------------|------------------------|----------------|--------------------|--------------------|
|                             |                                | <         | >         | Chl a (mg/m <sup>3</sup> ) | % cover     | <                       | <                       | <                                       | %    | <50 <sup>th</sup> %ile | <20 <sup>th</sup> %ile | %Δ             | >                  | %Δ                 |
| Coastal Manawatu (Mana_13)  | Manawatu Estuary (Mana_13CMA)  | 24        | 70        | 4                          | 5           | 0.015                   | 0.444                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Coastal Rangitikei (Rang_4) | Rangitikei Estuary (Rang_4CMA) | 24        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Lower Whanganui (Whai_7)    | Whanganui Estuary (Whai_7CMA)  | 24        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Coastal Whangaeahu (Whau_4) | Whangaeahu Estuary (Whau_4CMA) | 22        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Turakina (Tura_1)           | Turakina Estuary (Tura_1CMA)   | 22        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Ohau (Ohau_1)               | Ohau Estuary (Ohau_1CMA)       | 22        | 70        | 4                          | 5           | 0.010                   | 0.110                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Lake Horowhenua (Hoki_1)    | Hokio Estuary (Hoki_1CMA)      | 24        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Owahanga (Owha_1)           | Owahanga Estuary (Owha_1CMA)   | 22        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| East Coast (East_1)         | Wainui Estuary (East_1CMA)     | 22        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Akitio (Akit_1)             | Akitio Estuary (Akit_1CMA)     | 22        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Kai Iwi (West_2)            | Kai Iwi Estuary (West_2CMA)    | 22        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Mowhanau (West_3)           | Mowhanau Estuary (West_3CMA)   | 24        | 70        | 4                          | 5           | 0.015                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |
| Waikawa (West_9)            | Waikawa Estuary (West_9CMA)    | 22        | 70        | 4                          | 5           | 0.010                   | 0.167                   | 0.400                                   | 95   | 260                    | 550                    | 10             | 1.2                | 20                 |

**Table I.6: Seawater Management Zone\*: Water<sup>^</sup> Quality Definitions**

The water<sup>^</sup> quality targets for the Seawater Management Zone\*, as defined in Table I.7, must read as follows (the numerical values in Table I.7 are indicated by [...]):

| Abbreviations used in Table I.7                 |                                   | Full wording of the target   |
|---|-----------------------------------|--|
| Header  | Sub-header                        |  |
| DO (%SAT)                                       | >                                 | The concentration of dissolved oxygen must exceed [...] % of saturation.   |
| Algal biomass Chl <i>a</i> (mg/m <sup>3</sup> ) | <                                 | The annual average algal biomass must not exceed [...] milligrams of chlorophyll <i>a</i> per cubic metre.   |
| TP (g/m <sup>3</sup> )                          | <                                 | The annual average concentration of total phosphorus must not exceed [...] grams per cubic metre.  |
| TN (g/m <sup>3</sup> )                          | <                                 | The annual average concentration of total nitrogen must not exceed [...] grams per cubic metre.  |
| Ammoniacal nitrogen (g/m <sup>3</sup> )         | <                                 | The average concentration of ammoniacal nitrogen must not exceed [...] grams per cubic metre.  |
| Tox.  | %                                 | For toxicants not otherwise defined in these targets, the concentration of toxicants in the water <sup>^</sup> must not exceed the trigger values for coastal waters defined in the 2000 ANZECC guidelines Table 3.4.1 for the level of protection of [...] % of species. For metals the trigger value must be adjusted for hardness and apply to the dissolved fraction as directed in the table. |
| Visual clarity (m)                              | %Δ                                | The visual clarity of the water <sup>^</sup> measured as the horizontal sighting range of a black disc must not be reduced by more than [...] %.   |
|   | >                                 | The visual clarity of the water <sup>^</sup> measured as the horizontal sighting range of a black disc must equal or exceed [...] metres.  |
| Enterococci                                     | 1 November - 30 April (inclusive) | The concentration of enterococci must not exceed [...] per 100 millilitres 1 November - 30 April (inclusive).  |
|   | 1 May - 31 October (inclusive)    | The concentration of enterococci must not exceed [...] per 100 millilitres 1 May - 31 October (inclusive).   |
| Faecal coliforms                                | <                                 | The median concentration of faecal coliforms must not exceed [...] per 100 millilitres.  |
|   | 90 <sup>th</sup> %ile             | The 90 <sup>th</sup> percentile concentration of faecal coliforms must not exceed [...] per 100 millilitres.   |



**Table I.7: Seawater Management Zone\*: Water<sup>^</sup> Quality Targets**

The following water<sup>^</sup> quality targets apply to the Seawater Management Zone\*:

| Management Zone           | DO<br>(%SAT) | Algal Biomass                     | TP<br>(g/m <sup>3</sup> ) | TN<br>(g/m <sup>3</sup> ) | Ammoniacal Nitrogen<br>(g/m <sup>3</sup> ) | Tox. | Visual<br>Clarity<br>(m) |    | Enterococci      |                | Faecal Coliforms |                       |
|---------------------------|--------------|-----------------------------------|---------------------------|---------------------------|--|------|--------------------------|----|------------------|----------------|------------------|-----------------------|
|                           | >            | Chl <i>a</i> (mg/m <sup>3</sup> ) | <                         | <                         | <  | (%)  | >                        | %Δ | 1 Nov - 30 April | 1 May - 31 Oct | <                | 90 <sup>th</sup> %ile |
| Seawater Management Zone* | 90           | 3                                 | 0.010                     | 0.060                     | 0.060                                      | 99   | 1.6                      | 20 | 140              | 280            | 14               | 43                    |

