TE TAI O AORERE / TASMAN DISTRICT COASTAL ENVIRONMENT STUDY

COASTAL NATURAL CHARACTER ASSESSMENT PREPARED FOR TASMAN DISTRICT COUNCIL

July 2022

tasman district council | Te Kaunihera o te tai o Aorere

Boffa Miskell

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Cover photograph: Awaroa Inlet.

Inside cover: Farewell Spit Intertidal Area

TE TAI O AORERE / TASMAN DISTRICT COASTAL ENVIRONMENT STUDY

Prepared for Tasman District Council

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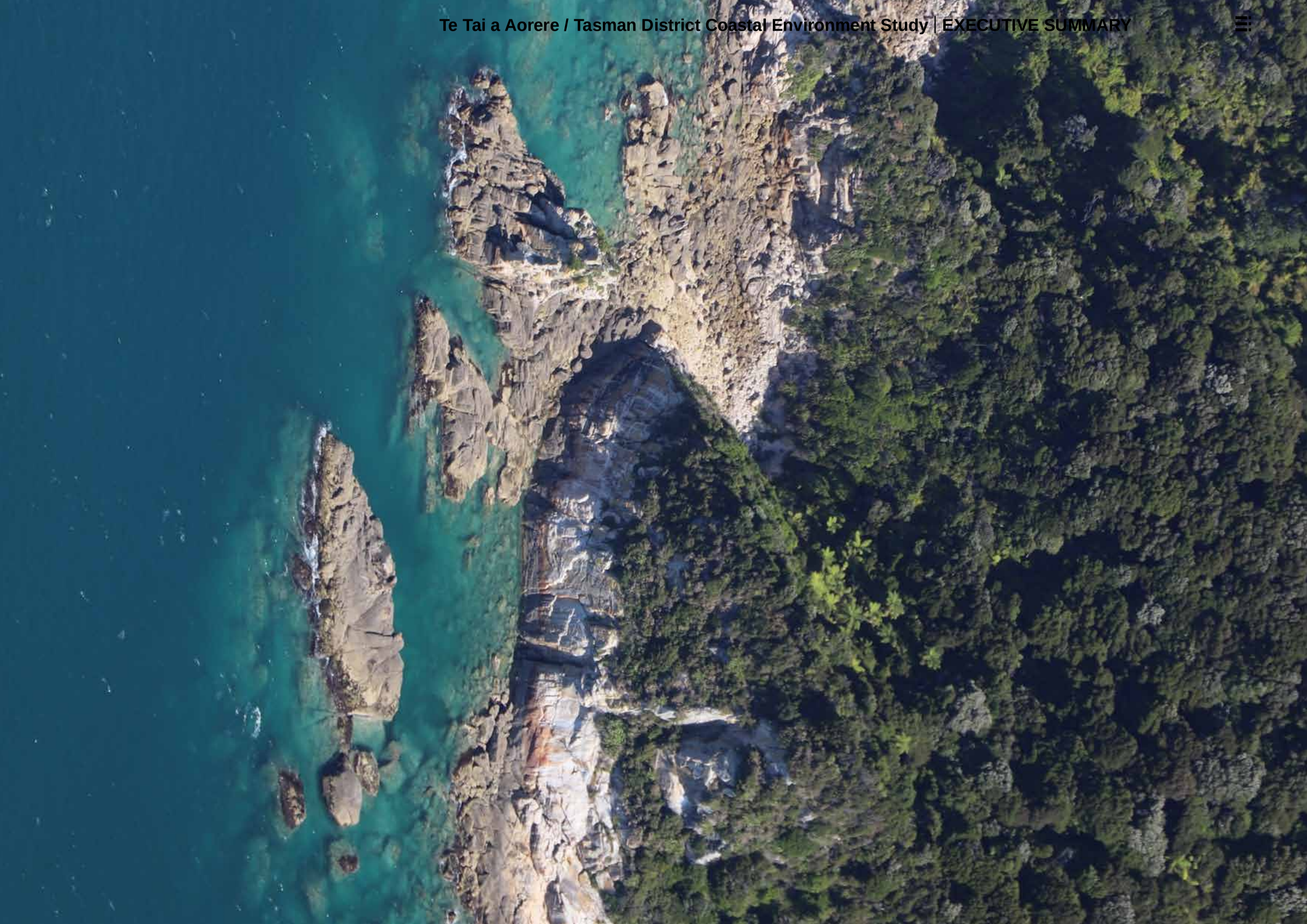
1. EXECUTIVE SUMMARY



1.1. Executive Summary

1.1.1. Introduction

This assessment identifies the coastal environment of the Tasman Region and evaluates levels of natural character to give effect to the requirements in the Tasman Regional Policy Statement and the district and regional coastal sections of the Tasman Resource Management Plan. As part of the review process, these two plans will be combined to form the Aorere Ki uta Aorere Ki tai - Tasman Environment Plan.

This report is an updated version of the November 2021 report following landowner engagement. Over the first round of extended engagement, the study team heard from over 300 individuals and groups, held webinars and public open days, met with various landowners and stakeholders and undertook some specific site visits. Following feedback, the draft maps of the Tasman District Coastal Environment together with the associated Coastal Environment study, has been revised to reflect local knowledge and site-specific issues.

This report is still subject to revision following acceptance of the '*Places of Significance to Māori*' project.

This report has been prepared in accordance with best practice outlined in Te Tangi a te Manu - Aotearoa New Zealand Landscape Assessment Guidelines.

1.1.2. Methodology Overview

The study area comprises the coastal environment of Tasman, including both terrestrial and marine areas (refer to Map 1). The terrestrial and marine coastal environment was evaluated by Boffa Miskell landscape architects and ecologists as well as technical scientists and ecologists from DOC and TDC.

The first step of this assessment identifies and maps the extent of the coastal environment. This encompasses the coastal marine area (CMA) extending out to 12 nautical-mile limit and a relatively narrow fringe of coastal land above mean high water springs (MHWS). The inland extent has been identified (with guidance from NZCPS Policy 1 (2)) as generally being the part of the coast where "*coastal processes, influences or qualities are significant*"[1]. That is, coastal processes, influences or qualities are not just present but significant.

The assessment of natural character has responded to NZCPS (Policy 13) and considers the extent to which existing natural elements, patterns and processes exist and have undergone human modification. This assessment has been considered in terms of abiotic, biotic and experiential attributes and assisted with a workshop hosted by the study team. Natural character aspects have primarily been considered in terms of the degree of human biophysical modification alongside associated experiential aspects which exist as a result of such levels of modification remaining apparent.

To facilitate this assessment, the study area was considered to comprise 14 coastal areas (10 coastal terrestrial areas and four marine coastal areas). Each of these areas were evaluated in relation to the three attributes[2]. The natural character ratings for each attribute were combined to determine the overall level of natural character. Each terrestrial and marine area was then assessed at a finer scale to identify components which have high or very high levels of natural character (based on abiotic and biotic attribute ratings (Map 1)).

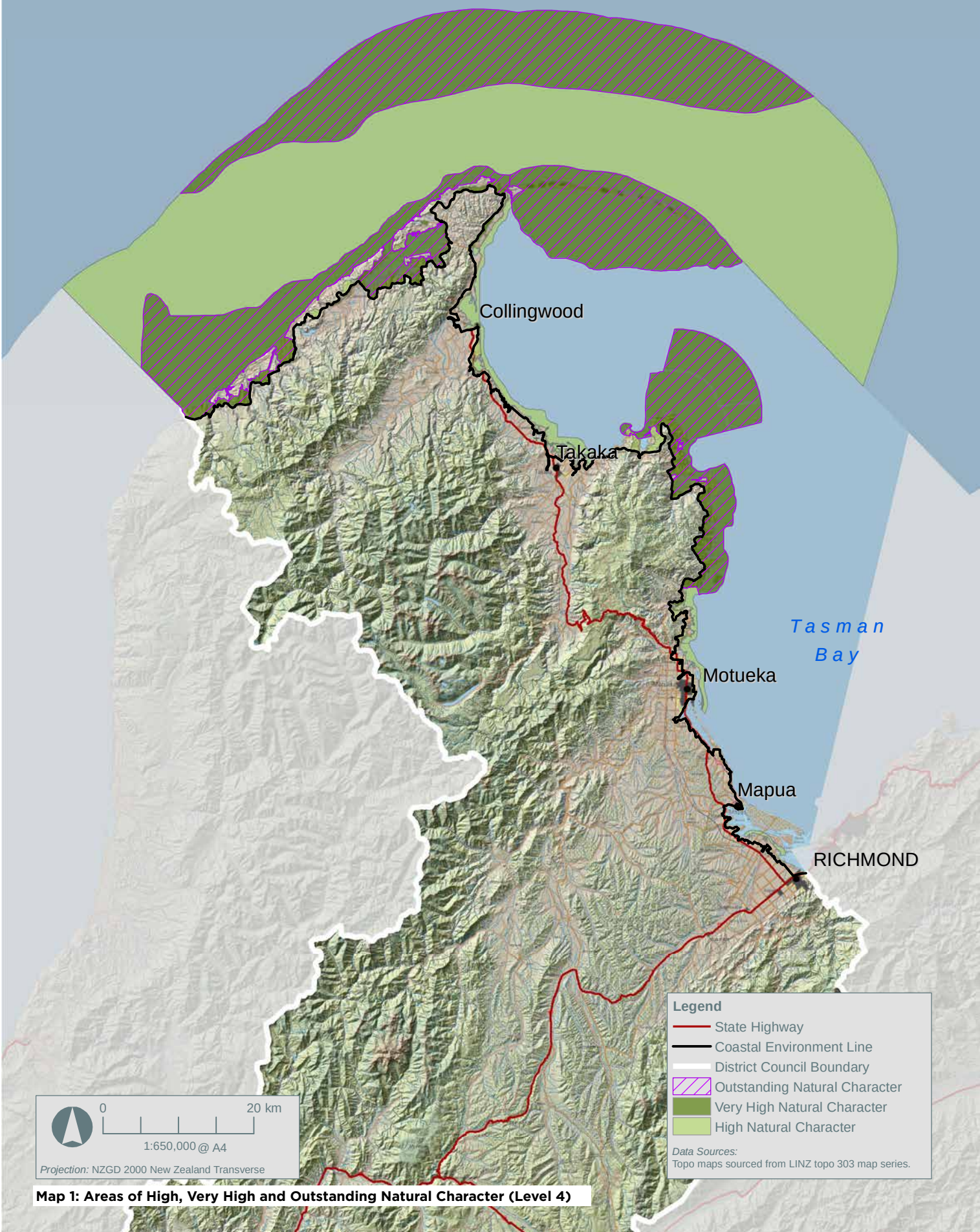
The final step of this assessment considers whether any parts of Tasman's coastal environment have outstanding natural character. During the assessment, marine and terrestrial components with at least high natural character were considered together in the context of the Tasman Region.

1. NZCPS Policy 1 (2)(c).

2. Attribute groupings based on the NZCPS Policy 13(2) list of items that may contribute to natural character.

Left: Rocky shores and native forest found near Canoe Bay, Abel Tasman.

AREAS OF HIGH NATURAL CHARACTER	AREAS OF VERY HIGH NATURAL CHARACTER	AREAS OF OUTSTANDING NATURAL CHARACTER
32	33	5



Map 1: Areas of High, Very High and Outstanding Natural Character (Level 4)

1.1.3. Study Findings

The Tasman coastal environment is geologically diverse and varies between the ruggedness of the north-west coast to the golden sandy beaches found to the east of the District. The coastal environment contains a range of naturally uncommon ecosystems including active sand dunes, coastal cliffs, coastal turfs, and estuaries. These ecosystems are found throughout the Tasman District, but are most common on the north west coast where there is less modification. Offshore the Tasman District supports a diverse range of marine mammals, birds, invertebrates and fish, and contains a variety of habitats and ecosystems. The marine ecosystems species found on the north west coast of the District are very different to those found in the sheltered waters to the east. The area also has many unmodified islands which act as strongholds for some of New Zealand's endangered and rare bird species.

Much of the coastal environment with at least high natural character occurs in the CMA and are primarily associated with areas that have received very low levels of modification. Much of the modification within the CMA in Tasman is through commercial fishing/ trawling techniques. Large areas of aquaculture are also present. Sheltered and enclosed areas, including Whanganui Inlet rate highly due to limited levels of modification. For terrestrial areas, large areas of high natural character are associated with the north west coast and parts of Abel Tasman, with the more modified flatter areas, receiving the least mapped high areas.

Five areas of outstanding natural character were identified, namely the North West Coast; North West Coast Open Ocean; Whanganui Inlet, Farewell Spit and parts of Abel Tasman. These are also illustrated on Map 1, left.

2. INTRODUCTION AND STUDY BACKGROUND

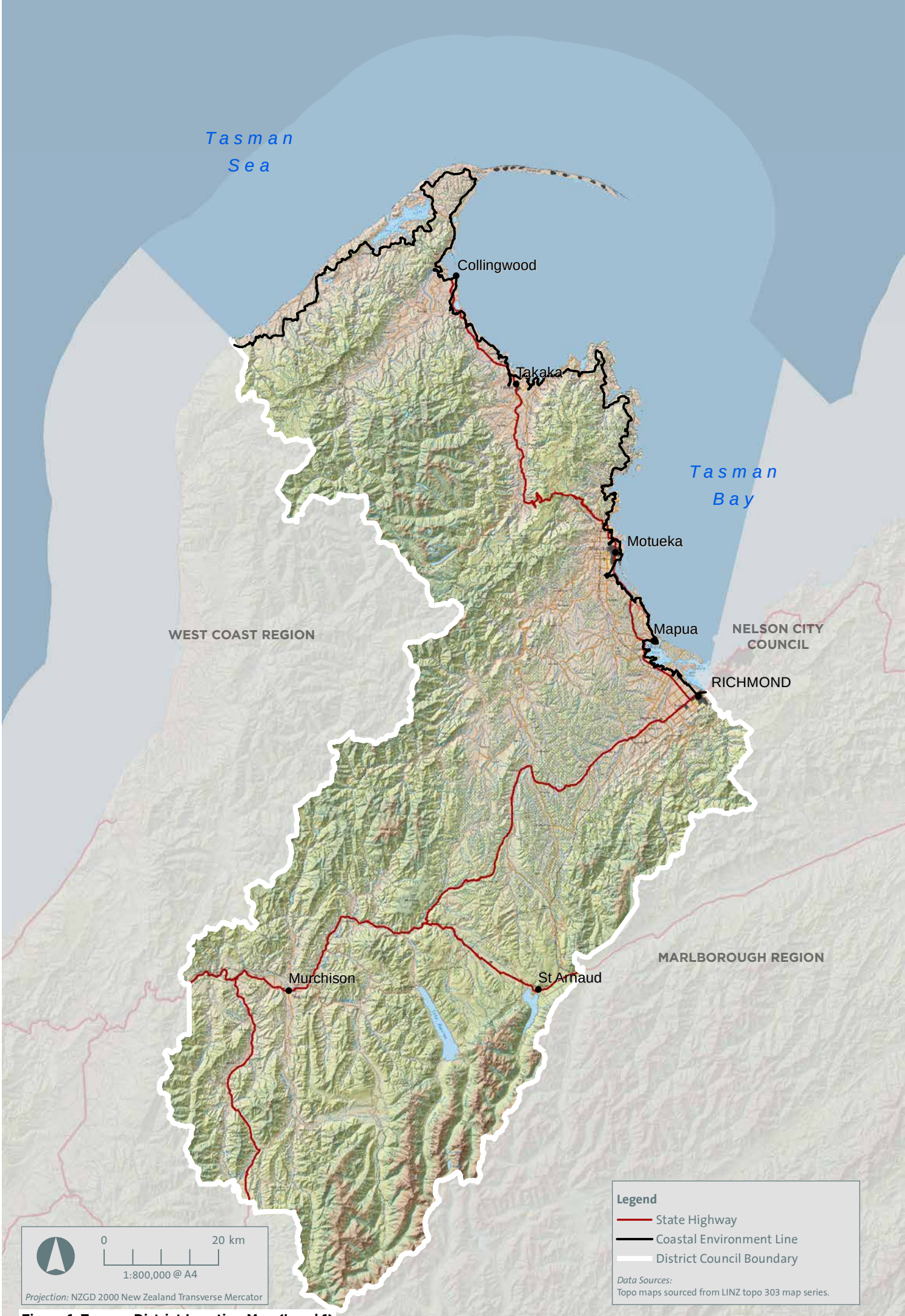


Figure 1: Tasman District Location Map (Level 1)

2.1. Purpose and Background

Boffa Miskell (BML) was engaged by Tasman District Council (TDC) to prepare a region-wide coastal natural character study to provide technical background to support to review of the Tasman Resource Policy Statement and the district and regional coastal sections of the Tasman Regional Management Plan. As part of the review process, these two plans will be combined to form the Aorere Ki uta Aorere Ki tai - Tasman Environment Plan.

The New Zealand Coastal Policy Statement 2010 (NZCPS) requires local authorities to define and map the terrestrial and marine component of Tasman's Regional Coastal Environment, utilising the elements described within Policy 1. The NZCPS 2010, also requires local authorities under Policy 13 to map or otherwise identify (at a minimum) the areas of high natural character within the coastal environment. The NZCPS 2010 Policy 13 also refers to areas of outstanding natural character, necessitating additional evaluation.

Policy 15 of the NZCPS refers to landscapes and the requirement to protect natural features and natural landscapes of the coastal environment. Any landscape consideration will be undertaken separately within the Landscape Study , which has been prepared by Bridget Gilbert Landscape Architecture. This Coastal Study will therefore only encompass the coastal environment and natural character considerations, as they relate to Policies 1 and 13 of the NZCPS.

This report will enable TDC to utilise the results in their review of the Regional Coastal Plan. A fundamental output of this Study will be to identify those characteristics and qualities of areas of Outstanding Natural Character (ONC) within the coastal environment, to enable those areas to be protected from adverse effects. Furthermore, it will be important that the evaluation of natural character of the other parts of the coastal environment (i.e. the non ONC areas) is intended to assist plan users in understanding the aspects of natural character that are likely to require protection from significant adverse effects.

2.2. Study Scope

Using a methodology applied in other natural character assessments of the coastal environment, the BML study team refined the approach of the assessment to ensure consistency in the way ecological and marine expertise is harnessed for this study, which effectively:

- Determines the inland extend of the coastal environment, as set out in Policy 1 of the NZCPS and;
- identifies areas of at least high natural character in the coastal environment, as set out in Policy 13 of the NZCPS 2010.
- Identifies areas of outstanding natural character in the coastal environment.

2.3. Study Process

The coastal study has been undertaken as an independent technical assessment by landscape architects at BML and been subject to input by a range of specialist experts, including marine and terrestrial ecologists from BML, the Department of Conservation (DOC) and TDC. Following engagement, input has also been incorporated from specific groups, such as the Waimea Inlet Forum working group.

The identification of the coastal environment and natural character methodology used for this study has been adapted from several recently completed natural character studies, including *Natural Character of the Marlborough Coast (2014); Nelson Coastal Study (2015)* and *Natural Character Study of the Waikato Region (2015)*.

This Study essentially is focussed on a five step-process (as outlined below).

The methodology will be framed around these five key steps, commencing with the first step which is establishing the extent of the coastal environment, and ultimately determining the extent of the Study. Particular note will be applied to the inland extent of the coastal environment. The second step will examine the definition of natural character and how this term is proposed to be used. The third step will outline the different spatial scales of the Study, commenting that natural character can occur at a variety of scales and that the scale of reference for each 'level' will be critical in determining different levels of natural character. The fourth step will essentially be an evaluation exercise, where each 'level' is appraised and evaluated on a seven-point scale. This fourth step will essentially be most pertinent around the 'Level 4' identification, which represents the finest grain of analysis. The final fifth step will be an assessment of whether any of the most detailed mapped 'High's and Very High's' (for both terrestrial and marine areas) would equate to Outstanding Natural Character. Outstanding Natural Character also encompasses as a whole the connection between terrestrial and marine environments.

While this format provides the basic structure of the investigation in a linear progression, the actual process can be iterative, and non-linear, especially where field investigations/ public engagement or further research/ information may change an area of a terrestrial coastal area which in turn may affect the extent of the coastal environment.

TDC, as part of the setup of this project, provided BML with a host of background material, including material prepared by Vicky Froude. DOC also provided BML with a wealth of information, which has been used predominantly for the abiotic and biotic sections of the report.

Further, acknowledging that both Marlborough District Council and Nelson City Council have already undertaken Coastal Natural Character Studies under the NZCPS, this study recognises the methodologies used for those studies and the outputs produced, and will align, where appropriate, its methodologies to ensure a comprehensive 'Top of the South' application to coastal natural character assessment.

Since the NZCPS 2010 was enacted, numerous councils throughout the country have undertaken Coastal Natural Character Studies. Furthermore, numerous coastal development-related projects have also been subject to court decisions over the past decade. Over this time, the methodology for identifying the inland extent of the coastal environment and natural character assessments have been tested and refined. Further commentary around both determining the inland extent of the coastal environment and natural character methods are explained in the following sections of this study.

Refinement of the methodology has occurred through a peer review process undertaken by Bridget Gilbert (BGLA). Further, a workshop was held via videoconferencing[3] on 7 April 2020 and attended by terrestrial and marine scientists from BML, the Department of Conservation and TDC as well as landscape architects from BML and BGLA and representatives from TDC. In total, over twenty people attended the day-long workshop. During the videoconferencing workshop, the extent of the coastal environment was discussed and refined as well as the methodology for the natural character assessment. The extent of Coastal Terrestrial and Coastal Marine Areas was also debated, as well as areas supporting specific characteristics and values.

The workshop enabled a comprehensive approach to assessing natural character. Characteristics and values that are representative of a specific area were discussed and their level of modification often debated. Following the workshop, further refinement work confirmed that the extent of the 14 broad Coastal Terrestrial and Marine Areas as mapped are accurate and appropriate. Following this, more refined mapping occurred at the Level 4 scale[4]. These areas were identified and delineated on a series of maps and their condition and values tabulated. Identification of areas containing Outstanding Natural Character (ONC) were then considered.

The extent of the coastal environment and areas of high, very high, and outstanding natural character, along with the schedules were also reviewed following an extensive engagement process which occurred during mid-2021 to mid-2022.

3. A workshop at TDC offices had originally been proposed, although unfortunately the country went into lockdown at 23:59 on 25 March 2020 due to the Covid-19 crisis and video-conferencing was the preferred method to ensure that the project progressed in a timely way.

4. The scaling for the Coastal Natural Character Study is explained in Section 2 of this report

Right: View of the Whanganui Inlet opening out into the Tasman Sea. Boffa Miskell, 2019.

3. STUDY APPROACH

3.1. Coastal Environment

The first step in the Study is to define the extent of the coastal environment, or 'Study Area'.

Step One Coastal Environment Extent	Step Two Natural Character Definition	Step Three Spatial Scale Defined	Step Four Evaluation	Step Five ONC Identification

3.1.1. Defining the coastal environment

The Resource Management Act 1991 (RMA) does not define 'coastal environment', nor does the New Zealand Coastal Policy Statement (NZCPS) 2010. However, the extent of the coastal environment needs to be considered in order to respond to Policy 1 of the NZCPS 2010. This policy recognises that the extent and characteristics of the coastal environment will vary from location to location and needs to be specifically assessed for each area.

Policy 1 of the NZCPS also recognises that the coastal environment may include the following nine characteristics set out in Policy 1(2):

a. The coastal marine area;
b. Islands within the coastal marine area;
c. Areas where coastal processes, influences or qualities are significant, including coastal lakes, lagoons, tidal estuaries, saltmarshes, coastal wetlands, and the margins of these;
d. Areas at risk from coastal hazards;
e. Coastal vegetation and the habitat of indigenous coastal species including migratory birds;
f. Elements and features that contribute to the natural character, landscape, visual qualities or amenity values;
g. Items of cultural and historic heritage in the coastal marine area or on the coast;
h. Inter-related coastal marine and terrestrial systems, including the intertidal zone; and
i. Physical resources and built facilities, including infrastructure, that have modified the coastal environment.

The above list of characteristics has assisted in defining what is included within the coastal environment. DOC has also provided guidance material on implementing Policy 1[5] which is widely utilised when undertaking these assessments.

Through the development of a methodology to determine the extent of the coastal environment, BML were guided by all of the identified characteristics above, although particular consideration was given to item (c) of Policy 1(2) of the NZCPS 2010 *'where coastal processes, influences or qualities are significant'*. References to the word 'significant' lie within a number of court decisions, including *[2008] Decision No. W30 Kaupokonui Beach Society Inc. and ors v South Taranaki District Council,* where reference was made to the *Northland Regional Planning Authority v Whangarei County Council* which stated: *'We therefore hold that the term "coastal environment" is an environment in which the coast is a significant part or element, but clearly it is 'impossible to get an abstract definition which is capable of simple and ready application to any given situation. What constitutes the coastal environment will vary from place to place and according to the position from which a place is viewed'*[6].

This, along with all other characteristics of the coastal environment outlined within Policy 1 were also addressed in the methodology.

The term 'significant' is not defined in the NZCPS 2010. Within the context of the RMA the word is used to address Section 6(c) matters[7]. In the context of Policy 1(2)(c) of the NZCPS 2010, the study team have interpreted the term 'significant' to mean 'sufficiently great or important to be worthy of attention; noteworthy', as outlined within the Oxford English Dictionary.

5. http://www.doc.govt.New Zealand/Documents/conservation/marine-and-coastal/coastalmanagement/guidance/policy-1.pdf

6. This was also cited within [2009] Decision C 15/09 Friends of Pelorus Estuary Incorporated v Marlborough District Council, paragraph 30.

7. It is not defined in the RMA but there is a lot of caselaw around what it means.

3.1.2. Mapping the coastal environment

The seaward extent of the coastal environment extends 12 nautical miles from MHWS (and the regional council boundary). The landward extent requires greater consideration, as this extent defines the landward 'boundary' of the coastal environment and the relevance of the NZCPS. Due to the complexity of the Tasman coastal area, specific consideration will need to be applied to more complex areas, such as the Abel Tasman area as well as around river mouths, inlets, coastal flats and dunes and the urban, more modified areas around Richmond and Motueka.

As a result, a number of methods have been applied in determining the inland extent of the coastal environment. To assist in determining this extent, a number of basic principles were used, where coastal processes, influences or qualities are significant. These principles include:

Ridgeline Principle

A general rule of thumb[8] is that the inland extent extends to the first [proximate] significant ridgeline inland of the coast. For areas where the 'first ridge' is located 'too far' from the coast, other methods are employed, such as local indentations, minor spurs and gullies. This is often trickier when indigenous bush extends over much of the landscape (such as Abel Tasman) and delineating the extent of the coastal environment results in more nuanced mapping. In some areas that are built up and the ridgeline is less distinctive, an approximate line is delineated near the top of the ridge (or hill) and a combination of other principles are used.

Land Typing Principle

This includes areas of land types (re: dunes and back dunes, coastal estuaries and coastal wetlands) where coastal processes have significantly shaped and formed the landscape. In these areas, places such as the Kaihoka dune lakes have been included. The extent of the area can be obvious, (for instance it follows the back of dunelands, or an inland coastal escarpment) or where it is more ill-defined, vegetation patterns will assist in defining this.

Coastal Hazard Principle

This can include areas where relatively frequent coastal inundation occurs and where freshwater conditions within a watercourse become more mixed by coastal waters. Where areas of obvious modification are apparent, a judgement was made over to what extent natural elements, patterns and process are still significant, which often result in a very slender coastal environment. Where this approach is utilised, it is important to delineate the extent along boundaries on the ground (such as paddock boundaries, vegetation changes etc) to enable a clear understanding of where the coastal environment stops/ starts.

Vegetation and Land Use Principle

Particularly for flatter areas, such the Waimea plains and the intensively developed coastal lands around Motueka, the boundaries are determined more by land use and where coastal elements, patterns and processes are still sufficiently significant to be dominant. This also includes inter-related coastal marine and coastal terrestrial areas, where continuity of elements, patterns and processes are strong. As with the coastal hazard approach it is important to delineate the extent along boundaries on the ground (such as paddock boundaries, roads, vegetation changes etc) to enable a clear understanding of where the coastal environment stops/ starts.

Cultural and Historic Heritage Principle

Such aspects are to include cultural and historic heritage in the CMA or on the coast. Information is currently being gathered through engagement with iwi and may further influence the inland extent of the coastal environment. It is envisaged that these items will have a specific focus relating to the coastal environment and include areas of settlement, mahinga kai, whaling stations, lighthouses etc. where coastal processes, influences or qualities remain significant.

The following diagrams highlight the different broad coastal landscape typologies of the Tasman coastal environment and indicate where specific principles were predominantly used. Within each Coastal Terrestrial Area, a discussion is outlined, which explains how the extent of the coastal environment was delineated, which, in some areas, may use a multiple of approaches. Of course, context is extremely important in each case and professional judgement is applied throughout:

8. [2008] NZEnvC 78 Long Bay-Okura Great Park Society Incorporated vs North Shore City Council (paragraph 134) and [2011] NZEnvC 384 Mainpower NZ Ltd v Hurunui District Council (paragraph 320).

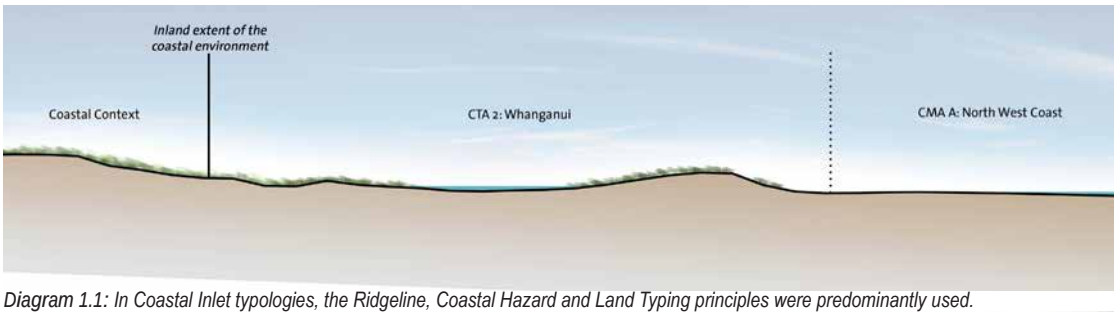


Diagram 1.1: In Coastal Inlet typologies, the Ridgeline, Coastal Hazard and Land Typing principles were predominantly used.

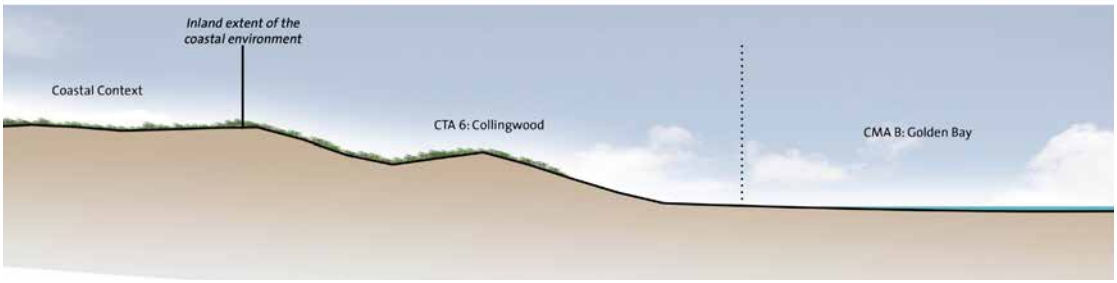


Diagram 1.2: In Coastal Plains and Mountains typologies, the Ridgeline, Coastal Hazard and Land Typing principles were predominantly used.

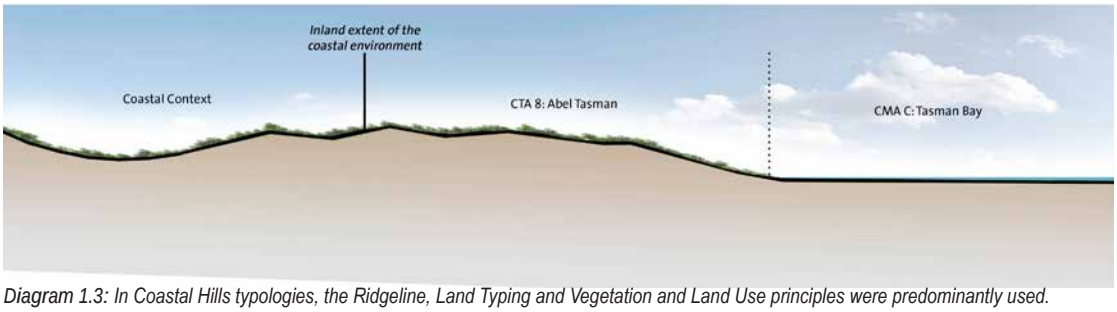


Diagram 1.3: In Coastal Hills typologies, the Ridgeline, Land Typing and Vegetation and Land Use principles were predominantly used.

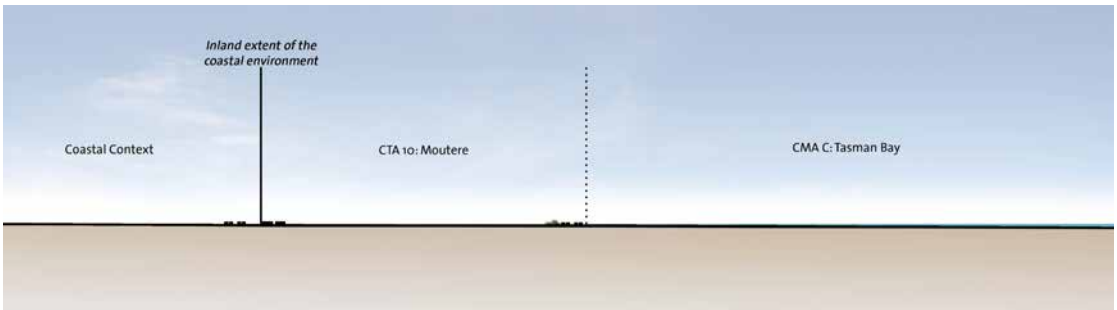


Diagram 1.4: In Coastal Plains typologies, the Coastal Hazard and Vegetation and Land Use principles were predominantly used.

Fundamental to this assessment of the inland extent of the coastal environment is the relevant and accessible data available to inform judgements[9]. The use of professional knowledge of the study team in relation to the elements outlined within Policy 1 of the NZCPS 2010 was also an essential source of information.

In a practical sense, the delineation of the inland extent of the coastal environment needs to tempered by practical considerations. This is mentioned in [2020] NZEnvC 001 EDS v Thames Coromandel District Council '*...it is important that the mapping exercise not become an end in itself. The purpose of identifying the coastal environment must drive any mapping methodology, not the other way around. This is because such mapping is an inherently reductive exercise, setting an apparently clear boundary when in the real world it is impossible to get an abstract definition which is capable of simple and ready application to any given situation*'[10]. (paragraph 55)

The scale of determining the inland extent of the coastal environment for this Study was undertaken at 1:25,000.

9. [2008] W30 Kaupokonui Beach Society Inc. and ors v South Taranaki District Council, paragraph 48: "The assessment as to the extent of the coastal environment in this particular area is a matter of pulling together a whole series of strands

10. Northland Regional Planning Authority v Whangarei County Council (1977) TCPAB A4828, quoted in Kaupokonui Beach Society Inc v South Taranaki District Council Decision W 030/2008 at [36].

3.1.3. Zones of Significance

Identifying Zones of Significance has been found to be a helpful tool in determining the extent of the Coastal Environment and in evaluating the natural character of the coastal environment. BML have developed the following model which has been applied to Tasman's Regional Coastal Environment.

The coastal environment has been divided into two areas to aid description (Zone A and Zone B). These two areas, divided by the mean high-water spring (MHWS) mark, are labelled Coastal Terrestrial Areas (CTAs) and Coastal Marine Areas (CMAs). Landward of the coastal environment is a zone labelled the Coastal Context zone. A description of each zone is summarised in Table 1 below:

Table 1: Zones of Coastal Significance

Coastal Landscape	Coastal Environment	Zone A Coastal Marine Area	This zone includes the Coastal Marine Area (CMA). Within the statutory context the Coastal Marine Area means the foreshore, seabed and coastal water and the air above the water to twelve nautical miles (or the territorial sea boundary). Inland, the Coastal Marine Area extends to the mean high-water spring (MHWS). The Coastal Marine Area includes the rock, beach, coastal lagoons and lakes below MHWS. The Coastal Marine Area extends approximately 1 km upstream of a river or a point that is calculated by multiplying the width of the river mouth by five [RMA definition].
		Zone B Coastal Terrestrial Area	The Coastal Significance Zone includes the Active Coastal Interface (land above MHWS) and generally includes land up to the summit of the first coastal ridge/ crest or escarpment (with the width of this zone varying depending on the topographic environment). The Active Coastal Interface is generally a slender component of the Coastal Significance Zone where the sea is the dominant element and the primary or significant influence on landform, vegetation and perception. The Coastal Significance Zone is where coastal processes are significant and may include estuaries, and dune lands. Coastal features are also prominent.
	Coastal Context	Zone C	Coastal Context. This area is where coastal elements, patterns and processes have an influencing presence on the coastal landscape and would include developed dune ridges which no longer exhibit significant coastal processes plus coastal plains, and hill-slopes. This zone generally extends inland from Zone B to where coastal influences are sufficiently diminished. It is also recognised that some activities occurring within this zone can significantly affect the coastal environment (Zones A and B), either experientially or physically, to varying degrees. The inland extent of Zone C is not identified, as it falls outside of the Coastal Environment.

The Coastal Environment Zones and the Coastal Context Zone can collectively be referred to as The Coastal Landscape.

The diagram (below) Diagram 2, illustrates the extent of the Coastal Environment and the three coastal environment zones within a very typical coastal environment in Tasman. The diagram illustrates that the coastal environment is determined by a variety of factors and changes from one coastal area to another.

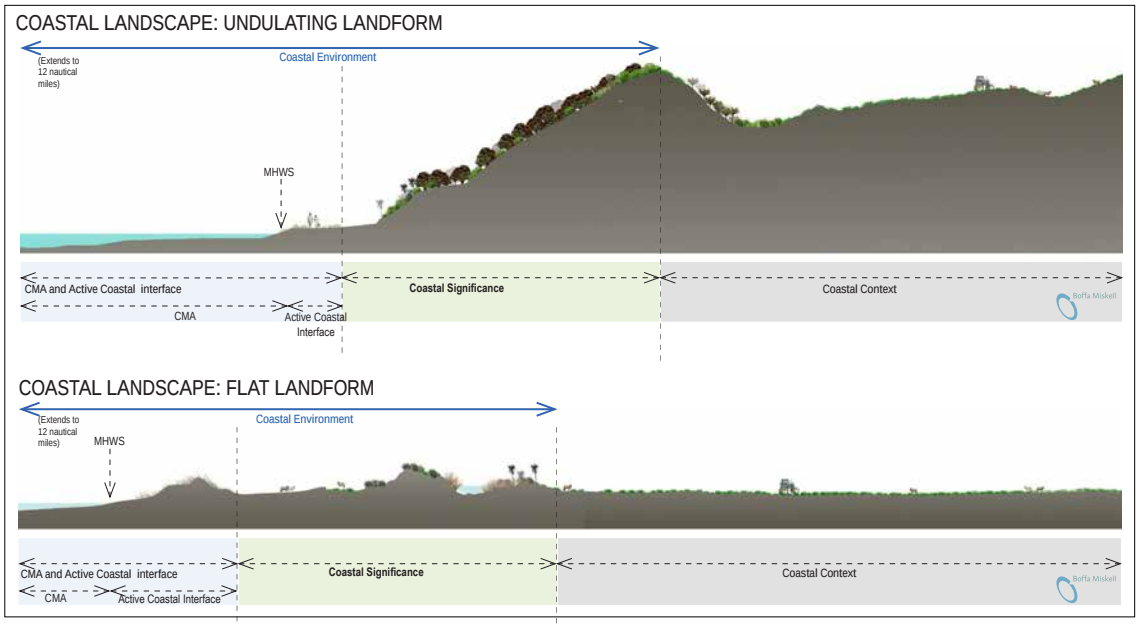


Diagram 2: *Illustration of the extent of the Coastal Environment and the three zones with two very typical coastal environments in Tasman.*

3.2. Coastal Natural Character

The second Step of the Study is to define the term natural character.

Step One Coastal Environment Extent	**Step Two** Natural Character Definition	Step Three Spatial Scale Defined	Step Four Evaluation	Step Five ONC Identification

3.2.1. Definition of Natural Character

Natural character is not defined in the RMA or in the NZCPS 2010. A broadly accepted term considers that the environments with the greatest natural character are those with comparatively low levels of human modification. Areas with high natural character are composed of natural elements appearing in natural patterns formed by natural processes. It is an areas distinct combination of natural characteristics and qualities, including degree of naturalness (Te Tangi a Te Manu).

Within 'Natural Character and the NZCPS 2010' [2012, Department of Conservation, p19] the following definition was endorsed:

Natural character is the term used to describe the natural elements of all coastal environments. The degree or level of natural character within an environment depends on:

1. *the extent to which the natural elements, patterns and processes[11] occur and;*
2. *the nature and extent of modification to the ecosystems and landscape/seascape.*

The degree of natural character is highest where there is least modification.

The effect of different types of modification upon natural character varies with context and may be perceived differently by different parts of the community[12].

Policy 13 (2) of the NZCPS recognises that natural character is not the same as natural features and landscapes or amenity values and identifies that natural character may include (but is not limited to):

a. *natural elements, processes and patterns;*
b. *biophysical, ecological, geological and geomorphological aspects;*
c. *natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;*
d. *the natural movement of water and sediment;*
e. *the natural darkness of the night sky;*
f. *places or areas that are wild or scenic;*
g. *a range of natural character from pristine to modified;*
h. *experiential attributes, including the sounds and smell of the sea; and their context or setting.*

The definition adopted for this study is the Department of Conservation endorsed definition mentioned earlier. Essentially, BML understand that natural character can be conceived of as a measure of the condition and experience of biophysical landscape attributes . Such condition can vary as a result of levels of human modification and takes account of the way such biophysical attributes are experienced e.g. the 'feeling' of being in a wild unmodified environment. By comparison, landscape evaluation considers a broader suite of biophysical, sensory / perception and associative attributes including aesthetic qualities alongside other shared and recognised values.

Despite some overlapping/common attributes, this difference in emphasis means natural character and landscape assessments are very different and can reach very different conclusions. For example, it is conceivable for an area with moderate natural character (e.g. grass covered hillside with some tracks) to be rated as having very high or even outstanding landscape qualities due to the landform, its visual cohesiveness and people's aesthetic and associative values of the area.

The Environment Court in *Clearwater Mussels v Marlborough District Council*[13] noted natural character assessment commences first with a consideration of the biophysical status of the area in question – i.e. the biotic and abiotic attributes – and the degree of naturalness (degree of human modification). The next step is to evaluate how people would experience the area.

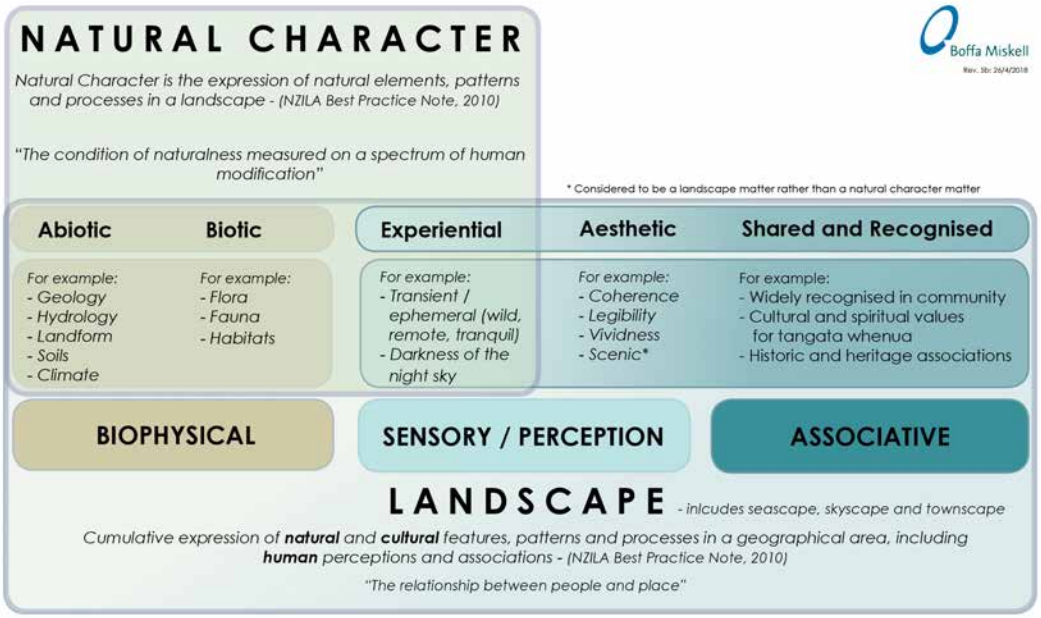
11. For the purposes of interpreting the NZCPS 2010 Policy 13.2, 'elements, patterns and processes' means: biophysical, ecological, geological and geomorphological aspects; natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks; and the natural movement of water and sediment.

12. Department of Conservation Natural Character Workshop Minutes; 2 August 2011(DOCDM-795012)

13. Decision [2018] NZEnvC88 Clearwater Mussels Ltd v Marlborough District Council, paragraph 154

"The determination of the natural character values of an area involves a high degree of evaluative judgment. That is both as to the nature and degree of the natural character values of the environment and how an activity affects those values. Natural character assessment properly commences with consideration of the biophysical status of the area in question. As looks can deceive, this enquiry is an important first step in order to understand the degree of naturalness of (or degree of human modification to) the relevant area. It is both a factual and science-focussed enquiry. 'Character' is a perceived value. Hence, once the degree of naturalness in the receiving environment is accurately gauged, the second step in a natural character assessment is to evaluate how people would sense and experience the naturalness of that environment'

The landscape and natural character relationship is graphically expressed in the following diagram.



3.2.2. Determination of naturalness

The term 'natural' and 'naturalness' has been discussed in numerous Environment Court decisions[14], including the Okura decision[15], which stated the following regarding the term 'natural':

"[The landscape witness's] evidence contained a helpful discussion of the concept of natural character and the distinction between natural character, natural features and landscape and amenity values. She noted that natural character is not defined in RMA nor in NZCPS. She testified "that naturalness exists on a spectrum from pristine to highly modified, and that the level of naturalness found within an area is defined by the level of indigenous nature (i.e. natural science factors) as well as perceived nature (i.e. perceptual and experiential components) – and that neither should be given undue weight over the other."

Recognising a lack of national guidance, BML, with the assistance of ecologists and landscape architects determined that ecologists' and landscape architects' views of 'natural' and 'naturalness' are complementary yet sufficiently different to warrant further clarification. Ecologists interpret natural character in terms of indigenous attributes and Landscape Architects take a broader view that can encompass both indigenous (and biophysical) and exotic natural attributes and perceptions (or the experience of) naturalness . The amount of disturbance or structures present (or experienced) affects the level of modification apparent when determining the level of 'experiential naturalness'.

Accordingly, the focus of naturalness differs and a refined definition of 'naturalness' was agreed as being:
"A measure of the degree of human modification of a landscape/ seascape or ecosystem expressed in terms of:
i. ecological naturalness (indigenous nature); and
ii. landscape naturalness (perceptions of nature)[16]."

14. Including [2019] NZHC 961 Clearwater Mussels Limited v Marlborough District Council; [20190 NZEnvC 110 Western Bay of Plenty District Council v Bay of Plenty Regional Council (Matakana Island Second Decision) and [2013] Final Decision of the Board of Inquiry into the King Salmon Requests for Plan Changes and Applications for Resource Consents.

15. [2018] NZEnvC 78 Zhi Li, Jing Nui and Weili Yang and ors v Royal Forest and Bird Protection Society Inc (paragraph 578

16. This description was endorsed within Clearwater Mussels V Marlborough District Council, Decision [2018] NZEnvC88, paragraph 125 and 126

This also can be interpreted that naturalness is the degree to which a landscape/seascape or ecosystem is not modified by human activities, expressed in the same two terms above. So, whilst natural science factors (or the biophysical attributes of landscape) are important in underpinning the term, they should not be given undue weight at the expense of experiential and associative (i.e. recreational) factors.

A seven-point rating scale from very high to very low was also provisionally adopted by the court for rating naturalness as shown in Diagram 3 below.

VERY HIGH	HIGH	MODERATE - HIGH	MODERATE	LOW - MODERATE	LOW	VERY LOW

Diagram 3 : Naturalness rating scale.

This construct was also reiterated within the Port Gore mussel farm decision[17]. Here the court considered that naturalness "is an anthropomorphic concept". The Court noted that "a scale of naturalness of habitats is not the same as a scale of naturalness of landscapes or natural character of the coastal environment".
For the purposes of this report, the term 'natural' is interpreted slightly differently for use in the terms 'natural' character and 'natural' landscapes. Natural as in 'natural character' is inferring a bias towards the natural science attributes with some experiential aspects, whilst natural as in 'natural landscapes' is referring more to the full spectrum of landscape that includes biophysical, sensory and associative attributes (i.e. it looks and/or feels natural), rather than its ecological and biophysical intactness.

3.2.3. Froude methodology

As part of the background research for this study, previous natural character work was reviewed. Specifically, this included work produced by Vicky Froude, from Ecologic in 2014[18].

The methodology employed within this assessment, used a quantitative approach, focussing almost entirely on biophysical aspects. Reviews of this method were undertaken[19] and conclusions reached that this approach does not appropriately address the construct of natural character in its entirety, and especially how this is understood within the RMA. This was also supported by the courts, where it stated: 'These aspects indicate that natural character is not an aspect that can be measured quantitatively, as an object. It must be assessed in terms of qualities, as well as elements, processes and patterns. In the case of natural character we are not addressing a scientific assessment, as we might in terms of land stability or ecological significance'[20].

As a consequence, a review of the methodology and application of the Froude has been undertaken with this study.

3.2.4. Study Scale

An important third stage of the Study is to acknowledge the different spatial scales of the Study.

Step One Coastal Environment Extent	Step Two Natural Character Definition	Step Three Spatial Scale Defined	Step Four Evaluation	Step Five ONC Identification

Within New Zealand, Natural Character assessments have been undertaken at a variety of different scales that steadily decrease from the broad regional scale to the detailed local scale. Natural character assessment is necessarily context and scale related. That is, different levels of natural character can be recognised in the coastal environment, depending on the level of detail gathered and the scale at which natural character is assessed and mapped. Typically for very large-scale assessments a relatively coarse grain analysis is applied, with the grain of assessment generally increasing as the extent of the study area decreases.

As the simplified diagram in Diagram 3 illustrates, natural character scales for Tasman can be considered at both a broad and more detailed scale. Due to the large scale of the coastal environment for Tasman, four scales or areas have been considered for this assessment. At the broadest scale is the entire region of Tasman (i.e. Level 1). At

17. Decision [2012] NZEnvC 72. 26th April 2012 (paragraphs 66 – 67)

18. Froude (2014): Tasman District Council Envrionment Inland Boundary and Natural Character Mapping: Methodology and Summary Results

19. One review dated 11 June 2014 (by letter) prepared by James Bentley, Boffa Miskell and addressed to Shelagh Noble at Tasman District Council, which concluded 'This study has a highly biophysically focus with limited experiential

20. Decision [2009] A18/09 Bayswater Marina Holdings Limited v North Shore City Council

this scale, climate, sea currents, geomorphological and land uses can have broad natural character inferences. At the next broad level, (Level 2), the region can be divided into three broad areas, Northern Coast, Golden Bay and Tasman Bay. This division recognises that the western part of the region is different in many respects to those areas in the east. This is predominantly influenced by landform and biotic modification and mapped at scales of 1:50,000.

At a more detailed scale, Levels 3-4 are considered. The Level 3 scale includes 10 Coastal Terrestrial Areas (CTAs) and four Coastal Marine Areas (CMAs). Essentially these areas have been mapped where collective characteristics are broadly homogeneous and overall level of natural character rating are similar. Mapping techniques have included use of generic broad land typologies (such as the Land Resource Inventory and NZ Land Cover Database) and prominent landscape features, such as estuarine environments, notable promontories and for marine environments, collective broad abiotic and biotic characteristics, such as currents at a scale of 1:25:000.

At the most refined scale, is Level 4 (mapped at 1:10,000). Only at this more detailed stage is Outstanding Natural Character (ONC) considered. Level 4 scale is illustrated as bullet points in the tables and more refined mapping within the Level 3 CTAs and CMAs.

The hierarchical approach depicted by Diagram 4 has been useful in further identifying specific features or stretches of coastline with higher levels of natural character compared to the remaining parts of the Coastal Environment

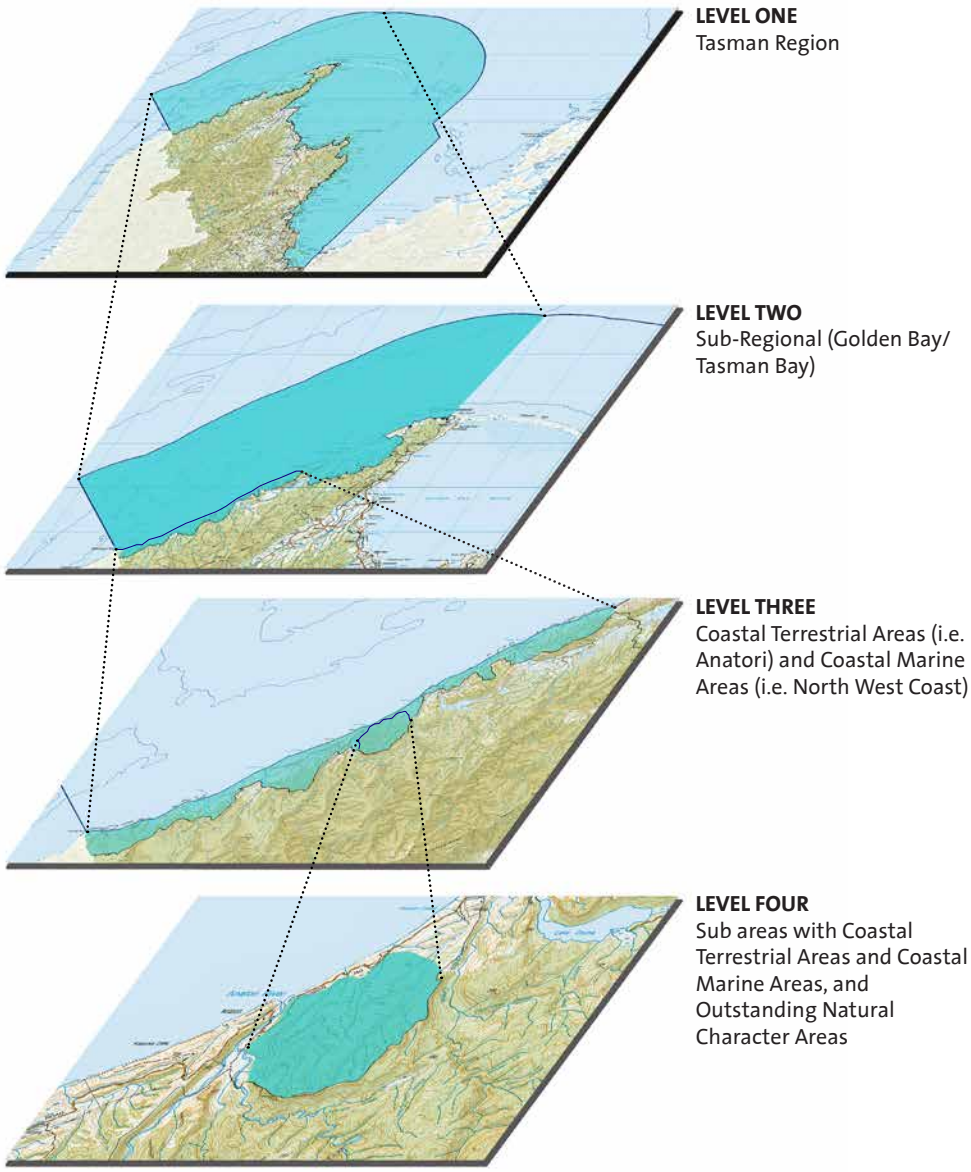


Diagram 4: Scaling diagram of levels of natural character as it applies to the Tasman Region.

3.2.5. Evaluation of Natural Character

Following the understanding of the different spatial scales of the Study, the fourth step of the Study is to undertake an evaluation of the natural character of each level.

Step One Coastal Environment Extent	Step Two Natural Character Definition	Step Three Spatial Scale Defined	**Step Four** **Evaluation**	Step Five ONC Identification

The assessment approach is based upon best practice use of key terminology, as well as the development of an evaluation matrix and calibration for identifying at least 'high' natural character (as required by Policy 13 (1)(a) and (c) of the NZCPS 2010).

Specifically, the following main points are adopted for this study:

- the methodology can be adapted to suit different types and scales of coastal landscapes;
- an understanding of natural character input from marine, freshwater and terrestrial ecologists and other natural scientists, as well as the input of landscape architects and planners;
- that natural character can be assessed on a continuum of modification that describes the expression of natural elements, patterns and processes (or the 'naturalness') in a coastal landscape/ ecosystem where the degree of 'naturalness' depends on:
    - The distinctive characteristics and qualities of an area.
    - The extent to which natural elements, patterns and processes occur and are legible;
    - The nature and extent of human modifications to the landscape and seascape including ecosystems;
    - The fact that the highest degree of natural character (greatest naturalness) occurs where there is least modification and uncluttered by obvious or disruptive human influence; and
    - Recognition that the degree of natural character is context and scale dependent and can change over time.

In accordance with the requirement outlined within Policy 13 of the NZCPS 2010, mapping and identification of at least areas of high natural character has been undertaken. Following this, a separate exercise has considered whether any areas of high or very high natural character qualify as Outstanding Natural Character and where appropriate, these have also been mapped.

Based on similar natural character assessments undertaken throughout the country, an understanding of natural character has been initially identified within separate Coastal Terrestrial Areas and Coastal Marine Areas. The extent of each Coastal Terrestrial Area and Coastal Marine Area have been primarily determined based on differences in broad biotic and abiotic condition as appropriate for the study scale and it also takes account of previous assessments of natural character including those in adjacent areas, such as Nelson and Marlborough.

Study members captured the necessary terrestrial and marine data which has helped inform the assessment of terrestrial and marine natural character ratings. Aspects for assessing Coastal Marine Areas include continuity of natural biotic patterns parallel to the shore and offshore , the extent of intertidal and subtidal zones, and influences of exotic species and water quality. For Coastal Terrestrial Areas, aspects include landform composition, freshwater catchments, dunes, backdunes, river mouths, estuarine margins and coastal wetlands and lakes and landcover.

When assessing the natural character of the coastal environment, several key attributes need to be considered. The list of attributes that natural character may include (NZCPS 2010 Policy 13 (2)) have been grouped broadly into the categories of **abiotic** (non-living: geology, climate etc.), **biotic** (living: ecology etc.) and **experiential** (human based perceptions) attributes to provide a systematic way to consider the different aspects of the natural patterns, processes and elements of the coastal environment and the degree of modification present.

The attributes are described for each Coastal Marine and Coastal Terrestrial Area identified in **Tables 2 and 3** (below) and were assessed for their degree of natural character by way of the evaluation matrix **Tables 4 and 5**.

The list of attributes has been developed to avoid double-counting and to ensure that the indicators for each attribute are mutually exclusive. They expand on the coastal environment diagrams in **Tables 2 and 3**. Experiential attributes for each have a small degree of overlap between marine and terrestrial, however, the descriptive approach allows for those overlaps to be clearly articulated.

The division of attributes between the Coastal Terrestrial Areas and Coastal Marine Areas is used as a way of

organising the data, where activities within the water can be quite different from what is occurring on the land. Notwithstanding this, the relationship between terrestrial and marine systems has also been taken into account. The interplay between Coastal Terrestrial Areas and Coastal Marine Areas is strong and they can each individually influence the degree of natural character of one another, for example, development on land around the Moutere Inlet can affect the natural character of the adjoining Moutere River and Moutere Inlet coastal area, particularly where the presence of retaining walls, a marina and wharves extend from the terrestrial area into the marine area. Experiential aspects are often interwoven between the two areas.

For this Study, each attribute is described specific to the particular area (rather than using standard descriptions) so that variations in the attributes between different areas are recorded and taken into account when assessing the degree of natural character. An overall value judgement as to the degree of natural character is then made for each coastal terrestrial area and each coastal marine area. Evaluation will only be undertaken at Level 3 and 4 scales.

In evaluating the degree of natural character, BML landscape architects James Bentley and Hannah Wilson, with relevant input from specialist ecological consultants from Boffa Miskell, Tasman District Council and the Department of Conservation, have described the abiotic, biotic and experiential characteristics.

Experiential characteristics and values used to inform the evaluations in this report have been determined by the study team and where necessary, amplified through the engagement process.

It is important to recognise that for an area to rate 'high' or 'very high' for experiential aspects of natural character, their intactness of biotic or abiotic factors needs to be high with no or little human modification.
This means that, for example, a popular beach near a populated area, is likely to rate lower in terms of the experiential attributes of natural character due to the lack of wildness and naturalness and high level of modification, despite the extensive range of available recreation opportunities in the area. The shared and recognised aspects of available recreation infrastructure and activities are generally factored into landscape assessments as a positive contributor, but this is considered a detractor in terms of an assessment of natural character.

When identifying natural character of marine and terrestrial vegetation and habitats, the Study Team have taken account of assemblages of species that are representative of the natural successional stage the area/habitat is in. This aspect of the assessment acknowledges that natural character must be considered in the context of what exists today rather than a comparison with a past condition that can no longer occur.

Not all human intervention within an environment has the effect of reducing natural character. On the northern side of Parapara Inlet at Milnthorpe Park an Incorporated Society has undertaken a forest regeneration project, managed under an agreement with the Department of Conservation. A variety of hardy but non-native trees, including Eucalyptus and acacia species, have been planted on very poor soils. The project's objective is to restore the area's natural forest cover faster than would be possible using only indigenous species. The project began in 1974 and now much of the area is covered in tall exotic trees and has an understorey with a range of indigenous plant species.

It has only been possible to capture terrestrial and marine data where that data exists and is easily accessible. Accordingly, the mapped areas illustrate existing knowledge at this point in the study process. This study has used the unpublished Nearshore Marine Classification and Inventory report[21] to assist in the descriptive and evaluative components within the marine environment.

The following tables highlight the specific descriptors for the Coastal Marine Area and Coastal Terrestrial Area:

21. Walls, K. 2006. Nearshore marine classification and inventory – a planning tool to help identify marine protected areas for the nearshore of New Zealand. Department of Conservation, Wellington. 342p.

Table 2: Coastal Marine Area - Zone A

Attributes	Descriptors	Spectrum of Naturalness
Marine Abiotic Systems	**Geomorphology or seascape -** the shape, slope, relative composition and texture of the seafloor. **Water depth -** the depth of the water column. This strongly influences the amount of light reaching the seafloor, the influence of waves on the seafloor, and the strength of currents. **Physical substrates on the seafloor -** the texture and composition of sea floor sediments (gravel, sand, mud) and the presence of exposed rocky reefs strongly affect biotic characteristics. **Currents -** the direction and magnitude of water flows caused by the influence of lunar tides, surface winds and waves, and in some places by river outflows (e.g., Moutere River or Ruataniwha River). **Wind and waves -** the Tasman coastal area varies greatly in exposure to winds and waves. **Water quality -** including temperature, salinity, suspended sediments, and levels of pollutant contamination (e.g., heavy metals, pesticides).	The degree (very high to very low) to which physical modifications (e.g. trawling and dredging, major port structures, port dredging and dumping, reclamation, jetties, sea defences, groynes, aquaculture and land-derived sedimentation) affect abiotic attributes.
Marine Biotic Systems	**The natural distribution,** abundance **diversity** and **continuity of species, communities, habitats and ecological processes** intertidally and sub-tidally including: **Pelagic community -** the microalgal, bacteria, zooplankton and larval fish community in the water column. **Seafloor communities -** the invertebrate fauna, and macroalgae living on or in the seafloor. **Fish -** reef, bottom associated, and pelagic fish. Intertidal communities including **worms, crustaceans, bivalves** and **other molluscs.** **Marine mammals -** fur seals, sea lions, dolphins and whales. **Birds -** shorebird and seabirds	The degree of natural character assessed (very high to very low) including the presence/ absence of species expected to occur currently, changes in abundance, biomass or diversity of taxa, changes in the size or age distribution of populations, the numbers and impact of exotic species present, and the degree of ecosystem functionality remaining. Information may be known (e.g. from surveys) or predicted (from assessing pressures in the marine environment; e.g. impacts from trawling, dredging and sedimentation).
Marine Experiential	The **experience in seeing, feeling** and perceiving the (Zone A) Coastal Marine Area; The degree that human modification of the area has occurred through the **construction of structures,** The numbers of people engaged in **recreational or commercial activities,** The magnitude of **human-made light** on the natural environment, The magnitude of human induced **noise** Natural qualities associated with **smell** **Ephemeral biotic activity** (i.e. seasonality of marine mammals, birds for example); Sense of **wildness and remoteness**	The degree (very high to very low) to which biotic and abiotic factors and their intactness (or conversely their modification) are experienced. Experiential values may be reduced by factors such as structures (e.g. ports, marinas, jetties, moorings, aquaculture), exotic species, and the presence of human activity including recreational pursuits (e.g. diving, swimming, boating, jet skis) and commercial operations (e.g. commercial fishing and tourism vessels and servicing boats). Recognise that different people experience naturalness differently. For example, for some people natural drifts of kelp decomposing on a beach may reduce their experiential value and demand that it is removed so they can 'enjoy' the beach. Others have an opposing view.

**Each coastal marine area is measured on the spectrum of naturalness (degree of human modifications) to each attribute from Very High to Very Low, then an overall judgement is made. The degree of physical (abiotic and biotic) and experiential naturalness is related to the location's context.*

Table 3: Coastal Terrestrial Area - Zone B

Attributes	Descriptors	Spectrum of Naturalness
Terrestrial Abiotic Systems	**Climatic influences** (wind, rain, exposure); **Geomorphology** and identification of different types of landforms (i.e. peninsulas, cliffs, dunes, wetlands); **Terrestrial coastal processes**, including erosion, river mouth processes including sedimentation (within the terrestrial zone); **Freshwater processes.**	The evident intactness of the abiotic systems. The degree (very high to very low) to which physical modifications such as built structures, road cuts, earthworks and reclamation works affect these abiotic attributes.
Terrestrial Biotic Systems	**Climatic influences** (wind, rain, exposure); **Geomorphology** and identification of different types of landforms (i.e. peninsulas, cliffs, dunes, wetlands); **Terrestrial coastal processes**, including erosion, river mouth processes including sedimentation (within the terrestrial zone); **Freshwater processes**.	The degree (very high to very low) to which modifications affect these biotic attributes. Influences include the presence of exotic species on native communities, physical structures such as infrastructure, housing, roading, tracking, reclaimed land, stop banks, as well as commercial forestry, agricultural, horticultural and viticultural land use that reduce the naturalness of the biota; Also included are modifications to freshwater systems, including channelizing watercourses, stop banks, culverts, dams etc. which affect freshwater biota.
Terrestrial Experiential	The **experience in seeing, feeling** and perceiving the (Zone B) Coastal Significance and Active Coastal Interface; The degree that human modification of the area has occurred through the **construction of structures**, the numbers of people engaged in **recreational or commercial activities,** The magnitude of **human-made light** on the natural environment, The magnitude of human induced **noise** Natural qualities associated with **smell** **Ephemeral biotic activity** (i.e. seasonality of flora, nesting birds for example); Sense of **wildness and remoteness**	The degree (very high to very low) to which physical and biotic modifications affect the naturalness experienced. Influences reducing naturalness include the presence of physical structures including ports, reclaimed land, infrastructure, roading, lighting, industrial noises and non-natural aromas; - Presence of exotic species; - Presence of humans, including recreational activities (driving, walking, camping, settlements)

**Each coastal terrestrial area is measured on the spectrum of naturalness (degree of human modifications) to each attribute from Very High to Very Low, then an overall judgement is made. The degree of physical (abiotic and biotic) and experiential naturalness is related to the location's context.*

3.2.6. Evaluation Matrix

An evaluation matrix was developed for the marine and terrestrial areas to provide clarity and consistency for the assessment of the level of natural character for each attribute. Like most other regions around New Zealand, almost all the coastal terrestrial and marine environments in the Tasman Region will have been modified by a very long history of human influence, including land clearance, land use, sedimentation and activities in the sea. Given such modification, no-where could be considered pristine. This natural character assessment, including the matrix, accepts this historical context and is not founded on a pre-human

Table 4: Coastal Marine Areas – Area A Evaluation Matrix

DEGREE OF NATURAL CHARACTER	VERY HIGH	HIGH	MODERATE - HIGH
ABIOTIC (including: Geomorphology or seascape; Water depth; Physical substrates on the seafloor; Currents; Wind and waves; Water quality.)	• Natural elements largely unmodified • Largely intact with few modifications to physical substrates, currents, and water quality • Rare modification / structures • Largely unmodified natural patterns • Dynamic processes largely intact with no or very little presence of human influence	• Natural elements remain generally free of modification • Very small levels of modification to physical substrates, currents, and water quality • Very small levels of modification / isolated structures • Largely unmodified natural patterns • Dynamic processes largely intact and show little evidence of human influence	• Natural elements remain clearly apparent • Small modification to physical substrates, currents, and water quality • Small scale modification / limited structures • Relatively unmodified natural patterns • Dynamic processes generally intact with some interference
BIOTIC (including: Natural distribution, abundance diversity and continuity of, communities and habitats and ecological processes intertidally and subtidally; Pelagic community; Seafloor communities; Fish; Intertidal communities; Marine mammals; Birds	• Exotic biota may occur but virtually no invasive species • All expected species present and their population structure largely unmodified • Very few modifications to natural biotic patterns • All ecosystem functions largely intact • Natural biotic processes show very little or no human influence	• Exotic biota may occur and invasive biota rare • Virtually all expected species present and population structure is generally unmodified • Small modifications to natural biotic patterns • Almost all ecosystem functions intact • Natural processes express some limited human influence	• Exotic biota occur but few invasive species • Virtually all expected species present with some modification to population structure • Natural biotic patterns are common with some modification apparent • Most ecosystem functions intact • Natural processes remain apparent with evidence of human modification
EXPERIENTIAL (including:Construction of structures; people engaged in recreational or commercial activities; Human made light; Human induced noise; qualities of smell; ephemeral biotic activity; Sense of wildness and remoteness)	• Overwhelming natural experience • Wild and remote • No sense of human activity or modification • Strong experience of the sensory aspects of the coastal environment	• High natural experience • Predominantly wild and remote • Limited modification • Clear experience of the sensory aspects of the coastal environment	• Predominantly natural experience • Frequent sense of wildness and remoteness • Minor modification apparent • Opportunities to experience of the sensory aspects of the coastal environment likely

baseline. Rather, evaluations are of current-state conditions relative to the best possible condition which can exist today Thus, a very high rating does not equate to a pre-human or pristine state and, depending on the current state of the rest of the region, may allow for some level of modification to certain attributes. The following tables, (Tables 4 and 5) are a useful tool in establishing indicators for levels of natural character and it is accepted that these represent a point in time and maybe further refined.

MODERATE	MODERATE - LOW	LOW	VERY LOW
• Some modification to natural elements • Physical substrates, currents, and water quality remain apparent • Modification is apparent / structures frequently occur • Some modification to natural patterns • Dynamic processes still apparent but frequently modified	• Natural elements remain present albeit modified • Physical substrates, currents, and water quality modification is common • Modification/ reclamation / structures common • Some natural patterns are present • Dynamic processes markedly modified	• Natural elements markedly modified • Physical substrates, currents, and water quality are highly modified • Large areas of modification / reclamation and/or structures • Some key natural patterns are no longer present • Dynamic processes highly modified	• Natural elements rarely occur • Physical substrates, currents, and water quality modification is extensive • Very extensive modification / large reclamation • Key natural patterns are no longer present • Dynamic processes extremely modified
• Exotic and invasive biota common • Some expected species absent with moderate modification to population structure • Modification to natural biotic patterns is often apparent displaying some human influence • Some ecosystem functions varying outside natural range • Natural processes occur in the context of clear human induced modification	• Exotic and invasive biota common • Many expected species absent with marked modification to population structure • Some natural biotic patterns remain present, albeit frequently modified • Most ecosystem functions are outside natural range • Natural processes are limited within a modified human setting	• Exotic and invasive biota very common • Most expected species absent with remnant population structure highly modified • Most natural biotic patterns have been modified • Limited ecosystem functions within natural range • Natural processes are largely modified and less frequently occur	• Exotic and invasive biota dominate • Expected species and ecosystems virtually absent with only the most hardy or adaptable species occurring • Most natural biotic patterns are no longer present • Little to no ecosystem functions exist within natural range • Natural processes are not immediately evident or present
• Somewhat natural experience • Opportunities to experience wildness and remoteness • Some modification apparent • Opportunities to experience sensory aspects of the coastal environment could well occur	• Human influence common • Limited sense of wildness or remoteness • Predominantly modified environment • Opportunity to experience the sensory aspects of the coastal environment possible but not expected	• Human influence strong • Rare sense of wildness and remoteness • Modified environment clearly apparent • Opportunity to experience the sensory aspects of the coastal environment unlikely	• No sense of naturalness or a natural experience • No sense of wildness or remoteness • Modified environment dominates • Little to no opportunity to experience the sensory aspects of the coastal environment

Table 5: Coastal Terrestrial Areas – Area B Evaluation Matrix

DEGREE OF NATURAL CHARACTER	VERY HIGH	HIGH	MODERATE - HIGH
ABIOTIC (including: Climatic influences; Geomorphology and identification of different landforms; terrestrial coastal processes (e.g. erosion); freshwater processes.)	• Natural elements largely unmodified • Rare modification / structures • Largely unmodified natural patterns • Largely intact with few modifications to landforms • Dynamic processes largely intact with no or very little presence of human influence	• Natural elements remain generally free of modification • Very small levels of modification / isolated structures • Largely unmodified natural patterns • Very small levels of modification to landform • Dynamic processes largely intact and show little evidence of human influence	• Natural elements remain clearly apparent • Small scale modification / limited structures • Relatively unmodified natural patterns • Small modification to landform patterns • Dynamic processes generally intact with some interference
BIOTIC (including: Margins of estuaries, wetlands and terrestrial areas and the intactness of their ecological processes; Colonies of nesting birds; Extent of freshwater communities; land cover; presence of indigenous fauna; marine mammal haulouts; organic sediments/ soils.)	• Exotic biota may occur but virtually no invasive species • All expected species present and their population structure largely unmodified • Largely unmodified and intact natural biotic patterns • Very few modifications to natural patterns and indigenous vegetation • All ecosystem functions largely intact • Natural biotic processes show very little or no human influence	• Exotic biota may occur and invasive biota rare • Virtually all expected species present and population structure is generally unmodified • Small modifications to natural patterns • Generally intact natural biotic patterns containing predominantly indigenous vegetation • Almost all ecosystem functions intact • Natural processes express some limited human influence	• Exotic biota occur but few invasive species • Virtually all expected species present with somemodification to population structure • Natural biotic patterns are common with some modification apparent • Indigenous patterns partially removed, with introduced vegetation in harmony with the landform • Most ecosystem functions intact • Natural processes remain apparent with evidence of human modification
EXPERIENTIAL (including: Construction of structures; people engaged in recreational or commercial activities; Human made light; Human induced noise; qualities of smell; ephemeral biotic activity; Sense of wildness and remoteness)	• Overwhelming natural experience • Wild and remote • No sense of human activity or modification • Strong experience of the sensory aspects of the coastal environment	• High natural experience • Predominantly wild and remote • Limited modification • Clear experience of the sensory aspects of the coastal environment	• Predominantly natural experience • Frequent sense of wildness and remoteness • Minor modification apparent • Opportunities to experience of the sensory aspects of the coastal environment likely

MODERATE	MODERATE - LOW	LOW	VERY LOW
• Some modification to natural elements • Modification is apparent / structures frequently occur • Some modification to natural patterns • Natural landform remain apparent with several earthworks / built influences • Dynamic processes still apparent but frequently modified	• Natural elements remain present albeit modified • Landform modification is common / several structures • Some natural patterns are present • Frequent earthworks linear/built influences • Some natural processes capable of recovery • Few natural processes remain apparent	• Largely modified natural elements • Large areas of modification / reclamation and/or structures • Largely modified natural patterns • Earthworks and built influences are common • Some key natural processes are no longer able to operate • Natural processes are largely modified	• Natural elements rarely occur • Very extensive modification / reclamation • Earthworks or reclamation dominant • Highly engineered forms • Few or no natural processes remain • Natural processes are not immediately evident or present
• Exotic and invasive biota common • Some expected species absent with moderate modification to population structure • Modification to natural biotic patterns is often apparent • Indigenous vegetation may occur within exotic vegetation displaying some human influence • Some ecosystem functions varying outside natural range • Natural processes occur in the context of clear human induced modification	• Exotic and invasive biota common • Many expected species absent with marked modification to population structure • Some natural patterns remain present, albeit frequently modified • Exotic vegetation common with frequent linear or artificial patterns • Most ecosystem functions are outside natural range • Natural processes are limited within a modified human setting	• Exotic and invasive biota very common • Most expected species absent with remnant population structure highly modified • Largely modified or artificial patterns • Limited vegetation with several linear or artificial patterns and built elements/ structures • Limited ecosystem functions within natural range • Natural processes are largely modified and less frequently occur	• Exotic and invasive biota dominate • Expected species virtually absent • Only the most hardy or adaptable species occur • Original ecosystems rare or absent • Highly modified and artificial patterns dominate • Rectilinear or artificial built patterns dominate • Little to no ecosystem functions exist within natural range • Natural processes are not immediately evident or present
• Somewhat natural experience • Opportunities to experience wildness and remoteness • Some modification apparent • Opportunities to experience sensory aspects of the coastal environment could well occur	• Human influence common • Limited sense of wildness or remoteness • Predominantly modified environment • Opportunity to experience the sensory aspects of the coastal environment possible but not expected	• Human influence strong • Rare sense of wildness and remoteness • Modified environment clearly apparent • Opportunity to experience the sensory aspects of the coastal environment unlikely	• No sense of naturalness or a natural experience • No sense of wildness or remoteness • Modified environment dominates • Little to no opportunity to experience the sensory aspects of the coastal environment

Whilst the Coastal Marine Area (partly identified on Diagram 2, along with the Coastal Terrestrial Area) extends out to the territorial sea boundary (12 nautical mile limit), information on the seabed ecology is generally greatest close to the shore and decreases appreciably with distance. The strong connection between land and sea is also a pivotal feature in terms of defining the natural character of the marine area. As such, a number of mapping techniques were employed for the marine environment, and these are outlined further within Appendix 1 of this Study . Trawling, dredging and fishing data and aquaculture areas were the primary drivers around determining areas of modification. Marine reserves and marine exclusion zones[22] (such as the Separation Point Zone) indicated areas of higher natural character.

When determining the overall natural character evaluation at the 'area' scale (Level 3), the methodology that has been developed utilises the equally weighted three categories of abiotic, biotic and experiential attributes. The equality ascribed to these three attributes, places a weighting on natural science (abiotic and biotic) attributes in the NZCPS 2010 and recognises that natural character is based on a condition that can be described with natural scientific methods. Experiential attributes are important contributing factors to a natural character assessment. However, they are more subjective and can be perceived differently by different people and over different timescales. Therefore, it is appropriate to frame assessments of natural character on natural science methods which may be more enduring and also more transparent.

At both the Level 3 and Level 4 scales, abiotic, biotic and experiential attributes have been evaluated and recorded. Where abiotic and biotic aspects rate as high or very high, this is generally reflected in an overall rating of high or very high. It is also a common observation that where there is a rating of high or very high for an abiotic or biotic factor, the experiential aspect typically rates towards the higher end of the spectrum, reflecting the connectivity between the quality of our experience of natural character and the biophysical condition of the natural environment. There are however, infrequent examples where experiential values rate higher than abiotic and biotic (for example the marine component of Golden Bay near shore estuaries) which is reflective of our 'experience' of an area and not always necessarily reflecting the true condition and quality of the natural environment.

Areas of outstanding natural character are outlined in the following section of this report.Table 6 shows an example of the Level 3 (Coastal Marine Area and Coastal Terrestrial Area) matrix approach used to rank the level of natural character in relation to the natural character attributes.

Table 6: Evaluation of Natural Character Attributes

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH	✓	✓	✓
HIGH			
MODERATE TO HIGH			
MODERATE			
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING		Rating (e.g. Very High)	

At the Level 4 scale, a finer grained analysis is undertaken (1:10,000 scale) to identify parts of the CMA or CTA that may retain areas of High or Very High natural character. The process is identical to the identification of the Level 3 analysis, however these identified 'parts' are individually mapped and tabulated where their characteristics and condition are specifically rated. Based on this, it is possible to have a CTA area with a Level 3 rating of High and many smaller-mapped 'parts' within it, identified at the Level 4 scale reaching a Very High rating.

22. niwa.co.nz/coasts/update/coasts-update-02-september-2010: 'The Ministry of Fisheries closed off 146 square kilometres of Tasman Bay to fishing from commercial trawlers and dredgers in December 1980, making it one of the oldest fishing exclusion zones in New Zealand. Their aim was to preserve beds of bryozoa – small colonial invertebrates that form large branching colonies, also known as 'lace corals'. These are thought to act as fish nurseries, providing habitat structure for juvenile fish – including tarakihi and snapper – and their prey'.

3.3. Outstanding Natural Character

The final step of the Study to assess areas of Outstanding Natural Character.

Step One Coastal Environment Extent	Step Two Natural Character Definition	Step Three Spatial Scale Defined	Step Four Evaluation	Step Five ONC Identification

Following on from the identification of areas of High and Very High Natural Character at the Level 4 scale for each Coastal Terrestrial and Coastal Marine Area, the next and last 'step' in the assessment process is to identify areas of Outstanding Natural Character.

Within this Study, areas of Outstanding Natural Character have been identified through a detailed assessment process (at the most refined mapping scale of Level 4) and mapped on Figures 33 – 37 of this study. Policy 13 of the NZCPS 2010 requires:

1. To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use and development:
   a. *avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and*
   b. *avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;…(Study emphasis)"*

This final step of the Study will essentially re-assess the highest rated Level 4 areas of Step 4, so that an area with outstanding natural character may be an area within the coastal environment that is considered to have 'high' or 'very high' levels of natural character. This will enable any planning mechanisms to relate to a specific mapped area, mapped at the most refined scale (1:10,000).

It is important to note that the 'high' or 'very high' ratings do not in themselves equate to 'outstanding', as clarified by the following Boffa Miskell definition:

'Outstanding' is a comparative evaluative term meaning; to stand out, exceptional, pre-eminent'.

It was determined by the study team that outstanding natural character should be assessed separately from the main assessment of natural character (Step 4), which determines areas holding 'very low' to 'very high' levels of natural character. This decision to separate out this assessment from the main natural character study stems from Policy interpretation in the NZCPS 2010. Policy 13 (1)(a) requires avoidance of adverse effects of activities on natural character in the coastal environment with outstanding natural character. For all other areas in the coastal environment, Policy 13(1)(b) requires that significant adverse effects are avoided, remedied or mitigated. [Study emphasis.] These are two quite different assessments.

This separation of outstanding natural character from the baseline follows current best practice outlined within Environment Court decisions on natural character, where everything in the coastal environment fits on the seven-point continuum from very low to very high. The avoidance therefore of effects under Policy 13(1)(a) for outstanding requires a reassessment of the highest rated areas and a comparison in an evaluation sense to 'stand out'.

The assessment of whether an area qualifies as having outstanding natural character combines both terrestrial and marine components at the Level 4 scale. This means that where sequences of ecological naturalness are considered important these are clearly captured (such as from the top of a ridge on the land to the bottom of the sea adjacent. Outstanding natural character, by its very term, determines the highest rated areas and should include systems that interconnect with each other and therefore should not be considered in isolation where possible.

Under the BML methodology used in this study, an area of outstanding natural character must:

'exhibit a combination of natural elements, patterns and processes that are exceptional in their extent, intactness, integrity and lack of built structures (the 'clutter' factor) and other modifications compared to other areas in the Tasman Region. (Boffa Miskell)

For the Tasman Region, an assessment to establish whether all or parts of its Coastal Terrestrial Areas and Coastal Marine Areas contain outstanding natural character needs only to be undertaken when all of the attributes, appraised at an adequate scale (in this case the more detailed – or Level 4 scale) and using adequate data, are assessed as being of 'high' or 'very high' levels of natural character. 'High' is included because this is mentioned in Policy 13 of the NZCPS. The methodology used for this Study, as outlined incorporates the seven-point scale. The results of this assessment are contained within Section 5 of this Study.

3.4. Digital Mapping and Datasets

The scale of the natural character study is critical to the validity of the end results. As outlined earlier, natural character assessment is scale related and determined by the study brief and varying extents by the mapping scale of the information used to determine the outcomes of the project. For this project, the scale is the region, although as described earlier, mapping is at a series of scales, with the most refined scale being the Level 4 mapping scale.

GIS has been used to systematically map the extent of the coastal environment and to map Coastal Marine and Terrestrial areas. The mapping scale undertaken for determining the inland extent of the coastal environment and the extent of the CTA's and CMA's is 1:25,000. One difficulty the study team faced was the variance in mapping scales between different GIS datasets. For example, the MPI trawling data has no specific scale at which the data is shown, but pixels are measured at approximately 1.8km by 1.8km which are incredibly broad in scale, and other data, such as the coastal erosion hazards are mapped at very fine scales, almost finer than 1:1,000 scale. In short, this means that the grain of data sources that may be determinative of Level 3 natural character boundaries, for example varies: in some cases, quite substantially.

To reconcile such potential mapping 'discrepancies', a checking process of 1:25,000 scale for mapping for the inland extent of the coastal environment and the identification of the CTA's and CMA's and 1:10,000 scale for the Level 4 (and ONC) mapping was undertaken by the Study Team to ensure the location of mapped boundaries accords with 'real' boundaries utilising aerial photographs, Google Earth, topographical maps and contour data in particular. These mapped areas were 'tested' through the workshop in April 2020 and refined where possible, especially if specific further information came to light. A consistent scale for these defined tasks was maintained. This spatial mapping technique will aid the Council with the use of their online GIS maps. It is envisaged that further 'boundary refinements' are undertaken at later stages of this Study as cadastral maps will be used for council online GIS mapping.

As mentioned earlier it has only been possible to capture terrestrial and marine data where that data exists and is easily accessible . Accordingly, the mapped areas illustrate existing knowledge at this point in the study process. Further, there are potential dataset 'gaps' which may affect the mapping of an area. Potential 'gaps' are more likely to be within the marine environment, where the level of data can be highly variable and difficult to obtain. As such, data like shipping routes or more precise data around fishing methods would create more nuanced maps. Further commentary around this is provided in Appendix 1.

The division between the CMA's and the CTA's is the mean-high-water spring mark (MHWS). The MHWS data was supplied to BML by TDC. The remaining datasets used for the determination of the coastal environment line, the CMA's and CTA's and the evaluation of natural character were provided to BML from Tasman District Council, Ministry of Primary Industries (MPI) and the Department of Conservation. Datasets include the following:

National GIS data provided by BML (and mapped at a variety of scales):

- Topo 50 & 250 Maps (LINZ)
- Digital contour information 20m interval (LINZ)
- Aerial image sourced from the LINZ Data Service and licensed for re-use under the Creative Commons Attribution 3.0 New Zealand license
- New Zealand Land Cover Database v5 (derived from the 2018 LUCAS satellite imagery) and used to determine the % of land cover for each Coastal Terrestrial Area
- Department of Conservation, conservation units
- GNS Geology (GNS Science)
- QE II covenants
- River Environment Classification (NIWA)
- Land Resource Inventory (Landcare Research)
- Protected Marine Areas (Department of Conservation)
- Current Marine Farms (MPI)

Right: Mouth of the Ruataniwha Inlet. Boffa Miskell, 2019.

Data provided by Tasman District Council included:

- Coastal erosion hazards
- Erosion structures
- Coastal inundation elevations
- 10m benthic contours (Rob Davidson)
- Roosting sites for wader bird species
- Inanga spawning sites of the Tasman District

Data provided by the Ministry for Primary Industries included:

- Commercial Fishing Regulations
- Average annual number of trawl (includes bottom and midwater and single pair trawling) events from 2007 - 2013

Data provided by the Department of Conservation included:

- Coastal Marine Habitats and Marine Protected Areas in the New Zealand Territorial Sea: A broad scale gap analysis (Department of Conservation) and used to determine the % of marine habitats for each Coastal Marine Area. Note: For ease of use with this Study, the 58 different habitat types have been consolidated by the Study Team into nine broader habitats that share common traits.
- Maui and Hectors Dolphin Database Sightings
- New Zealand Marine Mammal Database Sightings

4. TASMAN DISTRICT COASTAL ENVIRONMENT

4.1. Introduction to the Tasman District Coastal Environment

The coastal environment of the Tasman District varies between the ruggedness of the north-west coast to the golden sandy beaches found to the east of the District. Extending from the Waimea Inlet in the south east to Anatori in the north west, and out to the dynamic currents found in the Tasman Sea, the Tasman District contains some of New Zealand's internationally renowned natural coastal features that are unique to the District such as Farewell Spit

Tasman's coastal environment is characterised by the often-harsh climate found in the outer Tasman Sea/ Cook Strait and the sheltered Golden and Tasman Bays. Broadly, the Tasman coastal environment can be split between the rough waters and windswept climate found on the north-west coast of the District and the sheltered beaches, lush forests and numerous estuaries found to the east. The north-west coast has an underlying geology of sandstone, limestone and mudstone mountains formed from glacial natural processes. These mountains contain the Tasman District's greatest opportunities for gaining wild and remote coastal experiences, due the exposed climate, coastal erosion and areas of untouched native forest. Conversely, to the east, Tasman Bay sits within the Moutere Depression, a large river depression formed from ancient gravels which have eroded from the mountains above.

The coastal environment of the Tasman District contains a diverse range of naturally uncommon ecosystems including active sand dunes, coastal cliffs, coastal turfs, and estuaries. These ecosystems are found throughout the Tasman District, but are most common on the north west coast where there is less modification.

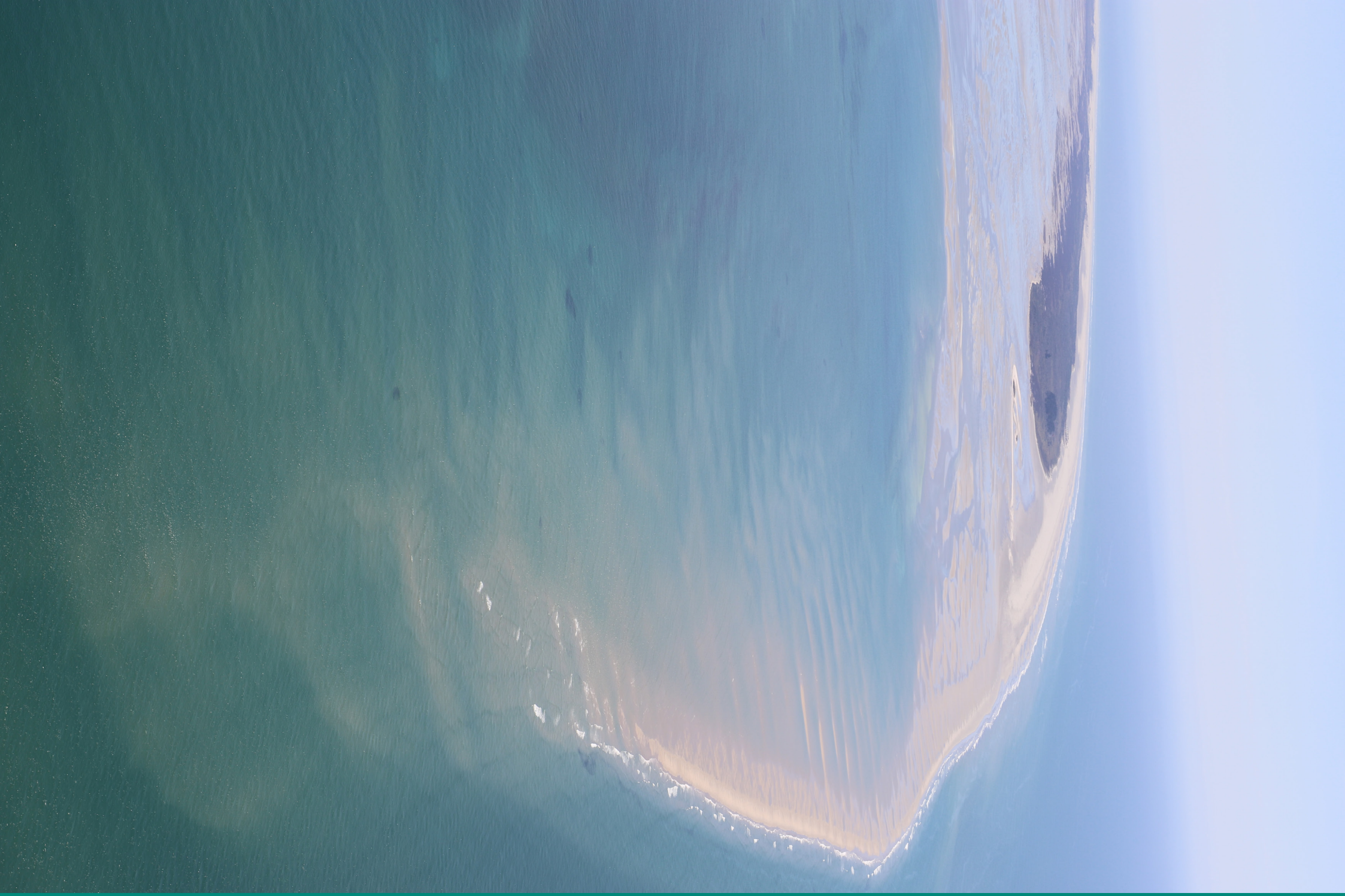
The Abel Tasman National Park is a key feature within Tasman Coastal Environment. Established upon Early Cretaceous granite, the park is both recognised for its ecological and recreational value by visitors and conservationists. Settlements such as Kaiteriteri and Pohara act as gateways to the wider Abel Tasman National park including the Abel Tasman Track, one of New Zealand's Great Walks.

Within the Tasman Coastal Environment, particularly on the east coast, estuarine environments and inlets are common. The Whanganui Inlet is one of the South Island's largest inlets and remains one of the least modified estuaries in New Zealand. Other inlets include The Waimea and Moutere Inlets which provide the setting for Mapua, and Motueka, while to the north of Abel Tasman National Park, smaller estuaries such as the Ruataniwha, Parapara and Pākawau Inlets provide habitats for wader bird and invertebrate species.

Offshore the Tasman District has many unmodified islands which act as strongholds for some of New Zealand's endangered and rare bird species. Islands in waters surrounding Abel Tasman National Park provide habitat for the declining little blue penguin and often fur seal colonies are present. To the north, the Archway Islands near Cape Farewell remain some of the District's least modified and largely untouched islands, providing breeding sites for sooty shearwaters and fluttering shearwaters.

While the Tasman District Coastal Environment is home to many rare wader bird species, the Tasman marine environment is frequented by dolphin species such as the common dolphin, dusky dolphin, Hector's dolphin, and orca. Whales are also common, particularly around the North-West Coast and within Golden Bay. Species found include pilot whales, sperm whales, minke, and fin whales.

Right: The Shellbanks, Farewell Spit. Boffa Miskell, 2019.



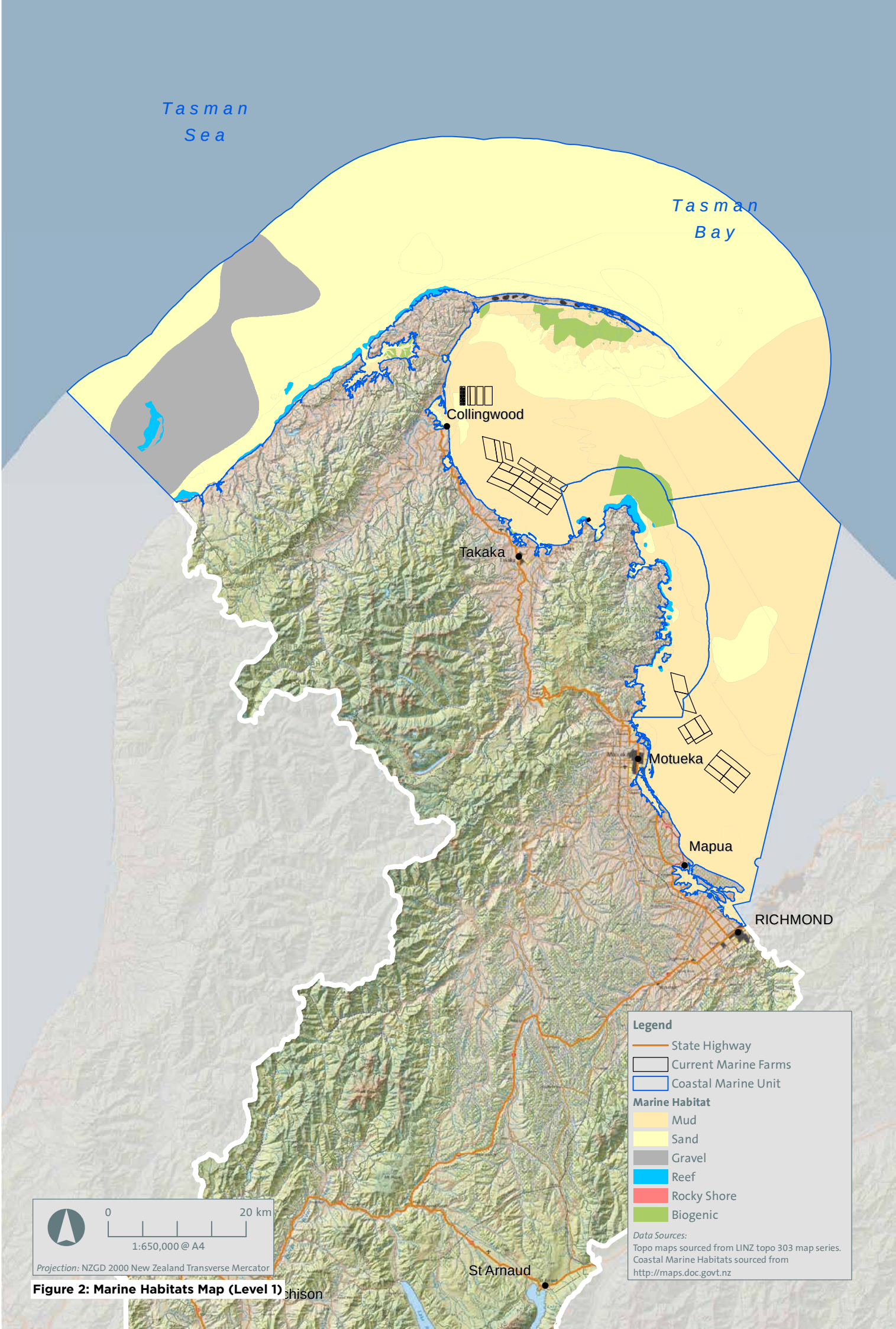


Figure 2: Marine Habitats Map (Level 1)

4.2. Coastal marine environment of the Tasman District

4.2.1. Abiotic

Tasman's coastal marine environment varies between the exposed environment and strong currents on the north west coast to the sheltered marine environment found in Golden and Tasman Bays. The north west coast waters are cooler in climate, with a sea surface temperature of 18°C in summer and 12°C in winter. The bays to the east of the District however are slightly warmer with a sea surface temperature of 20°C in summer and 13°C in winter (Macara, 2016).

The underlying marine habitat within the Tasman coastal marine environment predominantly consists of mud and sand with Tasman and Golden Bay, whereas the north west coast contains a mixture of sand and gravels carried by the Westland Current.

The major currents within the Tasman coastal marine environment consist of the Westland Current and the D'Urville Current. The Westland Current carries sediment deposited by river systems on the West Coast of the South Island up to Farewell Spit where they are deposited at the end of the Spit. Due to this natural process, Farewell Spit grows by 15 metres in length each year. The D'Urville Current runs parallel to the Golden and Tasman Bay coastline and connects to the Cook Strait Canyon systems which run between the North and South Island. Due to being exposed to these currents the outer waters of the Tasman coastal marine environment, particularly on the north west coast, are more turbulent that those in the sheltered waters of Tasman and Golden Bays.

The Tasman coastal marine environment has a relatively gently sloping topography that rarely exceeds 50 metres below Mean High Water Spring. in Golden and Tasman Bays. To the North-West Coast the topography is steeper, where at twelve nautical miles the seafloor drops 100 metres below Mean High Water Spring.

Closer to shore the Tasman coastal marine environment contains numerous inlets and estuaries in each of the Coastal Marine Areas. Two of the largest, the Whanganui and Waimea Inlets, are also two of the largest inlets in the South Island. Many of these estuarine environments drain almost completely at low tide exposing the intertidal mudflats below.

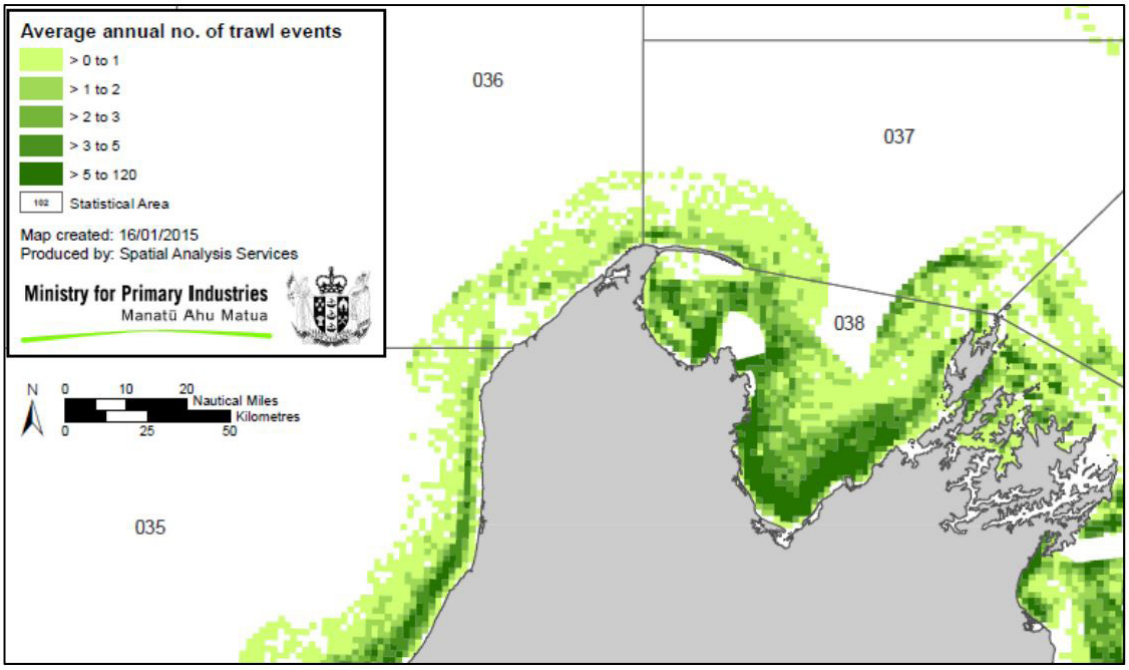


Figure 3: Average annual number of trawl (includes bottom, midwater, single and pair trawling) events form 2007 - 2013. From MPI (Newcombe et al., 2015)

4.2.2. Biotic

The Tasman coastal marine environment supports a diverse range of marine mammals, birds, invertebrates and fish, and contains a variety of habitats and ecosystems. Marine ecosystems on the north west coast of the District are very different to those found in the sheltered waters to the east.

The north west coast contains estuarine, intertidal and offshore habitats, with Whanganui Inlet providing shelter from the open Tasman Sea. The inlet is split between the Westhaven (Te Tai Tapu) Marine Reserve and the Westhaven (Whanganui Inlet) Wildlife Management Reserve. Species found within inlet include invertebrates such as mud crabs, snails and mussels, and salt marsh communities containing eel grass, oioi and sea rush (Tasman District Council, 2010). The inlet also provides nursery and feeding habitat for thirty-eight marine species and twelve freshwater fish species. To the outer waters of the north west coast polychaete marine worm species and bryozoan communities are most common, as well as fish such as rig, snapper and red gurnard. New Zealand fur seals are also known to haul out at Bar Point at various places along this coast.

Golden and Tasman Bays contain more estuaries with the two largest inlets located to the south of Tasman Bay. These estuaries provide habitat for many wader bird species due in part to the areas of saltmarsh which line the coastal edge. Species found include the Australasian bittern, South Island fernbird, and banded dotterel.

Farewell Spit has a large intertidal area to the south which spans the length of the Spit. The intertidal zone is part of the Farewell Spit RAMSAR site due to its international significance for wader bird such as bartailed godwits, pied oystercatchers, variable oystercatchers, banded dotterel, red knot and ruddy turnstone (National Wetland Trust of New Zealand, n.d.). This part of Golden Bay also contains a large area of native eel grass a key species for supporting juvenile fish.

Abel Tasman contains numerous sheltered bays and estuaries which support red and brown algae species, wader birds and saltmarsh vegetation. The Tonga Island Marine Reserve is a stronghold for the little blue penguin and provides habitat for fish species such as blue cod, moki, and wrasses. To the north, the Separation Point Exclusion Zone contains a regionally significant bryozoan coral bed which has been left untouched by trawling. Fish species, particularly juveniles also thrive in this zone with ample habitat and sheltered reefs available. Fur seals haul out at several location along the Park, notably Tonga Island, Adele Island and Separation Point.

4.2.3. Experiential

The Tasman marine environment offers visitors a mixture of wild and remote experiences on the north west coast and sheltered tranquil experiences within Golden Bay, Tasman Bay, and within the waters surrounding Abel Tasman National Park. Opportunities to experience the Tasman marine environment are largely associated with recreational activities and commercial operations within Tasman and Golden Bays. Tours to explore Abel Tasman by boat or kayak are available from Kaiteriteri and Marahau, while fishing tours can be accessed from Golden Bay.

Much of the north-west coast remains relatively unmodified due to sections of the coastline being relatively inaccessible and remote. Modifications are commonly associated with larger townships, particularly in Tasman Bay where land reclamation and extensive roading and port infrastructure is common.

Transient and sensory experiential values are prevalent in the Tasman marine environment. The shallow nature of the estuaries provides opportunities to experience the intertidal areas at low tide as well as at high tide. At low tide the patterns created by the intertidal channels are exposed, demonstrating the intricate network of these estuarine systems. The long, sandy beaches found within Tasman and Golden Bays provide visitors with direct access to the Tasman marine environment and expansive views of the Tasman Sea. The north west coast is less accessible but provides wild and remote experiences for visitors. Popular attractions on the north west coast are Whararikі Beach near Cape Farewell and the Whanganui Inlet where some parts are best accessed by kayak.

The waters surrounding Abel Tasman National Park also contain rich experiential values. Visitors are able to view marine mammals such as fur seals and dolphins as well as rare sea bird species such as the little blue penguin. Many choose to explore this part of the Abel Tasman by boat or kayak due to its mostly sheltered waters, opportunities to explore less accessible inlets and coves, and to immerse themselves in the natural environment that remains relatively untouched.

Right: Marine Farms in Golden Bay. Boffa Miskell, 2019.

4.3. Coastal terrestrial environment of the Tasman District

4.3.1. Abiotic

The Tasman District coastal terrestrial environment is characterised largely by the Moutere Depression to the east and the Tasman Mountains to the north and west (Rattenbury et al., 1998). The Moutere Depression contains some of the District's youngest Holocene gravels and sand ranging from 5.3 million years old near Moutere to 14,000 years old near the Waimea Inlet (GNS Science, 2014). In contrast the Tasman Mountains are formed from Paleogene sandstone and limestone approximately between 23 and 53 million years in age. This mountain range has been heavily influenced by glaciation during the Pleistocene resulting in the larger "U" shaped valleys found along the north-west coast, particularly near Anatori.

Key geological features within this District range from the expansive and dynamic landform that is Farewell Spit to the Abel Tasman National Park which is largely formed from Early Cretaceous granite. The Tasman coastal environment includes relatively unmodified offshore islands along the north west coast, and within Abel Tasman National Park. Dune systems are also common along the north west coast which have formed features such as the Kaihoka Lakes, some of the least modified shallow coastal lakes in New Zealand. The eastern coastline of the District is defined by long sweeping beaches, estuaries and inlets surrounded by flat coastal terraces and dunes. In contrast the western coastline is characterised by rugged cliffs and exposed headlands.

The climate within the Tasman District varies between the sheltered bays to the east and the exposed North-West Coast. Tasman and Golden Bay are both largely sheltered from strong weather systems from the south-west by the Tasman Mountains therefore creating a sunny and mild climate for the bays in the east. Tasman Bay has the driest and warmest climate of the whole District, with an average annual rainfall of 1,250mm and over 2,400 sunshine hours annually in areas (Macara, 2016). In contrast the North-West Coast of the Tasman District is exposed to a similar climate found on the West Coast further south. The area is subjected to a higher rainfall being on the western side of the Tasman Mountains. Annual rainfall in this area is between 2,000 to 2,750mm with higher rainfall areas found further south, and sunshine hours range between 2,000 and 2,150 hours annually (Macara, 2016).

4.3.2. Biotic

The Tasman coastal terrestrial environment has a diverse range of biotic systems from large estuaries to mature native forests. The coastal environment supports up to 27% of the global breeding population of variable oytercatchers, five coastal sites which support internationally, nationally and regionally-significant coastal birds, and is home to 26 bird species which are either Nationally Threatened, or At Risk (McArthur et al., 2022).

On the District's north-west coast mature lowland, kahikatea (Dacrycarpus dacrydioides) and coastal forest remain above areas of cleared pasture below. These areas form the edge of the North-West Nelson Forest Park and support lizard species, long-tailed bats, and native forest bird species. The rivers within this part of the Tasman District support a diverse number of fish species including longfin eel, torrentfish, bluegill bully, redfin bully, and all five migratory galaxiids.

The Whanganui Inlet is one of the Tasman District's biotic hotspots and is considered a Nationally Important Ecosystem. The landscape surrounding the inlet contains a mixture of rare alluvial indigenous forest, estuarine habitats, and intact areas of swampland. The estuarine environment supports wader birds such as the banded rail, banded dotterel and Australasian bittern, providing an important breeding site for these species. The more exposed and windswept kānuka (*Kunzea ericoides*) and coastal forest near the mouth of the Whanganui Inlet provides habitat for the specific morphological variant of the Nelson green gecko/starred gecko, a rare species within the Tasman District.

Seashore earwig. Found on less inhabited coastlines. Simon Walls, Department of Conservation.

Farewell Spit is a unique landform within the Tasman District and is almost completely protected by a combination of nationally and internationally recognised conservation areas. The spit is a Ramsar site and protected nationally by the Farewell Spit Nature Reserve. This is largely due to the wader birds which forage on the spit with species present including South Island pied oystercatchers, banded dotterels, and the international migrants eastern bar-tailed godwit, red knots and ruddy turnstone. Up until 1975, Farewell Spit was grazed by sheep and cattle, however today the spit is now home to regenerating native mānuka (*Leptospermum scoparium*), kānuka (*Kunzea ericoides*), lowland flax, bracken, sedges (*Carex spp.*) and herbs.

Much of the lower lying areas of the District are used primarily for agricultural grazing and

crops. Small and larger settlements are also located within these broad river plains which have affected natural character in these areas.

To the south east of the District lies the Abel Tasman National Park. The park, once covered in beech forest prior to European settlement but subsequently cleared over large parts, has now regenerated back into mature forest consisting of podocarp, beech and broadleaf species. The park also contains flax swamplands and estuarine environments supporting marsh crake, spotless crake, Australasian bittern, banded rail and South Island fernbird. Tonga Island and Adele Island along with the other offshore islands within the park provide habitat for native birds such as reef heron, black-backed gull, red-billed gulls, pied shag, little blue penguins and spotted shag.

4.3.3. Experiential

The Tasman coastal terrestrial environment is valued for its wild and isolated values to the east as well as its sheltered and lush environment to the west. Throughout the year species such as fur seals, dolphins, whales and migratory birds frequent this area amplifying the natural values which are associated with the Tasman District.

The north-west coast of the Tasman District is renowned for its ruggedness and exposure to the harsh coastal climate. Difficult to access, the north-west coast provides visitors with wild and remote experiences with opportunities to visit untouched areas of native bush and sandy beaches with rocky reefs. Those wishing to explore further can walk to the Kahurangi Keeper's house in the south-western corner of the District. The expert track traverses along the beach and involves river crossings and navigating native bush (Department of Conservation, n.d.-a).

Golden and Tasman Bay conversely are more populated and easier to access. Many visit these parts of the District to enjoy the expansive beaches and warmer and more sheltered climate found here, particularly within Abel Tasman National Park. The Abel Tasman Track is a popular attraction for visitors to the District following the coastline of the park and passing through intact indigenous forest.

Below:80 million year old Dinosaur Footprints found near the Whanganui Inlet. Simon Walls, Department of Conservation.

5. COASTAL MARINE AND COASTAL TERRESTRIAL AREAS

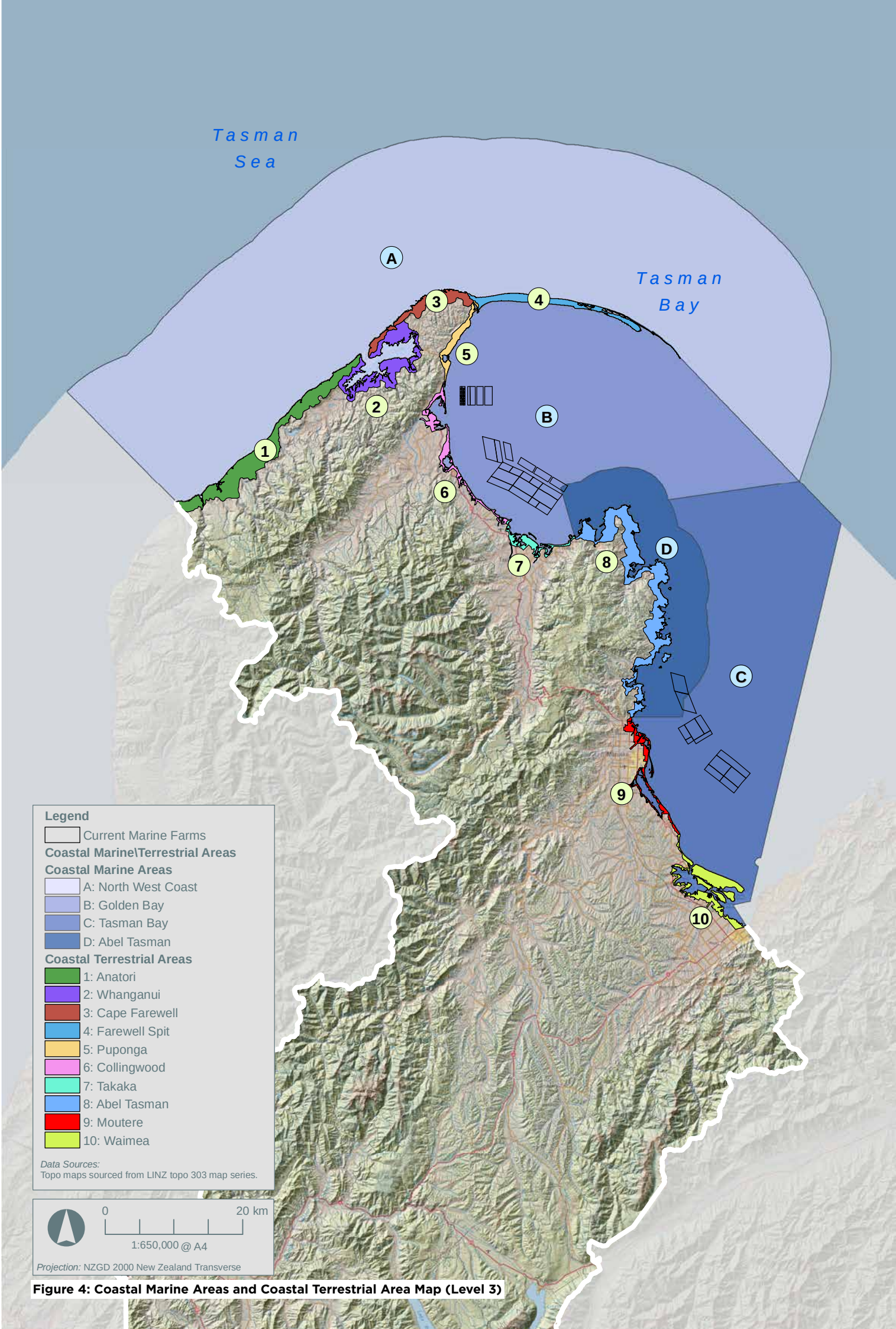


Figure 4: Coastal Marine Areas and Coastal Terrestrial Area Map (Level 3)

5.1. The Tasman District Coastal Marine and Coastal Terrestrial Areas

The Tasman coastal environment has been divided into fourteen Coastal Marine and Coastal Terrestrial Areas. Four Coastal Marine Areas (A-D) and ten Coastal Terrestrial Areas (1-10) have been identified, described and mapped. (Refer to Figure 4):

Coastal Marine Areas	Coastal Terrestrial Areas
Coastal Marine Area A: North-West Coast	Coastal Terrestrial Area 1: Anatori
Coastal Marine Area B: Golden Bay	Coastal Terrestrial Area 2: Whanganui
Coastal Marine Area C: Tasman Bay	Coastal Terrestrial Area 3: Cape Farewell
Coastal Marine Area D: Abel Tasman	Coastal Terrestrial Area 4: Farewell Spit
	Coastal Terrestrial Area 5: Pūponga
	Coastal Terrestrial Area 6: Collingwood
	Coastal Terrestrial Area 7: Takaka
	Coastal Terrestrial Area 8: Abel Tasman
	Coastal Terrestrial Area 9: Moutere
	Coastal Terrestrial Area 10: Waimea

The following pages outline in more detail the relevant abiotic, biotic and experiential characteristics and values of each Coastal Marine and Coastal Terrestrial Area at the Level 3 scale. Within each of these Coastal Marine Area's and Coastal Terrestrial Area's are smaller areas of high and very high natural character. Where applicable, these smaller areas have been tabulated at the end of each Coastal Marine Area and Coastal Terrestrial Area's descriptions. This more refined identification represents the 'Level 4' scale.

Above: Cape Farewell, North West Coast of the Tasman District. Boffa Miskell, 2019.

5.2. Coastal Marine Area A: North-West Coast

The North West Coast Coastal Marine Area encompasses the entirety of the western coastline of the Tasman District. The area extends from Kahurangi Point in the south to the outer waters off Farewell Spit. The north-west coast of the Tasman District is more exposed to prevailing winds and storms, apart from the more sheltered waters of Whanganui Inlet.

Key coastal characteristics include: exposed and open waters, sheltered Whanganui Inlet, the sandy northern waters of Farewell Spit, rocky reefs and near shore features, remote and wild experiential aspects.

Abiotic

An analysis of this Coastal Marine Area's habitat type comprises 73% sand; 1.3% reef; 8.5% mud; 16.9% gravel; 0.2% biogenic and 0.1% rocky shores[23]. The approximate size of this Coastal Marine Area is 286,242 hectares.

The abiotic characteristics of this Coastal Marine Area varies between the outer coastline and the Whanganui Inlet. The seabed topography of the north-west coastline is relatively steep compared to the rest of the district, with depths exceeding 100 metres in areas to the south. The Kahurangi Shoals and Paturau Bank are notable offshore features in the south, whereas in the north the bathymetry drops away quickly to 50 metres within a few kilometres of the coast before levelling out further offshore. The intertidal beaches along the outer side of Farewell Spit also tend to be narrower than those further south.

Overall, this part of the Tasman coastline is exposed to the prevailing westerly wind.The open waters are influenced by the Westland Current and the D'Urville Current to the north of Farewell Spit and large swells. The high tide range is between 3.1 and 3.6 metres. Upwelling also occurs (the process of cold, nutrient rich water being forced to the surface) off the western coast, providing a source of nutrient enrichment (National Ocean Service, 2020). Sea surface temperatures range from approximately 18°C in summer to 12°C in winter.

Due to the high level of rainfall on the west coast, the amount of terrigenous sediment (sediment from eroded rock) is greater in the south-western end of the North West Coast Coastal Marine Area. The area therefore receives a greater amount of fine, river-borne sediment. These sediments travel up the coast via wave action and northward water movements and are deposited at Farewell Spit.

23. Coastal Marine Habitats, Department of Conservation.

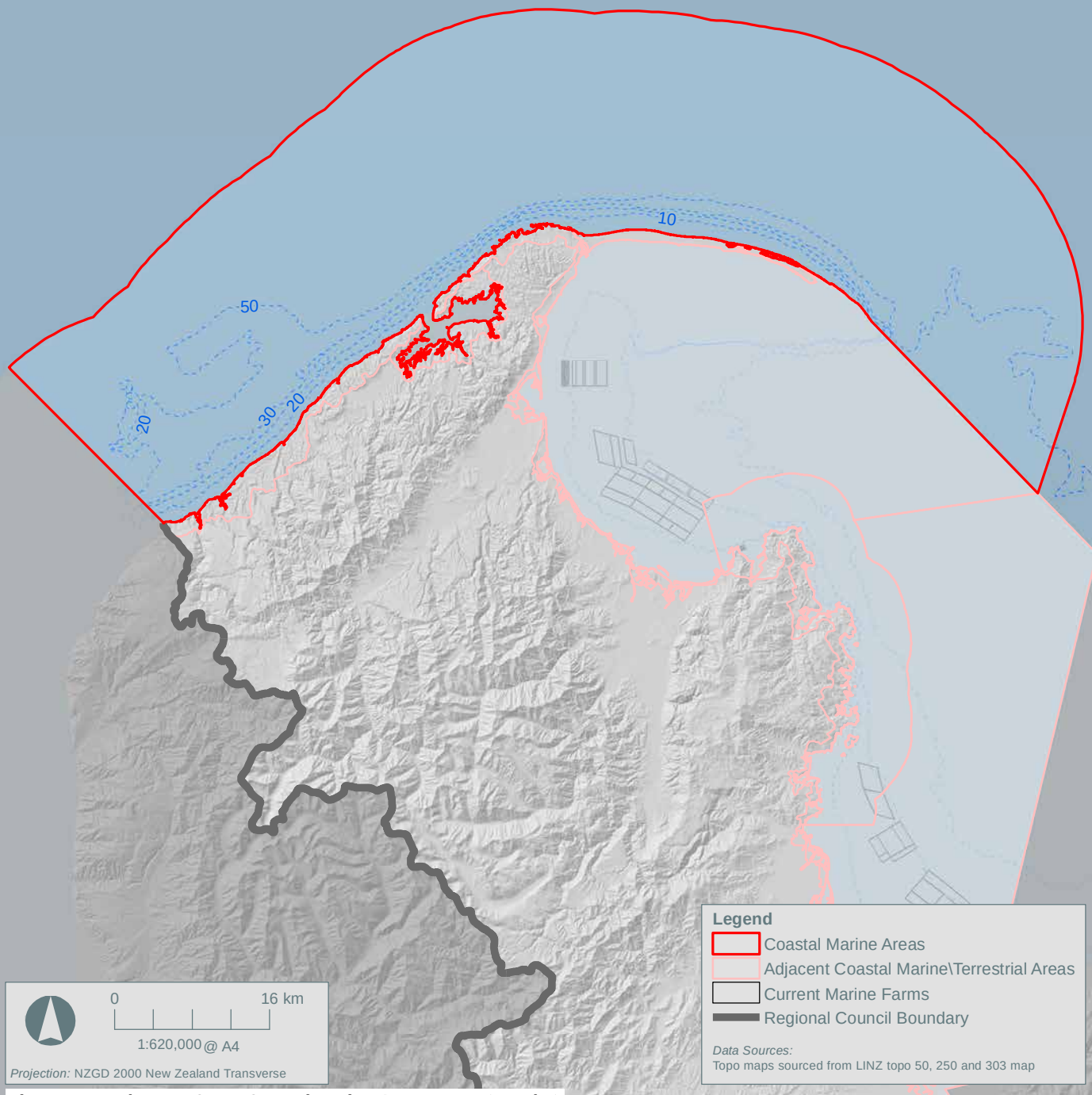


Figure 5: North West Coast Coastal Marine Area Extent (Level 3)

The exposed outer coast is distinguished by open sandy beaches interspersed with rocky headlands and outcrops, wave-cut intertidal platform reefs, offshore reefs and (in the north) small islets. Small river mouth estuaries are also a feature of this coast.

Whanganui Inlet's steep coastal topography and narrow entrance, including the Bar Point sandspit, largely shelters the rest of the inlet from the strong climatic and oceanic influences experienced within the wider Coastal Marine Area. The drowned valley system drains almost entirely at low tide, with the exception of the deep channels which drain the northern and southern regions of the inlet.

Modifications to the abiotic values of this Coastal Marine Area are largely associated with offshore trawling although this is not as extensive as seen in Tasman and Golden Bay. The greatest intensity is found near Farwell Spit. Other modifications are associated with activity within the terrestrial areas, such as causeways across some of the side arms of Whanganui Inlet. Historical clearance of indigenous vegetation around parts of Whanganui Inlet has caused an increased amount of fine mud in areas of the Inlet.

Biotic

The North West Coast Coastal Marine Area supports a wide range of offshore, estuarine and intertidal species. Offshore communities vary depending on the depth of the water. Silty sand communities are present at the 30 – 50 metre depth, containing a diverse range of polychaete marine worm species including the purple worm (*Aglaophamus macroura*) and *Ampharete kerguelensis* and the marine mollusc *Maorimactra ordinaria*. Sandy mud communities found at approximately 85 to 300 metres below sea level support polychaete worm species and various bryozoan species. Closer to Farewell Spit offshore benthic communities associated with sand and mud include cockle species such as *Pratulum pulchellum*, and the dog cockle *Tucetona laticostata*, and bivalve species including the morning star shell (*Tawera spissa*), and *Mactra ordinaria.*

Smaller estuarine areas along the outer coast support areas of saltmarsh up the river channels along with cockles (*Austrovenus stutchburyi*), pipi (*Paphies australis*), mud snails (*Amphibola crenata*), estuarine crabs. Biota are generally sparse along the exposed and rugged outer coastline, where wave action and sand scour create a harsh environment for intertidal and shallow subtidal species to inhabit.

Whanganui Inlet supports a rich and abundant estuarine biota. The Inlet is fringed with a mixture of saltmarsh species including jointed rush (*Leptocarpus similis*), sea rush (*Juncus kraussii australiensis*), and three-square (*Schoenoplectus pungens*). Extensive areas of eel grass (*Zostera capricorni*) occurs across inlet's open flats.

Invertebrate species within the Whanganui Inlet vary depending of each habitat. The intertidal sand flats support species such as the tunnelling mud crab (*Helice crassa*), limpet (*Notoacmea helmsi*), spotted top shell (*Melagraphia aethiops*), cockles (*Austrovenus stutchburyi*), whelks (*Cominella glandiformis*), nut clams (*Nucula hartvigiana*) and polychaete worm species. The mudflat and high tide areas support mud crabs (*Helice crassa*), polychaete and nereid worms, and mud snails (*Amphibola crenata*). In the intertidal rock habitats, the predatory dark rock shell (*Haustrum haustorium*), blue mussel (*Mytilus edulis*), ribbed mussel (*Aulacomya maoriana*), periwinkle (*Littorina unifasciata*) and cat's eye (*Turbo smaragdus*) can be found. Subtidal habitats include species such as the chiton (*Leptochiton inquinatus*), polychaete Spirorbis species, the morning star shell (*Tawera spissa*), pipi (*Paphies australis*), kina (*Evechinus chloroticus*), algae such as *Ulva, Rhodophyta*, and *Carpophyllum* species and sponges including *Ancorina alata,* and *Darwinella oxeata*.

With relatively unmodified margins and abundant invertebrate species present in the Whanganui Inlet, bird species are also diverse. Roosting sites can be found at North Head at the mouth of the inlet and Rakopai. Species present within the Whanganui Inlet include bar-tailed godwit (*Limosa lapponica*), red knot (*Calidris canutus*), pied oystercatcher (*Haematopus ostralegus*), banded dotterel (*Charadrius bicinctus*), Australasian bittern (*Botaurus poiciloptilus*), South Island fernbird (*Bowdleria punctata*), and the only site on the west coast of the South Island where the banded rail (*Rallus philippensis*) breeds.

Further north, over eighty wetland birds have been recorded on Farewell Spit. In addition to many of the species found in the Whanganui Inlet, Australasian gannet (*Morus serrator*), Caspian tern (*Sterna caspia*), black-backed gull (*Larus dominicanus*), and variable oystercatcher (*Haematopus unicolor*) all breed on Farewell Spit. Gannets, terns and gulls brave the exposed waters to the north in search of food.

Banded kokopu. Department of Conservation.

The north west coast provides important habitat for the at- risk little blue penguin (*Eudyptula minor*) which breed on the shores, rock stacks and islets within this Coastal Marine Area.

Offshore sea bird species present in the North-West Coast Coastal Marine Area include cape petrels (*Daption capense*), sooty shearwater (*Ardenna grisea*), New Zealand white capped albatross (*Thalassarche steadi*), great albatross (*Diomedea sp.*), southern black backed gull (*Larus dominicanus*), black-browed albatross (*Thalassarche melanophris*), southern royal

albatross (*Diomedea epomophora*), giant petrels (*Macronectes giganteus*), and the Westland petrel (*Procellaria westlandica*). These birds are found near the coastline and towards the twelve nautical mile mark.

Fish species found within the North-West Coast Coastal Marine Area are suited to both marine and freshwater environments. Those found offshore of Farewell Spit are snapper (*Pagrus auratus*), rig (*Mustelus lenticulatus*) red gurnard (*Chelidonichthys cuculus*), and various flatfish species within the subtidal area. Species found further south include the spotty (*Notolabrus celidotus*), banded wrasse (*Notolabrus fucicola*) and benthic species such as the marbled brotula (*Bidenichthys consobrinus*), orange clingfish (*Diplocrepis puniceus*) and olive rockfish (*Acanthoclinus fuscus*). Whanganui Inlet perhaps contains the most diverse population of both marine and freshwater fish species. The inlet provides nursery and feeding habitat for thirty-eight marine species and twelve freshwater fish species. Marine species include blue cod (*Parapercis colias*), red moki (*Cheilodactylus spectabilis*), copper moki (*Latridopsis forsteri*), banded wrasse (*Notolabrus fucicola*), and yellowbelly flounder (*Rhombosolea leporina*). Freshwater species include banded kōkopu (*Galaxias fasciatus*), inanga (*Galaxias maculatus*), redfin bully (*Gobiomorphus huttoni*) and longfin eel (*Anguilla dieffenbachii*).

Marine mammals found within this Coastal Marine Area include dolphin species and New Zealand fur seals (*Arctocephalus forsteri*). Fur seals haul out at the mouth of the Whanganui Inlet and at Pillar Point near Cape Farewell. The common dolphin (*Delphinus delphis*), dusky dolphins (*Lagenorhynchus obscurus*), Hector's dolphins (*Cephalorhynchus hectori*) (Department of Conservation, 2019), and orca (*Orcinus orca*) all frequent these waters as well as southern right whales (*Eubalaena australis*) and blue whales (*Balaenoptera musculus*)(Department of Conservation, 2020b).

Protected areas within this Coastal Marine Area include the Whanganui Inlet and the coastal fringes of the Kahurangi National Park, North-West Nelson Forest Park and Farewell Spit Nature Reserve. The south-western end of the Whanganui Inlet is a part of the 536-hectare Westhaven (Te Tai Tapu) Marine Reserve (Department of Conservation, 2020b). The rest of the inlet is protected under the Westhaven Wildlife Management Reserve which stretches over the remaining 2,112 hectares of tidal sandflats and channels found in the inlet (Department of Conservation, 2020b).

Modifications to biotic values within this Coastal Marine Area are associated with offshore commercial fishing and due to terrestrial modification at the Coastal Marine and Terrestrial interface. The increase of fine muds in Whanganui Inlet due to nearby land clearance has meant a decrease in the area of seagrass beds (Stevens & Robertson, 2016).

Experiential

The North West Coast Coastal Marine Area is the most remote marine area within the Tasman District. Human modification and light sources within the coastal environment is limited, and despite sheep and cattle grazing along large parts of the coastline, the area's remote and rugged nature means this Coastal Marine Area retains much of its natural and wild character.

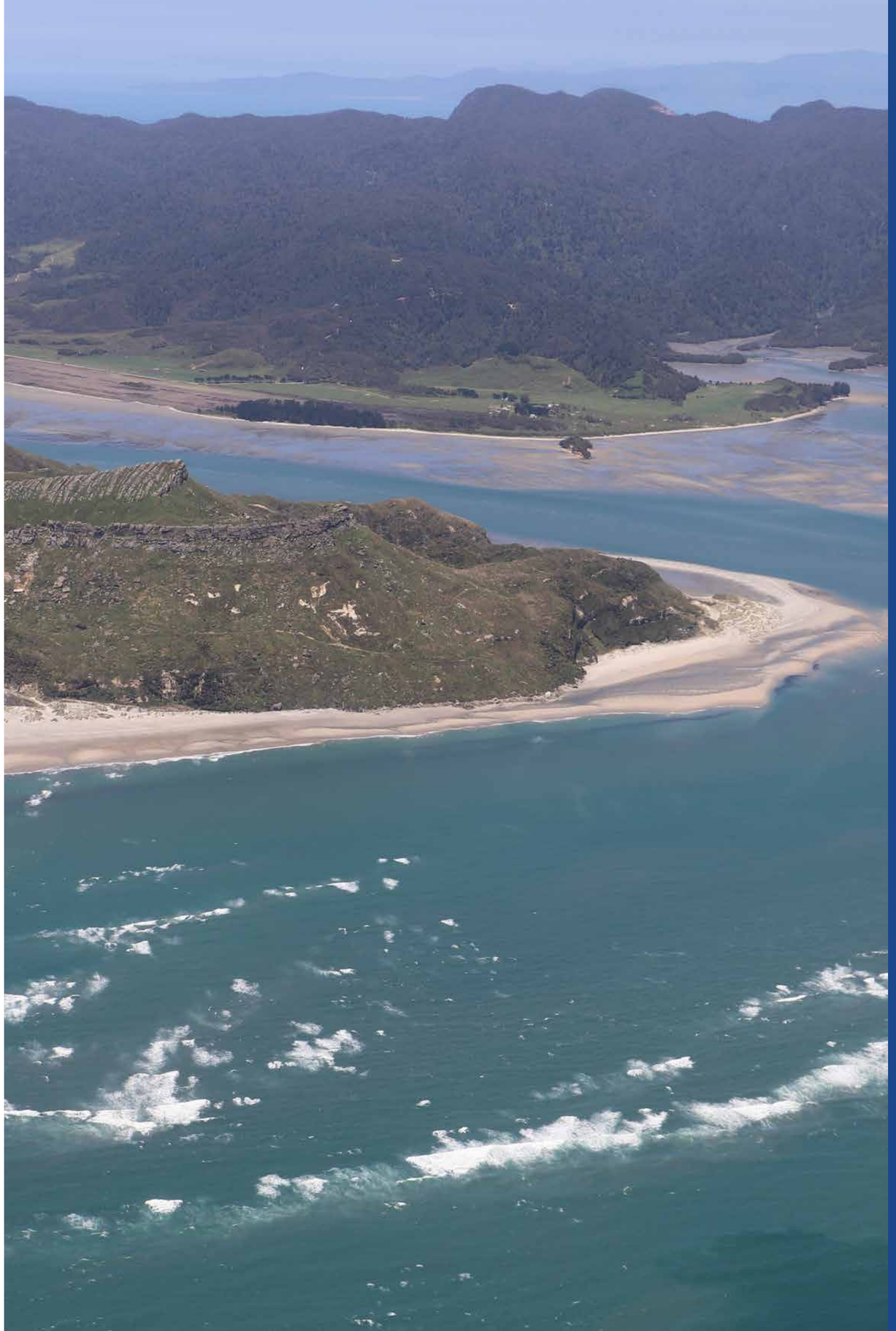
There are unsealed boat ramps at the intersection of Kaihoka Lakes Road and Pākawau Bush Road, near the mouth of the Wairoa River, and the south-west end of the Whanganui Inlet. A small commercial wharf is located towards the south-western end of the inlet.

While some commercial fishing occurs within this Coastal Marine Area, recreational activities are not common on the outer coast due to its remote and exposed conditions. Whanganui Inlet is a popular recreational hotspot being sheltered from the Tasman Sea. Visitors are able to experience the inlet by vehicle (e.g. along Dry Road), boat, or kayaking especially up the less accessible tidal arms.

Level 3 Rating: Coastal Marine Area A: North-West Coast

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH		✓	✓
HIGH	✓		
MODERATE TO HIGH			
MODERATE			
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING	VERY HIGH		

Right: Mouth of the Whanganui Inlet. Boffa Miskell, 2019.



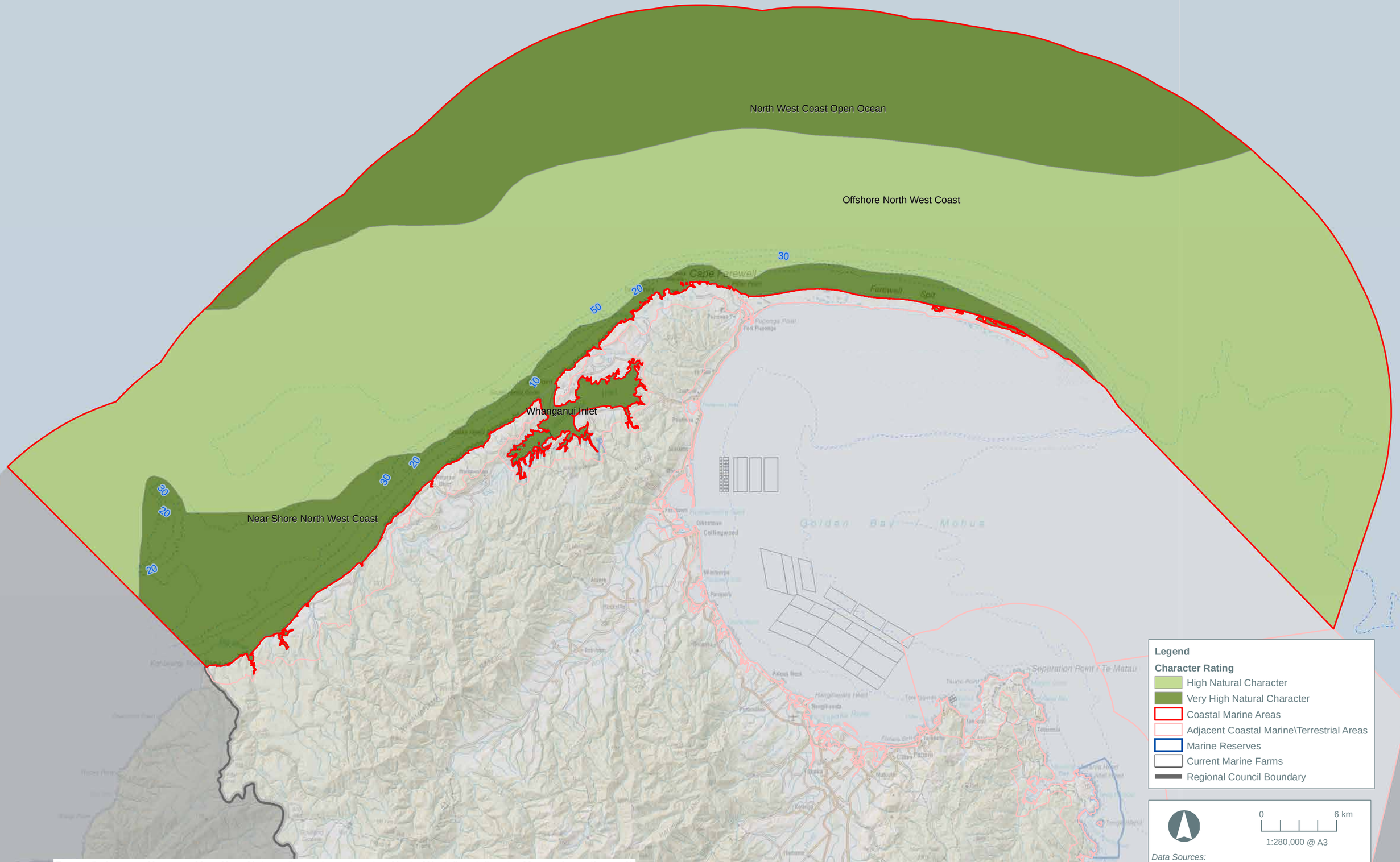


Figure 6: Areas of High and Very High Natural Character within the North West Coast Coastal Marine Area. (Level 4)

Coastal Marine Area A: North-West Coast

SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 6

REFER TO COASTAL TERRESTRIAL AREAS 1-4 FOR FURTHER INFORMATION RELATING TO THE TERRESTRIAL COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
NEARSHORE NORTH WEST COAST	VH	H	VH	VH	• Dynamic oceanic conditions and nutrient rich waters on the outer coast contrast with the sheltered waters of Whanganui Inlet. • Despite farming along various parts of the coastline, the nearshore marine zone retains much of its natural functioning due to the coast's dynamic nature. • Extensive wader bird populations and habitat for little blue penguin. • Several marine mammal species inhabit or pass through these waters. • Expansive, unmodified views of the Tasman Sea and western Cook Strait • Opportunities to experience the darkess of the night sky	• Offshore trawling in places
OFFSHORE NORTH WEST COAST	H	H	H	VH	• Dynamic oceanic conditions and nutrient rich waters • Several marine mammal species inhabit or pass through these waters. • Continental shelf benthic habitats and species. • Expansive, unmodified views of the Tasman Sea and wild experiences • Opportunities to experience the darkess of the night sky	• Some offshore trawling
NORTH WEST COAST OPEN OCEAN	VH	VH	VH	VH	• Dynamic oceanic conditions and nutrient rich waters • Several marine mammal species inhabit or pass through these waters. • Continental shelf benthic habitats and species. • Expansive, unmodified views of the Tasman Sea and wild experiences • Opportunities to experience the darkess of the night sky	• Limited modification of any kind
WHANGANUI INLET	VH	H	H	VH	• Drowned river valley system formed from sandstone • Westhaven (Te Tai Tapu) Marine Reserve and the Westhaven Wildlife Management Reserve • Plentiful freshwater and marine fish species • Supports a variety of marine invertebrates • Fur Seals haul out at the mouth of the Inlet • Sheltered, sublime and isolated experiences within the waters of the inlet • Popular destination for kayakers • Sheltered, highly natural and tranquil experiences • The transient ebb and flow of the movement of the tide exacerbates the perceived naturalness of the intertidal area.	• Some modification to north-eastern shores impacting saltmarsh beds and sedimentation

Label: VH=Very High; H=High; MH=Moderate High; M=Moderate; ML=Moderate Low; L=Low; VL=Very Low.

Above: Mouth of the Ruataniwha Inlet. Boffa Miskell, 2019.

5.3. Coastal Marine Area B: Golden Bay

The Golden Bay Coastal Marine Area extends from the southern side of Farewell Spit to Separation Point. This excludes the three nautical mile buffer from MHWS which forms the Abel Tasman Coastal Marine Area. This Coastal Terrestrial Area is characterised by a gradually sloping bay with sandy beaches, lagoons and inlets. The bay overlooks Cook Strait and is mostly sheltered from the Tasman Sea by Farewell Spit.

Key coastal characteristics include: Farewell Spit's extensive intertidal flats, Ruataniwha Inlet, Parapara Inlet, Onekaka Estuary, Waitapu Estuary, and Motupipi Estuary. Many of these estuaries and inlets drain almost completely at low tide, exposing the sand flats beneath. Wide interconnected sandy beaches fringe much of the coastline, with the seabed gently shelving offshore to a depth of around 30 m in the middle of the bay.

Abiotic

An analysis of this Coastal Marine Area's habitat type comprises 25.3% sand; 0% reef; 69.5% mud; 0% gravel; 5.2% biogenic and 0% rocky shores[24]. The approximate size of this Coastal Marine Area is 110,113 hectares.

The Golden Bay Coastal Marine Area is a sheltered bay to the north-west of Cook Strait. Protected by Farewell Spit and he Burnett Range to the west, the bay is not as exposed to the oceanic swells found on the north-west coast of the Tasman District.The sandy beaches fringing the shoreline tend to be broad due to their gentle slope and the bay's large tidal range (> 4 m). Offshore, the underlying bathymetry is also gentle in slope ranging down to approximately 50 metres in depth off the western end of Farewell Spit.

During the summer months surface sea temperature in Golden Bay is approximately 19°C while in winter this decreases to approximately 12.5°C (Macara, 2016).

Due to more westerly-wind exposure in the south of the bay, beaches are steeper with a coarser sediment composition. Contrasting with this, in the north the 10-metre bathymetry contour extends anywhere between 3 kilometres at Pūponga to 12 kilometres off Farewell Spit from MHWS. These northern areas are more sheltered with a greater diversity of intertidal species, with a clockwise gyre (oceanic current) which circulates in the bay depositing abiotic and biotic material in the lee of Farewell Spit.

24. Coastal Marine Habitats, Department of Conservation.

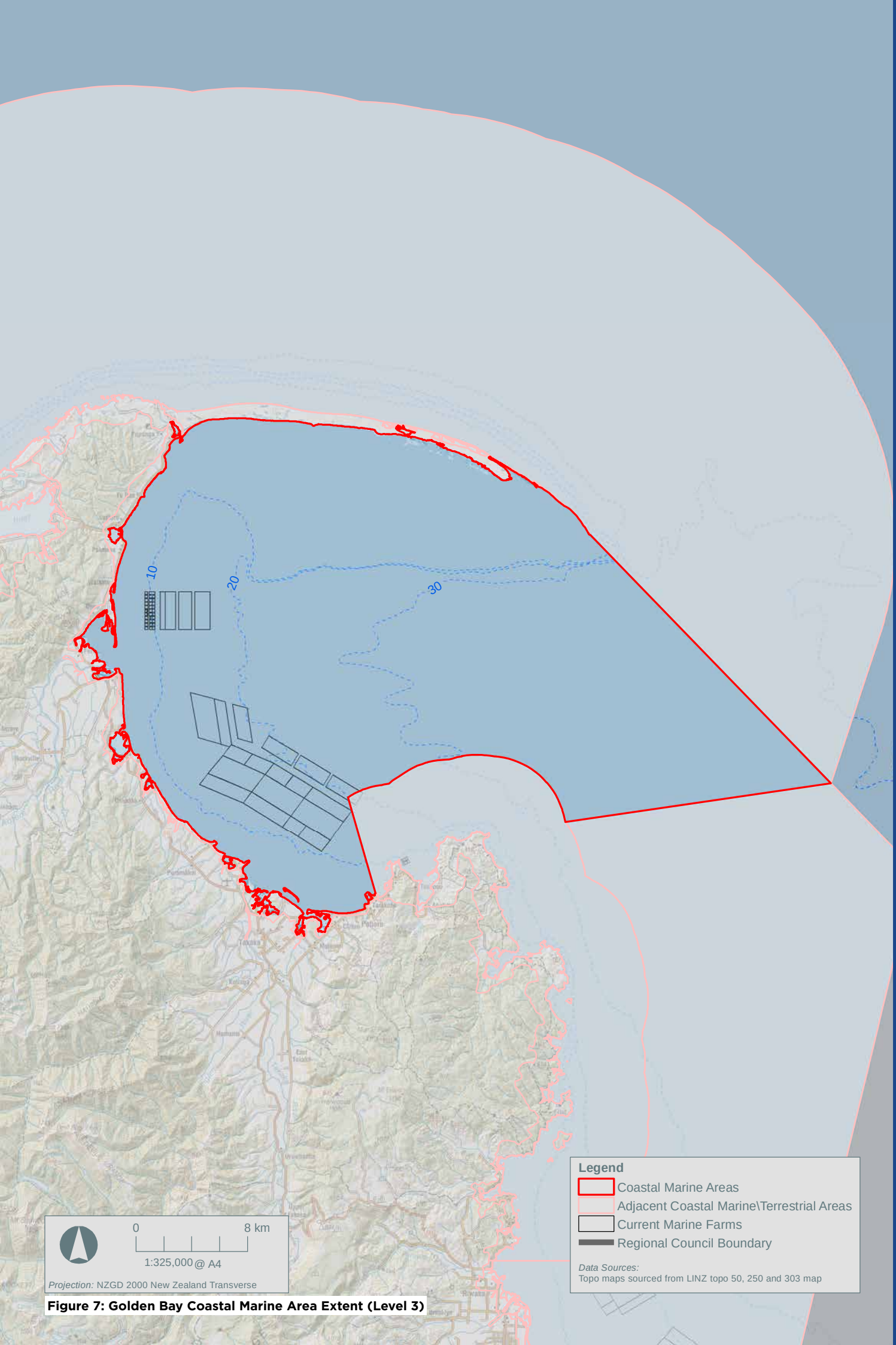


Figure 7: Golden Bay Coastal Marine Area Extent (Level 3)

The Golden Bay Coastal Marine Area has a series of inlets and estuaries located intermittently around its edge. The largest at 1,610ha is Ruataniwha Inlet in the centre of the bay. Each of the inlets are shallow and are comprised of silts and clays. Due to their shallow gradient and the large tidal range, the estuaries are mostly fully drained at low tide exposing the intertidal flats. While Ruataniwha exceeds over 1,000ha in size, many of the estuaries in the Golden Bay Coastal Marine Area are no larger than 60ha.

While the majority of the Golden Bay Coastal Marine Area is defined by sandy beaches and intertidal flats, there are still small headlands and reef areas scattered along the coastline. Rocky outcrops and reefs include those found at Pūponga, Pohara Beach, Patons Rock, the Ōtere River mouth, Rangihaeata and Tukurua Point.

Offshore trawling and dredging will be a significant modifier of the bay below depths of around 10 metres. Around the margins, modifications include roads, bridges and causeways, coastal protection works, and various jetties, wharves and moorings (e.g. near Pūponga, Takaka, Parapara Inlet and Collingwood). Port Tarakohe is the largest coastal modification.

Biotic

The intertidal flats of Golden Bay, especially those in the north, provide excellent habitat for invertebrates, fish and birds the native eel grass *Zosteria capricorni* is a key part of the ecosystem, as a primary source of productivity and as habitat. It forms extensive beds across Farewell Spit's sand flats but is more patchily distributed over the bay's western shores, trapping sediment and providing habitat for fish species, particularly juveniles (Schwarz et al., 2007).

Another key feature of Golden Bay is the marine saltmarsh species found in the enclosed estuaries and inlets. These areas are dominated by four main species including searush (*Juncus kraussii australiensis*), jointed rush (*Leptocarpus similis*), glasswort (*Sarcocornia quinqueflora*) and remuremu (*Selliera radicans*). Saltmarsh beds are an important source of primary productivity in estuaries and provide habitat for invertebrates and benthic species as well as birds such as the Australasian bittern (*Botaurus poiciloptilus*), South Island fernbird (*Bowdleria punctata*), banded dotterel (*Charadrius bicinctus*), banded rail (*Rallus philippensis*) and marsh crake (*Porzana pusilla*).

Numerous bird roosting sites are located around the perimeter of Golden Bay. Within the Golden Bay Coastal Marine Area there are key roosting sites associated with Farewell Spit as well as at the Takaka river mouth, Taupata Stream and at the mouths of the Parapara Inlet, Pākawau Inlet, and two at the Ruataniwha Inlet.

The estuaries, inlets and exposed tidal flats (including the Farewell Spit intertidal area) in this Coastal Marine Area are habitat for a diverse and abundant invertebrate fauna – an important food source for birds and coastal fish. Notable invertebrate species include the New Zealand cockle (*Austrovenus stutchburyi*), pipi (*Paphies australis*), amphipods, barnacles (*Elminius modestus*), and various isopod and marine worm species.

A typical array of sediment dwelling species occurs offshore in Golden Bay – various worms, molluscs, urchins, crustaceans, sea cucumbers, brittlestars and starfish. These include scallops (*Pecten novaezelandiae*), horse mussels (*Atrina zelandica*), dredge oysters (*Tiostrea chilensis*). A long history of trawling and dredging has significantly modified benthic communities in the bay.

Notable fish species in the Golden Bay Coastal Marine Area include snapper (*Pagrus auratus*), rig (*Mustelus lenticulatus*), flat fish, red gurnard (*Chelidonichthys cuculus*), kahawai (*Arripis trutta*) and king fish (*Seriola lalandi*). Juvenile fish species such as whitebait can be found in the estuaries, inlets and streams within the Coastal Marine Area. These water bodies provide a rich food source and shelter.

The outer waters off Separation Point provide excellent habitat for fish and invertebrate species due to the exclusion zone prohibiting recreational and commercial fishing. A regionally significant bryozoan coral bed is present in these waters as well as a rich assemblage of fish species including blue cod (*Parapercis colias*), spotty (*Notolabrus celidotus*), tarakihi (*Nemadactylus macropterus*), blue moki (*Latridopsis ciliaris*), goatfish (*Upeneichthys lineatus*), butterfly perch (*Caesioperca lepidoptera*), scarlet wrasse (*Pseudolabrus miles*), marblefish (*Aplodactylus arctidens*), banded wrasse (*Notolabrus fucicola*), seahorse (*Hippocampus abdominalis*), opalfish (*Hemerocoetes monopterygius*), red moki (*Cheilodactylus spectabilis*) and sweep (*Scorpis lineolatus*).

Farewell Spit is a Ramsar Site, providing extensive habitat for thousands of wading birds such as pied oystercatcher (*Haematopus ostralegus*) and variable oystercatcher (*Haematopus unicolor*) and notably several species which migrate from the northern hemisphere. These international migrants include bar-tailed godwit (*Limosa lapponica*), red knot (*Calidris canutus*), wrybill (*Anarhynchus frontalis*), long-billed curlew (*Numenius americanus*), greytailed

tattler (*Tringa brevipes*) and ruddy turnstone (*Arenaria interpres*). Australasian gannets (*Morus serrator*) breed on the Spit, and these as well as southern Buller's albatross (*Thalassarche bulleri*) and the southern black backed gull (*Larus dominicanus*) can be seen offshore. Invertebrate species are abundant within the intertidal flats and channels of Farewell Spit including the mud whelk (*Cominella sp.*), tuatua (*Paphies subtriangulata*), surf clam (*Dosinia sp.*), mud snail (*Amphibola crenata*), small shell borer (*Xymene sp.*), ghost shrimp (*Squilla sp.*), seaslater (*Ligia sp.*) and mud crabs (*Macrophthalmus hirtipes*).

Golden Bay supports small resident populations of hectors dolphin (*Cephalorhynchus hectori*) and New Zealand fur seals (*Arctocephalus forsteri*). Bottlenose dolphins (*Tursiops truncatus*) and orca (*Orcinus orca*) periodically visit the bay, and pilot whales (*Globicephala melas.*), common dolphin (*Delphinus delphis*) and dusky dolphin (*Lagenorhynchus obscurus*) are seasonal visitors. The northern beaches of the Bay including Farewell Spit's tidal flats are a hotspot for pilot whale strandings in summer. Occasional larger whales may also be seen in the bay.

The offshore area of this Coastal Marine Area has had a long history of commercial shellfish dredging and trawling for demersal species such as snapper, flatfish, and gurnard (Newcombe et al., 2015). Marine farms are also present within the bay between three to five kilometres offshore. These are mostly located to the south of Golden Bay with farms north of Ruataniwha Inlet and consented farms offshore from Parapara Inlet and the Takaka River mouth. Sedimentation (mainly from the Aorere and Takaka Rivers) will also have modified some estuaries and offshore habitats.

Experiential

The Golden Bay Coastal Marine Area is a popular destination for beach-related and watercraft activities, including swimming, bird watching, and fishing. Many of the coastal settlements include baches and there is an influx of holiday makers into the bay over the summer.

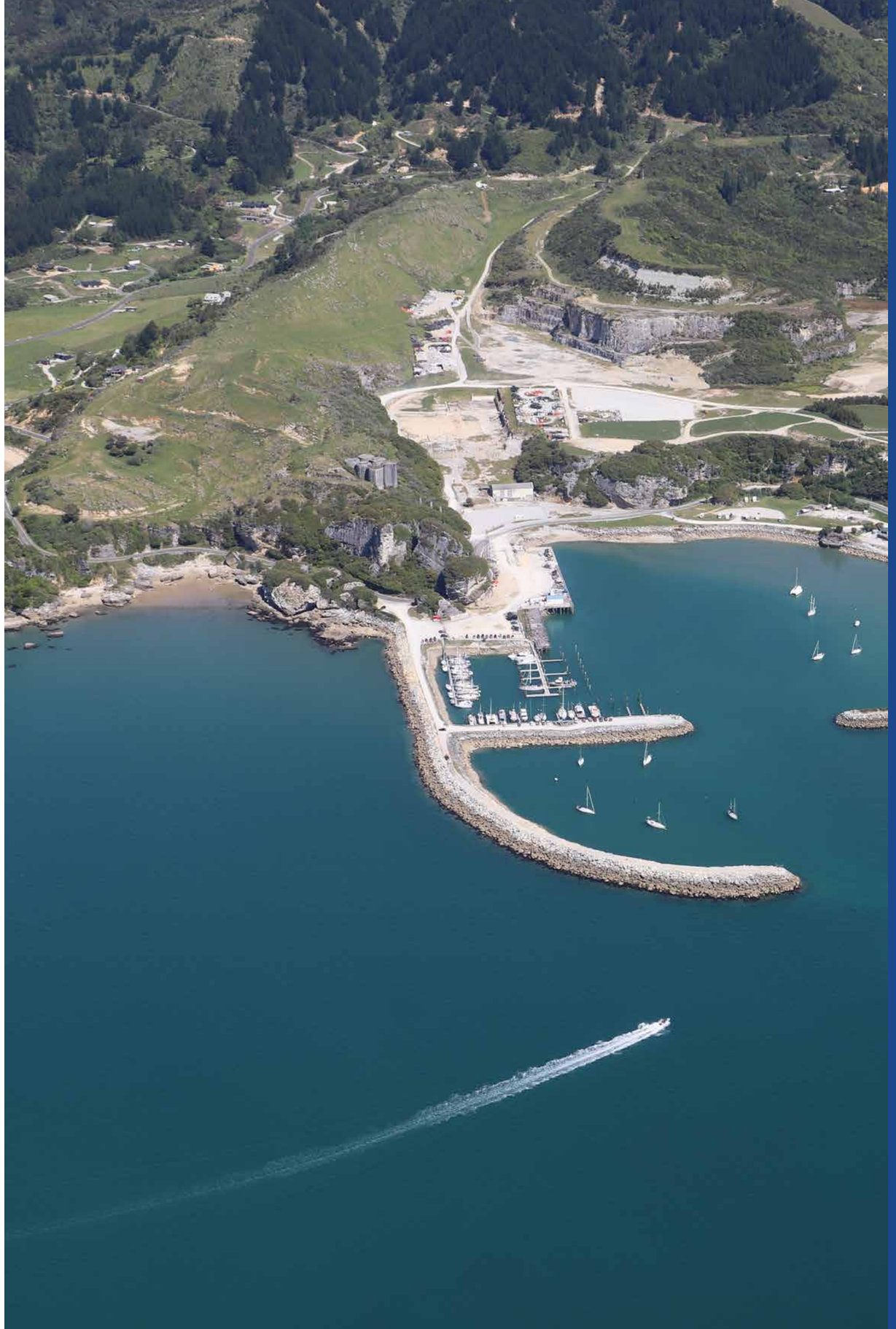
Boat ramps are present at various locations, most commonly near higher populated areas such as Pohara and Parapara. Jetties, wharfs and other structures also occur near settlements and popular beaches. Port Tarakohe in the south-eastern sector of the bay provides a sheltered marina and launching facility.

On a good day, the outer waters of Golden Bay can be reached by private vessel with common activities including fishing and water sports. Commercial operators offer fishing and kayak tours within the bay.

Level 3 Rating: Coastal Marine Area B: Golden Bay

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH			
HIGH			✓
MODERATE TO HIGH	✓	✓	
MODERATE			
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING	MODERATE-HIGH		

Right: View of the Pohara Boat Club near Pohara Boffa Miskell, 2019.



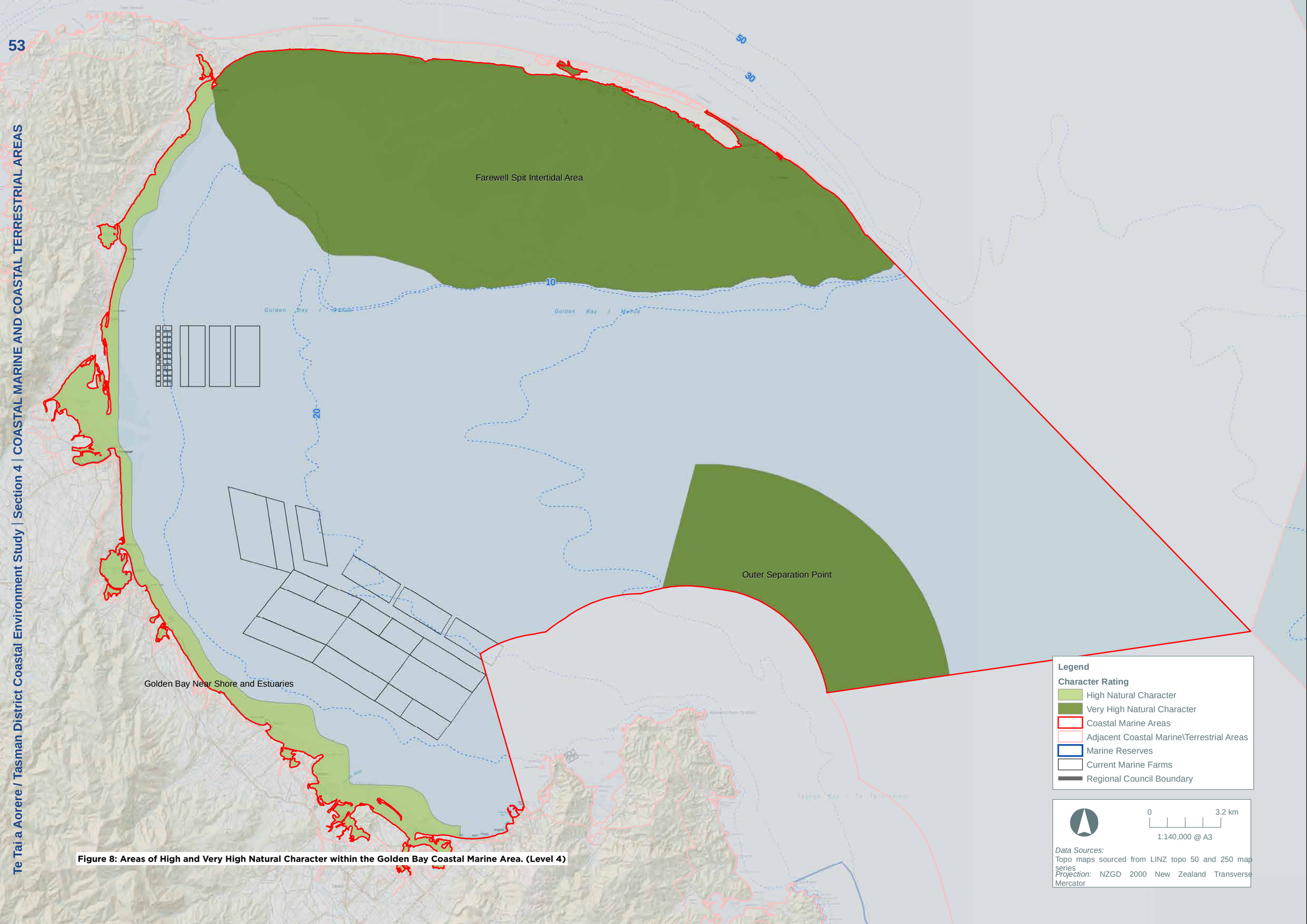


Figure 8: Areas of High and Very High Natural Character within the Golden Bay Coastal Marine Area. (Level 4)

Coastal Marine Area B: Golden Bay

SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 8

REFER TO COASTAL TERRESTRIAL AREAS 5-7 FOR FURTHER INFORMATION RELATING TO THE TERRESTRIAL COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
FAREWELL SPIT INTERTIDAL AREA	VH	VH	VH	VH	• Unmodified intertidal area • Supports large seagrass meadows and abundant invertebrate species • Habitat, including breeding and roosting sites, for a diverse avifauna, especially wader birds • Internationally recognised as part of the Farewell Spit Ramsar Site. • Expansive views of offshore waters and Golden Bay. • Remote and wild experiences	• Follows the 10m bathymetry contour and avoids trawling in Golden Bay
GOLDEN BAY NEAR SHORE AND ESTUARIES	H	H	H	VH	• Expansive and relatively intact intertidal areas. • Estuaries and inlets provide sheltered habitats with vegetated margins and a diverse and abundant invertebrate fauna. • Estuaries and tidal flats provide an important food source for bird species and coastal fishes. • Roosting sites for wader bird species including at the Takaka river mouth, Taupata Stream and at the mouths of the Parapara Inlet, Pākawau Inlet, and Ruataniwha Inlet. • Sheltered, and tranquil experiences	• Excludes areas of aquaculture
OUTER SEPARATION POINT	VH	VH	VH	VH	• Provide excellent habitat for fish and invertebrate species • Regionally significant bryozoan coral beds • Very High levels of perceived naturalness due to lack of modification	• Corresponds with Separation Point Exclusion Zone

Label: VH=Very High; H=High; MH=Moderate High; M=Moderate; ML=Moderate Low; L=Low; VL=Very Low.

Above: View of Rabbit Island and the wider Tasman Bay from Nelson.Boffa Miskell, 2019.

5.4. Coastal Marine Area C: Tasman Bay

The extent of Taman Bay Coastal Marine Area is from Separation Point in Abel Tasman National Park to the Nelson and Tasman District Boundary. This excludes the three nautical mile buffer from Mean High Water Spring Mark which forms the Abel Tasman Coastal Marine Area. This Coastal Marine Area is characterised by expansive, uninterrupted views, sweeping sandy beaches, and two major estuaries the Waimea and Moutere Inlets. While the majority of the bay is part of the Tasman District, it is also shared with nearby town and District, Nelson.

Key coastal characteristics include: The Moutere and Waimea inlets which provide intertidal flats and saltmarsh communities, Motueka and Waimea River mouths, and estuarine islands and sandspits.

Abiotic

An analysis of this Coastal Marine Area's habitat type comprises 7.1% sand; 0% reef; 92.6% mud; 0% gravel; 0.3% biogenic and 0% rocky shores[25]. The approximate size of this Coastal Marine Area is 101,667 hectares.

Tasman Bay Coastal Marine Area is a gradually sloping bay which is less than 50 metres in depth at the 12 nautical mile mark. During the summer months surface sea temperature in Tasman Bay is approximately 19°C while in winter this drops to approximately 12.5°C (Macara, 2016). Tasman Bay is sheltered from large oceanic swells, is generally warmer than the nearby waters of Cook Strait, and with many freshwater tributaries is not as saline as waters in Cook Strait. The Motueka River plume can extend across much of the western side Tasman Bay (Tuckley et al 2006).

The D'Urville Current brings relatively warm oceanic water into the bay from the west and north, with tidal flows taking water into the inner bay then generally northwards along the western flank of Tasman Bay. Water exits the bay near D'Urville Island to the west of the Marlborough Sounds.

The Tasman Bay coastline is relatively flat, with moderately wide sandy beaches and expansive intertidal mud/sand flats in the estuaries and inlets. The Waimea Inlet, found in the south-east of the Coastal Marine Area, is the largest estuary in the South Island and is considered nationally important. It is approximately 2 metres deep at high tide and sheltered from Tasman Bay by Rabbit Island, a barrier island separating the western and eastern openings to the estuary. The inlet is comprised of predominantly sand substrate and soft mud cover due to fine sediment inputs from natural and human induced land disturbance (Stevens & Robertson, 2014). Deep incised channels within the estuary are also present and are well flushed at low tide.

25. Coastal Marine Habitats, Department of Conservation.

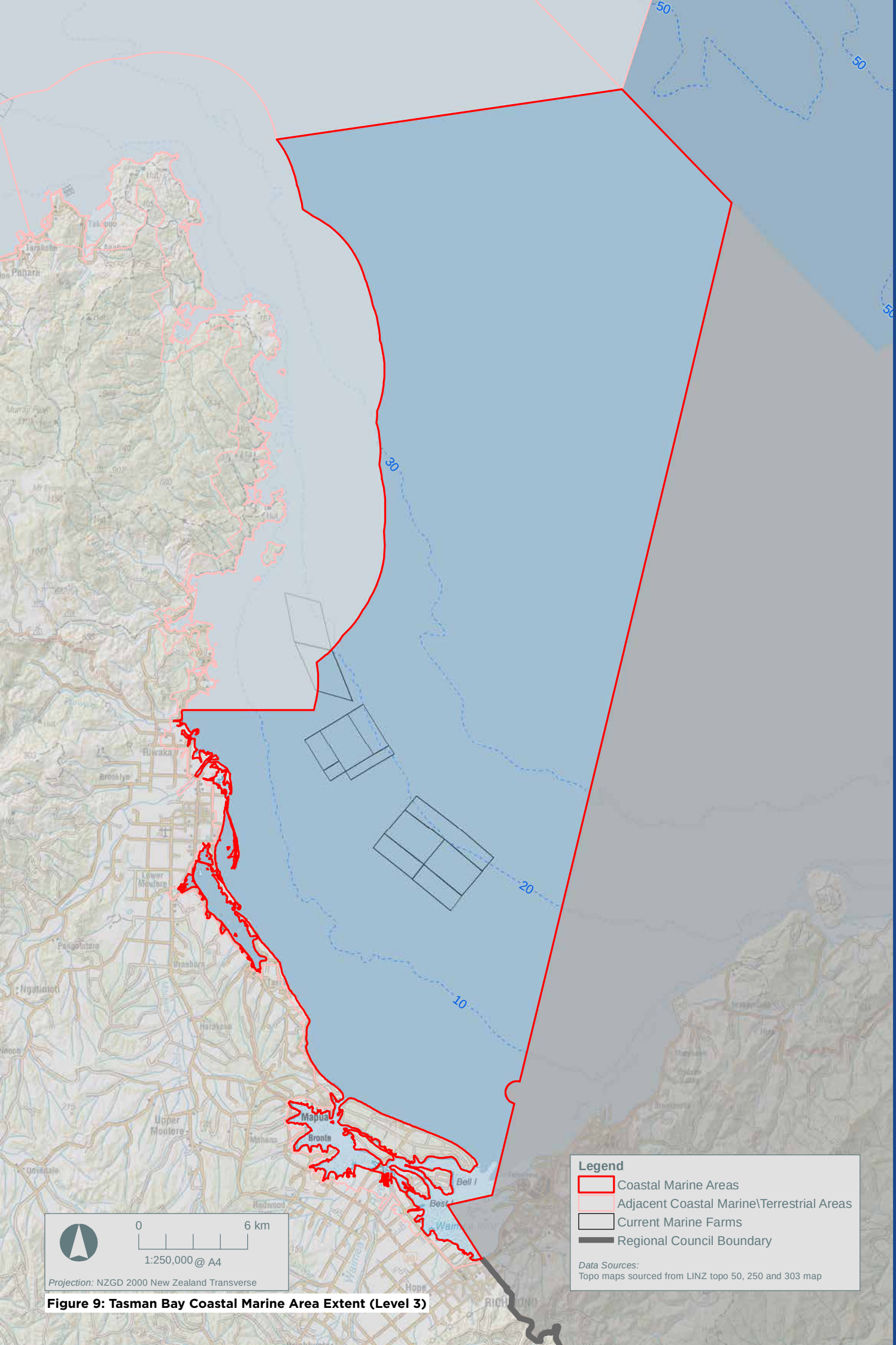


Figure 9: Tasman Bay Coastal Marine Area Extent (Level 3)

Although smaller, Moutere Inlet shares similar characteristics to the Waimea Inlet. It is at a maximum 2 metres deep and has two openings on either side of Jackett Island on the north-eastern flank of the inlet. As the land around the inlet has been greatly developed, the intertidal flats are comprised of fine sand and soft mud (Stevens & Robertson, 2013). Much like the Waimea Inlet, the Moutere Inlet is well flushed and almost empty at low tide, exposing deep incised channels in the intertidal flats (Stevens & Robertson, 2013).

To the north of Moutere Inlet is the Motueka Spit, a large sand barrier which extends from the Mouteka River Mouth to 1km south of Port Motueka. The sand spit is a part of the wider Motueka River Delta system which is formed from sediments from both the Motueka and Riwaka Rivers. Being exposed to Tasman Bay the sand spit is always changing in response to the sea and sediments deposited from the river mouth (Department of Conservation, 2020a).

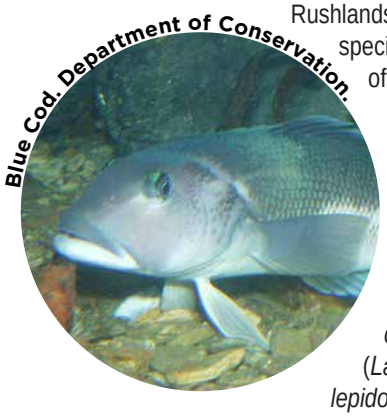
Modifications to the abiotic values of this Coastal Marine Area include trawling, shellfish dredging, sedimentation and development along the coastal edge. While the estuaries provide a helpful barrier between the open ocean and land, absorbing and trapping any nutrients and sediments, large areas have been reclaimed through stop-banking, changing the original patterns and processes found along the Tasman Bay coastline (Newcombe et al., 2015).

Moutere Inlet is significantly modified by surrounding roads, bridges and causeways, as well as by port, marina and factory developments at Port Motueka. Jetties and wharves are dotted around the coastline within the sheltered inlets.

Biotic

Offshore parts of Tasman Bay are habitat for a typical array of sediment-tolerant benthic species. Notable species include brittle stars (*Amphiura rosea*), polychaete worms, hermit crabs, sea cucumbers, the heart urchin (*Echinocardium cordatum*) and various bivalve and gastropod molluscs (e.g. scallops, dredge oysters, *Dosinia lambata, Neilo australis*, the saltwater nut clam *Nucula nitidula*, the cockle *Pratulum pulchellum*, *Scalpomactra scalpellum*, the turret shell *Maoricolpus roseus*, and whelks. Benthic invertebrates are an important source of food for fish species such as red gurnard (*Chelidonichthys cuculus*), rig (*Mustelus lenticulatus*), tarakihi (*Nemadactylus macropterus*) and snapper (*Pagrus auratus*). Sabellid tubeworms can also be found on a small area of cobbles closer to shore in Ruby Bay.

The inlets and estuaries of the Tasman Bay Coastal Marine Area provide important shelter, food and habitat for numerous invertebrate, fish and marine bird species. While land use around Moutere Inlet and in the surrounding catchments has impacted sediment levels within the inlet, there is still a diversity of habitats and species present. Rushlands, eel grass beds (*Zostera capricorni*), and seaweed species are present. Wading bird species frequent the inlet, while white heron (*Ardea modesta*) is seen occasionally. Large beds of cockles (*Austrovenus stutchburyi*), Pacific Oyster (*Crassostrea gigas*) and mud snails are also present.



To the north of the Tasman Bay Coastal Marine Area is the outskirts of the Separation Point exclusion zone. The outer waters off Separation Point provide excellent habitat for fish and invertebrate species due to the exclusion zone prohibiting recreational and commercial fishing. A regionally significant bryozoan coral bed is present in these waters as well as a rich assemblage of fish species including blue cod (*Parapercis colias*), spotty (*Notolabrus celidotus*), tarakihi (*Nemadactylus macropterus*), blue moki (*Latridopsis ciliaris*), goatfish (*Upeneichthys lineatus*), butterfly perch (*Caesioperca lepidoptera*), scarlet wrasse (*Pseudolabrus miles*), marblefish (*Aplodactylus arctidens*), banded wrasse (*Notolabrus fucicola*), seahorse (*Hippocampus abdominalis*), opalfish (*Hemerocoetes monopterygius*), red moki (*Cheilodactylus spectabilis*) and sweep (*Scorpis lineolatus*).

The Mouteka River Delta and nearby sandspit provides an ideal habitat for wader bird species, royal spoonbill (*Platalea regia*), white heron (*Egretta alba*) and various gull species. The sandspit is occupied by over 10,000 birds during the summer months and is a breeding area for the white-fronted tern (*Sterna striata*), banded dotterel (*Charadrius bicinctus*), and variable oystercatchers (*Haematopus unicolor*). Offshore, bird species found within Tasman Bay include southern black backed gulls (*Larus dominicanus*) and petrel species.

Further south, the Waimea Inlet shares similar characteristics to the Moutere Inlet in terms of habitat types though is significantly larger. There has been an estimated 40% reduction of seagrass between 1990 and 1999 and 15% reduction in native saltmarsh between 1946 and 2006 (Stevens & Robertson, 2014). Nevertheless, the inlet still supports good saltmarsh habitat around parts of the inlet with species such as *Juncas kraussii australiensis*, *Leptocarpus similis* and *Sarcocornia quinqueflora* present. The Waimea River delta contains some of the most intact areas of saltmarsh within the Waimea Inlet and is known to support threatened wetland birds including Australasian

bittern, South Island fernbird, marsh crake, spotless crake, and banded rail (North, 2010a, 2010b). The area contains a complex pattern of saltmarsh vegetation communities including brackish and freshwater wetland communities and has an intact vegetation sequence to the upper shoreline (North, 2010a, 2010b). Species present include saltmarsh ribbonwood, oioi, sea rush, and two threatened species including estuary sedge (*Carex litorosa*) and native musk (*Mimulus repens*) (North, 2010a, 2010b).

The inlet also supports around forty marine and freshwater fish species, including whitebait spawning sites, over one-hundred invertebrate species, and over fifty water bird species including the eastern bar-tailed godwit (*Limosa lapponica*) and South Island pied oystercatcher (*Haematopus finschi*) (Davidson & Moffat, 1990). The inlet also supports 50% of the regional breeding population of Caspian Terns (McArthur et al., 2022).

Bottlenose dolphins (*Tursiops truncatus*) and orca (*Orcinus orca*) periodically visit Tasman Bay. Pilot whales (*Globicephala melas.*), common dolphin (*Delphinus delphis*) and dusky dolphin (*Lagenorhynchus obscurus*) are seasonal visitors. New Zealand fur seals (*Arctocephalus forsteri*) may be encountered offshore and very occasionally larger whales (e.g. southern right whale *Eubalaena australis*) may also be seen in the bay. Vagrant leopard seals are sometimes seen and hectors dolphins are occasionally sighted in inner Tasman Bay (Department of Conservation, 2020b)

Modifications to biotic values within the Tasman Bay Coastal Marine Area are largely associated with offshore trawling and dredging, marine farms off the coast of the Moutere Inlet (Tasman District Council, n.d.), and development within the terrestrial areas reducing saltmarsh habitat. Trawling and recreational and commercial fishing have also had great impacts on the biotic values, with the snapper, scallops, red cod and flatfish all being popular catches (Newcombe et al., 2015). Dredging for oysters and mussels also occurs in the bay. Due to the modification to benthic habitats, perna beds (green lipped mussels) are now extinct in Tasman Bay (Anderson et al., 2019).

Experiential

The Tasman Coastal Marine Area is the most developed and heavily fished area within the Tasman District. Experiential aspects within this Coastal Marine Area vary from semi enclosed tidal estuaries to expansive views of Tasman Bay, Abel Tasman National Park and Cook Strait.

Historically this Coastal Marine Area has been heavily influenced by people due to the nearby settlements of Mouteka, Mapua and Nelson (which sits outside of the study area). Structures such as roads, causeways, jetties, and wharves are found throughout this Coastal Marine Area and boat access is predominantly within the Waimea and Moutere Inlets.

Recreational opportunities within this Coastal Marine Area include beach-related activities, swimming, birdwatching and fishing. Fishing can be carried out from the shoreline or within the bay. Commercial operators also offer fishing tours within Tasman Bay.

Level 3 Rating: Coastal Marine Area C: Tasman Bay

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH			
HIGH			
MODERATE TO HIGH		✓	✓
MODERATE	✓		
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING	MODERATE-HIGH		

Right: Waimea Inlet margins.
Boffa Miskell, 2019.

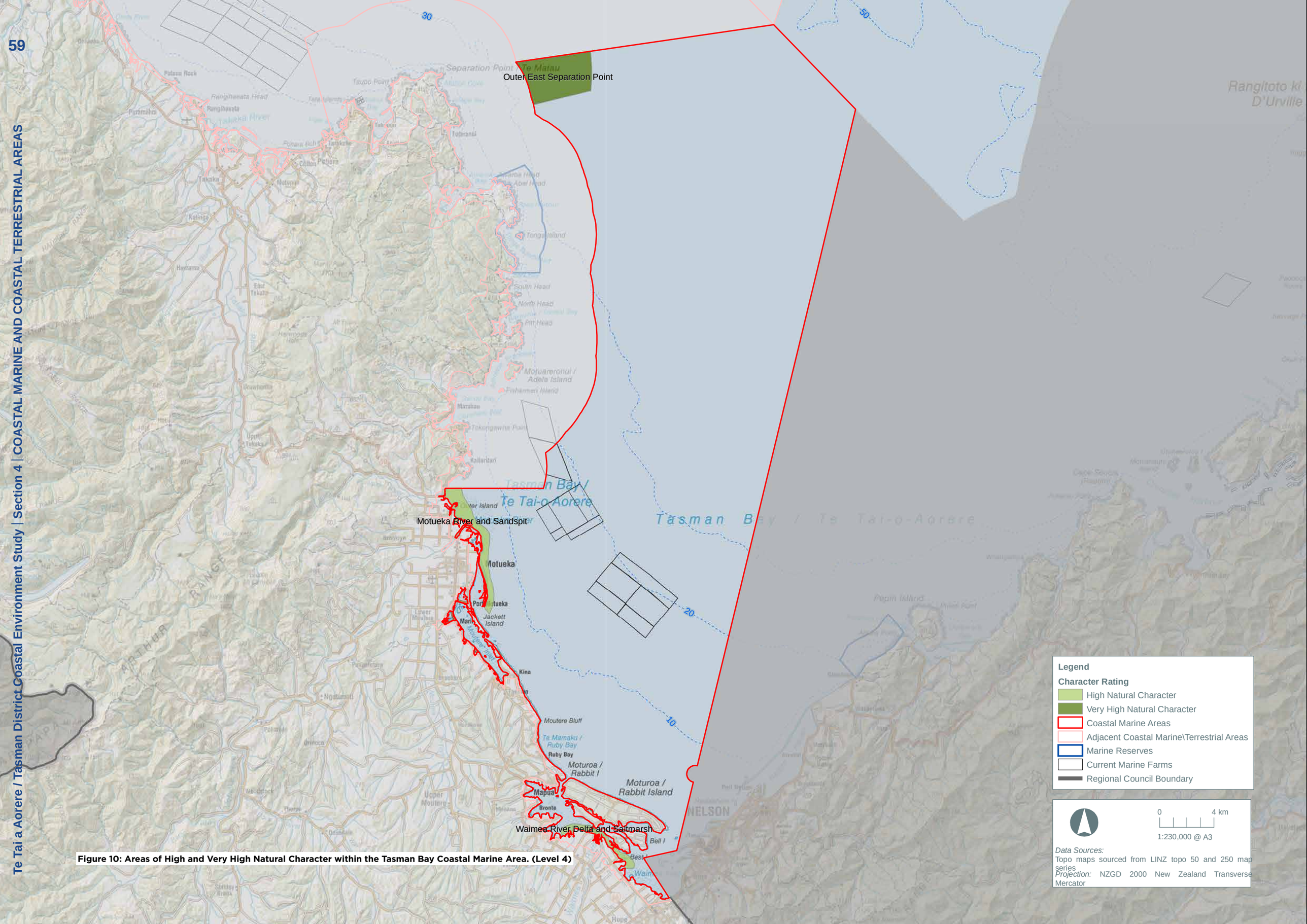


Figure 10: Areas of High and Very High Natural Character within the Tasman Bay Coastal Marine Area. (Level 4)

Coastal Marine Area C: Tasman Bay

SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 10

REFER TO COASTAL TERRESTRIAL AREAS 9-10 FOR FURTHER INFORMATION RELATING TO THE TERRESTRIAL COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
OUTER EAST SEPARATION POINT	VH	VH	VH	VH	• Seafloor geomorphology and landform remains largely intact due to exclusion zone. • Excellent habitat for fish and invertebrate species • Regionally significant bryozoan coral bed • Expansive views of Golden and Tasman Bays	• Corresponds with the remaining part of Separation Point Exclusion Zone
MOTUEKA RIVER AND SANDSPIT	H	H	H	H	• Dynamic sandspit and river mouth with sediment frequently deposited changing the sandspit's form. • Ideal habitat for wader bird species such as the royal spoonbill (*Platalea regia*), white heron (*Egretta alba*) and various gull species. Approximately 10,000 wader bird species also inhabit the sandspit during the summer months. • Largely free of structures and modifications to the coastal edge. • Expansive views of Tasman Bay	• Does not include the highly modified waters to the west of the of the Spit near Motueka.
WAIMEA RIVER DELTA AND SALTMARSH	H	H	H	H	• Largely intact river delta. • Contains some of the most intact areas of saltmarsh with the Waimea Inlet. • Contains two threatened species including estuary sedge (*Carex litorosa*) and native musk (*Mimulus repens*). • Known to support threatened wetland birds including Australasian bittern, South Island fernbird, marsh crake, spotless crake, and banded rail. • Sheltered and tranquil experiences.	• Neighbouring terrestrial environment is highly modified.

Label: VH=Very High; H=High; MH=Moderate High; M=Moderate; ML=Moderate Low; L=Low; VL=Very Low.

Above: Waters surrounding Fisherman Island and Adele Island. Boffa Miskell, 2019.

5.5. Coastal Marine Area D: Abel Tasman

The Abel Tasman Coastal Marine Area extends from the Abel Tasman Monument near Takaka to the mouth of the Riwaka River and out to three nautical miles from MHWS. This Coastal Marine Area is characterised by shallow, sandy bays, and rocky reefs with expansive views of Cook Strait, Golden Bay and Tasman Bay. The Coastal Marine Area offers sheltered bays from the wider coastal environment including Wainui Bay, Awaroa Bay, and Torrent Bay.

This coastal marine area is bordered by the Abel Tasman National Park. Other key coastal characteristics include the offshore islands and rock stacks, the granite shoreline and underlying geology, rocky boulder and bedrock reefs separated by golden sand beaches, and the Tonga Island Marine Reserve.

Key coastal characteristics include the offshore reefs and rock stacks surrounding Adele, Fisherman, and Tonga Islands, granite shoreline and underlying geology and the Tonga Island Marine Reserve.

Abiotic

An analysis of this Coastal Marine Area's habitat type comprises 4.1% sand; 5.9% reef; 75.1% mud; 14.7% biogenic and 0.3% rocky shores[26]. The approximate size of this Coastal Marine Area is 31,347 hectares.

The shoreline and immediate subtidal zone of the Abel Tasman Coastal Marine Area is relatively steep compared to neighbouring Golden and Tasman Bays, but levels out quickly and is gently sloping offshore to about 30 metres depth at the 3 nautical mile boundary. The shoreline and nearshore zone are predominantly granite rocks and sands, reflecting the granite dominated geology off this coast. The geology in turn has a great impact on the diversity and types of flora and fauna which appear in this Coastal Marine Area.

The surface sea temperature during the summer months is approximately 19°C in summer compared to 12°C in the winter months. Much like the neighbouring Tasman and Golden Bays, the Abel Tasman Coastal Marine Area is sheltered from large oceanic swells. Moderate to strong currents occur off the major headlands. In contrast, the fifteen coastal estuaries within this Coastal Marine Area provide shelter from the outer waters and drain almost completely at low tide (Davidson, 2018).

Several estuaries are dotted along the Abel Tasman coast, the largest being Wainui Inlet, followed by Kaiteriteri, Otuwhero, and Torrent Bay estuaries (Davidson, 2018). The Wainui Inlet is sheltered by a large sandspit separating

26. Coastal Marine Habitats, Department of Conservation.

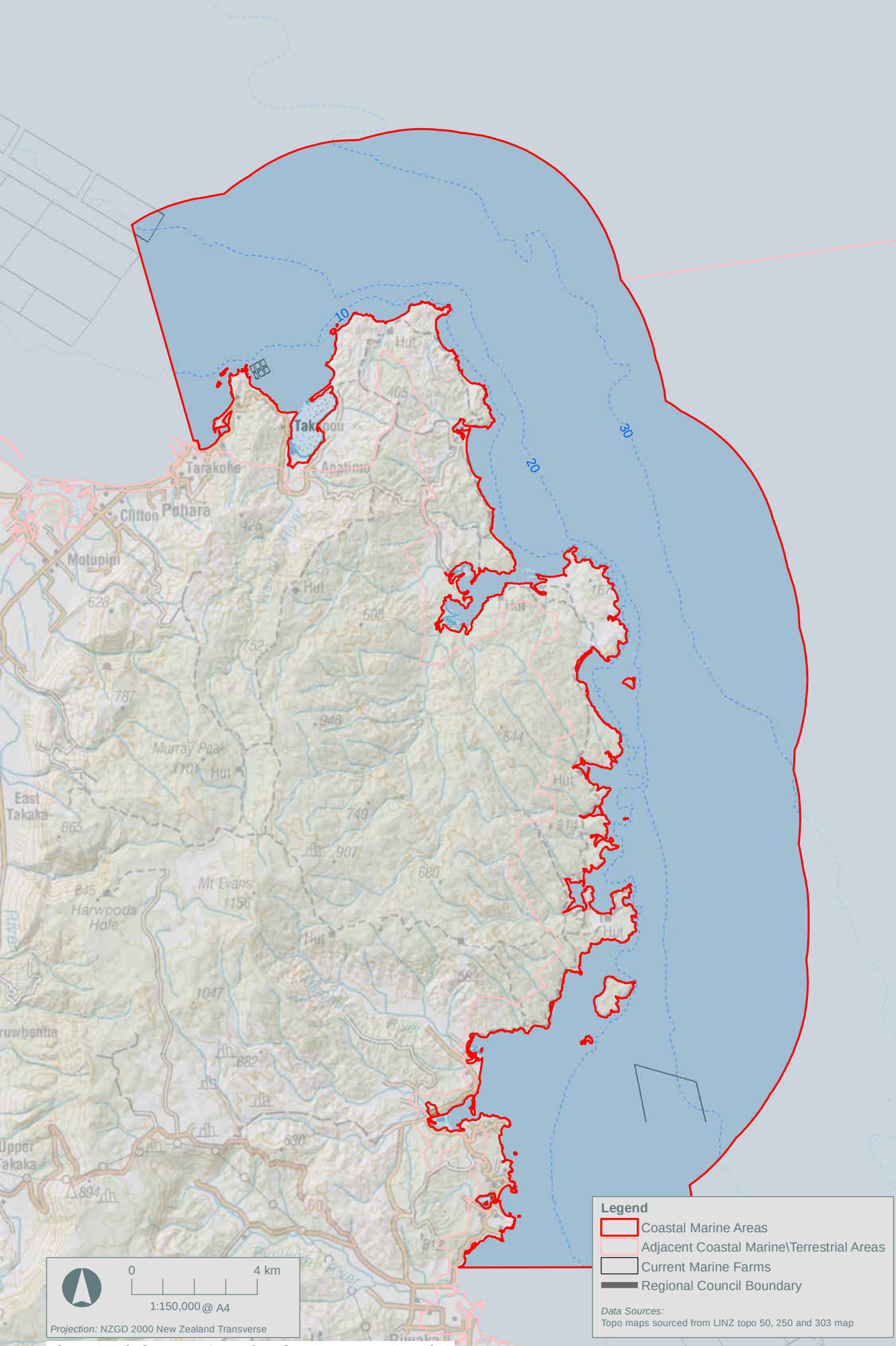


Figure 11: Abel Tasman Coastal Marine Area Extent (Level 3)

the inlet from Wainui Bay. Unlike other estuaries in the Tasman region, estuaries in the Abel Tasman Coastal Marine Area contain a mixture of coarse to fine granite granules and sediments. Fine muds are comparatively uncommon due to the mostly indigenous forest cover and granite-dominated catchments. Increased levels of mud and sediment, however, are present in the Kaiteriteri and Otuwhero estuaries due to associated human modification on the land.

Modifications to the abiotic values within this Coastal Marine Area are associated with commercial and recreational fishing and with isolated terrestrial modification causing increased sedimentation in the Kaiteriteri and Otuwhero estuaries. In addition, very large flood events in the Motueka River can result in a sediment plume extending northwards along the southern reaches of the Abel Tasman coast. Anchoring occurs at various popular spots along the Park, and there is a mooring zone at The Anchorage in Torrent Bay. Excluding the 142km^2 exclusion zone around Separation point and the Tonga Island Marine Reserve, bottom trawling has occurred close to shore along parts of this coast especially in the south and near Totaranui.

Biotic

The Abel Tasman Coastal Marine Area supports a unique marine community due to its granite geology. Subtidal algae populations are sparse, dominated by coralline species (*Corallinales spp.*) and relatively few red and brown macro-species. Grazing invertebrates (e.g. kina, limpets and top shells) are conspicuous across the exposed subtidal rocks.

Many of the estuaries in the Abel Tasman Coastal Marine Area retain natural biological sequences from indigenous forest cover through to marshlands and intertidal flats. Framing the fifteen estuaries within this Coastal Marine Area are coherent stands of saltmarsh habitat including shore pimpernel (*Samolus repens*), remuremu (*Selliera radicans*), sea rush (*Juncas kraussii australiensis*) jointed rush (*Leptocarpus similis*) and glasswort (*Sarcocornia quinqueflora*). The saltmarsh provides habitat for numerous bird species such as the fernbird (*Bowdleria punctata*), banded rail (*Gallirallus philippensis*), Australasian bittern (*Botaurus poiciloptilus*) and the marsh crake (*Porzana pusilla*). Variable oyster catchers There are also two roosting sites at the mouth of the Wainui and Awaroa Inlets, with banded dotterel (*Charadrius bicinctus*) roosting at the Wainui roosting site.

Invertebrates are also abundant within the estuaries. Molluscs, polychaetes (bristle worms), and crustaceans dominate the soft shores of the estuaries (Davidson, 1991). Similar species are found subtidally, along with others such as the horse mussel (*Modiolus modiolus*), scallop (*Pectinidae spp.*), starfish (*Asteroidea spp.*), and kina (*Evechinus chloroticus*). Offshore species are similar to those found in Golden and Tasman Bays including mollusc species such as *Neilo australis*, the saltwater nut clam (*Nucula nitidula*), the turret shell (*Maoricolpus roseus*), the brittle-star (*Amphiura rosea*) and the heart urchin (*Echinocardium cordatum*). Rock lobsters are found along rocky sections of the Park especially where boulders and bedrock combine to create caves, crevices and overhangs.

There is a greater diversity of fish species within the tidal and rocky shores of Abel Tasman Coastal Marine Area compared to open sediment-dominated areas. Species along the Abel Tasman National Park include snapper (*Pagrus auratus*), spotty (*Notolabrus celidotus*), tarakihi (*Nemadactylus macropterus*), blue moki (*Latridopsis ciliaris*), goatfish (*Upeneichthys lineatus*), butterfly perch (*Caesioperca lepidoptera*), blue cod (*Parapercis colias*), scarlet wrasse (*Pseudolabrus miles*), marblefish (*Aplodactylus arctidens*), banded wrasse (*Notolabrus fucicola*), seahorse (*Hippocampus abdominalis*), opalfish (*Hemerocoetes monopterygius*), red moki (*Cheilodactylus spectabilis*) and sweep (*Scorpis lineolatus*).

Bottlenose Dolphin. Department of Conservation.

Commercial trawling and dredging is prohibited off Separation Point protecting a regionally significant bryozoan coral bed, dominated by Celleporaria agglutinans, and juvenile fish habitat. Brachiopods and numerous other bryozoan species are also present.

Within the no fishing zone near Separation Point there is also a regionally significant bryozoan coral bed, *Celleporaria agglutinans*. There are also brachiopod species and ninety-three other bryozoan species present.

The Tonga Island Marine Reserve is also a significant part of the Abel Tasman Coastal Marine Area. Protected from recreational and commercial fishing, the marine reserve supports a typical array of species such as crayfish, wrasses (*Labridae sp.*), blue cod (*Parapercis colias*), tarakihi (*Nemadactylus macropterus*), and snapper (*Pagrus auratus*).

Fur seals breed on Tonga, Pinnacle and Adele Islands and haul out at various other places along the entire coast including around the Tata Headland and Tata Islands (Department of Conservation, 2008b). .

Bottlenose dolphins (*Tursiops truncatus*), dusky dolphins (*Lagenorhynchus obscurus*), common dolphins (*Delphinus delphis*), Hector's dolphins (*Cephalorhynchus hectori*) and Orca (*Orcinus orca*) may be seen periodically or seasonally along this coast. Southern right whales (*Eubalaena australis*) are rare visitors.

Spotted Shag. Department of Conservation.

Little blue penguins (*Eudyptula minor*) forage offshore during the day and nest along rocky shores notably on Adele, Tata, and Fisherman Islands. Offshore comorant (*Phalacrocoracidae spp.*) and gull colonies can be found near the Tata Islands. Southern black backed gulls (*Larus dominicanus*), red billed gulls (*Chroicocephalus novaehollandiae scopulinus*) and Australasian Gannets (*Morus serrator*) are regularly seen. Other common seabirds include spotted shag (*Stictocarbo punctatus*), little shag (*Phalacrocorax sulcirostris*), pied shag (*Phalacrocorax varius*), South Island pied oystercatcher (*Haematopus finschi*), variable oystercatcher (*Haematopus unicolor*), white-faced heron (*Egretta novaehollandiae*), and fluttering sheerwater (*Puffinus gavia*).

Modifications to this Coastal Marine Area are largely associated with recreational and commercial fishing, especially trawling and dredging. These methods are banned within the Separation Point closed area, and all forms of fishing are prohibited with Tonga Island Marine Reserve.

Experiential

The Abel Tasman Coastal Marine Area is renowned for its natural beauty and exhibits a high level of experiential values. The Area has a natural backdrop of the Abel Tasman National Park with its indigenous forest cover and minimal human induced light pollution. Crescent-shaped golden sand beaches, rocky headlands and intimate estuaries pepper the coastline, popular places to explore or relax, especially during the summer months.

Within this Coastal Marine Area are opportunities to view penguins and marine mammals such as fur seals and dolphins, as well as explore the many estuaries, sandy beaches and rocky shores the Abel Tasman has to offer.

While the Abel Tasman Great Walk is a popular way to explore the coastline, sea kayaking and boating allows visitors to explore less accessible inlets and offshore islands including Adele Island and Tonga Island. Private vessels are common, from kayaks and small run-abouts to large launches and yachts

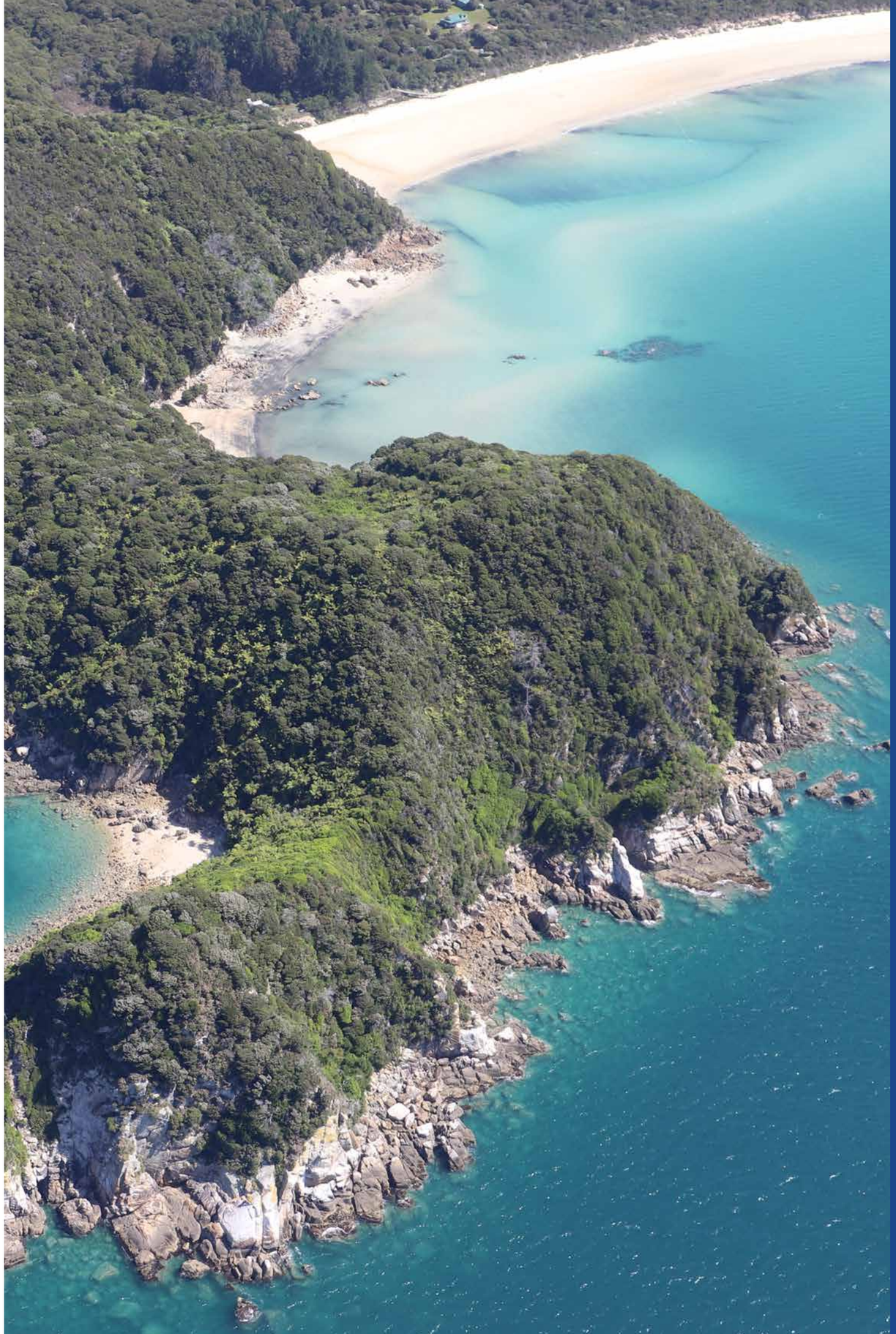
Commercial kayak operators offer guided tours or individual hires for those wishing to explore Abel Tasman's marine environment. Kayakers can do single or multi-day trips along the coast and stay in huts or campsites within the national park.

Commercial operators also offer a variety of water taxi and cruise options departing from Kaiteriteri or Marahau taking tourists to popular areas within the Abel Tasman Coastal Marine Area. For those wishing to reach the outer waters of the Abel Tasman Coastal Marine Area for more remote fishing and sightseeing opportunities, tours are available from Pohara and Kaiteriteri.

Level 3 Rating: Coastal Marine Area D: Abel Tasman

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH		✓	✓
HIGH	✓		
MODERATE TO HIGH			
MODERATE			
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING	VERY HIGH		

Right: Awaroa Head, and Awaroa Bay. Boffa Miskell, 2019.



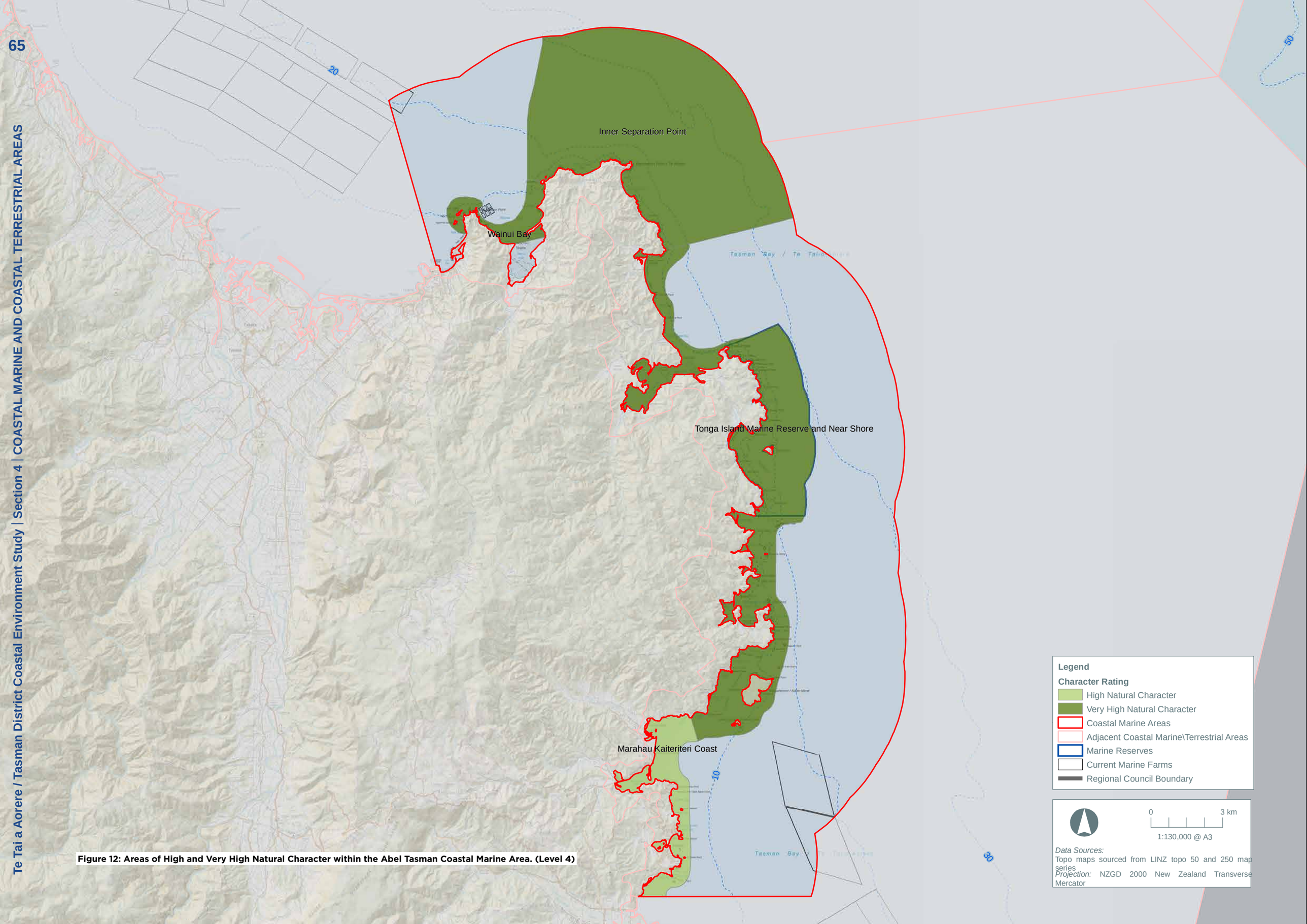


Figure 12: Areas of High and Very High Natural Character within the Abel Tasman Coastal Marine Area. (Level 4)

Coastal Marine Area D: Abel Tasman

SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 12

REFER TO COASTAL TERRESTRIAL AREA 8 FOR FURTHER INFORMATION RELATING TO THE TERRESTRIAL COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
INNER SEPARATION POINT	VH	VH	VH	VH	• Part of the Separation Point closed fishing (trawling and dredging) area • Seafloor geomorphology and landform remains largely intact due to exclusion zone • Intact habitat for marine fish and invertebrate species • Nursery for juvenile fish species • Regionally significant bryozoan coral beds • High remoteness and naturalness values	• Corresponds with the remaining part of Separation Point Exclusion Zone
WAINUI BAY	VH	VH	VH	VH	• Intact rocky shoreline around Tata Islands. • Estuaries contain coarse to fine granite granules and sediments unique to Abel Tasman Supports numerous invertebrate species • Roosting site present for the banded dotterel (*Charadrius bicinctus*) • Large estuary with good stands of salt marsh at its head. Supports numerous invertebrate species • Habitat for numerous bird species such as the fernbird (*Bowdleria punctata*), banded rail (*Gallirallus philippensis*), Australasian bittern (*Botaurus poiciloptilus*) and the marsh crake (*Porzana pusilla*) • The highly tidal character of the inlet contributes to the high level of perceived naturalness • A sense of peacefulness, tranquillity and remoteness. • High recreational and naturalness values	• Some terrestrial modification to the coastal edge of the inlet impacting sediment composition • Excludes marine farms to the north-west of Wainui Bay. • Avoids aquaculture in Wainui Bay.
TONGA ISLAND MARINE RESERVE AND NEAR SHORE	VH	VH	VH	VH	• Tonga Island Marine Reserve • Supports numerous invertebrate species • Coherent areas of saltmarsh vegetation • Roosting site present for the banded dotterel (*Charadrius bicinctus*) • Habitat for numerous bird species such as the fernbird (*Bowdleria punctata*), banded rail (*Gallirallus philippensis*), Australasian bittern (*Botaurus poiciloptilus*) and the marsh crake (*Porzana pusilla*) • Fur seals, dolphin species and orca present • High naturalness and remoteness values	• Some offshore trawling neighbours this area of very high natural character.
MARAHAU KAIERITERI COAST	H	H	H	H	• Estuaries contain coarse to fine granite granules and sediments unique to Abel Tasman • Habitat for wader birds • High recreational and naturalness values	• Some sedimentation and modification due to land clearance in the terrestrial area

Label: VH=Very High; H=High; MH=Moderate High; M=Moderate; ML=Moderate Low; L=Low; VL=Very Low.

Above: Turimawiwi River Mouth and Turimawiwi Dunes. Lisa McGlinchey, Tasman District Council.

5.6. Coastal Terrestrial Area 1: Anatori

The Anatori Coastal Terrestrial Area forms part of the wild and remote northern section of the west coast, located between the District's boundary with Buller to the south at Kahurangi Point extending to South Head Cone at the mouth of the Whanganui Inlet. This section of the Tasman coastline is the least populated within the District, with no major settlements and only one access road traversing numerous streams, wetlands, dunes and rivers. Farms can also be found near the coastline. Part of the more elevated sections of this Coastal Terrestrial Area form part of Kahurangi National Park with parts of the lower land being used primarily for grazing.

Key coastal characteristics include: salt turfs, dunes, exposed bluffs, sandy beaches, coastal lakes and lagoons. Elevated indigenous bush cover and cleared land for grazing closer to coast. This part of the Tasman coastline is one of the most exposed areas to prevailing north-west winds and storms forming in the north-west Tasman Sea.

The inland extent of the coastal environment has been defined using the Ridgeline Principle, and Vegetation and Land Use Principle. This included the use of topographical features such as ridges and valleys, and encompasses the Anaweka, Turimawiwi, Anatori, and Paturau river mouths.

Beyond this Coastal Terrestrial Area is a coherent stand of indigenous forest which forms part of the North West Nelson Forest Park and wider Kahurangi National Park. Within the coastal context is Lake Otuhie a small coastal lake framed by limestone cliffs and wetlands. The lake is one of the best examples of a largely unmodified shallow coastal lake.

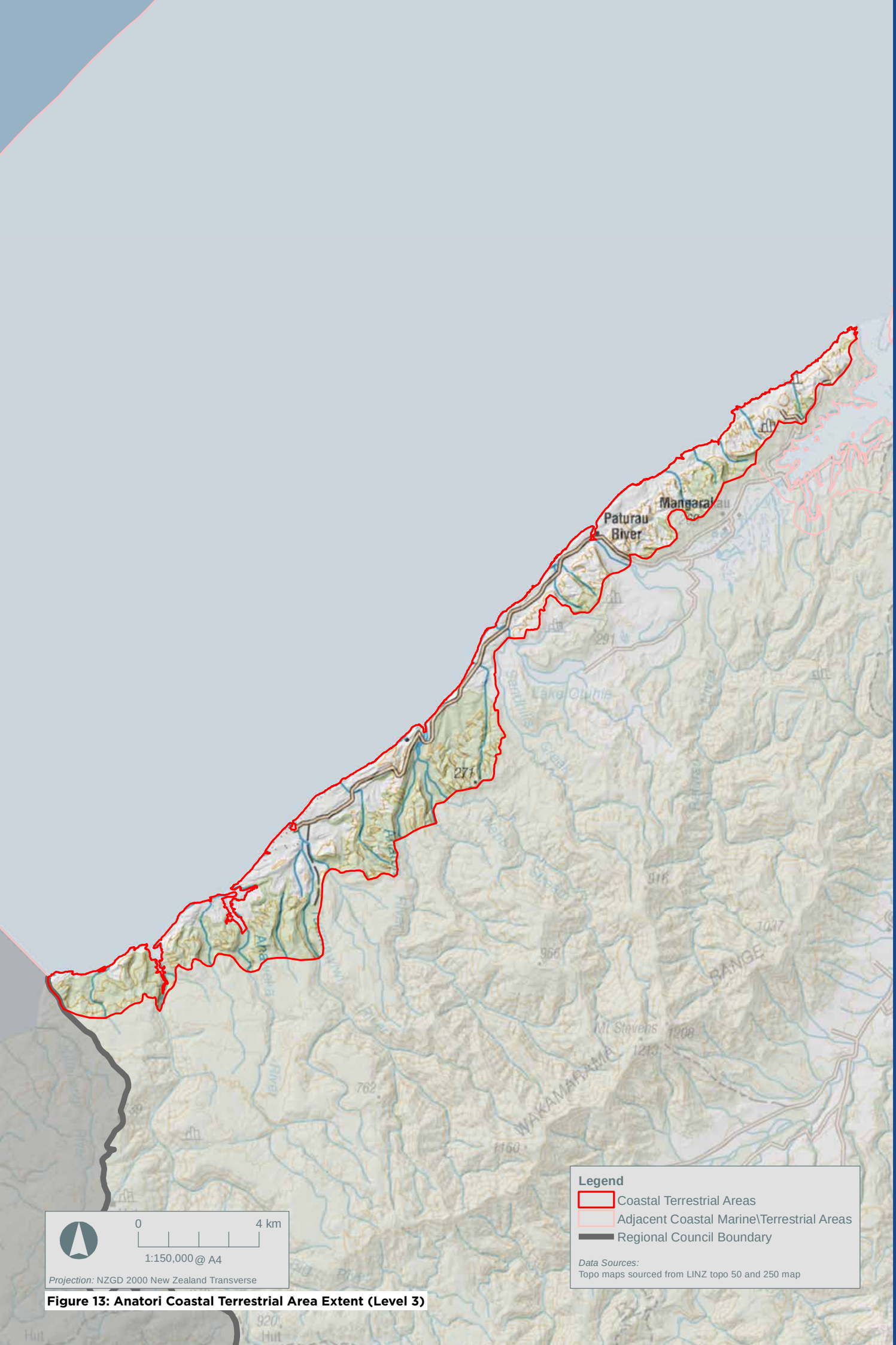


Figure 13: Anatori Coastal Terrestrial Area Extent (Level 3)

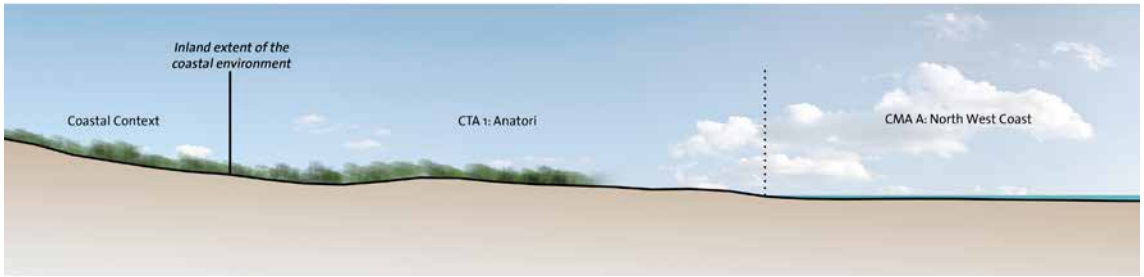


Diagram CTA1: Anatori representative Coastal Environment diagram

Abiotic

The Anatori Coastal Terrestrial Area is characterised by an open ocean coastline and is situated on the exposed west coast of the Tasman District. The underlying geology of this Coastal Terrestrial Area comprises sandstone, siltstone and limestone, with gently sloping mountains, rocky headlands and sandy beaches. Due to the exposed nature of the north-west coast, natural erosion is prevalent on the headlands and cliffs near the mouth of the Whanganui Inlet. To the south a large sand dune system is present near the Turimawiwi River mouth and stretches approximately 2.5 kilometres north and south of the river.

The Coastal Terrestrial Area includes geological features such as Kahurangi Point, and geopreservation sites such as the regionally significant Turimawaiwi River mouth, Paturau marine terraces, and the Nguroa to Paturau limestone coastal features.

The landscape is not built but is vegetated in a mix of native and exotic vegetation. Pastoral farmland is prevalent along the lower hillslopes and flatter coastal areas; this change in land use from forest to pasture results in some modification to abiotic processes, such as increased soil desiccation and increased potential for erosion and slips. The coastline is unimpeded and there are no barriers or modifications to coastal foreshore processes. Structures, such as bridges and culverts, across river mouths are rare (the outlet of Lake Otuhie and the Patarau River have bridges across them) but some river mouths are forded and many small headwater tributaries and streams are crossed by the road from Paturau River to Turimawiwi River, presumably with culverted crossings. River mouth processes are therefore able to occur naturally with little human influence.

Climate within this Coastal Terrestrial Area is more exposed and similar to conditions found on the West Coast of the South Island. Average yearly rainfall is 2,500mm, while annual sunshine hours are 2,150. The average annual temperature in summer is 21°C while in winter this drops to 4°C. These numbers fluctuate dependent on the location within the Anatori Coastal Terrestrial Area. Towards the south, higher rainfall levels and lower temperatures are experienced while in the north sunshine hours increase with the temperature averages.

Biotic

The total land area within the Anatori Coastal Terrestrial area is 6,453 ha, of which 49.2% is native forest, 38.9% is pasture, 6.8% is native shrubland, 3.4% is bare or lightly-vegetated surfaces, 1.13% is water bodies, 0.3% is flaxland, 0.1% is exotic forest, and 0.1% is native wetland.

Thirty-five percent of the Coastal Terrestrial Area is formally protected. The North West Nelson Forest Park protects much of the forested areas further from the coast north of the Anatori River. Big River Scenic Reserve and a small area of the Kahurangi National Park are within the Coastal Terrestrial Area between Kahurangi Point and Big River. The Anatori Coastal Terrestrial Area would originally have been almost entirely forested. Alluvial valleys south of Whanganui Inlet formerly contained tall forests of kahikatea (*Dacrycarpus dacrydioides*), northern rata and pukatea. The vegetation of this area shows strong relationships with the northern North Island and is thought to represent a remnant of a continuous pre-Pleistocene land mass (McEwen, 1987).

Much of the Coastal Terrestrial Area has been cleared of forest and is used for farming. As well as pastoral farming, the area has had a long history of gold and coal mining, timber extraction and flax-cutting. Only a few valuable remnants of the former kahikatea (*Dacrycarpus dacrydioides*), northern rata and pukatea forests survive on alluvial valley floors. However, the remoteness of the Coastal Terrestrial Area means that there is a higher proportion of the original lowland and coastal forest remaining than elsewhere in New Zealand. Most of the remaining forest on the Tertiary hill country is podocarp (rimu (*Dacrydium cupressinum*), kahikatea (*Dacrycarpus dacrydioides*) and matai (*Prumnopitys taxifolia*)) - hardwood forest. Beech species occur on lower fertility sites and beech forest is more common on soils from Cretaceous rocks (McEwen, 1987).

The catchments south of Sandhills Creek support a large area of continuous indigenous forest. In particular, the Big River catchment, including the terrestrial margins of the estuary, is almost entirely forested and between Big River and Kahurangi Point and north of the Anatori River there are extensive tracts of indigenous coastal forest. Many of

the remaining forested areas are of conservation significance because they comprise examples of the original natural landscapes that have been cleared from the remainder of New Zealand.

To the north and south of the Turimawiwi River are extensive and intact sand dunes. These dunes, particularly to the south, contain populations of pinago. At Kahurangi Point, there are also areas of coastal salt turfs, including threatened and at- risk species on the cliff crest and talus slope.

Rhytida patula, a carnivorous snail. Simon Walls, Department of Conservation.

At least four lizard species have been recorded in the Anatori Coastal Terrestrial Area; these include, Raukawa gecko (*Woodworthia maculata*), forest gecko (*Mokopirirakau granulatus*), northern grass skink (*Oligosoma polychroma*) and brown skink (*Oligosoma zelandicum*). There are also a few records in the DOC database (from the past 10-20 years) of long-tailed bats (*Chalinolobus tuberculatus*) in the forested areas of the Coastal Terrestrial Area. The forested areas and coastal foreshore also provide habitat for a variety of avifauna species. Additionally, a diverse composition of carnivorous snails, dominated by species in the *Powelliphanta genus*, are known around Kahurangi Point and Mangarākau. These species have limited distribution and are threatened by habitat loss and predation.

The main waterways within this Coastal Terrestrial Area are the Anaweka, Turimawiwi, Anatori and Patarau Rivers. These waterways provide habitat for Threatened and At Risk freshwater fish species, including longfin eel, torrentfish, bluegill bully, redfin bully, and all five migratory galaxiids (giant kōkopu, banded kōkopu, inanga, kōaro and shortjaw kōkopu). Many of the small streams also support freshwater crayfish (kēkēwai). Lake Otuhie supports longfin and shortfin eels, inanga and giant kokopu, and common bullies. Brown trout have been found in the lake in the past but are thought to be absent now (James & Kroos, 2011).

Riparian vegetation within the Coastal Terrestrial Area has largely been cleared closer to the coast and is dominated by pasture, but the upper reaches of the freshwater environments are within indigenous forest. Water quality is good given that the headwater tributaries and the upper reaches of the catchments are within Kahurangi National Park. Only the lower extents and rivermouths have a primarily farmland land use which may somewhat reduce water quality due to nutrient and sediment inputs.

Experiential

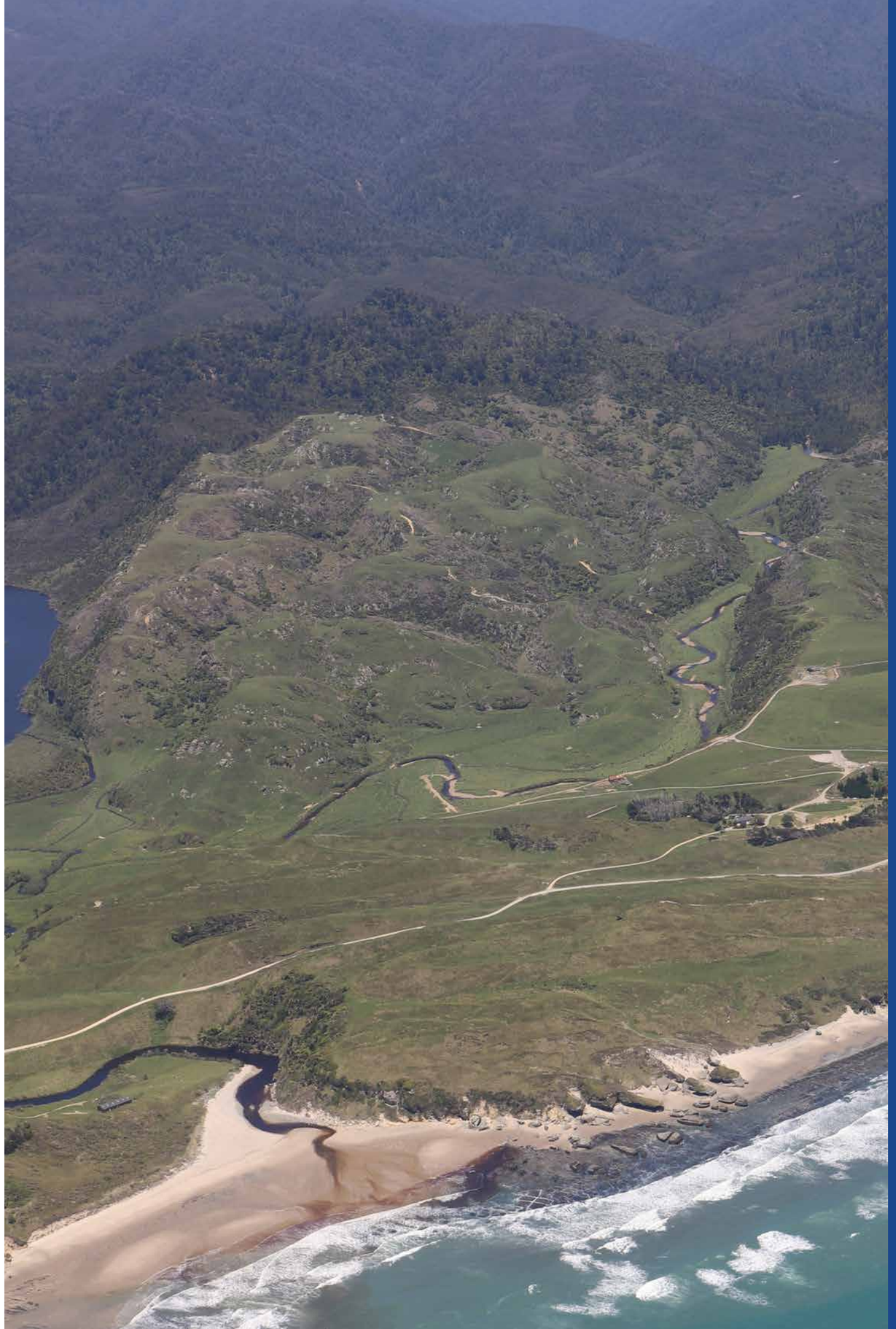
Anatori is the most remote Coastal Terrestrial Area within the Tasman District. It is the “end of the road” for travellers driving the Tasman District’s western coastline, with greater opportunities for wild and remote experiences and experiencing the darkness of the night sky. The Anatori River is the gateway to the Kahurangi Point Route which follows the beach to the Kahurangi Keepers House. The route is expert level and involves two river crossings.

Access to this Coastal Terrestrial Area is limited to a single gravel road which extends from the western shores of the Pākawau Inlet. The road within this Coastal Terrestrial Area extends from the Paturau River in the north to the Turimawiwi River. From this point, any access further south is by four-wheel drive vehicle or on foot. The Coastal Terrestrial Area is very remote with limited built structures and is sparsely populated. Freedom camping also occurs near Anatori beach and upstream of the Anatori river mouth.

Level 3 Rating: Coastal Terrestrial Area 1: Anatori

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH			✓
HIGH	✓	✓	
MODERATE TO HIGH			
MODERATE			
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING	HIGH		

Right: Sandhills Creek meeting the Tasman Sea. Boffa Miskell, 2019.



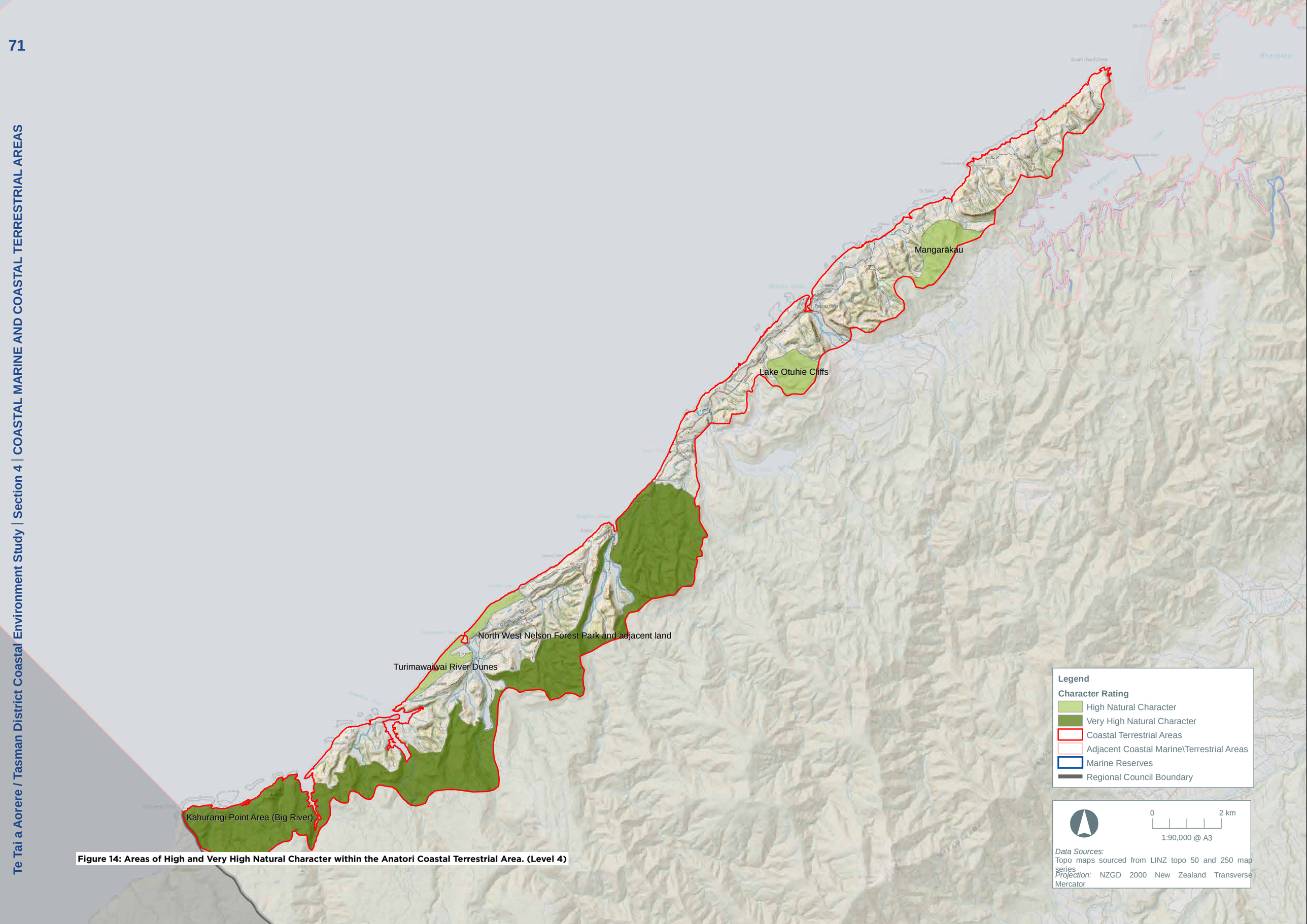


Figure 14: Areas of High and Very High Natural Character within the Anatori Coastal Terrestrial Area. (Level 4)

Coastal Terrestrial Area 1: Anatori

SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 14

REFER TO COASTAL MARINE AREA A FOR FURTHER INFORMATION RELATING TO THE MARINE COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
KAHURANGI POINT AREA (BIG RIVER)	VH	VH	VH	VH	• Intact sandstone and limestone mountain range • Extensive indigenous forest cover with rocky headlands and sandy beaches • Coastal salt turfs including threatened and at risk species on the cliff crest and talus slope • Diverse snail species • High sense of wildness, isolation and remoteness • No human modification or built structures • Opportunities to experience the darkess of the night sky	• Excludes modified pasture lands at lower elevations.
TURIMAWAIWAI RIVER DUNES	H	H	H	VH	• Extensive active sand dunes either side of the Turimawiwi River mouth • Pingao can be found to the south of the dunes, a coastal sedge endemic to New Zealand • High sense of remote and wildness values	• Dunes are flanked by a pastoral landscape.
NORTH WEST NELSON FOREST PARK AND ADJACENT LAND	VH	VH	VH	VH	• Intact sandstone, limestone and siltstone coastal foothills • Isolated and remote experiences • No human modification or built structures • Opportunities to experience the darkess of the night sky	• Excludes modified pasture lands at lower elevations
LAKE OTUHIE CLIFFS	H	H	H	VH	• Part of the Paturau marine terraces geopreservation site • Relatively intact coastal hills with some land clearance • High sense of remote and wildness values	• Excludes modified pasture
MANGARĀKAU	H	H	H	VH	• Part of the Nguroa to Paturau limestone coastal features geopreservation site • Diverse snail species • High levels of exposure to the Tasman Sea	• Excludes modified pasture

Label: VH=Very High; H=High; MH=Moderate High; M=Moderate; ML=Moderate Low; L=Low; VL=Very Low.

Above: North-eastern bays of the Whanganui Inlet. Boffa Miskell, 2019.

5.7. Coastal Terrestrial Area 2: Whanganui

The Whanganui Coastal Terrestrial Area virtually includes the entire watershed of this large west coast inlet. The Whanganui Coastal Terrestrial Area is dominated by the large tidal inlet which is sheltered from the north-west coast by a ridge of coastal hills. There are no settlements in this Coastal Terrestrial Area, however a connecting road from the Kaihoka lakes to Mangarakau follows the edge of the inlet. Much of this Coastal Terrestrial Area is covered in native forest and due to its location, holds strong remote and wild values.

Key coastal characteristics include: tidal mudflats, seagrass beds, salt marshes, tidal wetlands, dunes, and islands. The south-western end of the inlet is a marine reserve, while the remaining waters are part of the Westhaven Wildlife Management Reserve. The inlet supports over thirty species of marine fish due to the plentiful food supply found in seagrass beds and sandflats (Department of Conservation, 2006b). It also provides important connection for migratory freshwater fish species between the Coastal Marine Area and waterways within the Coastal Terrestrial Area.

The Kaihoka Lakes are also a prominent feature within this Coastal Terrestrial Area, with no outflows or permanent inflows of water (Schallenberg, 2011).These lakes were formed from wind induced shifting of coastal sand dunes and contain only native macrophyte species (Schallenberg, 2011).

The inland extent of the Coastal Environment has been defined using the Ridgeline Principle, Land Typing Principle, and Vegetation and Land Use Principle. This includes the vegetated hills south of this Coastal Terrestrial Area. Towards the south western extent, the Coastal Environment is defined in part by the extent of the marine reserve and where saline vegetation is present in streams and rivers.

Beyond this Coastal Terrestrial Area is the Kahurangi National Park, which is dominated by indigenous forest. The Whanganui Coastal Terrestrial Area is separated by the Burnett Range from the adjacent Pūponga and Collingwood Coastal Terrestrial Areas in Golden Bay, creating a narrow four-kilometre corridor which separates these coastal terrestrial areas.

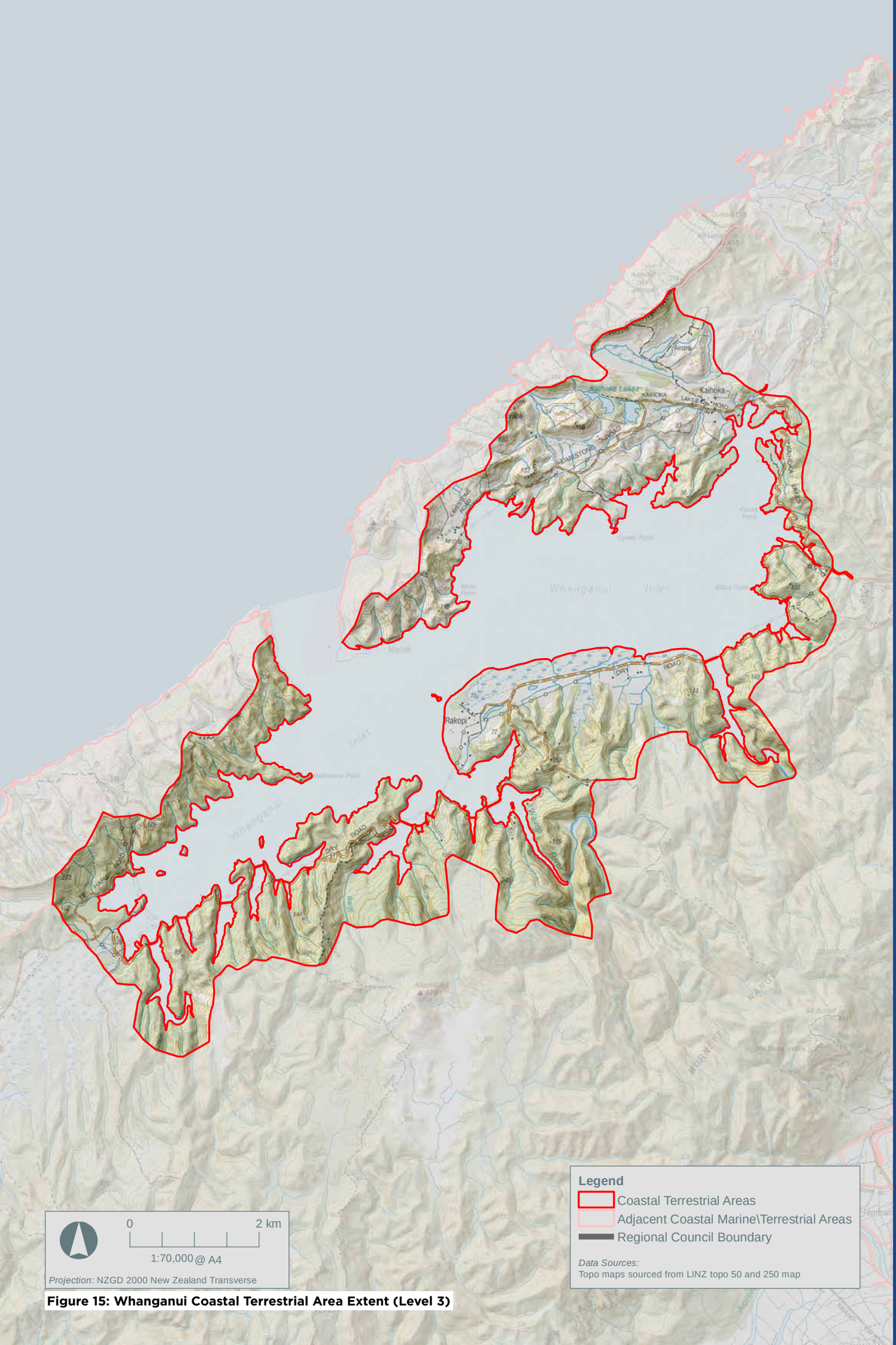


Figure 15: Whanganui Coastal Terrestrial Area Extent (Level 3)

Diagram CTA2: Whanganui representative Coastal Environment diagram

Abiotic

The Whanganui Coastal Terrestrial Area is defined by the Whanganui Inlet, a seawater-dominated tidal lagoon estuary and drowned river valley, and gently sloping hills that abut Kahurangi National Park beyond the Coastal Terrestrial Area boundary. The Coastal Terrestrial Area is characterised by the mountains north-west of the Burnett Range and headlands which shelter the inlet from the open ocean. The Coastal Terrestrial Area also includes regionally significant geopreservation sites including the Meroiti doline field and Meroiti limestone pavement.

Due to the sheltered nature of this Coastal Terrestrial Area there is less coastal erosion present in comparison to the coast directly exposed to the Tasman Sea. The underlying geology of this Coastal Terrestrial Area is largely comprised of sandstone, however the two headlands at the mouth of the inlet have been formed from a combination of limestone and sandstone.

There are a number of small waterways within the Whanganui Coastal Terrestrial Area that flow into Whanganui Inlet within the Anatori Coastal Marine Area. The largest of these is Wairoa River. Hydrological processes are largely intact with the exception of the stream mouths and arms of the Whanganui Inlet (in the Coastal Marine Area) which are crossed by causeways. These causeways may restrict tidal flushing of some areas of the inlet.
Many of the small tributary waterways of Whanganui Inlet are also crossed by the road, with many likely to have culverted crossings.

To the north-west of this Coastal Terrestrial Area are the Kaihoka Lakes, located approximately 1-kilometre south-east of Kaihoka Point. The lakes have been formed due to the natural movement of sand dunes blocking waterways and drainage of the surrounding landscape. This has over time formed the lakes which are present today and are expected to be less than 6,000 years old (GNS Science, 2017). The lakes are considered a regionally significant geopreservation site. Ecologically, the lakes are considered some of the least modified shallow coastal lakes in New Zealand (however there are some potential nutrient inputs to one lake from farming) and hydrological processes occur naturally (Schallenberg, 2011).

Modifications to the Coastal Terrestrial Area are relatively small-scale and are restricted to the Inlet edge. The modifications include a road along the southern and eastern edges of the Inlet, pastoral farming (~6% of the Whanganui Inlet catchment is in pastoral farming, the remainder is pre-dominantly vegetated in native forest (~91%) (Wriggle, 2017) and a number of road causeways.

The main modification to abiotic processes within the Coastal Terrestrial Area is restricted tidal flushing to many of the upper estuary arms as a result of the causeways (Wriggle, 2017). Other coastal processes occur with little to no modification.

Climate within this Coastal Terrestrial Area is more sheltered due to being protected by the headlands to the west. Average yearly rainfall is 2,750mm, while annual sunshine hours are 2,150. The average annual temperature in summer is 22°C while in winter this drops to 5°C.

Biotic

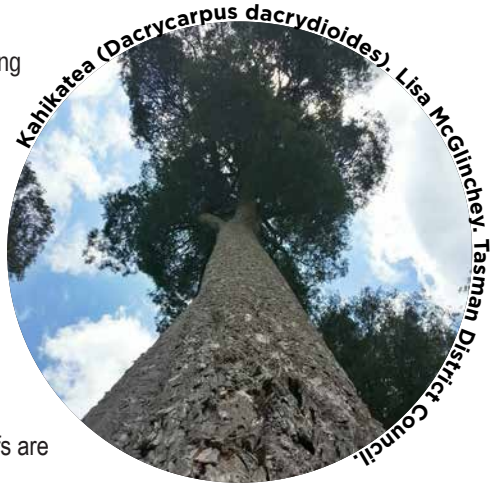
The total land area within the Whanganui Coastal Terrestrial area is 3,641 ha, of which 53.4% is native forest, 24.6% is pasture, 14.8% is native shrubland, 3.7% is native wetland, 2.3% is water bodies, 1% is exotic forest, and 0.2% is bare or lightly-vegetated surfaces.

Over 40% of the Coastal Terrestrial Area is protected within public conservation land (1,470 ha) and QEII covenants (approx. 7 ha). The North West Nelson Forest Park protects much of the forested areas on both sides of the southern part of the Whanganui Inlet and the Gavin Scenic Reserve protects forest on hillslopes between the Bone Creek and Wairoa River. Some of the forest on the eastern margins of the inlet are within Kahurangi National Park, including

the Muddy Creek catchment. An intact area of saltmarsh at Rakopi is partly protected by the Whanganui Inlet Scenic Reserve. On the northern side of the inlet Whanganui Inlet Scenic Reserve and Kaihoka Lakes Scenic Reserve protect areas of coastal forest. Almost all of the Whanganui Coastal Terrestrial Area would originally have been almost entirely forested right to the coast.

Originally the Coastal Terrestrial Area was mainly densely clothed in warm temperate rain forest. The rainforest was predominantly kahikatea (*Dacrycarpus dacrydioides*) on the flats, which graded into open wetland dominated by flax and cabbage trees, with areas of pakihi-like mānuka (*Leptospermum scoparium*) shrubland on less fertile soil which are rich in ferns such as Schizaea, umbrella fern and tangle fern. Extensive beech-podocarp forest dominated by hard beech (*Nothofagus truncata*) and rimu (*Dacrydium cupressinum*) covered the slopes. Plants species with a generally more northerly distribution are were a characteristic of warm temperate forest nearer the coast (G. Walls & Simpson, 2004).

The Whanganui Inlet is listed in Schedule 25D of the Tasman Resource Management Plan as an Area with Nationally Important Natural Ecosystem Values and is protected as a Wildlife Management Reserve. It is notable for being largely unmodified, having intact vegetation sequences from estuary to hilltop and having a rare alluvial indigenous forest type adjacent to the estuary.


Kahikatea (Dacrycarpus dacrydioides). Lisa McGlinchey. Tasman District Council.

There is still a high proportion of the original lowland and coastal forest remaining within this Coastal Terrestrial Area and much of the hill country on the southern and eastern sides of the Whanganui Inlet still supports indigenous forest, including original growth podocarp (rimu (*Dacrydium cupressinum*), kahikatea (*Dacrycarpus dacrydioides*)and matai (*Prumnopitys taxifolia)*) - hardwood forest. In addition, the northern cliffs and shoreline of the Whanganui Inlet supports a population of the critically threatened shrub *Brachyglottis cockaynei*. Much of this is forest is protected within the North West Nelson Forest Park and Kahurangi National Park. The mild climate protects species with a generally more northerly distribution, such as kawaka (lowland cedar) and kohekohe and northern rata, pukatea, kiekie and nikau are characteristic species in the warm temperate forest within the Coastal Terrestrial Area. The coastline supports significant areas of salt turf communities and the coastal cliffs are clothed in wharariki (mountain flax) (G. Walls & Simpson, 2004).

The Coastal Terrestrial Area includes a small area of the northern-most part of the Mangarakau Wetland. This wetland is significant as a good example of an intact, relatively large swamp system containing a high diversity of indigenous vegetation types and, unlike most swamps elsewhere in New Zealand, it has not been modified by weed invasion (Clarkson, 2009). The headland to the north of the inlet has largely been cleared of forest and is now used for pastoral farming.

The inlet area is large, has high estuarine habitat diversity and is an important breeding site for banded rail (*Gallirallus philippensis*), banded dotterel (*Charadrius bicinctus*) and Australasian bittern (*Botaurus poiciloptilus*) (Tasman District Council, 2014). The estuary is also an important shorebird roosting and foraging site (Schuckard & Melville, 2013; Tasman District Council, 2001). White heron (*Ardea modesta*) and reef heron (*Egretta sacra*), both threatened bird species, are occasional visitors to Whanganui Inlet, and high numbers of royal spoonbill (*Platalea regia*) are consistently recorded in the area (Schuckard & Melville, 2019).

The windswept kānuka (*Kunzea ericoides*) and coastal forest of the Whanganui Inlet are hotspots areas for one specific morphological variant of the Nelson green gecko/starred gecko (*Naultinus stellatus*). The rocky outcrops and coastal forest in the Whanganui Coastal Terrestrial Area also have records of and provide habitat for Raukawa gecko, forest gecko, northern grass skink and brown skink. There are also a few records in the DOC database (from the past 10-20 years) of long-tailed bats in the forested areas around the Whanganui Inlet that are part of Kahurangi National Park. In addition to bats, the native forest provides habitat for a diversity of native forest bird species, with a diversity of snail species known in the Kaihoka area.

A number of small waterways drain into the Whanganui Inlet. The largest is the Wairoa River. The waterways in the southern and eastern extent of the Whanganui Coastal Terrestrial Area are generally within indigenous forest so water quality is assumed to be good. Waterways in the northern extent are within more modified land uses.

The waterways within the Whanganui Inlet support a diverse freshwater fish fauna, longfin and shortfin eels, giant kōkopu, banded kōkopu, shortjaw kōkopu, kōaro and inanga, and bluegill and redfin bullies. Brown mudfish are also present in wetlands (Mangarakau Swamp and within the Paturau River catchment) in the southwestern extent of the Coastal Terrestrial Area.

While the causeways through Whanganui Inlet may restrict tidal flushing the waterways or main channels are crossed by bridges so are unlikely to pose as barriers to the passage of freshwater fish between freshwater and marine environments.

The Kaihoka Lakes catchments have good cover of modified, but relatively intact coastal forest with prominent nikau palms, matai (*Prumnopitys taxifolia*), kahikatea (*Dacrycarpus dacrydioides*), cedar and tanekaha. Agricultural land-uses make up only approximately 5% of the catchment. Water quality is good but subject to some nutrient run-off from the two, small agriculture-dominated catchments feeding the lakes. The lakes have high scientific and conservation value and are support rare land-locked populations of banded kokopu. Freshwater crayfish / kēkēwai are also present and Schallenberg (2011) reported the lakes as having special and unique features including unusually large freshwater mussels. Trout have been introduced to the lakes in the past but have presumably died out due to lack of spawning sites in the catchment (James & Kroos, 2011).

Experiential

The Whanganui Coastal Terrestrial Area is relatively remote and accessed by a narrow road from west of the Pākawau Inlet. The road traverses the southern part of the inlet and in places long causeways and bridges have been constructed to allow access to south-western parts of the Tasman coast, including the Anatori Coastal Terrestrial Area.

While some modification has occurred to the south of the inlet, the Coastal Terrestrial Area has very few dwellings, limited light pollution, and is largely in a natural state. As the Whanganui Inlet contains both a marine and wildlife management reserve, fishing is not permitted. Nevertheless, other popular recreational activities include birdwatching and picnicking.
Due to the undeveloped and largely unmodified nature of this Coastal Terrestrial Area there are greater opportunities for remote experiences. Opportunities to experience both flora and fauna of the inlet coupled with highly natural bush, equate to very strong levels of naturalness.

The Kaihoka Lakes are easily accessible from Kaihoka Lakes Road. The area offers recreational opportunities including bird watching, and a short ten-minute walk which follows the northern boundary of the lakes.

Level 3 Rating: Coastal Terrestrial Area 2: Whanganui Inlet

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH	✓		✓
HIGH		✓	
MODERATE TO HIGH			
MODERATE			
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING	VERY HIGH		

Whanganui Inlet at low tide.
Boffa Miskell, 2019.

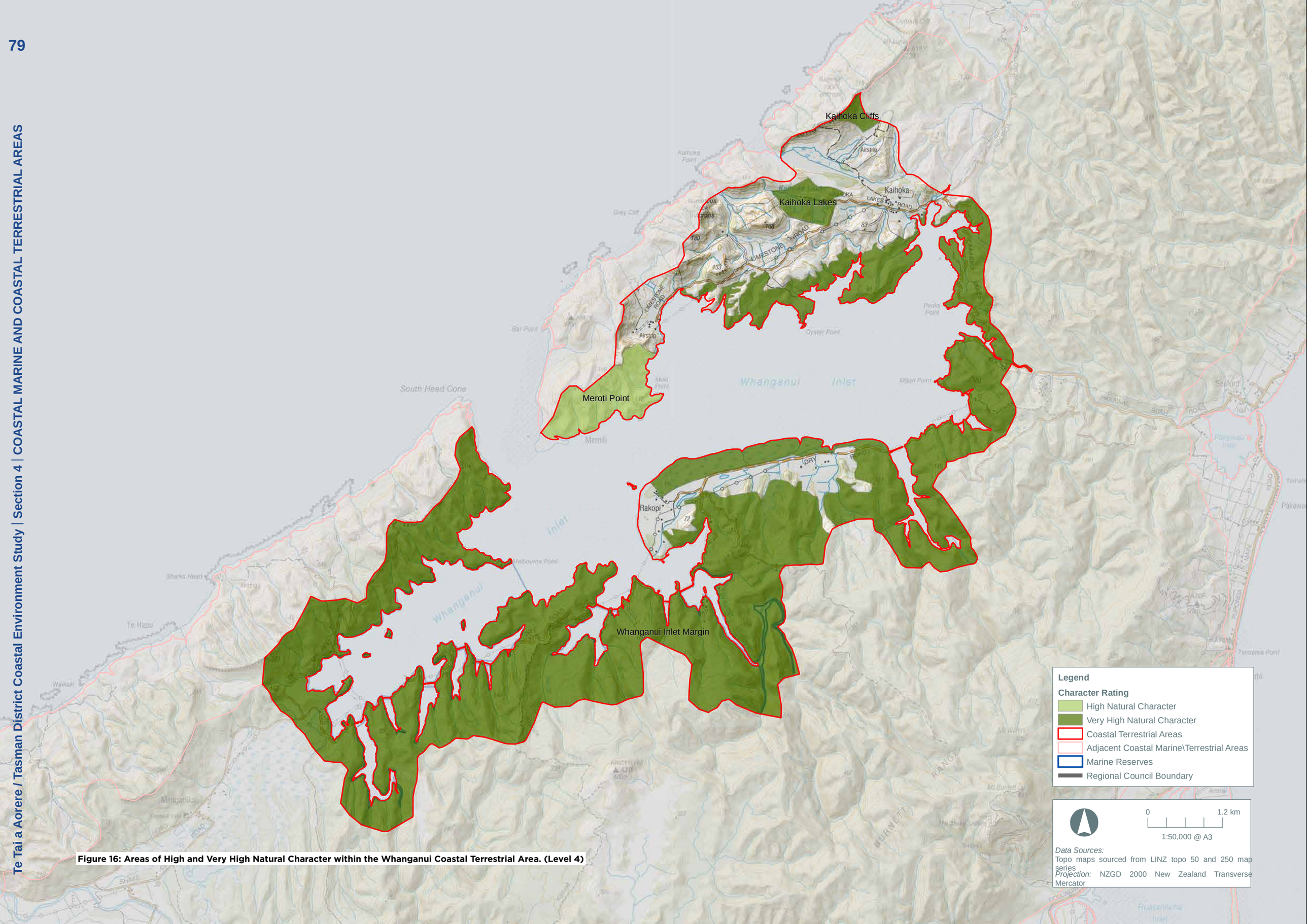


Figure 16: Areas of High and Very High Natural Character within the Whanganui Coastal Terrestrial Area. (Level 4)

Coastal Terrestrial Area 2: Whanganui

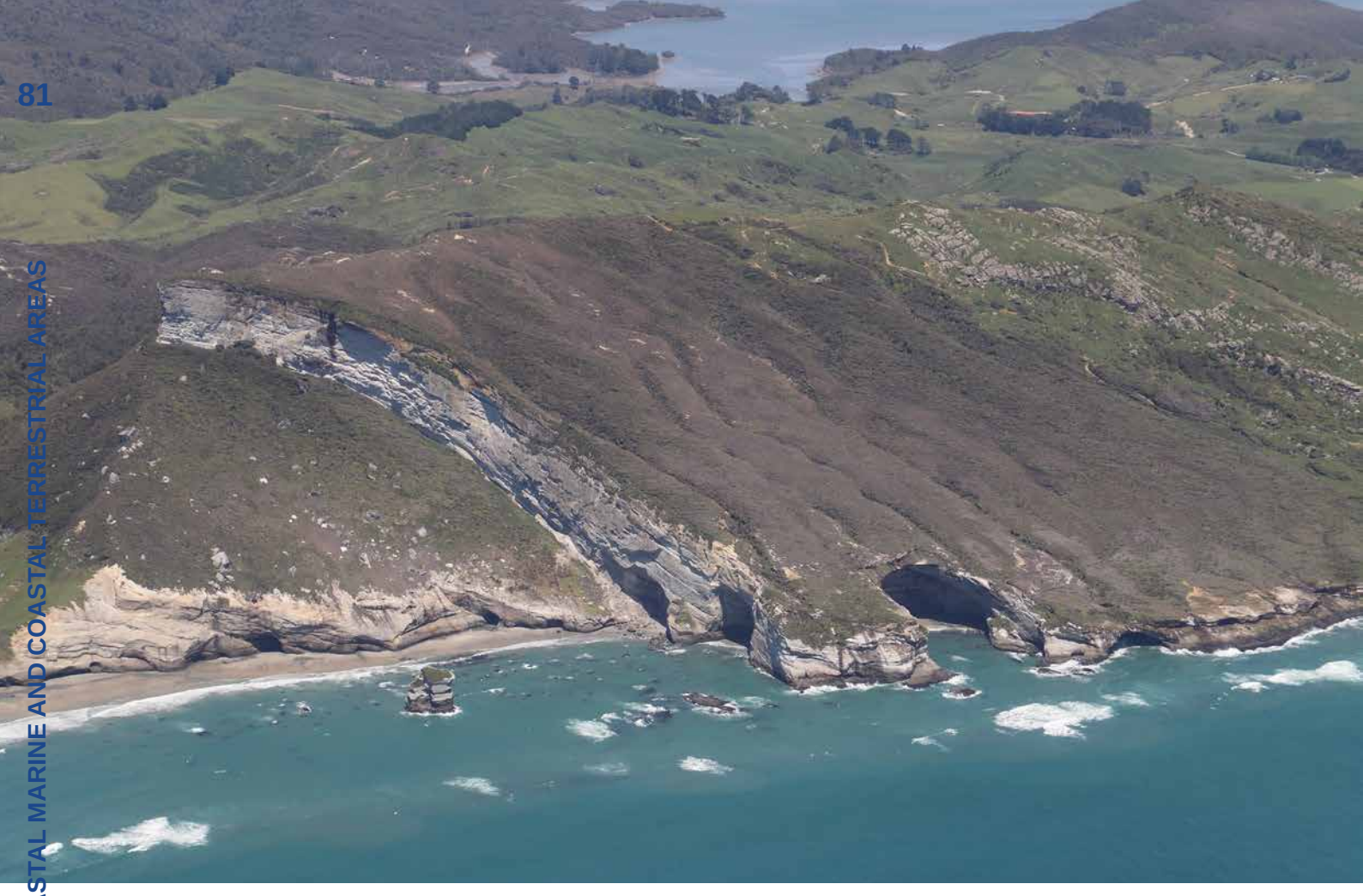
SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 16

REFER TO COASTAL MARINE AREA A FOR FURTHER INFORMATION RELATING TO THE MARINE COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
WHANGANUI INLET MARGIN	VH	VH	VH	VH	• Intact drowned river valley system formed from sandstone • Important breeding site for banded rail, banded dotterel and Australasian bittern • Population of critically threatened shrub Brachyglottis cockaynei on conglomerate cliffs and shoreline in the northern part of the inlet • High level of naturalness due to lack of human modification and structures • isolated and remote experiences • Views of the Whanganui Inlet and the Tasman Sea • Opportunities to experience the darkess of the night sky	• Pasture at Rakopai has been excluded
MEROTI POINT	H	H	H	H	• Exposed rocky headlands and cliffs largely intact • Intact dune system near the mouth of the Whanganui Inlet • Sheltered from the Tasman Sea • Scattered areas of regenerating indigenous forest. • Remote experiences	• Includes some areas of exotic grassland
KAIHOKA LAKES	VH	VH	H	VH	• Naturally formed from movement of sand dunes • Regionally significant geopreservation site • Considered some of New Zealand's least modified shallow coastal lakes • Relatively intact coastal forest with prominent nikau palms • Isolated and sheltered location • Opportunities to experience the darkess of the night sky	• Surrounded by exotic grassland
KAIHOKA CLIFFS	VH	VH	H	VH	• Intact sandstone coastal cliffs • Diverse snail species present • High level of perceived naturalness	• Excludes pasture

Label: VH=Very High; H=High; MH=Moderate High; M=Moderate; ML=Moderate Low; L=Low; VL=Very Low.



Above: Mount Lunar and Curious Cliff. Boffa Miskell, 2019.

5.8. Coastal Terrestrial Area 3: Cape Farewell

The Cape Farewell Coastal Terrestrial Area is located between Bar Point at the mouth of the Whanganui Inlet north-eastwards to Pillar Point, at the western extent of Farewell Spit. Similar to the Anatori and Whanganui Coastal Terrestrial Areas, this area is relatively remote with no major settlements but contains scattered houses on areas of cleared grassland. This area also includes the Archway Islands, a group of islands near Cape Farewell which contain bird nesting sites for the fluttering shearwater (*Puffinus gavia*) and sooty shearwater (*Ardenna grisea*). Rocky islands close to the shoreline are common features found in this Coastal Terrestrial Area.

Key coastal characteristics include: rocky reefs and islands, steep exposed sandstone and limestone cliffs, low lying farmland, wetlands, coastal lakes, numerous sheltered and exposed sandy beaches. Remote, highly natural and wild west coast experiences are also gained in more exposed locations.

The inland extent of the Coastal Environment has been defined using the Ridgeline Principle and Land Typing Principle. This includes the coastal cliffs and hills which run the length of this Coastal Terrestrial Area. The Coastal Environment encompasses notable geological features such as Mount Lunar, and Cape Farewell.

The Coastal Context beyond the Coastal Environment line include the crumpled coastal forested hills associated with inland Pūponga. Overlooking Cape Farewell is a portion of the Kahurangi National Park which creates an approximate ten-kilometre buffer between the Kaihoka Lakes and Pūponga.

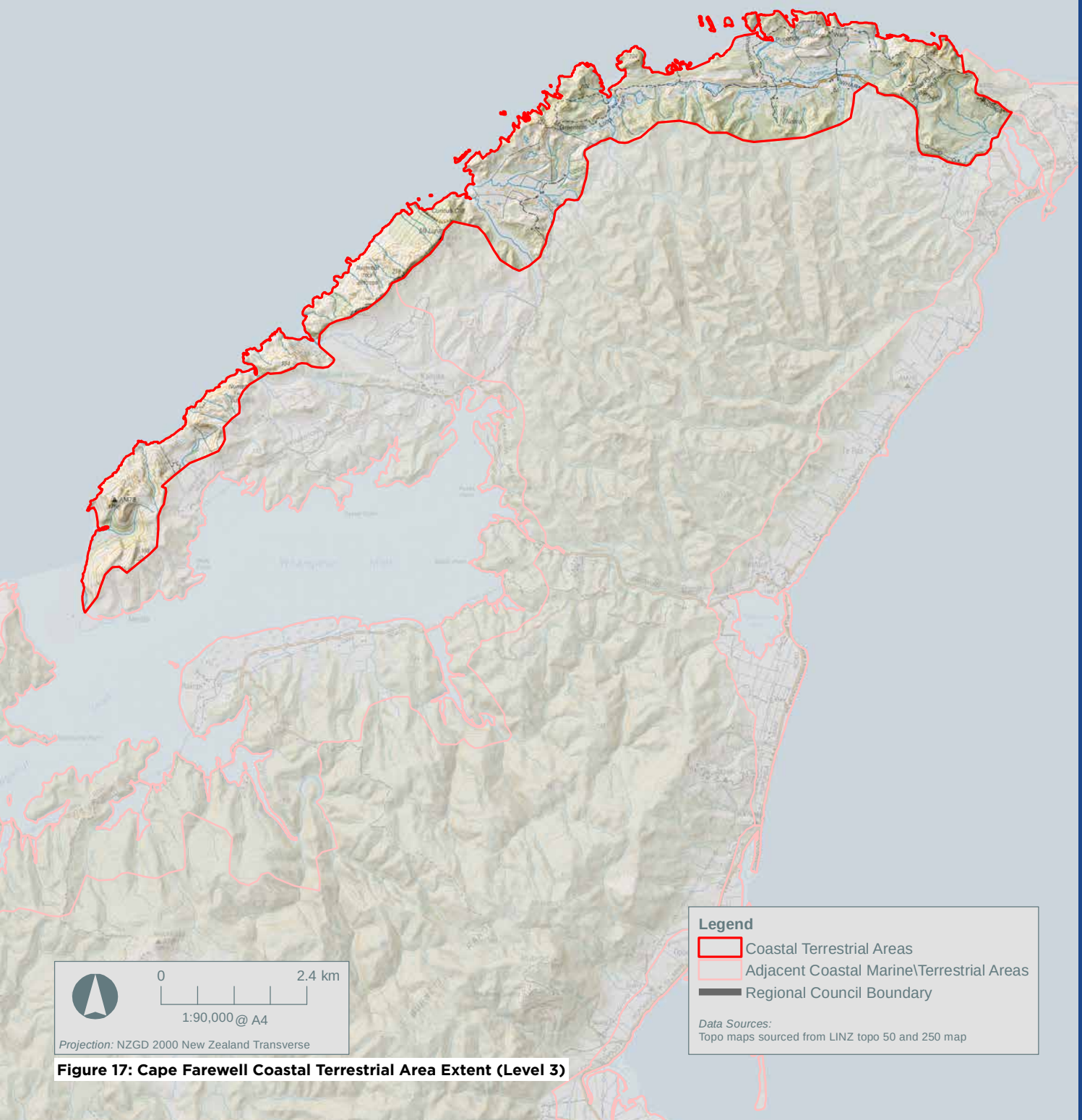


Figure 17: Cape Farewell Coastal Terrestrial Area Extent (Level 3)

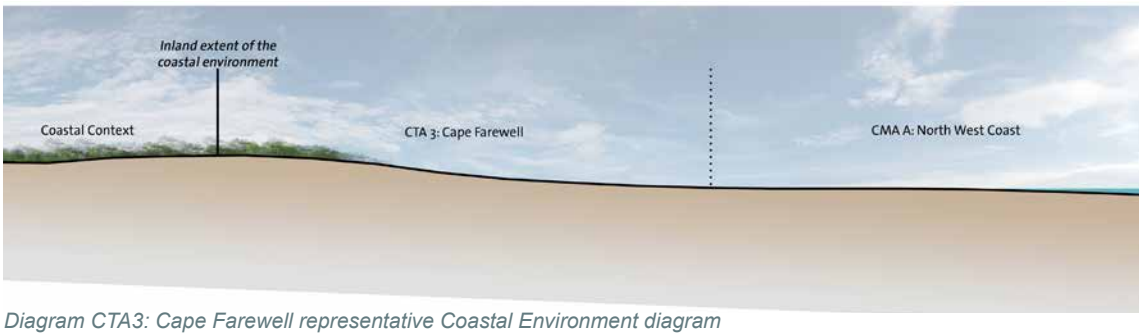


Diagram CTA3: Cape Farewell representative Coastal Environment diagram

Abiotic

The Cape Farewell Coastal Terrestrial Area is characterised by steep coastal cliffs and a mosaic of farmland, native vegetation, small coastal lakes and sandy beaches. The underlying geology of this Coastal Terrestrial Area is largely comprised of sandstone, with smaller areas of limestone to the south. Geopreservation sites present within this Coastal Terrestrial Area include the regionally significant Nguroa to Paturau limestone coastal features, the Kaihoka tilted pavement, and the nationally significant Cape Farewell to Nguroa coastal arches.

Being an exposed section of the Tasman Coastal Environment, this Coastal Terrestrial Area is subject to natural erosion from the ocean and prevailing south-westerly wind. This has caused the exposure of numerous limestone headlands and caves which line the coastline. Windswept dune systems are also prevalent, and can be found at Bar Point, Grey Point, Kaihoka Point and Whararikі Beach.

There are a number of small waterways within the Cape Farewell Coastal Terrestrial Area but many may not have surface flow throughout the year. The largest waterways, which flow to the sea, are (from north to south) Whararikі Stream, Green Hills Stream, and two unnamed waterways flowing out to Ngūroa Bay. The mouths of these four waterways are unimpeded and processes are able to occur naturally.

The Coastal Terrestrial Area has very little modification and infrastructure present. The coastline is unimpeded allowing abiotic processes to occur naturally. In areas, land use change from native vegetation to exotic pasture is likely to result in some abiotic modifications, such as alterations in soil moisture content and erosion on the coastline. Being on the north-west coast of the Tasman District this Coastal Terrestrial Area is exposed to weather systems approaching from the south. Average yearly rainfall is 1,500mm however this increases near the mouth of the Whanganui Inlet, while annual sunshine hours are 2,250. The average annual temperature in summer is 23°C while in winter this drops to 6°C.

Biotic

The total land area within the Cape Farewell Coastal Terrestrial area is 1,991 ha, of which 48.5% is pasture, 26.4% is native shrubland, 17.7% is native forest, 4% is bare or lightly-vegetated surfaces, 1.83% is native wetland, 0.6% is exotic forest, 0.5% is water bodies, 0.33% is flaxland, and 0.07% is artificial surfaces.

Forty-eight percent of the Coastal Terrestrial Area is within public conservation land. Pūponga Farm Park Recreation Reserve extends along the entire coast from the base of Farewell Spit west to south of Pilch Point with the northern extent of Kahurangi National Park adjoining Pūponga Farm Park south of Cape Farwell. Kaihoka Scenic Reserve protects the north-west facing bluffs of Mt Lunar within the Coastal Terrestrial Area.

Much of the Coastal Terrestrial Area has been cleared of forest and is now used for farming. In particular, much of the land south of the Pūponga Farm Park is in exotic pasture. Within the Coastal Terrestrial Area there are a number of areas of high conservation value. Coastal dune systems near Bar Point on the northern side of Whanganui Inlet, at Grey Cliffs and west of the Kaihoka Lakes support relatively intact coastal dune vegetation with a number of plant species of ecological significance.

The north-western slope of Mt Lunar and Curious Cliff support unique coastal turf, bluff and heathland vegetation communities. Pilch Point, west of Greenhills, supports unique coastal heathland communities and the Old Man Range, inland of Pillar Point, although modified by fire, also supports distinctive and botanically interesting heathlands with several endemic species (S. Courtney pers. comm. 2020). Botanically interesting landscapes also occur on the Holocene sand country and adjoining *Cretaceous conglomerate* and coal measures between Whararikі Beach and Cape Farewell (McEwen, 1987). Steeper hillslopes inland of Whararikі Beach that are mostly within Kahurangi National Park support relatively intact indigenous forest.

Coastal turflands, which support a number of at risk and threatened plant species are found at Bar Point, on the Archway Islands and in several areas around Pilch Point. Species of note include the nationally vulnerable species

NZ iris and sea holly, and at risk coastal species such as the coastal herb *Leptinella calcarea* and pygmy forget-me-not (*Myosotis pygmaea*).

Wharariki Beach has a relatively intact sequence of dunes that support diverse vegetation and a series of inter-dune dune lakes and wetlands. Kānuka (*Kunzea ericoides*) forest covers the older, more stable dunes, in association with rātā, rimu (*Dacrydium cupressinum*), mataī, tānekaha and kaikōmako. This area supports several rare plant species, in addition to planting of the nationally critical species *Pimelea ignota*, and at risk sand daphne (*Pimelea villosa*). Several at risk and threatened plants have been also planted on Tunnel Island, including *Euphorbia glauca* and Pimelea ignota.

Wharariki Beach also provides habitat for a diversity of coastal bird species and the Ngūroa Bay and Archway Islands have breeding colonies of sooty shearwaters, fluttering shearwaters and little blue penguins. Seals also use the islands as refuges..

The Cape Farewell Coastal Terrestrial Area is a hotspot area for one specific morphological variant of the Nelson green gecko/starred gecko. There are also records of Raukawa gecko, forest gecko, northern grass skink and brown skink within the habitats of this Coastal Terrestrial Area.

The numerous waterways within the Cape Farewell Coastal Terrestrial Area have primarily native vegetation in the riparian margins, however, there are areas that have been cleared for farming. Given the remote nature and generally forested headwaters, the water quality is likely to be good. The four main streams within the Coastal Terrestrial Area (Wharaiki Stream, Green Hills Stream and two unnamed streams at Ngūroa Bay) support shortfin and longfin eels, giant kōkopu, banded kōkopu and inanga populations, as well as redfin, common and giant bullies and freshwater crayfish / kēkēwai.

Experiential

The Cape Farewell Coastal Terrestrial Area is not easily accessible. Northern areas as far south as Wharariki beach can be accessed by Wharariki Road, while southern sections of the Coastal Terrestrial Area are mostly on private land, accessed by farm tracks and four-wheel drive vehicles.

Human modifications within this Coastal Terrestrial Area are largely associated with farming practices which occur within the Pūponga Farm Park and further south near the Whanganui Inlet. The Cape Farewell Coastal Terrestrial Area is also a popular recreational hotspot for the District with walking and mountain biking tracks available at Cape Farewell and within the Pūponga Farm Park (Department of Conservation, 2016b). These vary in difficulty and allow visitors to access the remote parts of the northern coastline.

As most of this Coastal Terrestrial Area is largely inaccessible and exposed to the prevailing south-west weather, Cape Farewell retains a high level of remoteness and great sense of wildness. From Wharariki Beach expansive views out towards the Tasman Sea are available and being “off the beaten track” there is a high sense of isolation and limited light sources. As the south is inaccessible to the public, it is likely that while much of this landscape has been developed into low or high producing exotic grassland there will be a high level of perceived naturalness due to the level of climatic exposure, isolation and lack of structures and infrastructure.

Level 3 Rating: Coastal Terrestrial Area 3: Cape Farewell

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH			
HIGH			✓
MODERATE TO HIGH	✓	✓	
MODERATE			
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING	MODERATE-HIGH		

Coastal Terrestrial Area 3: Cape Farewell

SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 18

REFER TO COASTAL MARINE AREA A FOR FURTHER INFORMATION RELATING TO THE MARINE COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
MOUNT LUNAR AND CURIOUS CLIFF	H	H	H	VH	• Intact and highly legible coastal landform • Rocky headlands and exposed cliffs • The north-western slope of Mt Lunar and Curious Cliff support unique coastal turf, bluff and heathland vegetation communities • Remote and wild experiences offered being exposed to the north-west coast	• Low producing exotic grassland to the north and south of this area.
BAR POINT	H	H	H	VH	• Intact coastal dune system • Rare coastal turflands, including several at risk species • Remote and wild experiences	• Contained to the bottom of a gully surrounded by exotic grassland
PILCH POINT	VH	VH	VH	VH	• Exposed headlands subjected to natural coastal erosion • Unique coastal heathland communities • Coastal shrublands with prostrate mānuka stand • Rare coastal turflands, including several threatened and at risk species • The only naturally occurring population of Carmichaelia juncea on this coast • Sheltered sandy beaches • Wild and remote experiences • Opportunities to experience the darkess of the night sky	• Forms the north-western corner of Pūponga Farm Park
ARCHWAY ISLANDS	VH	VH	VH	VH	• Intact coastal islands subjected to natural erosion • Included within the Cape Farewell to Ngauroa coastal arches geopreservation site • Breeding colonies of sooty shearwaters, fluttering shearwaters and little blue penguins • Rare coastal turflands on Tunnel Island, including several threatened and at risk species • Seals use Green Island as a refuge site • No apparent human modification • High level of intactness and sense of wildness	• Islands overlook Wharariki Beach

Table continues on page 89

Coastal Terrestrial Area 3: Cape Farewell

SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 18

REFER TO COASTAL MARINE AREA A FOR FURTHER INFORMATION RELATING TO THE MARINE COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
NGŪROA BAY ISLANDS	VH	VH	VH	VH	• Intact coastal islands subjected to natural erosion • Included within the Cape Farewell to Ngauroa coastal arches geopreservation site • No apparent human modification • Wild and remote experiences	• Found between Pilch Point and Nga ūoa Bay
KAHURANGI NATIONAL PARK NORTH	VH	VH	VH	VH	• Intact sandstone coastal hills • Large area of intact indigenous forest • Part of the Kahurangi National Park • High level of naturalness and remoteness • Opportunities to experience the darkess of the night sky	• Overlooks the Pūponga Farm Park
WHARAKIKI BEACH	VH	VH	VH	VH	• Intact sequence of dunes, with some areas covered in kānuka (Kunzea ericoides), rātā, rimu (Dacrydium cupressinum), mataī, tānekaha and kaikōmako. • Supports several rare plant species • Provides habitat for a diversity of coastal bird species • Very high wild and remoteness values • Opportunities to experience the darkess of the night sky	• Forms part of the Pūponga Farm Park
PILLAR POINT	VH	VH	VH	VH	• Striking and highly legible coastal headlands • Dramatic and windswept vegetation • Wild and remote experiences being exposed to the Tasman Sea • Opportunities to experience the darkess of the night sky	• Forms part of the Pūponga Farm Park

Label: VH=Very High; H=High; MH=Moderate High; M=Moderate; ML=Moderate Low; L=Low; VL=Very Low.

Right: Ngauroa Bay and Islands. Simon Walls, Department of Conservation.

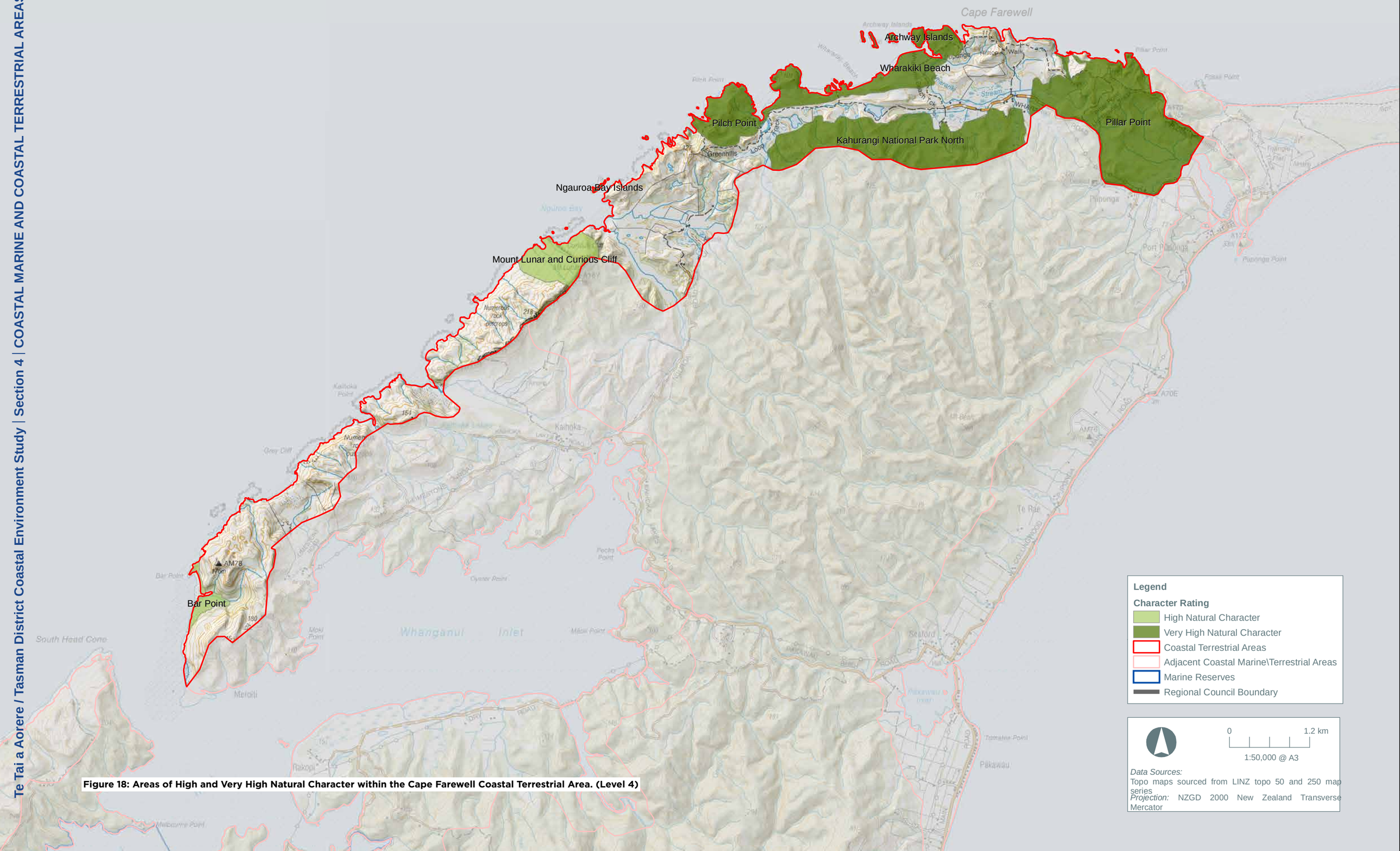
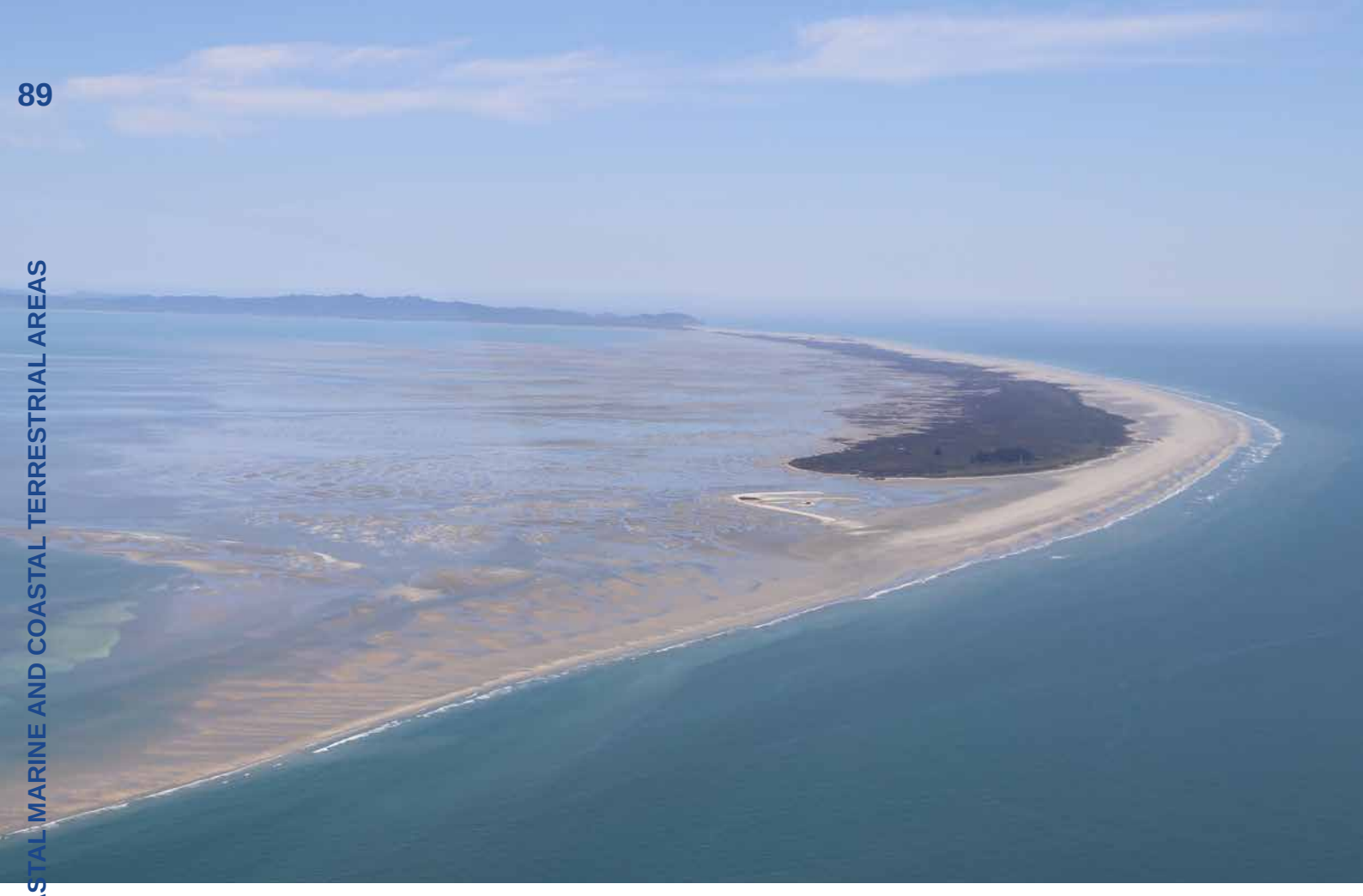


Figure 18: Areas of High and Very High Natural Character within the Cape Farewell Coastal Terrestrial Area. (Level 4)

Whararikі Beach.
Boffa Miskell, 2019.



Above: View of Farewell Spit looking back towards Cape Farewell. Boffa Miskell, 2019.

5.9. Coastal Terrestrial Area 4: Farewell Spit

The Farewell Spit Coastal Terrestrial Area is located at the north-western corner of the Tasman District. It extends from Pillar Point and Pūponga Point to the Shellbanks and includes all of the sand spit. Due to Farewell Spit being a low lying sandspit, there is little presence of structures with the exception of a lighthouse and two small buildings at the north-eastern end of the Coastal Terrestrial Area. The area is open, exposed and experiences a range of climatic conditions, being the division between the west coast waters and the more sheltered waters of Golden Bay.

Key coastal characteristics include: sand dunes, saline vegetation, sweeping sandy beaches, and coastal lakes and ponds (Department of Conservation, 2020a). During the spring and summer months, Farewell Spit becomes populated with thousands of migratory wading birds from the northern hemisphere. It also acts a trap for some marine mammals such as dolphins and numerous whale species which have stranded on the spit (Department of Conservation, 2006a). Remote and isolated experiences are commonplace.

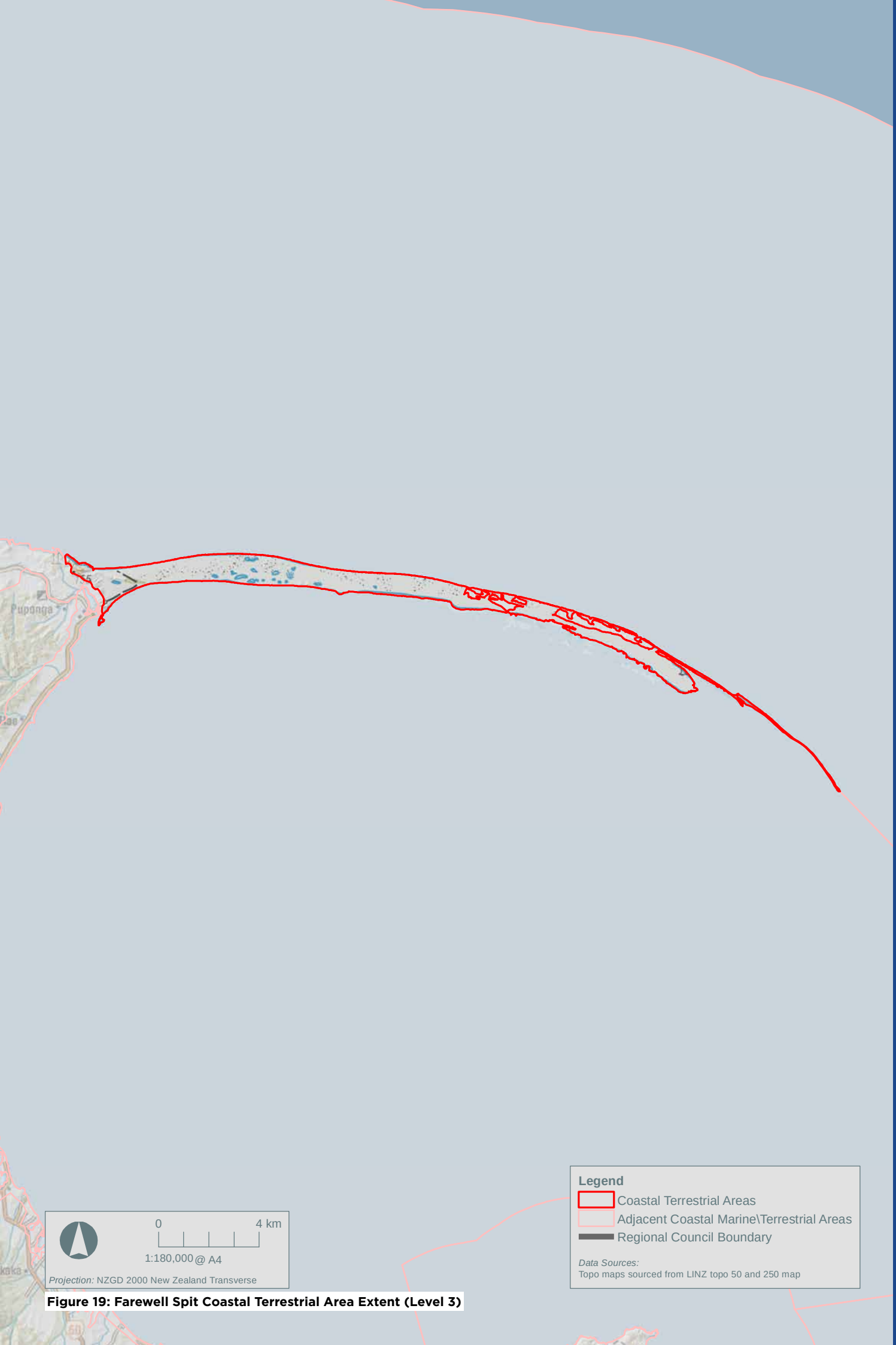


Figure 19: Farewell Spit Coastal Terrestrial Area Extent (Level 3)

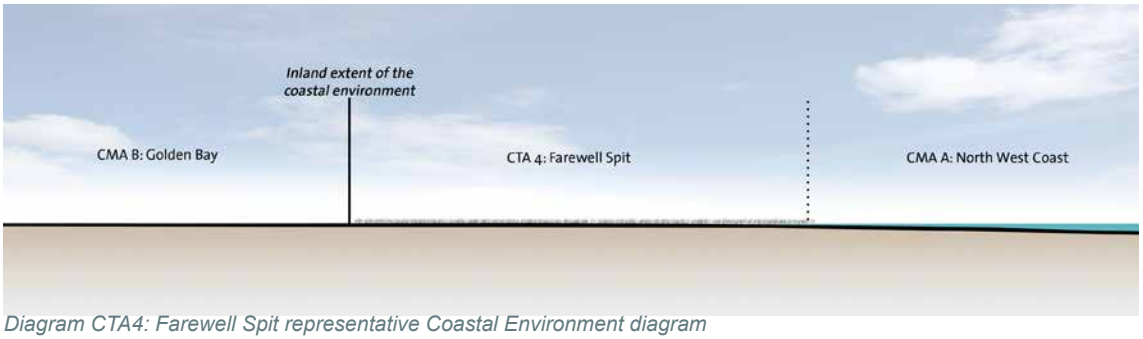


Diagram CTA4: Farewell Spit representative Coastal Environment diagram

Abiotic

Farewell Spit is a 25 km long, recurving sandspit (Tasman District Council, 2001) with a total coastline of approximately 67km. The spit encloses the northwest part of Golden Bay and the sheltered southern area has extensive tidal sandflats. The northern area of Farewell Spit is open and exposed to the Tasman Sea (Battley et al., 2005).

Farewell Spit is the longest sandspit in New Zealand and is formed predominantly of quartz sands derived from erosion of the Southern Alps and West Coast sea cliffs that have been transported northwards by a long-shore current. The spit is naturally very dynamic and has a long history of degradation during low sea levels during glacial periods and re-construction during interglacial periods, however the current spit is entirely of Holocene origins. Since the origin of the current spit (approximately 6500 years ago), it is estimated that 2.2 million cubic metres of sand have been deposited annually, and it is reported to be extending annually by 15m (Battley et al., 2005).

Farewell Spit has five distinct landforms. These include ocean beach; mobile dune belts; inter-dune hollows; low rolling dunes with many temporary and permanent lakes and wetlands; and intertidal sandplains (Battley et al., 2005). There is one waterway, which is likely to be ephemeral, at the base of the spit (western end of the Coastal Terrestrial Area).

An area of pastoral farmland remains at Triangle Flat at the base of the spit (Battley et al., 2005). Other small-scale modifications to the area include a pa site at Pūponga Point, a viewing platform and walking tracks; these modifications have little influence on abiotic processes, with the exception of farming, which is likely to somewhat modify drainage and water retention capabilities.

Being exposed to weather systems from the west, Farewell Spit is one of the windiest coastal locations in the Tasman District. Average yearly rainfall is 1,500mm, while annual sunshine hours are 1,750. The average annual temperature in summer is 23°C, in winter this drops to 6°C.

Biotic

The total land area within the Farewell Spit Coastal Terrestrial area is 2,105 ha, of which 37.9% is bare or lightly-vegetated surfaces, 19.9% is pasture, 17.7% is native wetland, 7.3% is native forest, 6.47% is water bodies, 6.26% is native shrubland, 4.12% is flaxland, 0.4% is exotic forest, and 0.07% is exotic scrub.

Almost the entire Coastal Terrestrial Area is formally protected. Almost all of the Coastal Terrestrial Area is formally protected (98%) by the Farewell Spit Nature Reserve except for a small area at the base of the Farewell Spit which is part of Pūponga Farm Park. Since 1976 the Nature Reserve area of Farewell Spit has been recognised as a Wetland of International Importance (Ramsar Site). As a Nature Reserve, public access to the spit is restricted. Farewell Spit and its associated tidal flats are also listed in Schedule 25D of the Tasman Resource Management Plan as an Area with Internationally Important Natural Ecosystem Values (Tasman District Council, 2014).

Prior to human settlement, coastal shrubland composed of Cassinia, grasses, pingao, Spinifex and flax is thought to have dominated the spit, with a forest of totara (*Podocarpus totara*) occurring at its western end (Deans, 1992). The vegetation has been extensively modified by fire and stock grazing (Farewell Spit was leased for grazing from 1874 to 1976) and the introduction of marram grass (Lynn, 2012) to a predominantly exotic cover dominated by marram grass and lupin. However, in 1975 all cattle and sheep were removed from the spit, and since then, the natural vegetation has begun to regenerate. Characteristic indigenous species are mānuka (*Leptospermum scoparium*), kānuka (*Kunzea ericoide*s), lowland flax, bracken, sedges (Carex spp.) and herbs. Regenerating native forest species include kaikomako, rimu and some akeake. Dune hollows and small lakes contain a range of indigenous macrophytes and turfland species including *Myriophyllum spp., Glossostigma elatinoides, Limosella tenuifolia, Lilaeopsis Orbiculatus* and *sand gunnera*, sedges (*Carex spp.*), and rushes (*Juncus spp.*). Three threatened,

endemic plant species are found in the sand dune communities; *Euphorbia glauca*, sand daphne and pingao. Pingao is showing signs of regeneration since the removal of cattle and sheep (Deans, 1992).

Natural coastal dynamics have caused significant erosion of the spit and resultant loss of some shorebird roosting habitat (Schuckard & Melville, 2019) however, Farewell Spit still regularly supports more than 20,000 shorebirds. The large intertidal flats provide very important roosting and foraging habitat for a high diversity of national and international migratory wading birds (e.g. South Island pied oystercatchers (*Haematopus finschi*), banded dotterels, eastern bar-tailed godwits (*Limosa lapponica*), red knots (*Calidris canutus*) and ruddy turnstone (*Arenaria interpres*) (Schuckard & Melville, 2013, 2019; Tasman District Council, 2001; Woodley, 2014)). In 2000, Farewell Spit was declared an East-Asian-Australasian Flyway Shorebird Network Site (Tasman District Council, 2001; Woodley, 2014). Besides wading birds, the dunelands of Farewell Spit also provide habitat for a diversity of other bird species, including a number of At Risk and Threatened species such as black-billed gulls (*Larus bulleri*) and South Island fernbird (*Bowdleria punctata*). They also provide important breeding habitat for colonies of Australasian gannets (*Morus serrator*; up to 3900 nesting pairs), Caspian terns (*Hydroprogne caspia*), little blue penguins (*Eudyptula minor*) and white-fronted terns (*Sterna striata*) (Schuckard & Melville, 2013, 2019; Tasman District Council, 2001).

Female spinifex. Simon Walls, Department of Conservation.

There are records of northern grass skink and brown skink within the Farewell Spit Coastal Terrestrial Area. Farewell Spit is also a stronghold for red katipo spiders (*Latrodectus katipo*) and was identified as one of nineteen preliminary key sites nationwide for securing the future of this species (Butler, 2008).

At the western end of the Spit, inland of Fossil Point, is representative coastal forest which is part of an important ecological sequence between the coast and unique coastal heathland communities of the Old Man Range. Pūponga Point, on the eastern side of the mouth of the Pūponga Estuary, is of conservation importance because it has indigenous coastal forest growing on a limestone substrate. This forest supports three locally uncommon tree species including kohekohe, whau and the large-leaved milk tree (Department of Conservation, 2016a).

Experiential

The Farewell Spit Coastal Terrestrial Area is a vast and expansive landscape which is not accessible by public vehicles without obtaining a Department of Conservation permit. Historically the spit was grazed, however in 1975 all the cattle and sheep were removed. Today there is very little modification to the area due to the spit being managed by the Department of Conservation and internationally recognised as a Ramsar site.

Those wishing to the explore Farewell Spit can do so on foot with the Fossil Point, and Spit Circuit tracks enabling access to the base of the spit from a carpark near Pūponga. The end of Farewell Spit can be reached by two Department of Conservation approved tour operations which travel the length of the spit to the lighthouse at the end. This windswept, remote and exposed part of the Tasman coastal environment is valued for its scenic and wild environment. There are opportunities to interact with wildlife and have isolated experiences away from the mainland.

Level 3 Rating: Coastal Terrestrial Area 4: Cape Farewell

DEGREE OF NATURAL CHARACTER	NATURAL CHARACTER ATTRIBUTES		
	ABIOTIC	BIOTIC	EXPERIENTIAL
VERY HIGH	✓		✓
HIGH		✓	
MODERATE TO HIGH			
MODERATE			
MODERATE TO LOW			
LOW			
VERY LOW			
OVERALL NATURAL CHARACTER RATING	HIGH		

Right: View overlooking Farewell Spit near Stockyard Point. Boffa Miskell, 2019.

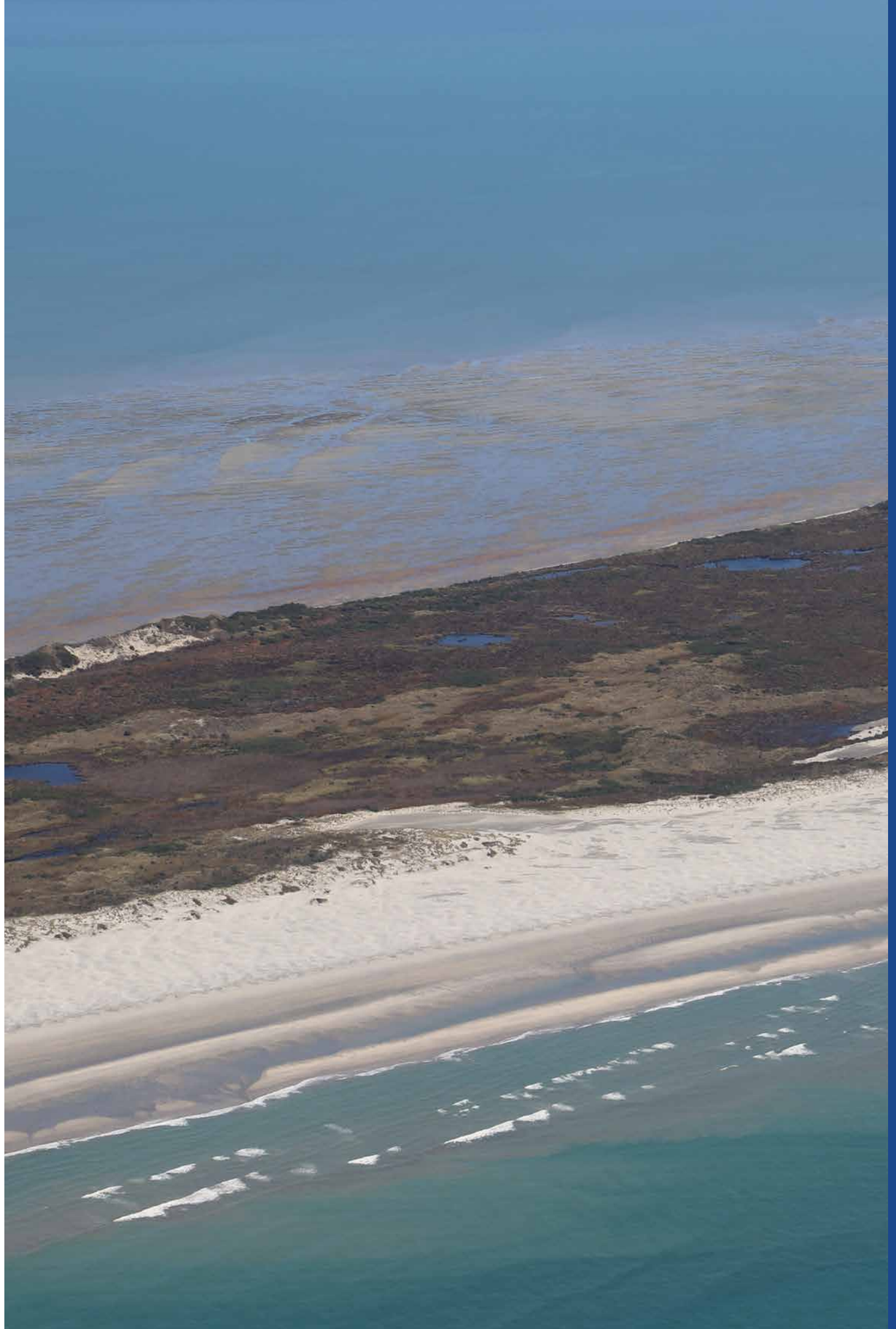


Figure 20: Areas of High and Very High Natural Character within the Farewell Spit Coastal Terrestrial Area. (Level 4)

Coastal Terrestrial Area 4: Farewell Spit

SPECIFIC CHARACTERISTICS AT THE LOCAL SCALE (LEVEL 4)

THESE ARE MAPPED WITH REFERENCE TO FIGURE 20

REFER TO COASTAL MARINE AREA A AND B FOR FURTHER INFORMATION RELATING TO THE MARINE COMPONENT ASSOCIATED WITH THIS AREA.

AREA	OVERALL RATING	ABIOTIC	BIOTIC	EXPERIENTIAL	KEY CHARACTERISTICS	ADDITIONAL COMMENTS
FAREWELL SPIT	VH	VH	VH	VH	• Dynamic sand spit with active dune systems • Internationally significant geopreservation site • Longest sandspit in New Zealand formed from West Coast quartz sands • Five distinct landscape features including ocean beach; mobile dune belts; inter-dune hollows; low rolling dunes and intertidal sandplains • Internationally recognised as a RAMSAR site • High diversity and population of wader bird species, as well as other bird species including little blue penguins • Stronghold for the red katipo spider • Isolated, wild and remote experiences	• Includes the lighthouse
FOSSIL POINT	VH	VH	VH	VH	• Exposed limestone cliffs subject to natural erosion • Intact stand of broadleaved indigenous hardwoods and mānuka (*Leptospermum scoparium*) and kānuka (*Kunzea ericoides*) • Part of the Fossil Point track which navigates the western end of Farewell Spit	• Excludes modified land
PŪPONGA POINT	H	H	H	VH	• Intact limestone outcrop • IntactCoherent stand of mānuka (*Leptospermum scoparium*) and kānuka (*Kunzea ericoides*) • High experiential values	• Interface between the Farewell Spit intertidal Area and Golden Bay Near Shore and Estuaries

Label: VH=Very High; H=High; MH=Moderate High; M=Moderate; ML=Moderate Low; L=Low; VL=Very Low.

Above: Pakawau Inlet. Boffa Miskell, 2019.

5.10. Coastal Terrestrial Area 5: Pūponga

The Pūponga Coastal Terrestrial Area is located within the north-western part of the sheltered waters of Golden Bay. The extent of this Coastal Terrestrial Area extends from the small settlement of Pūponga in its northern reaches to Taimatea Point near Waikato in the south. This Coastal Terrestrial Area includes Pūponga Point, a regionally significant geopreservation site, and the Pākawau Inlet. Due to the sheltered nature of Golden Bay and the flatter topography close to the coastal edge, the Pūponga Coastal Terrestrial Area has a larger degree of modification than more northern Coastal Terrestrial Areas, with the small settlements of Seaford, and Pākawau located near the Pākawau Inlet.

Key coastal characteristics include: Narrow sandy beaches, large areas of flat grazed pasture and inland coastal hills covered in indigenous forest. The topography of this Coastal Terrestrial Area has a gentle slope and provides shelter from the prevailing winds which batter the west coast of the Tasman District. This area also includes two large coastal inlets of Pākawau Inlet and Pūponga Inlet.

The inland extent of the Coastal Environment has been defined using the Ridgeline Principle, Vegetation and Land Use Principle, and Coastal Hazard Principle. Beyond the Coastal Environment, are the indigenous forests of Kahurangi National Park.

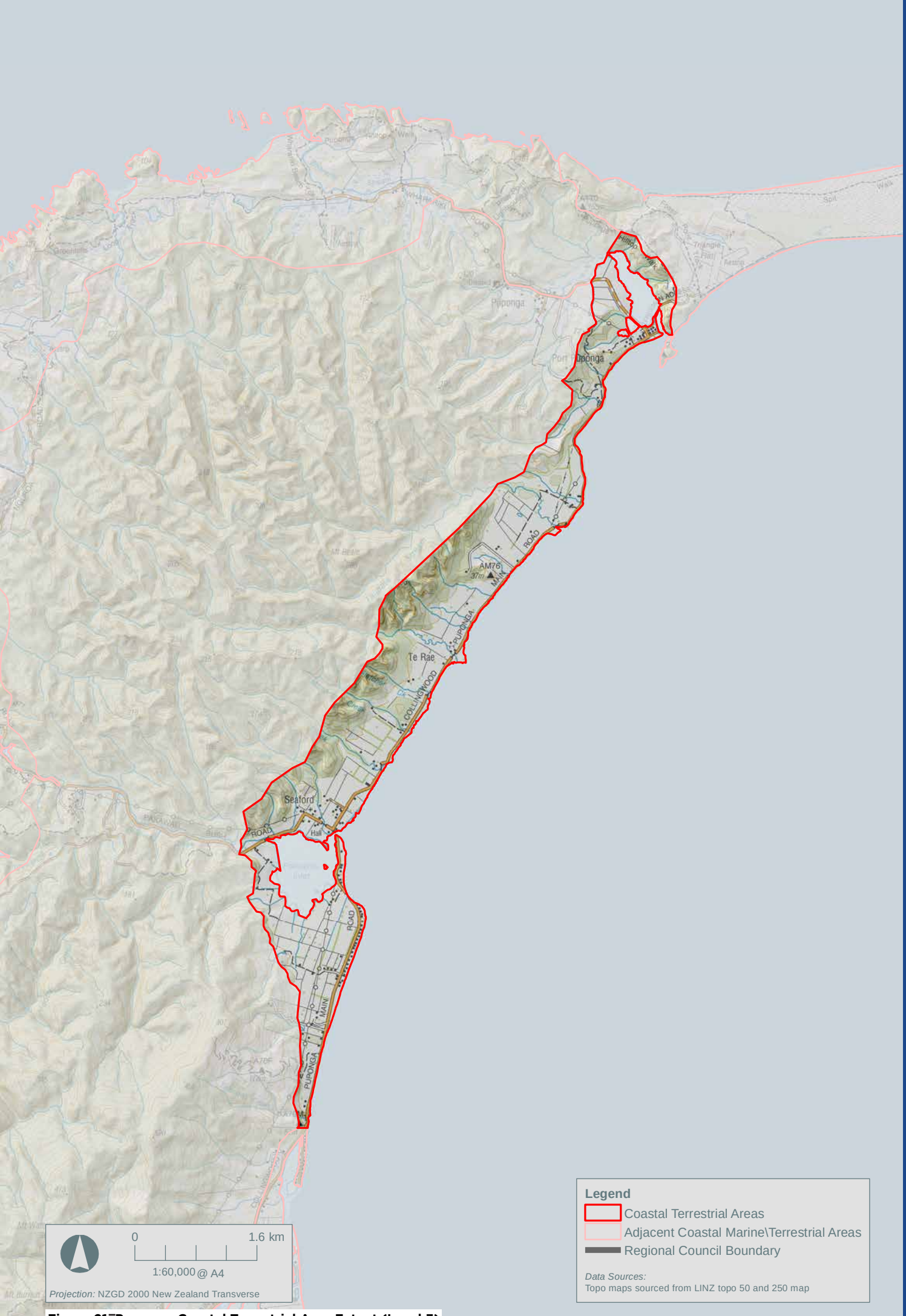


Figure 21: Puponga Coastal Terrestrial Area Extent (Level 3)

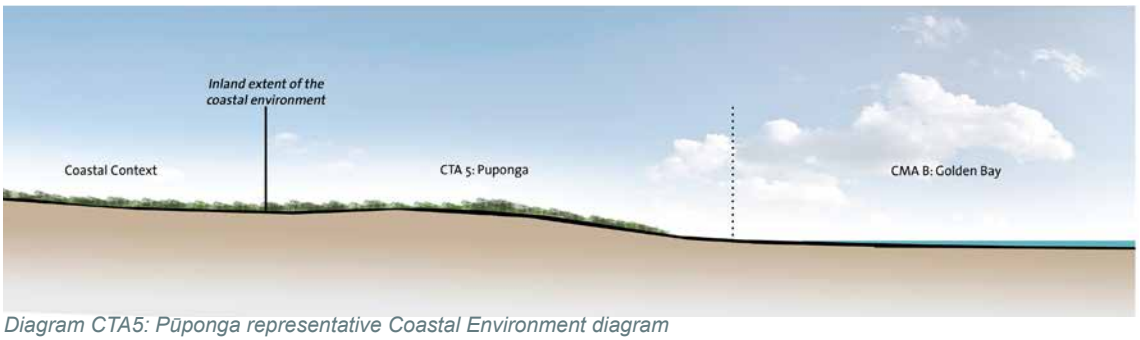


Diagram CTA5: Pūponga representative Coastal Environment diagram

Abiotic

The Coastal Terrestrial Area is at the northern extent of Golden Bay and is characterised by the gently sloping sandstone foothills which sit within the Kahurangi National Park. Below is an extensive coastal platform which extends from Pūponga to just south of the Pākawau Inlet formed from gravels. Within this Coastal Terrestrial Area there are also two geopreservation sites, including Farewell Spit which is internationally significant and the Pūponga Point fluviatile sedimentary rocks.

Shoreline erosion is evident in some places, particularly around Pākawau, where there are areas with steep sand scarps up to 2.5 m high. On some beachfront properties, coastal processes have been modified through the installation of erosion protection measures such as rock seawalls (small-scale), rock rip rap and logs, and undertaking sand 'push up' exercises whereby sand is pushed from the upper beach berm against erosion scarps to create a buffer of sand to act as a dune, and provide coastal protection (OCEL Consultants Ltd, 2015). Between Pūponga Point and Te Rae intermittent rock coastal protection is present (Tasman District Council, 2019).

A road extends along the foreshore and small settlements are dotted along the coast. There are a number of waterways, with forested headwaters in Kahurangi National Park, that flow through the Coastal Terrestrial Area. Some of the waterways are ephemeral (only flowing following rainfall events) (James & Kroos, 2011) in summer months. The outlets of these are modified by bridges or culverted road crossings, however, fish passage between freshwater and marine environments is thought to be generally intact (James & Kroos, 2011).

The climate of this Coastal Terrestrial Area is less exposed than the Coastal Terrestrial Areas on the north-west coast. Average yearly rainfall is 1,750mm, while annual sunshine hours are 2,100. The average annual temperature in summer is 22°C while in winter this drops to 6°C.

Biotic

The total land area within the Pūponga Coastal Terrestrial area is 1,044 ha, of which 58.3% is pasture, 18.8% is native forest, 15% is native shrubland, 3.7% is exotic forest, 1.8% is native wetland, 1.1% is artificial surfaces, 0.6% is exotic scrub, 0.3% is bare or lightly-vegetated surfaces, 0.2% is water bodies, 0.2% is cropland or horticulture, and 0.07% is flaxland.

Approximately thirteen percent of the Pūponga Coastal Terrestrial Area is formally protected. The land on the eastern side of Pūponga Inlet is within Pūponga Farm Park and the forested hillslopes at the inland-most extent of the are part of Kahurangi National Park. Between Seaford and Te Rae a 5.7 ha patch of remnant podocarp forest is protected by a QEII Open Space Covenant.

The Pūponga Coastal Terrestrial Area is dominated by farmland. Much of the flat coastal plain has been cleared of indigenous vegetation and developed for farming. Almost 60% of the landcover of the Coastal Terrestrial Area is exotic pasture. The steeper hillslopes behind the coastal plain between Pākawau Bush Road (near Seaforth) and Port Pūponga, at the inland-most extent of the Coastal Terrestrial Area, support a mix of modified secondary indigenous forest and primary indigenous forest. On the eastern side of Pūponga Inlet, within Pūponga Farm Park, there is mixed broadleaved – hardwood forest which is dominated by kānuka (*Kunzea ericoides*) near the coast. This grades into scrub further inland. This forest and scrub is contiguous with the heathland communities of the Old Man Range.

Between Seaford and Te Rae there is a 5.7 ha patch of highly representative primary lowland alluvial forest within a QEII Open Space Covenant. This small area contains large remnant podocarp trees and is of high conservation high as one of the last remaining stands of primary forest on an alluvial landform in the Coastal Terrestrial Area.