

# Appendix G: Landscape & Natural Character Assessment

# Porirua Wastewater Treatment Plant – re-consenting

Landscape, Natural Character and Visual Effects Assessment  
Prepared for Wellington Water

26 March 2020



## Document Quality Assurance

<b>Bibliographic reference for citation:</b> Boffa Miskell Limited 2020. <i>Porirua Wastewater Treatment Plant – re-consenting: Landscape, Natural Character and Visual Effects Assessment</i> . Report prepared by Boffa Miskell Limited for Wellington Water.		
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Status: FINAL	Revision / version: 1	Issue date: 26 March 2020
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# Executive Summary

This assessment of landscape and natural character relates to a coastal permit consent for the discharge of treated wastewater from Porirua's wastewater treatment plant at Rukutane Point. The existing outfall location was selected from a comparative assessment process by Wellington Water during 2018 – 2019 where several options were considered. The selected option uses the existing coastal outfall pipe which has capacity to take the projected additional discharge volumes. The Coastal Permit for the discharge to coastal water expires in July 2020 and is the subject of this application.

All options, including the selected option included upgrades at the existing wastewater treatment plant involving small scale structures housed within existing buildings or located below ground. These upgrades are within an area designated for this purpose and therefore do not form part of this application. The changes are designed to increase the capacity of the treatment plant so that it can treat all wastewater arriving at the plant. The proposed eradication of bypasses and improved microbial treatment at the plant will improve the quality of the discharge compared to existing levels, but with average flows projected to increase over time, it is likely that wastewater quality will gradually decrease over time. A series of provisions include monitoring and review at set times and trigger points are proposed to mitigate these effects over the course of the consent.

This assessment of the landscape and natural character effects has been informed by two recent technical studies commissioned by Porirua City Council. These studies were undertaken to give effect to the requirements in the NZ Coastal Policy Statement and of the Regional Policy Statement. The first of these - the Porirua Landscape Evaluation study - identifies Outstanding Natural Landscapes (ONL) and Special Amenity Landscapes (SAL). The second of these is the Porirua Coastal Study, which identifies those areas of high or outstanding natural character in the coastal environment. The studies have identified the discharge area as being within an area of **High** Natural Character with the treatment plant and outfall structure within the Rukutane/Titahi Bay Significant Amenity Landscape.

The consent for the existing outfall structure at Rukutane Point does not expire until 2034 so is considered part of the existing environment with any effects on landscape or natural character remaining neutral.

Any adverse effects on areas of high landscape value and natural character arising from the proposed discharge are assessed as **very low** due to the low level of change in the water quality to the receiving waters from the discharge at the existing outfall pipe with correspondingly very low effects on natural character.



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# 1.0 Introduction

## 1.1 Scope of the report

Boffa Miskell Limited (**BML**) was engaged by Wellington Water in October 2018 to provide landscape and visual effects advice, including effects on Natural Character to assess options for consenting of the existing Porirua wastewater treatment plant (**WWTP**) and outfall at Rukutane Point in Titahi Bay. The existing WWTP is covered by a designation for the purpose of wastewater treatment and therefore does not require further assessment. For the purpose of this report any assessment of the upgrade only includes the proposed discharge from the existing outfall. This existing outfall structure is consented until 28 June 2034 with no physical works planned at the outfall before that time. Some minor works to increase the capacity of treatment of wastewater at the existing plant are proposed and will be completed under the designation K1048 in the Porirua District Plan.

The following Landscape, Natural Character and Visual Effects Assessment assesses the landscape and visual effects of the proposed discharge from the WWTP on the immediate and surrounding environment, including natural character of the coastal environment, as relevant.

## 1.2 Project background

BML have been involved in several stages of the Porirua Wastewater consenting programme since October 2018. In that time, we have prepared two reports to inform the Multi Criteria Assessment (MCA) workshops and presented on landscape and natural character matters at those workshops as follows:

1. 25<sup>th</sup> June 2019 – Comparative assessment of Network Options (9 options combined wastewater network and treatment options, including 3 outfall options)
2. 28<sup>th</sup> August 2019 - Comparative assessment of Wastewater Treatment Plant only with 3 outfall options – to enable selection of a preferred outfall option.

The outcome from the last workshop in August 2019 informed the selection of the existing outfall along with some upgrade of the existing treatment plant to improve the capacity of the WWTP and thereby improve the overall quality of wastewater discharged at the existing outfall at Rukutane Point.

## 1.3 Other Technical Relevant Reports

Other technical reports were prepared by relevant experts to inform the MCA workshops as part of the selection process. These comprise:

- **Public Health Risk** – associated with contact recreation and food gathering;

- **Water quality and ecology** – including streams, harbour, the coastal shoreline and the wider coastal environment, and terrestrial ecology;
- **Tangata whenua values** – effects on mauri, mana hauora, kai moana, mahinga kai, heritage and whakapapa;
- **Social and Community** – Amenity, recreation and heritage, including perception;
- **Technology** – Enduring, reliable and flexible for future technology and capacity upgrades;
- **Growth** – supports long term growth and investment, and economic development of the city and sub-region;
- **Resilience** – Climate change, natural hazards and operation resilience; and
- **Cost.**

Those reports of most relevance to landscape and natural character effects were water quality and ecology; and social and community aspects. Effects on these may have related effects on amenity and perception of ‘naturalness’ within the coastal environment. These effects may be attributed to natural character (which assesses physical, biological and experiential values). The findings of these reports were presented at the MCA workshops and have been considered in this assessment as covered by the expert technical reports included with the application.

The Cawthron Ecology<sup>1</sup> report provided detailed information on the ecological effects of the outfall options on the coastal marine environment. It also provides a baseline for future monitoring. In addition, the water quality assessment of the preferred option as included in the AEE has informed this assessment.

### **Porirua Landscape Evaluation Study 2017**

In 2017, BML undertook the Porirua Landscape Evaluation study to identify Outstanding Natural Features and Landscapes; and Special Amenity Landscapes within Porirua City<sup>2</sup>. The evaluation identifies and maps these valued landscapes as required by the Wellington RPS (2010) Policy 15 and subsequent requirements of the Proposed Natural Resources Plan (PNRP decision version, 2019)<sup>3</sup>.

### **Porirua Coastal Study 2018**

In 2018, BML prepared the Porirua Coastal Study, which maps Porirua’s coastal environment and evaluates levels of natural character. The Natural Character of the Coastal Environment Study was undertaken for Porirua City Council and Wellington Regional Council<sup>4</sup>. This technical study identifies and maps areas of natural character relevant to this assessment.

Both of these technical studies were undertaken to meet the requirements in the NZCPS 2010, and the Wellington Regional Policy Statement (RPS). They also now meets the subsequent Proposed Natural Resources Plan (PNRP decision version, 2019). Both the Porirua Landscape Evaluation and Coastal

<sup>1</sup> Cawthron Institute: Report no 3380 (2019), *Porirua wastewater treatment plant outfall: assessment of effects of different outfall options on the marine environment*, Prepared for Wellington Water Ltd

<sup>2</sup> Boffa Miskell (2017). *Porirua Landscape Evaluation – Draft Technical Assessment*.

<sup>3</sup> Proposed Natural Resources Plan (PNRP, 2019). Policy 24(a).

<sup>4</sup> Boffa Miskell Ltd (2018). *Porirua Coastal Study Natural Character Evaluation of the Porirua City Coastal Environment*

Studies have been used to inform the District Plan review and have yet to go through the public planning process.

As part of the selection of the preferred option for the wastewater treatment plant and outfall, Boffa Miskell prepared two papers to inform the MCA workshops. These covered the effects on *natural character and landscape including effects on natural character of the coastal environment, landscape fabric, landscape character and visual amenity*<sup>5</sup>. These memos (dated 11-June-2019 and 13-September-2019) outlined the valued landscapes and natural character ratings that applied to the various network and outfall options

## 1.4 Assessment Process

This assessment has been undertaken with reference to the Quality Planning Landscape Guidance Note<sup>6</sup> and its signposts to examples of best practice, including the NZILA Guidelines for Landscape Assessment<sup>7</sup>. In summary, the effects ratings are based upon a seven-point scale which ranges from very low to very high. A detailed description of natural character and its evaluation can be found in **Appendix 1**.

A site visit was undertaken at the start of the optioneering process on the 6<sup>th</sup> of November 2018 to view the existing wastewater treatment plant and its environs including Korohiwa Bay, below Round Point on the eastern side (refer Map 8 - excerpt from Coastal Study at Appendix 3, showing location). Also visited was the existing outfall location at Rukutane Point. At the time, Korohiwa Bay was being considered as one of the options for a new outfall, but was subsequently ruled out for reasons including landscape and natural character effects. Photographs were taken from these locations to understand the wider context of the Site and its surroundings.

## 2.0 Site Context

The existing outfall is part of a broader landscape within the coastal environment which forms Porirua's southern coastal edge between Titahi Bay and Green Point (Komangarautawhiri), extending towards Makara to the southern boundary of Porirua's south-west coast. The coast skirts around the base of the treatment plant, opening out to Cook Strait with Mana Island located on the near horizon, 3.2 km off shore. The Titahi Bay Surf Club is located approximately 1.0km away on the beach to the east.

The existing environment at Rukutane Point includes the outfall structure with the proposed discharge into the coastal waters at this current location. For the purpose of this assessment of natural character

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<sup>5</sup> As defined in scope of project to Boffa Miskell for Wellington Wastewater, 2018

<sup>6</sup> <http://www.qualityplanning.org.nz/index.php/planning-tools/land/landscape>

<sup>7</sup> Best Practice Note Landscape Assessment and Sustainable Management 10.1, NZILA

effects, the coastal environment includes both coastal marine and terrestrial components. Excerpts from the Coastal Study (2018) are included at Appendix 3 - Maps 8 and 18 showing the extent of the coastal marine and terrestrial environments forming part of the study area being assessed.

## 2.1 Coastal Terrestrial Environment

The coastal terrestrial environment for the area around Rukutane Point extends from MWHS up to the first dominant ridge at Pikarere Farm. The area is identified as Area 14 *West Coast* in the Porirua Coastal Study (2018) - terrestrial area (refer Map 18, Appendix 3). This ridge defines the inland extent of the coastal environment – shown as a dotted line on Maps 8 and 18. The vegetation of the area is generally pasture with small pockets of regenerating native vegetation on steep slopes. There is limited modification along much of the coastal edge with the exception of the outfall and WWTP in this area as seen in Photograph 1 below.

In the Porirua Landscape Evaluation Study (2017) to which I was a co-author, the area is identified as having Special Amenity landscape values (SAL) due to its high natural science values with an intact coastal landform, steep rocky headlands with pockets of regenerating coastal vegetation in the rural gullies and on the rocky cliff escarpments, including at nearby Stuart Park. It has high sensory values derived from the exposure to the high prevailing westerly winds and sunsets which emphasise the dramatic landforms around the coast.



**Photograph 1:** Site context showing coastal terrestrial environment south of Rukutane Point. WWTP designated area in centre with Pikarere Farm rising up to the first ridge. Korohiwa Bay is the small crescent-shaped bay seen below the promontory at Round Point – lower right of photograph.

The existing outfall structure is located at the base of a rocky headland, with open sea views to Cook Strait and the rocky coastline at Rukutane escarpment. It is accessed via a road which traverses the Stuart Park headland (as seen in Photograph 2 below). The coastal edge from Titahi Bay towards the bay east of Green Point is classified as local purpose (Esplanade) reserve vested in Porirua City Council, as is Stuart Park – an area of regenerating scrub including gorse and rank pasture down to the coast. The coastal character at the site of the discharge pipe is one of rocky cliffs with rock outcrops and small stony bays contained by rocky headlands.

In the Porirua Coastal Study the area in the vicinity of the outfall was evaluated as having an overall **moderate-high** level of natural character in the Coastal Terrestrial Area (14: West Coast - refer Map 18, Appendix 3) This is the case for the majority of this area with the exception of the Rukutane Escarpment which has a **high** natural character rating and includes the area where the existing outfall structure is located. This rating for the Rukutane area was due to the escarpment being well vegetated with coastal processes largely intact and the presence of some *At Risk* plant species. The remaining coastal terrestrial Area 14 (West Coast) has a '**moderate to high**' natural character rating with the lower rating due to the land being historically cleared of forest and where the majority is covered by exotic grassland and managed as grazed pasture. .

In context, the existing wastewater treatment plant is located within the West Coast area - 700 metres west of the outfall from where the effluent is gravity-fed to the coastal discharge point. A portal is built into the cliff where the effluent travels through an underground tunnel at the coastal edge.

The existing treatment plant sits within a landform created by excavating the valley sides for a flat platform to house the plant components. It is contained within a fenced security compound with the main entrance gate accessed from a sealed road off the end of Moki Street in Titahi Bay. A mature pine plantation around the compound screens views to the treatment plant from Pikarere Farm which is located on the hills above the compound.

The site where the outfall is located contains structures including the tunnel portal, in-ground inspection chamber at ground level and a building containing a pump station, as seen in photograph 2. These elements contribute to a coastal terrestrial environment with a **moderate-high** level of natural character in the Coastal Study due to having been modified with roading, structures and vegetation removal. These structures are considered part of the existing environment and are not within an area of high or outstanding level of natural character to be preserved as directed by the NZCPS.

The outfall pipe at the coastal discharge point is encased in concrete. There is a separate concrete barrier alongside to limit the immediate easterly flow of the discharge towards Titahi Bay, as seen in Photographs 2 and 3. No additional structures are proposed at this location where the outfall discharges into the sea. The barrier appears to have some localised effect in the immediate vicinity of the outfall on the dispersal of the discharge by directing it towards Green Point before dispersing into the wider coastal waters (refer Photograph 3).



**Photograph 2:** Existing outfall at Rukutane Point with access road traversing Stuart Park headland



**Photograph 3:** Existing outfall at Rukutane Point showing pipe encased in concrete with concrete barrier to limit the immediate easterly flow of the discharge towards Titahi Bay. Photo from Figure 2: Aerial view of wastewater outfall at Rukutane Point, Memo from Dave Cameron 2 Dec 2019).

## 2.2 Coastal Marine Area

The Coastal Marine Area (CMA) covers the area below MHWS. For this assessment, it includes the area mapped as *Rocky Reef South* in the Porirua Coastal Study. (refer Map 8, Appendix 3 **Rocky Reef South**, p. 48). This shows the coastal marine area in the vicinity of the proposed outfall as having a **High** overall natural character rating.

The method for evaluation natural character is outlined at Appendix 1 which illustrates that natural character is rated on a continuum relative to a seven-point scale, where very low levels of natural character relate to highly modified environments and high levels of natural character relate to less modified environments. The evaluation matrix that accompanies the methodology describes the abiotic, biotic and experiential values that contribute to the natural character on this high to low continuum.

The Coastal Study describes the high natural character in the vicinity of the outfall is due to the high abiotic and experiential values with some reduced biotic values from depleted fish species due to the area being accessible from the coast, but largely unmodified coastal environment with “*Macro algae communities in the rocky reefs south area close to near pristine condition: their diversity and prevalence is high and similar to that found in coastal areas to the south extending into Cook Strait*”<sup>8</sup>.

The area identified in the Coastal Study as *Rocky Reef South* extends from the start of the rocky reef and coastal cliffs on the south side of Titahi Bay, southwards along the coast adjacent to Pikarere Farm. To the west it extends out towards Mana Island and includes the submerged isthmus 4-10m deep known as *The Bridge* which is designated as an Area of Important Conservation Value (AICV) in the operative GWRC Regional Coastal Plan for its “*marine flora and fauna of national significance.*” It is also listed as a Regionally Significant geological feature in the coastal marine area – Schedule J in the Proposed Natural Resources Plan for the Wellington Region (Decision version, 2019).

The existing coastal marine environment in the vicinity of the outfall was assessed as part of the ecological report by Cawthron (report no. 3380) as considered at the MCA workshops and included as Appendix F to the resource consent application. This described the environment of this coastal area as consisting of intertidal and shallow subtidal patch reefs interspersed with sand sediments. Their surveys showed an abundant and diverse range of algal flora and associated invertebrate fauna within the intertidal reefs. There was no discernible difference in the number or diversity of organisms in the area of the existing discharge compared to surrounding areas. Sediments contained concentrations of organic elements and trace metals typical of shallow coastal areas, indicating the shallow coastal waters around the outfall were unaffected, or only mildly affected by human activities.

The overall natural character of the Coastal Marine Area D *Rocky Reef South* (as seen in Fig 1, Map 8) was assessed as **high** in the Porirua Coastal Study, due to its largely unmodified coastal reefs and

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<sup>8</sup> Boffa Miskell Ltd (2018). *Porirua Coastal Study Natural Character Evaluation of the Porirua City Coastal Environment*, p.44

largely intact submerged 'Bridge' shoal. The limited human interference combined with a wild and rugged setting result in a high experiential rating.

## 2.3 Visual Catchment

The existing structures on the coast associated with the outfall at Rukutane Point (shown in Photographs 2 and 3 above) can be seen at the coast from the base of the access road. Distant views of these structures are also visible from land around the Plimmerton coast. The concrete-encased outfall structure comes into view within the last 100m of the access road nearing the coast. Views of the outfall structure are possible from the air and out at sea looking back towards land, but the actual discharge is not visible except at close range from the shore directly at the outfall site.

Both the WWTP site and the outfall at Rukutane Point are accessible by pedestrians from the road which has a locked gate at the end of the residential area at Moki Street, requiring key access for vehicles. Walking access is possible to the coastal reserve by recreational walkers and fishers.

## 3.0 Relevant Statutory Provisions

### 3.1 National Plans

As part of this assessment, there are several planning provisions that apply to the site of the outfall discharge. At a national level they include:

- *The Resource Management Act – notably Section 6 matters (natural character and Outstanding Natural Landscapes).*
- *The New Zealand Coastal Policy Statement 2010 (NZCPS)*

*Objective 2:* relates to preserving the natural character of the coastal environment and protecting natural features and landscape values.

*Policy 13:* directs local authorities

(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;*

*including by:*

(c) *assessing the natural character of the coastal environment of the region or district, by mapping or otherwise identifying at least areas of **high natural character**; and*

(d) ensuring that regional policy statements, and plans, identify areas where preserving natural character requires objectives, policies and rules, and include those provisions.

(2) recognise that natural character is not the same as **natural features and landscapes or amenity values** and may include matters such as:

- (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; and
- (h) experiential attributes, including the sounds and smell of the sea; and their context or setting.

[emphasis added]

The Porirua Coastal Study (2018) was prepared by BML with a team of NIWA scientists who assessed Porirua's coastal environment and evaluated levels of natural character to address the requirements in the Wellington Regional Policy Statement (RPS, Policy 48) and the NZCPS 2010.

## 3.2 Regional and District Plans

### *Wellington Regional Policy Statement (RPS)*

The RPS seeks that the region's special amenity landscapes are identified and those landscape values that contribute to amenity and the quality of the environment are maintained or enhanced (Objective 18)

The 2017 Porirua Landscape Evaluation Study identifies Special Amenity Landscapes (SAL) and Outstanding Natural Landscapes (ONL) within Porirua City. The coastal terrestrial area surrounding the existing outfall and proposed discharge location at Rukutana Point is identified as an SAL (refer map at Fig 1, Appendix 2).

### *Porirua City District Plan*

The Wastewater Treatment Plant is covered by a designation in the Porirua District Plan: K1048. As such, any changes to existing structures for the purpose of wastewater treatment are not relevant to this application for a resource consent.

The outfall area is within an area of reserve owned and managed as open space by the Porirua City Council. It is classified as a Local Purpose Reserve (Environmental Purposes) under the Reserves Act 1977. In the case of this outfall, the proposed discharge does not require any new structures and the consent for the existing outfall structure at Rukutane Point does not

expire until 2034 so is considered part of the existing environment with any effects on landscape or natural character remaining neutral.

A full assessment of the proposal against the relevant statutory provisions is provided in the application.

## 4.0 Proposal Description

The proposal is for discharge of treated wastewater from the existing outfall at Rukutane Point into the coastal marine environment. As a result of projected population growth, the discharge volumes are expected to increase over the life of the proposed consent by up to 20% in volume, based on population predictions as set out in the table below.

**Table 4-1: Population and wastewater flows predictions**

Metric	Unit	Year 2018	Year 2043
Population	residents	84,000	121,000
Average daily flow (ADF)	m <sup>3</sup> /day	26,438	38,016
Instantaneous ADF	L/s	306	440
Instantaneous PWWF	L/s	1,275	1,500

(As noted in Activity Description in the main body of the Resource Consent application)

To allow for the increase in flow and to ensure all of the wastewater is fully treated, there will be some minor upgrades of the existing treatment plant, to increase the volume of effluent that can be treated from the current 1200L/s to 1500L/s. These upgrades include an upgrade of the existing UV system to allow disinfection of flows to a capacity of 1500L/s. The new UV plant would be installed in a below ground concrete channel adjacent to the existing UV building structure within the designated compound.

For the purpose of this assessment, any upgrade of the existing Porirua Wastewater Treatment Plant (WWTP) at Titahi Bay is not included as these works are provided for under the existing designation. However, it does assess the effects arising from the proposed discharge from the existing outfall structure at Rukutane Point – noting that there are no additional structures proposed at the outfall, which is consented until 2034.

By ensuring that all wastewater arriving at the treatment plant is fully treated, the proposed capacity upgrades will improve the level of treatment of effluent discharging to the coast, compared to what is happening now. There will be a short time until the plant capacity upgrade is completed (current estimate by June 2023) when partially treated, bypass discharges from storm flows will continue to occur. This situation will however be for a short period (prior to the plant upgrade), at intermittent times and the discharge will be very similar to what currently occurs. The Cawthron report indicates

that the current discharge is having a negligible ecological effect so it can be concluded that the short term continuation of by-passes, which are intermittent and short term themselves, will not have an effect on natural character.

In the future there may be a need to upgrade the capacity of a portion of the outfall pipe which links the UV facility to the drop structure. However, this is not required immediately and is land based so does not form part of this application for Regional Council consents within the coastal environment.

The proposed discharge would appear as clear water, with little discernible difference in water quality from the surrounding seawater. The effluent will receive a higher level of treatment through UV irradiation at the treatment plant as part of the proposed minor plant upgrades. There may be some visual effect on water surface with freshwater 'floating' on top of sea water (which is heavier). This may be seen as a slight change in the surface in calm conditions, which are rare in this coastal location.

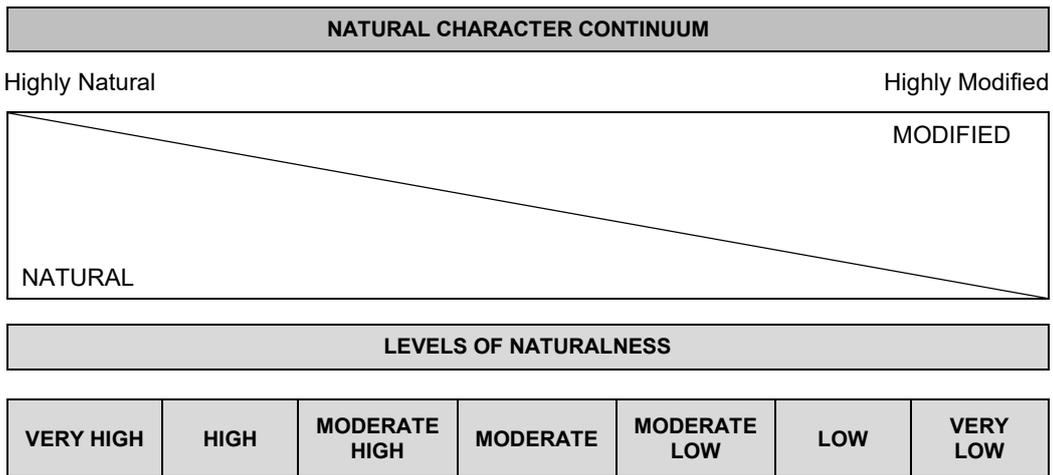
## 5.0 Assessment of Effects

Landscape and visual effects result from natural or induced change in the components, character or quality of the landscape. Usually these are the result of landform or vegetation modification or the introduction of new structures, facilities or activities. In this case, where the proposal is for a discharge to coastal water, natural character effects are also assessed, including the coastal terrestrial and the coastal marine environments. All these impacts are assessed to determine their effects on character, quality, amenity and experiential values.

### 5.1 Natural Character Effects

The following broadly outlines the method for assessing natural character. A more detailed description of natural character and its evaluation can be found in **Appendix 2**.

- Natural Character is a measure of naturalness in relation to the physical and biological aspects and perceived (i.e. perceptual and experiential) 'naturalness' within the coastal environment. Three attributes; physical, biological and experiential, of the coastal environment are considered, and combined to arrive at an overall measure of natural character.
- Natural character is about the condition of the coastal environment. The level of evident human-induced change dictates the level of natural character.
- Natural character is assessed on a continuum, where the degree of naturalness essentially depends on the extent of modification to the natural elements, patterns and processes in the coastal environment. That is; highest degree of natural character (greatest naturalness) occurs where there is least modification/uncluttered by obvious or disruptive human intervention and/or influence. The level of natural character has been expressed on a seven-point scale from very high to very low. (Refer to diagram below)



- The coastal environment includes both terrestrial and marine components; the inshore extent of the marine component is the CMA boundary (i.e. MHWS). The terrestrial area for this assessment extends from the MHWS up to the inland extent of the coastal environment. This extent is determined by considering relevant and accessible data including coastal hazards and input from terrestrial and freshwater ecologists to determine the extent to which coastal processes and influences remain significant.

This assessment has relied on the marine ecology assessment undertaken by Cawthron Institute for the preferred outfall option<sup>9</sup> and the water quality assessment included in the body of the resource consent application to inform the marine aspects of the assessment.

The effects on natural character of a proposal are considered in terms of the effects on the existing condition of the natural character arising from the proposal. Therefore, at a notional level, the effects of the proposed discharge on existing natural character has been considered, based on the findings of the Porirua Coastal Study. The study was undertaken at a district-wide scale at which the outfall constituted a small element in the wider context. The evaluation of natural character in the presence of the existing outfall did not mark the area down on account of the discharge. Subsequently, any changes to the natural character arising as a result of the proposed discharge at the existing outfall are considered to be small in scale or negligible in the overall context of this coastal (terrestrial and marine) area. At a more localised scale, the natural character effects are assessed based on the Cawthron ecological assessment and the water quality assessment in the AEE. The Cawthron Report identifies that the existing discharge is having a negligible or less than minor ecological effect. However the AEE predicts that without further mitigation there is a risk that the proposed discharge will result in more than minor ecological effects on the biota of the sub-tidal rock reef. In response to the assessment, the application proposes a 'monitoring, review and respond' mitigation regime. This is set out in section 5.13 of the AEE.

Any natural character effects from the proposed discharge need to be assessed for both terrestrial and marine components. This evaluates the physical, biological and experiential attributes to arrive at an overall evaluation of the level of natural character for the particular area where the activity is being

<sup>9</sup> Cawthron Institute: Report no 3380 (2019), *Porirua wastewater treatment plant outfall: assessment of effects of different outfall options on the marine environment*, Prepared for Wellington Water Ltd,

carried out. In this case, the area covered by the outfall discharge falls within the areas identified in the Porirua Coastal Study as:

- **Coastal Terrestrial Area 14: West Coast.**
- **Coastal Marine Area D: Rocky Reef South**

The following is a summary of existing natural character attributes for the coastal marine and coastal terrestrial areas as described in the Porirua Coastal Study relevant to the proposal.

### 5.1.1 Existing Natural Character –Coastal Terrestrial Environment

#### **Coastal Terrestrial Area 14: West Coast.**

##### Physical (Abiotic) attributes

Geology/geomorphology / Hydrology / Climatic influences

Steep coastal escarpments above narrow gravel beach and rocky reefs that follow coastal edge. Limited modification along coastal edge. Some isolated structures and tracking along the tops of the coastal scape including the wastewater treatment plant, but limited access along coast ensuring dynamic coastal processes remain largely intact. Vegetation for farming activities is the biggest modification to coastal processes.

**Moderate to High**

##### Biological (Biotic) attributes

Landcover / indigenous/exotic species / Indigenous biota / Estuaries, freshwater

Most of coastal environment is managed pasture with minimal tree cover. Grey scrub and broadleaved indigenous forest cover 15% of area. Exotic (pines) vegetation around wastewater treatment plant. Indigenous vegetation modified by farming, fire and construction of wastewater treatment plant and associated roads. Area contains a rare coastal shingle beach ecosystem with 3 At Risk plant species. However, the area is not fenced and is dominated by pasture grasses and modified by goat browse.

**Moderate to Low**

##### Experiential attributes

Views, sounds and smells of the sea / sense of wildness and remoteness

The steep coastal cliffs retain a remote wild and scenic character with very little apparent sense of landform modification.

**High**

**OVERALL NATURAL CHARACTER RATING FOR COASTAL TERRESTRIAL ENVIRONMENT:**

**MODERATE TO HIGH**

## 5.1.2 Existing Natural Character –Coastal Marine Environment

### Coastal Marine Area D: Rocky Reef South

#### Physical (Abiotic) attributes

Wind, waves and currents / Rocky Reefs / Seafloor sediments / Water quality

A mix of narrow beaches occur along an open coast. 'The Bridge' is a submerged land bridge-like sandy shoal with sandy sea floor substrates swept by tidal flows. Tidal rocky reefs, rock platforms and submerged fringing reefs. Well-developed tidal rocky reefs remain intact. Beach berm at base of coastal cliffs is narrow and unmodified. Ocean waves provide a strong abiotic element and beaches remain as yet unmodified by climate change.

**High**

#### Biological (Biotic) attributes

Landcover / indigenous/exotic species / Indigenous biota / Estuaries, freshwater

Close to pristine macro algae communities in rocky reefs. High diversity and prevalence. Exposed headlands and reef areas marked by presence of bull kelp. Rocky reefs exposed to recreational fishing that would have depleted fish, crayfish and paua abundance. However, depletion less than experienced by the rocky reefs in the north CMA which is much more accessible. Low diversity of marine mammals with infrequent sightings of killer shales, dolphins and fur seals. Relatively large numbers of gulls.

**Moderate to High**

#### Experiential attributes

Views, sounds and smells of the sea / sense of wildness and remoteness

Access to coast is relatively limited and presents an unmodified vista out to Cook Strait and Marlborough Sounds. Sense of wildness, remoteness and ruggedness imparts considerable experiential character.

**High**

### OVERALL NATURAL CHARACTER RATING FOR COASTAL MARINE ENVIRONMENT:

**HIGH**

## 5.1.3 Summary of Natural Character Effects

The NZCPS (Policy 13) requires identification of areas of high natural character of the coastal environment by mapping or otherwise identifying at least areas of high natural character (NZCPS Policy 13(1)(c)) The Natural Character of the Coastal Environment Study was undertaken for PCC to address this policy in 2018.

The map showing the overlays, including Natural Character (refer **Appendix 3**), illustrates that the existing outfall discharges into an area within the coastal environment with a **high** Natural Character rating as identified in the Porirua Coastal Study. Key characteristics of each area are assessed in terms of Abiotic, Biotic and Experiential values. The proposed discharge is within the 'Rocky Reef south' area with high abiotic and experiential values; and moderate-high biotic values (p. 46).

In assessing the effects on natural character resulting from the proposed discharge, the moderate-high biotic values in the Coastal Study indicate that the area is not pristine. This is highlighted in the technical reports relating to biophysical and natural processes, indicating that the current discharge has negligible or less than minor adverse ecological effects. While the AEE identifies the potential for more than minor adverse effects on the biota of the rocky reef from the proposed discharge, a 'monitor, review and respond' based mitigation regime has been included in the application and can confidently be expected to adequately mitigate any natural character effects of the proposed discharge through that process.. [

In this case, the proposed discharge would have no effect on the existing condition of the natural environment with respect to the rocky escarpment or coastal reefs as there are no new structures required. The discharge should not alter the existing experiential attributes given there will be no discernible difference to that from the existing levels of discharge with no evident difference in water quality at the outfall.

The Cawthron study indicates that there are no discernible differences in the prevalence or diversity of coastal species in the coastal waters surrounding the existing discharge as compared to the wider area. It can therefore be reasonably expected that there is likely to be little or no discernible effect on the coastal biotic, or abiotic or experiential elements components arising from the proposed discharge to coastal waters (as compared to a situation of no discharge, for example if the consent was not replaced).

A possible abiotic effect arising from the discharge would be a slight change in surface texture of the water in very calm conditions due to freshwater – being lighter than salt-laden water - floating on the surface. This may appear as a smooth patch of water in the area of the discharge at close range. The conditions which give rise to this effect would be very rare, given the strong wave action that occurs at the site. It is therefore unlikely that the increased level of discharge volume would create any discernible difference (either as compared to the existing discharge, or, logically, as compared to a no discharge scenario).

The effects on natural character from the proposed discharge are therefore assessed as **very low** given that with the proposed mitigation measures the discharge is unlikely to result in any changes to the abiotic, biotic and experiential values of the coastal marine area.

## 5.2 Landscape Effects (Including effects on Seascape Character)

Landscape or seascape character in this case, is derived from the distinct and recognisable pattern of elements that occur consistently in a particular landscape. It reflects particular combinations of geology, landform, soils, vegetation, land use and features of human settlement. It creates the unique sense of place defining different areas of the landscape.

It is expected that the proposed discharge will not alter any biotic, abiotic or experiential values as described above. The effects on the character of the seascape are assessed as **very low** to the point of negligible.

### 5.3 Visual Effects

Visual amenity effects are influenced by several factors, including the nature and scale of the proposal, the character of the site, the ability of the landscape to absorb change, the nature of the viewing audience and expectations of the viewer. Distance and context are important factors in determining effects on visual amenity as is, the complexity of the intervening landscape and the nature of the view.

In this case, the visual effects of the proposal are limited to those from the discharge at the existing outfall, not the outfall structure itself. This view is only possible from the immediate coastal area in close proximity to the pipe where it is publicly accessible from the road at Stuart Park, managed as a reserve by PCC.

Any visual effects arising from the discharge are likely to be indiscernible thus **very low** or negligible.

### 5.4 Potential Cumulative Effects

There is potential for cumulative visual effects to occur as a result of the change in landscape character or visual effects arising from a proposal. In this case, there are no potential cumulative effects as the level of change is likely to be imperceptible and any effects arising from the proposed discharge from the coastal outfall will be minor in terms of landscape, visual or natural character.

## 6.0 Conclusions

The proposed upgrade to the Porirua WWTP involves minor upgrades at the plant to increase capacity and level of effluent treatment discharging to the coast. Any upgrade to existing structures within the plant are provided for under the designation and therefore do not require further consent. This assessment applies to the proposed discharge to coastal water at the existing outfall. There are no changes proposed to the coastal outfall pipe and structures as the pipe has capacity to take the additional 20% volumes expected from predicted population growth.

The Porirua Coastal Study identifies and evaluates areas of natural character within the coastal environment. The area where the coastal outfall is located is within an area assessed as having **high** natural character. The scale and nature of the proposal relating to the discharge is such that any potential effects would be **very low**.

The effects are such that they do not trigger any non-compliance with any objectives, policies or rules of the statutory provisions in the planning documents relating to landscape, visual or natural character effects in the coastal environment.

## 7.0 References

Boffa Miskell (2017). *Porirua Landscape Evaluation – Draft Technical Assessment*. Report Prepared by Boffa Miskell Ltd for Porirua City Council, Report No. W17077.

Boffa Miskell (2018). *Porirua Coastal Study – Natural Character Evaluation of the Porirua City Coastal Environment*. Report Prepared by Boffa Miskell Ltd for Porirua City Council and Greater Wellington Regional Council, Report No. W18030.

Cameron D (2019) Porirua WWTP: Activity Description, Stantec memo dated 2 December 2019

Cawthron Institute: Report no 3380 (2019), *Porirua wastewater treatment plant outfall: assessment of effects of different outfall options on the marine environment*, Prepared for Wellington Water Ltd, Morrissey D, Bertehelsen A, Clark D, Cunningham S, Edhouse S, Floerl , Sneddon R, D'Archino R.

# Appendix 1: Assessment Methodology

## Coastal Natural Character

### Natural Character Assessment

Natural Character is essentially a measure of naturalness in relation to the physical and biological aspects and perceived (i.e. perceptual and experiential) 'naturalness' within the coastal environment<sup>10</sup>. It is a measure of the condition of the environment- this is different from landscape, which is concerned with character and values.

Natural character is generally 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 extent to which natural elements, patterns and processes occur and are legible;
- The nature and extent of human modifications to the landscape, marine area and ecosystems;
- The proposition that the highest degree of natural character (greatest naturalness) occurs where there is least modification/uncluttered by obvious or disruptive human intervention and/or influence; and
- Recognition that the degree of natural character is context-dependent and can change over time.

### Definition of Natural Character

Policy 13 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.*

### Evaluation of Natural Character

The assessment approach is based upon an interpretation 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).

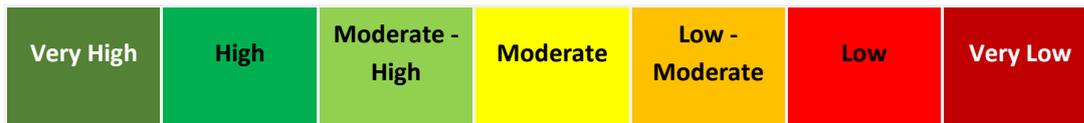
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<sup>10</sup> Summary categories of the coastal environment elements and processes listed in Policy 1, NZCPS 2010.

Specifically, the following main points are adopted:

- the methodology can be adapted to suit different **types and scales** of coastal landscapes and ecosystems;
- an understanding of natural character requires input from terrestrial, freshwater and marine ecologists and other natural scientists (e.g. geomorphologists), 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' or level of natural character is assessed on a seven-point scale

The diagram below illustrates the natural character continuum relative to a seven-point scale, where very low levels of natural character relate to highly modified environments and high levels of natural character relates to less modified environments.



# Terrestrial Natural Character Evaluation Matrix

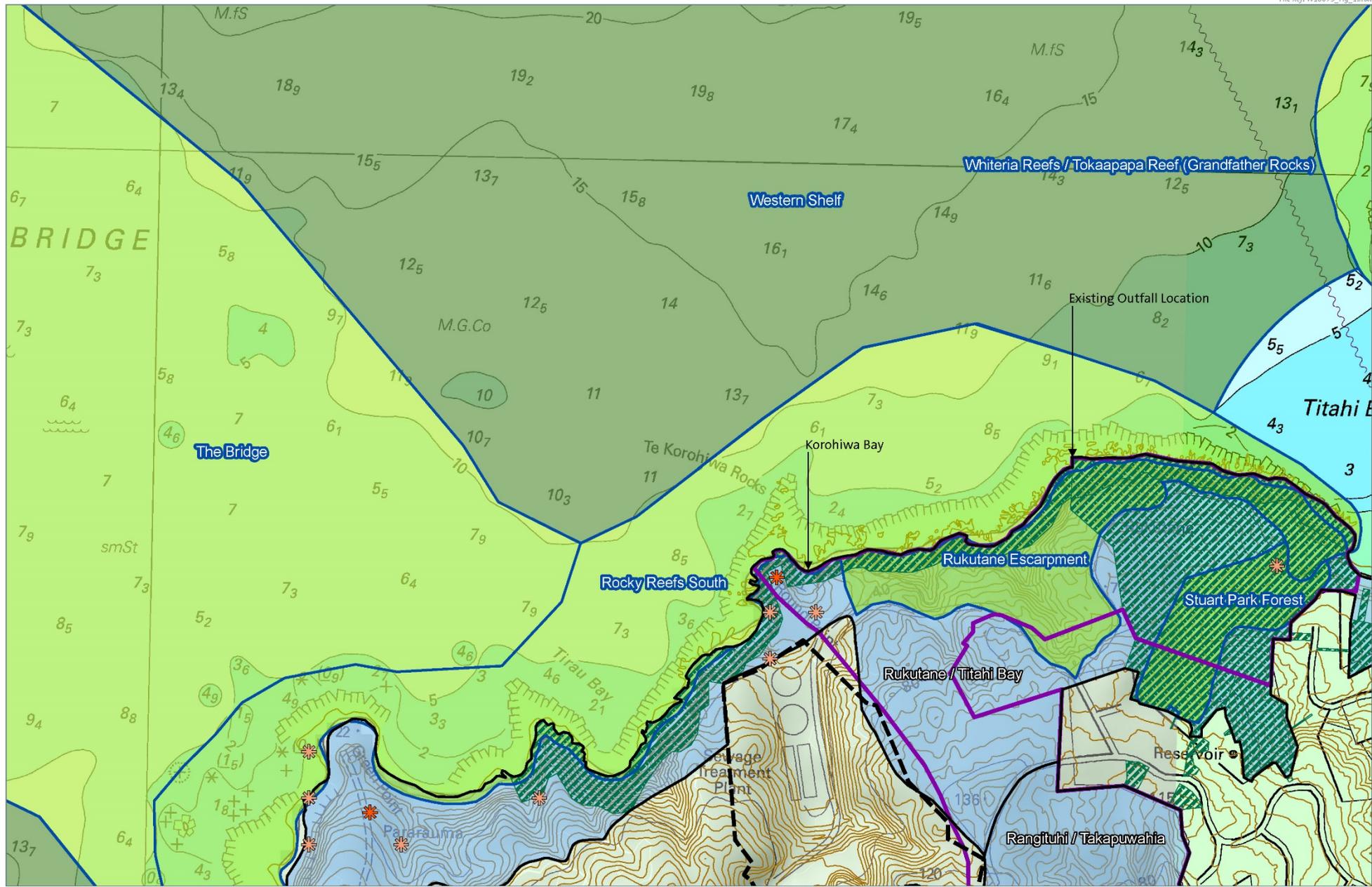
Degree of Natural Character	Very High	High	Moderate - High	Moderate	Low - Moderate	Low	Very Low
<b>Abiotic</b> <ul style="list-style-type: none"> <li>- Geology / geomorphology</li> <li>- Hydrology</li> <li>- Climatic influences</li> </ul>	<ul style="list-style-type: none"> <li>- Rare modification / structures</li> <li>- Dynamic processes virtually intact</li> </ul>	<ul style="list-style-type: none"> <li>- Very small levels of modification / isolated structures</li> <li>- Dynamic processes largely intact</li> </ul>	<ul style="list-style-type: none"> <li>- Small scale modification / limited structures</li> <li>- Dynamic processes generally intact with some interference</li> </ul>	<ul style="list-style-type: none"> <li>- Moderate scale modification / several structures</li> <li>- Dynamic processes still apparent</li> </ul>	<ul style="list-style-type: none"> <li>- Frequent landform modification / several structures</li> <li>- Some natural processes capable of recovery</li> </ul>	<ul style="list-style-type: none"> <li>- Large areas of modification / reclamation and/or structures</li> <li>- Some key natural processes are no longer able to operate</li> </ul>	<ul style="list-style-type: none"> <li>- Very extensive modification / reclamation</li> <li>- Few or no natural elements, patterns, processes remain</li> </ul>
<b>Biotic</b> <ul style="list-style-type: none"> <li>- Land cover (indigenous / exotic species)</li> <li>- Indigenous biota</li> <li>- Estuaries, freshwater communities</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota may occur but virtually no invasive species</li> <li>- Virtually all expected species present and their population structure virtually unmodified</li> <li>- Contains species and habitats of high conservation value</li> <li>- All ecosystem functions virtually intact</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota may occur and invasive biota rare</li> <li>- Virtually all expected species present and population structure is largely unmodified</li> <li>- Very likely to contain species and habitats of high conservation value</li> <li>- Almost all ecosystem functions intact</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota common with few invasive species</li> <li>- Virtually all expected species present with slight modification to population structure</li> <li>- Some species and habitats of high conservation value</li> <li>- Most ecosystem functions intact</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic and invasive biota regularly present</li> <li>- Some expected species absent with moderate modification to population structure</li> <li>- A few species and habitats of high conservation value</li> <li>- Some ecosystem functions varying outside natural range</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic and invasive biota common</li> <li>- Many expected species absent with marked modification to population structure</li> <li>- Species and habitats of high conservation value rare</li> <li>- Most ecosystem functions varying well outside natural range</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic and invasive biota very common</li> <li>- Most expected species absent with remnant population structure highly modified</li> <li>- Species and habitats of high conservation value absent</li> <li>- Few original ecosystem functions remain</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic and invasive biota dominate</li> <li>- Expected species virtually absent</li> <li>- Only the most hardy or adaptable species occur</li> <li>- Original ecosystem functions rare or absent</li> </ul>
<b>Experiential</b> <ul style="list-style-type: none"> <li>- Views, sounds and smells of the sea</li> <li>- Sense of wildness and remoteness</li> </ul>	<ul style="list-style-type: none"> <li>- Overwhelming sense of wildness and remoteness</li> <li>- Rare human influence</li> </ul>	<ul style="list-style-type: none"> <li>- Predominantly wild and remote</li> <li>- Limited human interference</li> </ul>	<ul style="list-style-type: none"> <li>- Frequent sense of wildness and remoteness</li> <li>- Some human interference</li> </ul>	<ul style="list-style-type: none"> <li>- Opportunities to experience wildness and remoteness</li> <li>- Obvious human influence</li> </ul>	<ul style="list-style-type: none"> <li>- Limited sense of wildness or remoteness</li> <li>- Strong human influence</li> </ul>	<ul style="list-style-type: none"> <li>- Rare sense of wildness</li> <li>- Built environment clearly apparent</li> </ul>	<ul style="list-style-type: none"> <li>- No sense of wildness or remoteness</li> <li>- Built environment dominates</li> </ul>
<b>Calibration</b>	<ul style="list-style-type: none"> <li>- Parts within Turakirae Head</li> </ul>						<ul style="list-style-type: none"> <li>- Wellington Container Terminal</li> </ul>

# Marine Natural Character Evaluation Matrix

Degree of Natural Character	Very High	High	Moderate - High	Moderate	Low - Moderate	Low	Very Low
<b>Abiotic</b> <ul style="list-style-type: none"> <li>- Wind, waves and currents</li> <li>- Rocky reefs</li> <li>- Seafloor sediments</li> <li>- Water quality</li> </ul>	<ul style="list-style-type: none"> <li>- Rare modification / structures</li> <li>- Dynamic processes virtually intact</li> <li>- Sediment makeup and quality virtually unmodified</li> <li>- Water quality virtually unmodified</li> </ul>	<ul style="list-style-type: none"> <li>- Very low levels of modification / structures</li> <li>- Dynamic processes largely intact</li> <li>- Sediment makeup and quality very slightly modified</li> <li>- Water quality very slightly modified</li> </ul>	<ul style="list-style-type: none"> <li>- Small scale modification / limited structures</li> <li>- Dynamic processes generally intact with some interference</li> <li>- Sediment makeup and quality slightly modified</li> <li>- Water quality slightly modified</li> </ul>	<ul style="list-style-type: none"> <li>- Moderate scale modification/ several structures</li> <li>- Dynamic processes still apparent</li> <li>- Sediment makeup and quality moderately modified</li> <li>- Water quality moderately modified</li> </ul>	<ul style="list-style-type: none"> <li>- Modification / structures common</li> <li>- Dynamic processes markedly modified</li> <li>- Sediment makeup and quality markedly modified</li> <li>- Water quality markedly modified</li> </ul>	<ul style="list-style-type: none"> <li>- Large areas of modification / structures and /or reclamation</li> <li>- Dynamic processes highly modified</li> <li>- Sediment makeup and quality highly modified</li> <li>- Water quality highly modified</li> </ul>	<ul style="list-style-type: none"> <li>- Very extensive modification / large reclamation</li> <li>- Dynamic processes extremely modified</li> <li>- Sediment makeup and quality extremely modified</li> <li>- Water quality extremely modified</li> </ul>
<b>Biotic</b> <ul style="list-style-type: none"> <li>- Pelagic community</li> <li>- Seafloor communities</li> <li>- Fish</li> <li>- Marine mammals</li> <li>- Seabirds, shore birds</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota very rare</li> <li>- All expected species present and their population structure virtually unmodified</li> <li>- Contains species and habitats of high conservation value</li> <li>- All ecosystem functions virtually intact</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota rare</li> <li>- All expected species present and population structure is largely unmodified</li> <li>- Very likely to contain species and habitats of high conservation value</li> <li>- Almost all ecosystem functions intact</li> </ul>	<ul style="list-style-type: none"> <li>- A few exotic biota occur</li> <li>- All expected species present with slight modification to population structure</li> <li>- Some species and habitats of high conservation value</li> <li>- Most ecosystem functions intact</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota regularly present</li> <li>- Some expected species absent with moderate modification to population structure</li> <li>- A few species and habitats of high conservation value</li> <li>- Some ecosystem functions varying outside natural range</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota common</li> <li>- Many expected species absent with marked modification to population structure</li> <li>- Species and habitats of high conservation value rare</li> <li>- Most ecosystem functions varying well outside natural range</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota very common</li> <li>- Most expected species absent with remnant population structure highly modified</li> <li>- Species and habitats of high conservation value absent</li> <li>- Few original ecosystem functions remain</li> </ul>	<ul style="list-style-type: none"> <li>- Exotic biota dominate</li> <li>- Expected species virtually absent</li> <li>- Only the most hardy or adaptable species occur</li> <li>- Original ecosystem functions rare or absent</li> </ul>
<b>Experiential</b> <ul style="list-style-type: none"> <li>- Views, sounds and smells of the sea</li> <li>- Sense of wildness and ecological intactness</li> </ul>	<ul style="list-style-type: none"> <li>- Overwhelming sense of wild and intact ecosystem</li> <li>- Rare human influence</li> </ul>	<ul style="list-style-type: none"> <li>- Predominantly wild and intact ecosystem</li> <li>- Limited human interference</li> </ul>	<ul style="list-style-type: none"> <li>- Frequent sense of wild and intact ecosystem</li> <li>- Some human interference</li> </ul>	<ul style="list-style-type: none"> <li>- Opportunities to experience wild and</li> <li>- Obvious human influence</li> </ul>	<ul style="list-style-type: none"> <li>- Limited sense of wild or intact ecosystem</li> <li>- Strong human influence</li> </ul>	<ul style="list-style-type: none"> <li>- Rare sense of wildness or intact ecosystem</li> <li>- Built environment clearly apparent</li> </ul>	<ul style="list-style-type: none"> <li>- No sense of wildness or intact ecosystem</li> <li>- Built environment dominates</li> </ul>

Appendix 2: Map

PLANNING OVERLAYS  
(Including Natural Character)



DRAFT

**Legend**

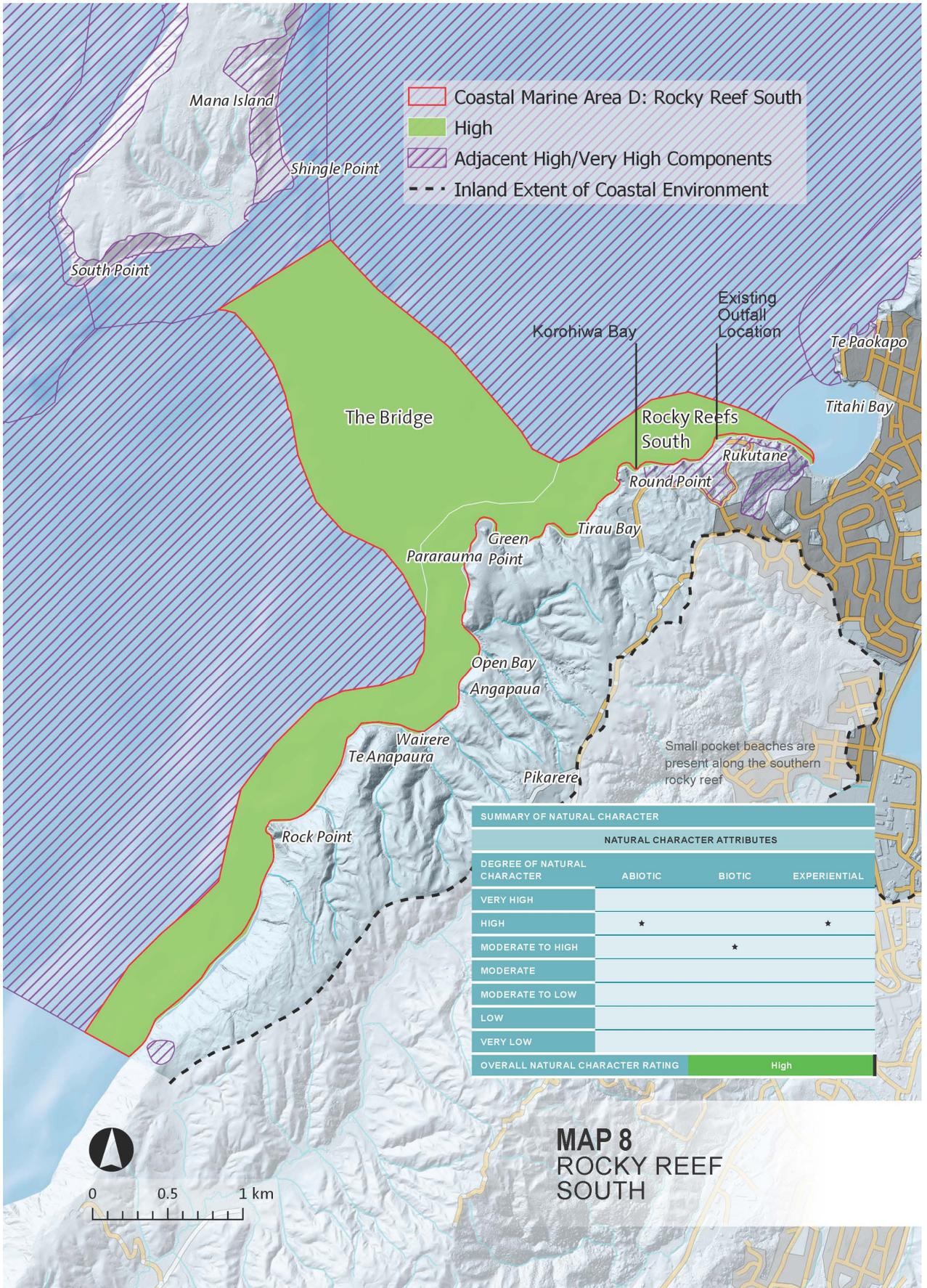
- Designation K1048 WWTP
- Archaeological Sites
- Plan Change 15 Heritage
- PCC Landscape Protection Area
- Natural Character Component
- PCC Reserves
- Natural Character Component Rating**
- High
- Very High
- Special Amenity Landscape
- 5m contours

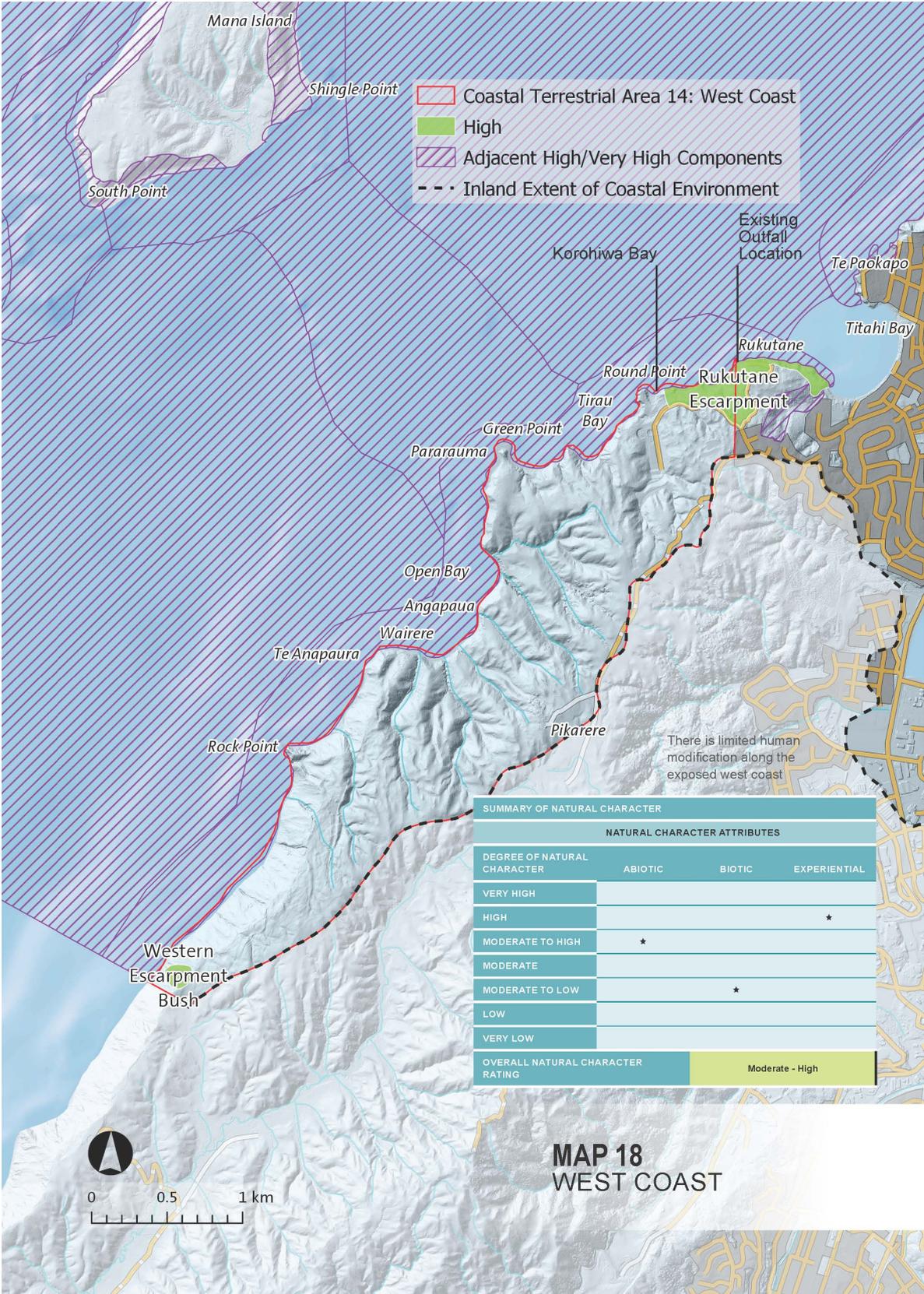
Figure 1

Appendix 3:

PORIRUA COASTAL STUDY  
(Natural Character)

Excerpt Maps 8 & 18





### **About Boffa Miskell**

Boffa Miskell is a leading New Zealand professional services consultancy with offices in Auckland, Hamilton, Tauranga, Wellington, Christchurch, Dunedin and Queenstown. We work with a wide range of local and international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, cultural heritage, graphics and mapping. Over the past four decades we have built a reputation for professionalism, innovation and excellence. During this time we have been associated with a significant number of projects that have shaped New Zealand's environment.

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