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LANDSCAPE AND VISUAL AMENITY ASSESSMENT

Lyttelton Port Company Channel Deepening Project

Landscape Assessment
Prepared for Lyttelton Port Company

9 September 2016



Boffa Miskell

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Prepared by:	James Bentley Principal Landscape Planner Boffa Miskell	
Reviewed by:	Rhys Girvan Principal Landscape Planner Boffa Miskell Limited	
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1.0 Introduction

1.1 Background

Lyttelton Port Company (LPC) has commissioned Boffa Miskell Ltd (BML) to prepare a Natural Character, Landscape and Visual Amenity Report on LPC's proposal to deepen the harbour to accommodate larger vessels. The purpose of this report is to undertake an assessment of landscape and visual effects to assist with the preparation of the Resource Consent.

Lyttelton Port (the Port) is located on the northern shores of Lyttelton Harbour /Whakaraupō approximately halfway up the harbour. Refer to **Figure 1** in the Graphic Supplement. The natural water depth between the port and harbour entrance is 5-13m. This is shallower than the draught of cargo vessels which need to access the Port.

To allow ships to travel up the harbour and dock at the port, a channel with a greater depth than the surrounding natural harbour has been created by dredging. Dredging of the Inner Harbour and the navigation channel commenced in the late 1800s with bucket dredgers creating a channel with a depth of 7.8m below chart datum. The first suction dredge (*Canterbury*) arrived in 1912 and worked on the channel, which at 1943 was 10.5m below chart datum. This was further deepened over the period up to the mid 1970's when it reached the current depth of approximately 12.2m below chart datum, ending adjacent to Mechanics Bay. This channel has not been deepened since the mid 1970's, but undergoes annual maintenance dredging.

In order to keep up with the international trend of increasing ship sizes (particularly container vessels), LPC is proposing to widen and deepen the existing navigation channel and extend it approximately 4 km beyond the harbour heads (see **Figure 1**). A depth of between 16.85 to 17.85 metres below chart datum is required for the whole channel to accommodate modern 8-9,000 TEU (twenty-foot equivalent) container ships, which typically have a draught of 14.5 metres.

As part of this report, the following other reports have been referenced:

- Lyttelton Port Company Channel Deepening Project - Simulations of suspended sediment plumes generated from the deposition of spoil at proposed maintenance disposal grounds: MetOcean (Report P0201-02).
- Lyttelton Port Company Channel Deepening Project - Simulations of suspended sediment plumes generated from the deposition of spoil at offshore maintenance disposal ground: MetOcean, (Report P0201-04).
- Lyttelton Port Company Channel Deepening Project - Review and Summary of coastal process effects; Tonkin & Taylor, August 2016.
- Effects of Channel deepening Projects on Waves and Tidal Currents in Lyttelton Harbour/Whakaraupō; Mulgor Consulting Ltd, February 2016.
- Assessment of Effects on Marine Mammals from the Lyttelton Port Company Channel Deepening Project: Cawthron, (Report No. 2869).
- Assessment of Impacts on Benthic Ecology and Marine Ecological Resources from the Proposed Lyttelton Port Company Channel Deepening Project: Cawthron, (Report No. 2860).

- Lyttelton Port Company Channel Deepening Project Marine Avifauna Assessment: Boffa Miskell, August 2016.
- Lyttelton Port Company Channel Deepening Project and Maintenance Dredging Assessment of Effects on Recreation and Tourism: Rob Greenaway & Associates, August 2016.

1.2 Project Description

The project is outlined within the accompanying Project Description. For a full description of the activities, location and methodologies proposed as part of the Channel Deepening Project refer to Section Two (Project Description) of the Assessment of Environmental Effects.

1.2.1 Sedimentation plumes

Within the MetOcean report¹ a series of simulations have been modelled to try to estimate the amount of sedimentation dispersal that would be present following its release at the proposed capital disposal area. The figure below is lifted from this report.

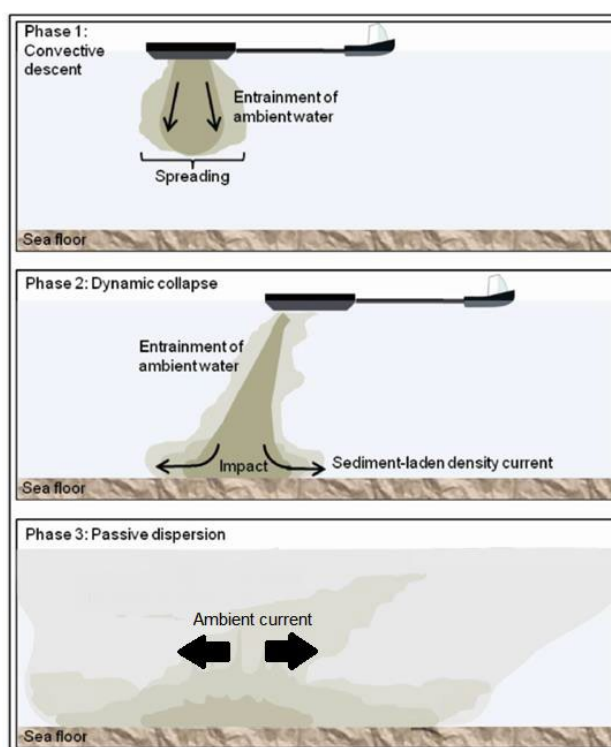


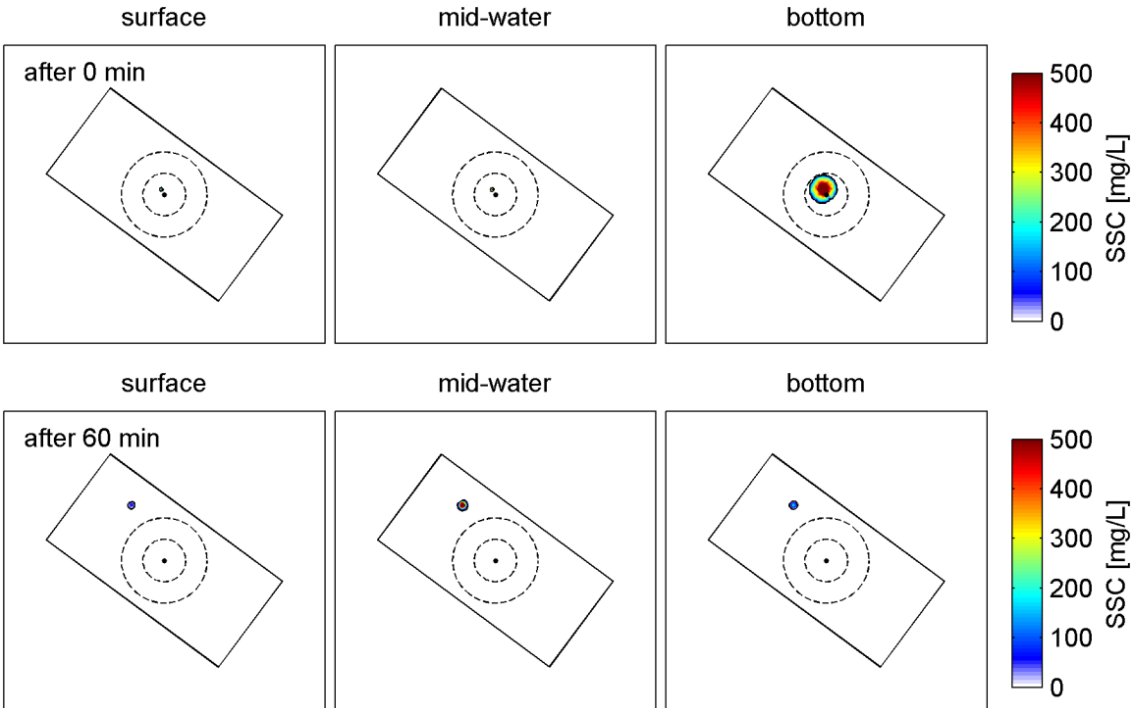
Image 2: Three main phases occurring during the disposal of dredged material: 1) Convective descent, 2) Dynamic Collapse, and 3) Passive plume dispersion.

MetOcean undertook modelling to illustrate the likely extent of sedimentation dispersal at the surface, in mid-water and at the bottom of the ocean during disposal in different currents for different time delays. The more intense the colours on the scale below, the more visible the suspended sediment concentration is. The diagrams below represent the disposal of one load

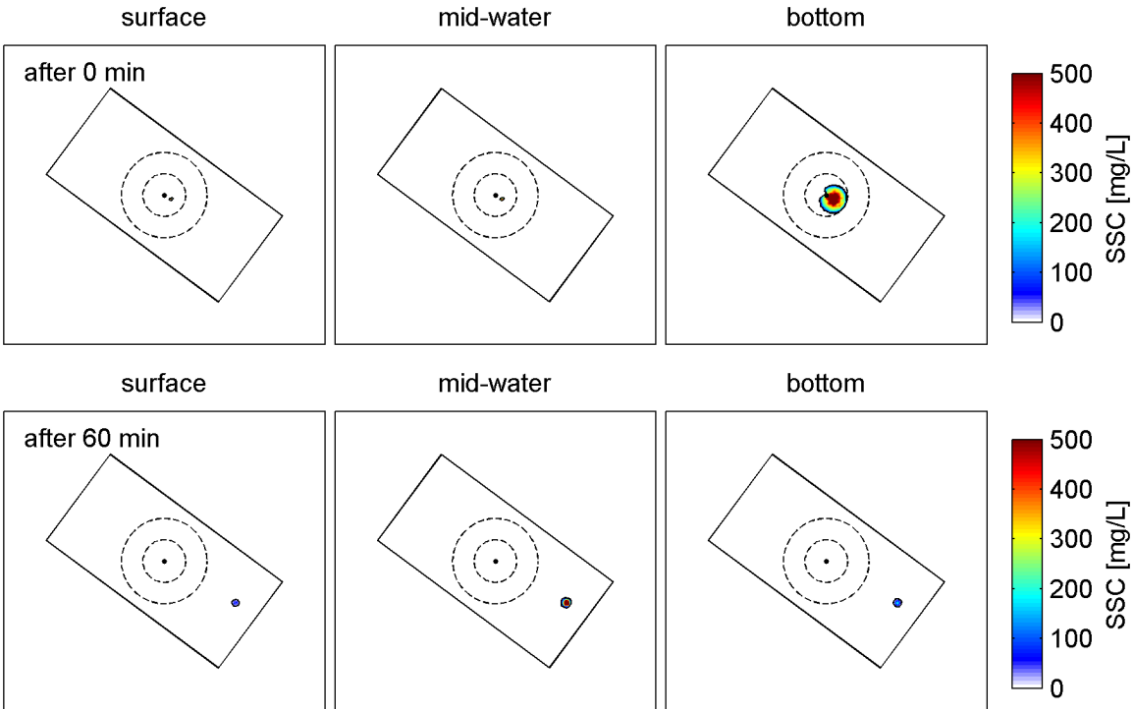
¹ Simulations of suspended sediment plumes generated from the deposition of spoil at the offshore disposal site.

of material, with the dashed circles illustrating radiuses of 500m and 1000m and represent a snap shot of those outlined within Figures 3.1 to 3.6 within the MetOcean report.

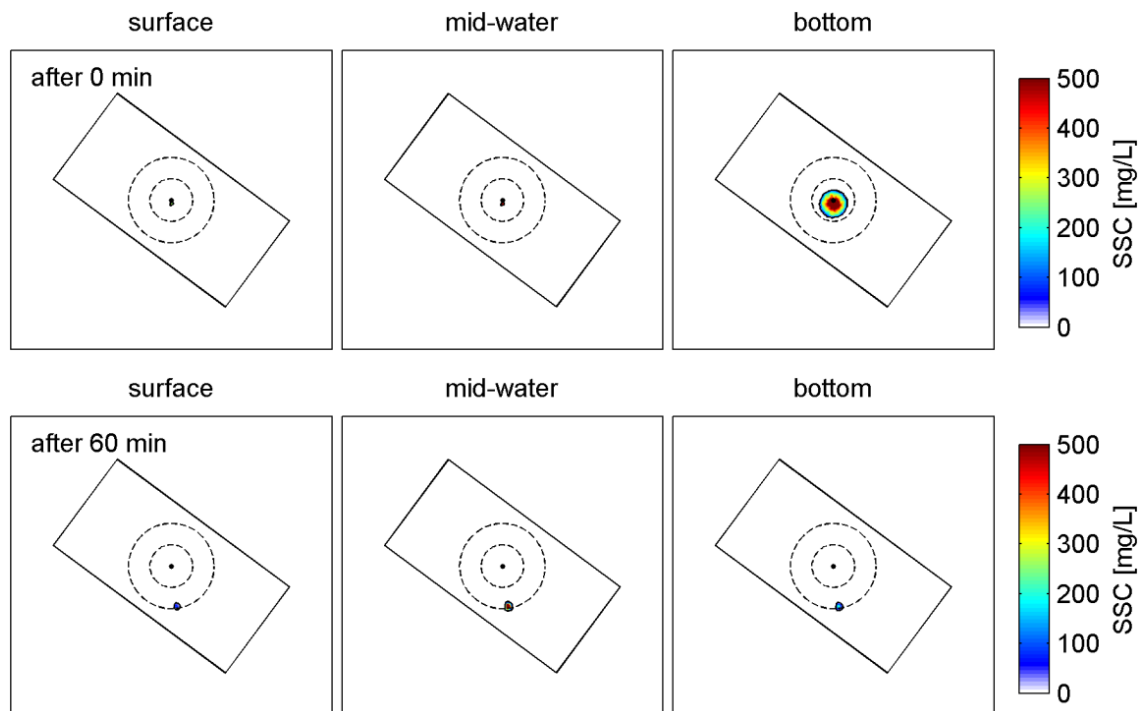
Northwest current



Southeast current

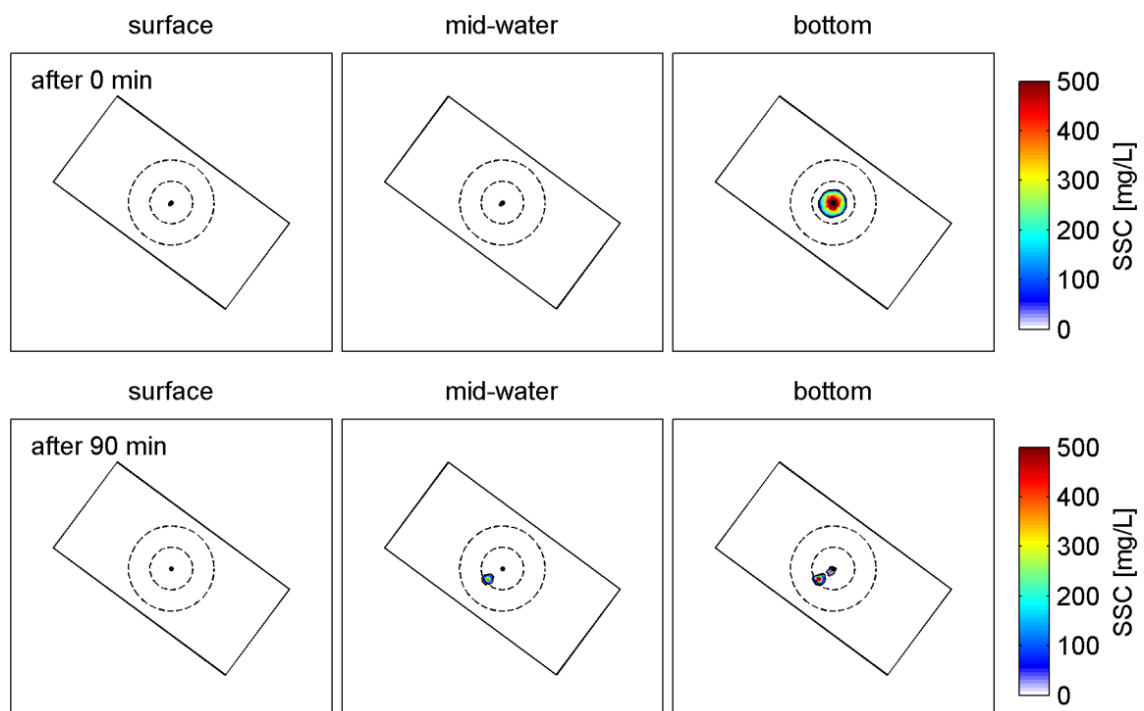


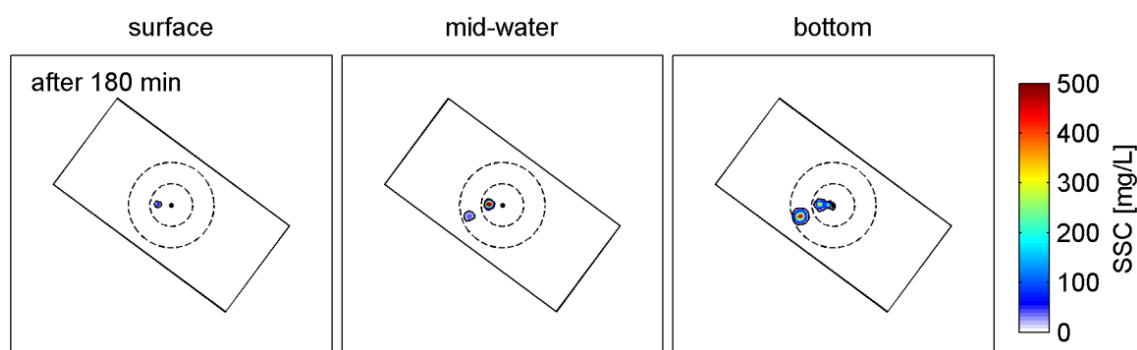
Northeast winds



Calm conditions

This scenario illustrates the dumping of three successive hopper loads during calm conditions.





The modelling demonstrates that the largest extents of plumes are associated with the bottom of the sea, with very little evident at the surface.

2.0 Site Location, Context and Landscape/Seascape Character

2.1 Site Location

For the purposes of this report, 'the Site' refers to the channel deepening area as well as the disposal and ongoing maintenance areas. The Site is located in Lyttelton Harbour/Whakaraupō, on Banks Peninsula, Canterbury and extends into the southern edge of Pegasus Bay, as illustrated on **Figure 1** and **Image 1** below. Lyttelton Harbour/Whakaraupō is the South Island's major commercial deep water port. It is the hub port for the South Island for the container trade and is well-located for the distribution of cargoes nationally and internationally. The Port is serviced by many international shipping lines and is an important component of the regional economy. It is proposed to lengthen the existing channel by approximately 6.5km, widen by 20m and increase the depth by up to 5-6m, as illustrated on the image² below:

² Project Description image 2.4 (July 2014)

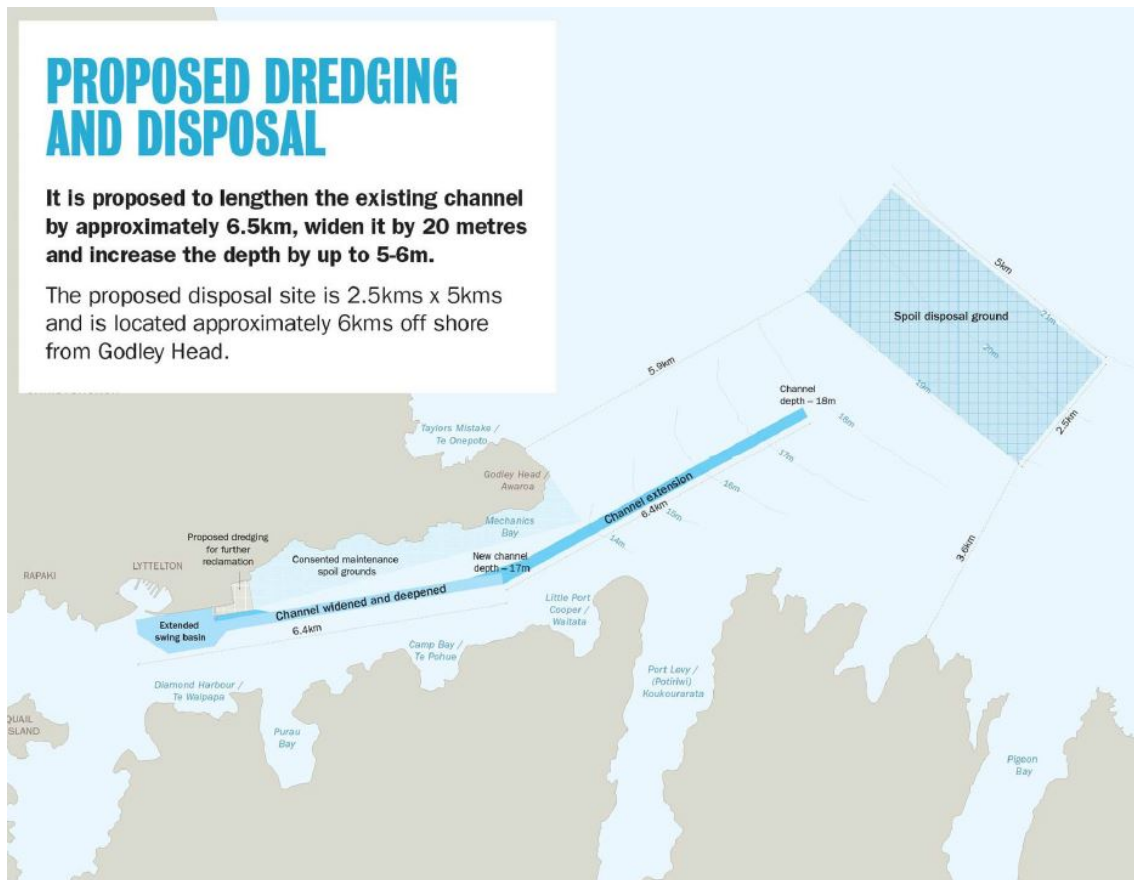


Image 1: Location of Proposal

2.2 Site Context

The Banks Peninsula Landscape Study (BPLS), prepared by Boffa Miskell in 2007, identifies Lyttelton Harbour/Whakaraupō as a broad area comprising 3 geological land areas - the Lyttelton volcanics, the pre-Lyttelton volcanics and the Northern Mt Herbert volcanics. These areas define and characterise this previously volcanic landscape of the harbour. Steep rocky slopes characterise the upper volcanic caldera rim with smoother and gentler lower colluvial slopes that drop to indented harbour edges. This creates a visually defined harbour landscape.

The water body of the Harbour itself can be broadly divided into inner, middle and outer areas (see **Figure 4**). The Inner Harbour is centred on Quail Island and surrounding bays. The Outer Harbour extends from a boundary drawn between Ripapa Island and Battery Point to the Heads. The Middle Harbour extends between the settlements of Diamond Harbour and Lyttelton Township and defines a transitional area between the Inner and Outer Harbours. The Site is located within this Middle Harbour area.

Westward of Diamond Harbour and Lyttelton township, the Inner Harbour is characterised by settlements that have extended to parts of the middle slopes of the harbour landscape. Eastward, there are few settlements except for rural dwellings on the southern side of the harbour and small settlements at Purau and Camp Bays. The Outer Harbour is more exposed to coastal weather with a stronger natural character. It has a history of military defence with remnant gun emplacements, tunnels and other structures on headlands and vantage points.

Landforms within the harbour are dramatic with rocky outcrops expressing the volcanic origins of the landscape. These include the jagged caldera ridgeline, exposed bands of layered volcanic rock formations (stratigraphy), outcrops of vertical dikes and landforms of solidified lava flows. This rugged underlying landscape has been eroded over time to form lower pastoral hills, spurs and bluffs descending to the indented coastal harbour edge. The harbour has a complex edge of small peninsulas and headlands, inlets and shallow mudflats, and Quail Island emerging within the Inner Harbour.

Vegetation cover around the harbour is mixed with predominantly modified and exotic grassland and forestry species. This reflects sheep farming and forestry activities that have developed over time. Remnant and regenerating native vegetation is dispersed around the harbour with some significant patches being located in areas such as Tauhinukorokio and Buckleys Bay Scenic Reserve.

These elements and characteristics combine to create an overall visually coherent caldera landscape with a fine grain of complex bays, vegetation and landforms, and attractive settlement areas. The Port of Lyttelton is a visually apparent large element of this landscape located between the Inner and Outer Harbours and closely associated with Lyttelton and Diamond Harbour townships.

2.3 Landscape and Seascape Character

Landscape character is the distinct and recognisable pattern of elements that occur 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.

Seascape is part of landscape and refers specifically to the coastal area. Seascape character derives from the distinctive elements, patterns and processes that make one seascape different from another, rather than better or worse than another. Landscape and seascape characterisation is usually carried out within a framework of character types and character areas where –

- Landscape and seascape character types comprise those areas that are homogeneous in nature that may occur in different locations. However, wherever they occur they share broadly similar combinations of geology, bathymetry, topography, ecology, human influences, perceptual and aesthetic attributes.
- Landscape and seascape character areas are single unique geographical areas within a particular landscape or seascape character type that have their own individual character and identity, even though they may share the same generic characteristics with other seascape character types.

In work undertaken to date, land and sea have been dealt with separately.

2.3.1 Landscape Character Areas

Within the 2007 Banks Peninsula Landscape Study, five Landscape Character Areas within the Lyttelton Harbour/Whakaraupō were established. The Banks Peninsula extent of the study excluded Godley Head from the study, due to it being in the area administered Christchurch City Council (CCC) at that time. The 2015 CCC Landscape Study included Godley Head due to the amalgamation of CCC and the Banks Peninsula District Council. **Figure 4** of the Graphic Supplement illustrates the extent of these Landscape Character Areas insofar as they relate

to Lyttelton Harbour/Whakaraupō and a brief description of them is contained within **Appendix 3** and summarised below:

- Godley Head
- Lyttelton
- Governors Bay
- Teddington
- Diamond Harbour
- Adderley Head

2.3.2 Seascape Character Areas

Lyttelton Harbour/Whakaraupō is approximately 15km long and is an east-west aligned marine inlet opening into Pegasus Bay within the north-western part of the Banks Peninsula. The harbour is the second biggest on the Peninsula (after Akaroa Harbour) and contains a variety of smaller seascape character areas, which can be separated into the Inner, Middle and Outer Harbours. The Harbour is contained by the caldera of an ancient volcano, with steeply rising rocky headlands within a relatively settled and modified landscape.

Area	Description & Character
Inner Harbour	The shallowest part of the harbour and the part most evident to tidal change. Large mud-flats are evident at low tide. The area is among the most sheltered and settled in Lyttelton Harbour/Whakaraupō. Water colour tends to be brown due to suspended sediment being disturbed from short-period seawaves.
Middle Harbour	Representing the most modified part of the harbour, this middle section is also the narrowest at 1.5km between Lyttelton Port and Diamond Harbour. Reclamation, port activities and modification to the land has influenced the character of this part of the Harbour.
Outer Harbour	This area of the harbour is more exposed to the currents associated with Pegasus Bay and defined by simple bold and mainly cleared landforms. The two Heads (Godley and Adderley Heads) define the outer harbour extents. Open views are obtained from this area towards the open ocean and Pegasus Bay. Ships are seen frequently passing through the heads enroute to and from Lyttelton Port. There can be contrast between water colouration where the outer harbour waters meet those of Pegasus Bay.
Pegasus Bay	Open and broad, where elevated panoramic views can be obtained. There are long distance views from along the coastline, and variable colouration to the water body is evident due to sedimentation disturbance caused by waves, outwash from rivers and streams and coastal erosion.

3.0 Statutory Planning Context

The relevant statutory planning context relates to the following:

3.1 Resource Management Act 1991 (RMA)

Section 6 of the Resource Management Act (RMA) sets out a number of matters of national importance. These include:

- section 6(a) which requires that decision makers recognise and provide for the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development.
- section 6(b) which requires recognition and provision for the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development.

Section 7 sets out a range of 'Other Matters' that all persons exercising functions and powers under the RMA shall have particular regard to. This includes;

- section 7(c) the maintenance and enhancement of amenity values and;
- section 7 (f) maintenance and enhancement of the quality of the environment.

'Amenity values' is defined in the RMA as, "those natural or physical qualities and characteristics of an area that contribute to peoples' appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes". Visual amenity is a component of the overall amenity of a place. Amenity includes a combination of many factors, such as visual amenity, ambient noise, air quality, and recreational and cultural attributes. It is noted that the effects of the proposal with respect to these other elements of amenity (i.e. noise, air quality, recreational and cultural attributes) are dealt with comprehensively in other reports.

3.2 New Zealand Coastal Policy Statement 2010 (NZCPS)

The NZCPS contains a number of Policies that are relevant to the project. Policy 1: Extent and Characteristics of the Coastal Environment provides a list of characteristics as a basis for establishing what might be included within the coastal environment. It is noted that this project is wholly contained within the coastal environment.

Most pertinent to the natural character, landscape and visual amenity elements of this project will be Policy 13: Preservation of Natural Character and Policy 15: Natural Features and Natural Landscapes.

Policy 13 Preservation of Natural Character

(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;

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

Natural Character is not defined in either the RMA or the NZCPS. The New Zealand landscape profession defines natural character as, *the expression of natural elements, patterns and processes in a landscape*.³ Natural character is the term used to describe the natural elements of coastal environments as the expression of natural elements, patterns and processes in a landscape (or the 'naturalness') where the degree of 'naturalness' depends on:

- The extent to which natural elements, patterns and processes occur.
- The nature and extent of modifications to the landscape, seascape and ecosystems

Policy 15 of the NZCPS is relevant as there are a number of Outstanding Natural Features and Landscapes (ONFL) within close proximity to the activity, however the activity is not within an ONFL. Policy 15 also relates to other natural features and natural landscapes.

Policy 15 Natural features and natural landscapes

To protect the natural features and natural landscapes (including seascapes) of the coastal environment from inappropriate subdivision, use, and development:

- (a) *avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment; and*
- (b) *avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment;*

3.3 Regional Coastal Environment Plan (RCEP)

The most relevant RCEP provision to the natural character, landscape and visual amenity elements of the project is Policy 6.1.

Policy 6.1

(a) *Within the Coastal Marine Area Environment Canterbury will:*

³ *Best Practice Note, Landscape Assessment and Sustainable Management*, adopted by New Zealand Institute of Landscape Architects (NZILA) June 2010

(i) control activities and development to remedy or mitigate adverse effects on:

- *coastal ecosystems and processes,*
- *the identified values of Areas of Significant Natural Value,*
- *the identified values of areas of high natural, physical, heritage or cultural value, and*
- *natural character in areas of the coastal environment where natural character predominates; and*

(ii) control activities and development to avoid any significant adverse effects on:

- *coastal ecosystems and processes,*
- *the identified values of Areas of Significant Natural Value,*
- *the identified values of areas of high natural, physical, heritage or cultural value, and*
- *natural character in areas of the coastal environment where natural character predominates; unless there are special or extraordinary and unique reasons why those adverse effects cannot be avoided; and*

(iii) adopt a precautionary approach when considering applications for resource consents where the effects, including cumulative effects, are as yet unknown or little understood, or where the functioning of marine ecosystems and coastal processes is poorly understood.

4.0 Assessment of Effects

The following section investigates the anticipated natural character, landscape and visual amenity outcomes of the proposed channel deepening proposal. The assessment is based on site visits, which included fieldwork on the harbour, around its margins, and in the vicinity of the site. Photographic views have been taken from key locations as part of this assessment which are attached to this report as a graphic supplement. These photographs were taken using a Canon 6D digital camera with a 50mm lens setting. The graphic supplement should be read in conjunction with this assessment and includes the following sections:

This assessment has been broken into the following section headings:

1. Assessment of Effects on the Natural Character of the Coastal Environment
2. Assessment of Effects on Natural Features and Landscapes
3. Assessment of Effects on Visual Amenity

4.1 Assessment of Effects on the Natural Character of the Coastal Environment

4.1.1 Approach

Natural character is generally assessed in a continuum of modification that describes the expression of natural elements, patterns and processes (or the 'naturalness') in a coastal area where the degree of 'naturalness' depends on:

- 1) *The extent to which the natural elements, patterns and processes⁶ occur;*
- 2) *The nature and extent of modifications 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.

Policy 13 of the NZCPS seeks to 'preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use and development'. It is acknowledged that the proposal falls entirely within the coastal environment. Natural character is a condition of the coastal environment, and is value-free (other than judging areas as having outstanding natural character).

The natural character assessment for this proposal utilises the methodology outlined below, with input provided by the associated technical reports to ascertain 'marine naturalness'.

As outlined, a coastal natural character study has already been undertaken by CCC and the results of those assessments are included as **Figure 2**. The CCC coastal natural character study has not rated the marine component, only parts of the terrestrial environment that rate as either high or very high natural character. Areas of Outstanding Natural Character (ONC) have also been mapped.

4.1.2 Methodology

A series of technical reports have been prepared⁴ in support of the AEE prepared for this project and these have assisted to ascertain the relevant data pertaining to the level of natural character within the terrestrial and marine environments.

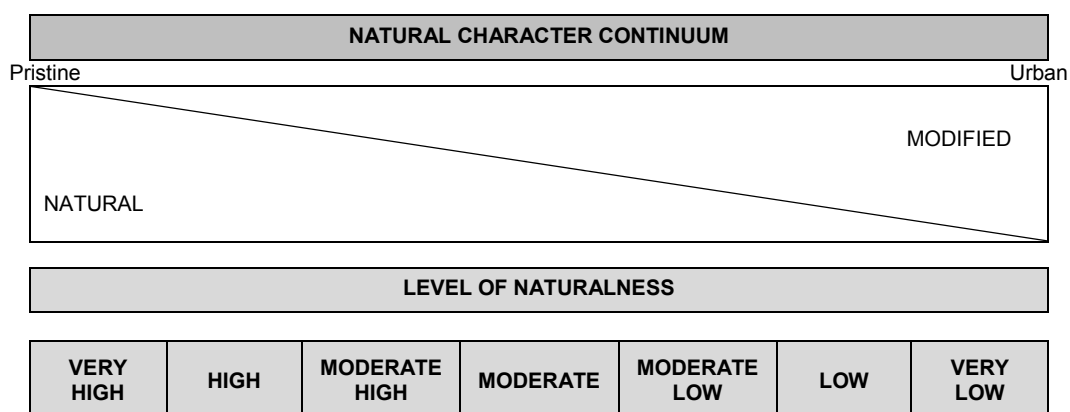
Due to the different data available, sourced from a range of areas, it was logical to split land or terrestrial components (or areas) from marine components when evaluating and mapping natural character. Grouping available information into physical (or abiotic or non-living) attributes and biological (or biotic or living) attributes further assists interpretation and understanding of this material. Abiotic attributes include climate, geology, currents, sediment and biological attributes include benthic environments, fish, mammals, seabirds and reefs. Experiential attributes (as noted within the NZCPS Policy 13) were also taken into account.

Given natural character is assessed over a continuum from highly natural (pristine) to totally modified (urban), half of the continuum (i.e. above moderate) can be considered to be predominantly "natural", while the half below moderate can be considered to be primarily

⁴ Refer to Background chapter of this report.

modified. Consequently, and in natural character terms, where the level of natural character is highest, it is generally more sensitive to change.

The table below illustrates in diagrammatic form, the natural character continuum relative to the 7 point assessment scale used to assess the levels of natural character / modification. The threshold between what can be considered to be a predominantly “natural environment” and a predominantly “urban environment” is also shown. This level of naturalness rating is consistent with those studies undertaken for the terrestrial environment within the CCC reports.



Policy 13(i)(a) of the NZCPS clearly requires the avoidance of adverse effects on natural character in areas of ONC. There are no areas of ONC near to the project.

With respect to all other areas, Policy 13(i)(b) requires the avoidance of significant adverse effects and the requirement to avoid, remedy or mitigate other adverse effects on natural character in the coastal environment.

4.1.3 Existing condition and mapped extents

Figure 2 illustrates the existing mapped areas of at least high natural character. The areas of most relevance to this project include: Godley Head parts of the Scarborough coast, Adderley Head, Eastern Port Levy and. The relevant characteristics are outlined below:

Area	Abiotic attributes	Biotic attributes	Experiential attributes
Coastal Cliffs of Godley Head and Scarborough area Rating: Very High	Impressive headland with sheer 120m cliffs. Sequence of steep cliffs, rocky peninsulas and sandy bays Steep sections of headland are susceptible to erosion, but create impressive geological features.	Limited indigenous vegetation present, apart from silver tussock cover, with native species in gullies Cliffs provide unique habitat for wildlife, including seabirds and penguins Cliff-nesting spotted shag area Hectors dolphins commonly sighted	Wild and often windswept views from Godley Head track Taylors Mistake popular swimming area Remote-like experiences from many mountain-bike trails.

Adderley Head	No specific information available, however, similar to Godley Head, the headland is impressive, with steep, eroded cliffs with limited indigenous vegetation. Often wild and windswept experiences can be obtained. Much is in private ownership.
Port Levy	No specific information available, however the embayment is impressive, with steep, eroded cliffs with limited indigenous vegetation. More sheltered within the inner parts of the embayment than the exposed outer headlands. Often wild and windswept experiences can be obtained. Much is in private ownership.

The assessment will focus of the effect the proposal has on these attributes as well as assessing the marine based attributes.

Abiotic Marine attributes

Much of the abiotic information is referenced in the Ocel Consultants report⁵. The geomorphology of Lyttelton Harbour/Whakaraupō is framed by the eroded caldera of an extinct volcano. Drowned cliffs continue underwater close to the land where they meet a flat, fine sediment seabed. Wave currents disturb the fine sediment which often is suspended. Some material settles in deeper parts, where wave swell energy subsides. Wave heights are a maximum at the harbour entrance, and dissipate further into the harbour as the depth of the sea bottom decreases⁶. The depth of Lyttelton Harbour is less than 10m near the port increasing in depth to 12-14m close to the heads.

The existing navigational channel within Lyttelton Harbour/Whakaraupō gets filled in with regular swells. The shallower the water the easier it is for waves to penetrate down to the seabed and disturb and entrain sediment that can then be transported by the tidal currents. The Lyttelton Harbour/Whakaraupō marine abiotic environment is dynamic where disturbance of the seabed by swell waves and seawaves, entrainment of sediment and subsequent settling out during periods of calm weather. The head of the harbour is characterised by mud flats exposed at low tide. The mud flats have developed principally from sediment runoff from the inner harbour catchment. The fine sediments forming the seabed are predominantly (60%) silt size, primarily derived from the loess silt that mantles Banks Peninsula. The seabed sediment on the south side of the navigation channel is slightly coarser than on the north side although this demarcation ends inside the Heads.

In terms of Pegasus Bay, this is relatively shallow within the lee of the Banks Peninsula and forms part of the continental shelf. The largest waves are from the south and south east and these waves can disturb the seabed of the continental shelf putting the silt and fine sand components into suspension. Once in suspension the sediment can move north around the flow obstruction represented by Banks Peninsula and drop out of suspension in the lee, in Pegasus Bay. The Southland current which forms a continuous but fluctuating eddy in the lee of the peninsula acts to distribute the sediment transported north across the inner continental shelf. The seabed sediment in the Bay is derived from the same source as the loess mantling Banks Peninsula derived from the Southern Alps. Consequently the mineralogy of the sediments is the same, they are indistinguishable.

Natural sediment plumes within both Lyttelton Harbour/Whakaraupō and Pegasus Bay are commonplace, brought about by wave energy and other abiotic processes including river/estuary mouths and general erosion of cliffs.

⁵ Deeping and Extension of the Navigation Channel, Ocel, July 2016

⁶ Effects of Channel Deepening Project on Waves and Tidal Currents; Mulgor Consulting Ltd, February 2016

In terms of modification, the reclamation around the port has severely affected the abiotic aspects of natural character within Lyttelton Harbour/ Whakaraupō, as have jetties, wharves, moorings and the ongoing channel work associated with the current shipping area. Within Pegasus Bay, there is less evident modification, with occasional mussel farms evident.

Biotic Marine attributes

Biotic aspects of natural character include all living things associated with the marine environment. The benthic ecology of the Site has been assessed by Cawthron Institute. The report states that benthic substrates in both the channel extension area and the proposed spoil ground were found to be relatively uniform semi-consolidated muds with the channel extension area having a slightly greater proportion of silt/clay particulates. Side-scan sonar coverage of both sites confirmed that the benthic substrate and habitat was effectively uniform over the study area. Contaminant status of surficial sediments, based on concentrations of indicative metals, was found to be low with levels generally well below national sediment guideline levels. The substrate at benthic sites within Lyttelton Harbour/Whakaraupō was variable in texture ranging between soft mud and very fine sand⁷.

Seabirds are assessed in Boffa Miskell's Avifauna report. The report states that Lyttelton Harbour/Whakaraupō and the surrounding coastline provide a diversity of habitat types for marine avifauna for nesting, roosting and foraging activities⁸. A subset of 17 marine avifauna species was identified within the waters of the Lyttelton Harbour/Whakaraupō or the offshore disposal area, **and** which have a local breeding or wintering population within Lyttelton Harbour/Whakaraupō or the wider Banks Peninsula. These 17 species comprise penguins, fairy prion and sooty shearwater, tern, shag, gull and waders, and inhabit two major ecosystems; those being the coastal (including the outer Lyttelton Harbour/Whakaraupō and the offshore area where dredged material will be disposed) and intertidal areas within the Lyttelton Harbour/Whakaraupō.

Marine mammals are assessed within the report by Cawthron Institute. The report states that out of more than 25 cetacean species that have been sighted or have stranded within Banks Peninsula waters, only eight species frequent the inshore waters of Pegasus Bay near Lyttelton Harbour/Whakaraupō. Hector's dolphin (*Cephalorhynchus hectori hectori*) and New Zealand fur seals (*Arctocephalus forsteri*) are the only year-round residents that feed on local fish populations and breed within inshore waters including Lyttelton Harbour/Whakaraupō and therefore likely to be affected by the proposed project. The only other species is the southern right whale (*Eubalaena australis*). Due to historical and on-going disturbances (which including channel ongoing channel deepening), Lyttelton Harbour/Whakaraupō and Pegasus Bay coastal waters are not considered significant habitats for any of the discussed species, but instead represent a small, less pristine fraction of similar habitats available to support those marine mammals utilising this larger coastal region⁹.

Experiential attributes

Lyttelton Harbour/Whakaraupō is a regionally popular recreation setting, supporting swimming, sailing and many other forms of boating. Commercial recreation and tourism is limited to several small boat charter operators, including the historic tug Lyttelton and the regular ferry and charter operations of Black Cat Cruises¹⁰.

⁷ Executive Summary, Benthic Ecology and Marine Ecological Resources, Cawthron Institute, 2016

⁸ Executive Summary, Marine Avifauna Assessment, Boffa Miskell 2016.

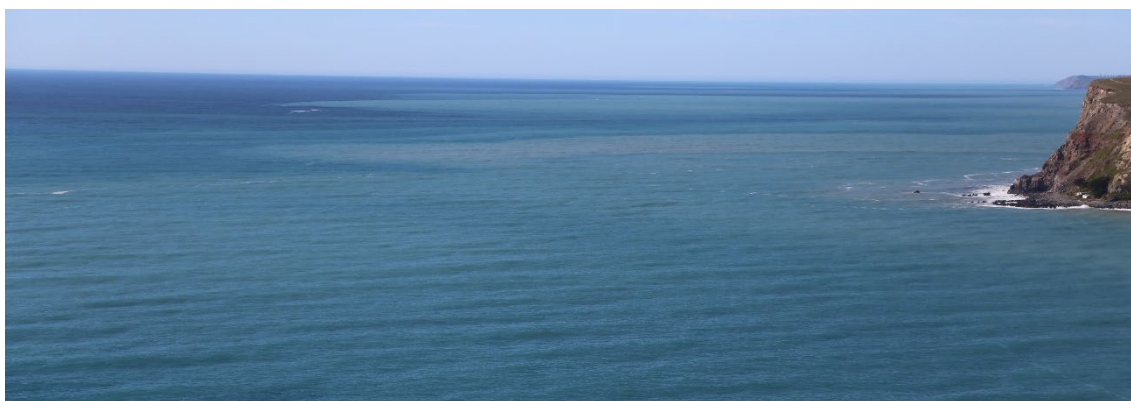
⁹ Executive Summary, Marine Mammals, Cawthron Institute, 2016

¹⁰ Introduction/Summary, Recreation and Tourism, Rob Greenaway, 2016

The area is very popular for coastal walks with extensive views received over both Pegasus Bay and Lyttelton Harbour/Whakaraupō from parts of Godley Head and at Evans Pass. Fishing and diving are also popular activities, and contribute to the experiential aspects of natural character. As the recreation assessment states, however, the naturally high turbidity of the water does limit the availability of some activities.

The experiential aspects here are also transitory, where weather patterns can change one's experiences dramatically. Remote and wild qualities can be experienced during wilder weather, however quite different experiences can occur on calm, sunny days where many people can be seen to be enjoying the area. The level of apparent modification has had a profound impact on the levels of naturalness apparent within the harbour.

In terms of water turbidity, Pegasus Bay along with Lyttelton Harbour/Whakaraupō retain a wide range of naturally occurring water colours (as seen in Photograph 1). The extent of the water discolouration can be seen over many kilometres and tends to be located closer to the land (where the sea bottom is shallower and effects of rivers and cliff/beach erosion is most evident). This difference in water clarity is typical of this part of the coastline.



Photograph 1: Lyttelton Harbour/Whakaraupō mouth and Adderley Head from Godley Head.

In summary, and based on the above, it is considered that the marine areas retain the following natural character ratings:

Seascape Character Area	Marine Natural Character rating		
	Abiotic	Biotic	Experiential
Marine: Inner Harbour	Moderate - High	Moderate	Low
Marine: Middle Harbour	Very Low	Very Low	Very Low
Marine: Outer Harbour	Moderate	Moderate	Moderate
Marine: Pegasus Bay	High	Moderate-High	High

4.1.4 Assessment of the proposal on Coastal Natural Character

4.1.4.1 The main dredging operation and associated activities, including sediment plume and ongoing maintenance

The main dredging operation and disposal area is illustrated on **Figure 1**. The existing shipping channel will be deepened by 4.65 m to 5.65 m and extended by 6.6km. The dredged seabed material is proposed to be deposited within a 1,200ha disposal area in Pegasus Bay, approximately 4 km from Banks Peninsula at its nearest point and 6 km from Godley Head, as illustrated on Image 1 within section 2 of this report

Abiotic Attributes

The enlarged shipping area will change the abiotic aspects of the sea bed and create increased sedimentation plumes as a result of this. As outlined by MetOcean, a 'snapshot' extent of these plumes are illustrated within the Project Description part of this report under paragraph 1.2.1. The method behind their modelling is outlined on page 21 of that report, and represent specific, discrete disposal events over a 60-minute window. The extended deepened channel will primarily be soft-sediment material, which has not been previously modified, although will be an extension to an existing shipping channel. In terms of the plumes created, MetOcean conclude that the extent of the dispersal of sedimentation will be dependent on the direction of the currents. Worst case scenarios include strong northwest, strong southeast and strong northeast waves and currents. The majority of the sedimentation will be settled within a 60 minute window. Whilst some mid-water and bottom plumes appear large during the initial depositing operation, this rapidly decreases within a period of 60 minutes. MetOcean concludes that even with the modelling under unfavourable conditions, the dispersal of sedimentation will be limited.

The pre-construction abiotic natural character ranges from very low close to the port (within the middle harbour) to moderate to high within Pegasus Bay. It is considered that there will be a small net change to the abiotic aspects relating to Pegasus Bay, changing from moderate to high, to moderate. It is assessed that no net change to the other seascape area ratings following the completion of the main channel deepening operations and ongoing continued maintenance will occur.

As the Mulgar Consulting Report states, there will be a change in the wave climate at some places in the harbour as a result of both stages of the development. There will be a small reduction in wave height close to the reclamation area, extending to insignificant in the upper harbour. In terms of tidal currents, there will also be a reduction of tidal currents in the vicinity of the reclamation area, and this is assessed as small.

Overall, and due to the seabed already being partially modified through past and continuing shipping operations, it is considered that the effect on abiotic aspects of natural character will be low.

Biotic Attributes

Cawthorn states in their sea mammals report that 'the potential direct effects of dredging and disposal activities that are most relevant to marine mammal species in Pegasus Bay regions include: potential vessel strikes, increased underwater noise production and possibly the risk of entanglement. While these effects have the greatest potential consequences to the relevant species (i.e. injury or death), the actual likelihoods were considered low and the overall risk levels deemed acceptable with suggested mitigation actions'¹¹.

¹¹ Executive Summary, Marine Mammals, Cawthron Institute, 2016

For sea birds, Boffa Miskell's Avifauna report states that the effects of the operation is determined to be low or very low, due principally to the mobile nature of the birds, the relatively large foraging area available and the restricted spatial extent and short term nature of any effects. The species for which the level of effect may be greatest is the little penguin, for which a moderate level of effect has been determined. This is due to the combination of *Threatened* classification currently assigned to the white-flipped penguin, its foraging behaviours, location of breeding populations in the upper harbour above the dredging operation and the nature of the potential effects (i.e. potential to impact foraging success and therefore breeding success). However, this effect will be short term as the CDP operation will be completed within two 9-14 month stages.

The pre-construction biotic natural character ranges from very low close to the port (within the middle harbour) to moderate to high within Pegasus Bay. It is considered that there will be no net change to these ratings following the completion of the main channel deepening operations and ongoing continued maintenance. Based on this, it is considered that the effect on biotic aspects of natural character will be low.

Experiential Attributes

There will be no significant change to experiential elements of natural character resulting from the project. There is already varied turbidity within the coastal and harbour waters of the Site (as shown in Photograph 1). The increase in small areas of visible sedimentation plumes will be localised and transitory. The visibility of the plumes will be dependent on the sea conditions and weather. If seen from more elevated locations, the plumes may be evident, but only within an already varied-colour seascape. The presence of a large dredging ship will be no different from what is currently experienced in the vicinity of the major operational port.

The pre-construction experiential natural character ranges from very low close to the port (within the middle harbour) to high within Pegasus Bay. It is considered that there will be no net change to these ratings following the completion of the main channel deepening operations and ongoing continued maintenance. It is considered that the experiential aspects of natural character will be affected to a low degree.

As a result of this analysis, it is considered that the construction and ongoing maintenance-related effects of the channel deepening will avoid the potential for any significant adverse effects on natural character, in accordance with Policy 13(1)(b) of the NZCPS. Any adverse natural character effects which occur are of a limited nature and occur in the context of existing modification associated with a major existing port.

4.2 Assessment of Effects on Natural Features and Landscapes

4.2.1 Approach

Under Policy 15 of the NZCPS, there is a requirement to avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment. In addition there is a requirement to avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment¹².

¹² Policy 15 (a) and (b) of the New Zealand Coastal Policy Statement 2010.

4.2.2 Methodology

An assessment to identify Outstanding Natural Features and Landscapes (ONFLs) within Christchurch City was been undertaken by Boffa Miskell in 2015. The results of this are illustrated on **Figure 3**¹³.

4.2.3 Existing condition and mapped extents

The mapped extent of ONFLs are illustrated on **Figure 3** and their associated values are contained in full within **Appendix 2** of this report. There are no ONFLs within the extent of the channel widening or ongoing maintenance operations. Several areas of ONFL have been identified in the vicinity of the Site within the coastal environment including the two outer headlands and part of the coastal area around these headlands. The remaining ONFLs are associated with the crater rim, and the estuary and beaches associated with the Avon/Heathcote Estuary and New Brighton and located several kilometres from the Site.

4.2.4 Assessment of the proposal on Natural Features and Landscapes

The assessment of the proposal will be on the degree to which the proposal affects the values that underpin the ONFLs (most notably those within the coastal environment) and the degree to which effects will be on other parts of the coastal environment, which are not outstanding.

The proposed capital disposal ground works will be located closest to the Godley Head ONFL. The principal landscape values of this ONFL relate to the headland's high legibility as an entrance feature to Lyttelton Harbour/Whakaraupō, its cliff exposures, the wild and remote aspects associated with its position, and its very high cultural aspects. Based on the understanding of the proposal, it is considered that the proposal will not adversely affect these underlying values.

No physical change will occur to the ONFL, so only perceptual aspects will be affected. The wild and remote aspects are to some extent, transitory and weather dependant. These are already affected by the existing route and ongoing maintenance of the channel. Based on this, it is considered that the effects on the perceptual values of the adjacent ONFLs will be very low and that the nature of the effect is considered neutral, consistent with the context within which shipping activity associated with the port already occurs. Therefore, adverse effects will be avoided in accordance with Policy 15 of the NZCPS.

In terms of the remaining parts of the coastal environment which are not considered to be outstanding, it is considered that there will be very low effects and that the nature of the effect is considered neutral.

4.3 Assessment of Effects on Visual Amenity

Visual amenity effects of proposals are influenced by a number of factors, including the nature of the proposal, the visual absorption capability (i.e. the site / locality's ability to visually absorb change) and the character of the Site and the surrounding area. Visual amenity effects are also

¹³ At the time this report was written, it is unclear whether Christchurch City Council has adopted the ONL extents as part of its replacement district plan. A decision on this is due out imminently.

dependent on the distance between the viewer and the proposal, the complexity of the intervening landscape and the nature of the view.

The principal elements of the proposal that will give rise to visual effects are:

- The extent of the disposal sedimentation plume and its contrast with adjacent sea-colouration at sea-level;
- The presence of dredging ships, especially along the route of the channel.
- The ongoing maintenance operations including presence of ships and further sedimentation plumes.

4.3.1 Visibility and viewpoint analysis

The Lyttelton Harbour/Whakaraupō basin and broader Pegasus Bay, are visible from various parts of the surrounding area. Within this visual catchment, viewing distances range significantly and vary in orientation and aspect.

To assess the anticipated visual effects a series of panoramic photographs have been taken from areas surrounding the area. These viewpoint locations are identified in **Figure 6 – Photograph Viewpoint Location Plan** and discussed in the following below.

4.3.2 Viewing Audience and Sensitivity

To understand who may potentially be affected by the proposal, an analysis of the potential viewing population was undertaken. The viewing audience falls into two broad groups; residents and transient viewers. Viewing audiences have differing sensitivity to visual change depending on their susceptibility to change and value attached to views. Resident populations are generally considered more sensitive than transient populations (from a given viewpoint). However, several factors combine to influence the magnitude of visual effects.

4.3.3 Visual Amenity Effects Assessment

The level of visibility and visual amenity will vary according to location.

Photographic Viewpoint 1: New Brighton Pier

Photographic Viewpoint 1 illustrates a view from the end of the New Brighton Pier. The distance from this viewing area is approximately 14 kilometres from the disposal area and 10 kilometres from the maintenance disposal area. The view from this location allows for panoramic views of the Pegasus Bay seascape, including views towards the entrance of Lyttelton Harbour/Whakaraupō and other Banks Peninsula northern bays.

Due to the distance of this viewpoint, it is unlikely that any discernible views of the surface sedimentation plumes would be evident. The only element that would be perceived would be the presence of the dredging ship during both the main operation of the channel deepening exercise and the on going maintenance. Based on this, and that ships are a frequent sighting from this vantage point, it is considered that the significance of the visual effects from New Brighton Pier will be very low, with a neutral nature of effect.

Photographic Viewpoint 2: Sumner Beach

This viewpoint represents a view from one of Christchurch's most popular beaches, Sumner Beach. The distance from this viewing area is approximately 12 kilometres from the disposal area and 6.5 kilometres from the maintenance disposal area. Any views towards these areas will be oblique, in that the primary orientation of views from this beach is towards the north, rather than the east. Sumner Head/ Scarborough Hill will also block some of the Site.

Any views towards the channel deepening operations will be at sea-level, which further limits potential visibility. Whilst the visibility of sedimentation plumes will not be evident from this location, the occasional presence of the dredging ship during both the main operation of the channel deepening exercise and the on-going maintenance would be seen. As with the New Brighton viewpoint, ships are a frequent sighting from this vantage point. As a result, it is considered that the significance of the visual effects from Sumner Beach will be very low, with a neutral nature of effect.

Photographic Viewpoint 3: Smugglers Cove

This viewpoint represents an elevated view taken from the terminus of Smugglers Cove, a no-entry residential road, off Sumner Head/ Scarborough Hill looking eastwards towards Adderley Head. Houses along this road are typically orientated towards the east to capture the panoramic views of the ocean. The photo-viewpoint illustrates the variable colouration of the water on any given day, where naturally suspended sedimentation occurs sporadically throughout these waters. Long distance views are also obtained beyond Godley Head towards other Banks Peninsula northern bays.

Ships regularly pass through this viewpoint enroute to and from Lyttelton. The majority of the disposal of material from the main channel deepening operations would be evident from this elevated vantage point, with the on-going maintenance appearing closer in the view (at approximately 5.5km distance with the capital works being approximately 9km away). The ships would be sighted more constantly and some surface plumes would be evident, although temporary. Operations during the night would also cause some noticeable night-lighting effects off shore, however, due to the distance, it is considered that these would be low. As a result, it is considered that the significance of the visual effects from these houses would be moderate to low, with an adverse nature of effect

Photographic Viewpoint 4: Summit Road

Photographic Viewpoint 4 illustrates a view from a location on Summit Road, enroute to the Godley Head car park. The view illustrates the elevated and panoramic views obtained from parts of this road towards Pegasus Bay and part of the channel deepening operations, and also shows variable water colouration. Much of the operations will occur beyond Godley Head and would not be visible, however part of the maintenance operations site would be partially visible.

Due to the transient nature of this viewpoint combined with the already variable colouration of the sea and that the presence of ships in this environment is not uncommon, the transitory presence of more regular ships would not adversely affect this viewing location. As a result, it is considered that the significance of the visual effects from Summit Road will be very low, with a neutral nature of effect.

Photographic Viewpoint 5: Godley Head

Extensive and numerous views are able to be obtained of the seascape and broader landscape from many of the footpaths and tracks around Godley Head. Photographic Viewpoint 5 illustrates a view from part of the easternmost track as it descends slightly to the gun-emplacement. Here panoramic views are obtained of the mouth of Lyttelton Harbour, Adderley Head and the mixing of the waters of Lyttelton Harbour and Pegasus Bay.

The natural visual discolouration of the water from these vantage points is very noticeable, as are the presence of ships and boats as they travel towards and away from Lyttelton Port. The proposed disposal operation works would be visible in the form of a ship from this elevated location (approximately 5km away), as would the on-going maintenance disposal (approximately 2km away). Plumes visible from the surface would be very small and barely noticeable when seen within the broader variable-colouration of the seascape. Whilst both a transitory viewpoint and a transitory operation, it is considered that the significance of the visual effects from the walking tracks of Godley (notably this specific viewpoint close to the gun emplacement) will be low, with a neutral nature of effect.

Photographic Viewpoint 6: Evans Pass

This viewpoint looks south towards the waters of the harbour and across the harbour to Purau and Diamond Harbour from Evans Pass. From this popular viewing location, the current view is impressive and predominantly comprised of natural landforms and the seascape of the harbour. The waters of the harbour are slightly more consistent than in other views over Pegasus Bay, however some discolouration is still evident.

The presence of boats would be the principal visual operation noticeable from this viewpoint, due to the disposal areas being within Pegasus Bay and away from this viewpoint. Some existing disposed material is dumped along the immediate inshore waters below this viewpoint. Based on this, it is considered that the significance of the visual effects from Evans Pass will be very low, with a neutral nature of effect.

Photographic Viewpoint 7 and 8: Camp Bay Road

Both photographic viewpoints 7 and 8 are taken from two locations on Camp Bay Road. Photographic Viewpoint 7 illustrates an easterly looking view close to the terminus of the road, overlooking Te Pohue/Camp Bay towards the entrance of Lyttelton Harbour/Whakaraupō. Both Godley Head and Adderley Head are visible.

Photographic Viewpoint 8 illustrates a view also from Camp Bay Road looking in a more northerly direction towards Lyttelton Port.

Ships travelling up through the Harbour would be visible from these locations at reasonably close distances (approximately 1 to 1.5km distances). Some visibility of ships would be observed towards the ongoing maintenance disposal area, although these would be at distances of approximately over 7km. The capital deepening operation disposal area would be located even further. It is unlikely that any visible sedimentation plumes would be visible from these viewpoints, with only the visual presence of the ships. Ships and other vessels travel along this route regularly and the presence of a larger ship operating channel deepening operations would not be unusual. Based on this, it is considered that the significance of the visual effects from Camp Bay Road will be very low, with a neutral nature of effect.

Photographic Viewpoint 9: Koromiko Crescent

Photographic Viewpoint 9 was taken from Koromiko Crescent, within Diamond Harbour looking towards Lyttelton Port. This photograph represents a typical view looking north-eastward to the waters of the harbour. The principal visibility from this viewpoint would be towards the ships entering and leaving the port. Any existing channel deepening exercises that currently occur would continue. Any sedimentation plumes would be limited, if at all visible. Ships and other vessels travel along this route regularly and the presence of a larger ship operating channel deepening operations would not be unusual. Based on this, it is considered that the significance of the visual effects from Koromiko Crescent will be very low, with a neutral nature of effect.

Photographic Viewpoint 10: Crater Rim Walkway (near the Sign of the Bellbird)

From the start of the Crater Rim Walkway at the 'Sign of the Bellbird' there is a view of the entire harbour. There is a very impressive broad scale landscape view that illustrates the Upper and Outer Harbour sections and the radial spurs descending into the harbour bay edges. Any views towards the channel deepening operations would be at distances of 15km plus. Any discolouration of water would be very difficult to see as would the presence of ships (without visual aids such as binoculars). Based on this, it is considered that the significance of the visual effects from the Crater Rim Walkway will be very low, with a neutral nature of effect.

Views from residents at Lyttelton Township

The township of Lyttelton is contained by two main east and west spur landforms extending from the crater rim. These landforms visually frame many views from public and residential viewpoints within the town. These outlooks are also strongly experienced as vistas along the radial road pattern that extends away from the Inner Port. Ships and other vessels travel within and around the Port regularly and the presence of a larger ship operating channel deepening operations would not be unusual. Based on this, it is considered that the significance of the visual effects from residents in Lyttelton will be very low, with a neutral nature of effect.

Summary of visual amenity assessment

Overall, in light of the above assessments, it is considered that the project will have at most moderate-low visual amenity effects.

5.0 Conclusion

LPC require that the existing shipping channel is widened and deepened to cope with a greater capacity of larger ships within the Port. Dredging already occurs in and around the harbour due to the relatively shallow waters of the Harbour.

This report assesses the natural character, landscape and visual amenity effects of this proposed activity.

This concludes that any natural character effects will be low with any potential significant adverse effects on natural character avoided, and non-significant adverse natural character effects of a limited nature and occurring within the context of modification associated with a major exiting port. Accordingly, the project is consistent with Policy 13 of the NZCPS.

In natural feature and landscape terms, the effects on the perceptual values of the adjacent ONFLs (particularly at Godley Head) will be very low and neutral in nature; adverse effects will be avoided on these areas. In terms of the remaining parts of the coastal environment which are not considered to be outstanding, it is considered that there will be very low effects which are neutral in nature. Accordingly, the project is consistent with Policy 15 of the NZCPS.

Concerning visual amenity, from the numerous vantage points assessed, all will receive either moderate-low, low or very low visual effects of the operation. Surface plumes will not be a significant visual effect, rather it's the presence of ships that would be the principal visual area of focus. The majority of visual effects will remain neutral and consistent with the character of shipping already established in association with Lyttelton Harbour/Whakaraupō

Based on this, it is therefore considered that the natural character, landscape and visual amenity effects of this proposed activity are managed in a way that avoids significant adverse effects and are readily assimilated within a working area of coastal environment.

Appendix 1: Methodology

Introduction

The landscape and visual assessment process provides a framework for assessing and identifying the nature and significance of potential landscape and visual effects. Such effects can occur in relation to physical features, viewing audiences and visual amenity and/or on the site's contribution to the existing landscape character and amenity values. When undertaking landscape and visual assessments, it is important that a structured and consistent approach is used to ensure that findings are as objective as possible. Judgement should always be based on training and experience, and be supported by clear evidence and reasoned argument.

The assessment of landscape and visual effects are separate, although linked, procedures. The existing landscape and its existing visual context or visual envelope all contributes to the existing 'baseline' for landscape and visual assessment studies. The assessment of the potential effect on the landscape is carried out as an effect on an environmental resource (i.e. the landscape features or character). Visual effects are assessed as one of the interrelated effects on the surrounding viewing audience. The differences between these types of effects can be summarised as follows:

Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced. This may in turn affect the perceived value ascribed to the landscape.

Visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.

To determine the overall nature and significance of landscape and visual effects, an understanding of the sensitivity of the landscape or viewing audience has been combined with an assessment of the magnitude of change resulting from the proposal in order to determine the overall significance of effects. This assessment has been undertaken with reference to the Quality Planning Landscape Guidance Note¹⁴ and its signposts to examples of best practice which include the recently published UK guidelines for landscape and visual impact assessment¹⁵ and the New Zealand Landscape Institute Guidelines for Landscape Assessment¹⁶.

Landscape Effects

Landscape character assessment and particularly the stage of characterisation, is the basic tool for understanding the landscape and forms a starting point for landscape baseline surveys. This process includes an analysis of how biophysical, sensory and associative attributes come together to create landscape character. This process is outlined further within NZILA's Best Practice Note 10.1: Landscape Assessment and Sustainable Management¹⁷.

To assess potential landscape effects, the landscape baseline should provide a concise description of the existing character of the landscape surrounding the site. This may include the

¹⁴ <http://www.qualityplanning.org.nz/index.php/planning-tools/land/landscape>

¹⁵ Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013

¹⁶ Best Practice Note Landscape Assessment and Sustainable Management 10.1, NZILA

¹⁷ NZILA Education Foundation (2010) Best Practice Note 10.1: Landscape Assessment and Sustainable Management.

characterisation of the landscape into distinct character areas or types, which share common features and characteristics. The condition of the landscape (i.e. the state of an individual area of landscape or landscape features) should also be described to form the basis for a judgement made on the value or importance of the affected landscape.

The sensitivity of the landscape depends upon the degree that a particular landscape or feature can accommodate change without detrimental effects on its character. This will vary upon the following factors:

- Existing land use;
- The pattern and scale of the landscape;
- Visual enclosure / openness of views and distribution of the viewing audience;
- The value or importance placed on the landscape; and
- The scope for mitigation, which would be in character with the existing landscape.

The determination of the sensitivity of the landscape resource is described in terms of both the susceptibility of an area of landscape to change and the value of the landscape. The susceptibility to change takes account of both the attributes of the receiving environment and the characteristics and effects of the proposed development. Landscape value derives from the importance that people and communities, including tangata whenua, attach to particular landscapes and landscape attributes. This reflects an understanding of the importance of biophysical, sensory/ aesthetic and associative landscape attributes which in turn may lead to the classification of an Outstanding Natural Landscape or Significant Amenity Landscape.

Assessing the magnitude of landscape effects provides a judgement about the amount of change that is likely to occur to the existing landscape. In undertaking this assessment it is also important that the size or scale of the affect and the geographical extent of the area influenced is defined alongside the duration of the affect, including whether this is reversible. In some cases the loss or change to existing landscape elements such as vegetation or earthworks can also be quantified.

There are no hard and fast rules about what makes a significant landscape effect. It is important to be clear about what factors have been considered when making professional judgements.

Table 1 below has been compiled to help quantify the significance of landscape effects.

Table 1: Determining the significance of landscape effects

Contributing Factors		Higher	Lower
Sensitivity	Susceptibility to change	- The landscape is strongly distinctive with important biophysical, sensory and associative aspects and absence of landscape detractors which make it highly vulnerable to the type of change which would result from the proposed development.	- The landscape lacks any distinctive biophysical, sensory or associated aspects with many detractors and has the ability to accommodate the proposed development without undue consequences to landscape character.
	The value of the landscape	- The landscape requires protection as a matter of national importance (ONF/L).	- The landscape is of low or local importance.
Magnitude of Change	Size or scale	- Total loss or addition of key features or elements; - Major changes in the key characteristics of the landscape including significant aesthetic or perceptual elements	- The majority of key features or elements are retained - Key characteristics of the landscape remain intact with limited aesthetics or perceptual change apparent

	Geographical extent	- Landscape character area scale	- Site scale, immediate setting
	Duration and reversibility	- Permanent - Long term (over 10 years)	- Reversible - Short Term (0-5 years)

Visual Effects

The visual baseline identifies the potential viewing audience which have the ability to obtain views towards the site. This comprises the group of people who occupy properties, roads, footpaths and public open spaces that lie within the visual envelope or zone of visual influence of the site. Field work is used to determine the actual extent of visibility of the site, including the selection of key representative viewpoints from public areas. This stage is also used to identify the potential 'viewing audience' e.g. residential, visitors, recreation users, and other groups of viewers who can see the site.

Once the viewing audience has been identified, the assessment then considers the visual sensitivity of individuals or groups which make up the viewing audience. The sensitivity of the viewing audience is dependent upon the susceptibility of the viewing audience to change and the value attached to available views:

The susceptibility of the viewing audience is determined by assessing the expectations and occupation or activity of people experiencing the view at particular locations and the extent to which their interest or activity may therefore be focussed on available views. People who are most susceptible to change generally include: residents at home, people engaged in outdoor recreation whose attention or interest is likely to be focussed on the landscape and on particular views, visitors to heritage assets or other important visitor attractions; and communities where views contribute to the landscape setting enjoyed by residents in the area.

The value or importance attached to particular views may be determined with respect to its popularity or numbers of people affected or reference to planning instruments. Important viewpoints are also likely to appear in guide books or tourist maps and may include facilities provided for its enjoyment and reference to it in literature or art.

Following an assessment of the potential sensitivity of the available viewing audience, the visual assessment then considers the potential magnitude of change which will result from visibility of the proposed development. It should also be remembered that views of a development do not necessarily equate to visual effects. Visual impact is not always negative and a change in view is not automatically wrong.

As part of assessing the magnitude of change, annotated panoramic photographs have been prepared to illustrate the nature and extent of available views. This has entailed taking digital photographs from each of the identified viewpoints and recording their GPS locations. The extent of the Site undergoing change which is likely from each viewpoint has then been annotated upon each photograph. Given the extractive nature of the project extending below existing ground level, the final form of extraction is not likely to be visible from beyond the Site.

Assessing the magnitude of visual effects takes account of the size or scale of the effect, the geographical extent over which views are obtained and the duration and reversibility of visual effects. Following this assessment, the magnitude of change resulting from the proposed development is combined with an understanding of the sensitivity of the viewing audience to determine the overall significance of visual effects. **Table 2** below has been prepared to help guide this process:

Table 2: Determining the significance of visual effects

Contributing Factors		Higher	Lower
Sensitivity	Susceptibility to change	Views from dwellings and recreation areas where attention is typically focussed on the landscape	Views from places of employment and other places where the focus is typically incidental to its landscape context
	Value attached to views	Viewpoint is recognised by the community such as identification on planning or tourist documents High visitor numbers	Viewpoint is not typically recognised or valued by the community Infrequent visitor numbers
Magnitude of Change	Size or scale	Loss or addition of key features in the view High degree of contrast with existing landscape elements (ie. in terms of form scale, mass, line, height, colour and texture) Full view of the development	Most key features of view retained Low degree of contrast with existing landscape elements (ie. in terms of form scale, mass, line, height, colour and texture) Glimpse / no view of the development
	Geographical extent	Frontal views Near distance views Change visible across wide extent of view	Oblique / rear views Long distance views Small portion of change visible
	Duration and reversibility	Permanent Long term (over 15 years)	Transient Short Term (0-5 years)

Nature of effects

In combination with assessing the significance of effects, the assessment also considers the nature of effects in terms of whether this will be positive (beneficial) or negative (adverse) in the context within which it occurs. Neutral effects can also occur where landscape or visual change is considered to be benign in the context of where it occurs.

The type or nature of change identified can be assessed as follows:

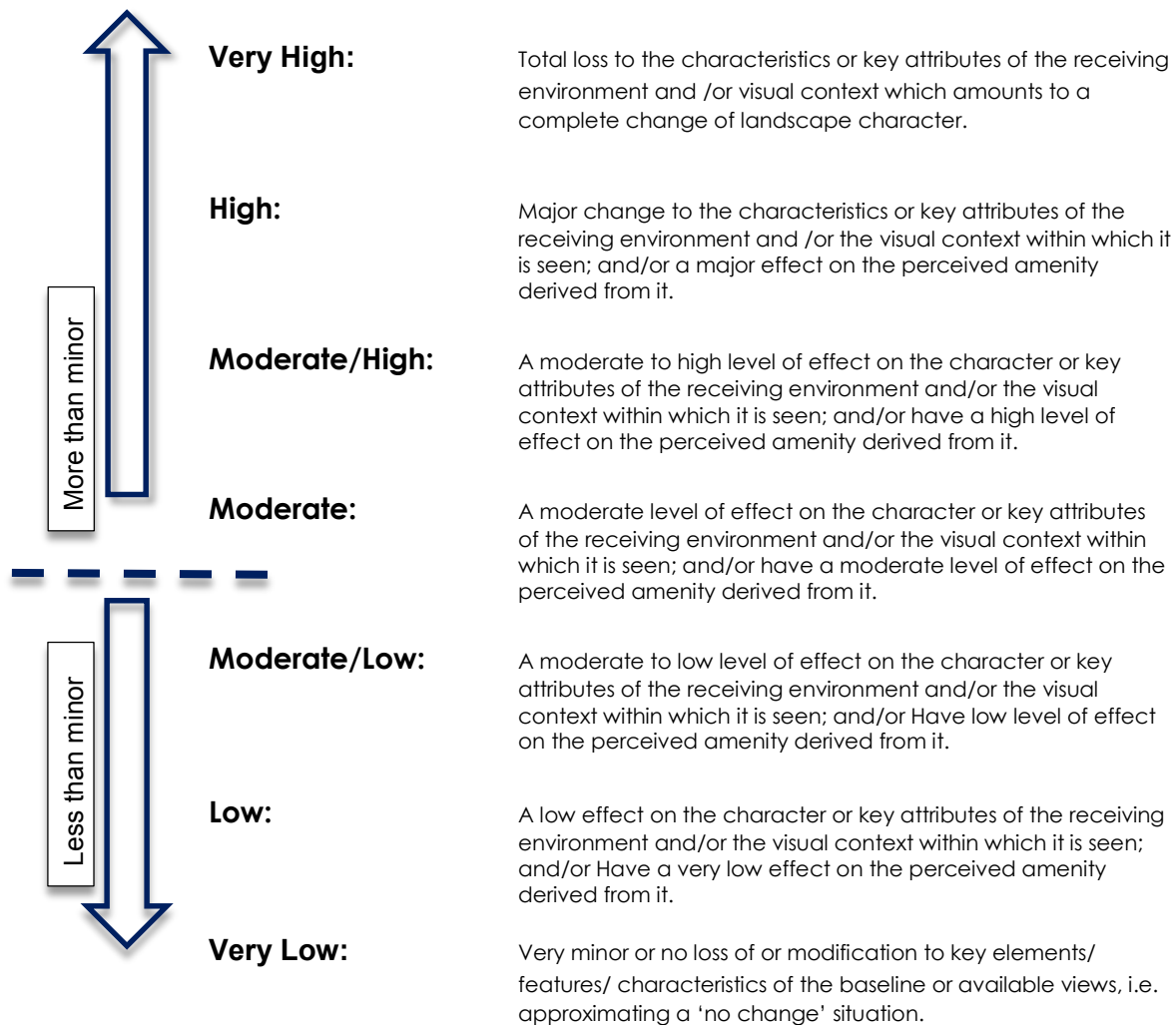
Adverse (negative): The proposal would be out of scale with the landscape or at odds with the local pattern and landform. The Scheme will leave an adverse landscape and visual impact on a landscape of recognised quality

Neutral (benign): The Scheme would complement (or blend in with) the scale, landform and pattern of the landscape maintaining existing landscape and visual values

Beneficial (positive): The Scheme would enhance the scale, landform and pattern of the landscape, improving the landscape and visual quality through removal of damage caused by existing land uses or addition of positive features

Determining the Overall Significance of Landscape and Visual Effects

The landscape and visual assessment concludes with an overall assessment of the likely significance of landscape and visual effects. This step also takes account of the nature of effects and the effectiveness of any proposed mitigation. The following levels of effect can be used to guide assessment of the significance of landscape and visual effects using the seven point scale as identified in NZILA's Best Practice Note:



Appendix 2: Landscape Evaluation Values

The following is a table of Landscape Values associated with the mapped Outstanding Natural Features and Landscapes within the 2007 Banks Peninsula Landscape Study and the 2015 Christchurch Landscape Study.

ONFL Name	Landscape Attributes		
	Biophysical	Sensory	Associative
Godley Head/ Taylors Mistake & Scarborough cliffs (CCC 2015 Landscape Study)	<p>The headland has very high legibility values, as it forms the entrance to the drowned volcano that makes up Whakaraupō/Lyttelton Harbour.</p> <p>The steep cliffs along the headland and Whitewash Head are distinctive features, which are a result of the erosional forces of the sea.</p> <p>The rocky coast line is an important landscape feature, representative of the cliffs which can otherwise only be found around the Banks Peninsula coast.</p> <p>The majority of the headland is covered in silver tussock, which is extensively grazed.</p> <p>In particular on south facing wetter slopes/gullies, native vegetation can be found.</p> <p>The headland has high value as a habitat for wildlife, including penguins that can be found in Boulder Bay and a shag colony.</p> <p>Sumner is surrounded by impressive cliffs and rock outcrops that display their volcanic origins.</p>	<p>The aesthetic attributes of Godley Head are amongst the most dramatic and important of any in Christchurch.</p> <p>The headland has high naturalness, with a largely natural appearance, significant native content to the grassland and cliff vegetation and few nodes of human development. The limited areas of trees maintain the openness of the area.</p> <p>The wild, exposed, remote feeling of the outer coastal area with its impressive cliffs is valued by many.</p> <p>The visual connections to the coast, open sea and Lyttelton Harbour, as well as Christchurch City and the foothills of the Southern Alps beyond are particularly memorable.</p> <p>The beach of Te Onepoto/Taylors Mistake is Christchurch's most secluded beach, which makes it an attractive destination for beach goers and surfers.</p>	<p>The character area contains a number of key cultural sites and landscape features, including most significantly the pā of Ōtokitoki.</p> <p>The headland of Awaroa, which signals the entrance to the harbour, as well as the ridge from Awaroa to Tapuwaeharuru/Evan Pass called Mahoenui, situated above Ōtokitoki, and Te Onepoto/Taylors Mistake are also culturally important landscape features to Māori and Europeans.</p> <p>The gun emplacements and associated buildings are a popular and easily accessible historic site.</p> <p>The DOC managed land provides a range of recreation opportunities, which can be easily accessed via the Summit Road from Evans Pass.</p> <p>The baches along Te Onepoto/Taylors Mistake have heritage value and contribute to the character of the beach setting.</p>

Adderley Head (Interpreted from Banks Peninsula Landscape Study 2007)	The headland has very high legibility values, as it forms the entrance to the drowned volcano that makes up Whakaraupō/Lyttelton Harbour.	Aesthetically important landscape feature forming legible part of entrance to Lyttelton Harbour.	Number of archaeological sites, including a sacred site to Ngai Tahu.
Heathcote/Avon Estuary (CCC 2015 Landscape Study)	<p>Formative processes of the estuary with the Avon and Heathcote river mouths and New Brighton Sand spit are highly legible.</p> <p>The active estuary with shifting channels is highly dynamic and the influence of the tide is particularly important for the ecosystem.</p> <p>Very high importance as a bird feeding and breeding site, nationally important for wading birds.</p> <p>Rapanui/Shag Rock and Clifton Cliffs are Geopreservation sites on southern side of the estuary entrance.</p> <p>Tuawera/Cave Rock is an impressive geological feature that shows its volcanic origins.</p> <p>The series of caves and rocky headlands from the mouth of the Ōpāwaho / Heathcote River to Scarborough Heads, including Te Pou o Tūtaemaro (the 'Rock' or headland near Redcliffs), Te Ana o Hineraki/Moa Bone Cave and Moncks Cave are significant geological features as well as having associated heritage, archaeological and cultural values.</p>	<p>The edges of the estuary are modified along the southern side (Bromley, Ferrymead, Redcliffs, Sumner), while the northern part around the Avon mouth and New Brighton Spit are more natural in appearance.</p> <p>The accessible parts of the estuary are frequently used for recreational activities, such as kayaking, windsurfing and bird watching.</p> <p>The estuary forms a central part of the eastern suburbs, including those on the eastern Port Hills, looking out onto the estuary.</p> <p>The smell of the tidal estuary is distinctive.</p>	<p>High importance of Māori history, settlement, occupation and use of Te Ihutai as a major mahinga kai.</p> <p>A concentration of archaeological sites, including caves, rock shelters and middens provide evidence of Māori occupation and an opportunity for education and interpretation.</p> <p>Key landscape features of particular significance to Ngāi Tahu include: Ōhikaparuparu (mudflats off Ferrymead/ Heathcote mouth), Te Pou o Tūtaemaro ('the Rock' or headland near Redcliffs), Te Ana o Hineraki/Moa Bone Cave, Ōtamahika (mudflats at Redcliffs), Waipātiki (channel at the outlet of Te Awa Kura/Watsons Creek), and Rapanui/Shag Rock, as well as Te Kōrero Karoro/South Brighton Spit, Tuawera/Cave Rock and Matukutakotako/ Sumner Beach.</p> <p>European history of shipping goods up the lower Heathcote River to first settlement of Christchurch.</p> <p>Tuawera/Cave Rock with its flagpole is a landmark of Sumner</p> <p>Rapanui/Shag Rock is an iconic landscape feature defining the entrance of the estuary, although in a diminished state following</p>

			<p>the 2010-2012 earthquakes.</p> <p>Matuku takotako/ Sumner Beach is particularly popular for recreational use.</p>
Otamahua/ Quail Island (Interpreted from Banks Peninsula Landscape Study 2007)	Important for its exposed volcanic stratigraphy.	Largest island within Lyttelton Harbour	<p>Popular for walking and picnickers.</p> <p>High historic associations</p>
Christchurch Coast New Brighton (CCC 2015 Landscape Study)	<p>The sand spit of New Brighton is an important geomorphological feature, as it defines the eastern edge of Christchurch and contains the Avon/Heathcote Estuary behind the sand bar.</p> <p>Te Kōrero Karoro/South New Brighton spit is an important bird habitat, including for species such as the godwit, as well as being plentiful in fish and shellfish species.</p> <p>Restoration of spinifex and pingao as native sand binders has improved the ecological value of some areas of foredunes.</p> <p>Restoration programmes of the backdunes have helped to establish native shrubland.</p>	<p>The southern tip of New Brighton spit is a remote coastal part of Christchurch where natural processes can be experienced.</p> <p>The narrow entrance to Te Ihutai/the Avon-Heathcote Estuary, confined by New Brighton spit on the northern side is a visually important landmark as it separates the open ocean from the sheltered estuary.</p> <p>The beach of New Brighton become increasingly remote and wild in appearance to the south, as the dominant man-made structures, such as the pier, become less visible.</p> <p>In places the dunes on the southern coast are up to over 100 m wide, which means that the buildings of the densely developed hinterland are visually less prominent.</p> <p>The views across the remote, windswept south beach extend across the mouth of the estuary to the Port Hills, Godley Head and Banks Peninsula.</p>	<p>The northern part of the area – Ōruapaeroa and the associated kāinga and mahinga kai area located near QEII</p> <p>Park, as well as the southern area of Te Kōrero Karoro and its association with the two settlements of Te Kai a Te Karoro and Raekura are of significance to tangata whenua.</p> <p>New Brighton has a rich European history as a seaside village with a prominent pier as a landmark.</p> <p>The pier is an attraction for tourists and locals alike.</p> <p>New Brighton is one of the key surfing spots of Christchurch.</p>
Eastern Port Hills (CCC 2015)	This section of the Port Hills contains the most legible rock outcrops, such as Te Ahi a	The coherent sequence of spurs and valleys of the central section of the Port Hills is visually	Many of the distinctive summits and rock outcrops along the crater rim are of importance to tangata

<p>Landscape Study)</p>	<p>Tamatea/Rapaki Rock, Te Tihi o Kahukura/Castle Rock, Ōtaranui/The Tors and Windsor Castle, telling a story of the volcanic origins of the hills.</p> <p>Numerous caves and tunnels are important geomorphological features.</p> <p>Castle Rock trachyte intrusion and the Rapaki dykes are also geopreservation sites.</p> <p>The majority of the character area is covered in extensively grazed grassland, containing silver tussocks and hard tussocks.</p> <p>Important remnant areas of native hardwood forest are found on wetter ground in gullies, such as Dry Bush (Bowenvale), top of Central Barnett</p> <p>Valley (contains mataī) and Jollies Bush (below Mt Pleasant).</p> <p>Significant native shrub areas and diversity occur around cliffs and outcrops, such as on the eastern side of the Heathcote Valley.</p> <p>Numerous gullies have been replanted with native vegetation, which is starting to form dense stands in some areas, including the top of Huntsbury Spur and Greenwood Park.</p>	<p>particularly important for the city of Christchurch, as it forms the skyline from most viewpoints.</p> <p>The most distinctive peaks on the skyline are Te Pōhue/Sugarloaf, Mt Vernon, Ōtaranui/The Tors, Ō-Kete Upoko/Mt Cavendish and Tauhinu Korokio/Mt Pleasant.</p> <p>The extensive rock bands and cliffs in the Heathcote Valley, Barnett Park, Windsor Castle (Sumnervale) are defining features within the visual catchments.</p> <p>The majority of spur tops are covered in a silver tussock/exotic grassland mix with forested gullies accentuating the radial drainage pattern of the hills. The hills provide a natural foil to the densely developed hill suburbs.</p> <p>The openness, naturalness and vastness of the slopes and their contrast with the urban area are the key attributes contributing to the character of the hills.</p> <p>The spurs descend towards the flat suburbs of Christchurch in a distinctive radial pattern that reflects the directions of lava flow from the former volcano.</p> <p>The spurs separate the major valleys into a series of contained visual catchments for which the spurs are the skyline.</p> <p>The spurs correspondingly have wide views across adjacent valleys and the plains generally.</p> <p>The change in colour with the seasons, daylight and</p>	<p>whenua, including Te Pōhue/Sugarloaf, Te Ahi a Tamatea/ Rapaki Rock, Te Upoko Kurī/Witch Hill, Ōtaranui/The Tors, Te Whakatakanga o te Ngārehu a Tamatea (range east from Rāpaki towards Ohinehou/Lyttelton), Te Tihi o Kahukura/Castle Rock, Te Moenga o Wheke (a locality near Te Tihi o Kahukura), Ō-kete-upoko (summits above Lyttelton, including Mt. Cavendish) and Tauhinu-korokio/Mt. Pleasant.</p> <p>A number of passes along the hills served as access routes for Māori between catchments, including Puke Atua/Dyer Pass, Te Iringa o Kahukura and Tapuwaeharuru/Evans Pass, as well as the former pā site of Tauhinu Korokio on Mount Pleasant.</p> <p>The Bridle Path is important in European history with a number of memorials along the way.</p> <p>The Lyttelton rail and road tunnels are of historic significance.</p> <p>Large areas of council and DOC managed land fall into this section of the Port Hills, which enables public access and restoration planting in this area.</p> <p>The crater rim walkway and mountain bike track are amongst the most popular tracks within Christchurch, providing stunning views of the city.</p> <p>Victoria Park and its associated trails provides particularly popular recreation opportunities.</p> <p>Victoria Park is the longest-established and most accessible recreation</p>
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		<p>weather, as well as the snow cover of the tops in winter and dry brown of summer provide visual interest and transient values.</p> <p>The recreation opportunities include an extensive network of trails for walking and biking.</p> <p>The Summit Road not only has a rich history, it also serves as a major access route along the hills.</p> <p>The Mt Cavendish gondola is a major tourist attraction, which provides easy access to the top of the hills.</p>	<p>reserve and remains the administrative focus of Port Hills conservation and recreation.</p> <p>Importance of views to the Port Hills is reflected in paintings and photographs depicting the natural and rugged landform in the backdrop of Christchurch.</p>
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Appendix 3: Landscape Character Area Descriptions

Area	Description & Characteristics
Godley Head	Eastern extent of the Port Hills retaining steep headlands, cliffs and escarpments, defining interface between Godley Head and the Port Hills volcanic history. Many small bays of varying sizes extend along the coastline, including the sandy Taylors Mistake and the intimate stony Boulder Bay. Soils are drought-prone and slips are common. Much of the headland is a reserve, and holds a number of cultural sites of importance. The character of this area has been influenced by 700 years of human occupation. The character is open, where unobstructed views of the seascape are obtained which are highly influenced by the exposed maritime atmosphere.
Lyttelton	Retains the largest population on the peninsula, where steep, south facing inner flanks of the ancient Lyttelton crater rim defines the northern extent of the character area. Spurs define the edges of this character area, where their soft, rounded form is juxtaposed against the rocky ridge. Much of the area is cleared, with regenerating native vegetation centred on DOC land. The port is heavily modified where extensive reclamation has occurred. High historic and cultural values are associated with this area.
Governors Bay	Defined by the rugged rim of the Port Hills to the north-west of the Harbour, this character area is defined by steep hills that reach the water. A series of indented bays define the coastal edge, with Mansons Peninsula forming the enclosing landform to Governors Bay. There are a number of small settlements, including Governors Bay and Allendale with numerous houses located off the main road throughout its extent. This character area contains Rapaki, one of the most significant Maori settlements on Lyttelton Harbour/Whakaraupō.
Teddington	This character area is located at the head of Lyttelton Harbour/Whakaraupō and forms the neck of Banks Peninsula, dividing Lyttelton Harbour/Whakaraupō from the southern side of Banks Peninsula at Gebbies Pass. Exposed pre-volcanic rock is part of the oldest on the peninsula. Mt. Bradley dominates this character area, where its steep form on the crater rim defines the south-eastern extent. Vegetation is dominated by improved pasture on the flats and lower slopes, merging with inter-tidal mudflats and extensive saltmarsh vegetation at the head of the harbour. Some native vegetation is apparent in the gullies. Farming dominates this area, along with forestry, with houses scattered throughout.
Diamond Harbour	This southerly located character area is geomorphologically complex where several bays or harbours indent the coastline. Dramatic, high rocky seacliffs separate the largely boulder shoreline from the

	landscape beyond. Notable bays include Charteris Bay to the west and Purau Bay to the east. Diamond Harbour is the principal residential area, with other smaller settlements at Charteris Bay, Purau and Stoddard Point remaining separate from Diamond Harbour.
Adderley Head	Reflecting the south-easternmost character area of Lyttelton Harbour/Whakaraupō, this character area sits in the cradle of Mt. Evans with its two defining spurs. Adderley Head forms an extension to one of these prominent spurs. The bulbous headland retains a smooth cap that drops quickly to sea-level. There is little vegetation in this landscape with the open spurs being dominated by modified grassland. Adderley Head is a DOC reserve and has an open, exposed character with a number of small bays, providing shelter.



LPC Channel Deepening Project **Natural Character, Landscape and Visual Amenity** **Graphic Supplement**

Graphic Attachment

Boffa Miskell



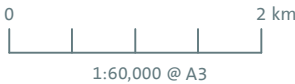
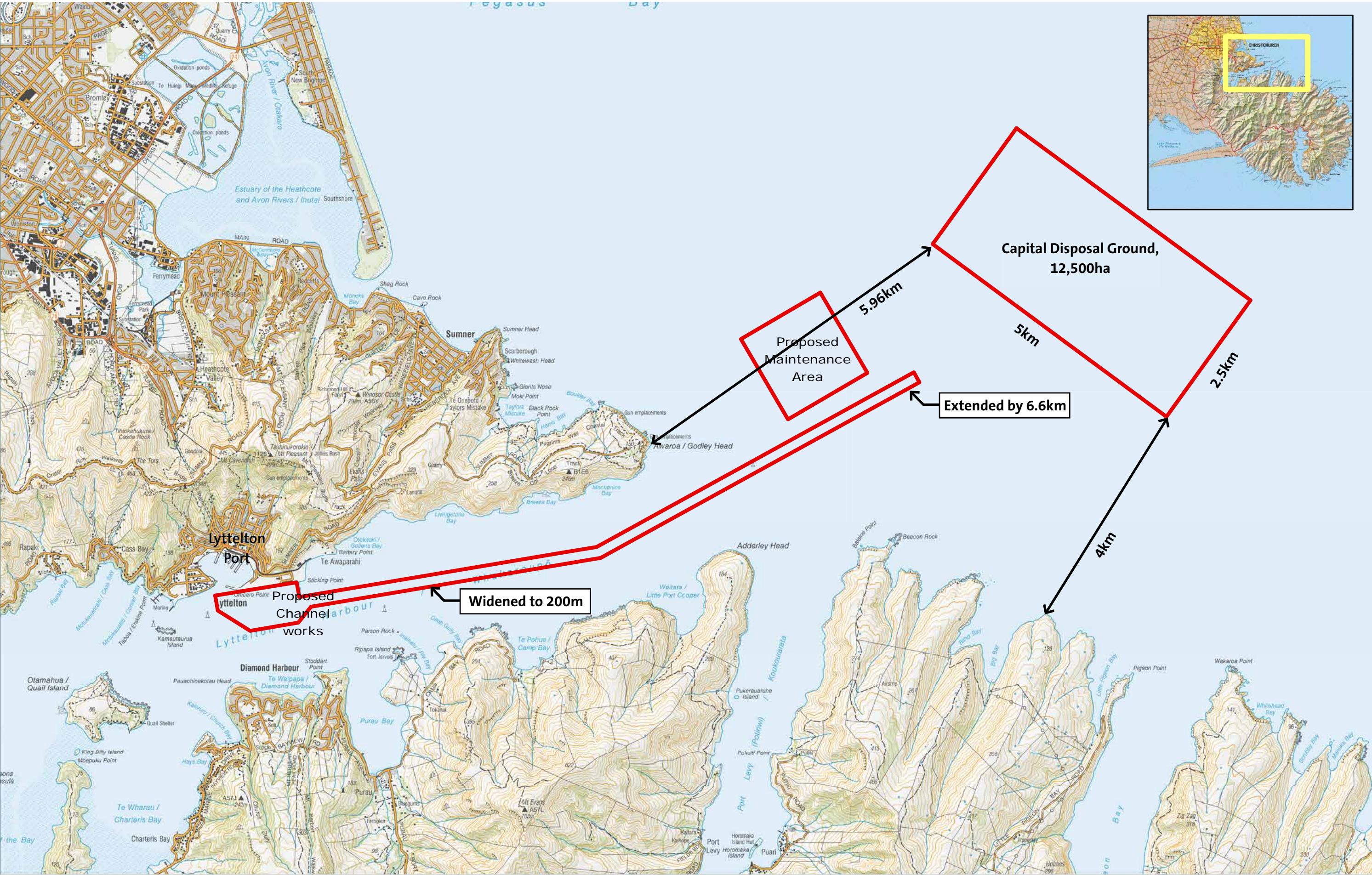
PREPARED FOR LYTTTELTON PORT COMPANY
BY BOFFA MISKELL LIMITED | 09 September 2016

LPC Channel Deepening Project

Natural Character, Landscape and Visual Amenity Graphic Supplement

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 Extent of Proposed Channel Works, Maintenance and Disposal Areas

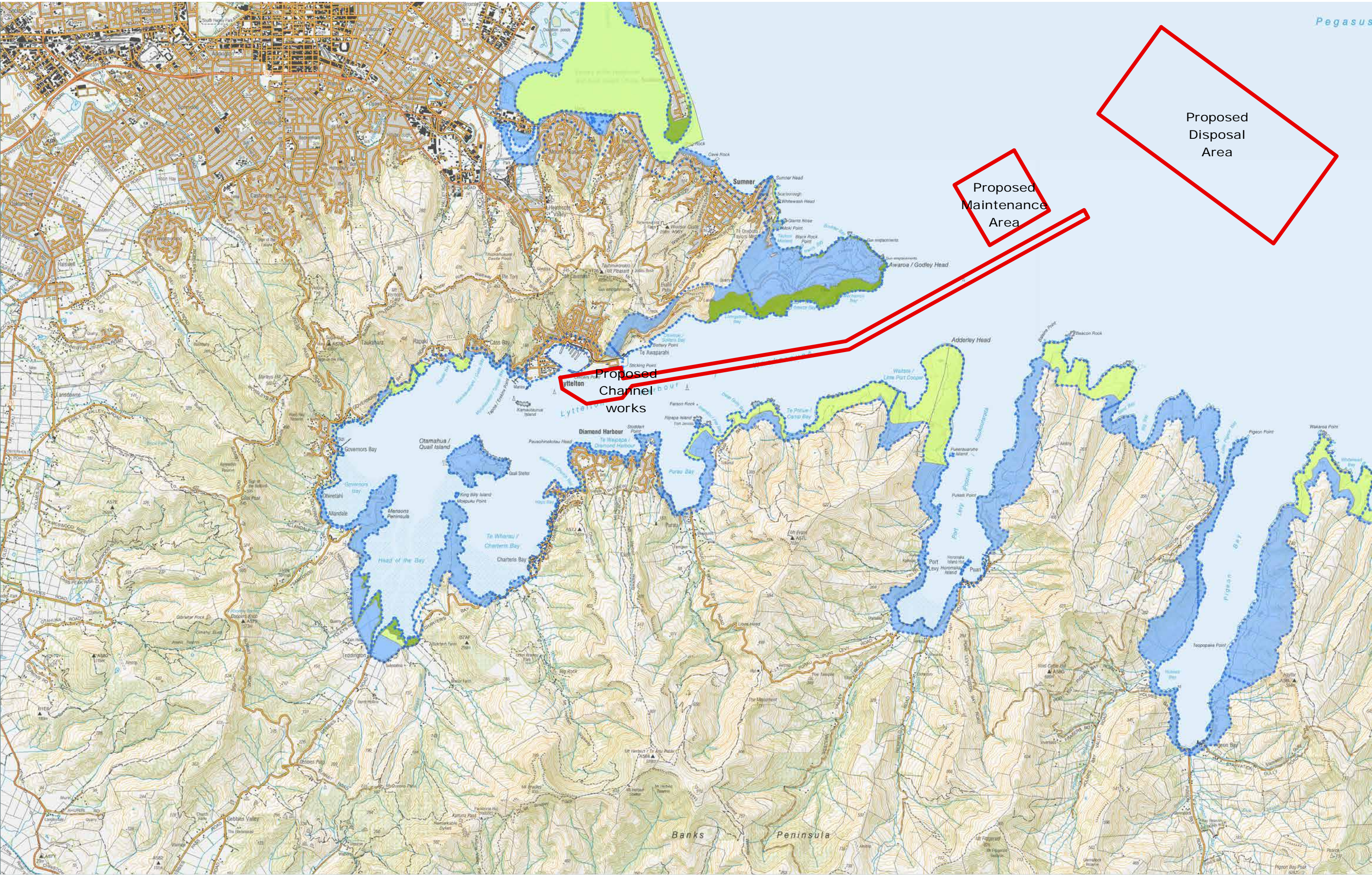
LPC CHANNEL DEEPENING PROJECT

Figure 1: Location Plan







| Date: 09 September 2016 | Revision: 1 |

Plan prepared for Lyttelton Port Company by Boffa Miskell Limited

Project Manager: James.Bentely@boffamiskell.co.nz | Drawn: CMu | Checked: JBe



Legend

-  Extent of Proposed Channel Works, Maintenance and Disposal Areas
-  District Plan Coastal Environment
-  Coastal Environment
-  High Natural Character
-  Very High Natural Character
-  Outstanding Natural Character

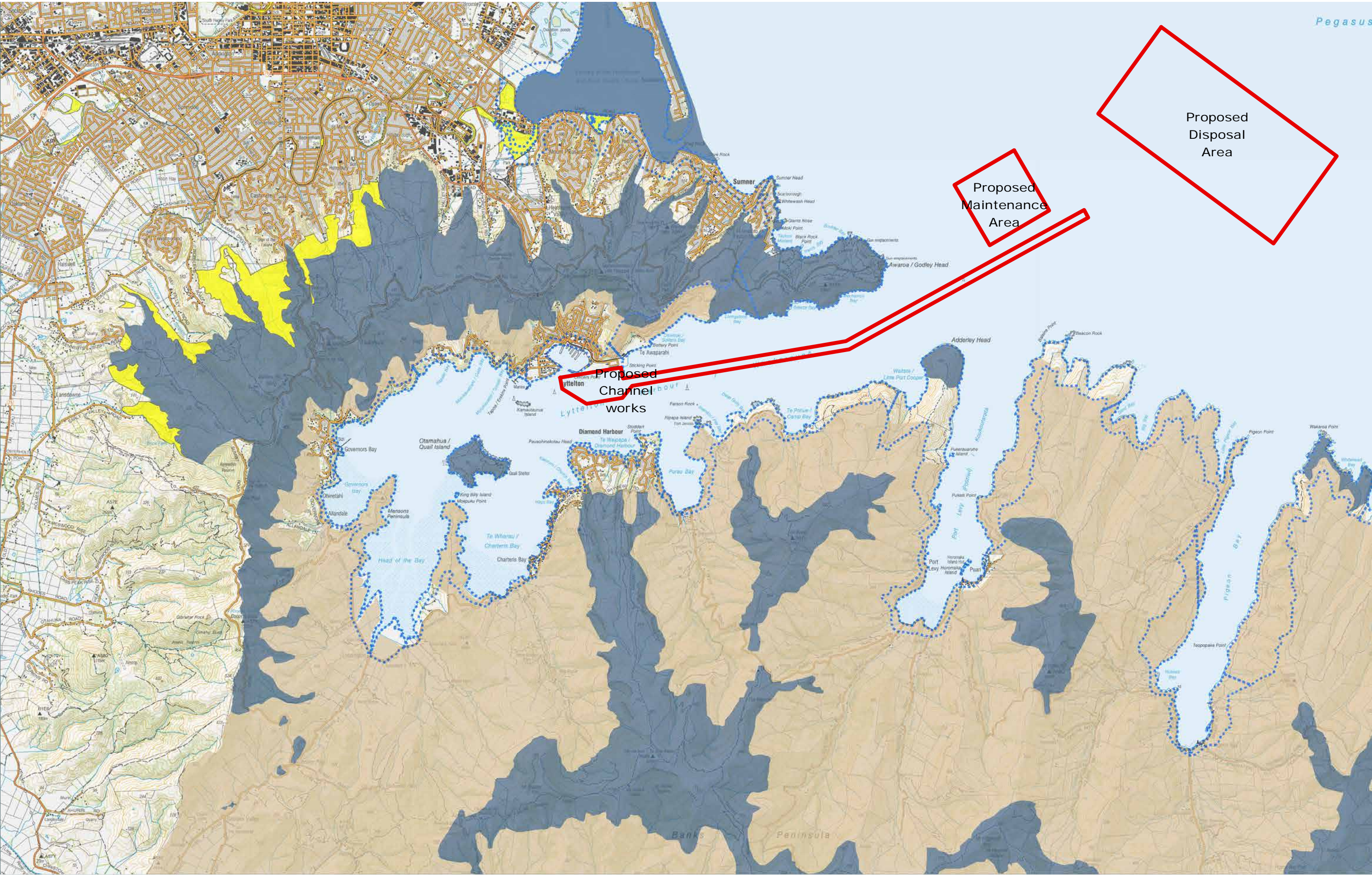
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Figure 2: Natural Character

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Legend

-  Extent of Proposed Channel Works, Maintenance and Disposal Areas
-  District Plan Coastal Environment
-  Rural Amenity Landscape (Banks Peninsula)
-  Outstanding Natural Feature or Landscape
-  Significant Feature or Landscape

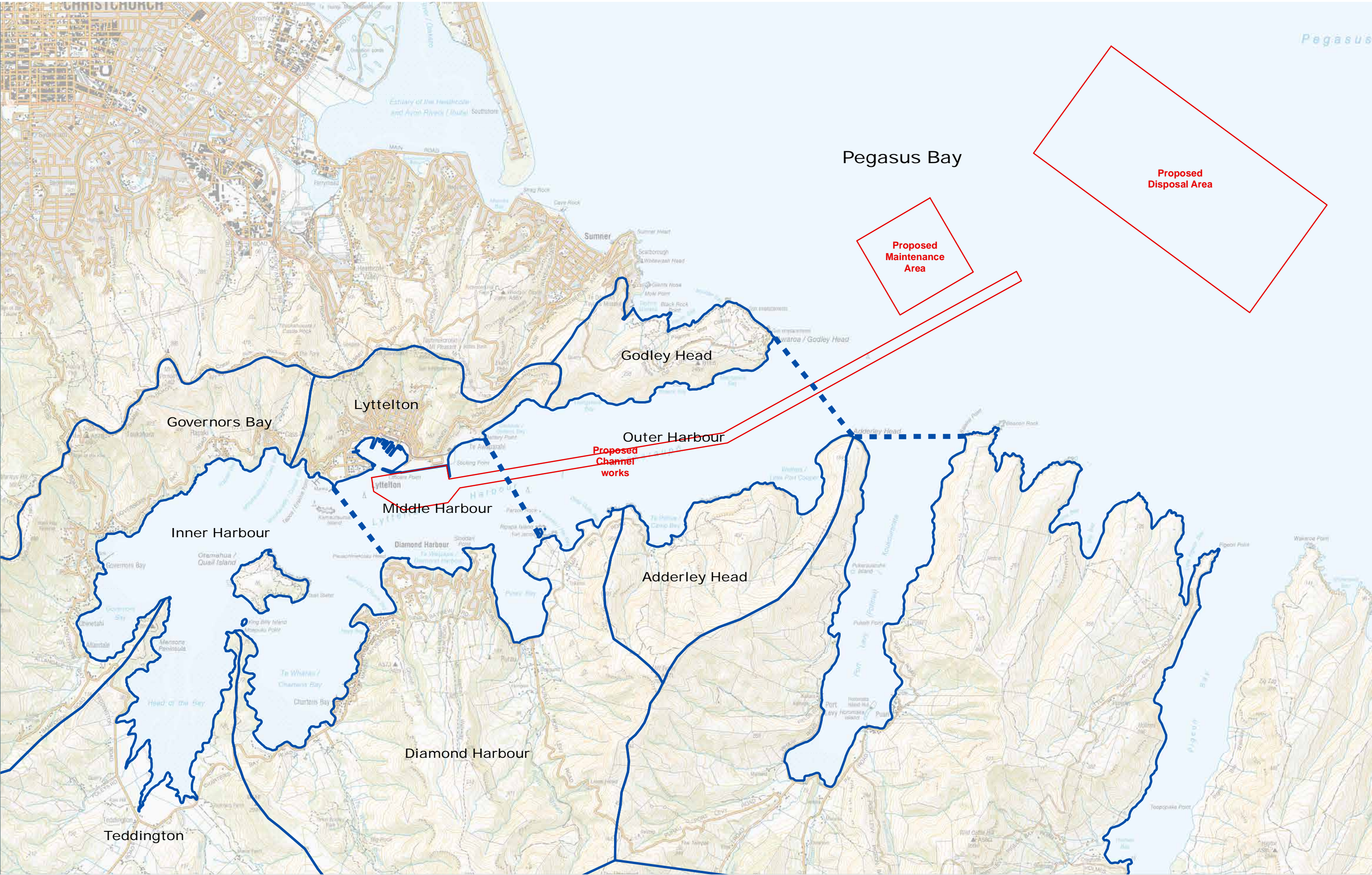
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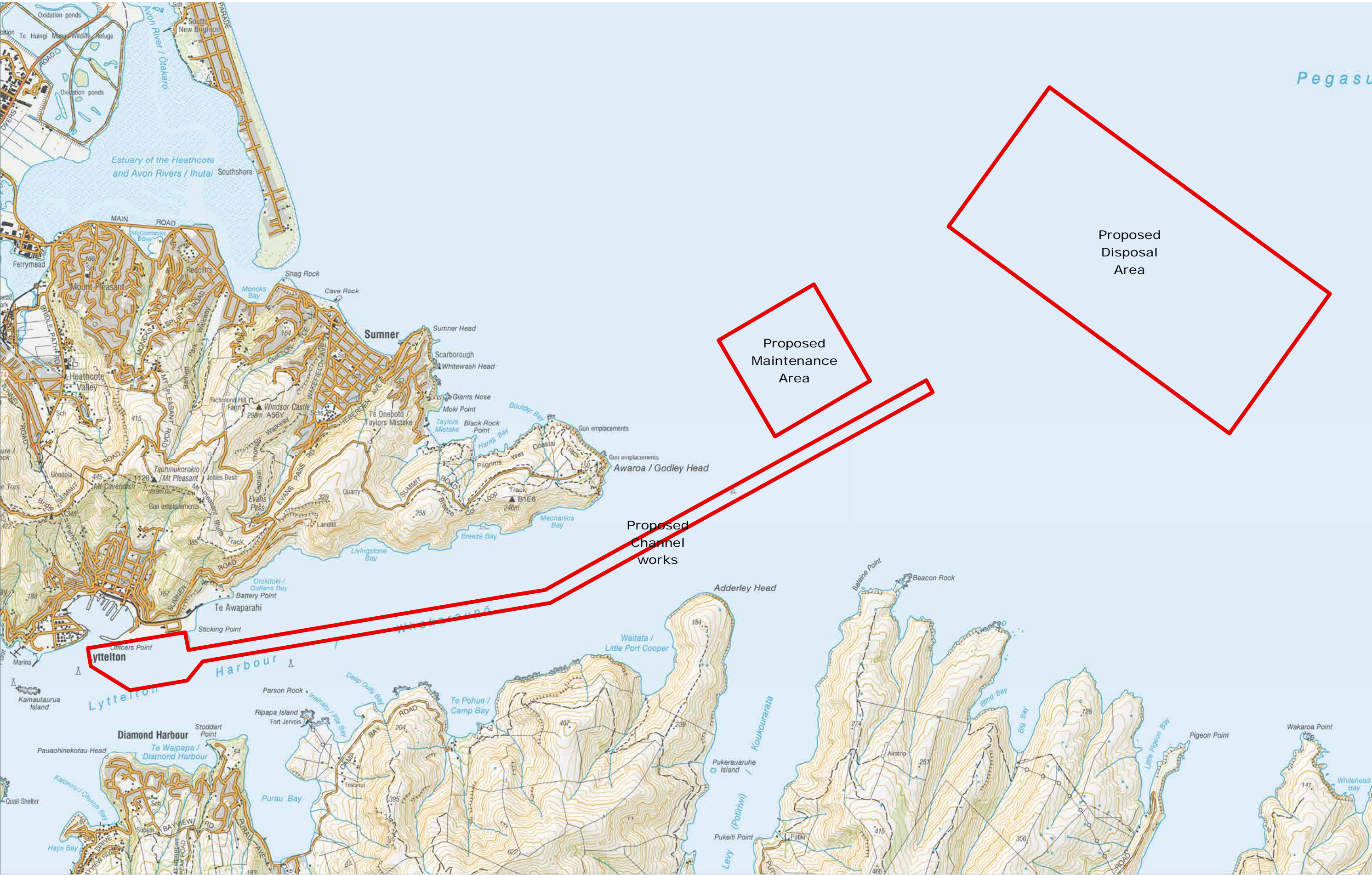
Figure 3: Landscape Areas

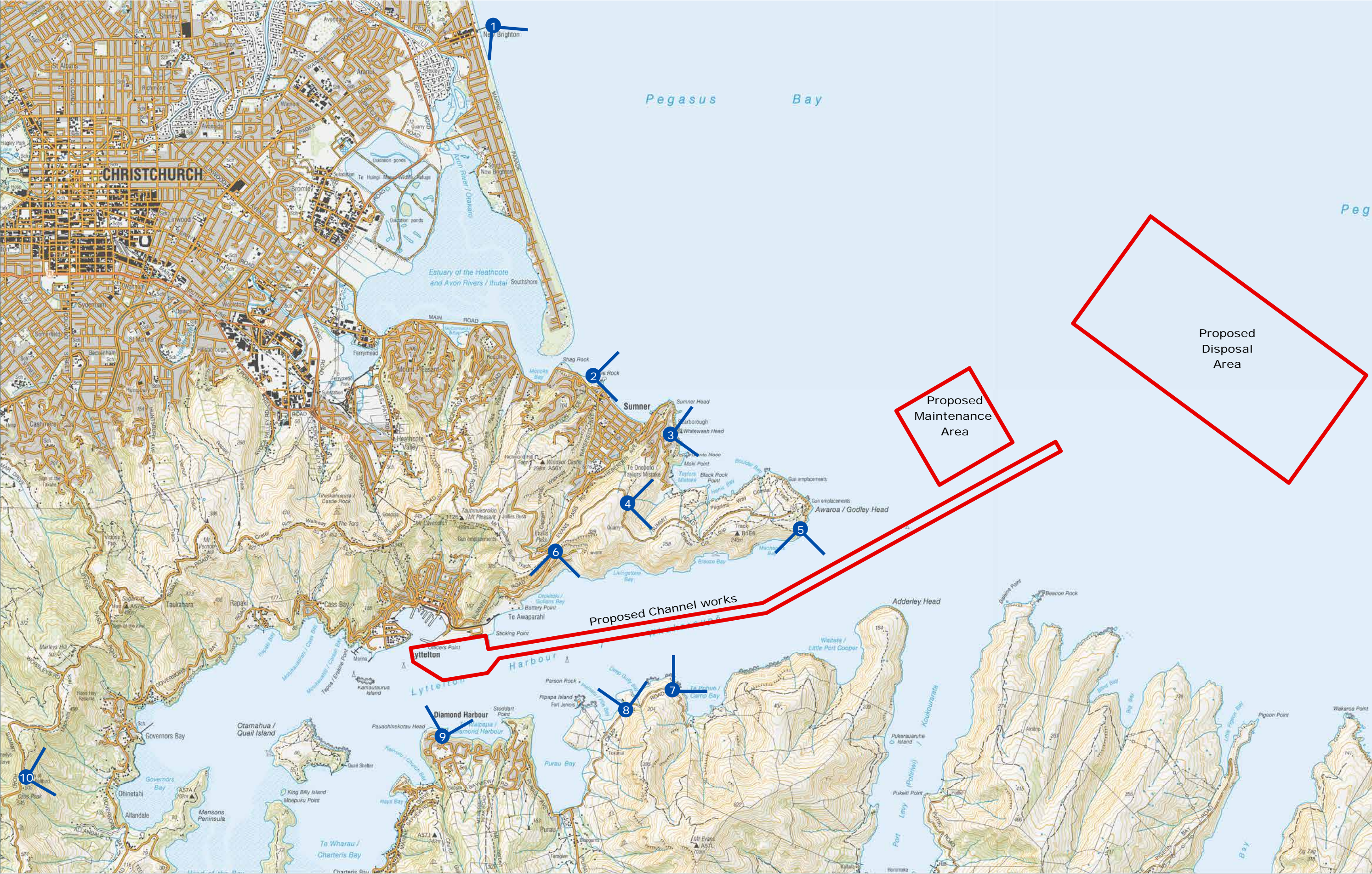
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Legend

-  Proposed Channel Works, Maintenance and Disposal Areas
-  Photographic viewpoint

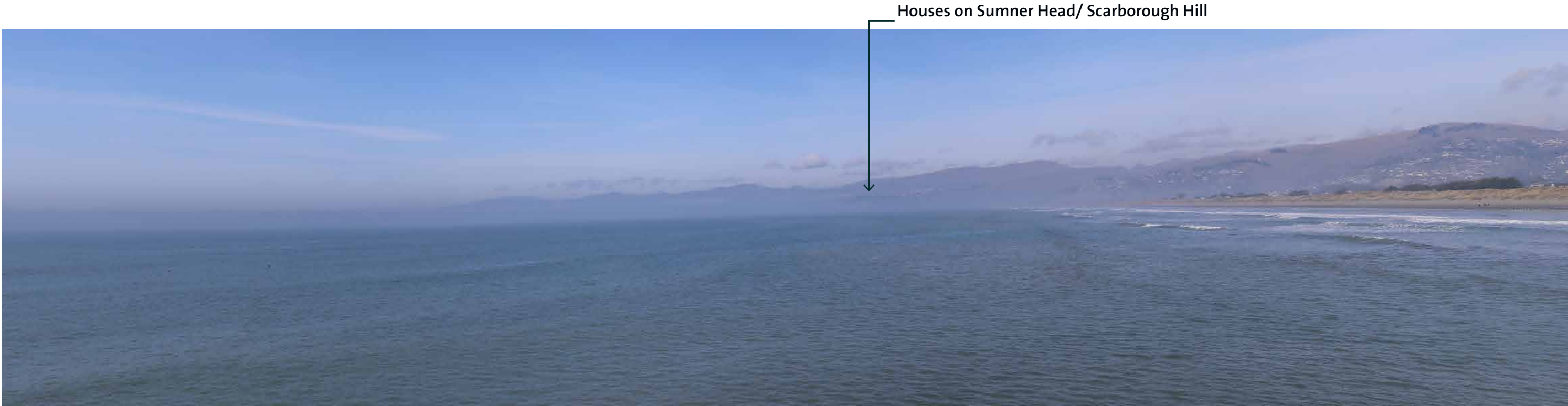
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Figure 6: Photograph Viewpoint Locations

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Photographic Viewpoint 1: View from the end of New Brighton Pier, looking north-eastwards towards Lyttelton Harbour and the Banks Peninsula | 18 August 2016 | 12:39 p.m. | Canon 6D



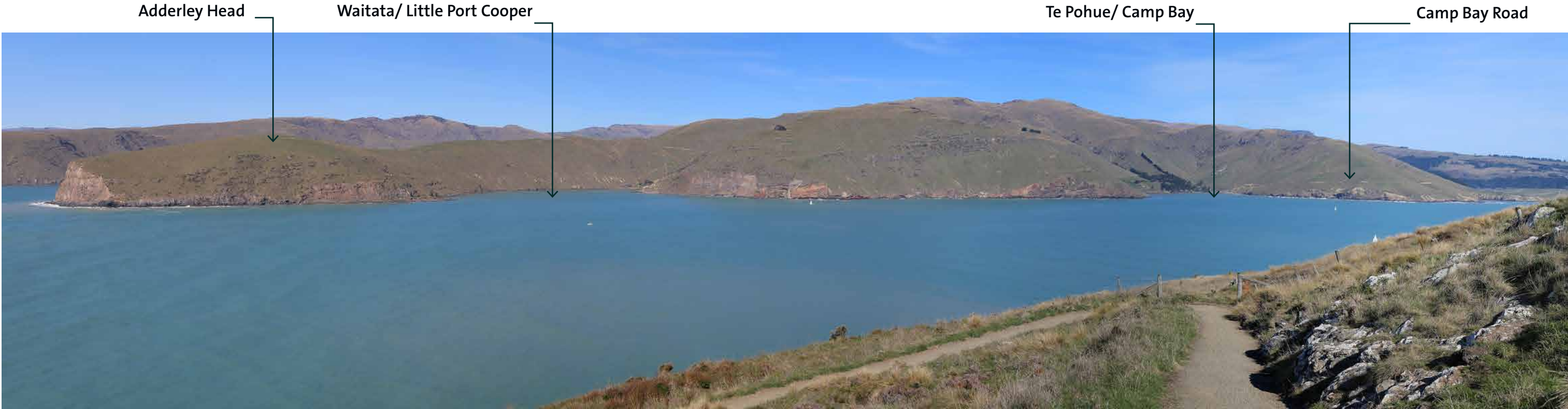
Photographic Viewpoint 2: Photograph taken from Sumner Beach, looking north-eastwards towards Pegasus Bay | 21 August 2016 | 11:13 a.m. | Canon 6D



Photographic Viewpoint 3: Photograph taken from the terminus of Smuggler’s Cove, a residential enclave on Scarborough Hill, looking towards Pegasus Bay | 21 August 2016 | 11:37 a.m. | Canon 6D



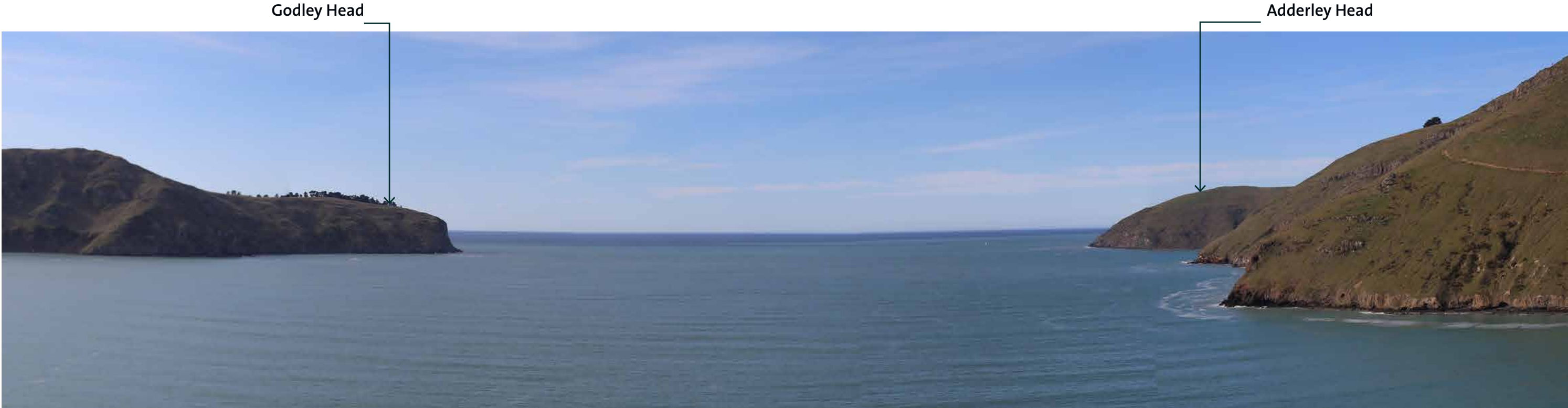
Photographic Viewpoint 4: Photograph taken from a location on Summit Road looking towards Taylors Mistake and Pegasus Bay | 21 August 2016 | 1:13 p.m. | Canon 6D



Photographic Viewpoint 5: Photograph taken from a footpath on Godley Head looking towards Adderley Head and Pegasus Bay | 21 August 2016 | 12:32 p.m. | Canon 6D



Photographic Viewpoint 6: Photograph taken from the lookout at Evans Pass towards Purau and Diamond Harbour, looking south | 21 August 2016 | 11:58 a.m. | Canon 6D



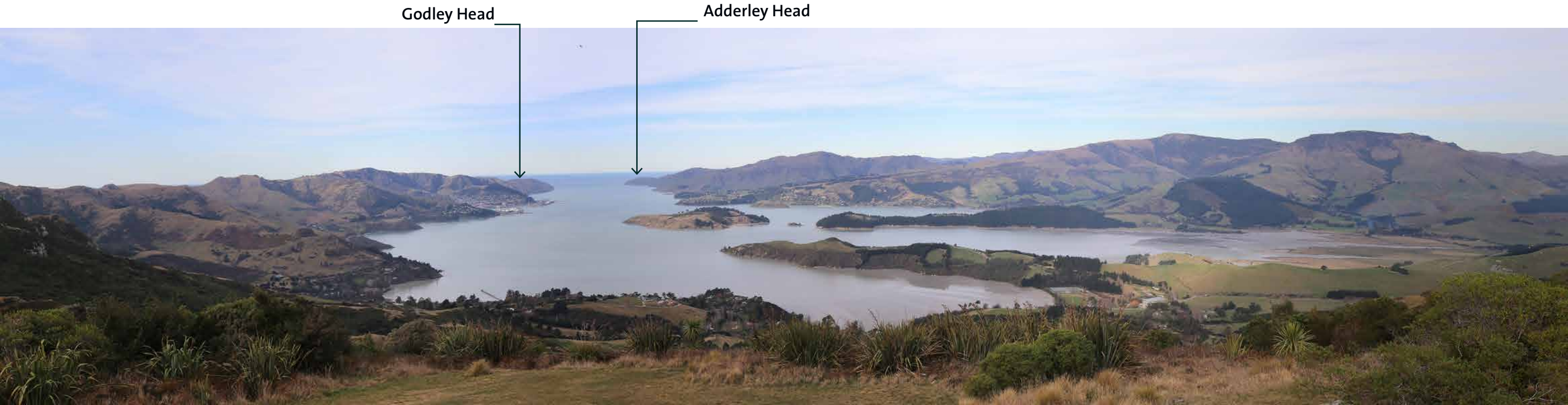
Photographic Viewpoint 7: Photograph taken close to the terminus of Camp Bay Road, overlooking Te Pohue/ Camp Bay and looking towards Lyttelton Harbour entrance | 21 August 2016 | 2:33 p.m. | Canon 6D



Photographic Viewpoint 8: Photograph taken from a location on Camp Bay Road looking northwards towards Lyttelton Port | 21 August 2016 | 2:39 p.m. | Canon 6D



Photographic Viewpoint 9: Photograph taken from a location on Koromiko Crescent, Diamond Harbour looking north towards Lyttelton Port and Godley Head | 21 August 2016 | 3:01 p.m. | Canon 6D



Photographic Viewpoint 10: Photograph taken from the Crater Rim Walkway, close to the Sign of the Bellbird, looking eastwards over Lyttelton Harbour | 21 August 2016 | 3:33 p.m. | Canon 6D