Space and place in the assessment of policies and plans adapting to natural hazards

Formative

Overview

- Importance of space and place in assessing policies and plans
- Explore some common spatial analysis techniques
- Planning case studies Christchurch coastal hazards and Queenstown debris flow and rockfall hazards

Formative

Why are space and place important?

- Spaces reflect the physical, social, and economic processes of human activity

- Space – metrics: elevation, latitude, longitude and topography
  : also political boundaries

- Places - locations where agency, social practices, mobility and social risks happen

"everyone assumes that being in one place rather than another makes a difference, as does being near rather than far."

Formative

What about place in SIA?

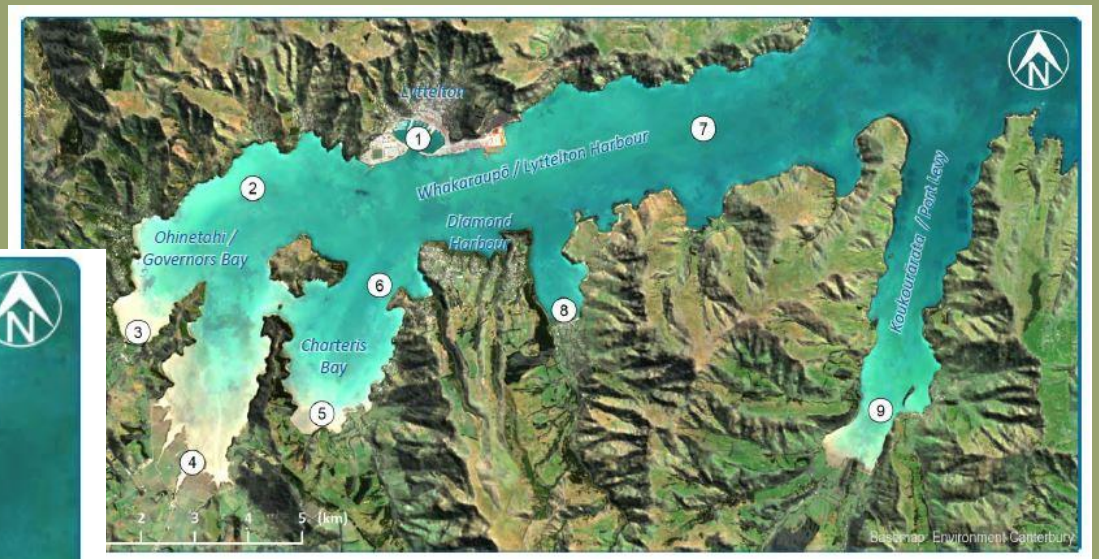
- Social experiences occur in places
- Places can be both constraining and enabling
- Societal groups experience place very differently
- Policies and planning can change the way places function and how they are experienced
- For SIAs, it is important to understand:
  - The types of people living in an affected community
  - How they move around to places of work and other social activities

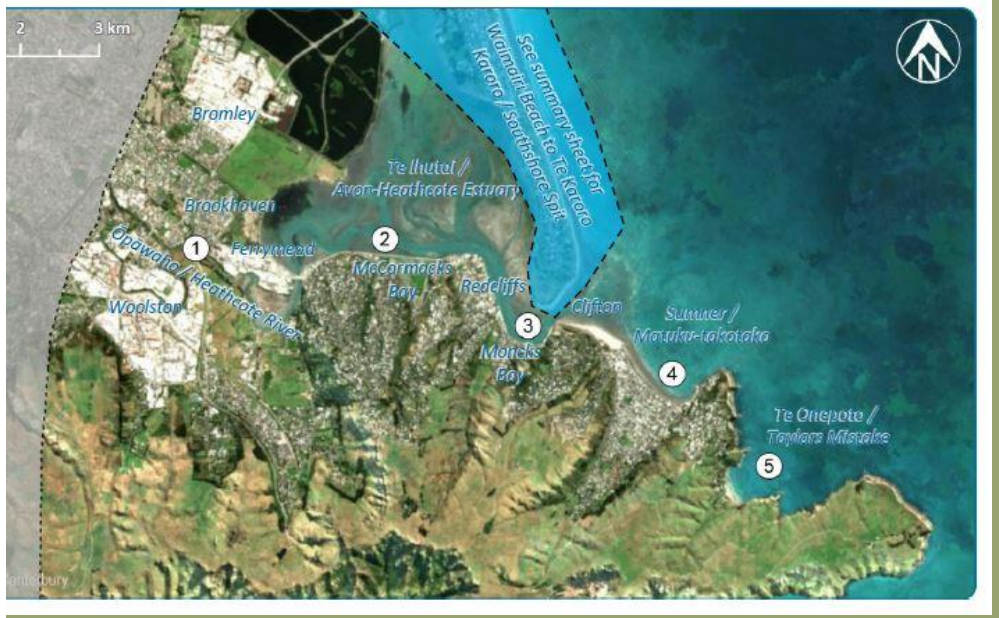
Formative

Spatial analysis techniques

- Need a good understanding of where policies and changes (and hazard events) are likely to occur spatially

- For Christchurch, Tonkin and Taylor and Jacobs had previously defined spatial areas for assessing coastal hazards





Formative

Christchurch City Council | Christchurch coastal hazards online portal

Overview | Coastal Flooding | Coastal Erosion | Groundwater

how the environment responds.

To start viewing the map, select a location from the options below.

Christchurch Coast

Show map of areas

STEP 1

Year

Sea Level Rise Scenario

STEP 2

Amount of Sea Level Rise

2150+
2130
2080
2050
2020

High (upper estimate) ▶
High (median estimate) ▶
Moderate ▶
Low ▶

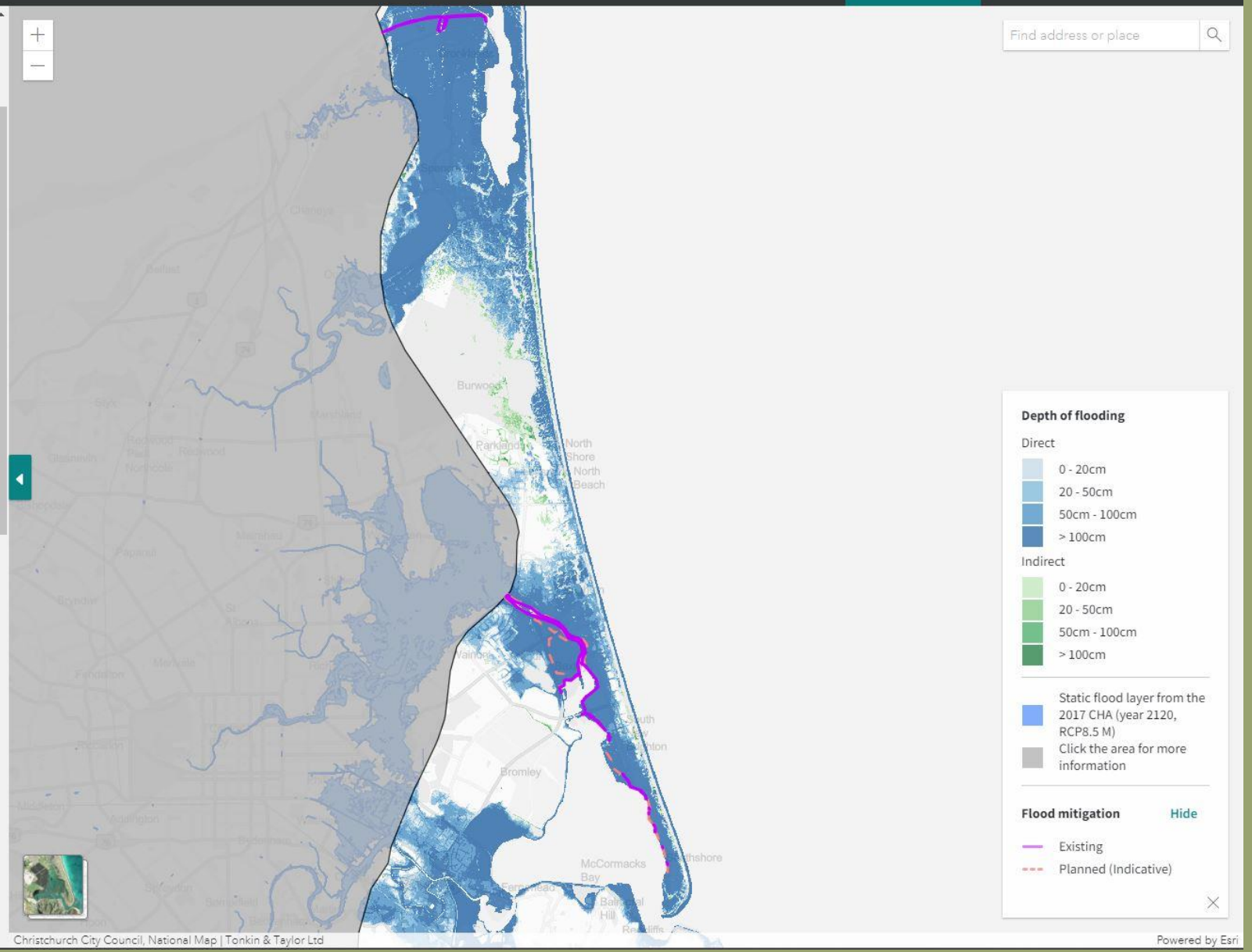
2.0m
1.5m
1.2m
1m
80cm
60cm
40cm
20cm
0cm

Use the sliders to choose the timeframe and sea level rise, which will change the hazards shown on the map.

- Step 1: Use the 'Year' slider to select how far into the future you want to go. This will adjust the arrows to show the range of sea level rise scenarios in that year.
- Step 2: Use the 'Amount of Sea Level Rise' slider to see how the hazards shown on the map change depending on how much sea level rise occurs.

The map to the right shows the depth of flooding modelled for a rare event ('100-year').

The depth of flooding at a particular location is influenced by the four key factors described below.



Formative

Christchurch City Council **Christchurch coastal hazards online portal**

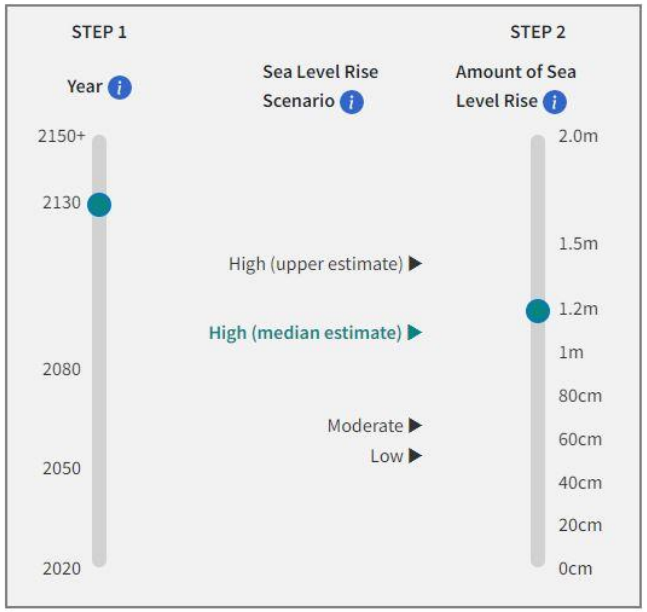
Overview | Coastal Flooding | Coastal Erosion | Groundwater

how the environment responds.

To start viewing the map, select a location from the options below.

Banks Peninsula

Show map of areas

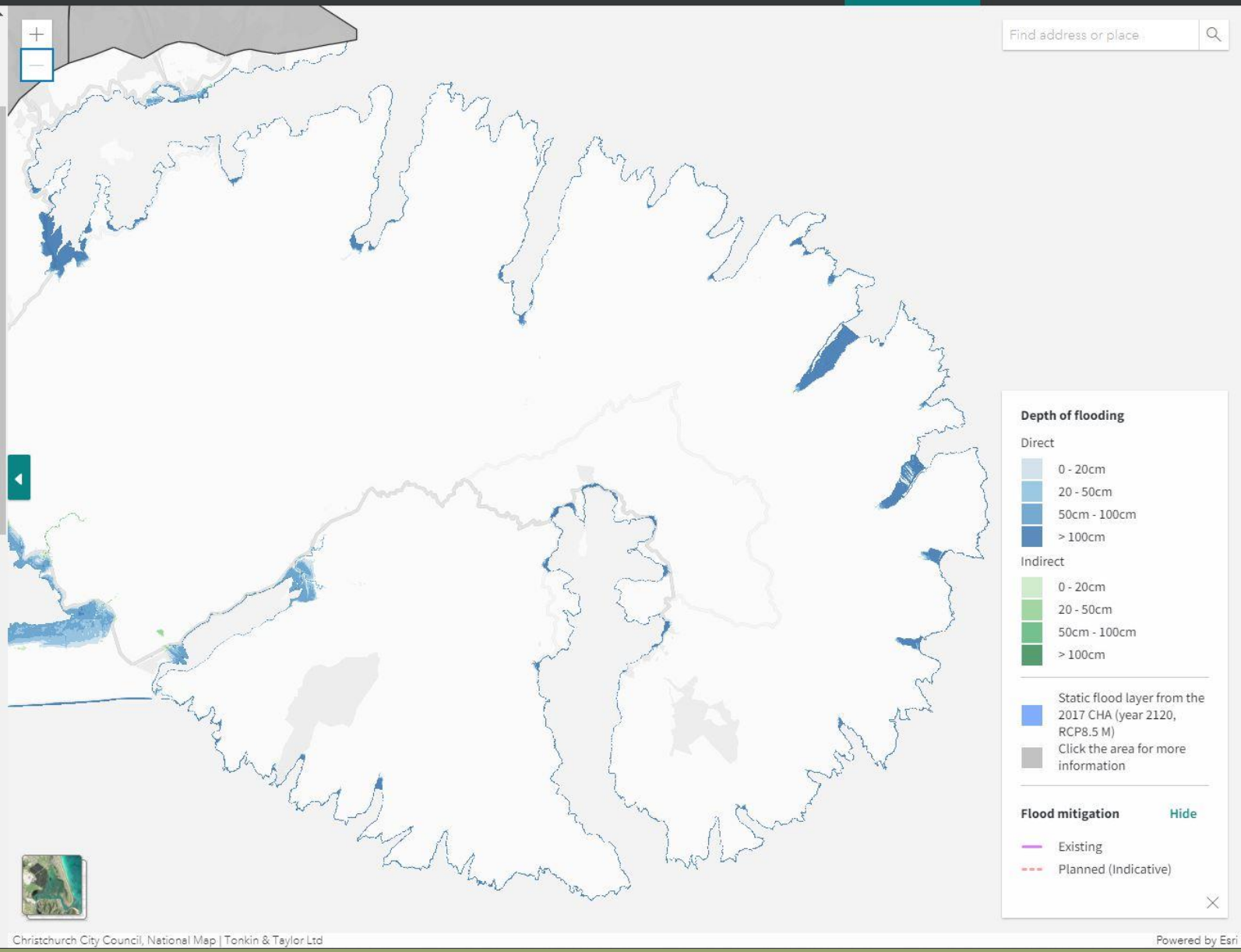


Use the sliders to choose the timeframe and sea level rise, which will change the hazards shown on the map.

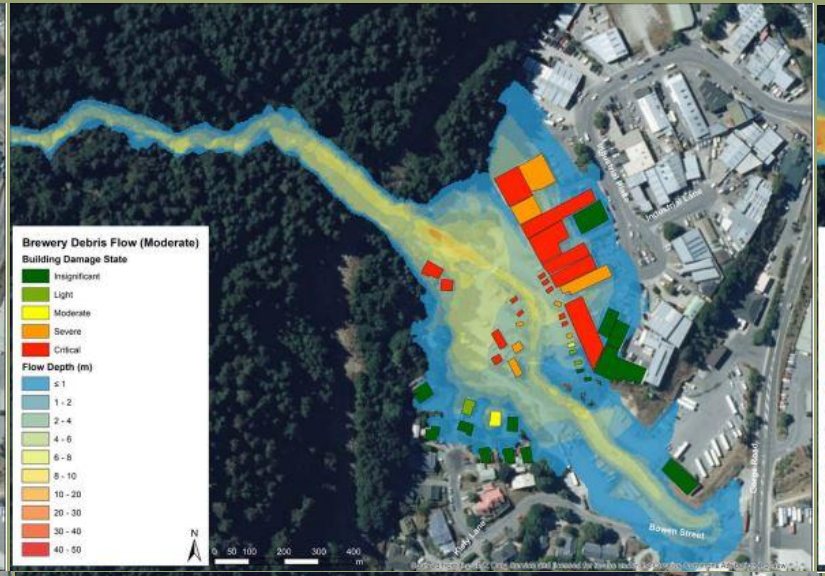
- Step 1: Use the 'Year' slider to select how far into the future you want to go. This will adjust the arrows to show the range of sea level rise scenarios in that year.
- Step 2: Use the 'Amount of Sea Level Rise' slider to see how the hazards shown on the map change depending on how much sea level rise occurs.

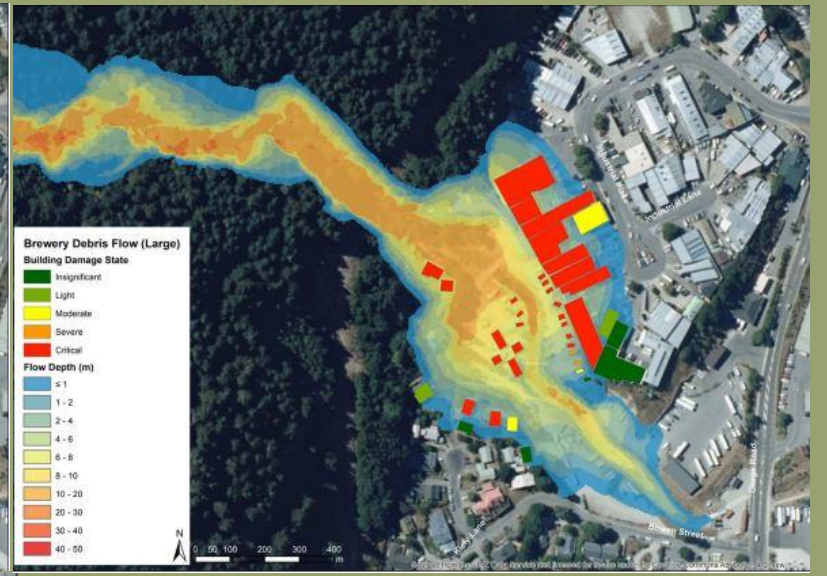
The map to the right shows the depth of flooding modelled for a rare event ('100-year').

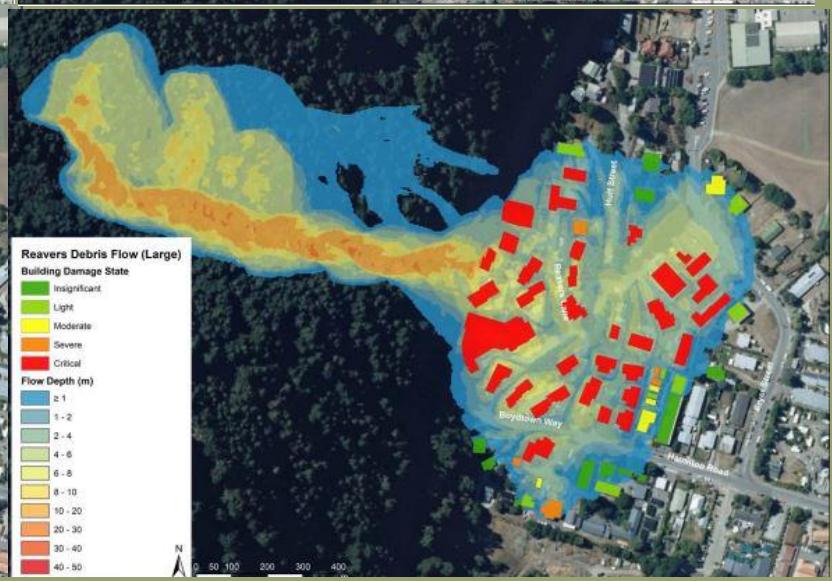
The depth of flooding at a particular location is influenced by the four key factors described below.



Formative







- For Queenstown GNS Science, Riskscape and Beca had done engineering and risk assessments to map scenarios

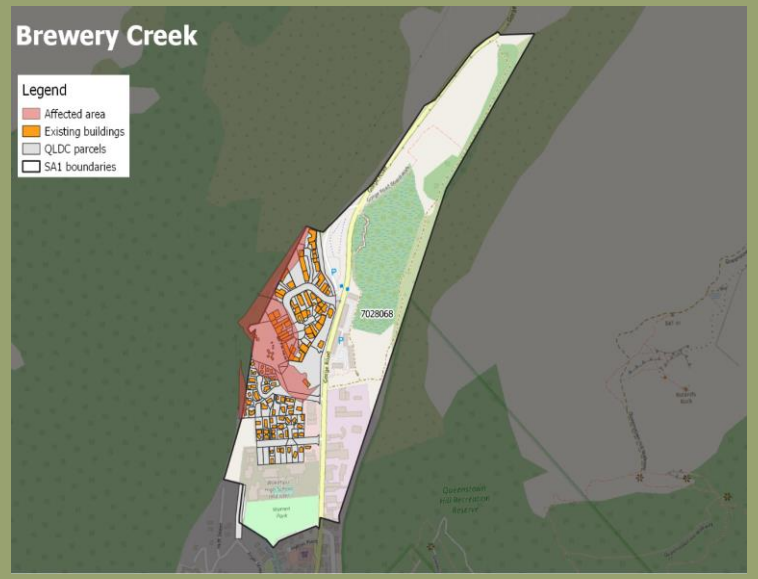
Formative

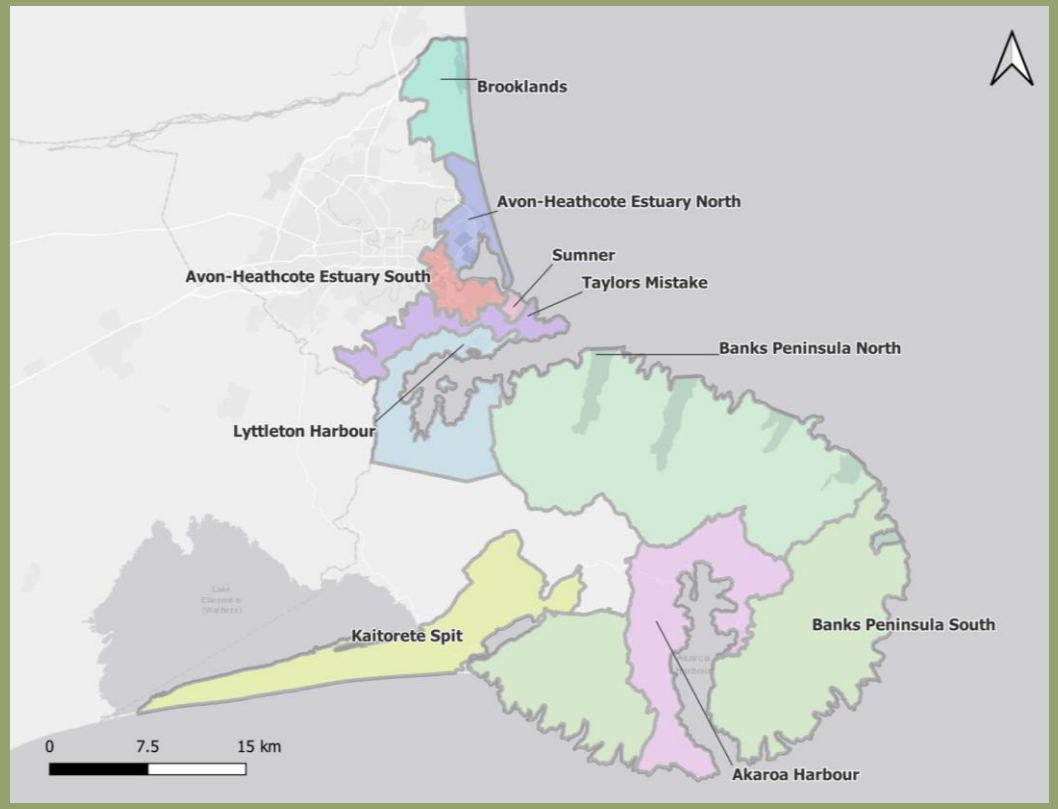
Spatial analysis techniques contd…

- Data analysis is constrained by defined spatial areas (typically Stats NZ – regions, TA, SA1s and SA2s)
- Communities can be defined based on a mix of social, topographic features and by identifying which communities are impacted by policies
- Information can include:
  - Census data
  - Population and household projections
  - Capacity for growth data – households and employment
  - Business and employment size and type
  - Social deprivation

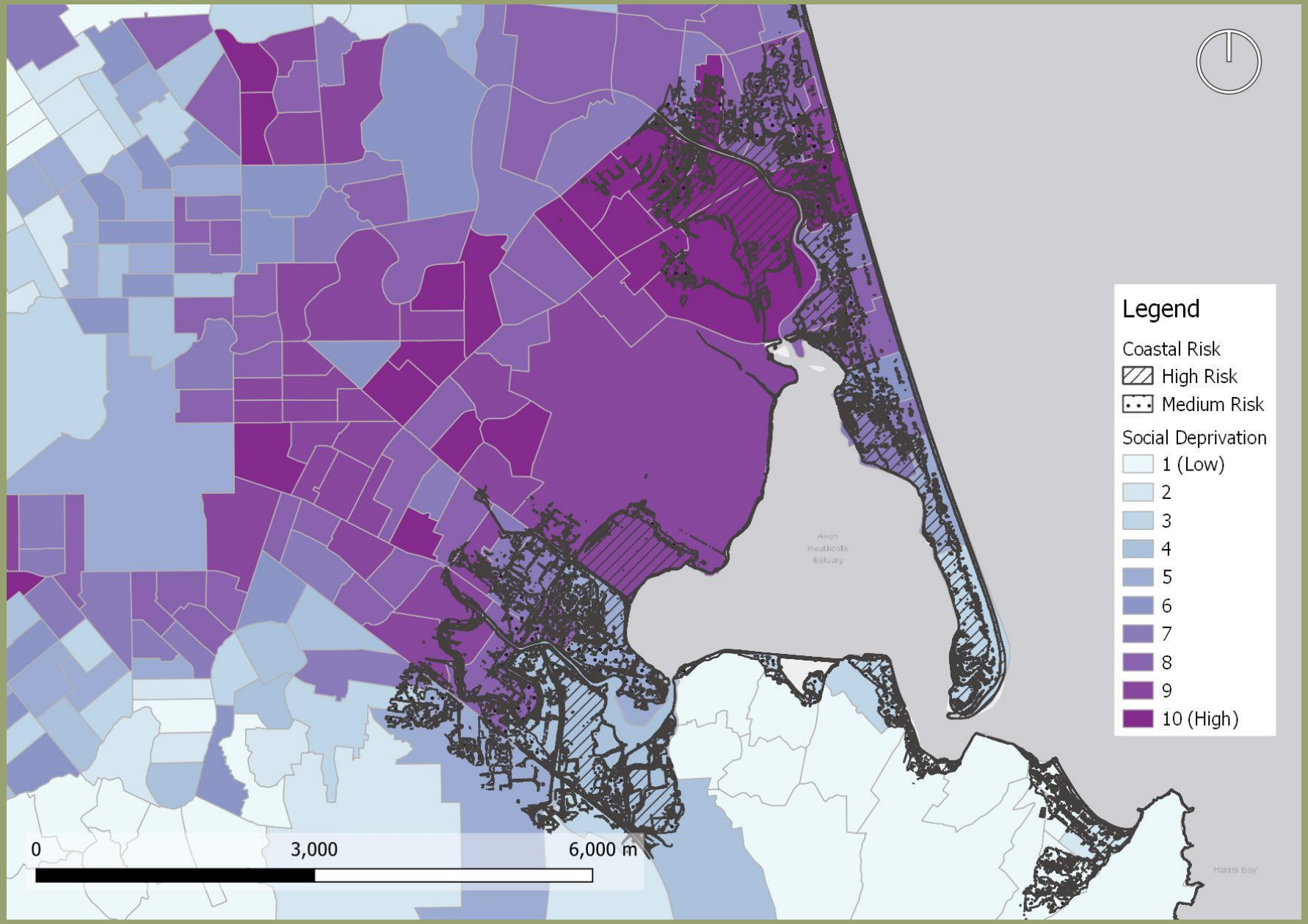
Formative

Defining affected communities

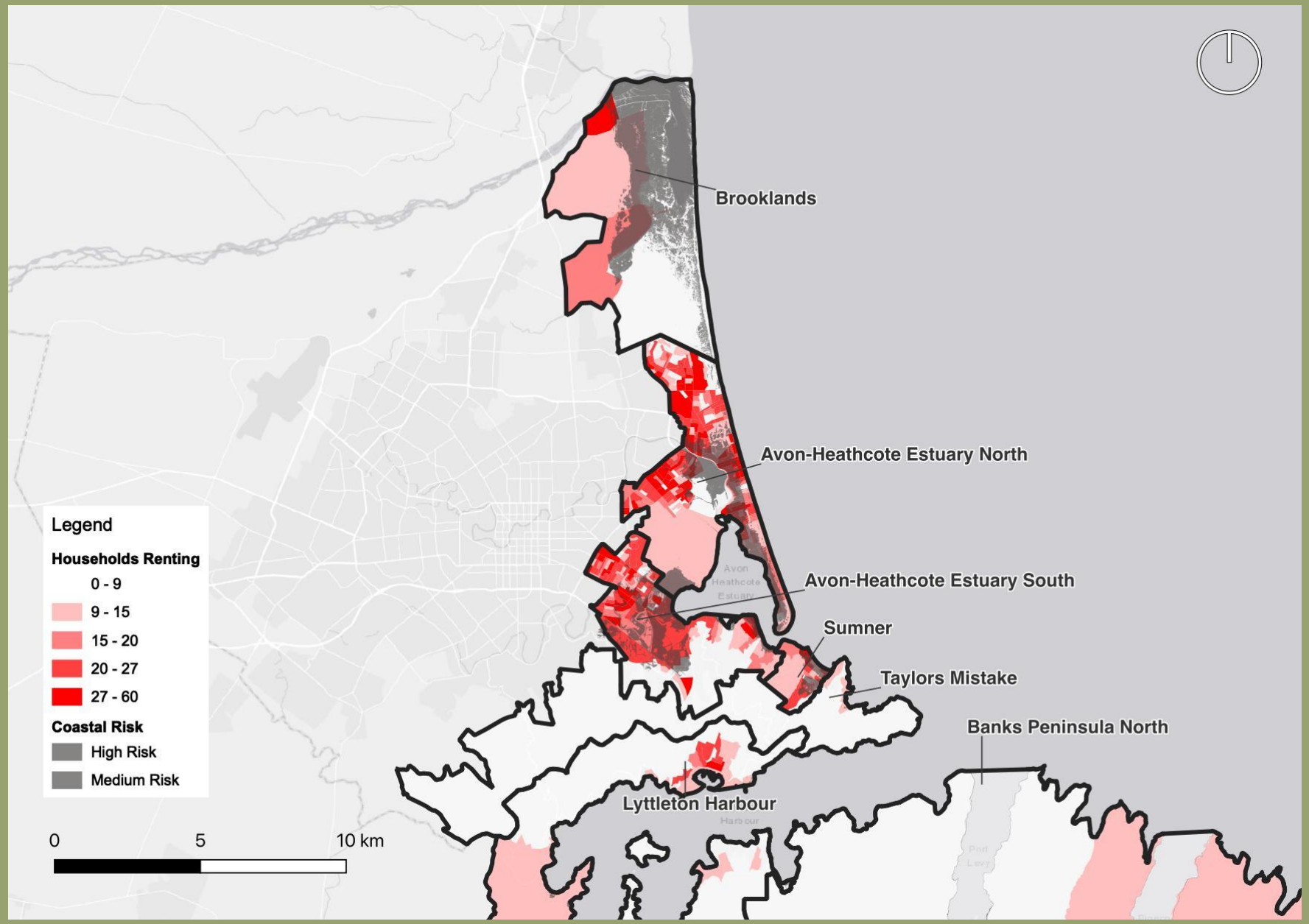




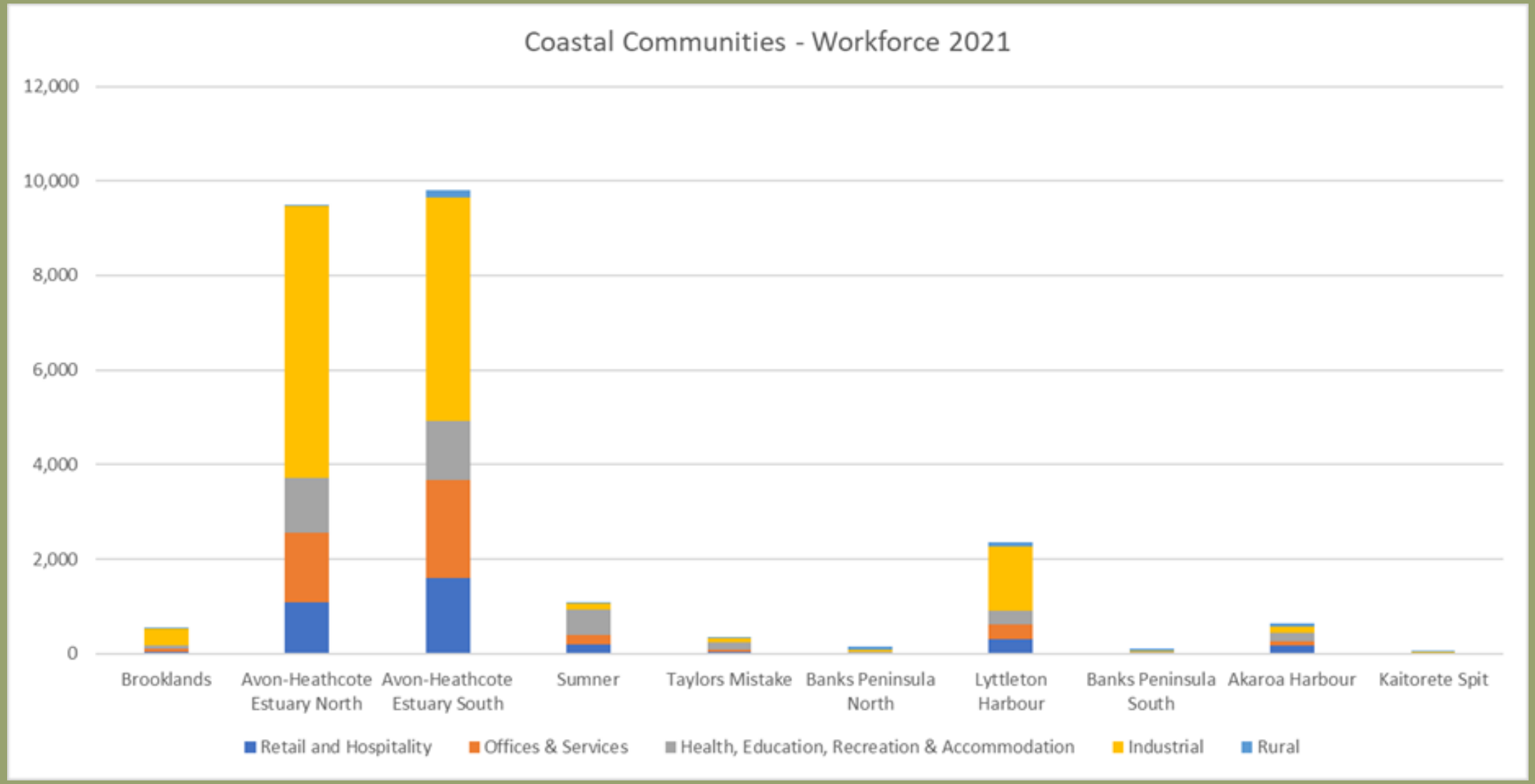
Formative


Legend
Coastal Risk
High Risk
Medium Risk
Social Deprivation
1 (Low)
2
3
4
5
6
7
8
9
10 (High)
0
3,000
6,000 m
Avon
Heathcote
Estuary
Harris Bay

Formative


Brooklands
Avon-Heathcote Estuary North
Avon-Heathcote Estuary South
Sumner
Taylors Mistake
Banks Peninsula North
Lyttleton Harbour
Legend
Households Renting
0 - 9
9 - 15
15 - 20
20 - 27
27 - 60
Coastal Risk
High Risk
Medium Risk
0
5
10 km

Formative


Coastal Communities - Workforce 2021
12,000
10,000
8,000
6,000
4,000
2,000
0
Brooklands
Avon-Heathcote Estuary North
Avon-Heathcote Estuary South
Sumner
Taylors Mistake
Banks Peninsula North
Lyttleton Harbour
Banks Peninsula South
Akaroa Harbour
Kaitorete Spit
Retail and Hospitality
Offices & Services
Health, Education, Recreation & Accommodation
Industrial
Rural

Formative

Demographic Variable		Brewery Creek	Reavers Lane	Queenstown
Age	Children	14%	6%	17%
	Working Aged	85%	92%	73%
	>65 years	1%	2%	11%
Ethnicity	NZ European	47%	62%	78%
	Asian	25%	20%	9%
	MELAA	20%	14%	4%
	Maori	4%	2%	5%
	Other	3%	2%	3%
Home Ownership Rates		20%	21%	39%
Personal Income	$0-$30,000	38%	41%	34%
	$30,001-$50,000	39%	41%	29%
	$50,001-$70,000	15%	10%	18%
	>$70,001	7%	9%	20%
Sources of Income	Paid Employment	70%	77%	50%
	Self Employment	11%	7%	18%
	Private Investments	4%	4%	15%
	Benefits and Allowances	12%	11%	15%
	No Source	3%	1%	2%
Employment Status	Employed Full time	84%	84%	66%
	Employed Part time	6%	7%	14%
	Unemployed or Not in Workforce	10%	9%	19%
Educational Quals.	Secondary School	39%	34%	49%
	University Undergraduate	19%	23%	19%
	Univesity Postgraduate	12%	9%	13%
	Overseas	19%	26%	10%
	None	11%	9%	9%

- Tabular data sits behind each of the maps
- Enables comparison between the average patterns for an affected community with the city, region or NZ average.

Formative

Summary

- Place and space is important for SIA because places are shaped by the people who live and interact in them
- The types of people and human facilities that make up places create unique and interesting places
- Policy and planning can have a range of positive and negative impacts on affected communities
- Spatial analysis is a good way to understand who and what is impacted

Formative

Get in touch

formative.co.nz

rebecca@formative.co.nz
tom@formative.co.nz

Formative