Dune restoration for protection against coastal hazards

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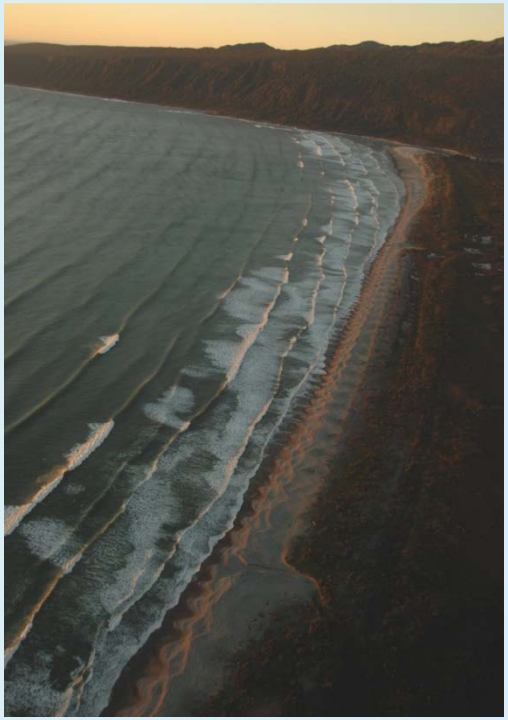
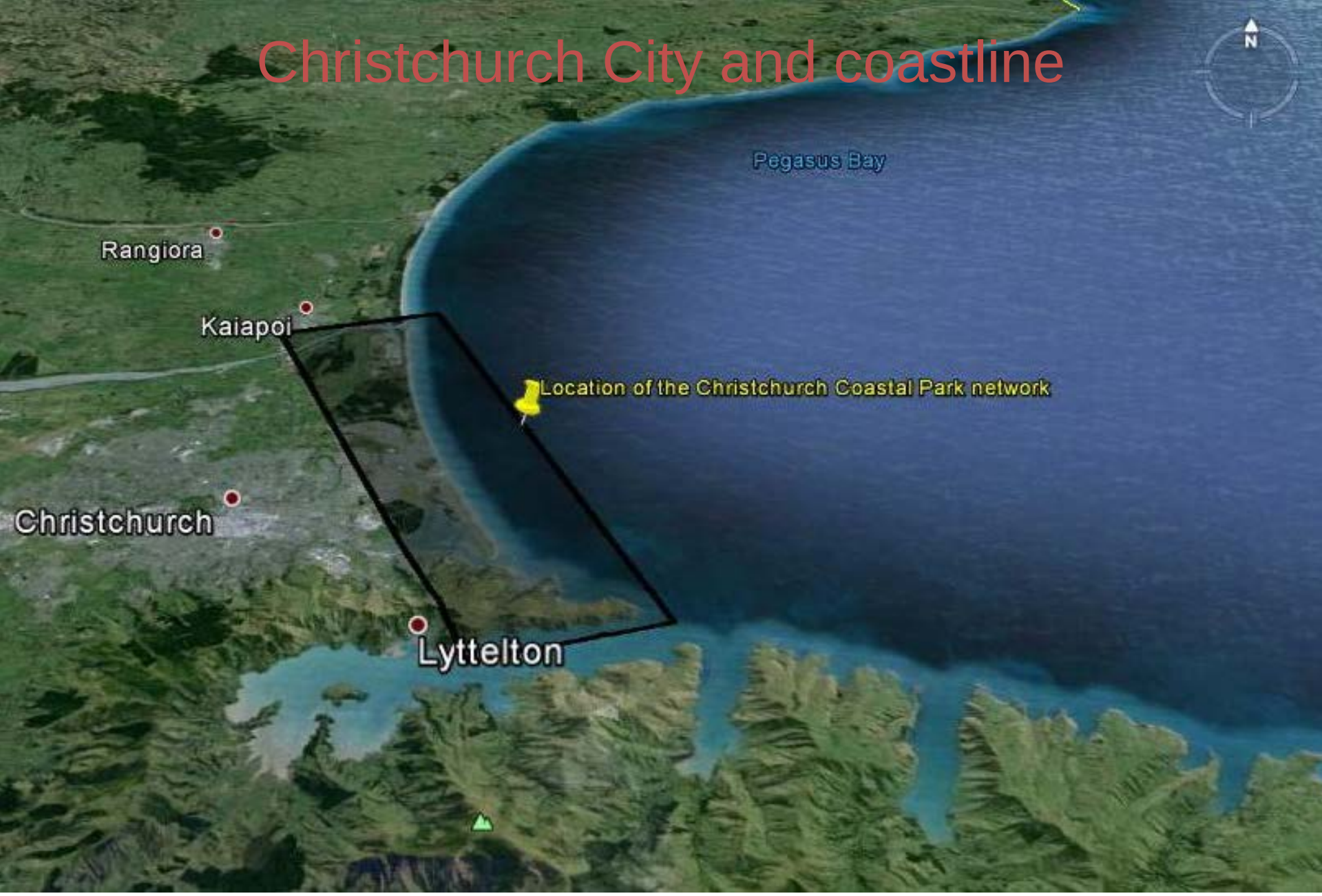
NZ's National Parks

Lowland and coastal environments under-represented



Active dune systems

Christchurch City and coastline

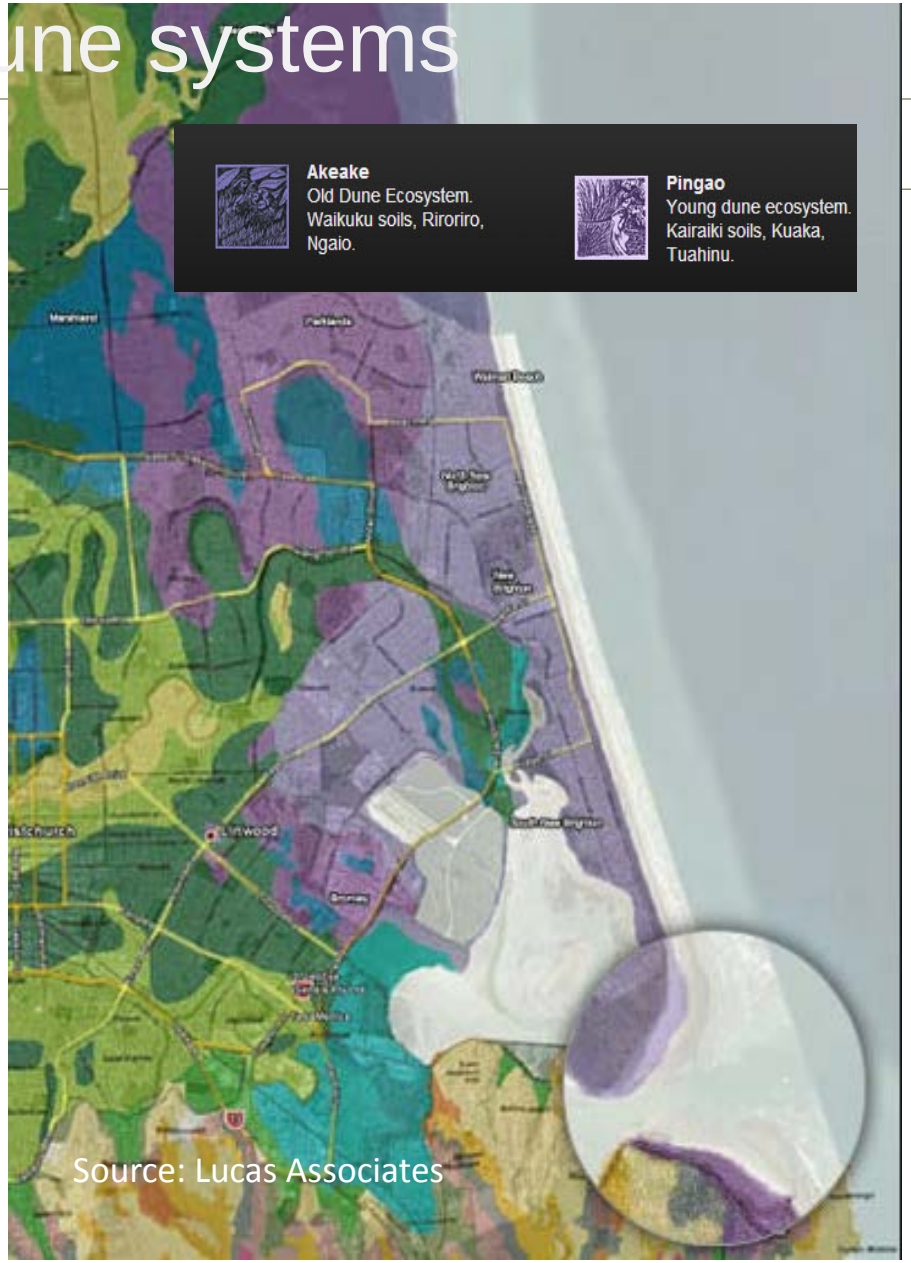


Christchurch Coastal Park Network

Indigenous dune systems

Spinifex
(Spinifex sericeus)

Pīngao
(Ficinia spiralis)



Source: Lucas Associates

Remnants of a larger active dune system

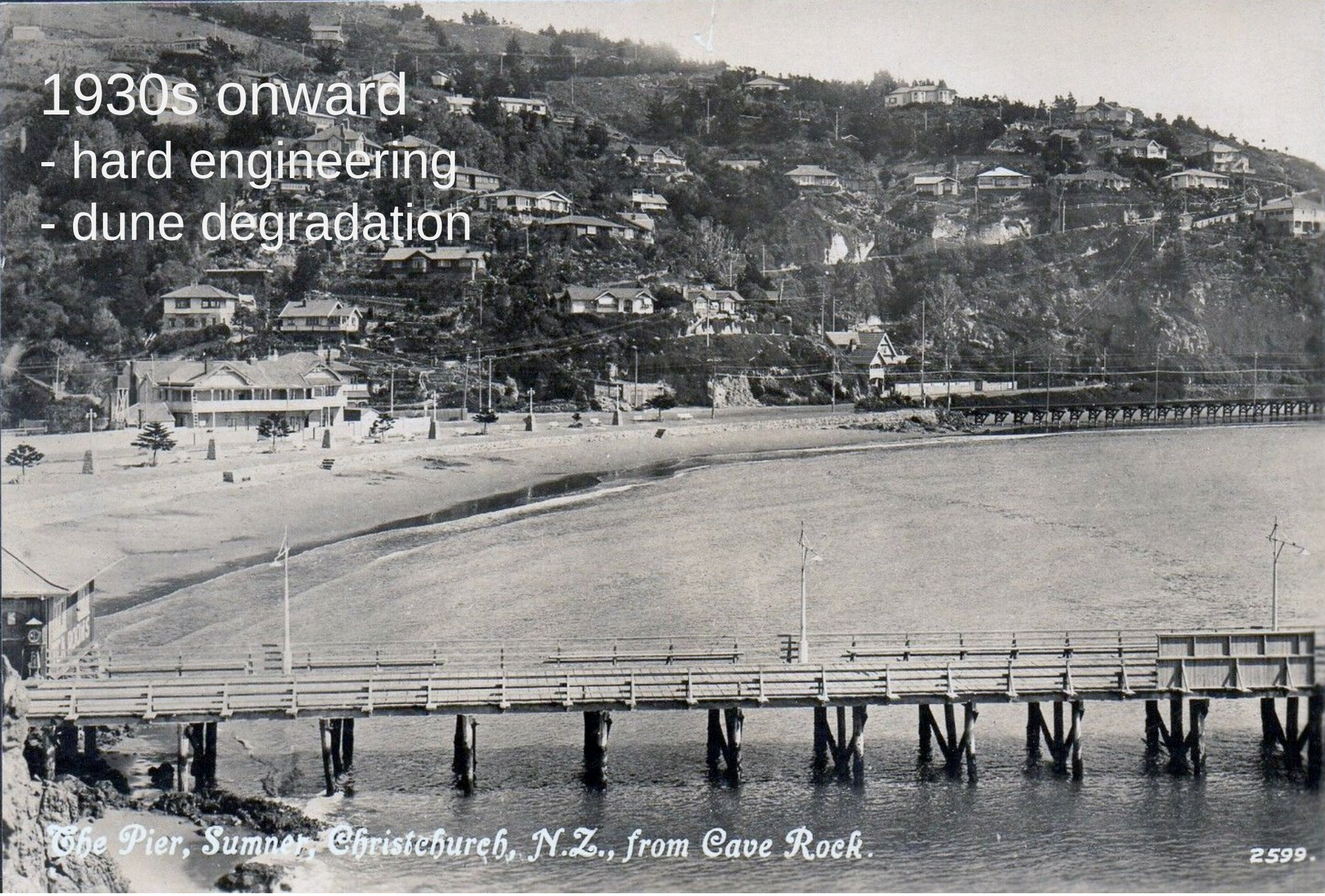
Sumner Beach 2014

LEGEND

- Fore dune zone
- Mid dune zone
- Back dune zone

Scale 1:2000 @ A4
Aerial Photo Source: Koordinates

Sumner Beach 1914

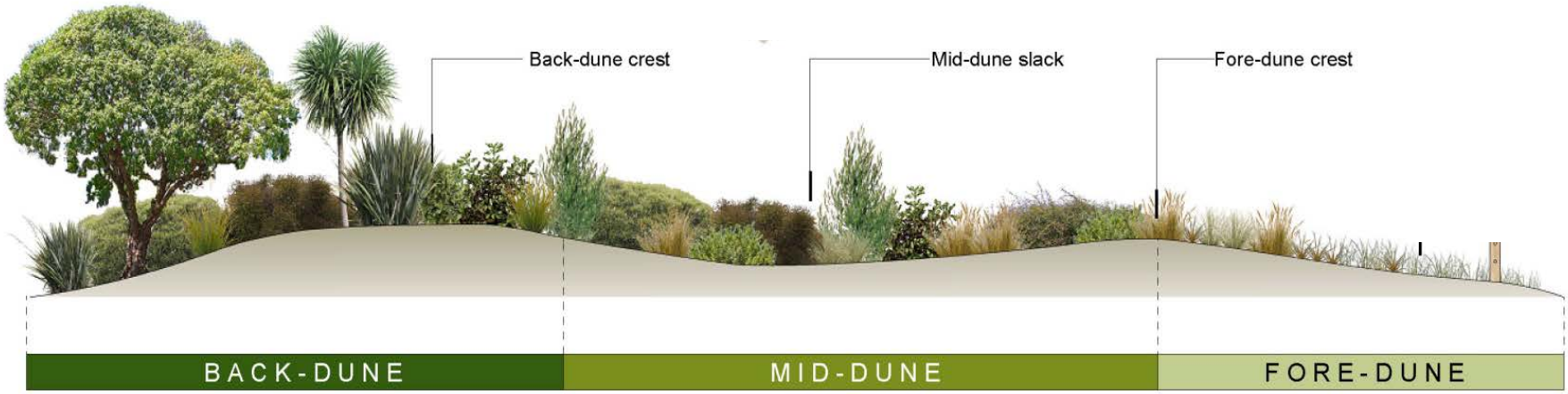

1930s onward
- hard engineering
- dune degradation
The Pier, Sumner, Christchurch, N.Z., from Cave Rock.
2599.

Key management goal

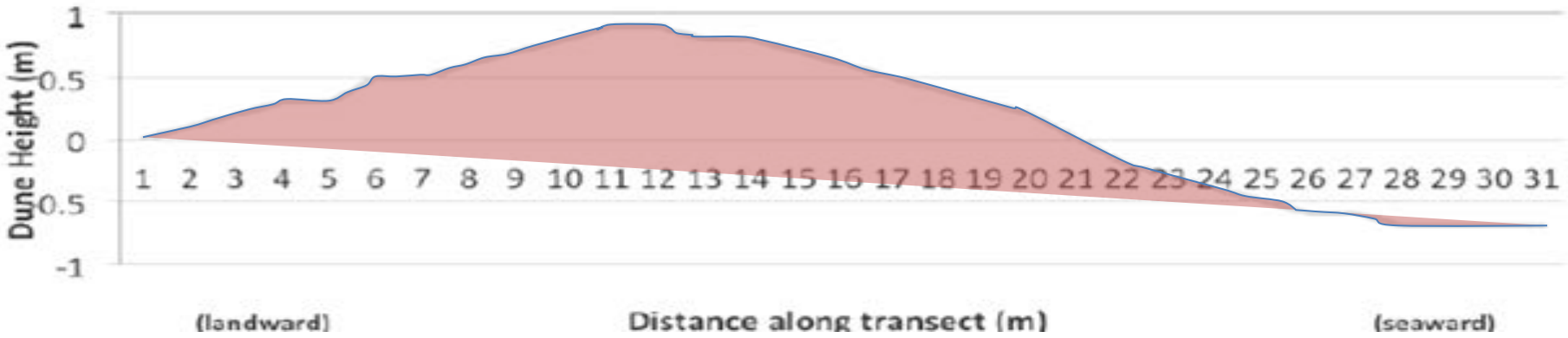
= recovery of Spinifex on fore-dunes

Sumner Beach site – dune protection and recovery

Results



Fore-dune transect December 2013 at a section of the beach in which dunes had disappeared. (Dune Height of zero = level of local foreshore road).



Concepts for Ecosystem-based climate change adaptation in the coastal zone

- Disaster Risk Reduction - a useful addition to ‘protection’ strategies due to focus on shorter duration high intensity events
- DRR as an Ecosystem Service
- Explicit recognition of planning horizons and adaptation needs. Failure to address = institutional inertia.
- Design of a whole ecosystem approach that is inclusive of the ecological system and the community.

Climate Change adaptation is a community problem.

Lessons from the field - coastal parks management

Management planning:

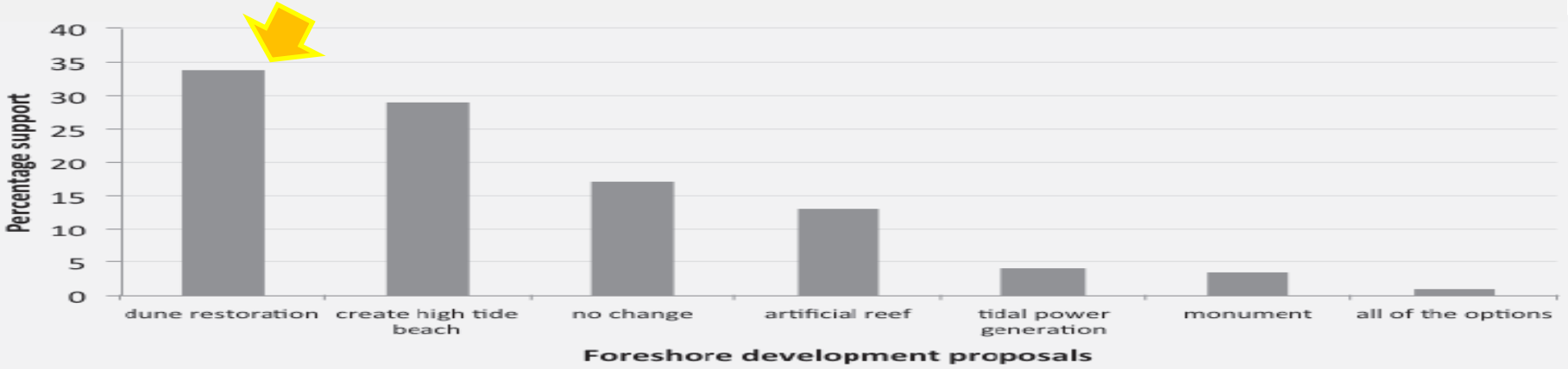
- Enable action at high level through overarching plan or strategy confirming objectives for protection and management
- Prepare individual management plans to detail specific restoration interventions, long term maintenance, and park infrastructure needed for particular areas
- Ensure sufficient resources to address ongoing threats to the park and its values prior to initiating management changes

Restorative management:

- Synergy by design: Conservation + DRR
- Community perspectives all-important
- Education and outreach activities support social learning

Community involvement

Popularity of development types for the Sumner foreshore (Adapted from Anderson et al., 2012).



Christchurch Coastal Resilience Case Study

Coastal Protected Areas and DRR

Potential roles for coastal protected areas in disaster risk reduction and climate change adaptation: a case study of dune management in Christchurch, New Zealand

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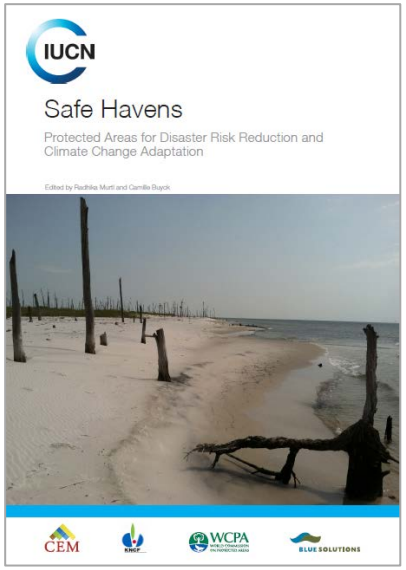
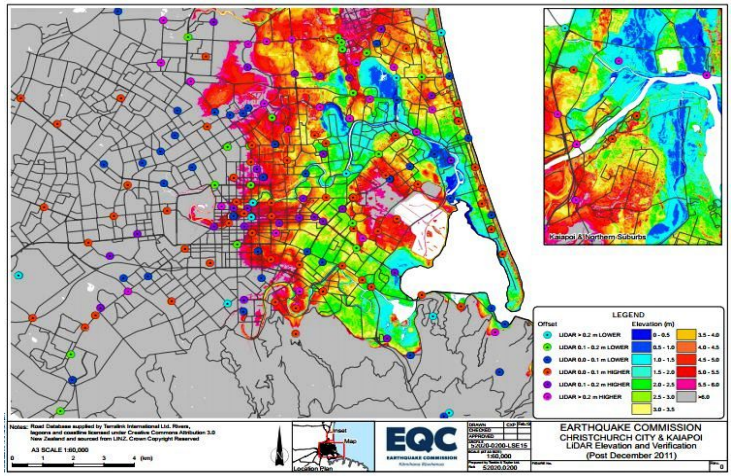


Resilience of coastal margins to sea level rise

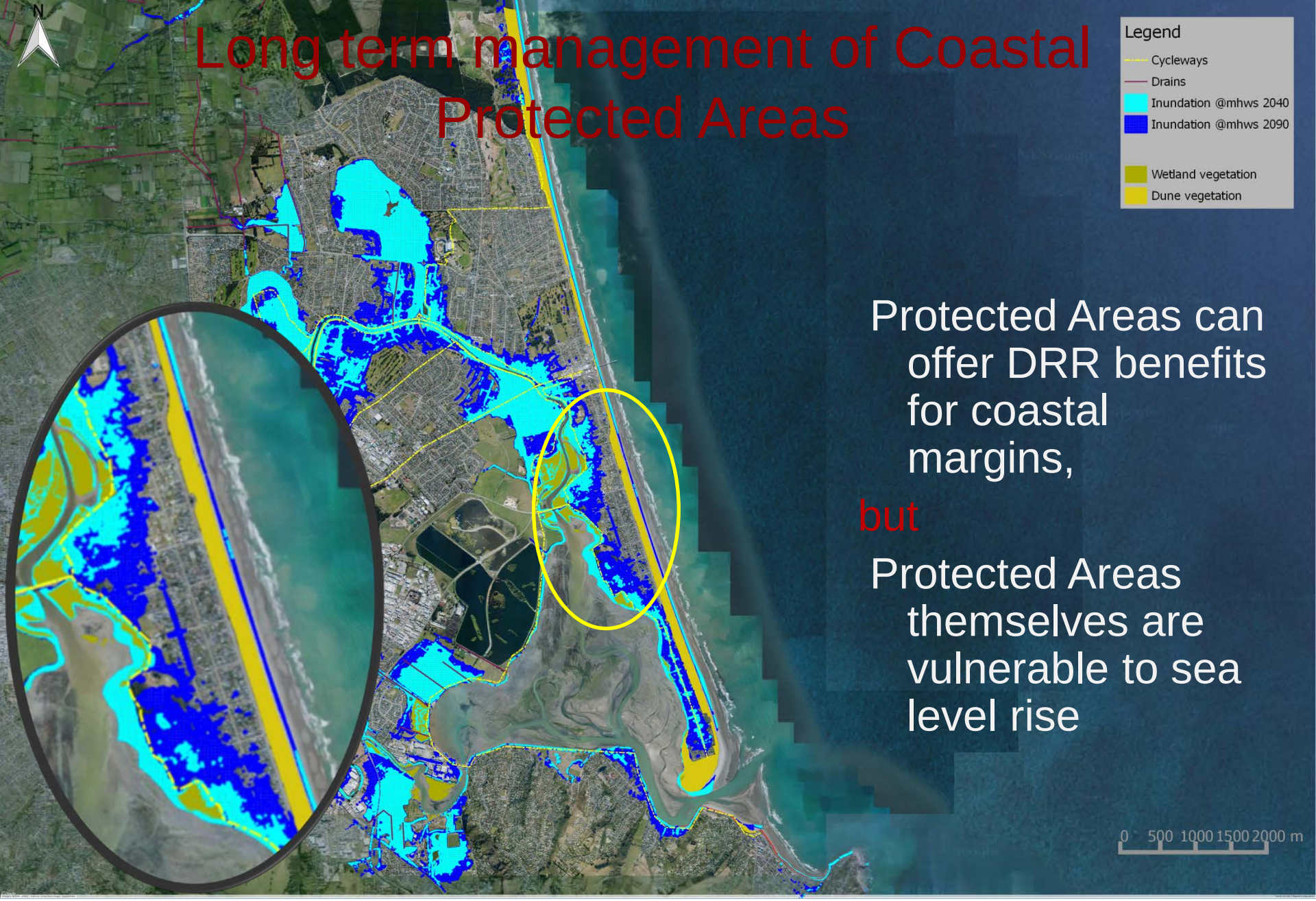


- earthquake recovery has created unprecedented opportunities and raised awareness

Sea level rise – the next frontier:

- understanding adaptation needs
- methods to maintain resilience in a shifting system
- effectiveness of policy and planning approaches

Long term management of Coastal Protected Areas



Protected Areas can offer DRR benefits for coastal margins,

but

Protected Areas themselves are vulnerable to sea level rise

Acknowledgements