



WAITAKI  
**WHITESTONE**  
ASPIRING GLOBAL  
**GEOPARK**  
AOTEAROA NEW ZEALAND

ASPIRING UNESCO GLOBAL GEOPARK  
APPLICATION 2019

**ANNEX 5**  
GEOLOGICAL & GEOGRAPHICAL SUMMARY



United Nations  
Educational, Scientific and  
Cultural Organization



UNESCO  
Global  
Geoparks

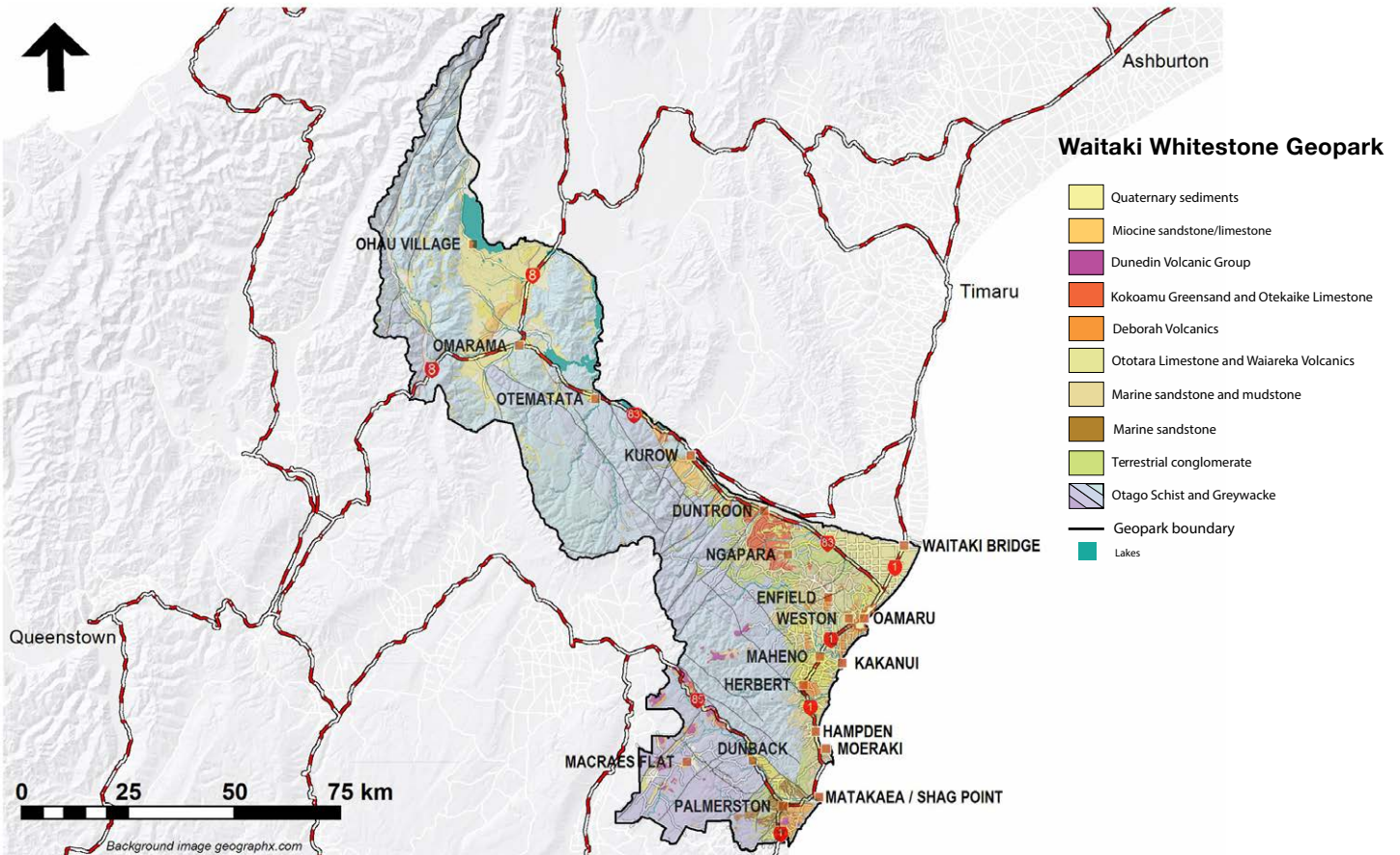
# Applicant UNESCO Global Geopark

## Waitaki Whitestone Geopark, New Zealand

### geographical and geological summary



● Aspiring UNESCO Global Geopark



## 1. Physical and human geography

Waitaki Whitestone Geopark is located on the central eastern side of Te Waipounamu (South Island), Aotearoa (New Zealand). With an area of 7,214 km<sup>2</sup>, the Geopark boundaries are aligned with the administrative boundaries of the Waitaki District, and form part of the northern Otago and southern Canterbury regions.

The Geopark is characterised by diverse landscapes ranging from steep alpine terrain with small modern glaciers in the Southern Alps in the far northwest, an array of ranges and basins, giving way to broad downlands and the braided channel of the Waitaki River in the east, and ending at the cliffed eastern sea coast. Within the downlands are the Geopark's most iconic landforms, including flat-topped mesas and karst topography developed on limestones, with scattered volcanic peaks.

The population of the Geopark is 22,300. Ōamaru is the largest town with a population of 13,715, and there are 16 towns and villages in the area. The Geopark offers a home for local wine and food producers, which is reflected in the emerging range of geogastronomy offerings available. Although the dominant business sector in the Waitaki area is agriculture, tourism is a significant and growing contributor to the local economy.

Geographic coordinates of the Waitaki Whitestone Geopark:

Max Longitude: 171° 10' 46.01"

Min Longitude: 169° 27' 43.09"

Max Latitude: -45° 35' 07.32"

Min Latitude: -43° 46' 40.08"

## 2. Geological features and geology of international significance

Many of the geosites of the aspiring Waitaki Whitestone Geopark yield evidence of a very dynamic basement geology reflecting the ongoing fracturing of Zealandia, the Earth's '8th continent', but mostly drowned landmass. The Waitaki Whitestone Geopark preserves many key components of the geological history of Zealandia. Zealandia's story begins in the Gondwana supercontinent, where Zealandia's basement rock was formed, including the greywacke and schist rock foundations of the Geopark. Opening of the Southern Ocean and Tasman Sea pushed the Zealandia block of continental crust out into the Pacific Ocean. Progressive subsidence of Zealandia's crust saw the sea slowly encroach across the land, heralding the deposition marine sediments and culminating in formation of the iconic Oligocene-age limestones of the Geopark, with hot-spot volcanic eruptions adding further nuances to the environment.

The shallow seas enriched by volcanic nutrients nurtured a rich diversity of marine life, especially ancestral whales and dolphins. The propagation through Zealandia of a new boundary between the Pacific and Australian plates caused compression and uplift, and a small part of Zealandia progressively emerged from the sea to create the New Zealand landmass. Mountain-building, erosion, the coalescence of drainages to form major rivers, and episodes of glaciation on the highest ground, brought about the Geopark's landscape elements. Ongoing tectonic deformation is expressed by occasional movement of some faults in the Geopark, and the ever-present ocean continues to eat away at the eastern shoreline. The diverse geological features of the Geopark attract geological researchers and tourists alike and bring to life the fundamental origins and processes of our geological heritage. The Geopark contains illustrative geological archives that are relevant not only to all of Zealandia but also our neighbouring fragments of Gondwana (Australia and Antarctica).