

## 5.0 Natural sites recommended for consideration as future additions

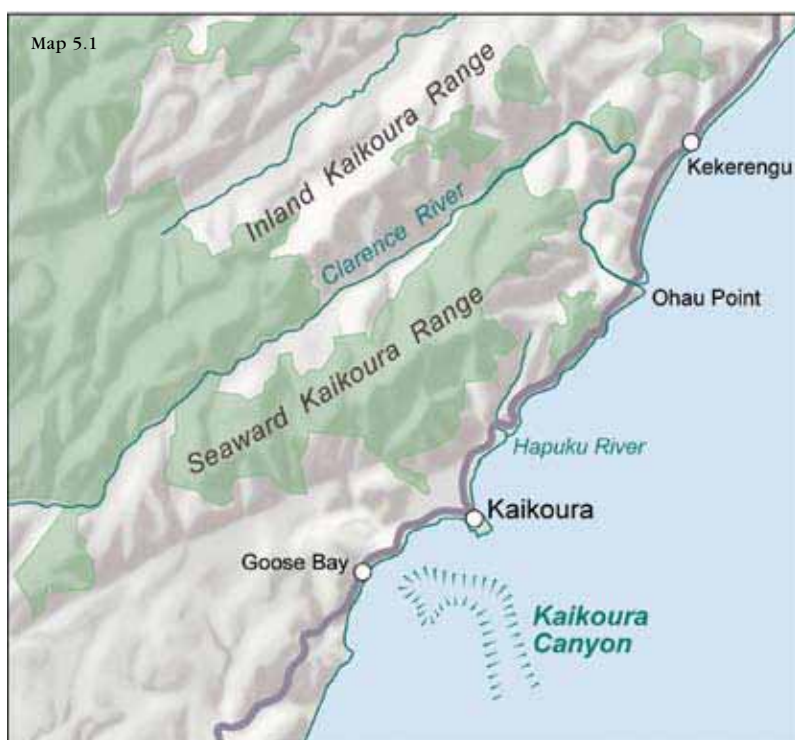
### 5.1 Kaikoura Canyon and Mountains

#### SITE LOCATION

The exact site is not rigorously defined. As a broad concept it traverses an 'underwater canyon to mountain summits' range of topographies in the Kaikoura locality (see Map 5.1). In particular, it would ideally include:

- The Kaikoura underwater canyon;
- Representative sections of Kaikoura coastline; and
- Representative transects of the Seaward and Inland Kaikoura Mountains.

#### SITE DESCRIPTION



The Kaikoura Canyon is 60 km long and up to 1200 m deep. It extends from just 500 m off the Kaikoura coastline to the south of Kaikoura Peninsula, reaching 1000 m depth just three kilometres offshore. The canyon extends out to the south-east of Cook Strait, linking the waters off Kaikoura with the depths of the Hikurangi Trough and the Kermadec Trench.

The highly scenic Kaikoura coastline, from the mouth of the Clarence River to Goose Bay, is a mixture of rocky outcrops and reefs interspersed with gravel beaches. Kaikoura Peninsula is the dominant coastal landform, with its raised beaches (up to 100 m above present-day sea level), impressive cliffs, and outcrops of limestone and other marine sedimentary rocks. The Seaward Kaikoura Mountains

form an impressive backdrop to Kaikoura. They lie only 15 km inland, with over 10 summits above 2000 m; Mt Fyffe (1602 m), a prominent landmark, is only 8 km from the coastline.



Kaikoura Peninsula, looking  
NW towards southern end of  
Seaward Kaikoura Range.  
*Lloyd Homer, GNS*

## VALUES THAT MAY JUSTIFY WORLD HERITAGE LISTING

The Advisory Group consider that in the long term, a suitable site could be delineated and placed on the tentative list because of its outstanding universal values with respect to underwater landforms, tectonic uplift, and marine life.

The following outstanding features are listed without reference to specific criteria:

- The aesthetic qualities of the Kaikoura seascape are very high, and the juxtaposition of a deep sea canyon with high mountains is an unusual natural phenomenon, not usually found in the world's continental landmasses.
- The Kaikoura Canyon is a very impressive geomorphic feature. There are other underwater canyons around the New Zealand coastline (e.g. Hokitika, Haast and many others off the mouths of major South Westland rivers) but none can match the Kaikoura Canyon for proximity to the coastline, or diversity and abundance of marine life.

NZ fur seal, Kaikoura coast.  
*DOC*



- Kaikoura is one of four coastal sites in New Zealand where the upwelling of ocean currents are important for marine biodiversity. The rising nutrient-rich waters from the Southern Ocean support dense populations of plankton and marine algae, leading to abundant krill, squid and fish. These in turn attract marine mammals (seals, dolphins, and whales) and prolific seabird life.
- The Kaikoura coastline has outstanding marine habitat values, especially the diverse reef habitats with extensive areas of sea grasses and kelp beds. The NZ fur seal breeding colony at Ohau Point has increased in numbers to the point where it is now one of the largest on the New Zealand coastline. There are also small breeding colonies and haulout sites around and south of the Kaikoura Peninsula.
- Tectonic uplift continues at the high rate of about 10mm/yr in the Kaikoura Mountains and 3mm/yr on the Kaikoura Peninsula. The evidence of this uplift can be seen in the series of raised shore platforms on the peninsula, each terrace marking a major earthquake over the past 125,000 years.
- The mountain-building at Kaikoura is particularly intense because of the local crustal compression along the Pacific and Indo-Australian Plate boundaries, causing the mountains to rise up steeply from the sea. Indeed, the current New Zealand-wide mountain-building phase, called the Kaikoura Orogeny, is so-named because these processes are so well expressed in the juxtaposition of the underwater canyon and the mountains.
- Kaikoura is notable for having the second highest number of different pelagic seabirds (41) counted at points around the New Zealand mainland coastline. They include a wide range of shearwaters, prions, Antarctic fulmar, Cape pigeon, petrels, mollymawks and albatross and high numbers of shorebirds such as gulls, shags, terns and oystercatchers.
- Kaikoura is an outstanding site for its diversity and numbers of cetaceans. It is internationally renowned for sperm whales, mainly males which are attracted by the plentiful squid and groper which thrive in the mixing of ocean currents and the upwelling of waters through the Kaikoura Canyon. Humpback, southern right, minke, sei and fin whales are all seen occasionally off Kaikoura. The smaller cetaceans there include dusky, common, Hector's, and bottlenose dolphins, orca and longfin pilot whales.

Sperm whale diving, Kaikoura.  
*Kim Westerskov*



## INTEGRITY, MANAGEMENT, AND RISK ISSUES

The Advisory Group consider that there are major integrity and management issues which would need to be addressed before a potential World Heritage site could be defined and added to New Zealand's tentative list.

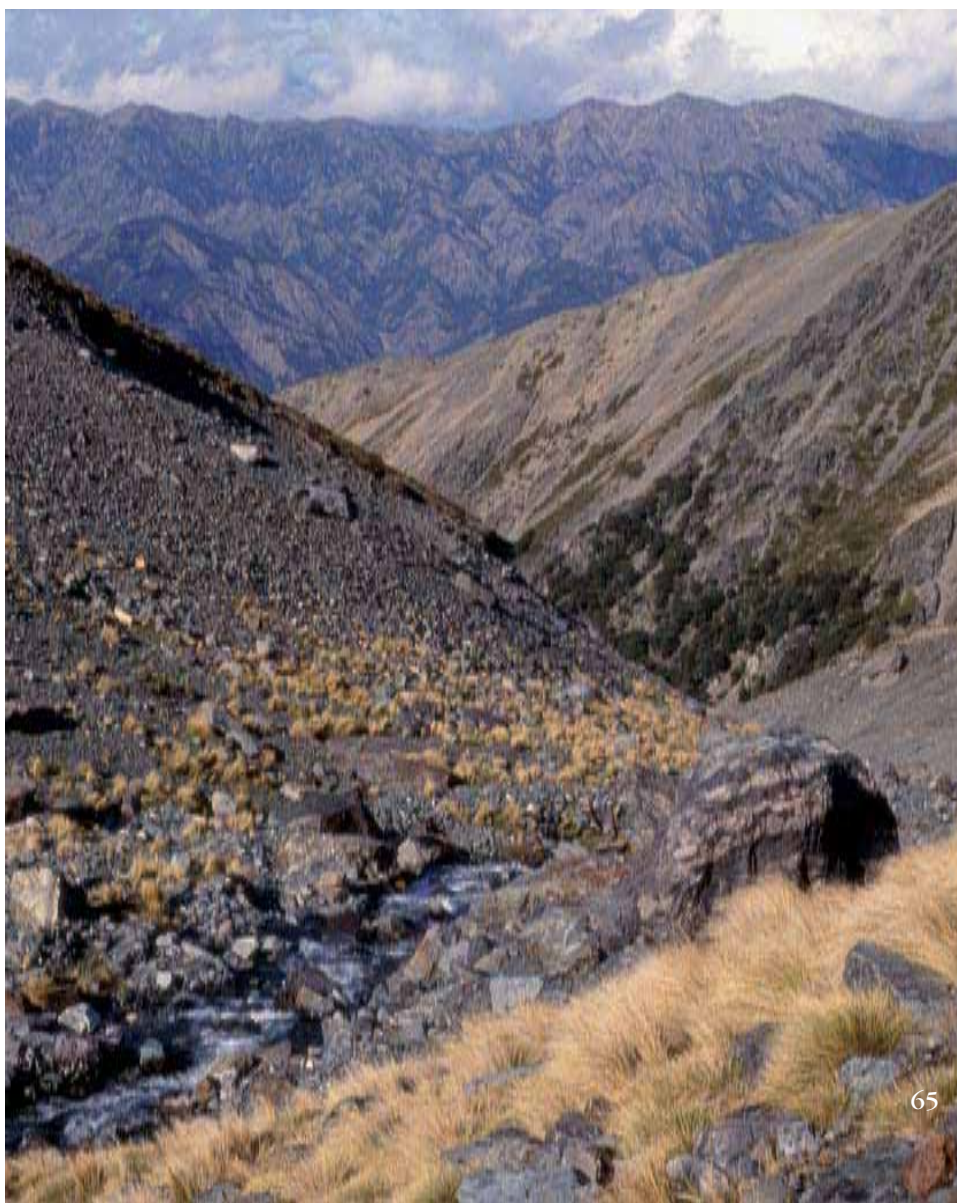
First is the lack of any marine and coastal protected areas. The Kaikoura Canyon has no protected status and there are only a few small coastal reserves managed by the Department of Conservation (mainly south of the mouth of the Clarence River from Okiwi Bay to Half Moon Bay). The need for a marine reserve, mataitai, taiapure or other effective form of marine protected area at Kaikoura has been recognized for more than a decade. Tangata whenua have to date opposed any marine reserve.

Second is the lack of enough protected lowland of high natural character, linking any eventual marine/coastal protected areas with the extensive conservation lands on the Seaward Kaikoura Range (the outcome of recent pastoral lease tenure reviews).

Third is the fragmented nature of marine planning and management, making it more difficult to ensure the sustainable management of Kaikoura's fisheries and marine mammals.

A potential World Heritage site at Kaikoura would need to have a co-ordinated marine/coastal conservation plan in place before a listing could be contemplated. However, the Advisory Group consider that the outstanding universal values of the site are such that government could take a long view and set a goal of bringing about the protection and integrated management of an 'undersea-to-mountains' natural site.

Looking SE towards the Seaward Kaikoura Range from the head of Branches Stream on the slopes of Mt Tapuae o Uenuku, Inland Kaikoura Range.  
*Les Molloy*

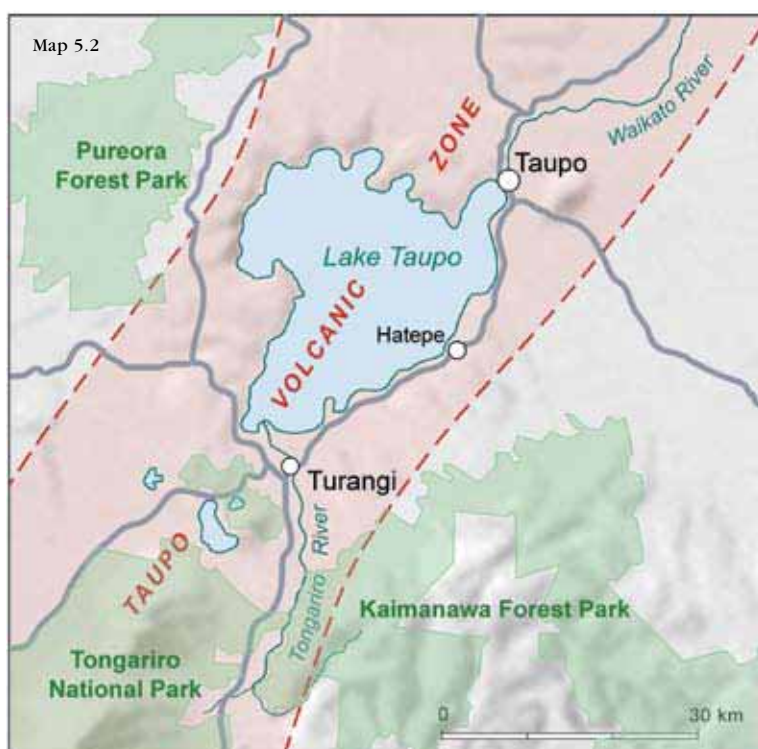


## 5.2 Lake Taupo

### SITE LOCATION

Lake Taupo lies in the upper reaches of the Waikato River catchment in the central North Island. It is a high and deep caldera lake, 622 sq. km in area, 359 m above sea level, and with a catchment area of 3487 sq. km. The lake is 40 km in length from north to south, and 30 km from west to east (see Map 5.2). Geographic co-ordinates are approximately: Lat. 38° 40' to 38° 56' S. Long. 175° 45' to 176° 06' E.

### SITE DESCRIPTION



Lake Taupo occupies the caldera of the huge 'Taupo Volcano' which has erupted intermittently for the past 330,000 years. It lies near the centre of the Taupo Volcanic Zone, a rift valley full of volcanic cones and domes, lake-filled calderas and high lava plateaux, extending north-east from the southern slopes of Mt Ruapehu. The deepest point known in the lake is 158 m and the total volume of water is almost 60 cubic km.

The margins of the lake contain many special plant communities, including cliff vegetation and lakeshore herbfields. The South Taupo Wetland extends from the lower Waimarino River to the delta of the Tongariro River, a classic 'bird's foot' delta and possibly the best example of this type of landform in the country. This wetland is a mosaic of vulnerable swamp and bog vegetation, the habitat of a number of threatened plants

and birds. The main river feeding into the lake is the Tongariro, which rises in the Kaimanawa Mountains as the Waipakahi River before it is joined by a succession of streams draining the eastern slopes of Tongariro National Park. The Tongariro is a large, wild, mountain river, internationally celebrated for the quality of its trout, its dramatic scenery, and for white water rafting and kayaking.

### VALUES THAT MAY JUSTIFY WORLD HERITAGE LISTING

The Advisory Group considers that in terms of its natural properties, the site should easily fulfill criterion (viii) as an *outstanding example representing major stages of the earth's (volcanic) history* as evidenced by the following:

- Taupo Volcano is considered to have produced the largest volcanic eruption on Earth during the last 7,000 years.
- Taupo Volcano is considered by many volcanologists to be the most frequently active and 'productive' rhyolitic volcano in the world in terms of the volume of material ejected. It has spread ignimbrite and tephra over much of the central and eastern North Island. It can be considered one of the world's limited number of 'super-volcanoes', capable of destructive eruptions of such magnitude that they have the capacity to significantly alter the world's climate.



Lake Taupo, looking south  
across Taupo township.  
*Lloyd Homer, GNS*

- The present shape of the Taupo caldera was determined largely by one of the largest eruptions in New Zealand's (and the world's) volcanic history – the great Oruanui Eruption of around 26,500 years ago. This eruption was so large and violent that if it happened today it would devastate most of the North Island and the northern part of the South Island. Close to the Oruanui eruption vent, the thickness of ignimbrite and tephra was 200 m deep; tephra was deposited one metre deep in coastal Hawkes Bay; and 10 cm depth of ash reached even the Chatham Islands.
- The Taupo Eruption of AD 186 has left an overwhelming imprint on the landforms, soils, vegetation and waters of the natural landscape of the central North Island, as well as determining the modern shape of the lake. Although there were no humans present to witness the awesome power of that most recent eruption, scientists consider that it probably produced eruption columns reaching 50 km in height that deposited enormous quantities of pumice and ash up to 50 m in depth on the eastern margin of the lake. These are best seen in the white cliffs exposed just north of Hatepe, close to the main eruption vent at the present-day Horomatangi Reef.

Lake Taupo, looking south  
towards Hatepe, with rilled  
pumice landscape around  
Ouaha in left foreground.  
*Les Molloy*



The volcanic peaks of Tongariro National Park (Mt Ruapehu left; Mt Ngauruhoe right) reflected in the waters of Lake Taupo.

*Les Molloy*



## INTEGRITY, MANAGEMENT AND RISK ISSUES

The site has a high level of geophysical integrity. A large section of the lake's mountainous catchment is protected land, especially Tongariro National Park and Kaimanawa Forest Park which are managed by the Department of Conservation. In addition, networks of shoreline and riparian reserves around the lake have a beneficial effect in maintaining its ecological integrity. The world class Taupo trout fishery is managed by the Department of Conservation.

The entire bed of the lake is owned by Ngati Tuwharetoa and under the Treaty of Waitangi they are guaranteed their right to exercise tino rangatiratanga (self-determination) over the lake.



Looking across the south Taupo wetlands behind Stump Bay, towards Turangi and the peaks of Tongariro National Park.

*Robert Hood*

The most significant risk to the site is the slowly declining health of the waters of Lake Taupo, which were previously of very high quality. The cause of the decline is the increasing nitrogen content of the inflowing groundwaters and rivers, feeding the growth of algae and thereby decreasing the water clarity in the lake. Potentially toxic algae bloomed in the lake for the first time in 2001 and again in 2003. Fortunately, Environment Waikato, Taupo District Council, Tuwharetoa, and Central Government agencies are taking action and in late 2003 launched the 'Protecting Lake Taupo Strategy', an \$83.5 million package of incentives to try and slow deterioration through land use changes.

It is not possible to add Lake Taupo to the New Zealand tentative list without the full agreement of Ngati Tuwharetoa iwi. However, as kaitiaki (guardians) of the lake, Ngati

Tuwharetoa may be interested in the listing of the lake as a cultural site (as is already the case for nearby Tongariro National Park), to protect the mauri of the waters and fulfill their desire for sustainable management (kaitiakitanga) of the lake. If this agreement could be reached, the Advisory Group is in no doubt that listing as a potential World Heritage site would add value to the site, increase its international standing, and add weight to the comprehensive measures being implemented to restore the quality of its waters.