

List and description of geological sites

Following a series of site assessments as part of the self-evaluation process, forty three sites have been selected as the iconic geosites of the geopark. Due to the unique geology of the geopark and many years of scientific enquiry in the area, we are spoilt for choice of sites.

Table 1: List and description of the Geosites of the Waitaki Whitestone Geopark
Maps can be found at <https://maps.waitaki.govt.nz/GMSC/Public/GeoparkGIS.html>

NUMBER	NAME	DESCRIPTION & PROTECTION	IMPORTANCE	FOCUS
 01	Ahuriri -44:20:22.263 169:43:17.024	The Ahuriri area is widely recognised for its outstanding landscape -mountains provide a snapshot of the Southern Alps, evidence of past glaciations and active faults in the landscape. Protection: Outstanding Natural Area	Regional Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 02	Ohau Moraines -44:22:17.089 169:53:41.229	The Ohau Moraines are some of the most sensitive recorders of ice-age climate change in the Southern Hemisphere. Also containing rare and threatened plants Protection: Outstanding Natural Area	International Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 03	Paritea (Clay Cliffs) -44:29:20.087 169:52:08.271	Spectacular “badland” outcrops first formed as gravels, sand and silt, in fresh-waters. Sediments buried and compacted, then uplifted and extensively eroded by wind and water. Protection: QEII covenant and Outstanding Natural Area	Regional Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 04	Ostler Fault zone, 'The Knot' -44:31:14.937 169:50:36.151	A major 90 degree bend in an active reverse fault. Surfaces c.20000 years old. Cutting across glacial moraines, makes it an ideal site for monitoring strain caused by plate boundary movement. Protection: Rural Scenic Zone	International Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 05	Te Awa Whakamau (Awahokomo) karst pinnacles -44:42:16.477 170:22:37.184	Karst pinnacles are the eroded remnants of thick sheets of Otekaike Limestone, which formed about 25 mybp, when the low land was surrounded by wide shallow seas. Protection: QEII covenant	National Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 06	Wai O Toura Reserve -44:48:20.685 170:31:43.881	Rare limestone ecosystem and geological holostatotype. Home to critically endangered plants like <i>Lepidium sisymbrioides</i> . Significant fossil penguins and other. Archaeological site. Protection: National Scenic Reserve	National Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 07	Takiroa shelter rock drawings -44:50:34.321 170:38:45.258	Limestone overhangs offered early travellers shelter along a seasonal route up the Waitaki Valley. A variety of rock art is captured here. It is an archaeological treasure. Protection: Significant Natural Feature, Archaeological Item (5653)	National Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 08	Brewery Hole -44:51:17.168 170:40:59.330	The Maerewhenua river disappears into sink holes and travels 4.5km underground to emerge at this sunken limestone cave known as Brewery Hole. Once known as Waikoakoa (happy waters) Protection: Township Zone, Heritage New Zealand Pouhere Taonga Act 2014	Regional Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 09	Vanished World -44:51:17.923 170:41:03.631	Formed in the early 2000's to help raise public awareness about the geology of the Waitaki district . The Society is active in promoting the science , conservation and appropriate use of fossils , outcrops, and landforms, through a process of education , Protection: Township Zone	International Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 10	Maerewhenua rock art site, Duntroon Escarpment -44:51:33.255 170:41:25.254	This escarpment contains multiple rock shelter sites and rock drawings and is an outstanding natural feature Protection: Partial Historic Reserve (Maerewhenua Historic Reserve), Outstanding Natural Feature, Archaeological Items (5655, 5657)	National Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 11	Te Kōakaumu (Kokoamu Bluff) -44:52:10.402 170:43:32.189	This escarpment exposes a mid Oligocene unconformity representing the period of maximum marine inundation, below brachiopod-rich Kokoamu Greensand and Otekaike Limestone producing fossils Protection: Significant Natural Feature, Geopreservation site	International Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓
 12	Waitaki River -44:52:25.084 170:47:11.788	Geological uplift, erosion and alluvial transport continue to maintain the Waitaki (waterway of tears) which is characterised by broad gravel beds, numerous channels and variable flows. Protection: Waitaki Catchment Water Allocation Regional Plan	International Scientific Importance MAP 	Geology ✓ Culture ✓ Nature ✓ Education ✓ Vista ✓

13	Waipata (Earthquakes) -44:52:27.575 170:37:24.545	Otekaike Limestone and Kokoamu Greensand, separated from Ototara Limestone by a regional intra-Oligocene unconformity, form large slumped blocks due to mass movement. In situ Baleen whale bones	International Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
14	Anatini -44:54:05.482 170:39:15.496	Easily accessible and one of few natural limestone arches in New Zealand, Anatini has baleen whale bones on display nearby as part of Vanished World trail.	National Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
15	Elephant Rocks -44:53:36.131 170:39:22.355	Set in a stunning rural vista these elephant shaped outcrops formed by chemical and wind erosion of Otekaike Limestone, which originated as a fossil rich marine sand 25 million years ago.	Regional Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
16	Valley of the Whales -44:55:24.882 170:40:55.012	The Valley of Whales earned its name from the exciting discovery of whale and dolphin fossils in the surrounding Otekaike Limestone and in the underlying Kokoamu Greensand.	International Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
17	Prydes Gully Road Quarry -44:55:58.854 170:37:46.967	Adze marks remain in an old quarry which produced "Waitaki Stone" (Otekaike Limestone) for building. This is a different stone than the more widely known "Oamaru Stone"	Regional Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
18	Tokarahi Sill -44:56:25.663 170:37:06.756	The cutting exposes a spectacular section of columnar-jointed basaltic sill or lava flow, formed when molten rock ran across the seafloor, about 40 mybp. In places, pillow lavas occur near the sill.	Regional Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
19	Huttons Bridge, Otago Schist -44:56:41.918 170:35:22.614	The oldest local rock type, formed 150-180 Mybp. Metamorphism of sandstones and siltstones resulted in gold-bearing schist, the source of the gold-bearing sediments found in this region.	Regional Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
20	Rakis Table -44:59:46.470 170:44:02.548	Raki Siltstone from the Eocene epoch. A significant feature in the landscape and the location of rain making efforts in the late 19th century when dynamite was set-off to 'seed' the clouds	Regional Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
21	Landon Creek bank -45:01:51.391 170:59:44.014	Exposures in banks of North Branch of Landon (Boundary) Creek featuring common Duntroonian brachiopods. Hypostratotype of Duntroonian Stage.	National Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
22	Devils Bridge Wetland -45:02:17.152 170:56:34.684	This wetland is a habitat for many species and is an area of Natural Significance in this Karst landscape. Caves surrounding the wetland contain solution holes and a shell bed layer.	Regional Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
23	Enfield dikes -45:02:40.908 170:52:14.112	This is one of the best inland exposures of igneous dikes in the Oamaru region. The sequence of several near-vertical sheets of basalt formed by multiple injections of lava.	Regional Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
24	Jackson's Paddock -45:05:14.340 170:53:17.212	Internationally important site of Eocene diatomite. Oamaru Diatomite type-locality (upper part of stratigraphic sequence) and overlying Totara Limestone containing Eocene-Oligocene boundary.	International Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
25	Hutchesons Quarry -45:05:38.583 170:57:56.154	One of NZ first geological reserves. Tuffs and Ototara limestone at the base are overlain by a fossil cobble-beach and an important fossil brachiopod location in the Gee Greensand.	National Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
26	Oamaru limestone dikes -45:05:51.531 170:57:39.913	In the road cutting on the north side of Chelmer Street is one of the best examples of limestone dikes in New Zealand.	Regional Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
27	Boatman's Harbour -45:06:46.369 170:58:57.291	Spectacular pillow lavas formed 34-36 Mybp when masses of molten lava solidified on the sea floor. White limestone between the pillows represents original limey sediment.	International Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
28	Makotukutuku (Old Rifle Butts) -45:07:32.004 170:57:51.513	The sea cliffs show a section through Eocene pyroclastic volcanic debris, rare rhodolith deposits of the MacDonald limestone, Pleistocene penguin remains and a raised Pleistocene beach.	National Scientific Importance MAP	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

	29 Te Awa Kōkōmuka (Awamoa Creek fossils) -45:08:30.327 170:56:06.324	An archaeological site of middens/ovens. This site is also important for diverse early Miocene (Altonian Stage) macrofauna occasionally exposed on the beach Protection: Archaeological item (5688)	National Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	30 Beach Road Erosion -45:09:13.109 170:55:19.954	Coastal erosion is evident on this section of road, closed 2008. Layers of high-class volcanic topsoil, loess and gravels with minimal vegetative cover erode easily. Protection: Significant Coastal Landscape	Regional Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	31 Otepopo (Mt Dasher) slate -45:09:40.892 170:39:41.573	A disused slate quarry and the only site in NZ where roofing slate has been produced, near Mackerras Creek, tributary of Kauru River, east foothills of Kakanui Range. Protection: Rural General Zone, Heritage New Zealand Pouhere Taonga Act 2014	Regional Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	32 Kākaunui River (Kakanui) Mouth -45:10:59.404 170:54:26.974	Dark mineral breccia containing material erupted from deep in the Earth's mantle and crust, including lherzolite, pyroxenite as well as megacrysts of garnet, clinopyroxene, kaersutite, and feldspar. Protection: Significant Coastal Landscape	International Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	33 Campbells Bay -45:11:40.546 170:53:43.488	Ancient shrimp burrows in Ototara Limestone. Younger Otekaike limestone was deposited over the eroded surface about 25 Mybp, and was overlain by Gee Greensand and Mt Harris Formation. Protection: Significant Coastal Landscape	National Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	34 Ōrore (All Day Bay) -45:12:34.430 170:53:05.929	The rock pools and geology of All Day Bay make it a favourite attraction. It shows deep-water mudstone of the Mount Harris Formation (Early Miocene, 20 Mybp) with fossil molluscs Protection: Significant Coastal Landscape	National Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	35 Bridge Point -45:13:14.051 170:52:57.026	Coastal outcrop of Waiareka Volcanics pyroclastic debris flows and marine sediments form a natural bridge. In places, abundant dead skeletons accumulated to form the Ototara Limestone. Protection: Significant Coastal Landscape	International Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	36 Te Kaihīnaki (Moeraki Boulders) and Scenic Reserve -45:20:50.824 170:49:33.972	A popular tourist attraction, boulders at Moeraki (Paleocene) and Shag Point (Cretaceous) formed within mudstone underlying the ancient seafloor between 55 and 35 million Mybp. Protection: Scenic Reserve (Moeraki Boulders Scenic Reserve), Outstanding Natural Feature, Geopreservation Site, Scientific reserve	International Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	37 Moeraki Peninsula -45:21:24.143 170:51:32.080	The peninsula is composed of basaltic volcanics overlying mudstone. Volcanic rocks have produced good examples of zeolite (such as erionite and phillipsite), and barite. Protection: Recreation Reserve (Moeraki), Significant Coastal Landscape, Geopreservation site	Regional Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	38 Kātiki -45:23:28.176 170:51:57.913	Home to many species of wildlife including hoiho (yellow-eyed penguins) and kekeno (fur seals). A special place of cultural and historical significance to Ngai Tahu. Protection: Significant Coastal Landscape, Site of Natural Significance, Archaeological Items (5697, 5696, 5695, 5698)	Regional Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	39 Trotters Gorge -45:24:10.363 170:46:32.968	Greywacke-breccia conglomerate of Cretaceous age. Landscape including cliffs and caves formed after the last ice age 12 - 15,000 years ago. See and hear many of New Zealand's bush birds. Protection: Scenic Reserve (Trotters Gorge Scenic Reserve)	Regional Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	40 Matakaea (Shag Point) -45:28:25.050 170:49:53.096	Features coal mining history, fossils (plesiosaur), and large round boulders (of Arai Te Uru legend) embedded in the soft sandstone of the rock shelf, interpreted as a tsunami deposit. Protection: Recreation Reserve (Matakaea Recreation Reserve), Significant Coastal Landscape	International Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	41 Puketapu -45:29:26.583 170:43:52.540	This prominent peak east of the town of Palmerston is a volcanic centre belonging to the widespread Dunedin Volcanic Group. A monument to Sir John McKenzie, a former Waihemo MP, stands at the top Protection: Significant Natural Feature, Heritage Item Cat B (108), Archaeological Items (5703,5705)	Regional Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	42 Golden Point Battery -45:21:06.455 170:25:31.673	Wonderfully preserved stamper battery and the only authentic working example in Otago it will leave you in awe of the determination of early miners Protection: Historic Reserve (Golden Point), Heritage Item (129)	National Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
	43 Nenthorn Goldfield -45:28:28.266 170:22:29.977	You can see barely any trace of what was once a gold boom town. The roadside features an example of a well exposed gold-bearing quartz veins that created this boom. Protection: Referenced for Conservation purposes s62(1) Conservation Act 1987	International Scientific Importance MAP 	Geology Culture Nature Education Vista	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>