Name:	Pukepuke Lagoon	
Location:	NZ Topo BM33	
Description:	The Pukepuke Lagoon Conservation Area covers approximately 80ha and consists of a dune lake (around 15ha in size) surrounded by wetland and a small sand dune area.	
ONL/ONF/SAF:	Outstanding Natural Feature	
Natural Science:	Geological/ Geomorphological:	The formation of Pukepuke Lagoon is closely associated with the development of the Manawatū dune field, which forms part of New Zealand's largest dune field. Pukepuke Lagoons is a dune wetlands and, therefore, is representative of one of New Zealand's most threatened and rare ecosystem types in New Zealand. The dune lake is a result of the formation of sand dunes along the coast near Tangimoana. Pukepuke Lagoon lies at the margin of a belt of stable sand dunes. The lagoon previously occupied a notably larger area to the northwest of its current, relatively recent location. Only a few dune lakes remain in the district, with Pukepuke Lagoon being one of two most notable ones. The lagoon is shallow and migrated eastward with sand movement. The sand dunes have now stabilised, and the shape and location of the lagoon is unlikely to change dramatically. The composition of the lake bed is sand and is likely underlain by silt/iron pan, however there are also areas of sandy gravel.
	Biological/Ecological:	It is an important, diverse wetland habitat for over sixty bird species, including both native and introduced birds. A number of species rarely found elsewhere in the Region live at Pukepuke Lagoon, including the North Island fernbird, spotless crake, marsh crake, New Zealand shoveler and New Zealand scaup. The royal spoonbill and variable oystercatcher visit the wetland occasionally. Two rare Nationally Threatened and globally threatened species, the New Zealand dabchick and the Australasian Bittern, are also found here. Other birds reported seen at the lagoon include black swans, shags and New Zealand falcon. The New Zealand Ecological Society journal published an article on the 'Use of Pukepuke Lagoon by Waterfowl'. The study looked at waterfowl population studies at the lagoon, which was the first such study in New Zealand at the time. The lagoon also has a large, scientifically and biologically important population of short finned eel. Long finned eel, brown mudfish and īnanga are also present. Weir systems have been improved to enable native fish species to swim into the lagoon, including eels. Three wetland herbs which are rare elsewhere in the Region have been found at Pukepuke Lagoon. These are Hydrocotyle pterocarpa, Zannichellia palustris and dwarf musk. The New Zealand Ecological Society journal also published an article on 'The History and Present Vegetation of the Macrophyte Swamp at Pukepuke Lagoon'. Other articles published in the journal on studies undertaken on Pukepuke Lagoon include ferret biology, and the activity and dispersal of pukeko. The New Zealand Wildlife Service researched waterfowl at Pukepuke until the late 1960s. In 2015, freshwater ecologists from NIWA carried out research on Pukepuke Lagoon, where they found plants growing across the bottom of the lagoon, which was predominately native, and is a good indicator of the ecology of the lagoon and a healthy ecosystem/ecosystem functioning. The ecologists were happy with the results and stated that the lagoon still held high biodiversity values. The same survey was carried out in 2001 and the vegetation results were almost the same, another good sign. They also compared their results to research conducted in 1978 and concluded that there has been no significant change in vegetation status or condition in those 25 years between the studies.
	Hydrological:	The current lagoon's catchment area of approximately 2,300ha consists of the upper Boss Stream catchment and the northern part of the original lagoon catchment. It is located four kilometres south of the lower Rangitikei River and approximately four kilometres from the coast. The lagoon is representative of the largest in a series of coastal lagoons, making it significant. Sand dunes prevent inland water runoff escaping out to sea. It contains a shallow lake up to two metres deep, drying out occasionally in summer droughts. Water quality and quantity is affected by surrounding farming activities. To prevent flooding of adjacent farmland, a sectioned weir has been constructed across the lagoon outlet. This helps to maintain water levels in the summer and minimises flooding in the winter. The coastal lake systems in the area connect with the ocean through Kaikokopu Stream and the stream connected to Pukepuke Lagoon crossing the coastal margin. The care and protection of these coastal margins is integral to the health of the fisheries at the coastal margin itself and further inland. The diversity and health of the vegetation in the lagoon indicates that Pukepuke Lagoon's water quality is high and that it is in very good condition with a healthy ecosystem.

	Aesthetic:	Expansive water body and intactness of remnant surrounding indigenous vegetation has a high degree of legibility and coherence which reinforces its vividness as a rare feature and provides a contrast to the surrounding modified landscape.
	Naturalness:	Whilst the area is surrounded by a largely modified pastoral landscape, there is a high degree of naturalness within the lagoon area due to the extent of the lake and the indigenous vegetation remnants.
Associational:	Historical:	Over the last century the area has been drained, contributing to the reduction of the wetland's size. When the Crown acquired the Pukepuke Reserve in the 1950s, the former Māori owners of the reserve negotiated the retention of fishing rights within the lagoon, with the agreement held under a deed of trust. That agreement is still honoured today, and the lagoon continues to be used by Parewanui hapū who make their journey to the lagoon to gather eels. In 1968, Pukepuke Lagoon became a wildlife management reserve through the Ministry of Internal Affairs, and was managed by the Wildlife Division (Wildlife Service). The Wildlife Service wrote a management plan for the lagoon in 1977, which was later expanded on in 1987 and included objectives and policies for Pukepuke Lagoon. In 1987, with the formation of DOC, management shifted from the Wildlife Division to DOC, renaming the lagoon from Pukepuke Wildlife Reserve to Pukepuke Lagoon Conservation Area.
	Tangata Whenua:	Under the Settlement Act the lagoon is an area of interest and statutory acknowledgement area for both Ngāti Apa and Rangitāne o Manawatū. The lagoon is within the domain of Ngāti Kauae and Ngāti Tauira, both of Ngāti Apa (North Island). Specifically, Pukepuke was known as a kainga site for Nga Potiki and Ngāti Rangiwaho (who were part of Ngāti Tauira hapū). Ngāti Apa occupied a fortified pā at Pukepuke until around 1840 and after that visited the area seasonally to gather food. Many significant battles occurred at the pā, and which have helped to shape Ngāti Apa's history with the area. The pā was a defensive island pā situated in the middle of the lagoon. Pā at Pukepuke were not just seasonal residences but were utilised as permanent residences prior to the arrival of European settlement by hapū of Ngāti Kauae and Ngāti Tauira. Lakes Omanuka, Pukepuke and Kaikokopu provided valuable mahinga kai and an abundance of tuna (eel) to Rangitāne o Manawatū in the early times. They are the places where Rangitāne o Manawatū would stop overnight to replenish food stocks and to rest while travelling between Rangitikei and Manawatū. Lakes Omanuka and Kaikokopu remain in Māori ownership however the title of Lake Pukepuke is now vested in DOC. Pā were established on the southern side of the Pukepuke Lagoon. Mahinga kai were also established and are still utilised today. The lagoon provided resources such as harakeke, inanga, eels and birds. Land Court records pertaining to the Himatangi Block reveal that the area was an important source of eel, fern root, kokapu, koko (tui), kererū and kiekie. Numerous cultivations were situated along the coast, particularly Himatangi. A variety of native and migrating birds were located in the wetlands, lagoons, lakes and swamps at Himatangi and Pukepuke. Rangitāne o Manawatū oral histories record a number of battles occurring in the vicinity and over the lagoon. Today, Ngāti Apa and Rangitāne o Manawatū have access rights and traditional fishing rights for long finned and short finned eels. Both iwi have immense cultural, spiritual, historical and traditional association with Pukepuke Lagoon.
	Shared/Recognised:	The lagoon has been described as one of the district's natural treasures (recorded in a newspaper article in the 2002 'Manawatu District State of the Environment Report') and is recognised under the MDC District Plan, Map fourteen, as a Conservation Area and under Appendix 1 – Heritage Places. Numerous articles on research undertaken at Pukepuke Lagoon have been published in the New Zealand Ecological Society journal, as well as an article in the Notornis: Journal of the Ornithological Society of New Zealand and New Zealand Journal of Zoology. Research on Pukepuke Lagoon is included in the book by Joseph J. Kerekes titled 'Developments in Hydrobiology: Aquatic Birds in the Trophic Web of Lakes'. Pukepuke Lagoon is also recorded on the 'Protected Planet' website, which is managed by the United Nations Environment Conservation Monitoring Centre with support from IUCN and its World Commission on Protected Areas.
	Recreation:	Pukepuke Lagoon House is available for accommodation for those visiting the site. There are also bird hides for viewing birds and wildlife watching, as well as a short walkway which includes a boardwalk. Gamebird hunting ballots are held for duck shooting on the lagoon. Access has remained relatively restricted, which has been thought to have assisted in the lagoon retaining its relatively good health and diversity.
Summary of Key Characteristics:	Pukepuke Lagoon has a range of scientific attributes (landforms, flora and fauna), along with significant historical, cultural and recreational values. High degree of natural character derived from the ecological health of the lagoon, including the presence of many bird species (some rare), healthy native vegetation, and good water quality. This feature stands out due to the modified surrounding agricultural and plantation forestry land use. Areas of riparian vegetation within the area and the open water of the lake contribute to the botanical, ecological and aesthetic values.	
Potential Issues:	The open water and remnant native vegetation defines the feature and contributes the natural character, perceived naturalness, aesthetic values, and associational factors. It would assist protection of the key characteristics if the following were to occur: • discourage the loss of native vegetation; discourage the establishment of exotic vegetation; discourage adverse effects on cultural values; discourage earthworks; and restrict built development.	

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