

Information Sheet on EAA Flyway Network Sites (SIS) – 2013 version

Available for download from <http://www.eaaflyway.net/nominating-a-site.php#network>

Categories approved by Second Meeting of the Partners of the East Asian-Australasian Flyway Partnership in Beijing, China 13-14 November 2007 - Report (Minutes) Agenda Item 3.13

Notes for compilers:

1. The management body intending to nominate a site for inclusion in the East Asian - Australasian Flyway Site Network is requested to complete a Site Information Sheet. The Site Information Sheet will provide the basic information of the site and detail how the site meets the criteria for inclusion in the Flyway Site Network.
2. The Site Information Sheet is based on the Ramsar Information Sheet. If the site proposed for the Flyway Site Network is an existing Ramsar site then the documentation process can be simplified.
3. Once completed, the Site Information Sheet (and accompanying map(s)) should be submitted to the Flyway Partnership Secretariat. Compilers should provide an electronic (MS Word) copy of the Information Sheet and, where possible, digital versions (e.g. shapefile) of all maps.

1. Name and contact details of the compiler of this form:

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EAAF SITE CODE FOR OFFICE USE ONLY:

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2. Date this sheet was completed:

1 December 2014

3. Country: NEW ZEALAND

4. Name of the Flyway Network site: FAREWELL SPIT

Accepted English transcription of the Site's name.

5. Map of site:

The most up-to-date available and suitable map of the wetland should be appended to the SIS (only in digital format and shape file). The map must clearly show the boundary of the site. Please refer to the "Digitising Site Boundaries in Google Earth" file linked [here](#).

6. Geographical coordinates (latitude/longitude, in decimal degrees):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

40°32'S, 172°50'E.

Contiguous tidal flats on the south side of Farewell Spit from Triangle Flat, Puponga (40°30'30" S, 172°04'25" E) to the tip of the spit (40°34'41" S, 173°04'16" E)

7. Elevation: (in metres: average and/or maximum & minimum)

Sea level to 3 m.

8. Area:

The total area of the site, in hectares. If the areas of discrete site units are known, please also list each of these together with the names (or labels) used to identify and differentiate these units.

11,388 ha.

Land area c.1961 ha;

Inter-tidal zone c.9427 ha.

9. General overview of the site:

A brief (two sentences) summary of the site, mentioning principal physical and ecological functions, and its importance for migratory waterbirds.

Farewell Spit is a 30 km long recurved sand spit at the northwestern extremity of South Island. The north side is exposed to the Tasman Sea, but the more sheltered southern side has extensive tidal sandflats supporting large numbers of shorebirds and waterfowl.

10. Justification of Flyway Site Network criteria:

Please provide waterbird count information (with year of latest count) that demonstrates that the site meets the criteria of the Flyway Site Network (Annex 1). That is:

- it regularly supports > 20 000 migratory waterbirds; or,

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- it regularly supports > 1 % of the individuals in a population of one species or subspecies of migratory waterbird: or,
- it supports appreciable numbers of an endangered or vulnerable population of migratory waterbird
- it is a “staging site” supporting > 5 000 waterbirds. or > 0.25% of a population stage at the site.

A listing of the populations of migratory waterbirds covered by the East Asian – Australasian Flyway Partnership and the 1% thresholds is attached (Annex 3).

The “staging site” criterion is particularly difficult to apply and application of this should be discussed with the Secretariat. Also note that some species have several populations that are very difficult to distinguish in the field.

9.1 % EAAFP population of bar-tailed godwit (*baueri*). Average counts 11,872, maximum 15,723.

7.9 % EAAFP populations of red knot. Average counts 8,260, maximum 12,416

2.3% EAAFP population of ruddy turnstone. Average counts 679, maximum 1,028.

The site regularly supports more than 20,000 shorebirds (Schuckard and Melville 2012).

11. Wetland Types:

List the wetland types present (see Annex 2). List the wetland types in order of their area in the Flyway Network site. starting with the wetland type with the largest area.

- G -- Intertidal mud, sand or salt flats**
- F -- Estuarine waters; permanent water of estuaries and estuarine systems of deltas.**
- B -- Marine subtidal aquatic beds; includes kelp beds, sea-grass beds, tropical marine meadows.**
- E -- Sand, shingle or pebble shores; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.**
- H -- Intertidal marshes; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.**
Coastal brackish/saline lagoons; brackish to saline lagoons with at least one relatively narrow connection to the sea.
- K -- Coastal freshwater lagoons; includes freshwater delta lagoons**

12. Jurisdiction:

Include territorial. e.g. state/region. and functional/sectoral. e.g. Ministry of Agriculture/Dept. of Environment. etc.

Territorial: Tasman District Council.

Functional: Department of Conservation

13. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland and the title and/or name and email address/phone number of the person or persons in this office with direct responsibility for managing the wetland.

The Department of Conservation has general responsibility for the management of flora and fauna and the Nature Reserve, while the Takaka Field Centre is responsible for day-to-day management.

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The Tasman District Council has statutory responsibilities under the Resource Management Act 1991 for water resources and the preparation of coastal plans.

14. Bibliographical references:

A list of key technical references relevant to the wetland, including management plans, major scientific reports, and bibliographies, if such exist. Please list Web site addresses dedicated to the site or which prominently feature the site, and include the date that the Web site was most recently updated. When a large body of published material is available about the site, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies.

Ballance, P.F.; Schuckard, R.; Melville, D.S.; Battley, P.F. 2006. Dual sand sources on Farewell Spit intertidal sand flats, New Zealand: partitioning during redistribution. *New Zealand Journal of Geology and Geophysics* 49: 91-100.

Battley PF, Melville DS, Schuckard R, Ballance PF 2005. Quantitative survey of the intertidal benthos of Farewell Spit, Golden Bay. Marine Biodiversity Biosecurity Report 7. New Zealand Ministry of Fisheries. 120 p.

Cromarty, P.; Scott, D.A. (eds.). 1996. *A directory of wetlands in New Zealand*. Department of Conservation, Wellington, New Zealand. 395 p.

Davidson, R.J.; Stark, K.E.; Preece, J.R.; Lawless, P.F.; Clarke, I.E. 1993: Internationally and nationally important coastal areas from Kahurangi Point to Waimea Inlet, Nelson, New Zealand: recommendations for protection. Department of Conservation, Nelson/Marlborough Conservancy. Occasional Publication No. 14, 121 p.

Schuckard, R. 2002. Wader distribution at Farewell Spit, Golden Bay and Tasman Bay.

Department of Conservation, Nelson Marlborough Conservancy. Occasional Publication No.54.

Schuckard, R.; Melville, D.; Cook, W.; Machovsky Capuska, G.E. 2012. Diet of the Australasian gannet (*Morus serrator*) at Farewell Spit, New Zealand. *Notornis* 59 (1&2): 66-70.

Schuckard, R.; Melville, D. S. 2013. Shorebirds of Farewell Spit, Golden Bay and Tasman Bay. Prepared for Nelson City Council and Tasman District Council.

Schuckard, R.; Melville, D. S. 2013b. Effects of selected activities on shorebirds in Tasman District: Management issues and options for sites of international importance. Prepared for Nelson City Council and Tasman District Council.

15. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence: fluctuations in water level; tidal variations: downstream area: general climate, etc.

Farewell Spit is a 30km long sandspit extending east and southeastwards from the northern tip of the South Island of New Zealand, across the northern part of Golden Bay. It is a classic recurved spit formed predominantly of quartz sands derived from erosion of the Southern Alps and West Coast sea cliffs, and transported northwards by a long-shore current. This long-shore movement of sand, driven by the prevailing southwesterly winds and swells of the Tasman Sea reaches the wide western mouth of Cook Strait where wave systems refracted to the east and have built the spit. (Ballance *et al* 2006). The spit is thought to have a complex Quaternary history of degradation during glacial low sea levels and reconstruction during interglacial high sea levels, but the present form of the spit is entirely of Holocene origin. Since the estimated origin of the current spit 6,500 years ago, an estimated 2.2 million cubic metres of sand have been deposited per annum. Wind transports more surface sand towards Golden Bay, although the majority of sand lies below the mean low water mark. The sub-aerial part of the spit averages about 1 km in width, and extends for about 30 km eastwards into Golden Bay. It is reported to be extending by 15 m annually. The area of Farewell Spit is about 11,388 ha, with about 1,961 ha above mean high water mark and an intertidal zone of about 9,427 ha. The total coastline is 67 km (Cromarty & Scott 1996). The sandspit is unique in New Zealand due to its extent and the biota it supports. (Cromarty and Scott 1996).

Five distinct landform features can be seen on Farewell Spit:

- Ocean beach, which is cut into a series of banks and channel by tidal action. This outer beach exposed to the Tasman Sea is breached in several places, especially during high tides greater than four metres.
- Mobile dune belt 20 km has barchan dunes (a dune formation rare in New Zealand) up to 27 m in height. This system is almost completely devoid of vegetation.
- Inter-dune hollow areas of flat sand inundated by the highest tides.
- An area with low rolling dunes, containing many permanent and temporary lakes, is the most visual barrier between the ocean beach and sandflats. This inner beach dune belt is completely vegetated and more irregular in appearance than the mobile dune belt. In the

eastern and western part of the Spit extensive fresh water areas host fresh water wetland communities. Mullet Creek bisects the Spit from east to west.

- Intertidal sand plains. A huge area of imperceptibly sloping sand, cut through by meandering channels stretching to below mean low water springs. Finer sediments originating from Golden Bay rivers are deposited along the inner beach. Some areas contain saltmarsh or eelgrass *Zostera novazelandica*, others are bare sand (; Davidson *et al* 1993; Cromarty and Scott 1996; Schuckard 2005; Schuckard and Melville 2013a). This intertidal sand flat ranges in width between 2 km at the extremities of the spit, and >7 km in the central part, an area of c. 100 km². It is actively extending southwards into the bay, approximately to the 10 m bathymetric contour, giving a total area of sand accumulation of c. 200 km² (Ballance *et al* 2005).

The intertidal sand flat on the sheltered southern side of Farewell Spit consist primarily of fine sand from the ocean side of the spit (<0.36 mm) blown from the spit during northerly storms. In parts of the flats fine sand is supplemented by significant but highly variable amounts of medium to coarse sand (>0.36 mm), and rare stones up to 40 cm long. The presence of tree trunks with tangled root masses, stranded on the flats, suggest that coarse sediment is being delivered in the root masses of the trees, which are washed out of flooded rivers discharging into Golden Bay. All mud is winnowed from the sand flats by wave and tidal action. Fine sand is moved around sufficiently to build a flat delta-type accumulation covering 200 km². Coarse sand, however, is not mixed and homogenised across the flats. Farewell Spit intertidal sand flats thus comprise sand from two contrasting sources (<0.36 mm and >0.36 mm), which remain partitioned according to grain size during sand redistribution on the flats (Ballance *et al* 2006)

The predicted average tidal range in Golden Bay varies between 1.4m and 3.8m and the predicted spring tidal range varies between 0.5m and 4.7m. The water circulation within Golden Bay is usually in a clockwise direction that splits from the eastward moving d'Urville current of Cook Strait (Ballance *et al.* 2006). This gyre is driven by the predominant west to northwest winds.

16. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

Land at the base of the spit has been developed for farming. Past burning and grazing have modified the vegetation (Davidson *et al* 1993).

17. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The wetland plays a major role in the support of food chains.

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Flyway Network site, and the ecosystem services of the site and the benefits derived from them.

Farewell spit supports regenerating sand dune plant communities and a very diverse avifauna, and is thus of special value for maintaining the genetic and ecological diversity of the region (Cromarty and Scott 1996).

The dryland areas of the spit have been almost totally transformed from original light coastal bush, scrub and native grasses to a predominantly exotic cover dominated by Marram Grass *Ammophila arenaria* and Lupin *Lupinus arboreus*, but with some native Manuka *Leptospermum scoparium*, Kanuka *Kunzea ericoides*, New Zealand Flax *Phormium tenax*, Bracken *Pteridium aquilinum* var. *esculentum*, sedges *Carex* spp. and herbs.

In 1975, all cattle and sheep were removed from the spit, and since then, despite the presence of some deer, the natural vegetation has begun to regenerate, with the character of the vegetated inter-dune areas changing, as native hardwood scrub species are colonising the mixed exotic/indigenous grass/herb swards. The emergence of this vegetation is a significant ecological development, as early explorers noted that the spit had "woody vegetation". Pingao is also showing signs of regeneration since the removal of cattle and sheep. There is evidence to suggest that this species is now competing successfully with introduced Marram Grass.

The saltmarsh area begins with eelgrass *Zostera* spp. at the lower limit, then distinct zones of glasswort *Salicornia* spp., Sea Rush *Juncus maritimus* var. *australiensis* and Jointed Rush *Leptocarpus simplex*, and finally a zone of New Zealand Flax *P. tenax* near the dunes (Cromarty and Scott 1996).

On the intertidal flats the greatest species diversity occurs in the large central area, with diversity diminishing in the fairly narrow tidal flats along the inner part of the spit and in the outer areas on the extreme eastward end of the spit. Diversity is strongly correlated with the extent of eelgrass on the central flats. Large-scale distribution of marine macrobenthos largely reflects habitat differences, primarily the presence or density of the eelgrass, *Zostera muelleri*. There are no spatially discrete habitats with distinct faunal communities. Instead, many of the taxa or groups that occur frequently increased in abundance as the cover of *Zostera* increased. Typical invertebrates characteristic of eelgrass beds include the bivalves *Austrovenus stutchburyi* (small size classes), *Macomona liliana* and *Nucula hartvigiana*, the snails *Cominella glandiformis*, *Micrelenchus tenebrosus*, *Eatoniella* sp., and *Zeacumantus* spp., polychaete worms in the families Capitellidae, Spionidae, and Scalibregmatidae, and the pill-box crabs, *Halicarcinus* spp. Areas without eelgrass have comparatively little infaunal diversity compared with vegetated area, but there is a group of taxa that are more commonly found in these sandy sites: *Amalda* sp., the

worms Nephtyidae and one Maldanid, Caprellidae, *Notoacmea h. helmsi*, *Squilla armata*, *Edwardsia tricolor*, Holothuroidea, *Paphies australis*, and large *Austrovenus stutchburyi* (Battley *et al* 2005).

Farewell Spit supports a large diversity of avian fauna, particularly shorebirds, including large numbers of internal and international migratory species, as well as waterfowl. (See section 20). The regenerating sand dune plant communities hold special value for maintaining the genetic and ecological diversity of the region, supporting birds such as the endemic fernbird *Bowdleria punctata*.

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the SIS.*

(Please add here the species which do not come under sec no 14)

Three threatened endemic plant species are found in the sand-dune communities: *Euphorbia glauca*, Sand Daphne *Pimelea arenaria* and Pingao *Desmoschoenus spiralis*. Other noteworthy plants include *Spinifex hirsutus*, occurring at its southernmost locality, and Sand Spike Rush *Eleocharis neozelandica*, recently rediscovered there at its type locality (this species had not been collected in the South Island for many years) (Cromarty and Scott 1996).

20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 10. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the SIS.*

(Please add here the species which do not come under sec no 14)

Farewell Spit hosts an average of about 29,000 shorebirds during the summer (maximum of 34,000), equivalent to 10.2% of the national population. In winter (June) there are on average 8,500 birds (maximum 11,000), 6.5% of the national population, and in spring (November) an average of 20,000 (13.2% of the national population), with a maximum of up to 29,000. During summer and spring, Farewell Spit hosts $\geq 20,000$ shorebirds, thereby meeting the threshold for recognition as a site of international importance in accordance with Ramsar Convention Criterion 5 (Schuckard and Melville 2012). The maximum number of waders ever counted at Farewell Spit was 58,590 in February 1993 (Schuckard 2002). Of 38 different shorebird species recorded at the site, 30 species are migratory and 8 native. Of these migratory species, 27 are rare or uncommon with maximum numbers varying between one and 50 birds per year

The average number of all Arctic-breeding migratory shorebirds in the Top of the South Island in spring (November) showed a decline of 26% between the periods 1983-2000 and 2001-2012.

The site is of international importance for Red Knot, a species in steep decline in the flyway. On average 8,260 Red Knots (7.9% of the flyway population) were recorded from Farewell Spit during the summer; the maximum was 12,416 birds. Overall the population in the top of the South Island declined from about 13,700 to 9,000 (Schuckard and Melville 2013).

Farewell Spit hosts internationally important numbers of bar-tailed godwits during the spring, summer, and winter periods. On average 11,872 godwits occur in the summer period, 9.1% of the total estimated flyway population (maximum 15,723). Overall the population in the Top of the South Island has declined from about 28,000 to 15,700, a decline of about 25%. The species is assessed to be in 'decline' (Schuckard and Melville 2013).

Farewell Spit supports 2.3% of the EAAFP population of ruddy turnstone. Average counts 679, maximum 1,028. Numbers have decreased at all sites from about 1,000 to 540, a decrease of about 47%. The population in the Top of the South Island is assessed to be in 'decline' (Schuckard and Melville 2013).

The undisturbed dunes provide breeding habitat for colonies of Australian Gannets *Sula serrator*, Caspian Tern *Hydroperone caspia* and White-fronted Tern *Sterna striata*. The gannet colony at the end of the spit continues to grow, and now holds over 3900 pairs (Schuckard *et al.* 2011). The *Zostera* beds of Farewell Spit also provide a food source for the largest congregation of moulting black swans in New Zealand. From 6000 to 14 000 birds have been counted annually from 1977 to 2002 (Battley *et al.* 2005).

Southern Fur Seals occasionally haul out, and Golden Bay is well known for its not infrequent mass whale strandings, which sometimes occur on the inner spit (Cromarty and Scott 1996).

21. Social, economic and cultural values:

a) Describe if the site has any general social, economic and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

Aesthetic values are high. Farewell Spit is the largest landform of its type in the country and is an outstanding example of the transporting power of the wind and the shaping of loose sediments by currents. There is much evidence of traditional Maori use, i.e. utilizing stranded marine mammals, gathering shellfish, hunting birds and flaking quartz and quartzite. Local Maori have a strong spiritual sensitivity and have adopted the traditional name of Onetahua for their marae.

Historic evidence shows that Farewell Spit was used by Maori, although the lack of fresh water supply would have restricted permanent habitation to the base of the Spit. A burial site has been noted in the area. On Triangle Flat at the base of the Spit, considerable quantities of Maori tools and weapons have been found and it is thought that this was one of the areas where local people made a final stand against the invaders from the North Island in the late 1820's. Occupation sites

can be found at the Triangle Flat and Fossil Point. Midden sites are located at various points along the length of the Spit (Davidson *et al* 1993).

The coasts were subject to sealing and whaling. Since 1840, there have been 11 shipwrecks on or near the spit. The lighthouse near the tip of the Spit was built in 1870 and manned until 1985. The spit was leased for grazing from 1874 until 1976 (Cromarty and Scott 1996).

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? (Double-click the checkbox to check and choose "Checked" under "Default Value" from "Check Box Form Field Options" window)

If yes, tick the box and describe this importance under one or more of the following categories:

- I. Sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- II. Sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- III. Sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- IV. Sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

22. Land tenure/ownership:

a) Within the Flyway Network site:

The spit is Crown land held as Nature Reserve and surrounding areas are Crown land held as Recreation Reserve. The surrounding seas have no specially protected status (Cromarty and Scott 1996). Farewell Spit was set aside as a flora and fauna reserve in 1938, and was listed as a wetland of international importance under the Ramsar Convention on 13 August 1976. In 1980 its status was altered to a nature reserve and the surrounding intertidal zone set aside as a wildlife sanctuary. The Spit was designated as a Network Site within the East Asian Australasian Shorebird Site Network (EAASSN), the predecessor to the EAAFP, in March 1996 (Schuckard 2002).

b) In the surrounding area:

The only adjacent land area, Puponga Farm Park, is Crown land and has been gazetted as a Recreation Reserve (Cromarty and Scott 1996).

23. Current land (including water) use:

a) Within the Flyway Network site:

Conservation of flora and fauna and protection of wildlife are the main land uses at the spit. The area continues to be given a high level of protection against human interference. Some tourism occurs. Two concessions to transport visitors to the lighthouse are based at Collingwood. The outer beach of the Spit is popular with locals for fishing. Public entry is restricted to —3 km from the base of the Spit and this area is popular for shore-based recreation, especially during the summer (Davidson *et al* 1993). The lighthouse, which is now unstaffed, lies about 20 km west of Puponga. There is a house with some trees adjacent to the lighthouse used as a base for field staff and researchers.

b) In the surroundings/catchment:

Land at the base of the spit has been developed for farming. Past burning and grazing have modified the vegetation (Davidson *et al* 1993). Puponga is run as a Farm Park with access to the public. The primary objective of management of the Farm Park is to protect the spit

24. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) Within the Flyway Network site:

The processes forming the sandspit have not, and probably could not, be altered by the hand of man (Cromarty and Scott 1996) although the spit itself has been. From the 1850s, it was extensively grazed by cattle and sheep which, along with fires has substantially modified vegetation types. Since 1975 when all stock were removed from the spit, and despite the presence of some deer, the natural vegetation has begun to regenerate

The most dramatic change has been with red knot at Farewell Spit with their numbers declining from 27, 000 in 1961 to 6800 in 2001. Red knot at Manukau Harbour have shown an increase in numbers over the same period—the two sites accounting for more than 50% of all red knot visiting New Zealand. An analysis of red knot count data concluded that the sharp increase in red knot in the Manukau Harbour from 1960 to the 1980s coincided with a small loss at Farewell Spit, however, by the time the numbers at Farewell Spit start their steep decline around 1985, numbers at Manukau are more or less stable. It is clear that the sharp numerical losses of red knots from Farewell Spit have not been compensated by complementary increases at Manukau indicating different population processes at each site (Schuckard 2002). Red knot are specialist feeders on small bivalves and these dramatic trends may have been related to changes in food abundance or availability. In the absence of any information on the benthos at these sites it is only possible to speculate. There is a need for the collection of baseline data on benthic invertebrates at major wader sites and for monitoring of this to be integrated with the census data. This additional information will help to interpret whether changes in the number and species of wader using a particular site is due to natural environmental factors or human impact (Schuckard 2002).

b) In the surrounding area:

Land at the base of the Spit has been developed for farming.

25. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Flyway Network site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

Farewell Spit is a Nature Reserve administered by the Department of Conservation. The Farewell Spit Management Plan (1990) allowed for natural processes to occur with minimum intervention. Access is controlled with public entry by permit only and dogs are prohibited.

Tourist traffic to the lighthouse is tightly controlled. The Nature Reserve status recognised Farewell Spit's outstanding values. It has been a protected area since 1938, when almost all the land (1,961 ha) above high tide level was set apart as a Flora and Fauna Reserve, and the area uncovered at low tide (then 9,360 ha) was set aside as a Sanctuary for the Preservation of Wildlife. The only adjacent land area, Puponga Farm Park, is Crown land and has been gazetted as a Recreation Reserve. Farewell Spit was listed under the Convention on Wetlands of International Importance especially as Waterfowl (Ramsar) on 13 August 1976. The management plan for the Nature Reserve was revised in 1990. The Farewell Spit Nature Reserve and Puponga Farm Park Management Plan covered both the Nature Reserve and the adjoining Farm Park.

Farewell Spit and the adjacent intertidal areas are a 'restricted area' under Part 71 of the Civil Aviation Rules - no aircraft are allowed to fly below 2,000 ft, this being to reduce disturbance to birds. Elsewhere in the region there are no height restrictions (Schcukard and Melville 2013).

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate, see Annex 3):

Ia ; Ib ; II ; III ; IV ; V ; VI ; N/A

c) Does an officially approved management plan exist; and is it being implemented?:

No

If yes, is it being implemented?: If no, is one being planned?

A draft plan was prepared by Katherine Hughes several years ago but has never been implemented (Hans Stoffgren pers comm).

d) Describe any other current management practices:

26. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

Recommendations of a report for Tasman District Council include maintaining Nature Reserve status and current restrictions and reducing disturbance to roosting birds in the 'Gobi Desert' public access area through the provision of signage (Schuckard and Melville 2013b).

27. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring: existence of a field research station, etc.

Birds New Zealand (The Ornithological Society) continues to monitor the shorebird populations regularly, with logistical assistance from the Department of Conservation. The Nelson/Marlborough Fish and Game Council monitor game-bird numbers by aerial counts. Various studies have been undertaken to determine the origin and formation of the sandspit. A current project is studying the gannet colony near the tip of the spit. Accommodation is available to scientists through the Department of Conservation at the lighthouse residence.

28. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The area is remote and vulnerable, and access is restricted, however, some educational materials concerning the reserve have been produced.

Teaching resource contains background information on the history and biodiversity of the area and suggestions for class and site based activities and student activity sheets based on the themes of migrating birds, adaptations, food chains/coastal productivity, resource management and weeds (DoC website, 2014).

<http://www.doc.govt.nz/getting-involved/training-and-teaching/teaching-resources/field-trips/nelson-tasman/farewell-spit-puponga-farm-park/>

29. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Public walking access is limited to 4km of the outer beach and 2.4km along the inner beach.

Currently there is one concessionaire conducting eco-tours to the lighthouse. One of these is licensed to take tours to the Australasian gannet colony, Bush End Point and Stockyard to observe birds. Strict controls ensure the birds are not disturbed (Schuckard 2002).

30. Threats

Information Sheet on EAA Flyway Network Sites

Which of the following threats is present historically – when the threat stopped but the effects are still there (H), currently (C) or potentially (P)?

Coastal erosion and sea level rise; walkers (Schuckard and Melville)

	Historically	Currently	Potentially
Residential and commercial development			
housing and urban areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
commercial and industrial areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tourism and recreation areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agriculture and aquaculture			
annual and perennial non-timber crops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wood and pulp plantations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
livestock farming and ranching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
marine and freshwater aquaculture	<input type="checkbox"/>	X	X
Energy production and mining			
oil and gas drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mining and quarrying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
renewable energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transportation and service corridors			
roads and railroads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
utility and service lines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
shipping lanes	<input type="checkbox"/>	X	X
flight paths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biological resource use			
hunting and collecting terrestrial animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
gathering terrestrial plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
logging and wood harvesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fishing and harvesting aquatic resources	<input type="checkbox"/>	X	X
Human intrusions and disturbance			
recreational activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
war, civil unrest and military exercises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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work and other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural system modifications			
fire and fire suppression	<input type="checkbox"/>	X	X
dams and water management/use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other ecosystem modifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive and other problematic species and genes			
invasive non-native/alien species	<input type="checkbox"/>	X	X
problematic native species	<input type="checkbox"/>	X	X
introduced genetic material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pollution			
household sewage and urban waste water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
industrial and military effluents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
agricultural and forestry effluents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
garbage and solid waste	<input type="checkbox"/>	X	X
air-borne pollutants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
excess energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geological events			
volcanoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
earthquakes/tsunamis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
avalanches/landslides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate change and severe weather			
habitat shifting and alteration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
droughts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
temperature extremes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
storms and flooding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please write here any additional threats and comments/queries you have on the threats.

Impacts of black swan population

Given the apparent importance of eelgrass to the infaunal communities that shorebirds depend on, accurate mapping of *Zostera* is an important step in adequately monitoring the intertidal environment. There is obviously no direct competition between black swans and the shorebirds of

Farewell Spit. They feed on different matter, and swans feed largely in water. The effects of swan grazing on *Zostera* dynamics and nutrient cycling have yet to be studied at Farewell Spit. Swans could plausibly affect the distribution or growth rates of *Zostera* on Farewell Spit. For instance, if intermediate *Zostera* cover inhibits settlement of pipi spat, and swan foraging promotes the spread of *Zostera*, then swan foraging could indirectly influence shorebird populations, such as red knots. The interrelationships between swans, *Zostera*, invertebrates, and shorebirds deserve future study (Battley et al. 2005).

Introduced Red Deer *Cervus elaphus* and European Hare *Lepus europaeus* present a threat to the plant communities and especially the threatened plant species. There are still some problems with invasion of other introduced species, such as Gorse *Ulex europaeus*, Blackberry *Rubus fruticosus* and Climbing Dock. Trials were carried out to find an effective herbicide for Climbing Dock, and these appear to have been successful. Small patches of *Spartina* occasionally appear along the inner edge of the spit (Davidson *et al* 1993). A major potential threat would be from an oil spill from the considerable amount of shipping in the area. The dumping of plastics from passing boats is also a problem. Fire is a major potential threat, especially in view of the strong winds that occur in the area in summer. Cockle harvesting nearby in Golden Bay may have some effect on marine food chains in the area, if harvesting exceeds sustainable levels (Cromarty and Scott 1996).

Annex 1: Criteria for the inclusion of sites in the Flyway Site Network

(From the Partnership Text)

To be considered for inclusion in the Flyway Site Network, this Partnership adopts the following criteria:

- a. Convention on Wetlands (Ramsar, Iran, 1971) criteria for internationally important sites for migratory waterbirds. That is:

Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.

Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

- b. The staging criteria as applied under the Asia - Pacific Migratory Waterbird Conservation Strategy. That is:

i. A staging site should be considered internationally important if it regularly supports 0.25% of individuals in a population of one species or subspecies of waterbirds on migration.

ii. A staging site should be considered internationally important if it regularly supports 5,000 or more waterbirds at one time during migration.

- c. Under exceptional circumstances a site can be nominated if it supports migratory waterbirds at a level or stage of their life cycle important to the maintenance of flyway populations. Justification of such nominations will be considered by the Partnership on a case by case basis.

Annex 2: Ramsar Classification System for Wetland Type

The codes are based upon the Ramsar Classification System for Wetland Type as approved by Recommendation 4.7 and amended by Resolutions VI.5 and VII.11 of the Conference of the Contracting Parties. The categories listed herein are intended to provide only a very broad framework to aid rapid identification of the main wetland habitats represented at each site.

To assist in identification of the correct Wetland Types to list in section 19 of the RIS, the Secretariat has provided below tabulations for Marine/Coastal Wetlands and Inland Wetlands of some of the characteristics of each Wetland Type.

Marine/Coastal Wetlands

- A -- **Permanent shallow marine waters** in most cases less than six metres deep at low tide; includes sea bays and straits.
- B -- **Marine subtidal aquatic beds**; includes kelp beds, sea-grass beds, tropical marine meadows.
- C -- **Coral reefs.**
- D -- **Rocky marine shores**; includes rocky offshore islands, sea cliffs.
- E -- **Sand, shingle or pebble shores**; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.
- F -- **Estuarine waters**; permanent water of estuaries and estuarine systems of deltas.
- G -- **Intertidal mud, sand or salt flats.**
- H -- **Intertidal marshes**; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.
- I -- **Intertidal forested wetlands**; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.
- J -- **Coastal brackish/saline lagoons**; brackish to saline lagoons with at least one relatively narrow connection to the sea.
- K -- **Coastal freshwater lagoons**; includes freshwater delta lagoons.
- Zk(a) -- **Karst and other subterranean hydrological systems**, marine/coastal

Inland Wetlands

- L -- **Permanent inland deltas.**
- M -- **Permanent rivers/streams/creeks**; includes waterfalls.
- N -- **Seasonal/intermittent/irregular rivers/streams/creeks.**
- O -- **Permanent freshwater lakes (over 8 ha)**; includes large oxbow lakes.
- P -- **Seasonal/intermittent freshwater lakes (over 8 ha)**; includes floodplain lakes.
- Q -- **Permanent saline/brackish/alkaline lakes.**
- R -- **Seasonal/intermittent saline/brackish/alkaline lakes and flats.**

- Sp -- **Permanent saline/brackish/alkaline marshes/pools.**
- Ss -- **Seasonal/intermittent saline/brackish/alkaline marshes/pools.**
- Tp -- **Permanent freshwater marshes/pools;** ponds (below 8 ha), marshes and swamps on inorganic soils; with emergent vegetation water-logged for at least most of the growing season.
- Ts -- **Seasonal/intermittent freshwater marshes/pools on inorganic soils;** includes sloughs, potholes, seasonally flooded meadows, sedge marshes.
- U -- **Non-forested peatlands;** includes shrub or open bogs, swamps, fens.
- Va -- **Alpine wetlands;** includes alpine meadows, temporary waters from snowmelt.
- Vt -- **Tundra wetlands;** includes tundra pools, temporary waters from snowmelt.
- W -- **Shrub-dominated wetlands;** shrub swamps, shrub-dominated freshwater marshes, shrub carr, alder thicket on inorganic soils.
- Xf -- **Freshwater, tree-dominated wetlands;** includes freshwater swamp forests, seasonally flooded forests, wooded swamps on inorganic soils.
- Xp -- **Forested peatlands;** peat swamp forests.
- Y -- **Freshwater springs; oases.**
- Zg -- **Geothermal wetlands**
- Zk(b) -- **Karst and other subterranean hydrological systems, inland**

Note: "floodplain" is a broad term used to refer to one or more wetland types, which may include examples from the R, Ss, Ts, W, Xf, Xp, or other wetland types. Some examples of floodplain wetlands are seasonally inundated grassland (including natural wet meadows), shrublands, woodlands and forests. Floodplain wetlands are not listed as a specific wetland type herein.

Human-made wetlands

- 1 -- **Aquaculture (e.g., fish/shrimp) ponds**
- 2 -- **Ponds;** includes farm ponds, stock ponds, small tanks; (generally below 8 ha).
- 3 -- **Irrigated land;** includes irrigation channels and rice fields.
- 4 -- **Seasonally flooded agricultural land** (including intensively managed or grazed wet meadow or pasture).
- 5 -- **Salt exploitation sites;** salt pans, salines, etc.
- 6 -- **Water storage areas;** reservoirs/barrages/dams/impoundments (generally over 8 ha).
- 7 -- **Excavations;** gravel/brick/clay pits; borrow pits, mining pools.
- 8 -- **Wastewater treatment areas;** sewage farms, settling ponds, oxidation basins, etc.
- 9 -- **Canals and drainage channels, ditches.**
- Zk(c) -- **Karst and other subterranean hydrological systems, human-made**

Annex 3: IUCN Protected Areas Categories System

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation.

Ia Strict Nature Reserve

Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

Ib Wilderness Area

Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

II National Park

Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

III Natural Monument or Feature

Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

IV Habitat/Species Management Area

Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

V Protected Landscape/ Seascape

A protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

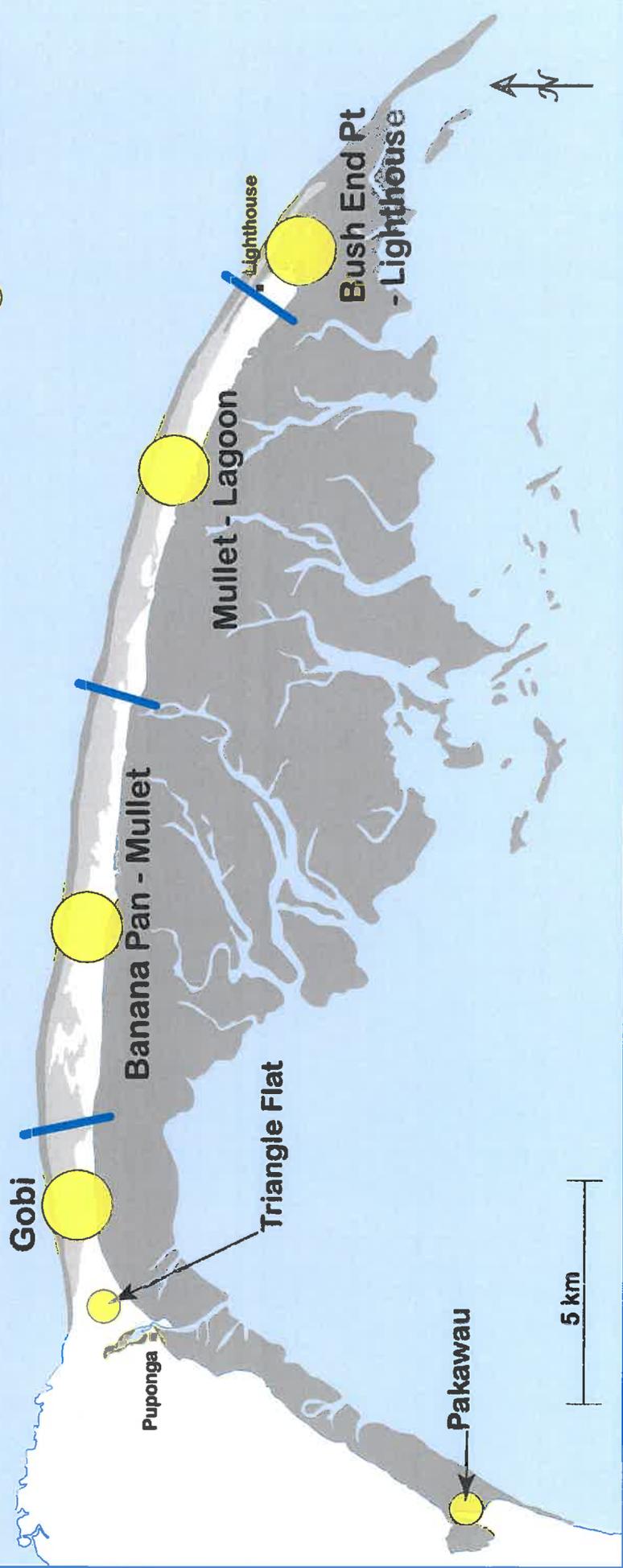
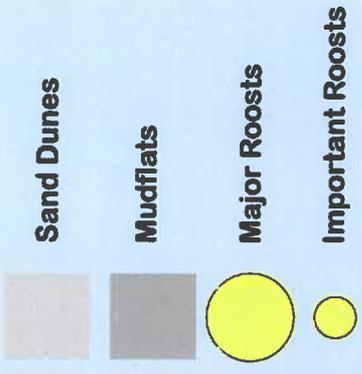
VI Protected area with sustainable use of natural resources

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Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems.



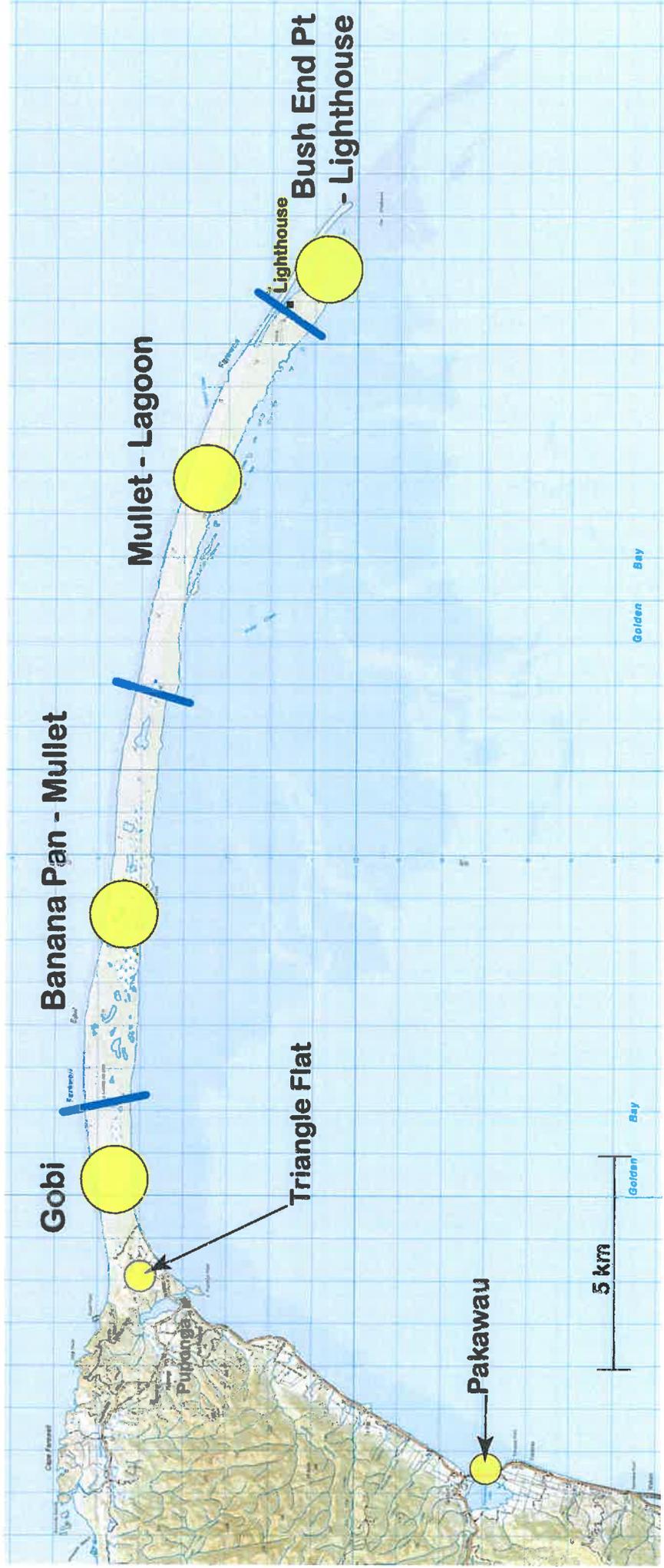
Farewell Spit Wader Roost Sites





Farewell Spit Wader Roost Sites

- Major Roosts
- Important Roosts





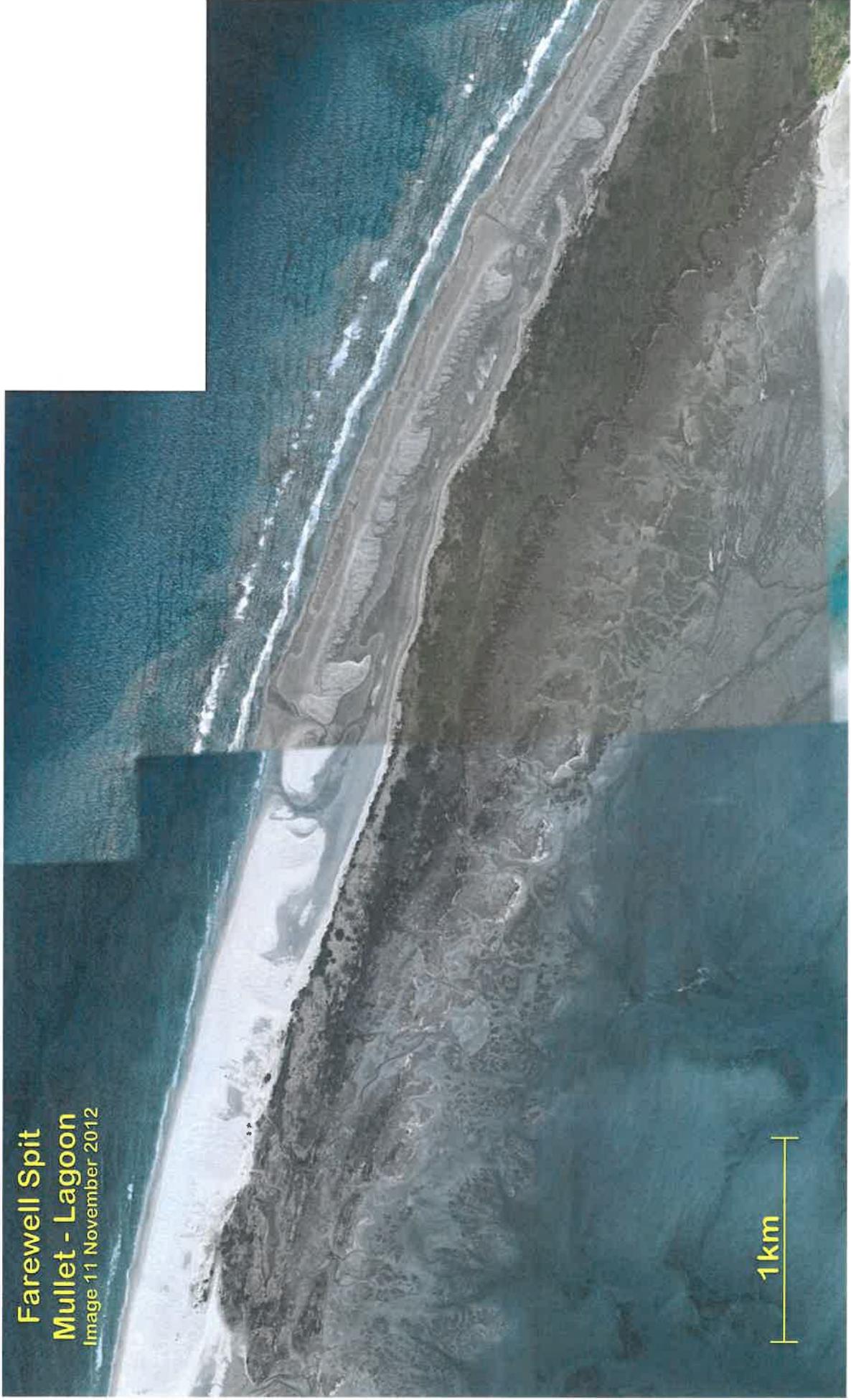
Farewell Spit
Triangle Flat - Gobi
Image 11 November 2012



Farewell Spit
Banana Pan - Mullet
Image 11 November 2012



Farewell Spit
Mullet - Lagoon
Image 11 November 2012





**Farewell Spit
Lighthouse - Bushend Point**

Image 11, November 2012

1km

