



EIS to accompany draft Storm Bay North MFDP

## **Appendix 12**

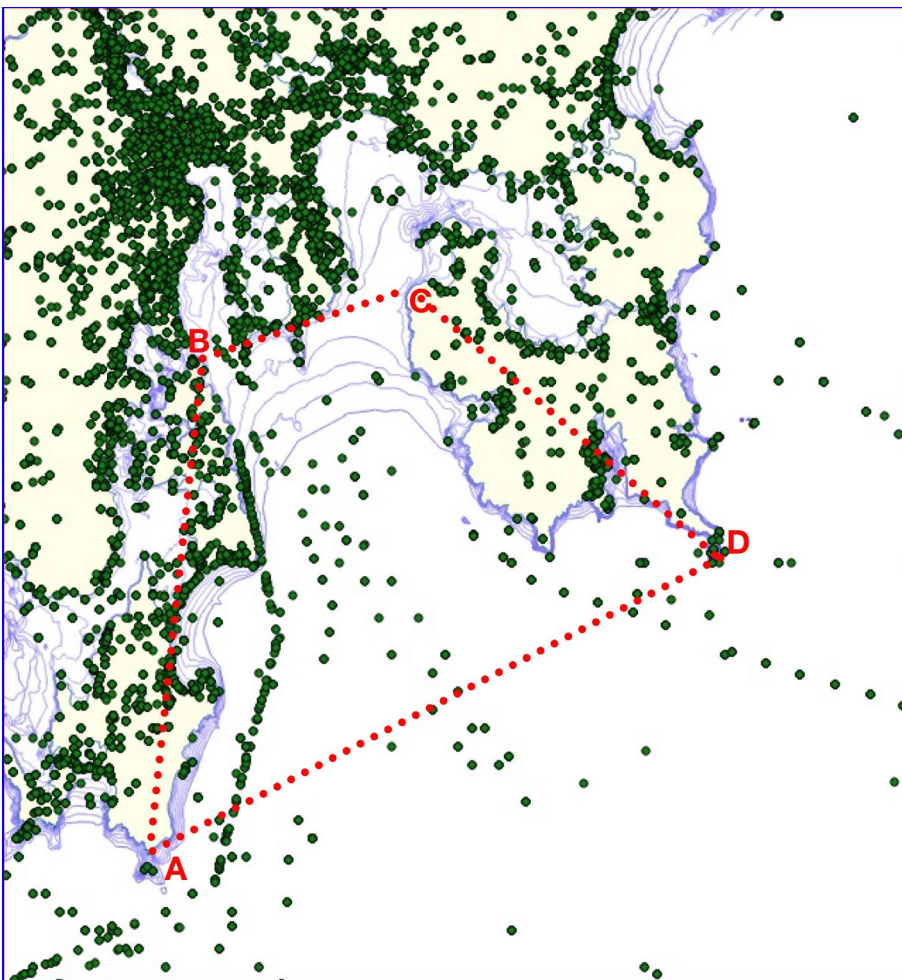
### **Seabirds in Storm Bay**

**Seabirds in Storm Bay – supporting text, data and syntheses for North Barker**  
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In this report, BirdLife Tasmania provides data on seabirds in Storm Bay to contribute to North Barker’s environmental assessment for Petuna’s proposed aquaculture operations in Storm Bay, Southeast Tasmania.

**1. Focal area**

All records in the BirdLife Tasmania database within a polygon bounded by Dennes Pt, Northwest Head, The Friars and Tasman I (Figure 1, Table 1) were extracted. In total, 246 taxa have been reported within the polygon since the mid-19<sup>th</sup> century. Of these, 68 taxa are considered seabirds and there have been in excess of 15,600 records (Table 2).



**Figure 1.** Map showing Storm Bay, southeast Tasmania. Green symbols denote bird observation(s) and the bathymetry to 40m (5m isobaths) is shown. The polygon for data extraction is denoted by the dotted lines; the four vertices are detailed in Table 1.

Vertex	Latitude °S	Longitude °E	
A	The Friars	-43.530	147.296
B	Dennes Point	-43.071	147.357
C	Northwest Head	-42.994	147.613
D	Tasman Island	-43.243	148.019

**Table 1.** Vertices for the Storm Bay polygon shown in Figure 1.

## **2. Focal species**

Table 2 lists the 68 seabird taxa reported from within the polygon shown in Figure 1. The table also lists the scientific name for each taxon, and the number of individuals observed per taxon. In total, 15,687 individuals have been recorded within the Storm Bay polygon.

The 68 taxa are comprised of 47 taxa of albatross, giant-petrel, petrel, prion, shearwater and diving-petrel, one species of penguin, seven species of pelican, cormorant and gannet, and 13 species of gull, tern, skua and jaeger (Table 2).

The 47 taxa of albatross, giant-petrel, petrel, prion, shearwater and diving-petrel are known to be able to locate their prey in the marine environment by smell – olfactory foraging (eg Bonadonna et al 2003a,b, Nevitt 1999, 2000, 2008, Nevitt et al 2008). It is known that some species of skuas are also able to locate prey by smell (Jouventin and Robin 1984), but there is no evidence currently available to indicate whether gulls, terns and jaegers (close relatives of skuas) are able to do so.

## **3. Scent trails as potential sources of risk**

Aquaculture facilities can generate significant scent trails downwind from their operations, particularly from the fish food and from the live fish themselves. These scent trails are carried and dispersed downwind by the prevailing winds.

There are no data available on the distance and persistence of these scent trails, or of the sensitivities of different seabird species to these trails. However, it is known that these seabird species can and do forage up to several thousands of kilometres from their colonies during the breeding season, and some circumnavigate the globe over the Southern Ocean during non-breeding seasons.

The seabird records from Storm Bay of seabirds were obtained throughout the year, indicating the presence of non-breeding seabirds during the summer months, and of breeding and non-breeding seabirds during the winter months (BirdLife Tasmania, unpubl data).

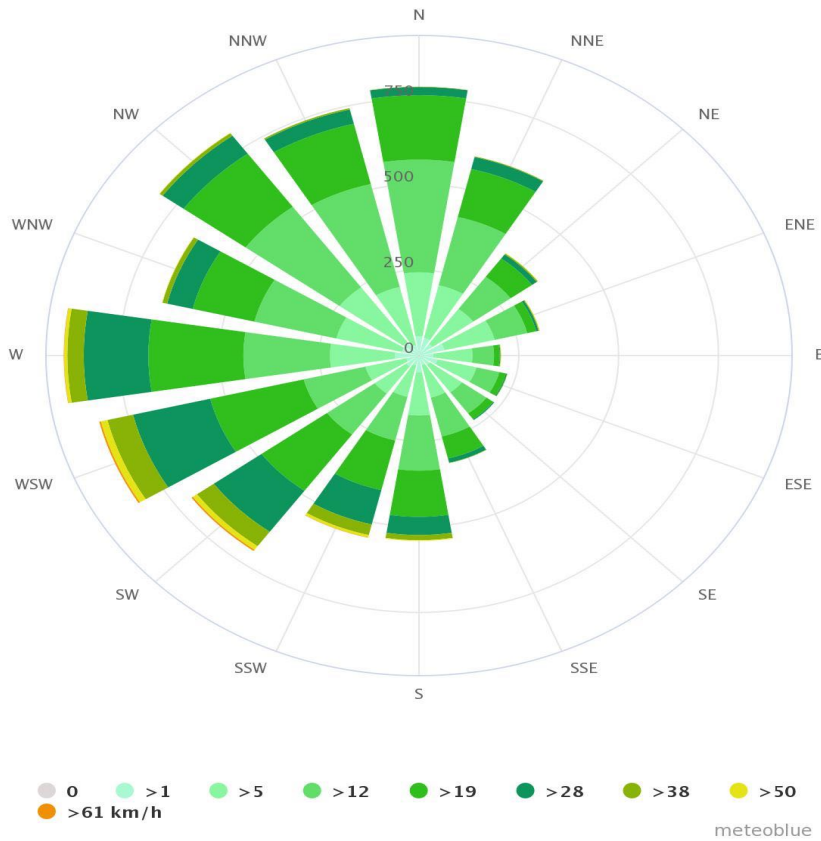
Figure 3 shows wind the 30-year rose data for Nubeena. Any winds from NNE-WNW are likely to carry scents from fish farms into Storm Bay and potentially farther into the Southern Ocean south and southeast of Tasmania. The scent trails will potentially act as attractants to the albatrosses, petrels, prions etc present in the area.

The seabirds typically fly upwind following a scent trail (olfactory foraging) then switch to visual location of prey closer to the source of the trail. The seabirds typically travel throughout a 24h period, and will travel as far at night as during the day.

The potential risk to seabirds attracted to the facilities in Storm Bay arises from the birds striking and/or entangling themselves in the infrastructure. These risks are greater at night and during foggy/poor visibility periods.

## **4. Mitigation and minimisation of risks to seabirds associated with scents**

Any efforts to minimise the production of scent trails from fish farms throughout the year will reduce the potential risk of attracting olfactory-foraging species to Storm Bay and to the facilities themselves. All options available should be investigated for their efficacy in reducing the production of scent trails from the proposed facilities.



**Figure 3.** Wind rose for Nubeena 43.1°S 147.74°E, 18m ASL, based on 30 year data set. The rose shows for Nubeena shows how many hours per year the wind blows from the indicated direction. Data from [https://www.meteoblue.com/en/weather/forecast/modelclimate/nubeena\\_australia\\_2154779](https://www.meteoblue.com/en/weather/forecast/modelclimate/nubeena_australia_2154779)), downloaded 15 September 2017.

Taxon	Common name	Obs
<i>Oceanites oceanicus oceanicus</i>	Wilson's Storm-Petrel	6
<i>Garrodia nereis</i>	Grey-backed Storm-Petrel	17
<i>Pelagodroma marina</i>	White-faced Storm-Petrel	24
<i>Fregetta tropica</i>	Black-bellied Storm-Petrel	7
<i>Fregetta grallaria</i>	White-bellied Storm-Petrel	16
<i>Diomedea exulans</i>	Wandering Albatross	37
<i>Diomedea epomophora</i>	Southern Royal Albatross	11
<i>Diomedea royal albatross sp.</i>	Royal Albatross	21
<i>Thalassarche melanophrys</i>	Black-browed Albatross	108
<i>Thalassarche impavida</i>	Campbell Albatross	2
<i>Thalassarche cauta</i>	Shy Albatross	188
<i>Thalassarche steadi</i>	White-capped Albatross	68
<i>Thalassarche salvini</i>	Salvin's Albatross	5
<i>Thalassarche chrysostoma</i>	Grey-headed Albatross	22
<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	89
<i>Thalassarche bulleri</i>	Buller's Albatross	93
<i>Phoebastria fusca</i>	Sooty Albatross	10
<i>Phoebastria palpebrata</i>	Light-mantled Sooty Albatross	5
<i>Macronectes giganteus</i>	Southern Giant Petrel	21
<i>Macronectes spp.</i>	Giant Petrel (species unknown)	9
<i>Macronectes halli</i>	Northern Giant Petrel	29

<i>Fulmarus glacialisoides</i>	Southern Fulmar	1
<i>Thalassoica antarctica</i>	Antarctic Petrel	2
<i>Daption capense</i>	Cape Petrel	21
<i>Halobaena caerulea</i>	Blue Petrel	4
<i>Pachyptila vittata</i>	Broad-billed Prion	1
<i>Pachyptila desolata</i>	Antarctic Prion	3
<i>Pachyptila belcheri</i>	Slender-billed Prion	2
<i>Pachyptila turtur</i>	Fairy Prion	59
<i>Procellaria aequinoctialis</i>	White-chinned Petrel	59
<i>Procellaria cinerea</i>	Grey Petrel	5
<i>Puffinus bulleri</i>	Buller's Shearwater	7
<i>Puffinus carneipes</i>	Flesh-footed Shearwater	2
<i>Puffinus griseus</i>	Sooty Shearwater	51
<i>Puffinus tenuirostris</i>	Short-tailed Shearwater	595
<i>Puffinus gavia</i>	Fluttering Shearwater	35
<i>Puffinus huttoni</i>	Hutton's Shearwater	5
<i>Puffinus assimilis</i>	Little Shearwater	19
<i>Lugensa brevirostris</i>	Kerguelen Petrel	1
<i>Pterodroma lessonii</i>	White-headed Petrel	24
<i>Pterodroma macroptera</i>	Great-winged Petrel	21
<i>Pterodroma solandri</i>	Providence Petrel	4
<i>Pterodroma inexpectata</i>	Mottled Petrel	26
<i>Pterodroma leucoptera</i>	Gould's Petrel	6
<i>Pterodroma cookii</i>	Cook's Petrel	1
<i>Pterodroma cervicalis</i>	White-necked Petrel	12
<i>Pelecanoides urinatrix</i>	Common Diving-Petrel	83
<i>Eudyptula minor</i>	Little Penguin	274
<i>Morus serrator</i>	Australasian Gannet	734
<i>Phalacrocorax melanoleucos</i>	Little Pied Cormorant	974
<i>Phalacrocorax carbo</i>	Great Cormorant	569
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	192
<i>Phalacrocorax varius</i>	Pied Cormorant	3
<i>Phalacrocorax fuscescens</i>	Black-faced Cormorant	1635
<i>Pelecanus conspicillatus</i>	Australian Pelican	53
<i>Catharacta maccormicki</i>	South Polar Skua	8
<i>Catharacta lonnbergi</i>	Brown Skua	5
<i>Stercorarius pomarinus</i>	Pomarine Jaeger	4
<i>Stercorarius parasiticus</i>	Arctic Jaeger	58
<i>Stercorarius longicaudus</i>	Long-tailed Jaeger	12
<i>Sterna nereis</i>	Fairy Tern	114
<i>Sterna caspia</i>	Caspian Tern	144
<i>Sterna striata</i>	White-fronted Tern	30
<i>Sterna paradisaea</i>	Arctic Tern	12
<i>Sterna bergii</i>	Crested Tern	1198
<i>Larus pacificus</i>	Pacific Gull	2532
<i>Larus dominicanus</i>	Kelp Gull	2720
<i>Chroicocephalus novaehollandiae</i>	Silver Gull	2579

**Table 2.** List of 68 seabird taxa reported from the Storm Bay polygon (Figure 1) extracted from the BirdLife Tasmania database on 15 September 2017.

## References cited

- Bonadonna F, Hesters F, Jouventin P 2003a. Scent of a nest: discrimination of own-nest odours in Antarctic prions, *Pachyptila desolata*. *Behavioral Ecology and Sociobiology* 54, 174-8.
- Bonadonna F, Cunningham GB, Jouventin P, Hesters F, Nevitt GA 2003b. Evidence for nest-odour recognition in two species of diving petrel. *Journal of Experimental Biology* 206, 3719-22.
- Jouventin P, Robin JP 1984. Olfactory experiments on some Antarctic birds. *Emu* 84, 46-8.
- Nevitt G 1999. Olfactory foraging in Antarctic seabirds: a species-specific attraction to krill odors. *Marine Ecology Progress Series* 11, 235-41.
- Nevitt GA 2000. Olfactory foraging by Antarctic procellariiform seabirds: life at high Reynolds numbers. *The Biological Bulletin* 198, 245-53.
- Nevitt GA 2008. Sensory ecology on the high seas: the odor world of the procellariiform seabirds. *Journal of Experimental Biology* 211, 1706-13.
- Nevitt GA, Losekoot M, Weimerskirch H 2008. Evidence for olfactory search in wandering albatross, *Diomedea exulans*. *Proceedings of the National Academy of Sciences* 105, 4576-81.