BEFORE THE ENVIRONMENTAL PROTECTION AUTHORITY
AT WELLINGTON

IN THE MATTER	of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012
AND	
IN THE MATTER	of a decision-making committee appointed to hear a marine consent application by Trans Tasman Resources Limited to undertake iron ore extraction and processing operations offshore in the South Taranaki Bight

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EXPERT EVIDENCE OF DAVID RICHARD THOMPSON ON BEHALF OF TRANS TASMAN RESOURCES LIMITED

15 DECEMBER 2016

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INTRODUCTION

Qualifications and experience

1. My name is David Richard Thompson. I am a seabird ecologist working within the Marine Ecology Group at the Wellington campus of the National Institute of Water and Atmospheric Research Limited (NIWA), where I have been employed since 1998. I was awarded a Bachelor of Science in Marine Biology by the University of Liverpool in 1985 and a PhD in Zoology by the University of Glasgow in 1990.

2. I have 26 years of professional experience in marine biology, particularly seabird ecology. I have research interests and experience in seabirds as sentinels of marine ecosystems, at-sea distributions of seabirds, seabird-fishery interactions and the use of stable isotopes in marine ecology. I have authored 71 science journal papers, six book chapters and 36 science reports for a broad range of clients, as outlined in Appendix A to my evidence.

Code of conduct

3. I confirm that I have read the Code of Conduct for Expert Witnesses as contained in the Environment Court Practice Note dated 1 December 2014. I agree to comply with this Code. This evidence is within my area of expertise, except where I state that I am relying upon the specified evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

SCOPE OF EVIDENCE

4. For the TTR project I prepared or contributed to the preparation of four reports:

   (a) Thompson 2013 Seabirds of the South Taranaki Bight NIWA Client Report WLG2013-15;

(b) Thompson 2013 Effects of ships lights on fish, squid and seabirds NIWA Client Report WLG2013-16;

(c) MacDiarmid et al. 2011 South Taranaki Bight Factual Baseline Environmental Report NIWA Client Report WLG2011-43; and

(d) MacDiarmid et al. 2015 Assessment of the scale of marine ecological effects of seabed mining in the South Taranaki Bight: Zooplankton, fish, kai moana, sea birds, and marine mammals NIWA Client Report WLG2015-13.

5. I confirm the contents of these reports are to the best of my knowledge correct and are the reports that were included as part of the Impact Assessment. These reports were peer reviewed by Aquatic Environmental Sciences Limited.

6. This evidence is based upon reviews of the seabirds that occur within the South Taranaki Bight (STB), of the effects of ship lighting on seabirds, squid and fish, and upon an assessment of the scale of ecological effects of seabed mining on seabirds.

ASSESSMENT OF EFFECTS

Seabirds and shorebirds in the South Taranaki Bight

7. The STB supports a relatively modest seabird assemblage, in terms of number of species utilising the area compared to the approximately 162 seabird taxa reported from throughout the New Zealand region, but detailed, systematic and quantitative information on the at-sea distribution of virtually all species is currently lacking for the STB, although I note seabird monitoring will form part of the baseline environment monitoring plan set out in the proposed conditions.

8. Based on a literature search (see Appendix A for sources) and sightings information publically available at the 'eBird' website (see http://ebird.org/content/newzealand/), Table A summarises seabird taxa that are likely to occur in the STB at some time during the year, ranked according to the Department of Conservation's conservation status. This list is not intended to be definitive and additional taxa could occur in the region.

9. Four taxa classified as 'threatened – nationally critical' are likely to occur in the STB (Antipodean albatross, Gibson's albatross, Salvin's albatross and black-billed gull), and a further six, 'threatened' taxa are also likely to occur in the area (black-fronted tern - 'nationally endangered', and Caspian tern, red-billed gull, pied shag, flesh-footed shearwater and grey-headed albatross – all 'nationally vulnerable': Table A).

10. Although some seabird species have been observed from, and can occur relatively close to, the coast, albatross, shearwater and petrel species tend to be relatively pelagic and wide-ranging in their distributions and will likely occur anywhere throughout the STB.

11. In contrast, some of the species occurring in the STB are likely to be relatively coastal in their distributions. Such species include blue penguin, shags, gulls and terns, although these latter two groups can extend to more offshore areas.

12. Additionally, the coastal environment bordering the STB supports a range of shorebirds that are unlikely to occur at-sea. Based largely on sightings information publically available at the 'eBird' website (see http://ebird.org/content/newzealand/), Table A also summarises shorebird taxa occurring along the coast of the

STB and ranked according to the Department of Conservation's conservation status.

13. One species, New Zealand shore plover, is classified as 'threatened – nationally critical', with a further four taxa classified as 'threatened – vulnerable' (wrybill, lesser knot, banded dotterel and northern New Zealand dotterel: Table A).

14. The STB does not support large breeding colonies for any species but a number of coastal estuarine sites are of significant value to coastal, shore, wading, and migratory bird species. These include the Waikirikiri Lagoon, and the Whanganui, Whangaehu, Turakina, Manawatu and Rangitikei river estuaries. For example, the Manawatu estuary is the largest and most important estuary for birds in the southern half of North Island and is one of six New Zealand sites designated under the Convention on Wetlands of International Importance (also known as the Ramsar Convention). Over 90 bird species have been recorded at the site, including northern hemisphere migrants such as bar-tailed godwit and lesser knot, together with New Zealand species such as wrybill, northern New Zealand dotterel, banded dotterel and royal spoonbill.

Potential effects on seabirds and shorebirds

15. Seabirds could potentially be affected by the proposal through: displacement from the mining site (physical exclusion), reduced foraging efficiency (via increased turbidity from the sediment plume), noise, oil pollution and through effects of artificial nocturnal lighting.

Displacement

16. Seabirds are likely to be physically excluded from the operation site and are similarly unlikely to exploit the water column below the mining vessel. However, all seabirds

exploit relatively large areas and have relatively large distributions and ranges (see paragraphs 28 and 29) such that exclusion from the operation site will not have more than a negligible effect on seabirds.

Sediment plume

17. The sediment plume associated with the discharge of de-ored sediment back to the seafloor has the potential to affect seabirds through an increase in water turbidity and a corresponding reduction in foraging efficiency in visual predators such as shag species. Prey detection and capture may be impacted to the point where seabirds are ultimately displaced from areas of relatively high turbidity, moving to unaffected or less affected areas. However, sediment plume modelling suggests that mining-derived sediment would contribute a relatively modest amount of material to both the near-surface sediment load (up to 1 mg/L) and the near-bottom sediment load (up to 2 mg/L) in the vicinity of the proposed mining site, compared to existing background concentrations (around 10 mg/L near the surface close to the coast and up to 100 mg/L near to the bottom close to the coast: Hadfield & Macdonald 2015). Displacement of seabirds to unaffected or less affected areas nearby will not have a significant impact either at the individual or population level given the relatively high mobility and large distributions of potentially affected species.

Noise

18. Noise from mining operations, from the mining vessel itself, and perhaps a surrounding area influenced by operational noise, has the potential to displace birds (it is unlikely that seabirds will be attracted to operational noise). As noted in paragraph 16, seabirds exploit relatively large areas and any displacement through noise will not have a significant effect on any potentially affected species.

Oil spills

19. Oil spills from vessels have the potential to kill and otherwise negatively impact seabirds, both directly and indirectly, depending on the time and location of the spill in relation to seabird numbers, habitat-use and behaviour, all of which will vary temporally.

20. Species that are likely to be more at risk from an oil spill include those species that spend a relatively large amount of time on the sea surface or those which dive to capture prey underwater. These would include blue penguin, common diving petrel and all shag species. However, even species of seabird that spend relatively more time flying than those mentioned above could potentially be affected by an oil spill. For example, following the Rena oil spill in October 2011, species of albatross, petrel and shearwater were all collected oiled from beaches.

21. However, TTR has prepared a Spill Contingency Management Plan that will address the risks of unplanned oil spills and mitigation measures necessary to reduce risk levels to as low as reasonably practicable. On this basis, I consider the risk to seabirds from an oil spill to be low.

22. Shorebirds, including those identified in Table A, will be unaffected by the potential effects outlined above, and by the effects of artificial nocturnal lighting covered in paragraphs 23 to 27, but could potentially affected by spilled oil if it were to reach coastal habitats. However, as noted in paragraph 21, the likelihood of an oil spill is low and TTR has in place a comprehensive Spill Contingency and Management Plan to minimise as far as is practicable the effects of any release of oil. On this basis, I consider the risk to shorebirds from an oil spill to be low.

Lighting

23. TTR's proposed project will entail use of a large (345 m long) processing vessel that will be permanently moored over the extraction site offshore. The vessel will be permanently crewed and will be a 24/7 operation requiring deck lighting at night for safe operation. These deck lights, in combination with standard navigational lights, will locally increase the presence of artificial nocturnal lighting posing a theoretical threat to marine life.

24. While it is well known that light attracts many species of seabirds, fish and squid, and that this characteristic has been employed for centuries in order to enhance catches of some species for human consumption, there is a general paucity of quantified information on the non-targeted use of light at night and its effect on these marine groups.

25. Overall, artificial nocturnal light generally attracts all three groups of marine animals to a certain extent. The attractiveness of light is not universal across these marine species: for example, the majority of diurnally-active seabirds appear not to exhibit marked attraction to artificial light, whereas light can potentially be a problem for nocturnal species.

26. For fish and squid, any effects of the iron sands extraction vessel as a source of artificial nocturnal light are likely to be very localised and centred on the vessel itself: some species of both groups could potentially aggregate in the water column close to the vessel, but these effects are highly unlikely to have any measurable population level impact on the attracted species simply because the proportion of any population or species affected in this way will likely be very small compared to the size of the population overall.

27. Similarly for seabirds, while it is possible that the vessel's lights may attract nocturnal species, particularly in poor weather, the remoteness of the area of operation from major seabird breeding colonies and standard mitigation protocols, as detailed in TTR's Seabird Effects Mitigation and Management Plan (SEMMP), would also suggest that any effect would be highly unlikely to have any measurable population level impact on the attracted seabird species.

Scale of effects with respect to seabirds

28. Seabirds generally, but particularly albatrosses and closely related species, operate at relatively large scales: for example, foraging Cook's petrels, a relatively small (200 g) seabird, have been tracked up to 1,400 km from the breeding site (Rayner et al. 2010), and wandering albatrosses were estimated to travel a distance of more than 8.5 million km throughout an indicative lifetime of 50 years (Weimerskirch et al. 2014). It follows that seabirds can exploit marine resources over relatively very large spatial scales. This extends to those species that are predominantly coastally distributed, although for these taxa (for example, gulls, terns, shags and blue penguin), areas utilised by a particular species are likely to be of the order of hundreds of thousands of km^2, compared to areas in the millions of km^2 for albatrosses.

29. Comparing the estimated area where proposed iron sand mining would elevate suspended sediment concentration above 2 mg/L with the area of distribution for a range of seabird taxa with differing foraging characteristics while breeding in New Zealand (Gibson's albatross classified as 'threatened – nationally critical', Westland petrel 'at risk – naturally uncommon', sooty shearwater 'at risk – declining', red-billed gull 'threatened – nationally vulnerable' and blue penguin 'at risk – declining') revealed that in all cases the

'sediment-affected area' as a result of the proposed mining represented no more than 0.1% of a species' distribution (blue penguin) and as little as 0.0001% (Gibson's albatross). On this basis, I conclude that any effect of mining through exclusion around the mining site will be negligible for seabirds.

RESPONSE TO EPA REPORT AND SUBMISSIONS

30. The EPA Key Issues Report does not specifically identify 'seabirds' as a 'key issue'. However, the Report considers the discharge of sediment to be a key issue and notes that the sediment plume could affect seabirds through reduced foraging efficiency. I have addressed this issue in paragraph 17.

31. A number of submissions have raised matters relating to seabirds. These can be grouped into those that relate to artificial nocturnal light, operational noise, sediment plume avoidance, seabird surveys and blue penguins in the STB. I will deal with each of these in turn.

    (a) Artificial nocturnal light: I have addressed this issue in paragraphs 23-25 and 27.

    (b) Operational noise: I have addressed this issue in paragraph 18.

    (c) Sediment plume avoidance: I have addressed this issue in paragraph 17.

    (d) Seabird surveys: to date there have been no seabird surveys at the proposed operational site, nor within the STB more generally. However, TTR propose to carry out a minimum of two years of baseline monitoring ahead of commencement of mining operations, which will include monitoring of seabirds.

The details of this will be included in the Baseline Environmental Monitoring Plan (BEMP).

(e) Blue penguins: the submission by Ngā Motu Marine Reserve Society raises several points specifically around blue penguins in the STB, and seabirds in the region more generally. The submission suggests that TTR's application concludes that the STB supports 'modest numbers of seabirds', whereas the application concluded the STB supports a 'modest seabird assemblage'. TTR's application has made no attempt to quantify the numbers of seabirds using the STB, rather has suggested the number of species using the region is modest compared to the total number of seabird species recorded from New Zealand. The submission goes on to use unpublished tracking data from blue penguins, complemented by sightings data of blue penguins, to suggest that the waters off south Taranaki are an 'important foraging area' for blue penguins and that the sediment plume resulting from mining operations could affect foraging efficiency, penguin survivorship with potential for impacts at the taxon level. I have dealt with the potential effects of the sediment plume on seabirds, including blue penguins, in paragraph 17, but note further that I consider it highly unlikely given the range and mobility of seabirds, including blue penguin, (as exemplified by the unpublished tracking data presented in Figure 6 of Ngā Motu Marine Reserve Society's submission), that any displacement from the area affected by the sediment plume would result in a significant effect on adult survivorship and even less on an effect at the level of the taxon.

CONDITIONS

32. As noted above, the conditions include (condition 14) a requirement to undertake baseline monitoring of a number of matters, including seabirds.

33. The proposed conditions also include a requirement (in condition 10) for TTR to comply with the Seabird Effects Mitigation and Management Plan (SEMMP) which TTR submitted as part of their application. The SEMMP includes mitigation measure around the potential effects of artificial nocturnal lighting, with reference to the Spill Contingency Management Plan for hydrocarbon products. The mitigation measures for lighting detailed in the SEMMP are comprehensive and should, as far as is practicable, effectively mitigate the risk from artificial nocturnal lighting.

34. The SEMMP further details TTR's response in the event of any bird interaction with proposed operations. Again this response appears comprehensive and will continue to be revised and amended as necessary in consultation with the Department of Conservation.

35. In my view, the SEMMP addresses as far as is practicable all mitigation measures and responses to seabird interactions with proposed operations, and benefits from ongoing development with the Department of Conservation.

CONCLUSIONS

36. TTR's proposed mining activities could pose a range of potential effects to seabirds and shorebirds in the STB: physical displacement from the operational area, increased turbidity from the sediment plume leading to reduced foraging efficiency, avoidance of operational noise, release of oils and artificial nocturnal lighting.

37. However, TTR's SEMMP includes measures and protocols to effectively mitigate against the majority of these potential effects, and coupled with the relatively high mobility of birds and the relatively large ranges and distributions exploited by seabirds in particular, I conclude that TTR's proposal would have an overall negligible effect on seabirds and shorebirds.

David Thompson
15 December 2016

APPENDIX A - PUBLICATIONS REVIEWED FOR REPORT (THOMPSON 2013 SEABIRDS OF THE SOUTH TARANAKI BIGHT NIWA CLIENT REPORT WLG2013-15) AND FROM WHICH SEABIRD TAXA IDENTIFIED FOR TABLE A.

Howell, L.; Esler, L. (2007). Beach patrol scheme: preliminary reports for the years 2002 to 2006. Southern Bird 32: 12-14.

Jenkins, J. (1981). Birds seen at sea around New Zealand during the 1978 BAAS expedition. Australasian Seabird Group Newsletter 16: 3-16.

Jenkins, J.A.F. (1988). The distribution of Buller's shearwater (Puffinus bulleri) in New Zealand coastal waters and in the Tasman Sea. Notornis 35: 203-215.

Powlesland, R.G.; Pickard, C.R. (1992). Seabirds found dead on New Zealand beaches in 1988, and a review of Puffinus species recoveries, 1943 to 1988. Notornis 39: 27-46.

Powlesland, R.G.; Pickard, C.R.; Powlesland, M.H. (1992). Seabirds found dead on New Zealand beaches in 1989, and a review of Pelecanoides urinatrix, Phaethon rubricauda, P. lepturus and Fregata ariel recoveries, 1943 to 1988. Notornis 39: 101-111.

Powlesland, R.G.; Powlesland, M.H. (1993). Seabirds found dead on New Zealand beaches in 1991, and a review of Morus and Sula species recoveries, 1943 to 1991. Notornis 40: 233-245.

Powlesland, R.G.; Powlesland, M.H. (1994a). Seabirds found dead on New Zealand beaches in 1992, and a review of Larus species recoveries, 1943 to 1992. Notornis 41: 117-132.

Powlesland, R.G.; Powlesland, M.H. (1994b). Seabirds found dead on New Zealand beaches in 1993, and a review of Sterna albostriata, S. caspia and S. stricta recoveries, 1943 to 1992. Notornis 41: 275-286.

Powlesland, R.G.; Powlesland, M.H.; Pickard, C.R. (1993). Seabirds found dead on New Zealand beaches in 1990, and a review of Phalacrocorax, Leucocarbo and Strictocarbo species recoveries, 1943 to 1990. Notornis 40: 27-43.

Rayner, M.J.; Hauber, M.E.; Clout, M.N.; Seldon, D.S.; Van Dijken, S.; Bury, S.; Phillips, R.A. (2008). Foraging ecology of the Cook's petrel Pterodroma cookii during the austral breeding season: a comparison of its two populations. Marine Ecology Progress Series 370: 271-284.

Robertson, C.J.R.; Hyvönen, P.; Fraser, M.J.; Pickard, C.R. (2007). Atlas of bird distribution in New Zealand 1999-2004. The Ornithological Society of New Zealand, Wellington, New Zealand.

Shaffer, S.A.; Weimerskirch, H.; Scott, D.; Pinaud, D.; Thompson, D.R.; Sagar, P.M.; Moller, H.; Taylor, G.A.; Foley, D.G.; Tremblay, Y.; Costa, D.P. (2009). Spatiotemporal habitat use by breeding sooty shearwaters Puffinus griseus. Marine Ecology Progress Series 391: 209-220.

Taylor, G.A. (2000a). Action plan for seabird conservation in New Zealand. Part A: threatened seabirds. Threatened species occasional publication No. 16. Department of Conservation, Wellington, New Zealand.

Taylor, G.A. (2000b). Action plan for seabird conservation in New Zealand. Part B: non-threatened seabirds. Threatened species occasional publication No. 17. Department of Conservation, Wellington, New Zealand.

Taylor, G.A. (2004). Beach patrol scheme: seabirds found dead on New Zealand beaches 1997 – 1999. Notornis 51: 176-191.

Tennyson, A.; Miskelly, C. (2011). An unprecedented prion wreck. Southern Bird 47: 11.

Walker, K.; Elliott, G. (2006). At-sea distribution of Gibson's and Antipodean wandering albatrosses, and relationships with longline fisheries. Notornis 53: 265-290.

TABLE A

Common Name	Scientific Name	DoC Conservation Status	IUCN Red List Classification	Relative Abundance
1. Seabirds				
Antipodean albatross	Diomedea antipodensis antipodensis	Threatened – Nationally Critical	Vulnerable	4
Gibson's albatross	Diomedea antipodensis gibsoni	Threatened – Nationally Critical	Vulnerable	4
Black-billed gull	Larus bulleri	Threatened – Nationally Critical	Endangered	5
Salvin's albatross	Thalassarche salvini	Threatened – Nationally Critical	Vulnerable	5
Black-fronted tern	Childonias albostriatus	Threatened – Nationally Endangered	Endangered	4
Caspian tern	Hydroprogne caspia	Threatened – Nationally Vulnerable	Least Concern	3
Red-billed gull	Larus novaehollandiae scopulinus	Threatened – Nationally Vulnerable	Least Concern	5
Pied shag	Phalacrocorax varius varius	Threatened – Nationally Vulnerable	Least Concern	3
Flesh-footed shearwater	Puffinus carneipes	Threatened – Nationally Vulnerable	Least Concern	4
Grey-headed albatross	Thalassarche chrysostoma	Threatened – Nationally Vulnerable	Endangered	4
Blue penguin	Eudyptula minor	At Risk - Declining	Least Concern	4
Light-mantled sooty albatross	Phoebetria palpebrata	At Risk - Declining	Near Threatened	4
White-chinned petrel	Procellaria aequinoctialis	At Risk - Declining	Vulnerable	6
Sooty shearwater	Puffinus griseus	At Risk - Declining	Near Threatened	6
Hutton's shearwater	Puffinus huttoni	At Risk - Declining	Endangered	6
White-fronted tern	Sterna striata striata	At Risk - Declining	Least Concern	5
White-capped albatross	Thalassarche cauta steadi	At Risk - Declining	Near Threatened	6
Fairy prion	Pachyptila turtur	At Risk - Relict	Least Concern	6

TABLE A

Common Name	Scientific Name	DoC Conservation Status	IUCN Red List Classification	Relative Abundance
Broad-billed prion	Pachyptila vittata	At Risk - Relict	Least Concern	6
White-faced storm petrel	Pelagodroma marina maoriana	At Risk - Relict	Least Concern	6
Northern diving petrel	Pelecanoides urinatrix urinatrix	At Risk - Relict	Least Concern	6
Cook's petrel	Pterodroma cookii	At Risk - Relict	Vulnerable	6
Mottled petrel	Pterodroma inexpectata	At Risk - Relict	Near Threatened	6
Fluttering shearwater	Puffinus gavia	At Risk - Relict	Least Concern	5
Snares Cape petrel	Daption capense australe	At Risk – Naturally Uncommon	Least Concern	4
Southern royal albatross	Diomedea epomophora	At Risk – Naturally Uncommon	Vulnerable	4
Northern royal albatross	Diomedea sanfordi	At Risk – Naturally Uncommon	Vulnerable	4
Northern giant petrel	Macronectes halli	At Risk – Naturally Uncommon	Least Concern	3
Black shag	Phalacrocorax carbo novaehollandiae	At Risk – Naturally Uncommon	Least Concern	3
Little black shag	Phalacrocorax sulcirostris	At Risk – Naturally Uncommon	Least Concern	3
Westland petrel	Procellaria westlandica	At Risk – Naturally Uncommon	Vulnerable	3
Buller's shearwater	Puffinus bulleri	At Risk – Naturally Uncommon	Vulnerable	6
Southern Buller's albatross	Thalassarche bulleri bulleri	At Risk – Naturally Uncommon	Near Threatened	4
Campbell albatross	Thalassarche impavida	At Risk – Naturally Uncommon	Vulnerable	5
Cape petrel	Daption capense capense	Migrant	Least Concern	
Wandering albatross	Diomedea exulans	Migrant	Vulnerable	
Southern giant petrel	Macronectes giganteus	Migrant	Least Concern	
Arctic skua	Stercorarius parasiticus	Migrant	Least Concern	
Black-browed albatross	Thalassarche melanophris	Coloniser	Near Threatened	1
Southern black-backed gull	Larus dominicanus dominicanus	Not Threatened	Least Concern	6
Australasian gannet	Morus serrator	Not Threatened	Least Concern	5
Little shag	Phalacrocorax melanoleucos brevirostris	Not Threatened	Least Concern	4
White-headed petrel	Pterodroma lessonii	Not Threatened	Least Concern	6
Grey-faced petrel	Pterodroma macroptera gouldi	Not Threatened	Least Concern	6

TABLE A

Common Name	Scientific Name	DoC Conservation Status	IUCN Red List Classification	Relative Abundance
Spotted shag	Stictocarbo punctatus punctatus	Not Threatened	Least Concern	5
2. Shorebirds				
New Zealand shore plover	Thinornis novaeseelandiae	Threatened – Nationally Critical	Endangered	1
Wrybill	Anarhynchus frontalis	Threatened – Nationally Vulnerable	Vulnerable	3
Lesser knot	Calidris canutus rogersi	Threatened – Nationally Vulnerable	Near Threatened	
Banded dotterel	Charadrius bicinctus bicinctus	Threatened – Nationally Vulnerable	Least Concern	4
Northern New Zealand dotterel	Charadrius obscurus aquilonius	Threatened – Nationally Vulnerable	Near Threatened	3
South Island pied oystercatcher	Haematopus finschi	At Risk - Declining	Near Threatened	5
Pied stilt	Himantopus himantopus leucocephalus	At Risk - Declining	Least Concern	4
Eastern bar-tailed godwit	Limosa lapponica baueri	At Risk - Declining	Near Threatened	
Variable oystercatcher	Haematopus unicolor	At Risk - Recovering	Least Concern	3
Royal spoonbill	Platalea regia	At Risk – Naturally Uncommon	Least Concern	2
Turnstone	Arenaria interpres	Migrant	Least Concern	
Pacific golden plover	Pluvialis fulva	Migrant	Least Concern	
Black-fronted dotterel	Elseyornis melanops	Coloniser	Least Concern	2
White-faced heron	Egretta novaehollandiae	Not Threatened	Least Concern	3
Spur-winged plover	Vanellus miles novaehollandiae	Not Threatened	Least Concern	4

Table A. Summary information on the conservation status and relative abundance of seabirds and shorebirds likely to occur in or adjacent to the South Taranaki Bight (STB). Taxonomy and New Zealand conservation status classification follows Robertson et al. (2013). Taxa ranked according to New Zealand conservation status. International Union for Conservation of Nature (IUCN) Red List classifications follow data at http://www.iucnredlist.org/ (accessed November 2016). Relative abundance scores reflect the New Zealand population size for each species, not an estimate of the population likely to occur within the STB region. Relative abundance scores follow Townsend et al. (2008), whereby a score of 1 = < 250 mature individuals (defined as an individual capable of reproduction and here calculated as double the best estimate of number of annual breeding pairs for each species), 2 = 250-1,000, 3 = 1,000-5,000, 4 = 5,000-20,000, 5 = 20,000-100,000 and 6 = > 100,000 mature individuals. Abundance scores are based on information available at http://nzbirdsonline.org.nz/ (accessed November 2016) and are provided for those species that breed in New Zealand.