Assessment of Potential Effects on Birds of the Proposed Stella Passage Development for Port of Tauranga

Contract Report No. 7339a

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Executive Summary

- The Port of Tauranga is applying for resource consents and a Wildlife Act permit to build new wharfs and dolphins and to reclaim, and dredge in an area used by breeding and roosting birds.
- Good data exists on bird use of different parts of the Port over the last 15 years. These show that some species are highly variable in terms of numbers using the areas, but others are more consistent.
- Tarāpunga/red-billed gull (*Chroicocephalus novaehollandiae scopulinus*, At Risk – Declining) nest in several areas and is the most numerous of the bird species utilising the Port. Two of their nesting areas will be affected by the proposed development. Kuaka/eastern bar-tailed godwit (*Limosa lapponica baueri*, At Risk – Declining) use the sand pile as a winter roost yearly. Kororā/blue penguins (*Eudyptula minor iredalei*, At Risk – Declining) nest in a wall that will be removed.
- Tōrea pango/variable oystercatcher (*Haematopus unicolor*, At Risk – Recovering) and tūturiwhatu/northern New Zealand dotterels (*Charadrius obscurus aquilonius*, Threatened – Nationally Increasing) use parts of the Port every year but are only seen in small numbers. A number of other species have been recorded at the Port but are highly variable in their usage.
- Port facilities are fully fenced, keeping out the public and dogs. The Port also undertakes pest, mammal, and weed control. These factors make the Port a highly attractive and safe habitat for birds.
- A detailed mitigation plan has been agreed upon. The plan is to replace the nesting habitat of both tarāpunga/ red-billed gulls and kororā/blue penguins and to achieve this prior to the loss of existing breeding areas. The mitigation methods are well-tried and will result in temporary and less than minor effects.
- In relation to Policy 11 of the NZCPS, adverse effects on Threatened and At Risk birds and significant adverse effects on breeding habitats will be avoided.
- The development will have temporary and less than minor effects on the birds, but the proposed remediation and mitigation measures will enhance the outcomes for all birds. As the effects of the project are so low, and given the range of other influences on birds, it would be difficult to attribute any changes in bird use of the Port 'habitat' to this project.

Contents

1.0 Introduction

Port of Tauranga Limited (POTL) is seeking approval for the Stella Passage Development (the Project) via the Fast-track Approvals Act 2024 (FTA). POTL commissioned Wildland Consultants to provide an assessment of effects on birds for the project, which comprises dredging, reclamations, wharf extensions, and the occupation of coastal space.

Tauranga Harbour is a very large tidal estuary that supports locally, nationally, and internationally significant populations of many shorebird and wetland bird species. Port of Tauranga is located within the eastern side of the harbour. Large numbers of kuaka/eastern bar-tailed godwit (*Limosa lapponica baueri*, At Risk – Declining) and tarāpunga/red-billed gull (*Chroicocephalus novaehollandiae scopulinus*, At Risk – Declining), as well as smaller numbers of several other Nationally Threatened and At Risk species regularly breed and roost within the Port surrounds[1].

The Project's scope of works is set out below:

- Dredging: 10.55 hectares and 1.5 million cubic metres:
  - Stage 1: 6.1 hectares and 0.85 million cubic metres.
  - Stage 2: 4.45 hectares and 0.65 million cubic metres.
- Reclamation of coastal marine area:
  - Stage 1: 0.88 hectares (Sulphur Point only).
  - Stage 2: 2.7 hectares (0.93 hectares Sulphur Point; 1.77 hectares Mount Maunganui).
- Sulphur Point Wharf Extension:
  - Stage 1: 285 metres.
  - Stage 2: 100 metres.
- Mount Maunganui Wharf Extension – Stage 2 only:
  - Wharf extension: 315 metres.
  - Installation of mooring and breasting dolphins as an alternative to reclamation and wharf construction.
  - Development at Butters Landing limited to minor structures.

POTL is proposing to build the Project over a period of several years to meet increased demands. Wharf construction is proposed for both the Sulphur Point Wharf and the Mount Maunganui Wharf on each side of the Stella Passage (Figure 1, Appendix 2).

The proposed extension for the Sulphur Point Wharf is 385 metres in length over two stages (Stage 1: 285 metres and Stage 2: 100 metres). The construction work will also require reclamation of the coastal marine area (Stage 1: 0.88 hectares, Stage 2: 0.93 hectares) and dredging (Stage 1: 0.85 million cubic metres, Stage 2: 0.65 million cubic metres). The location of the second stage of the proposed Sulphur Point wharf extension is north of an area used for storage of dredged sand (see Figure 1 below), which will be unaffected by the proposed wharf development. This sand area, often referred to as the 'sand pile', regularly supports large populations of kuaka/eastern bar-tailed godwits, tōrea pango/variable oystercatcher (*Haematopus unicolor*, At Risk – Recovering), tōrea/South Island pied oystercatchers (At Risk – Declining), and smaller numbers of tūturiwhatu/northern New Zealand dotterels (*Charadrius obscurus aquilonius*, Threatened – Nationally Increasing), taranui/Caspian terns (*Hydroprogne caspia*, Threatened – Nationally Vulnerable), tara/white-fronted tern (*Sterna striata striata*; At Risk – Declining)

[1] Threat classifications and common names are as per Robertson *et al.* 2021. Species names are provided in Appendix 1.

Figure 1: Port of Tauranga key bird locations

and tarāpunga/red-billed gulls (*Chroicocephalus novaehollandiae scopulinus*, At Risk – Declining). A breeding colony of tarāpuka/black-billed gulls (*Chroicocephalus bulleri*, At Risk – Declining) was present in 2016.

An extension is proposed for the Mount Maunganui wharves of 315 metres in length and reclamation of 1.77 hectares during Stage 2 of the Project. Mooring and breasting dolphins will be installed as an alternative to reclamation and wharf construction at the southern end of the Mount Maunganui Wharves. Development of the wharf extension will necessitate the removal of an approximately 315 metres long length of rock wall where kororā/blue penguins (*Eudyptula minor iredalei*; At Risk – Declining) burrows have been found, and which is also the location of large tarāpunga/red-billed gull colony each spring and summer. However, 200 metres of modified rock wall section will be completed at the southern end of the Mount Maunganui wharf prior to any rock wall removal where tarāpunga/ red-billed gulls and kororā/blue penguins use to roost or breed.

This report provides an assessment of effects of the proposed developments on key populations of birds, and provides a management plan to address potential adverse effects.

2.0 Methods

A site visit to the Port was undertaken on 6 December 2021 in which the sand pile and rock walls around Mount Maunganui Wharf and Sulphur Point were visited. Additionally, on 15 August 2019, a penguin survey was undertaken by Joanna Sim (DabchickNZ) and her conservation dog, Rua, which is trained to find penguin burrows.

This report is also based on a desktop assessment, regular weekly surveys undertaken during the breeding season and bi-weekly during the non-breeding season at the sand pile (which commenced October 2021) and monthly surveys at the rock wall of the Mount Maunganui Wharf (commenced in January 2022). The assessment also includes annual winter and summer count data of waders in Tauranga Harbour (Birds New Zealand), and also observations and short reports by Professor John Cockrem on birds at the Port[1,2].

Further site visits were undertaken 3 July 2022 and 1 March 2023 to assess the proposed changes to the tarāpunga/red-billed gull rock wall and kororā/blue penguin nesting box site.

3.0 Stages 1 and 2: Sulphur Point Wharf

3.1 Background

3.1.1 Construction

Sulphur Point wharf is built on land reclaimed from Tauranga Harbour, with work starting in 1965. Appendix 3 provides figures that show the present-day footprint of the sand pile overlaid on aerial photography of the Sulphur Point area in 1969, 1974, 1988, 2008, and 2017. The earliest photograph shows that the area was once estuary, and within five years had been reclaimed, creating expansive areas of sand. By 1988, this had largely grassed over, leaving sandy beaches around the boundary. The 2008 photograph shows the Sulphur Point wharf largely as it is now, but with a bigger sand pile, located

[1] Cockrem J. 2019: Sulphur Point sand area bird counts September 2018 to March 2019. Unpublished memo.
[2] Cockrem J. Undated. Birds at the Port of Tauranga. Unpublished memo.

to the north of its present site. The photograph taken in 2017 shows how the 'quality' of the sand pile can change - in this photograph it is significant vegetated. Overall, the location and size of the sandy habitat at Sulphur Point has changed regularly over the last *c.*55 years.

The sand pile is an active work site (Plate 1); it is used for the deposition of dredged sand from the Stella Passage, and the sand is occasionally taken for use for beach regeneration around the Tauranga area.

Plate 1 – A view of the northern end of the sand pile, showing the proximity to wharf activities, and the recent use of the site by tracked vehicles.

3.1.2 Birds of Sulphur Point

Birds New Zealand (also known as the Ornithological Society of New Zealand) began formal surveys of waders around Tauranga Harbour in 1994. In these early years, birds from the Sulphur Point area were grouped under the site name 'Sulphur - Panepane'. It is likely that locations away from Sulphur Point are included within this site. Later surveys (2008-2021) more clearly relate to Sulphur Point habitats, and record the variable presence of eight wader species. These later data are summarised in Table 1 (Appendix 5, Table A1-1).

Two of the species recorded include pohowera/banded dotterel (*Charadrius bicinctus bicinctus*, At Risk – Declining) and ngutupare/wrybill (*Anarhynchus frontalis*, Threatened – Nationally Vulnerable). Both are infrequent visitors during winter after breeding elsewhere, but when resident, have been present in relatively high numbers. Banded dotterel have only been present in five of the last 15 years and wrybill in only three years. A further four species present are classified as At Risk – Declining. One of these, kuaka/eastern bar-tailed godwit, is present in all years and in significant numbers.

Also variably present at Sulphur Point are non-wader species, including taranui/Caspian tern (Threatened – Nationally Vulnerable; not seen since 2017), tara/white-fronted tern (At Risk – Declining; common on the sand pile and the rock wall, some breed and varies in numbers from 4 – 300), karoro/southern black-backed gull (*Larus dominicanus dominicanus*, Not Threatened; only present in small numbers), tarāpunga/red-billed gull (At Risk – Declining; present in large numbers and

breeding in three locations) and on at least five occasions, but not in recent years, tarāpuka/black-billed gull (At Risk – Declining).

Of these 13 species, five have been recorded breeding at the sand pile during the spring-summer months; tūturiwhatu/northern New Zealand dotterel, tōrea pango/variable oystercatcher, tara/white-fronted tern, tarāpunga/red-billed gull, and tarāpuka/black-billed gull (the latter species in 2016). Other species are present at this time but may not be breeding. Most notable is the international migratory species, kuaka/eastern bar-tailed godwit (Plate 2), which breeds in the northern hemisphere summer and flies to Aotearoa/New Zealand to overwinter.

Plate 2– Kuaka/eastern bar-tailed godwit, Karaka shellbank, Manukau Harbour. Image © Department of Conservation (Image Ref: 10030914) by Dick Veitch.

After the breeding season, during the autumn-winter months, the sand pile is used as a high tide roost site by multiple species. The most common of these is the tōrea/South Island pied oystercatcher (At Risk – Declining).

Eastern bar-tailed godwit is discussed in detail in the following sections, as it is the largest population present at the sand pile. Other species are briefly discussed in Section 3.3.

Table 1 – Bird survey counts at the Sulphur Point warehouse shed roofs (Shed 11 and 12) and the sand pile, 2008-2021, combined (source: Ornithological Society of New Zealand). *Shed 12 was used as roost site between 2008 and May/June 2017. ^Shed 11 was used also as roost site between November 2017 and May/September 2020. [+]Probable roosting on the Cold Store roof. [#]Bar-tailed godwits and other avian species observed roosting on the Cargo wharf after Shed 12 was removed. Winter months (March to August) and summer months (September to February). Common names, species names, and threat classifications are from Robertson *et al.* (2021).

Species	Threat Classification	Season	Site	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Waders																	
Banded dotterel/ pohowera	At Risk - Declining	Winter	Shed														
			Sand pile			100											
		Summer	Shed														
			Sand pile														
Eastern bar-tailed godwit/kuaka	At Risk - Declining	Winter	Shed						132*	43*	5*	115*					
			Sand pile			22							50				
		Summer	Shed						200*	1,000*	1,500*	2,000*		1,200[#]			
			Sand pile	1,000	3,500	860	3,000	2,200	2,000				1,500		2,000	2,000	2,000
Northern New Zealand dotterel/ tuturiwhatu	Threatened - Nationally Increasing	Winter	Shed				11*										
			Sand pile			20		10	1	6	3		2	3		4	4
		Summer	Shed														
			Sand pile	6	10	9	2	2	2	5	2	3	1	2	4	2	2
Pied stilt/poaka	Not Threatened	Winter	Shed														
			Sand pile				2										
		Summer	Shed														
			Sand pile							2							
South Island pied oystercatcher/ torea	At Risk - Declining	Winter	Shed			400*		700*	750*	492*	600*	292*	500*	211^		200^	550[+]
			Sand pile				338										
		Summer	Shed	20*	85*	107*	35*	120*	220*	95*	110*	138*	110^	100^	170^	95[+]	
			Sand pile		2												
Spur-winged plover	Not Threatened	Winter	Shed														
			Sand pile			2											
		Summer	Shed														
			Sand pile	2													
Variable oystercatcher/	At Risk - Recovering	Winter	Shed				3*				12*						
			Sand pile			10		6	2				5	3		2	4

Species	Threat Classification	Season	Site	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
toreapanga		Summer	Shed	25*	25*	4*	16*		13*	10*	35*	5*	10^	2^	4#	4	
			Sand pile	6	2	2		3		6	4	3	1	3	2		2
Wrybill/ ngutuparore	Threatened - Increasing	Winter	Shed														
			Sand pile			71		52	48								
		Summer	Shed														
			Sand pile					8									
Gulls																	
Black-backed gull/karoro	Not Threatened	Winter	Shed						14*	14*	14*	20*		1^		1^	1+
			Sand pile			2		46	20				2	2		4	2
		Summer	Shed			62*	12*					41*	2^	165^	42^	48+	
			Sand pile				20	12	7		1	2	1		3	2	2
Black-billed gull/ tarāpuka	At Risk - Declining	Winter	Shed														
			Sand pile														
		Summer	Shed	15*													
			Sand pile	210						1	4	12	5				
Red-billed gull/ tarāpunga	At Risk - Declining	Winter	Shed				8*				1*						5+
			Sand pile										6	1			
		Summer	Shed											16#			
			Sand pile	400	800			30	4	8	90	200	20	400		14	120
Terns																	
Caspian tern/ taranui	Threatened - Nationally Vulnerable	Winter	Shed														
			Sand pile			16		26	28								2
		Summer	Shed		1*												
			Sand pile				1	3	3				2				
New Zealand fairy tern/tara	Threatened - Nationally Critical	Winter	Shed														
			Sand pile														
		Summer	Shed														
			Sand pile				2										
White-fronted tern/tara	At Risk - Declining	Winter	Shed				1*										5+
			Sand pile														
		Summer	Shed				2*										
			Sand pile	250	150			300	100	5	120	200	35	200	240	400	100

3.2 Kuaka/eastern-bar tailed godwit

3.2.1 Migration, and international and national status

Kuaka/eastern-bar tailed godwits breed in western Alaska, and after breeding, birds migrate annually to Aotearoa/New Zealand spending their non-breeding season at different feeding and roosting sites around the country (Gill *et al.* 2009).

Birds fly to Aotearoa/New Zealand using the East Asian-Australasian Flyway (Appendix 4), arrive early September and depart from early March (Battley *et al.* 2012). Of the four global subspecies of bar-tailed godwits *Limosa lapponica*, virtually all Aotearoa/New Zealand godwits are of the *baueri* subspecies. More than 80,000 birds of a worldwide population of 133,000 (*c.*65%) individuals spend the non-breeding season in Aotearoa/New Zealand (Conklin *et al.* 2014; Hansen *et al.* 2016).

Important non-breeding kuaka/eastern bar-tailed godwit populations in Aotearoa/New Zealand include those in the Manukau Harbour, Farewell Spit, Firth of Thames, and Tauranga Harbour. Adult godwits are highly sedentary and show high fidelity to non-breeding areas (Nechaev 1998; Battley *et al.* 2012). During their time at the non-breeding grounds, godwits undergo primary feathers moult and prepare for the northward return migration.

The report for regional prioritisation of migratory shorebirds of the East Asian-Australasian Flyway (Conklin *et al.* 2014) recognises Tauranga Harbour as a site of international importance. This is because it regularly supports more than 1% of the kuaka/eastern bar-tailed godwit numbers worldwide. Conklin *et al.* (2014) rank Tauranga Harbour as the fourth most important location within Aotearoa/New Zealand for kuaka/eastern bar-tailed godwits. Numbers using the sand pile at the Port have varied between <1,000 to 3,000 but have been consistently around 2,000 in recent years.

3.2.2 Tauranga Harbour sites

Key locations of summer roost sites for godwits in Tauranga Harbour are shown in Figure 2. These locations have been based on data obtained by Ornithological Society of New Zealand members. The map highlights sites with more than 1% and less than 1% of the East Asian-Australasian Flyway population. The largest and most important roosts identified in this report are Sulphur Point, Bowentown shellbanks, Matahui Point, Tinopai sandbar, and Tahunamanu Island. Some sites are entirely above mean high-water springs and, therefore, are continuously available, while other sites are available only for a certain number of days per month. Other sites, such as the Ōmokoroa golf course, are used only at spring high tides or during bad weather.

Kuaka/eastern bar-tailed godwit count data shows marked differences between years (refer Table 1). This variability in counts may be attributable to factors such as different tidal levels affecting roosting patterns, changes in food availability within or between seasons, or physical changes in roost sites from erosion, accretion, or human modification. For example, counts undertaken at the Port during the 2018-2019 summer months recorded the following[1]:

- 11 September: No godwits (low tide)
- 4 October: 90 godwits (mid tide)
- 2 November: 16 godwits (mid tide)
- 20 December: 749 godwits (high tide)

[1] Cockrem J. 2019: Sulphur Point sand area bird counts September 2018 to March 2019. Unpublished memo.

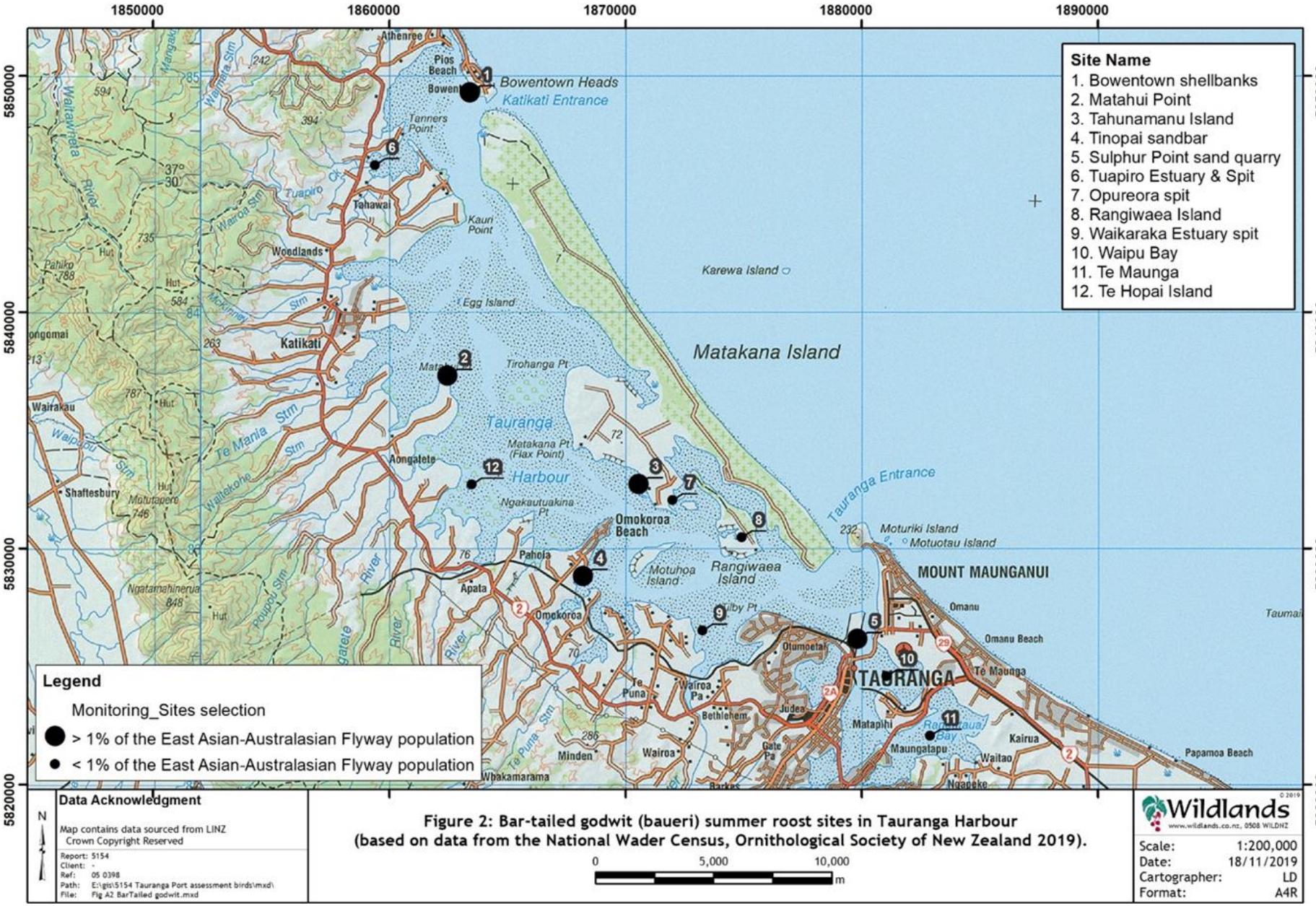

Figure 2: Bar-tailed godwit (baueri) summer roost sites in Tauranga Harbour (based on data from the National Wader Census, Ornithological Society of New Zealand 2019).

- 17 January: 878 godwits (high tide)
- 12 March: 32 godwits (high tide)

In comparison, the November 2018 high tide count undertaken by the Ornithological Society recorded 1,200 kuaka/eastern bar-tailed godwits.

Changes in site names over time and possibly site boundaries also affect the summary of count data. Nevertheless, roost sites that hold significant kuaka/eastern bar-tailed godwit numbers within the Tauranga Harbour are discussed further below.

The extensive intertidal flats in Tauranga Harbour are feeding areas for kuaka/eastern bar-tailed godwits. Birds disperse throughout the harbour to feed, although flats adjacent to important roost sites would be particularly well used. This habitat provides rich food resources for kuaka/eastern bar-tailed godwits, such as benthic organisms like bivalves, crustaceans, and polychaetes (Wang *et al.* 2002). Long-term studies on the diet of godwits indicate that their prey of choice appears relatively constant between seasons (Scheiffarth 2001).

The following sites are kuaka/eastern bar-tailed godwit roosts that support over 1% of the *baueri* population in Tauranga Harbour, and threats at these sites are also briefly described:

- Bowentown shellbanks. The location of the roost in mid-harbour means that direct human disturbance is low. The shellbank is subject to erosion and accretion, and is flooded by spring high tides, affecting its availability as a roost. Nesting of some seabirds occurs here (Wildland Consultants 2013).

- Tahunamanu Island. Located immediately off Matakana Island. A major roost site for many bird species. Gorse and other pest weeds are present. In 2012, cattle could access part of the site, and fencing was recommended to exclude stock (Wildland Consultants 2013).

- Matahui Point. The relative isolation of this site means that direct human disturbance is low. However, a grass airstrip on adjacent land may have made the site less attractive to birds, and conversion of part of the point to intensive horticulture may also have increased human-related disturbance (Wildland Consultants 2013).

- Sulphur Point Sand Pile. This roost site has undergone extensive changes over the decades, including major reclamation works as part of the development of the Sulphur Point Wharf. Wader numbers have fluctuated over this time, including kuaka/eastern bar-tailed godwits.

- Tinopai sandbar. This roost site receives the most use of the three roost sites around the Omokoroa Peninsula, possibly because the other two roosts often suffer disturbance from people and dogs. However, it can be rendered unusable when tidal conditions are bad, such as when water levels are high enough to force birds from the roost due to spring high tides and strong winds (Owen *et al.* 2006).

The quality of non-breeding sites in Aotearoa/New Zealand may significantly influence the lifetime productivity of kuaka/eastern bar-tailed godwits maturing here and affecting the year-to-year survival of adult birds (Southey 2009).

3.3 Other species that utilise the Sulphur Point sand pile

3.3.1 Oystercatchers

Two species of oystercatchers are regularly present at the sand pile. Tōrea/South Island pied oystercatcher (At Risk – Declining) is the second most common species using the sand pile. Numbers have varied from 200 to 750 individuals over winter months, and 20 to 220 individuals over summer. It almost exclusively breeds in the South Island. Birds at the Port during the breeding season will not be breeding.

Tōrea pango/variable oystercatcher (At Risk – Recovering) are present in low numbers during the breeding season, and have occasionally been recorded after breeding. Birds are likely to regularly breed at the sand pile, with two nests being recorded in January 2024, and six chicks the following month. The wintering flock of 12 birds in 2008 represented a low proportion of the total national population (*c.*0.2%).

3.3.2 Dotterels

Two dotterel species have been recorded at the sand pile. Tūturiwhatu/northern New Zealand dotterels (At Risk – Recovering) follow a similar pattern to tōrea pango/variable oystercatcher, with consistently low numbers during the breeding season, and periodic flocks of up to 20 recorded post-breeding. In 2018, two nests were recorded. Like many other shorebirds, tūturiwhatu/northern New Zealand dotterel is significantly affected by introduced predators and korora/southern black-backed gulls. Numbers at the sand pile almost reached the 1% population level, with 20 birds during winter of 2010.

Pohowera/banded dotterel (At Risk – Declining) were only recorded in 2010 (surveys from 2007-2021), with a flock of 100 individuals observed. The national population is estimated at a maximum of 20,000 mature birds. The species breeds throughout Aotearoa/New Zealand, from coastal beaches to inland rivers, to terrestrial habitats such as the Central Plateau.

3.3.3 Terns

Two tern species have been recorded at the sand pile:

- Tara/white-fronted tern (At Risk – Declining) established a breeding colony at the sand pile at Sulphur Point in 2018, numbering approximately 67 nests. It is not clear how often tara/white-fronted tern nest at the Port. However, 300 individuals were recorded at the sand pile during November 2023 (Appendix 5, Table A1-2).
- Two or three taranui/Caspian terns (Threatened – Nationally Vulnerable) were observed during the 2012, 2013 and 2017 breeding seasons, though no breeding was observed. Numbers have been recorded between 16-28 individuals during the 2010, 2012, and 2013 non-breeding seasons (Table 1).

3.3.4 Gulls

All three species of gulls known in Aotearoa/New Zealand have been recorded at the sand pile. The most threatened of these is tarāpuka/black-billed gull (At Risk – Declining), which apparently bred at the sand pile in 2016[1]. Tarāpuka/black-billed gulls are highly mobile, and colonies do not necessarily establish in the same location from year to year. While it is a relatively abundant species, numbers in

[1] Cockrem J. 2019: Sulphur Point sand area bird counts September 2018 to March 2019. Unpublished memo.

the North Island are very low and on average, 1-12 individuals have been recorded at the sand pile in 2014 to 2017. However, a flock of 210 were recorded in 2008.

Tarāpunga/red-billed gull (At Risk – Declining) breed at the sand pile with approximately 50 nests in 2023. It is not known how often the species breeds at this site. The species regularly breeds in a much larger colony on the rock wall of the Mount Maunganui Wharf. This species is discussed in detail in Section 4.2.

Up to 16 karoro/southern black-backed gull (Not Threatened) have been recorded in January 2024 at the sand pile (Appendix 5, Table A1-2). Karoro/southern black-backed gull is a super-abundant native species that has significantly benefitted from the activities of people. It is also a predator of other bird species, taking eggs and chicks. Karoro/southern black-backed gull control is undertaken in certain locations where predation of vulnerable species (such as braided river birds, or shorebirds) requires control.

3.3.5 Other bird species

Ngutupare/wrybill (Threatened – Nationally Vulnerable) is a specialist braided river bird, mostly breeding in Canterbury, with smaller populations in Otago. It migrates to estuaries and harbours of the northern North Island after breeding. Tauranga Harbour is not a particularly important wintering site for the species, with over 80% of birds recorded in Firth of Thames and Manukau Harbour. Nevertheless, wrybill flocks have been present at three of the 12 annual winter counts at the sand pile, and each time, numbers have been close to or above the 1% population level (71, 52, and 48 birds).

Poaka/pied stilt (Not Threatened) have only been recorded at the sand pile twice, with only two birds recorded 2011 and 2014. The size of the national population is poorly known. The estimate of 30,000 birds used today dates back to 1984-1993 (Heather and Robertson 1996).

3.4 Potential effects of the Sulphur Point Wharf extension

3.4.1 Disturbance due to wharf and reclamation construction including dredging

Proposed construction of the Sulphur Point Wharf extension is to be undertaken in two stages:

- Stage 1 is estimated to take around six months for dredging, and approximately 24 months to complete the wharf extension and reclamation.
- Stage 2 is estimated to take around five months for dredging, and approximately 10 months to complete the reclamation and wharf extension.

Birds using the sand pile at Port of Tauranga for roosting or breeding will be exposed to significantly higher levels of activity and noise, including vehicle movements and pile driving, for a duration that will include breeding and non-breeding periods.

Species that presently use the sand pile are currently subjected to unavoidable disturbance and noise from wharf activities. However, tara/white-fronted terns, tūturiwhatu/northern New Zealand dotterels, tarāpunga/red-billed gull and tarāpuka/black-billed gulls have bred successfully within metres of working wharves, indicating that these species are capable of tolerating intermittent but high levels of human disturbance of this type. This is in contrast to, for example, people walking or driving through colonies, causing destruction of nests, and sometimes abandonment of the colony.

Given the almost constant presence of high numbers of kuaka/eastern-bar tailed godwits during surveys, it is predicted that this species is relatively tolerant of wharf activities, and will continue to use the sand pile during construction. It is noted that kuaka/eastern bar-tailed godwits have previously

been recorded roosting on cargo shed roofs (2010-2018), and tōrea pango/variable oystercatcher have been recorded roosting at various sites within the Port, including the container terminal and between Berths 1-8 (Plate 3). It is possible that these birds will temporarily relocate to a roof due to Project-related disturbances near the sand pile.

Plate 3 – Tōrea pango/variable oystercatcher roosting on the Container Terminal roof (left: 17 March 2023) and between Berths 1-8 (right: 20 February 2023).

During Stage 1, the anticipated construction works will take longer than Stage 2 and will likely be focused at different points along the proposed wharf extension. The works will move sequentially along the wharf over the construction period, meaning the sand pile will be less affected by disturbance when works are further away. The predicted effect of Stage 1 construction on avifauna will be less than minor post-mitigation, and will be of a temporary nature, ceasing at the completion of works.

Stage 2 construction of the 100 metre wharf extension and reclamation area (0.93 hectares) will be adjacent to the sand pile and will be more visible to roosting and breeding birds. Construction during Stage 1 will have introduced birds to the increased activity and noise leading to further habituation. Habituation occurs when a reaction to a stimulus reduces over time after repeated exposure. The predicted effect of Stage 2 construction on avifauna will be minor post-mitigation due to being closer to the sand pile site, and will be temporary, ceasing when the Stage 2 reclamation and wharf construction works are complete.

In summary, species responses to reclamation and wharf construction are uncertain, but many species may prove to be relatively tolerant. Given the uncertainty it is possible that minor (for Stage 2) effects may occur temporarily, and some birds may move elsewhere to breed and roost. However, the disturbance is short term, and it is predicted that use of the sand pile will be unchanged from previous levels once reclamation and wharf construction is complete. Moreover, because birds do shift nesting areas (tara/white-fronted terns) or move frequently between roost sites (kuaka/eastern bar-tailed godwits, tūturiwhatu/northern New Zealand dotterel) attributing changes to the development activities would be difficult.

It is unlikely that increased vessel activity associated with dredging within the Stella Passage will disturb birds at the sand pile, as they are already accustomed to regular boat movements. Terns and gulls are unlikely to forage in this area to any significant degree as foraging distributions for all tern and gull species will be extensive within the Tauranga Harbour and other coastal areas. The predicted effect of dredging on avifauna will be less than minor and difficult to detect.

Mitigation measures arising from the development, relating to noise, dredging, monitoring and pest control, are addressed in Appendix 5, Sections 1 and 3.

3.4.2 Application of New Zealand Coastal Policy Statement 2010

Policy 11 clause a(i) of the New Zealand Coastal Policy Statement 2010 (NZCPS) requires the avoidance of adverse effects of activities on indigenous taxa that are listed as Nationally Threatened or At Risk. Clause b(ii) of the same policy requires avoidance of significant adverse effects, and the avoidance, remediation, or mitigation of other adverse effects of activities on habitats in the coastal environment that are important during the vulnerable life stages of indigenous species.

Despite being a constructed structure, the sand pile is clearly an important breeding and roosting habitat for many bird species, including internationally significant numbers of kuaka/eastern bar-tailed godwit, and several other Nationally Threatened and At Risk species. During Stages 1 and 2 of construction, increased activity and noise may temporarily affect these birds. However, the construction period is short-term and any affect will be temporary with birds returning to their usual activities without lasting adverse effects. Attributing any changes to the construction would be difficult.

However, with the sand pile being managed as per the recommendations contained in Appendix 5, Section 1 of this report, potential adverse effects on indigenous species and their habitats are predicted to be avoided, in accordance with the above NZCPS provisions.

4.0 Stage 2: Mount Maunganui Wharf

4.1 Background

The original Mount Maunganui Wharf was completed in 1954 and was 372 metres in length. It was later increased to 1,843 metres, and has since been lengthened to 2,060 metres. The southern two thirds of the wharf are used for timber handling. Stage 2 of the Project includes the reclamation of 1.77 hectares of the coastal marine area (in two parts) and the construction of a 315 metre extension to the south of the existing wharf. Mooring and breasting dolphins will be installed to the south of the wharf extension, including along Butters Landing where a new bunker barge jetty is also proposed.

The presence of a large tarāpunga/red-billed gull colony on the rock wall at the ‘timber wharf’ was first formally recognised as part of a national survey of the species in 2015-2016. POTL commenced monthly surveys of roosting and nesting tarāpunga/red-billed gulls in January 2022. Furthermore, during a site visit in July 2019, Wildland Consultants staff recommended that a survey was undertaken for kororā/blue penguins in the affected rock wall. The species was confirmed to be present in September 2019. A few tara/white-fronted tern pairs may use stand-alone piles or part of the rock wall to roost and potentially breed near the Mount Manganui wharf. The breeding season of these birds (October to March) is comparable to tarāpunga/red-billed gulls (September to February). This species will not be discussed further but if any birds are observed to be nesting within the construction area, a 25 metre setback will be applied.

4.2 Tarāpunga/red-billed gull

4.2.1 National and local status

Tarāpunga/red-billed gull is classified as At Risk – Declining. The present classification of the species is due to significant declines at three of Aotearoa/New Zealand's largest colonies at Three Kings Islands, Mokohinau Islands, and Kaikoura (Mills *et al.* 2018).

In the North Island, tarāpunga/red-billed gull colonies in 2014-2016 were mainly located on offshore islands (23%), coastal cliffs and rocks (19%), and nearshore stacks and islands (34%). At Mount Maunganui Wharf, the tarāpunga/red-billed gull colony has been estimated to have up to 800 individuals and over 250 nests (Port of Tauranga survey data 2022-2024); (Plate 4). This represents 1.8% of the national breeding population. It is understood that the colony has sometimes been located on the roof of a large cargo shed at the north end of Sulphur Point Wharf, but has established each spring at its current location for several years.

Plate 4 – Tarāpunga/red-billed gull colony site at Mount Maunganui Wharf looking south, showing the proximity of the working wharf area including moorings. Also visible is an asphalt and concrete surface (left) installed to discourage birds from nesting. Photograph July 2019, before nesting.

The presence of the colony at the Mount Maunganui Wharf has created a health and safety issue for POTL. Dock workers are dive-bombed while working, and in particular, tying mooring ropes; mooring ropes and other surfaces are covered in gull faeces which become slippery when wet; and there is concern regarding the potential for spread of infectious organisms from faeces. Attempts have been made to reduce attacks by construction of overhead shelters to protect staff (Plate 5), and to encourage the birds to move by covering the seawall with concrete and asphalt (Plate 4). However, the birds have only moved slightly further south, and continue to dive-bomb dock workers.

4.2.2 Overview of ecology

Tarāpunga/red-billed gulls breed in dense colonies on the mainland and at most colonies, adults and chicks return to the same colony in which they previously bred or were hatched. If successful at a

particular site, adults will return the next year to that colony (Mills *et al.* 2018). Other studies (Lalas *et al*. 2022) have shown that entire colonies can move between seasons.

The diet of breeding adult tarāpunga/red-billed gulls and nestlings consists mainly of the euphausiid *Nyctiphanes australis* (or krill), but they also feed on small fish, terrestrial invertebrates, fishing discards, and food discards in urban areas and rubbish dumps.

Plate 5– Overhead shelters built to protect dock workers from tarāpunga/red-billed gull attacks during the breeding season. Red-billed gull colony site visible in far distance. Photograph in July 2019, before nesting.

A major cause of reproductive failure in tarāpunga/red-billed gulls on the mainland is predation by introduced mammals. A long-term study conducted in Kaikoura by Mills *et al.* (2018) found predators included cats (*Felis catus*), ferrets (*Mustela furo*), stoats (*Mustela erminea*), karoro/southern black-backed gulls (*Larus dominicanus*), hedgehogs (*Erinaceus europaeus*) and rats (*Rattus* spp.). Some tarāpunga/red-billed gulls specialised in egg-robbery, especially when euphausiid availability was low. Between 1965 and 1984, predation was dominated by stoats and karoro/southern black-backed gulls, and egg losses averaged 20%, and chick losses 15%. After cats and ferrets invaded the colonies, the predation rate on eggs and chicks increased by a further 15%.

Long-term declines in tarāpunga/red-billed gull numbers may also be driven by changing sea temperatures altering the distribution and abundance of marine organisms (Mills *et al.* 2008; Frost and Taylor 2016; Frost 2017). The major declines on predator-free, undisturbed offshore islands such as the Three Kings and Mokohinau Islands support this possibility.

4.2.3 Potential effects of Mount Maunganui Wharf extension

Development of the 315 metre Mount Maunganui wharf extension will require the existing rock wall to be dismantled. This work will be done outside the breeding season, such that no nests are disturbed or destroyed. In the absence of suitable sea walls, the red-billed gull colony will have to relocate elsewhere. To address this, Port of Tauranga will modify approximately 200 metres of the existing rock wall south of the present location of the colony. This will enable the gulls to shift their present colony

location to an adjacent, largely identical site. However, individuals may select another location within Port of Tauranga such as a cargo shed roof, or another relatively undisturbed location with suitable surfaces for breeding with the proposed mitigation measures.

Mitigation measures arising from the development, including the establishment of the purpose-built rock wall, methods to attract tarāpunga/red-billed gulls to the new wall and monitoring, have been addressed in Appendix 5, Sections 2 and 3.

With adoption of the recommended mitigation measures, the effects of the Stage 2 (Mount Maunganui) reclamation and wharf construction on tarāpunga/red-billed gulls will avoid adverse effects due to the construction of the modified rock wall as an alternate location and the temporary, short-term construction period allowing birds to returning to their usual activities without lasting adverse effects.

4.2.4 Application of New Zealand Coastal Policy Statement 2010

NZCPS policy 11(a)(i) and (b)(ii) applies to Stage 2 in a similar manner as described in Section 3 of this report for Stage 1.

Tarāpunga/red-billed gulls are classified as At Risk, and the size of the colony is nationally significant, being greater than 1% of the national population. The artificial nature of the breeding habitat does not detract from the importance of the site for tarāpunga/red-billed gulls.

POTL plans to construct a new rock wall habitat for tarāpunga/red-billed gulls located a short distance south of the current colony. This new habitat will be created to avoid disrupting the breeding season. To attract the tarāpunga/red-billed gull to the new location before the existing rock wall habitat is removed, gull decoys and a stereo system will be used to play recordings of tarāpunga calls. This approach has proven to be effective at other sites, such as during the relocation of breeding birds for the America's Cup facilities in Auckland (Auckland Council 2020; Roy 2020).

Proposed management measures are outlined in Appendix 5 of this report. These measures aim to ensure the Project avoids all but transitory, minor adverse effects on tarāpunga/red-billed gull and its important habitats. Consequently, the Project will avoid adverse effects on this At Risk species and will avoid significant adverse effects on habitats critical to it, while mitigating other effects to a less than minor level. These outcomes align with the NZCPS policies identified above. It is important to note that red-billed gulls often temporarily abandon their colony sites when there is no disturbance; therefore, any changes resulting from the development may be challenging to link directly to the Project.

The Port of Tauranga is seeking a permit under the Wildlife Act (1953) as part of the Fast Track application process. However, this approval will only relate to korōra/blue penguins. POTL does not propose to capture any gulls, nor disturb or destroy any tarāpunga/red-billed gull nests, given works will be undertaken outside the breeding season.

4.2.5 Butters Landing gull colony

Butters Landing has been identified as the site for a new penguin nesting box colony. Recently, a small tarāpunga/red-billed gull breeding colony has established itself at the site. There is potential for more permanent roosts and nests to be created in this location (Plate 6).

Plate 6 – Newly establishing red-billed gull colony at Butters Landing.
Photograph 27 January 2025.

The Butters Landing site includes an amenity building utilised by Port staff for tea and meal breaks. Establishment of the tarāpunga/red-billed gull colony has resulted in gull droppings covering the building, staff vehicles, and paths. This situation makes the area unhygienic and poses a significant risk to human health.

The current global spread of avian flu, which can also infect mammals, increases the health risk associated with this new colony. Although Aotearoa, New Zealand does not yet have the highly infectious strain of avian flu (H5N1), its transmission worldwide occurs through migratory birds. Additionally, the sand pile at the Port serves as a significant roosting area for kuaka/eastern bar-tailed godwit, a species that migrates between the Port and regions known to have the infectious strain of avian flu.

It is acceptable to scare away non-nesting birds, and it is crucial to consider the ongoing health of staff and the continued functioning of the Port. Non-lethal deterrents, such as trip wires that preclude landing and walking, could be installed at the site (including on the roof of the amenity building) outside the breeding season and after the penguin boxes have been installed (avoiding areas where penguins will walk). Furthermore, as indigenous shrubs and flaxes become established around the nesting boxes, this will deter tarāpunga/red-billed gulls from nesting on the ground as they breed within rocky headlands, cliffs, beaches, islands, sandspits, and shellbanks. This approach aims to prevent the permanent establishment of tarāpunga/red-billed gulls.

The establishment of this colony indicates that the Port environment offers a safe habitat for avifauna. If gull numbers continue to increase, it may be necessary to undertake additional measures to deter nesting in other sensitive areas of the Port.

The Port has created an ideal habitat for Threatened and At Risk bird species. While avifauna can inhabit natural or artificial environments, tarāpunga/red-billed gulls defecating on and around the Port buildings increases the health risk to Port staff. Although the Port provides a bird-friendly environment, it is essential to implement control measures around the amenity building to prevent any adverse effects that could disrupt Port operations.

4.3 Kororā/northern blue penguin

4.3.1 National, regional, and local status

Blue penguins in the Bay of Plenty are the northern blue penguin subspecies, *Eudyptula minor iredalei*. The northern blue penguin is classified as At Risk - Declining.

Tauranga supports a significant penguin population, concentrated at Mauao (Mount Maunganui) 400 pairs, Moturiki (Leisure Island) 100 pairs, and Motuotau (Rabbit Island) 200 pairs[1]. Other locations around the wider Tauranga area are less well known.

A penguin survey of Port of Tauranga was undertaken by Joanna Sim and her conservation dog, Rua, (DabchickNZ) in August 2019. The dog detected the presence of kororā/blue penguins at several locations within the Port (Figure 3). At Mount Maunganui Wharf, 16 indications were found within the rock wall that will be removed (red line, Figure 3), i.e., within the footprint of the tarāpunga/red-billed gull colony.

All penguin detections in the Mount Maunganui seawall were deep burrows beneath rocks, or in sandy substrates underneath the asphalt road surface. Because of this, no penguins were seen, although faeces and feathers were observed[2].

If present, 16 nests would equate to approximately 2.3% of the known Tauranga kororā/blue penguin population. However, the resident population at this location is likely to be less, as penguins will also nest in other locations around Tauranga.

4.3.2 Overview of ecology

Kororā/blue penguins are widespread around the coastline of Aotearoa/New Zealand, roosting and nesting in colonies or sometimes singly. Colonies are generally small, numbering only a few pairs. Birds breed in a wide variety of burrow types, including burrows they have excavated, commandeer off other birds, or use logs, caves, crevasses in rocky shorelines, under houses and custom-made nest boxes (Braidwood *et al.* 2011, Marchant and Higgins 1990).

Kororā/blue penguins can travel significant distances and typically feed on the sea bottom trapping their prey (Chiaradia *et al.* 2007). They generally consume small fish and squid (Flemming *et al.* 2013; Fraser and Lalas 2004; van Heezik 1990).

Kororā/blue penguins are affected by many threats, including introduced predators. Cats (*Felis catus*), dogs (*Canis familiaris*), ferrets (*Mustela furo*), and stoats (*Mustela erminea*) can prey on eggs, chicks, and adult kororā/penguins; and rats (*Rattus* spp.) may prey on eggs (Agnew *et al.* 2014). Kororā/blue penguins are also vulnerable to collisions with vehicles when they cross roads to access breeding sites (Heber *et al.* 2008; Dann 2013), with small boats within the marinas, and possible effects of climate change (references in Dann 2013).

4.3.3 Potential effects of Mount Maunganui Wharf extension

Potential effects of the Project along the section with the 16 possible kororā/blue penguin burrows are:

- Possible injury or mortality of eggs, chicks, and adults from the dismantling of the existing rock wall. This assumes that work during the breeding season will not be able to be avoided. Adults may be affected at any time of year.
- Permanent loss of available breeding habitat.
- Disturbance of adjacent breeding birds during the construction period.

[1] http://www.westernbaywildlife.nz/wildlife/seabirds/little-blue-penguin/

[2] Memo from Joanna Sim, 2019, discussing the results of the penguin survey, with map provided by Port of Tauranga.

These potential effects have been addressed in the mitigation measures provided in the Management Plan (Appendix 5, Sections 2 and 3), including the establishment of a new nesting box colony at Butters Landing, replacement burrows through the installation of concrete pipes (for kororā) within the purpose-built new wall to be built for tarāpunga/red-billed gulls, stage works for the dismantling of the existing rock wall, and monitoring. The predicted effect of Stage 2 construction on kororā/blue penguins will be avoided with the proposed mitigation measures.

4.3.4 Application of New Zealand Coastal Policy Statement 2010

NZCPS policy 11(a)(i) and (b)(ii) applies to Stage 2 as described in Section 3 of this report for Stage 1.

Kororā/blue penguins are classified as At Risk. The permanent loss of breeding habitat would be an adverse effect, despite the site being 'artificial'.

The question of whether the effect is significant can be based on the percentage of the local population that is affected by the loss, in this case less than 2.3% (Section 4.3.1). This is not a significant percentage of the local Tauranga population.

Proposed management measures are set out in Appendix 5 to this report. These measures include ensuring the kororā/blue penguin burrows are unoccupied before the rock wall is dismantled. Pre-development surveys will identify the locations of nests. Adult birds will be relocated to a new nest box colony at Butters Landing which is south of the existing habitat. Existing burrows with chicks and/or eggs will be avoided until a chick has fledged. Empty burrows will be blocked to ensure relocated birds cannot re-enter. Additional, new burrow sites will be installed in the new rock wall to be developed as tarāpunga/red-billed gull habitat.

These measures will ensure that the Project avoids all but transitory, minor adverse effects on kororā/blue penguin and its important habitats. As a result, the Project will avoid adverse effects on this At Risk species and will avoid significant adverse effects on habitats important to the taxa, while mitigating other effects on the habitat to a minor level. These outcomes are consistent with the NZCPS policies identified above.

Under the Wildlife Act 1953, the killing of blue penguins is illegal without a permit. A wildlife approval will be obtained well before works to dismantle the rock wall begins, and the Department of Conservation will be consulted during the applications process.

5.0 Stages 1 and 2: Lighting Effects

5.1 Background

The proposed management measures are set out in Appendix 5 to this report.

Many bird species, including shorebird and seabird species, can be attracted to or be disorientated by artificial lighting at night (ALAN). Light pollution can hide navigational aids (sun, moon and stars), and bright lights can attract birds, causing them to divert from efficient migratory routes (death through exhaustion) or collide with infrastructure. This effect can be significantly pronounced when visibility is poor, such as on foggy nights (Mclaren *et al*. 2018). Attraction to artificial night lighting may result in other adverse effects on birds, such as reducing fuel stores and delaying migration (Gauthreaux and Belser 2006). The most commonly affected species are Procellariformes (including petrels, shearwaters, albatross, and terns), migrating shorebirds (e.g. kuaka/eastern bar-tailed godwit) and some penguins. Currently, 56 petrel species have been identified worldwide, and the birds at greatest risk are burrow-breeding seabirds (Rodriguez *et al*. 2017a, 2017b). Adult Procellariforme are less

vulnerable than fledglings, but nocturnal activities do play an important role in the annual breeding cycle (Rodriguez *et al*. 2017a, 2017a). Fledglings of burrow breeding species are at a greater risk to artificial lights, particularly during their maiden flight to sea.

5.1.1 Terrestrial effects

Attraction to ALAN can lead to seabirds' crash landing (termed 'fallout') in urban areas. Fallout birds cannot get airborne once on the ground without assistance, leading to being run over by vehicles, starvation, succumbing to injuries, or mammalian predation. For example, Kaikōura tītī/Hutton's shearwater (*Puffinus huttoni*, Threatened – Nationally Vulnerable) fledglings undertake their maiden flight to sea from two alpine colonies and their flight path passes over the Kaikōura township where birds are often found grounded in and around the town during March and April (Deppe *et al*. 2017). Furthermore, the street lighting around Punakaiki has been identified as a contributor to fallout events with tāiko/Westland petrels (*Procellaria westlandica*, At Risk – Naturally Uncommon) between November and January (Naish 2020). Westland petrels also nest and breed close to an urban environment on the mainland.

Other reports of light-induced collisions in northern Aotearoa New Zealand include birds colliding with the lighthouse on Burgess Island (Pokohinu, Mokohinau Islands) and being grounded by lights in Auckland City and various coastal towns (Lukies *et al*. 2021; Whitehead *et al*., 2019), and grey-faced petrels (*Pterodroma gouldi*) found below streetlights in the eastern Bay of Plenty (W.B. Shaw, Wildlands, pers. comm.).

In the Canary Islands, a GPS data-logger study on the flight tracks of Cory's shearwater (*Calonectris borealis*, Non-resident Native – Vagrant) found grounded fledglings on their maiden flight within 16 kilometres of their breeding grounds. This issue was found to be more severe for inland colonies and was directly linked to light pollution (Rodriguez *et al*. 2015). Another study revealed that over 10,000 shearwaters, storm petrels, and Atlantic puffins (*Fratercula arctica*) were found grounded in the village of Hirta, St Kilda, Outer Hebrides. These birds were attracted to the lights of village buildings at night and to street lamps along the shorefront, which are now no longer in use (Miles *et al*. 2010).

It is not just the direct impact of artificial lights on wildlife that is concerning. Light pollution can also disorientate migratory shorebirds and alter their flight trajectories. Moreover, it can disrupt the invertebrates that shorebirds rely on, leading to a decline in food supplies and creating challenges at their refuelling stopovers.

A study on penguins at a naturally dark site in Australia showed that exposure to artificial lighting along preferred paths to reach their nests helped the penguins to find their way, reduced predation risk and possibly improved vision (Rodriguez *et al*. 2018). The study showed that the penguins habituated to artificial light and were unaffected by an increase of 15 lux. However, lighting may also attract penguins to undesirably lit sites.

5.1.2 At-sea affects

Artificial lighting can also disorientate birds which collide with artificial structures while flying or foraging. The risk is considerably higher if the structure is associated with an attractive food source, such as commercial fishing vessels. For example, seabirds colliding with vessels and warp cables of longline and trawling boats is a major source of mortality for many seabird species. An extreme case is of a trawler travelling in darkness on a calm, foggy night with strong ice lights on, and at dawn, almost 900 prions, storm petrels, and diving petrels were found on deck, of which more than a quarter were dead (Black 2005). Furthermore, ship lighting at anchor is important for maritime safety. However, artificial lighting at sea can lead to bird fallout events on ships. Approximately 70 Buller's shearwaters (*Adrenna bulleri*, At Risk – Declining) landed on a cruise ship in Aotearoa New Zealand, and

approximately half of the birds died (Cropp 2019). Cruise ships are now being asked to dim their night lighting to avoid further events from November to June (DOC 2019).

5.2 Seabird and shorebird species

An assessment of seabird and shorebird data obtained from the eBird database for the period January 2000 to April 2023 and the Port of Tauranga bird survey data (October 2021 to May 2024) identified 25 species, including four classified as Threatened and 17 At Risk species (Table 2; Robertson *et al.* 2021). Of these species, six are burrow-breeding seabirds which nest on islands within the Bay of Plenty, and adjacent to Tauranga Harbour. These species are found on the following islands:

- Northern diving petrel/kuaka (*Pelecanoides urinatrix urinatrix*, At Risk – Relict) breed and nest on Moturiki (Leisure) Island, Motuotau (Rabbit) Island, Mōtītī Island and Motunau (Plate), Karewa Island, Tūhua/Mayor Island, Moutohorā (Whale) Island, Moutoki Island, and Rūrima Island.
- New Zealand white-faced storm petrel/takahikare (*Pelagodroma marina maoriana*, At Risk – Relict) breed and nest on Moturiki (Leisure) Island, Motunau (Plate) Island, Moutoki Island, and Rūrima Island.
- Flesh-footed shearwater/toanui (*Ardenna carneipes*, At Risk – Relict) breed and nest on Karewa Island and Tūhua/Mayor Island.
- Fluttering shearwater/pakahā (*Puffinus gavia*, At Risk – Relict) breed and nest on Motuotau (Rabbit) Island, Mōtītī Island and Motunau (Plate), Karewa Island, Tūhua/Mayor Island.
- Grey-faced petrel/ōi (*Pterodroma gouldi*, Not Threatened) breed and nest on Mauao/Mount Maunganui, Motuotau (Rabbit) Island, Motunau (Plate) Island, Karewa Island, Moutohorā (Whale) Island, Moutoki Island, Tūhua/Mayor Island, Taumaihi (The Knoll) Island, Rūrima Island, and Whakaari/White Island.
- Black petrel/tāiko (*Procellaria parkinsoni*, Threatened – Nationally Vulnerable) breed and nest on Moutoki Island and Rūrima Island.

Table 2 – Bird survey data compiled from eBird checklists and Port of Tauranga bird survey data (October 2021 to May 2024). Common names, species names, and threat classifications are from Robertson *et al.* (2021).

Common name	Scientific name	Threat classification	Port	Harbour	Coastal
Black-fronted tern/tarapirohe	*Chlidonias albostriatus*	Threatened – Nationally Endangered		Y	
Northern New Zealand dotterel/tūturiwhatu	*Charadrius obscurus aquilonius*	Threatened – Nationally Increasing	Y		Y
Black petrel/tāiko	*Procellaria parkinsoni*	Threatened – Nationally Vulnerable			Y
Caspian tern/taranui	*Hydroprogne caspia*	Threatened – Nationally Vulnerable	Y	Y	Y
Banded dotterel/pohowera	*Charadrius bicinctus bicinctus*	At Risk – Declining	Y		
Black-billed gull/tarāpuka	*Chroicocephalus bulleri*	At Risk – Declining	Y	Y	Y
Buller's shearwater/rako	*Adrenna bulleri*	At Risk – Declining			Y
Eastern bar-tailed godwit/kuaka	*Limosa lapponica baueri*	At Risk – Declining	Y		
Northern blue penguin/kororā	*Eudyptula minor iredalei*	At Risk – Declining	Y	Y	Y
Red-billed gull/tarāpunga	*Chroicocephalus novaehollandiae scopulinus*	At Risk – Declining	Y	Y	Y
Red knot/huahou	*Calidris canutus rogersi*	At Risk – Declining		Y	Y
South Island pied oystercatcher/tōrea	*Haematopus finschi*	At Risk – Declining	Y		
White-fronted tern/tara	*Sterna striata striata*	At Risk – Declining	Y	Y	Y
Little black shag/kawau tūī	*Phalacrocorax sulcirostris*	At Risk – Naturally Uncommon		Y	Y
Pied shag/kāruhiruhi	*Phalacrocorax varius varius*	At Risk – Recovering	Y	Y	Y
Variable oystercatcher/tōrea pango	*Haematopus unicolor*	At Risk – Recovering	Y	Y	Y
Black shag/māpunga	*Phalacrocorax carbo novaehollandiae*	At Risk – Relict	Y	Y	Y
Fairy prion/tītī wainui	*Pachyptila turtur*	At Risk – Relict			Y
Flesh-footed shearwater/toanui	*Ardenna carneipes*	At Risk – Relict			Y
Fluttering shearwater/pakahā	*Puffinus gavia*	At Risk – Relict			Y
New Zealand white-faced storm petrel/takahikare	*Pelagodroma marina maoriana*	At Risk – Relict			Y
Northern diving petrel/kuaka	*Pelecanoides urinatrix urinatrix*	At Risk – Relict			Y
Ruddy turnstone	*Arenaria interpres*	Non-resident Native – Migrant		Y	Y
Little pied shag/kawaupaka	*Microcarbo melanoleucos melanoleucos*	Non-resident Native – Vagrant		Y	Y

5.3 Light character and potential effects

5.3.1 LED technology and potential effects

Light emitting diodes (LEDs) are now widely used to replace previous technology and provide a new range of spectral characteristics (Longcore *et al*. 2018). This makes them safer than high-pressure sodium, low-pressure sodium, metal halide, and fluorescent lights, which take a long time to warm up and cool down and were generally left on all night. LED bulbs are more energy efficient, and light control is instant when turned on or off. However, all LED lights contain blue wavelengths.

The spectral composition of lights is thought to affect attraction by birds: white and blue light is highly attractive to all seabirds (kelvin ≥ 2200; Longcore *et al*. 2018). All seabirds are sensitive to the violet-blue spectrum and short wavelength (380-500 nanometres). Different LED lights can have the same colour-correlated temperature (CCT) but can have very different blue content (Figure 1). This light colouration, however, can appear the same to the human eye as we are not sensitive to violet-blue spectrum.

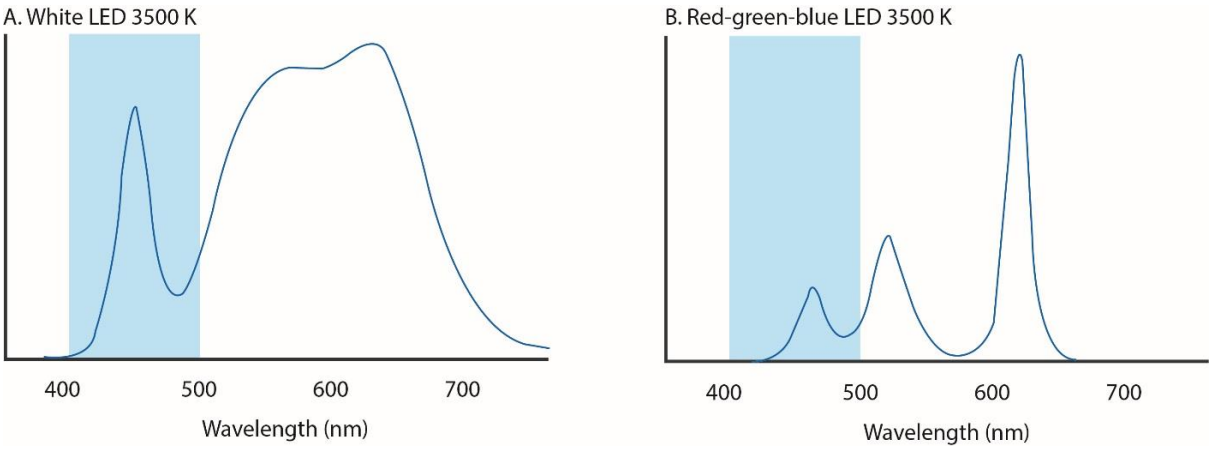

Figure 1: A comparison of the blue wavelength spectral content of two LED lights with the same CCT (3500k). The blue band shows the blue region of the visible spectrum (400–500 nm). The light in A has a much greater blue light content than B yet the two appear to the human eye as the same colour. For animals with differing sensitivities to light wavelength from humans, they may appear very different. Figure copied from National Light Pollution Guidelines (2020).

Animals and humans perceive light differently, and commercial lighting focuses on the best solution for human activity without considering the effects on other species. As lighting sources are upgraded within urban and commercial areas from high-pressure sodium, low-pressure sodium, metal halide and fluorescent lights, consideration is needed to assess the extent of sky glow, light source intensity, direction, duration and spectrum of the lights (e.g. wavelength)

5.3.2 Sky glow

Sky glow is the effect of lighting illumination on atmospheric conditions that influence the amount and nature of reflection and scattering of light. Sky glow can be seen from a great distance from cities and can be highly attractive to wildlife, including birds, turtles, and insects (National Light Pollution Guidelines 2020; Longcore *et al*. 2018). Lights of different spectra, intensity and configuration will affect sky glow differently.

Vertical lights that illuminate the sky can significantly impact birds flying at night and attract birds to an area. Regardless of location within the Port, all outside high mast floodlights should be shielded above, and the edge of the shield should be below the whole of the light source, preventing any upward illumination and reducing horizontal light spread. This will greatly reduce any attraction of birds flying at night. However, the overall sky glow of Tauranga is contributed to by all commercial businesses (during business hours), sports facilities (during training or competitions) residents (generally early evening), and road lighting (all night).

5.3.3 Light intensity and wavelength

Light Intensity

Light intensity may be more important than colour for seabirds. Very bright light will attract seabirds regardless of colour (Raine *et al*. 2007). It is important to keep light intensity to a minimum (National Light Pollution Guidelines 2020; Longcore *et al*. 2018). Light intensity should be appropriate for the activity, and only use the minimum number of lights to meet the requirements.

Wavelength

Numerous studies have reported attractiveness to different wavelengths. White light has the greatest effect as it contains all wavelengths of light (Reed 1986) and different animals perceive light differently to humans (Figure 2; Longcore *et al*. 2018). Human vision ranges from 400-700 nanometres, with a peak of 555 nanometres. It has been shown that potential physical damage can occur when exposed to 400-490 nanometres for extended periods and changes in physiological function when exposed to these wavelengths at night (changes in circadian rhythms to the 24-hour light/dark cycle in animals; Longcore *et al*. 2018). Artificial light at night can suppress production melatonin, the “sleep hormone”. This hormone is a key contributor to circadian clock regulation, which is a natural, internal process that regulates the sleep-wake cycle and repeats/resets on each rotation of the Earth roughly every 24 hours. These 24 hour rhythms have been observed widely in plants, animals, fungi, and cyanobacteria. Melatonin can be suppressed, affecting, movement to or from nests or roosts, timing of the dawn chorus, and changing movement and breeding patterns such as migration and egg laying.

Research on the photoreceptors of wedge-tailed shearwaters (*Ardenna pacifica pacificus*, At Risk – Relict) has revealed that they have four cone-based visual pigments that are most sensitive to light wavelengths of 406, 450, 503, and 566 nanometres, approximately corresponding to violet, blue-violet, green and yellow-green light, respectively (Hart 2004). This heightened sensitivity to wavelengths of <380-500 nanometres may explain why fledglings show an increased attraction to blue and cool colour temperature light (Rodriguez *et al*. 2017). Understanding the specific light preferences of seabirds can help in designing more effective conservation strategies.

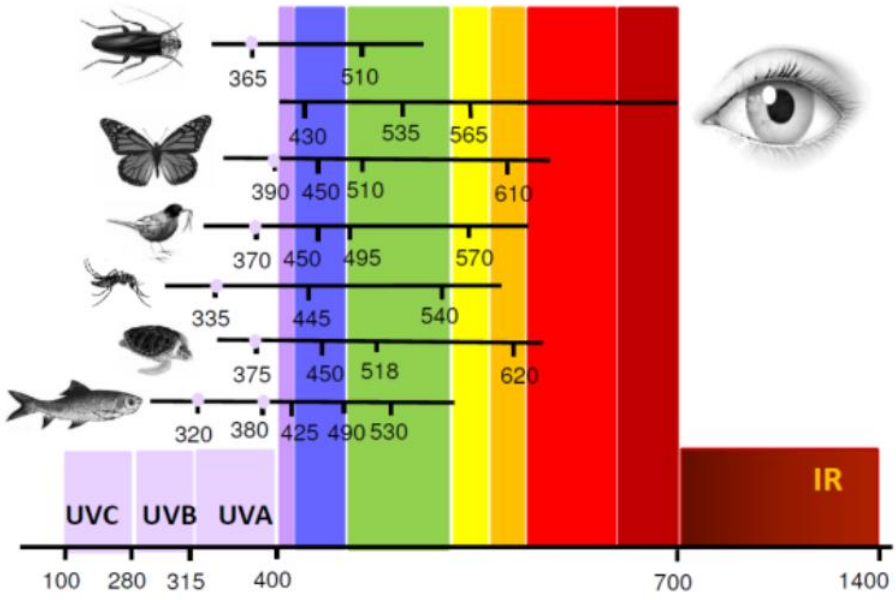

Figure 2: Ability to perceive different wavelengths of light in humans and wildlife is shown by horizontal lines. Numbers indicate peak sensitivity. Figure copied from Carneiro (2021).

5.3.4 Direction

The direction of the light is also extremely important. All lights must be fully shielded from above and directed onto the intended object or area to prevent light pollution and the attraction of avifauna (Figure 3). It is also important to assess the type of material the lights are directed toward. It is important that surfaces are of low reflective surface (e.g. avoid surfaces that are highly polished, shiny or of a light colour, such as white paint).

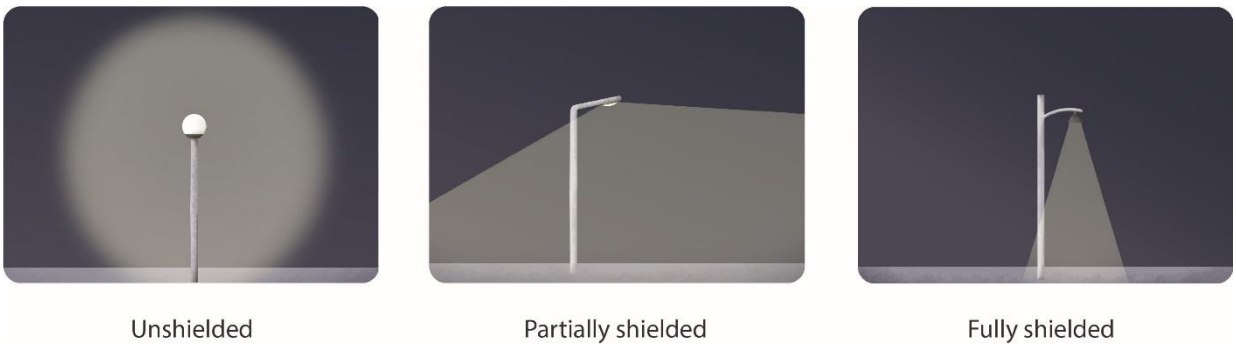

Figure 3: Lights should be shielded to avoid lighting anything but the target area or object. Figure copied from National Light Pollution Guidelines (2020).

5.3.5 Colour correlated temperature

Colour correlated temperature (CCT) of a light source is one way to minimise the potential for adverse effects on avifauna. Although all LEDs contain blue light, use of a low kelvin bulb reduces the CCT. Lamps containing a warm yellow colour are of a low colour temperature (between 1000-3000 kelvin), whereas cool bluish lamps have a colour temperature over 5000 kelvin. For birds that are sensitive to blue light, LEDs with a low amount of short wavelength should be used (e.g. 2700-3500 kelvin; Figure 4). If lighting must be nearer 6000 kelvin for human safety requirements, low light intensity, long wavelength (e.g. over 560 nanometres), and downward-facing lights illuminating only the intended object or area as practicable, including motion sensor lighting where appropriate.

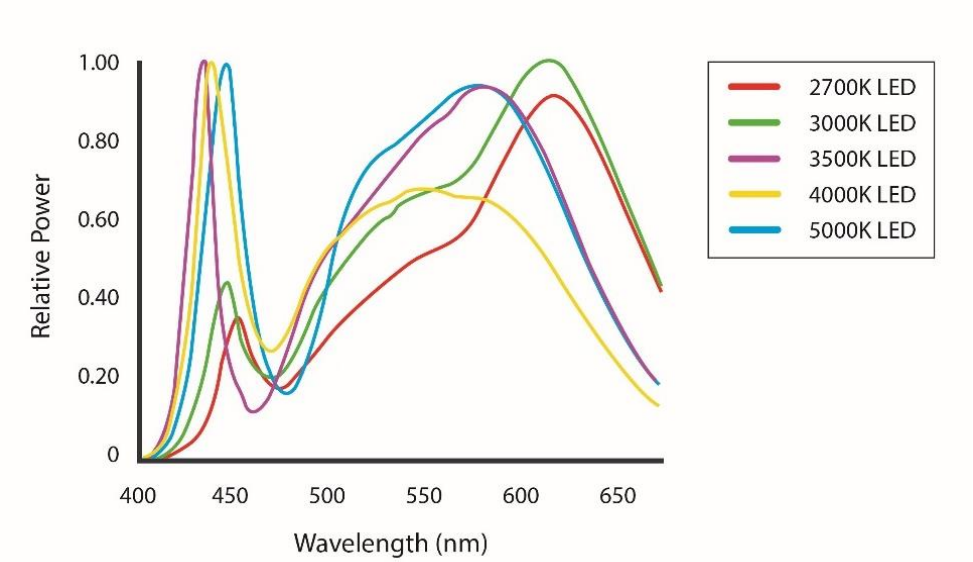

Figure 4: Spectral curves showing the blue content of white 2700-5000 K LED lights. Note the difference in relative power output in the blue (400-500 nanometre) wavelength range. Figure copied from National Light Pollution Guidelines (2020).

5.3.6 Mitigation measures

Mitigation measures provided to address potential lighting effects are set out in Appendix 5, Sections 2. With implementation of the following measures, the effects of ALAN on birds are expected to be minor:

- Floodlights should be fully shielded and mounted horizontally, avoiding upward illumination and minimising horizontal light spread.
- Use of low colour-correlated temperature for LEDs (preferably 3,000 K; warm light), no greater than 6,000 K. If up to 6,000 K is used, control the light spread and intensity.
- All lights must have as little or no short wavelength (380-500 nanometres) violet or blue light.
- Light intensity and the number of lights used should be sufficient to only light the intended object or area.
- Use motion sensor lighting where practicable, as well as high quality, low glare lighting.
- Non-reflective paint should be used when repainting storage tanks, buildings, and other structures.

6.0 Summary

Port of Tauranga is proposing to dredge approximately 10.55 hectares of the Stella Passage, construct some 3.58 hectares of reclamations, and construct wharf extensions of 385 metres at its Sulphur Point Wharf, and 315 metres at its Mount Maunganui Wharf. The project will occur over two stages, over a period of several years.

Potential effects of the project on birds revolve around:

- At Sulphur Point, there is potential for construction activity undertaken to the north of (not within) the sand pile to disturb birds using the sand pile nearby. The sand pile is used by internationally-

significant numbers of kuaka/eastern bar-tailed godwits for feeding and roosting. It is also used by up to 12 other bird species for breeding/roosting.

- At the Mount Maunganui Wharf, the removal of 315 metres of rock wall that provides habitat (albeit artificial) for tarāpunga/red-billed gulls, along with up to 16 kororā/blue penguin nesting sites.

Various management measures to address potential effects are recommended in the Management Plan provided as Appendix 5 to this report. Key measures include:

In relation to the sand pile at Sulphur Point Wharf, the following is recommended:

- Continued use of shipping containers as a barrier to noise from the Port operations and from Project construction works.
- A pest animal (mustelid, rat, cat, hedgehog, and rabbit) control programme.
- A pest plant control programme to maintain the value of the sand pile as bird habitat.

In relation to the tarāpunga/red-billed gull habitat at Mount Maunganui Wharf:

- Development of 200 metres of purpose-built rock wall a short distance south of the proposed Mount Maunganui Wharf extension, providing new habitat to support the tarāpunga/red-billed gull colony displaced from its current location nearby.

In relation to the kororā/blue penguin at Mount Maunganui Wharf:

Pre-demolition surveys and relocation of kororā/blue penguins to a new nesting box colony at Butters Landing and exclusion of penguins from the existing burrows.

- Installation of new concrete pipe burrows for kororā/blue penguins into the purpose-built section of the rock wall that is to be constructed to support the relocated tarāpunga/red-billed gull colony.

In relation to lighting effects:

- A Light Management Plan to minimise effect of artificial lighting on avifauna, including shielding, horizontal mounting, controlled light intensity, low colour-correlated temperature, little or no short wavelength, and non-reflective paint when repainting.

In relation to the establishing tarāpunga/red-billed gull colony at Butters Landing:

- Deploy non-lethal deterrents (e.g. trip wires) outside of the avian breeding season and indigenous planting after creating the penguin nest boxes to deter permanent establishment of a tarāpunga/ red-billed gull colony.

With the adoption of the recommended mitigation measures, the Project's effects will all be temporary and have been assessed as follows:

- Birds using the sand pile – effects will be less than minor;
- Tarāpunga/red-billed gull – effects will be less than minor; and
- Kororā/northern blue penguin – effects will be less than minor.

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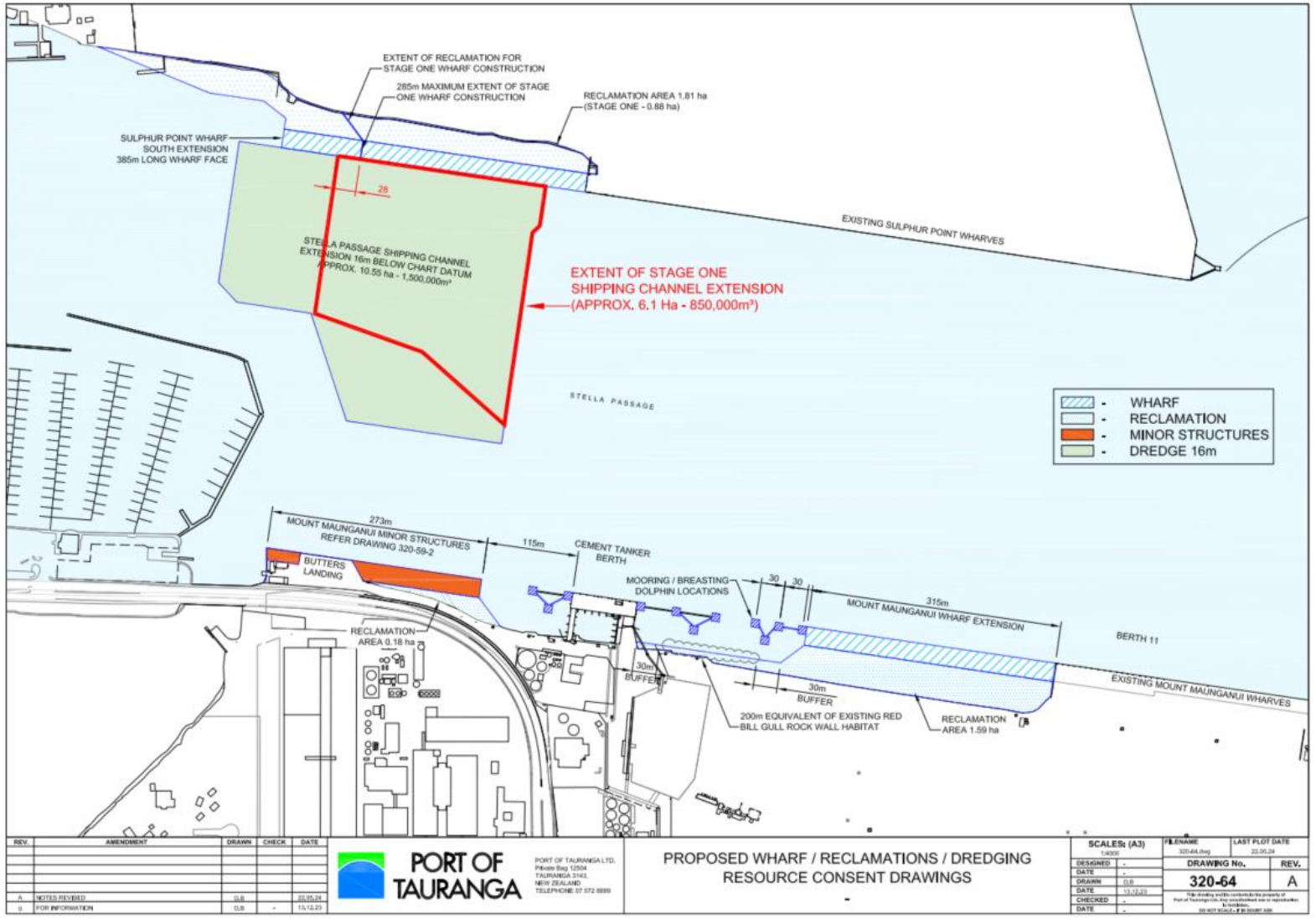
Appendix 1

Species names used in this report

Common Name(s)	Scientific Name	Threat Classification
Caspian tern/taranui	*Hydroprogne caspia*	Threatened – Nationally Vulnerable
Northern New Zealand dotterel/tūturiwhatu	*Charadrius obscurus aquilonius*	Threatened – Nationally Increasing
Wrybill/ngutu pare	*Anarhynchus frontalis*	Threatened – Nationally Increasing
Banded dotterel/pohowera	*Charadrius bicinctus bicinctus*	At Risk – Declining
Black-billed gull/tarāpuka	*Chroicocephalus bulleri*	At Risk – Declining
Eastern bar-tailed godwit/kuaka	*Limosa lapponica baueri*	At Risk – Declining
Northern blue penguin/kororā	*Eudyptula minor iredalei*	At Risk – Declining
Red-billed gull/tarāpunga	*Chroicocephalus novaehollandiae scopulinus*	At Risk – Declining
Sooty shearwater/tītī	*Ardenna griseus*	At Risk – Declining
South Island pied oystercatcher/tōrea	*Haematopus finschi*	At Risk – Declining
White-fronted tern/tara	*Sterna striata striata*	At Risk – Declining
Variable oystercatcher/tōrea pango	*Haematopus unicolor*	At Risk – Recovering
Pied stilt/poaka	*Himantopus himantopus leucocephalus*	Not Threatened
Southern black-backed gull/karoro	*Larus dominicanus dominicanus*	Not Threatened
Spur-winged plover	*Vanellus miles novaehollandiae*	Not Threatened

Appendix 2

Wharf extension plans



Appendix 3

Aerial photography of Sulphur Point 1969-2017


2019 SAND PILE
FOOTPRINT
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AMENDMENT
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CHECK
DATE
FOR INFORMATION
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PORT OF TAURANGA LTD
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TAURANGA 3143,
NEW ZEALAND
TELEPHONE 07 572 8899
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SAND PILE
SULPHUR POINT
SCALES: (A4)
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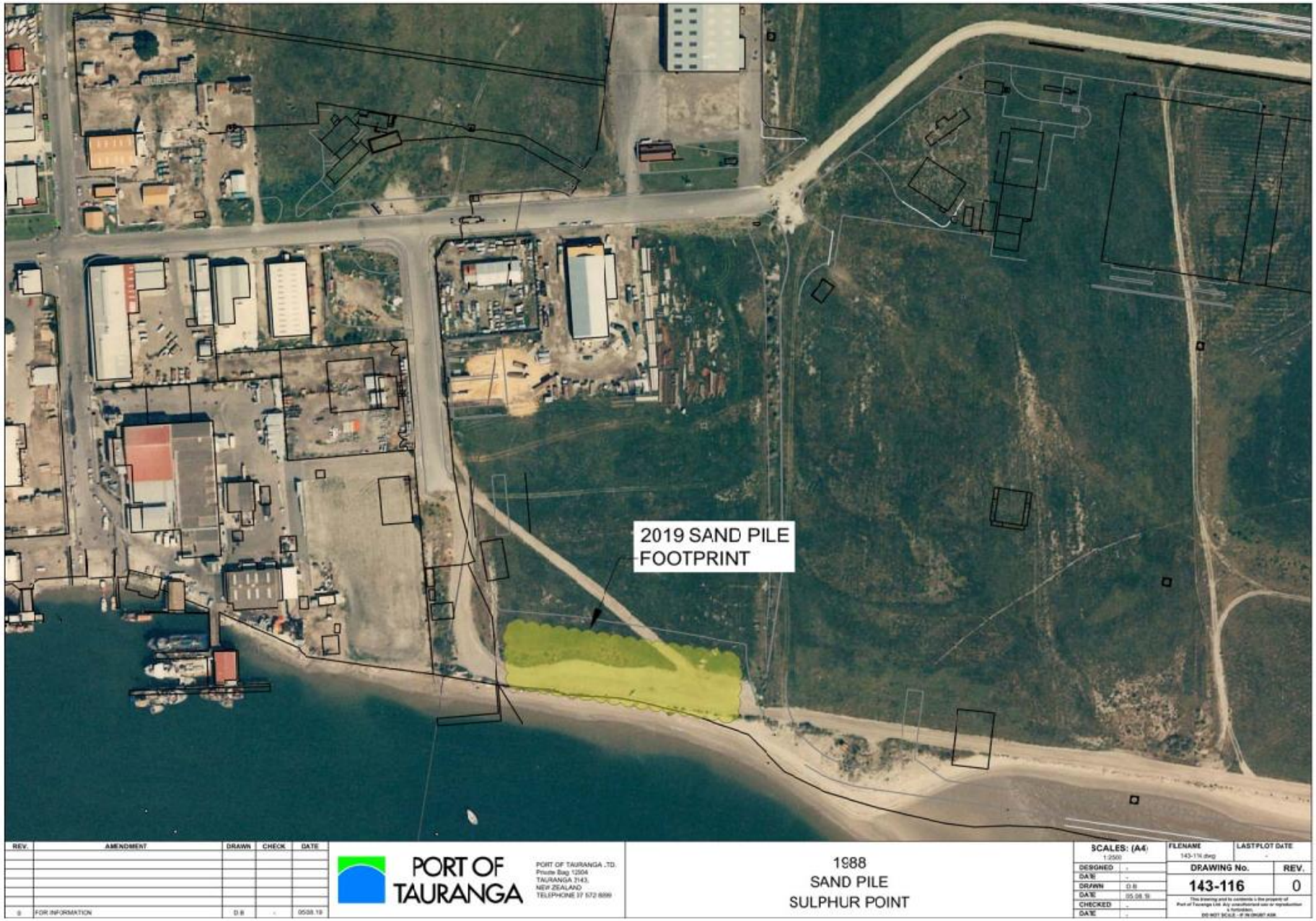
DO NOT SCALE - IF IN DOUBT ASK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FOOTPRINT
REV.
AMENDMENT
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FOR INFORMATION
D.B
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0508.19
PORT OF TAURANGA
PORT OF TAURANGA .LTD.
Private Bag 12004
TAURANGA 3143.
NEW ZEALAND
TELEPHONE 07 572 8999
1988
SAND PILE
SULPHUR POINT
SCALES: (A4)
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DO NOT SCALE - IF IN DOUBT ASK


2019 SAND PILE
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PORT OF TAURANGA
PORT OF TAURANGA LTD.
Private Bag 12504
TAURANGA 3143,
NEW ZEALAND
TELEPHONE 07 572 8899
2008
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2019 SAND PILE
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FOR INFORMATION
PORT OF TAURANGA
PORT OF TAURANGA LTD.
Private Bag 12504
TAURANGA 3143.
NEW ZEALAND
TELEPHONE 07 572 8899
2017
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143-116.dwg
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Appendix 4

Global distribution of kuaka/eastern bar-tailed godwit

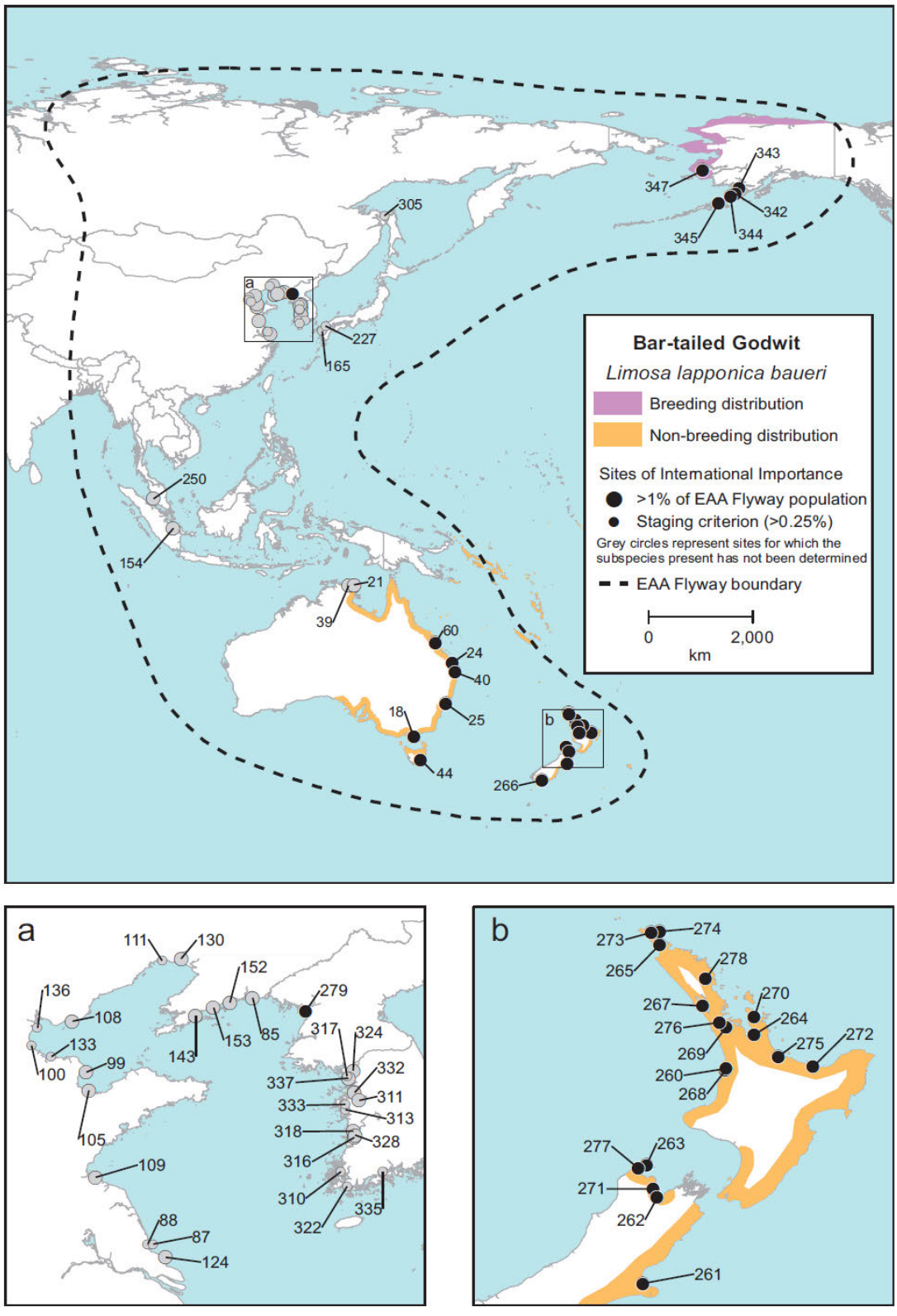

Figure A1 – Range and sites of international importance. From Conklin *et al.* (2014).

Roost sites have been combined to simplify the map and show those that are important roosts for godwits:

1. Bowentown shellbanks
2. Tanners Point
3. Matahui Point
4. Matakana Island
5. Tinopai sandbar
6. Sulphur Point
7. Tuapiro Estuary
8. Opureora spit
9. Rangiwaea Island
10. Waikaraka Estuary spit
11. Waipu Bay
12. Te Maunga
13. Te Hopai Island

Appendix 5

Avifauna Management Plan for the Port of Tauranga Sand Storage Site, Wharf Extensions, and Wider Port Environs

Wildland Consultants Ltd Contract Report No. 5154f

See separate document.

Appendix 6

Pre-lodgement cultural values and assessments by the Department of Conservation (DOC), Bay of Plenty Regional Council (BOPRC), and Iwi of Tauranga

Group	Effect	DOC, BOPRC or Iwi Recommendation	Mitigation and Comments
Department of Conservation	**Effects and Mitigations** The survey age references for little penguin are dated, 2019 (5-6 years old). It is possible over this time that population numbers have changed, if this is the case than management plans and strategies need to reflect this. Ideally further surveys could be undertaken during a period where birds are likely to be landbound to ensure sufficient assessment of effects and mitigations (e.g. are enough replacement burrows being provided).		Avifauna Management Plan, Section 2, Points 2.2, 6.0, and 7.2 contains information with regards to these comments and sets out the mitigation measures. Information is also contained in Sections 6.0 and 13.0 of the ecological assessment.
	One of the mitigations is "*Post-construction: kororā/penguin population will be surveyed twice during the first two breeding seasons after construction of the Mount Maunganui Wharves has been completed (October and December), to confirm whether kororā/penguins have taken up residence in any new wall structures (e.g. in the new purpose built rock wall for red-billed gulls south of the dismantled wall, closer to the Tanker Berth)*" yet the purpose of this mitigation e.g. what will happen with the information is unclear.	DOC recommends being provided with this information to inform outcomes and future management.	Avifauna Management Plan has been amended to state that all reports are provided to DOC (See Section 2, Point 2.1.20).
	The dismantling of the rock walls should take place between April and June to minimise potential impact on kororā/penguin whilst they are breeding		Sections 2, 2.2, and 5.2 of the Avifauna Management Plan sets out the actions. Section 2, Point 5.2 has also been amended to incorporate the 20 metre setback between any active nest identified during the pre-construction survey and a works site, as recommended by DOC.

Group	Effect	DOC, BOPRC or Iwi Recommendation	Mitigation and Comments
	The applicant has only identified a single Wildlife Approval for the handling, capture and relocation of kororā stating that the red-billed gulls will be encouraged to relocate of their own accord. If the strategy to encourage relocation is not successful, the applicant may require another wildlife authority to relocate red-billed gulls outside of the fast-track process. DOC would recommend that the applicant has a further plan to ensure there is protective benefit to wildlife in case that occurs. DOC would recommend that there should also be monitoring of the sandpile site, as the establishment of a new red-billed gull breeding colony may affect other birds' use of the sandpile (which DOC would anticipate as requiring mitigation/remedy).		Section 2, Points 7.1-7.2 of the Avifauna Management Plan discusses methods to encourage the tarāpunga/red-billed gull to the newly modified 200 metre rock wall. The modified wall will be completed outside of the breeding season and one year prior to any works commencing within the area of the current colony. This will allow tarāpunga/red-billed gulls to become familiar with the new rock wall in their own time. A Wildlife Approval should not be required for the tarāpunga/red-billed gull. However, a further approval will be applied for if required. Section 1, Point 8.0-8.2 of the Avifauna Management Plan discusses bird monitoring methods of the sand pile.
	There is a possibility that white-fronted terns/nests may be disturbed, as they nest near the area which will be disturbed. Again, the applicant would require further wildlife authority to relocate white-fronted tern outside of the fast-track process.		The tara/white-fronted tern breeding season (October to March) is very similar to tarāpunga/red-billed gull (September to February). Works will avoid both species breeding seasons, or will be well underway that any tara/white-fronted tern looking to find nest site will not select an area within the active site. If a pair does start to nest, a 25 metre setback will be applied until the chicks fledge. Section 4.1 of the ecological assessment has been amended to address this.
	Reef heron is likely to use the shallow waters next to the sand pile. It may become less suitable habitat when the passage is dredged – an assessment of this should be made to understand potential effects and subsequently appropriate mitigations, alongside long-term monitoring.		There have been no reports of reef heron during the on-going monitoring around the Port and specifically at the sand pile. Nevertheless, the works will not affect this species if present as there are other areas of suitable foraging habitat within the harbour and any loss or reduction of this area is very minor.
	Caspian terns use the area the most by roosting on the sand pile.		This information is provided in the Avifauna Management Plan in Section 1, Points 5.0-5.1 and addresses management measures.

Group	Effect	DOC, BOPRC or Iwi Recommendation	Mitigation and Comments
	Monitoring activities would typically document the qualifications and experience of those undertaking the work (this is not present).		The Port staff undertaking the avifauna surveys are very familiar with the target species (e.g. identification and behaviours), understand the sampling method and rules applying to the sampling method, and are familiar with the analysis and reporting format for the results.
	Table A1-2 in AMP doesn't relate monitoring to the size and activities of the sandpile at time of survey.		Avifauna Management Plan Table A1-2 has been amended.
	Monitoring by OSNZ is stated as occurring since 1994, but Table A1-1 only shows data from 2008-2021. It should also state the month that the monitoring (both winter and summer) occurs.		Avifauna Management Plan Table A1-2 contains all of the data we were able to acquire. The table also states the Winter months are March to August, and summer months are September to February.
Bay of Plenty Regional Council	Avifauna Management Plan – Section 3: • The reference to 5-minute counts is unclear as it is usually employed in terrestrial bird surveys; it would be better to simply count the birds in each sector each survey.		Section 3, Point 2.1.3 of the Avifauna Management Plan has been amended as per recommendation.
	• Caution will be required regarding drone use and the potential to displace birds, especially birds congregated at a roost – drones represent a potential aerial predator and therefore a threat.		Section 3, Point 2.1.3 of the Avifauna Management Plan acknowledges the risk of potential disturbance and provides guidelines on drone use and the caveat of the area being within the Tauranga Airport flight path.
	• Caution is advised regarding the wearing of Hi Vis gear close to birds as it may also result in site desertion.		Section 3, Point 2.1.2 of the Avifauna Management Plan acknowledges that PPE is essential for health and safety of staff. However, the section has been amended to provide caution of that disturbance and site desertion does not occur.
	• Equipment should include binoculars AND a spotting scope.		Section 3, Point 2.1.7 of the Avifauna Management Plan has been amended as per recommendation.
	• Provision of an endoscope would assist with penguin surveys.		Section 3, Point 2.1.7 of the Avifauna Management Plan has been amended to include the use of a burrowscope/ endoscope for kororā/blue penguin surveys, as recommended.

Group	Effect	DOC, BOPRC or Iwi Recommendation	Mitigation and Comments
Iwi of Tauranga	Impacts to birds, in particular to kororā/blue penguin and tarāpunga/red-billed gull as a result of:	To input into the creation and implementation of the Avifauna Management Plan – POTL's proposed measure to manage effects to birds.	Avifauna Management Plan offered as a condition of consent.
	• Removal of the rock wall at the Mount Maunganui wharves, requiring kororā/blue penguin and tarāpunga/red-billed gull to relocate to a newly created rock wall.		This information is provided in Section 2 of the Avifauna Management Plan and discusses the methods and timing of removal (e.g. works outside of breeding season), and mitigation measures to aid the birds relocating (translocation of kororā/blue penguins to nesting box colony, and playback calls and gull decoys to attract tarāpunga/red-billed gull to the new rock wall). Section 4.2.4 also covers these aspects in the AEE.
	• The exposure of birds at the sand pile to significantly higher levels of activity and noise (as a result of construction) including vehicle movements and pile driving.		This information is contained in the Avifauna Management Plan in Section 1, Points 1.0 and 5.0-5.1, and addresses management measures.
	• If kororā/blue penguin and tōrea pango/variable oystercatcher do not relocate due to disturbances near the sand pile, there is no requirement to intervene meaning these birds could be subject to significant impacts.		The sand pile is located approximately 400 metres south of the Sulphur Point wharves and potential effects are discussed in the AEE in Section 3.4.-2.4.2 and 6.0, and the Avifauna Management Plan, Section 1, Points 4.2 and 5.0-5.2).
	• Artificial lighting causing disorientation and reproductive output of shorebirds and seabirds		An assessment of artificial lighting and mitigation measures are discussed in the Avifauna Management Plan, Section 2, Point 3.2 and Section 4, and within the AEE, Section 5.0.
	• Loss of food sources due to increased turbidity and loss of seafloor life near nesting areas for kororā/blue penguin.	Improve monitoring of feeding sites and food availability.	The Avifauna Management Plan, Section 2, Points 3.4 discusses the foraging behaviour of kororā/blue penguins.
	• Disturbance of kororā/little penguin near staff lunchroom from increased human activity and noise.	Install deterrents and increase monitoring of	The Avifauna Management Plan discusses disturbance in Section 2, Points 2.2, deterrents at Butters Landing in

Group	Effect	DOC, BOPRC or Iwi Recommendation	Mitigation and Comments
		kororā/blue penguin populations.	Section 2, 2.3 and 7.2, and monitoring in Section 2, Point 6.4.
	• Loss of tarāpunga/red-billed gull breeding and nesting habitat from dredging and vessel activity.	Provide predator control at new nesting sites.	There will be no loss of breeding or nesting habitat from dredging or vessel activity. Predator control is undertaken throughout the Port and is discussed in more detail in the Avifauna Management Plan in Section 1, Points 2.0, 5.2, and 6.0, and Section 3, Point 3.0.

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