



Shorebird Monitoring: Lee Point, Darwin, Northern Territory (Winter 2026)

Defence Housing Australia



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1.0 Introduction

Defence Housing Australia (DHA) is proposing an urban development on the outskirts of Darwin that will establish a residential, community, and commercial precinct in the suburb of Nightcliff. During the environmental approvals process, the proposal was identified as having potential to impact Darwin's migratory shorebird population through increased beach traffic at key roosting and feeding areas on the city's northern beaches. To mitigate any potential impacts to these populations, the Northern Territory Environment Protection Agency (NT EPA) provided the following recommendation in its assessment report for this project:

Recommendation 3

That approvals for the proposal should include a condition that requires DHA to develop and implement a monitoring program to quantify impacts from the Proposal on local shorebirds. The program is to be designed in consultation with Flora and Fauna Division, Department of Environment Natural Resources, and Wildlife and Heritage Division, Department of Tourism and Culture Parks, and implemented before commencement of construction activities. Results and annual updates from the program should be made publicly available on the internet (NT EPA 2018).

The EIS for this project included a detailed report by Dr Amanda Lilleyman (Charles Darwin University) outlining the potential impacts of increased anthropogenic disturbance on Darwin's migratory shorebirds. This monitoring program was adopted in a report published by EcoZ Pty Ltd (*Shorebird Monitoring Program: Lee Point Master-planned Urban Development*) in September 2022, which was updated in August 2023 (EcoZ 2023) with a few minor adjustments. This monitoring program was reviewed by Brydie Hill from the Flora and Fauna Division (Department of the Environment, Parks and Water Security) and Dean McAdam (Parks and Wildlife Division), with their assessment concluding that the proposed methodology is adequate for detecting project-related impacts to local shorebird populations. Finally, this monitoring program was adopted by Ecology and Heritage Partners (*Shorebird Monitoring Plan: Lee Point, Darwin, Northern Territory*, 2023) with a minor adjustment to the minimum tide height (from 6.5 m to 6 m).

Four Elements Consulting was commissioned by DHA to conduct the shorebird monitoring program in accordance with the *Shorebird Monitoring Plan: Lee Point, Darwin, Northern Territory*, (Ecology and Heritage Partners 2023). Darwin's northern beaches provide habitat for up to 10,000 shorebirds comprising over 20 different species, with the majority breeding in the northern hemisphere in China, Russia and Alaska before migrating through eastern Asia to Australia and New Zealand each year. Migratory shorebirds begin arriving in Australia in August and remain through the austral summer before departing again in March or April. Birds that are too young to breed or adults that are not strong enough for the journey north will stay in Australia the whole year, and these birds are the focus of this study.

This report marks the commencement of Year 3 of the shorebird monitoring program and presents the findings from the winter survey 2026, continuing the long-term effort to assess potential impacts of the Lee Point development on Darwin's migratory shorebird populations.

2.0 Methodology

2.1 Study Area

The study included five survey locations on Darwin's northern beaches – Lee Point (**Plate 1**), Sandy Creek (**Plate 2**), Nightcliff Rocks (**Plate 3**), Spot on Marine (**Plate 4**) and East Point (**Plate 5**). Lee Point and Sandy Creek, which are public beaches approximately 15 km north of Darwin (**Figure 1**), provide important shorebird foraging and roosting habitat and may experience increased anthropogenic disturbance as a result of the proposal (i.e., impact sites). The remaining three sites (Nightcliff Rocks, Spot on Marine and East Point) are not expected to be impacted by the proposal but will act as controls whilst also providing a greater understanding of shorebird utilisation in the Darwin area. Nightcliff Rocks and East Point are headlands with exposed intertidal rock flats located approximately 8.5 km and 6.5 km north of Darwin respectively, while spot on Marine is an exposed mangrove mudflat approximately 6.5 km north of Darwin.



Plate 1 Lee Point



Plate 2 Sandy Creek

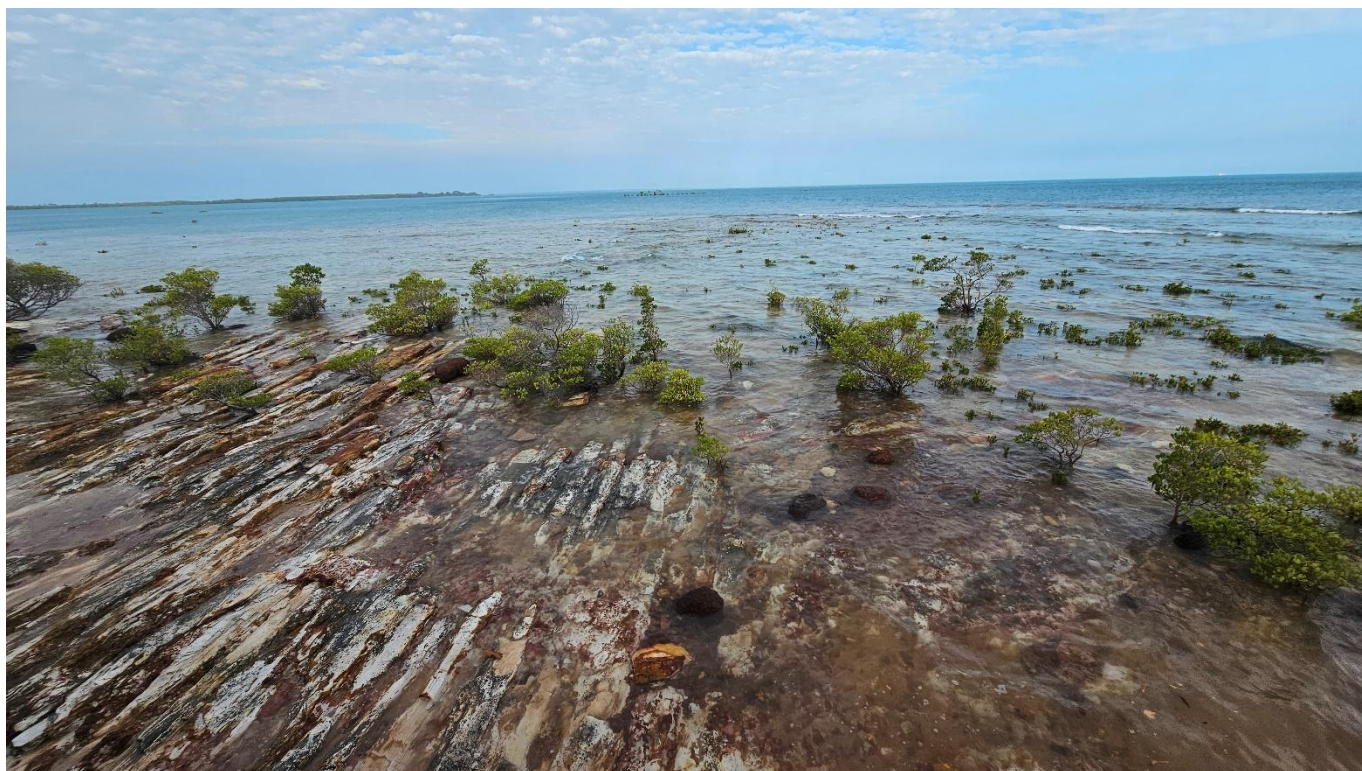


Plate 3 Nightcliff Rocks



Plate 4 Spot on Marine

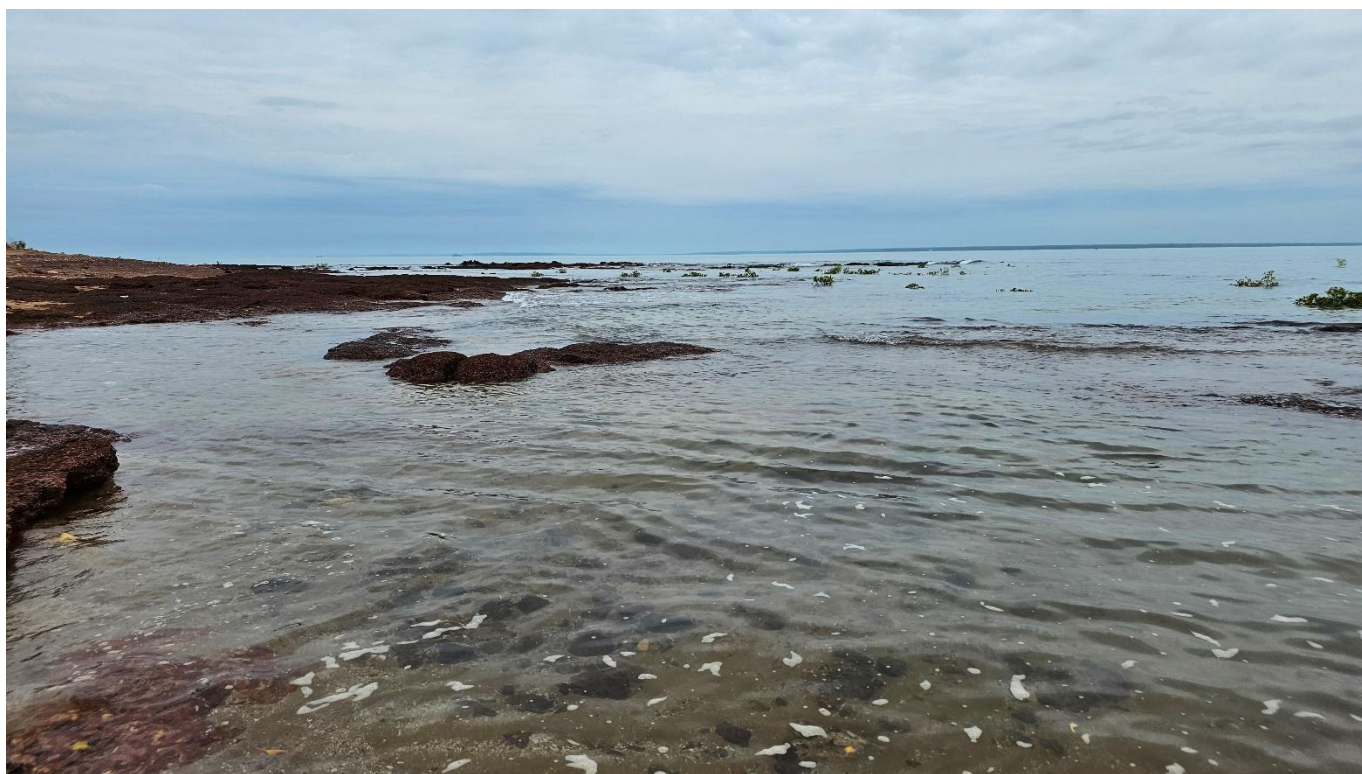


Plate 5 East Point



Figure 1 Lee Point and Sandy Creek Survey Locations

2.2 Field Assessments

Shorebird surveys were undertaken between 6th-8th July 2026 by two qualified Ecologists competent in shorebird identification and counting techniques. Monitoring was conducted in accordance with the methods outlined in *Shorebird Monitoring Plan: Lee Point, Darwin, Northern Territory* (Ecology and Heritage Partners, 2023). Each of the five survey locations was surveyed once by one person for a two-hour period approximately one hour either side of the high tide (see **Table 1**). In accordance with the Shorebird Monitoring Program (Ecology and Heritage Partners, 2023), the high tides on these days exceeded 6 m (see **Table 1**). Sandy Creek and Lee Point were surveyed simultaneously as shorebirds are known to move between these proximate roosts (i.e., shorebirds roosting at Lee Point one day may roost at Sandy Point the next day), thus ensuring an accurate count of birds utilising the area. Surveys were conducted at least 100 m from roosts to minimise disturbance to shorebirds, with each surveyor equipped with binoculars (10 × 42) and a spotting scope (20–60× magnification). On occasion, birds moved closer than the intended survey distance, in which case surveyors maintained a passive presence and took all reasonable measures to avoid disturbance.

Table 1 Survey Periods, Tide Data and Weather Data

Date	Site	High Tide Height (m)	High Tide Time	Weather	Temperature (°C)	Rainfall (mm)	Wind Speed (km/h)/ Direction	Survey Period
06/07/2026	East Point	6.58	09:56	Clear	22	0	15 SE	08:45-10:45
06/07/2026	Spot on Marine	6.58	09:56	Clear	22	0	15 SE	08:45-10:45
07/07/2026	Lee Point	6.36	10:25	Clear	23	0	19 SE	08:45-10:45
07/07/2026	Sandy Creek	6.36	10:25	Clear	23	0	19 SE	08:45-10:45
08/07/2026	Nightcliff Rocks	6.09	10:58	Clear	23	0	15 SSE	09:00-11:00

All shorebirds and waterbirds seen during the survey period were identified, counted and recorded. The behaviour of all birds was recorded (i.e., roosting, foraging etc.), as were any changes to the environment, disturbances, and potential disturbances. As per the Shorebird Monitoring Program (Ecology and Heritage Partners, 2023), disturbances were defined as proximate stimuli (e.g., humans, dogs, raptors etc.), and the response of shorebirds to each disturbance was recorded (i.e., flight, walk away, no response). Distant disturbances were categorised as potential disturbances, and although these do not elicit a response from shorebirds, they provide a measure of anthropogenic disturbance on the beach. The time and type of each disturbance and potential disturbance was also recorded.

3.0 Results

Twelve species of migratory shorebird were observed during the survey period – Pacific golden plover (*Pluvialis fulva*), great knot (*Calidris tenuirostris*), sanderling (*Calidris alba*), red-necked stint (*Calidris ruficollis*), common sandpiper (*Actitis hypoleucos*), ruddy turnstone (*Arenaria interpres*), greater sand plover (*Charadrius leschenaultia*), Siberian sand plover (*Charadrius mongolus*), eastern curlew (*Numenius madagascariensis*), bar-tailed godwit (*Limosa lapponica*), whimbrel (*Numenius phaeopus*), and grey-tailed tattler (*Tringa brevipes*). All observations made during the survey period are detailed below.

Lee Point

Lee Point was surveyed concurrently with Sandy Creek on July 7th, 2026. Six (6) species of migratory shorebird were recorded (**Table 2**), as well as 11 species of non-migratory waterbirds. Two potential disturbances were recorded during the survey period (**Table 3**).

Table 2 Bird Observations at Lee Point

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
08:45	Pied oystercatcher	2	NE	100	0	Roosting
08:45	Masked lapwing	12	NE	100	0	Roosting
08:45	Siberian sand plover	4	NE	100	0	Roosting
08:45	Red-capped plover	6	NE	100	0	Roosting
08:45	Eastern curlew	24	NE	100	0	Roosting
08:45	Bar-tailed godwit	4	NE	100	0	Roosting
08:45	Ruddy turnstone	3	NE	100	0	Roosting
08:45	Great knot	800	NE	100	0	Roosting
08:45	Sanderling	1	NE	100	0	Roosting
08:45	Silver gull	3	NE	100	0	Roosting
08:45	Lesser crested tern	4	NE	100	0	Roosting
08:45	Greater crested tern	8	NE	100	0	Roosting
08:45	Black-necked stork	2	NE	100	0	Roosting
08:45	White ibis	1	NE	100	0	Roosting
08:45	Pacific reef heron	2	NE	100	0	Roosting
08:45	Great egret	1	NE	100	0	Roosting
09:56	Australian pelican	6	NE	100	0	Roosting

Table 3 Disturbance Observations at Lee Point

Time	Type	Duration (min)	Shorebird Response	Species	Number Affected	Did the Affected Birds Leave the Site?	Entry and Exit Points of Disturbance	Notes
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08:48	Human	60	None	NA	NA	No	Entered and exited from northern beach end.	Two bird watchers stopping >100 m away from roosting shorebirds. No response recorded. Potential disturbance.
08:53	Human	112+	None	NA	NA	No	Entered via walking track connecting beach to Buffalo Creek Road. Still present at the end of survey.	Two fishermen walking towards buffalo creek, away from roosting shorebirds. No response recorded. Potential disturbance.

Sandy Creek

Sandy Creek was surveyed concurrently with Lee Point on July 7th, 2026. No migratory shorebird species and four (4) non-migratory shorebird species were recorded during the survey period (**Table 4**). No disturbance or potential disturbance events were observed.

Table 4 Bird Observations at Sandy Creek

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
08:45	Beach stone-curlew	4	N	100	0	Roosting
08:45	Silver gull	4	NW	100	0	Roosting
08:45	Pacific reef heron	1	NW	100	0	Roosting
08:45	Masked lapwing	2	W	100	0	Roosting

Nightcliff Rocks

No migratory shorebird and eight (8) species of non-migratory waterbird were observed at Nightcliff Rocks during the survey period (**Table 5**). Two disturbances were recorded during the survey period (**Table 6**).

Table 5 Bird Observations at Nightcliff Rocks

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
09:00	Sooty oystercatcher	1	W	100	0	Roosting
09:00	Pied oystercatcher	1	W	100	0	Roosting
09:00	Nankeen night heron	1	W	100	0	Roosting
09:00	Pacific reef heron	1	W	100	0	Roosting
09:00	Masked lapwing	3	W	100	0	Roosting
09:00	Silver gull	3	W	100	0	Roosting
09:22	Greater crested tern	2	W	100	0	Roosting
09:26	Gull-billed tern	1	W	100	0	Roosting

Table 6 Disturbance Observations at Nightcliff Rocks

Time	Type	Duration (min)	Shorebird Response	Species	Number Affected	Did the Affected Birds Leave the Site?	Entry and Exit Points of Disturbance	Notes
09:38	Human	23	None	NA	NA	No	Entered and exited via staircase connecting the rocks to Sunset Park.	Three people walked onto rocks, maintained enough distance from roosting shorebirds to not trigger a response.
10:23	Human	5	Flushed	Sooty oystercatcher	1	Yes	Entered and exited via staircase connecting the rocks to Sunset Park.	Fisherman walked onto rocks flushing one bird.

Spot on Marine

No migratory shorebirds and one (1) species of non-migratory shorebird were recorded at Spot on Marine during the survey period (**Table 7**). No disturbances were recorded during the survey period.

Table 7 Bird Observations at Spot on Marine

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
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08:45	Beach stone-curlew	2	E	80	0	Roosting
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East Point

Seven (7) species of migratory shorebird and one (1) species of non-migratory waterbird were recorded at East Point during the survey period (**Table 8**). Two disturbances were recorded during the survey period (**Table 9**).

Table 8 Bird Observations at East Point

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
08:45	Grey-tailed tattler	28	W	100	0	Roosting
08:45	Whimbrel	2	W	100	0	Roosting
08:45	Ruddy turnstone	5	W	100	0	Roosting
08:45	Pacific golden plover	4	W	100	0	Roosting
08:45	Greater sand plover	75	W	100	0	Roosting
08:45	Greater crested tern	2	W	100	0	Roosting
08:45	Red-necked stint	2	W	100	0	Roosting
08:45	Common sandpiper	1	W	100	0	Foraging

Table 9 Disturbance Observations at East Point

Time	Type	Duration (min)	Shorebird Response	Species	Number Affected	Did the Affected Birds Leave the Site?	Entry and Exit Points of Disturbance	Notes
9:15	Human	90+	None	NA	NA	No	Entered beach from walking track adjacent to beach before walking out onto rock. Still there at the end of survey.	Family of three exploring the beach/rocks, kept enough distance to shorebirds to not trigger a response.
9:47	Human	2	Flushed	All species	119	Yes	Entered beach from walking track adjacent to beach before walking out onto rock. Exited same way.	Person walked onto rocks and straight through roosting birds. All birds left and did not return during survey period.

4.0 Conclusion

This survey aimed to quantify the richness and abundance of shorebirds remaining on Darwin's northern beaches during the northern hemisphere breeding season, and to record anthropogenic disturbance at five key feeding and roosting locations. Monitoring was undertaken in accordance with the *Shorebird Monitoring Plan: Lee Point, Darwin, Northern Territory* (Ecology and Heritage Partners 2023).

During the Year 3 winter survey, 12 shorebird species were recorded across the five survey sites. Species richness was highest at East Point, where seven species were recorded, while shorebird abundance was highest at Lee Point, where 836 individuals were observed. Overall, disturbance was limited across the survey period; however, one disturbance event at East Point resulted in shorebirds leaving the survey site.

The total number of shorebirds recorded during the Year 3 winter survey remained high, with 953 individuals recorded compared with 844 individuals in Year 2 and 198 individuals in Year 1. Lee Point again supported the highest abundance of shorebirds, confirming its continued importance as a roosting site for migratory shorebirds on Darwin's northern beaches.

5.0 References

Ecology & Heritage Partners (2023). *Shorebird Monitoring: Lee Point, Darwin, Northern Territory (Winter 2023)*. Report prepared for Defence Housing Australia, Darwin, Northern Territory.

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Lilleyman, A. (2017). *Report on Potential Impacts from Disturbance to Migratory Shorebirds in Darwin: Defence Housing Australia – Lee Point Master-planned Urban Development*. Defence Housing Australia, Darwin, Northern Territory.

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