Shorebird Monitoring: Lee Point, Darwin, Northern Territory (October 2025)

Defence Housing Australia

4 elements

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Defence Housing Australia

Revision History

Version	Purpose	Issued by	Date	Reviewer	Date
1	Final	V. Wiklund	30/10/2025	P. Tomkins	29/10/2025

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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 Defence Housing Australia 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. This October survey quantifies shorebird abundance on Darwin's northern beaches during the early stages of their on-breeding stopover.

This report presents the findings from the 2025 October survey, forming part of the summer monitoring period for Year 2 of DHA's shorebird monitoring program. It continues 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

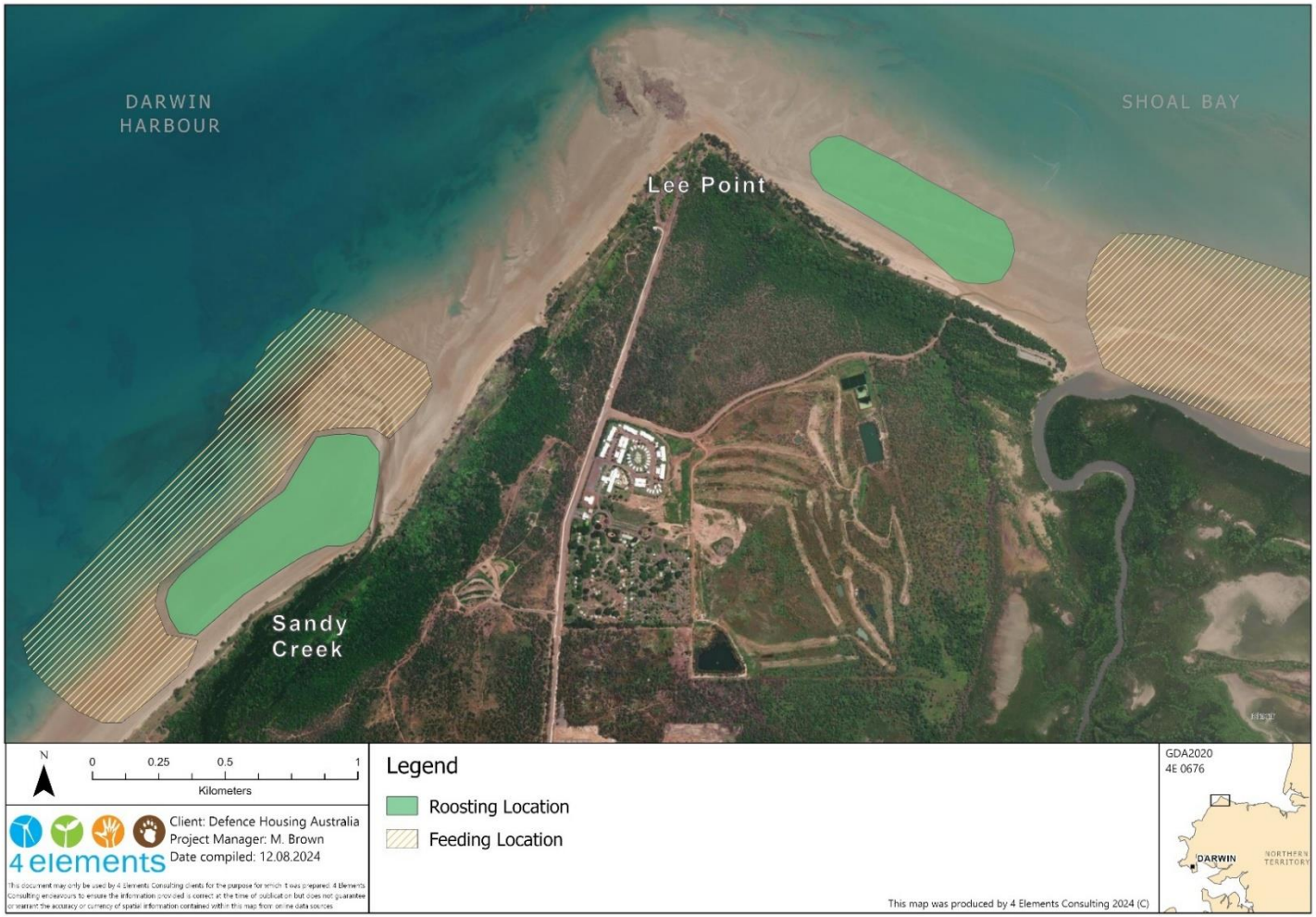

Figure 1 Lee Point and Sandy Creek Survey Locations

2.2 Field Assessments

Shorebird surveys were undertaken from 11th to 13th of October 2025 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 (ºC)	Rainfall (mm)	Wind Speed (km/h)/ Direction	Survey Period
11/10/2025	Lee Point	7.12	07:49	Scattered clouds	28	0.2	6 NNE	07:00-09:00
11/10/2025	Sandy Creek	7.12	07:49	Scattered clouds	28	0.2	6 NNE	07:00-09:00
12/10/2025	East Point	6.66	08:19	Partly sunny	29	0.8	2 ESE	07:30-09:30
12/10/2025	Spot on Marine	6.66	08:19	Partly sunny	29	0.8	2 ESE	07:30-09:30
13/10/2025	Nightcliff Rocks	6.03	08:52	Clear	28	0	9 NNE	07:45-09:45

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

Seventeen species of migratory shorebird were observed during the survey period – red knot (*Calidris canutus*), 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*), grey plover (*Pluvialis squatarola*), whimbrel (*Numenius phaeopus*), bar-tailed godwit (*Limosa lapponica baueri*), black-tailed godwit (*Limosa limosa*), Terek sandpiper (*Xenus cinereus*), pacific golden plover (*Pluvialis fulva*), little curlew (*Numenius minutus*), 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 October 11th 2025. Fifteen species of migratory shorebird were recorded (**Table 2**), as well as 10 species of non-migratory waterbirds. Two 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
07:00	Greater sand plover	200	NE	100	0	Roosting
07:00	Siberian sand plover	25	NE	100	0	Roosting
07:00	Whimbrel	12	NE	100	0	Roosting
07:00	Eastern curlew	24	NE	100	0	Roosting
07:00	Australian pelican	1	NE	100	0	Roosting
07:00	Ruddy turnstone	11	NE	100	0	Roosting
07:00	Red-necked stint	63	NE	100	0	Roosting
07:00	Great knot	3000	NE	100	0	Roosting
07:00	Red knot	440	NE	100	0	Roosting
07:00	Sanderling	25	NE	100	0	Roosting
07:00	Grey-tailed tattler	13	NE	100	0	Roosting
07:00	Grey plover	3	NE	100	0	Roosting
07:00	Red-capped plover	13	NE	50-100	0	Roosting/Foraging
07:00	Bar-tailed godwit	39	NE	100	0	Roosting
07:00	Terek sandpiper	13	NE	100	0	Roosting
07:00	Common sandpiper	2	NE	100	0	Roosting
07:00	Greater crested tern	1	NE	100	0	Roosting
07:00	Lesser crested tern	135	NE	100	0	Roosting
07:00	Australian tern	36	NE	100	0	Roosting

07:00	Little tern	16	NE	100	0	Roosting
07:00	Caspian tern	120	NE	100	0	Roosting
07:00	Whiskered tern	2	NE	100	0	Roosting
07:00	Silver gull	4	NE	100	0	Roosting
07:30	Beach stone-curlew	12	E	80	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
07:00	Human	120	None	NA	NA	No	NA	Group of bird watchers observed the roost from >100 m away for the entire survey period; no response observed.
08:15	Human + dog	10	None	NA	NA	No	Entered and exited from the north-western part the beach	Human and dog approached roosting birds but turned around approximately 150 m away; no response observed. **Potential disturbance.**

Sandy Creek

Sandy Creek was surveyed concurrently with Lee Point on October 11th 2025. Four migratory shorebird species and six non-migratory shorebird species were recorded during the survey period (**Table 4**). One disturbance and two potential disturbances were recorded during the survey period (**Table 5**).

Table 4 Bird Observations at Sandy Creek

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
07:00	Silver gull	24	NW	100	0	Roosting
07:00	Greater crested tern	154	NW	100	0	Roosting
07:00	Lesser crested tern	11	NW	100	0	Roosting
07:00	Whiskered tern	7	NW	100	0	Roosting

07:00	Eastern curlew	8	NW	100	0	Roosting
07:00	Little tern	2	NW	100	0	Roosting
07:00	Caspian tern	1	NW	100	0	Roosting
08:40	Greater crested tern	50	NW	100	0	Roosting
08:40	Whiskered tern	4	NW	100	0	Roosting
08:40	Eastern curlew	3	NW	110	0	Roosting
08:40	Little curlew	1	NW	110	0	Roosting
08:40	Pacific golden plover	2	NW	110	0	Roosting
08:40	Grey plover	4	NW	110	0	Roosting

Table 5 Disturbance Observations at Sandy Creek

Time	Type	Duration (min)	Shorebird Response	Species	Number Affected	Did the Affected Birds Leave the Site?	Entry and Exit Points of Disturbance	Notes
8:30	Human	2	None	NA	NA	No	Entered from southern end of track adjacent to beach; remained for survey duration.	Two people arrived by bike, left bikes at end of path, and entered mangroves to fish. No response observed. **Potential disturbance.**
8:35	Human	15	None	NA	NA	No	Entered and exited via southern beach track.	Two birders walked along track >200m from shorebirds. **Potential disturbance.**
8:55	Human + dog	3	Flushed	All species	280	No	Entered beach from adjacent track, ran south along beach.	Two off-lead dogs ran onto roost, flushing all birds. Birds moved slightly north but remained on site.

Nightcliff Rocks

Nine species of migratory shorebirds and three species of non-migratory waterbird were observed at Nightcliff Rocks during the survey period (**Table 6**). One potential disturbance was recorded during the survey period (**Table 7**).

Table 6 Bird Observations at Nightcliff Rocks

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
07:45	Greater sand plover	81	W	100	0	Roosting
07:45	Siberian sand plover	21	W	100	0	Roosting
07:45	Great knot	105	W	100	0	Roosting
07:45	Pacific golden plover	16	W	100	0	Roosting
07:45	Terek sandpiper	18	W	100	0	Roosting
07:45	Ruddy turnstone	4	W	100	0	Roosting
07:45	Red-necked stint	63	W	100	0	Roosting
07:45	Common sandpiper	6	W	100	0	Roosting
07:45	Grey-tailed tattler	9	W	100	0	Roosting/Foraging
07:45	Greater crested tern	98	W	100	0	Roosting

Table 7 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
08:45	Human	10	None	NA	NA	No	Entered via staircase connecting the rocks to the Sunset Park and continued to walk south along mangroves	Person with dog on lead walking along mangroves. Stayed >200m from roosting shorebirds. **Potential disturbance.**

Spot on Marine

Three species of migratory shorebirds and two species of non-migratory shorebird were recorded at Spot on Marine during the survey period (**Table 8**). No disturbances were recorded during the survey period.

Table 8 Bird Observations at Spot on Marine

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
07:30	Grey plover	12	SE	100	0	Roosting
07:30	Whimbrel	23	SE	100	0	Roosting
07:30	Eastern curlew	17	SE	100	0	Roosting
07:30	Beach stone-curlew	2	S	110	0	Roosting
07:30	Jabiru	1	W	90	0	Roosting

East Point

Ten species of migratory shorebirds and two species of non-migratory waterbirds were recorded at East Point during the survey period (**Table 9**). Four disturbances and two potential disturbances were recorded during the survey period (**Table 10**).

Table 9 Bird Observations at East Point

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
7:30	Siberian sand plover	21	NW	50	0	Roosting
7:30	Greater sand plover	105	NW	70	0	Roosting
7:30	Great knot	4	NW	100	0	Roosting
7:30	Pacific golden plover	8	NW	100	0	Roosting
7:30	Ruddy turnstone	12	NW	100	0	Roosting
7:30	Silver gull	1	NW	100	0	Roosting
7:30	Red-necked stint	22	NW	100	0	Roosting
7:30	Grey-tailed tattler	24	NW	100	0	Roosting
7:30	Terek sandpiper	11	NW	100	0	Roosting
7:30	Whimbrel	1	NW	100	0	Roosting
7:30	Common sandpiper	6	NW	100	0	Foraging
8:40	Greater sand plover	7	NW	100	0	Roosting
8:40	Ruddy turnstone	3	NW	100	0	Roosting
8:40	Pacific golden plover	4	NW	100	0	Roosting
8:45	Whiskered tern	12	NW	100	0	Roosting

Table 10 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
07:30	120+	Human	None	NA	NA	No	Group already present at beginning of survey; remained until completion.	Group fishing on rocks north of mangroves. All birds roosted south, possibly due to this group. **Potential disturbance.**
08:00	15	Human	None	NA	NA	No	Entered beach from adjacent track; exited same way	Group of 5 walked onto rocks south of mangroves to fish. Maintained distance; no response recorded.

08:39	2	Boat	None	NA	NA	No	Passed south to north ~150m offshore	Small boat driving past roosting birds. **Potential disturbance.**
09:00	15	Human	None	NA	NA	No	Entered beach from adjacent track; exited same way	Three fishermen walked onto rocks south of mangroves; kept distance; no response recorded.
09:10	20+	Human	None	NA	NA	No	Entered beach from adjacent track; exited same way	Two fishermen walked onto rocks south of mangroves; kept distance; no response recorded.
09:12	2	Human	None	NA	NA	No	Walked along beach from north to south	Two people walked along beach; no response recorded.

4.0 Conclusion

The aim of this survey was to quantify the richness and abundance of shorebirds present on Darwin's northern beaches during the austral summer period, and to gather data on anthropogenic disturbance at five key feeding and roosting locations. Monitoring was conducted in accordance with the *Shorebird Monitoring Plan: Lee Point, Darwin, Northern Territory* (Ecology and Heritage Partners 2023).

During the October survey, a total of 17 migratory shorebird species were recorded across the five survey sites, comprising 4,492 individual birds. Lee Point continued to show the highest diversity and abundance, with 15 shorebird species and 3,871 individuals, reinforcing its importance as a key roosting and feeding site.

Disturbance levels remained highest at East Point, with two potential and four confirmed disturbance events recorded. However, unlike the September survey, these disturbances did not result in complete relocation of shorebirds from the site.

Compared to the September survey, which recorded 17 migratory species and 4,611 individuals, October results were very similar in both richness and abundance, indicating consistent site usage across months. The contrast in disturbance impact at East Point between the two months highlights variability in shorebird response and the importance of continued monitoring.

These results indicate consistent site usage and species composition between September and October, suggesting stability in migratory shorebird patterns during the early summer period. Continued monitoring remains essential to manage human activity and protect key roosting sites.

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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