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

Defence Housing Australia

4 elements

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Revision History

Version	Purpose	Issued by	Date	Reviewer	Date
1	Final	J. Button	20/03/2026	P. Tomkins	20/03/2026

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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 March survey captures their ongoing presence during the non-breeding stopover on Darwin's northern beaches.

This report presents the findings from the March survey, part of the summer monitoring period for Year 2 of the shorebird monitoring program. It continues the long-term effort to assess potential impacts of the Lee Point development on Darwin's migratory shorebird populations. This survey was conducted in collaboration with Larrakia Nation, the peak body representing the Larrakia people, to ensure cultural considerations and local knowledge are incorporated into the monitoring process.

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

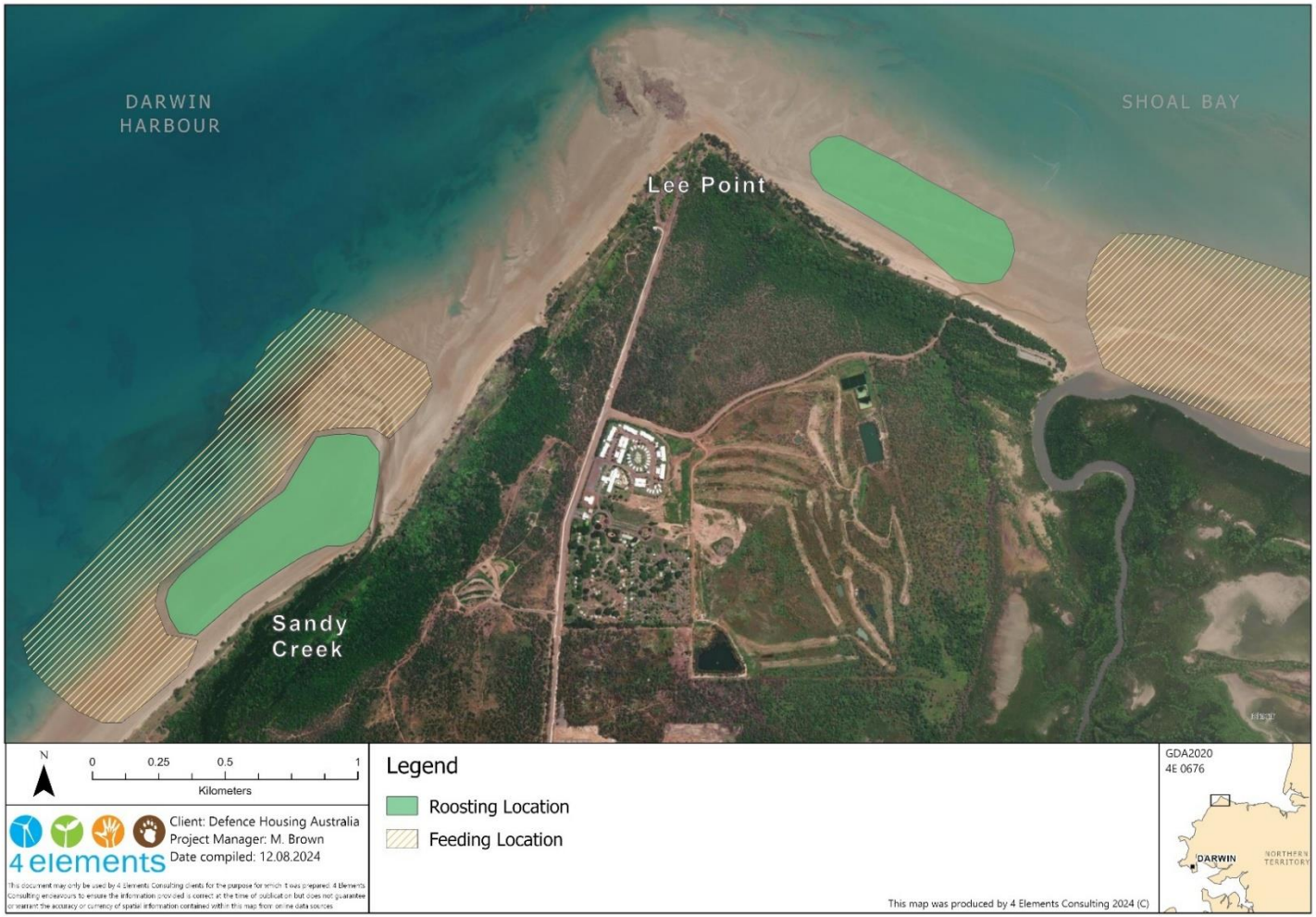

Figure 1 Lee Point and Sandy Creek Survey Locations

2.2 Field Assessments

Shorebird surveys were undertaken from 6th to 8th of March 2026 by two qualified Ecologists, competent in shorebird identification and counting techniques, in collaboration with two representatives from Larrakia Nation. 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
06/03/2026	Lee Point	7.4	08:04	Showers	27	36.0	20 SW	07:45-09:45
06/03/2026	Sandy Creek	7.4	08:04	Showers	27	36.0	20 SW	07:45-09:45
07/03/2026	East Point	7.2	08:36	Showers	28	36.0	20 SW	07:45-09:45
07/03/2029	Spot on Marine	7.2	08:36	Showers	28	36.0	20 SW	07:45-09:45
08/03/2026	Nightcliff	7.4	08:26	Showers	27	30.6	24 SSW	07:30-09:30

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

A total of 13 species of migratory shorebirds were observed during the survey period, including red knot (*Calidris canutus*), great knot (*Calidris tenuirostris*), sanderling (*Calidris alba*), 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*), terek sandpiper (*Xenus cinereus*), 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 March 6th, 2026. Nine (9) species of migratory shorebird were recorded (**Table 2**), as well as five (5) species of non-migratory waterbirds. One potential disturbance was 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
09:00	Greater crested tern	60	NW	100	0	Roosting
09:00	Little tern	17	NW	100	0	Roosting
09:00	Caspian tern	1	NW	100	0	Roosting
09:00	Australian tern	10	NW	100	0	Roosting
09:00	Great knot	8	NW	100	0	Roosting
09:00	Greater sand plover	125	NW	100	0	Roosting
09:00	Siberian sand plover	15	NW	100	0	Roosting
09:00	Sanderling	22	NW	100	0	Roosting
09:00	Ruddy turnstone	1	NW	100	0	Roosting
09:00	Pied oystercatcher	2	SE	300	0	Roosting
09:00	Whimbrel	1	SE	450	0	Roosting
09:00	Eastern curlew	1	SE	300	0	Roosting
09:00	Common sandpiper	1	NW	75	0	Foraging
09:00	Red capped plover	12	NW	75	0	Foraging/roosting
09:43	Eastern curlew	1	NW	100	0	Roosting
09:43	Greater sand plover	110	NW	100	0	Roosting
09:43	Siberian sand plover	10	NW	100	0	Roosting
09:43	Grey-tailed tattler	1	NW	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
09:45	Human	5	None	NA	NA	No	NA	Photographer taking photos of shorebirds. Stayed more than 100 m rom roost. **Potential Disturbance.**

Sandy Creek

Sandy Creek was surveyed concurrently with Lee Point on March 6th 2026. Two (2) migratory shorebird species and three (3) non-migratory shorebird species were recorded during the survey period (**Table 4**). Three (3) potential disturbances were recorded during the survey period.

Table 4 Bird Observations at Sandy Creek

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
8:00	Beach stone-curlew	1	NW	50	Roosting	NW
8:16	Masked lapwing	2	NW	50	Flyover	NW
8:27	Greater sand plover	1	NW	50	Roosting	NW
8:27	Beach stone-curlew	3	NW	20	Roosting	NW
8:27	Whimbrel	1	NW	50	Roosting	NW
8:33	Greater crested tern	19	NW	50	Flyover	NW
8:47	Greater crested tern	6	NW	50	Roosting	NW
8:47	Whimbrel	1	NW	50	Roosting	NW
9:24	Greater crested tern	8	NW	50	Roosting	NW

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
8:39	Human	5	None	NA	NA	No	Entered and exited north of Sandy Point	Walker with four dogs entered beach north of Sandy Point. **Potential disturbance.**
8:57	Human	5	None	NA	NA	No	NA	Runner on beach – did not approach birds. **Potential disturbance.**
8:59	Human	5	None	NA	NA	No	NA	Person with dog on beach. Did not approach birds. **Potential disturbance.**

Spot on Marine

Spot on Marine was surveyed concurrently with East Point on March 7th, 2026. Four (4) species of migratory shorebirds and one (1) species of non-migratory shorebird were recorded at Spot on Marine during the survey period (**Table 5**). One potential disturbance was recorded during the survey period. Most birds left the site at around 7:58 when high tide inundated mud flat.

Table 6 Bird Observations at Spot on Marine

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
7:30	Pied oystercatcher	1	SW	80	0	Roosting
7:30	Bar-tailed godwit	2	SW	80	0	Roosting
7:30	Whimbrel	23	SW	80	0	Roosting
7:30	Grey plover	9	SW	80	0	Roosting
7:43	Eastern curlew	3	SW	80	0	Roosting

Table 7 Disturbance observations at Spot on Marine

Time	Type	Duration (min)	Shorebird Response	Species	Number Affected	Did the Affected Birds Leave the Site?	Entry and Exit Points of Disturbance	Notes
7:52	Bird of prey	2	None	NA	NA	No	NA	Brahminy kite fly over. Did not approach birds. **Potential disturbance.**

East Point

East Point was surveyed concurrently with Spot on Marine on March 7th, 2026. Three species of migratory shorebirds and two species of non-migratory waterbirds were recorded at East Point during the survey period (**Table 6**). No disturbance was recorded during the survey period.

Table 8 Bird Observations at East Point

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
07:45	Greater crested tern	12	NE	25	0	Roosting
07:45	Lesser crested tern	1	NE	25	0	Roosting
07:45	Common sandpiper	2	NE	25	0	Foraging/roosting
07:45	Whimbrel	1	SW	25	0	Roosting
07:50	Greater crested tern	11	NE	25	0	Roosting
09:00	Grey-tailed tattler	6	NW	30	2	Roosting
09:00	Whimbrel	1	NE	30	0	Roosting

Nightcliff Rocks

Nightcliff Rocks was surveyed on March 8th, 2026. Nine (9) species of migratory shorebirds and eight (8) species of non-migratory waterbird were observed at Nightcliff Rocks during the survey period (**Table 7**). One disturbance was recorded during the survey period (**Table 8**). It was noted that all knots left the site at 8:13 when tide inundated the rocks, and many red knots displayed breeding plumage.

Table 9 Bird Observations at Nightcliff Rocks

Time	Species	No. Individuals	Direction from Surveyor	Distance from Observer (m)	Height (m)	Behaviour
7:30	Sooty oystercatcher	3	W	50	0	Roosting

7:30	Masked lapwing	1	W	50	0	Roosting
7:30	Siberian sand plover	4	W	50	0	Roosting
7:30	Greater sand plover	50	W	50	0	Roosting
7:30	Great knot	1510	W	50	0	Roosting
7:30	Red knot	48	W	50	0	Roosting
7:30	Whimbrel	7	W	50	0	Roosting
7:30	Ruddy turnstone	7	W	50	0	Roosting
7:30	Pied oystercatcher	1	W	50	0	Roosting
7:30	Greater crested tern	12	W	50	0	Roosting
7:30	Lesser crested tern	1	W	50	0	Roosting
7:30	Little tern	5	W	50	0	Roosting
7:30	Common sandpiper	4	W	50	0	Roosting
7:30	Grey-tailed tattler	15	W	50	0	Roosting
7:34	Masked lapwing	2	W	50	0	Roosting
8:10	Terek sandpiper	3	W	50	0	Roosting
8:15	Silver gull	1	W	50	0	Roosting
09:22	Striated heron	1	W	50	3	Flying

Table 10 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
7:45	Masked lapwings	1	Moved roosts	Great knot, red knot	1558	No	NA	Masked lapwings flew on to nearby rocks while calling loudly, flushing shorebirds

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 March survey, a total of thirteen (13) migratory shorebird species were recorded across the five (5) survey sites, with the highest abundance observed at Nightcliff Rocks and highest species richness observed at Lee Point. Shorebird abundance decreased compared to earlier summer survey periods, declining from 5,472 in January, 3,262 in February, and 2,187 individuals in March across all sites. This pattern is consistent with the March 2025 survey, which recorded 4,178 migratory shorebirds, suggesting that many species begin departing the region from February. Although the total recorded in March this year was substantially lower than in March 2025, the reduced counts are likely attributable to extreme survey conditions, including very high tides (>7 m) and severe weather events (thunderstorms) during the survey period.

Few disturbances were recorded during this survey period, likely due to inclement weather, which generally reduces human activity along the northern beaches.

The shorebird monitoring program will continue throughout the austral summer to ensure that shorebird numbers remain consistent, while also providing a measure of anthropogenic disturbance at 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.

EcOz Environmental Consulting (2022). *Shorebird Monitoring Program Lee Point Master-planned Urban Development*. Defence Housing Australia, Darwin, Northern Territory.

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.

Northern Territory Environmental Protection Authority (2018). *Assessment report 88 – Lee Point master-planned urban development.* Defence Housing Australia, Darwin, Northern Territory.