10 February 2026

Northern Territory Environment Protection Authority
Level 1, Arnhemica House, 16 Parap Road, Parap
Darwin NT 0801

By email: *eia.ntepa@nt.gov.au*

https://ntepa.nt.gov.au/consultation/bonaparte-carbon-capture-and-storage-project

Submission: Bonaparte Carbon Capture and Storage Project

BirdLife Top End welcome the opportunity to provide comments on the referral for "Bonaparte Carbon Capture and Storage Project" published on 12 January 2026.

This submission is made with reference to the potential risks and impacts of the project to the environmental factors and objectives established in the NT Environmental Protection Act 2019 (The Act)

We refer to the following documents:
a. A referral form;
d. EPBC Act Protected Matters Report;
e. The Project Proponent's Likelihood of Occurrence Assessment; and,
f. Stakeholder engagement plan; and,
d. Pre-referral consultation report (together, the Referral).

Recommendation Summary

BirdLife Top End considers that the information provided by the proponent is insufficient to demonstrate that the Ichthys CCS Project can be undertaken without unacceptable environmental risks. In particular, the referral does not adequately assess impacts on critical habitat in Darwin Harbour for Nationally Significant migratory shorebird species listed under the TPWC and EPBC Act. Furthermore, the referral does not appropriately characterise or manage the risks associated with large-scale CO_2 transport and venting in close proximity to sensitive intertidal ecosystems.

We submit that:

- critical migratory shorebird habitat has been misidentified or overlooked;

- disturbance, habitat degradation, and cumulative impacts have been underestimated;
- key risks associated with CO_2 leakage, rupture, and venting have not been adequately assessed; and
- stakeholder engagement has been inadequate, undermining the reliability of the environmental assessment.

BirdLife Top End recommends that as the pursuant to s S 55(5)(b) of the *Northern Territory Environment Act 2019* (**the Act**), the NT EPA should determine that the proposed action is unacceptable because it is likely to have significant impacts that cannot be appropriately avoided, mitigated or managed. Failing this, S 55(5)(a) of The Act, the NT EPA should determine that a comprehensive environmental impact assessment is required for the referred action or strategic proposal to ensure a more rigorous level of assessment, supported by comprehensive baseline data, independent analysis, and a precautionary approach to decision-making.

Introduction

About BirdLife Top End

BirdLife Top End is a volunteer branch of BirdLife Australia, an independent, non-partisan grassroots charity dedicated to the conservation of Australia's native birds and their habitats. BirdLife Australia is the national partner of BirdLife International, the world's largest conservation partnership, and has played a central role in monitoring and safeguarding Australia's birdlife. This work includes major long-term threatened species programs and collaborative projects with communities, Traditional Owners, government and industry.

BirdLife Australia is comprised of a nationwide community of more 30 branches, over 400,000 supporters and thousands of volunteers and citizen scientists. The Top End branch contributes to a legacy of almost 120 years of bird conservation, scientific research, advocacy, education and on-ground habitat protection. Within this broader network, BirdLife Top End provides the focal point for community-led bird conservation in the Northern Territory's 'Top End.' The branch is entirely volunteer-run and operates in alignment with BirdLife Australia's core mission and values: to make a real and positive difference for Australia's birds.

Our region spans from the Barkly Tablelands to the northern tip of the continent, including the Tiwi Islands, Groote Eylandt, and all other offshore islands. Volunteers and members across the Top End lead and support a wide range of activities: bird research and long-term monitoring programs; community capacity-building initiatives; advocacy for species and habitats under threat; and public engagement through education and outreach. This grassroots effort forms an integral part of BirdLife Australia's national conservation work and helps protect the unique birdlife of northern Australia.

The Special Importance of the Darwin Harbour for Migratory Shorebirds

Darwin Harbour, located on Larrakia Country, is one of the region's most important natural environments. It borders the cities of Darwin and Palmerston, home to most of the Northern Territory's population and the site of the Territory's highest concentration of industry and commercial activity. The harbour is

connected globally not only through trade and transport, but also through the migratory species that rely on it. Among these are remarkable shorebirds that travel annually along the East Asian–Australasian Flyway between Darwin and distant breeding sites across the Russian tundra, Mongolia, northern China, and Alaska; an extraordinary round trip of up to 25,000 kilometres.

For some species, Darwin Harbour serves as a key destination, while for others it functions as an essential stopover point. Because shorebirds can act as indicators of environmental health[1], understanding how they use the harbour is vital to ensuring it remains ecologically sustainable for these species and for the broader marine and intertidal ecosystem[2]. Major pressures on migratory shorebirds in Darwin Harbour include human disturbance, habitat alteration, and ongoing coastal development[3].

Darwin Harbour provides habitat for shorebird populations of international significance, with several locations also recognised as nationally significant due to the abundance and diversity of species present. At low tide, migratory shorebirds are spread across the harbour's intertidal flats, while at high tide they gather at specific roosting sites.

The harbour, like other coastal areas across northern Australia, functions as a crucial stepping stone for birds travelling to non-breeding sites farther south[4]. Some individuals remain in the Darwin region throughout the non-breeding season, while others use the area to build energy reserves before continuing south or east. Darwin Harbour (NT029 Port Darwin) is one of 332 important migratory shorebird sites identified in the recently released Australian National Directory of Important Migratory Shorebird Habitat (2025) designated as a nationally important winter and summer site for 6 migratory species including having year-round habitat value for the Critically Endangered Far Eastern Curlew and supporting nationally significant diversity of migratory shorebirds.

Criteria for inclusion includes sites assessed against internationally recognised quantitative criteria. For a site to be classed as internationally important, 1% of a species' flyway population had to use that site, and for a site to be considered nationally important, 0.1% of a species' flyway population had to use the site. This rigorous approach identified 104 internationally significant sites and 187 nationally significant sites, with an additional 41 sites used by Latham's Snipe, spanning all states and territories.

These habitats include tropical mudflats, temperate estuaries, arid inland wetlands, high-energy ocean beaches, and extensive wetland complexes, each supporting unique shorebird assemblages and facing distinct threats. Because the habitat surrounding Darwin Harbour has largely retained its ecological integrity, there is a significant opportunity to manage the area in ways that maintain the current shorebird

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[1] See for example, Drever, M.C., Mogle, M.J., Douglas, T.J. *et al.* Shorebird Abundance is Associated with Nutritional Quality of Intertidal Biofilm on the Fraser River Estuary. *Estuaries and Coasts* **47**, 519–534 (2024). https://doi.org/10.1007/s12237-023-01280-0

[2] Lilleyman, A., & O'Brien, G**.** (2024). *Darwin Harbour migratory shorebird site action plan*. BirdLife Australia

[3] Lilleyman, A., Franklin, D. C., Szabo, J. K., & Lawes, M. J. (2016). Behavioural responses of migratory shorebirds to disturbance at a high-tide roost. *Emu - Austral Ornithology*, *116*(2), 111–118. https://doi.org/10.1071/MU14070

[4] See p. 66 in Driessen, J., Kidd, L. R., Weller, D. R., Purnell, C., Maguire, G., Jaensch, R., and LeClair, S. M. (2025). Australian National Directory of Important Migratory Shorebird Habitat. Report for the Department of Climate Change, Energy, the Environment and Water. BirdLife Australia, Melbourne.

populations. Achieving this requires both the protection of existing habitat and improved understanding of how shorebirds rely on different parts of the harbour, including how they may be affected by environmental change.

The Darwin Harbour Migratory Shorebird Site Action Plan[5] outlines the steps needed to support this work, emphasising collaboration among scientists, community members, government agencies, and industry partners. This is particularly critical at a time when there is potential for an incursion of Highly Pathogenic Avian Influenza (H5N1) to the Australian mainland, as well as emerging climate change related ecological disasters such as marine heatwaves, that are threatening the resilience of our shorebird habitats and populations in Australia.

Figure 1:: Nationally significant saltpan used by the Critically Endangered Far Eastern Curlew which is likely to be impacted by proposed works.

The proposed action

Inpex proposes to construct and operate a carbon capture and storage facility across four project areas for the purpose of transporting carbon dioxide from Middle Arm through a subsea pipeline to the G-7-AP permit area in the Commonwealth waters of the Bonaparte Gulf, where it will be injected into a saline aquifer via up to six injection wells. The proposed operation will run for 30 years.

The Referral encompasses construction and operations activities across four interconnected project areas: the onshore development area **(ODA)**, where CO_2 is received and prepared for transport; the nearshore development area **(NDA)**,where the subsea pipeline infrastructure is installed and transitions

[5] (Lilleyman, A, & Obrien, G (n. 2)

from land to sea; the dredge spoil disposal ground **(DSDG),** where the dumping of dredge soil acquired during marine works necessary for pipeline and facility access; and the infill development area **(IDA)**, which relates to additional offshore works and infrastructure needed to complete the transport and injection system.

Our Concerns:

The BCCS Project represents a significant new pressure on Darwin Harbour at a time when migratory shorebird populations are already declining globally. Darwin Harbour regularly supports more than 25 species of migratory shorebird. Of those, fifteen are listed as vulnerable, endangered or critically endangered on the *Environment Protection and Biodiversity Conservation Act* 1999 and subject to the conservation advice for migratory shorebirds.[6]

The intertidal habitat located within the project area of this development is documented as nationally significant for the Critically Endangered Far Eastern Curlew (*Numenius madagascariensis)*[7]. Curlews feed and roost within the saltmarsh habitat located within mangroves. The Far Eastern Curlew is one of the largest shorebirds in the world and is endemic to the East Asian-Australasian Flyway. The population of this species has declined by 80% over the last forty years.

Given their listing in the TPWC and EBPC act, all levels of government have an obligation to protect migratory shorebirds and their habitats.

1. **Impacts to Critical Migratory Shorebird Habitat**

This is our most significant concern. Darwin Harbour provides critical habitat for shorebirds, supporting nationally significant numbers of migratory shorebirds including the Critically Endangered Far Eastern Curlew, and supporting significant populations of Vulnerable Greater Sand Plover (Charadrius leschenaultii) and multiple other threatened shorebirds.

Surveys in 2017 found 329 Far Eastern Curlews during high tide throughout Darwin Harbour, including within saltpans on the Middle Arm peninsula. Research on the movements of Far Eastern Curlew in Darwin Harbour using GPS tracking showed that Far Eastern Curlew uses saltpans and coastal saltmarsh in amongst mangrove forests throughout both spring and neap tide cycles. These intertidal ecosystems on the Middle Arm peninsula also support Whimbrel (Numenius phaeopus), Grey Plover (Pluvialis squatarola), Pacific Golden Plover (Pluvialis fulva), Grey-tailed Tattler (Tringa brevipes) and Greater Sand Plover (Charadrius leschenaultii), as well as many other shorebirds and waterbirds. See figure below.

[6] Commonwealth of Australia. (2015). *EPBC Act Policy Statement 3.21: Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*. Department of the Environment.

7 Lilleyman, A., Alley, A., Jackson, D., O'Brien, G., & Garnett, S. T. (2018). Distribution and abundance of migratory shorebirds in Darwin Harbour, Northern Territory, Australia. Northern Territory Naturalist, 28, 30–42. https://doi.org/10.5962/p.374204

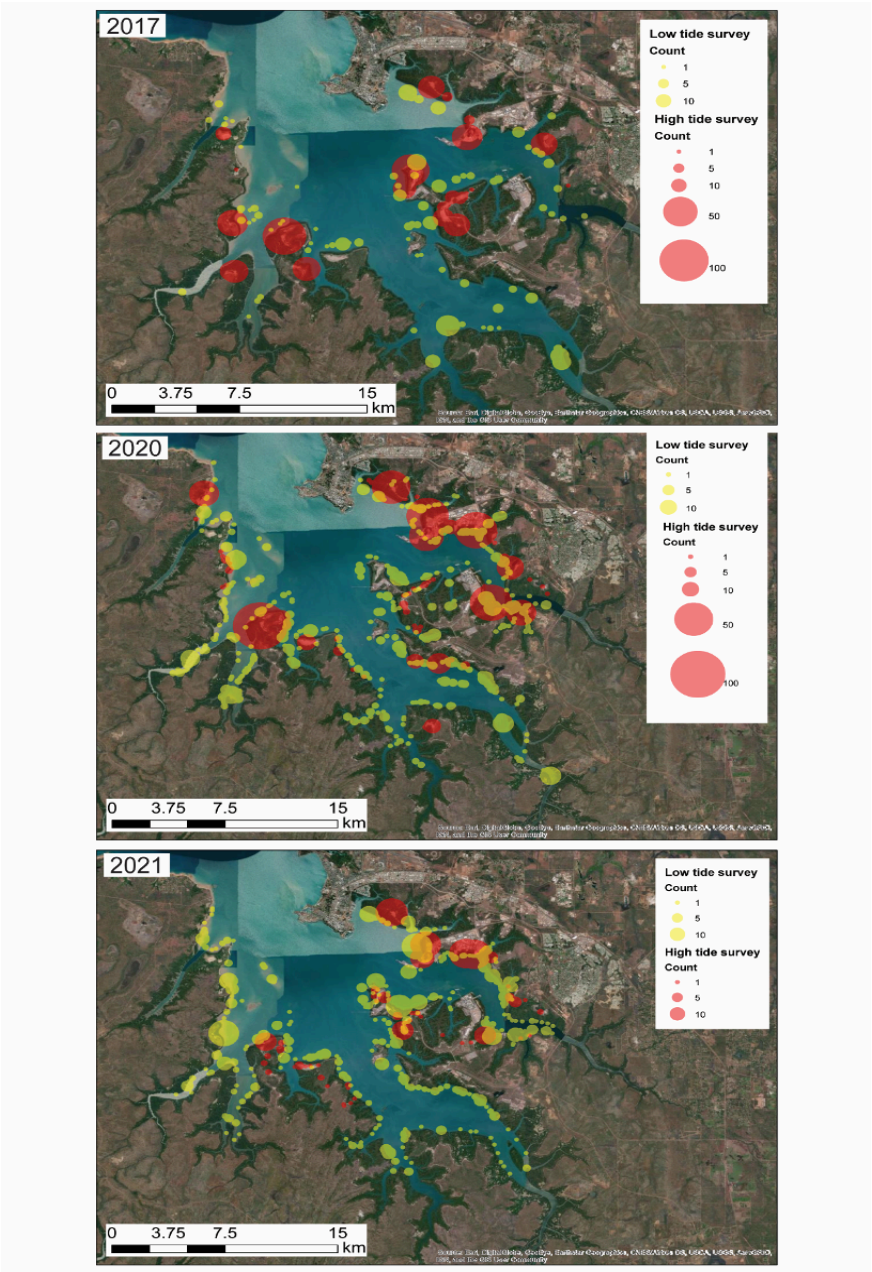

Figure 2: Distribution and abundance of all shorebirds and waterbirds recorded during aerial surveys conducted during low-tide and high-tide in 2017, 2020, 2021 in Darwin Harbour, Northern Territory. Not to be reproduced. Unpublished data by A. Lilleyman et al.

Northern Territory conservation advice for the Far Eastern Curlew, is to "retain healthy intertidal mudflat habitats; improve protection of roosting sites; manage anthropogenic disturbance at important sites when Far Eastern Curlews are present; and incorporate requirements for the species into coastal planning and management"[8] This advice also applies to Greater Sand Plover, Great Knot, Lesser Sand Plover and Red Knot.[9] The project will impact this nationally significant habitat for migratory shorebirds, including the Far

[8] Northern Territory Department of Environment, Parks and Water Security. *Far Eastern Curlew (Numenius madagascariensis). Threatened Species of the Northern Territory.* Darwin: NT Government, November 2021.
[9] See https://nt.gov.au/environment/animals/threatened-animals

Easter Curlew, both during the construction phase, and throughout ongoing operations and maintenance.These impacts are outlined below.

Specific impacts

1. **Construction disturbance during the 2028-2031 development phase**

The Proponent states that trenching, clearing, pipe laying and other construction activities would be localised, short-term, and therefore unlikely to cause significant impacts. This view, however, does not account for the cumulative disturbances likely to be produced by multiple activities occurring across Darwin Harbour, nor the resulting cumulative effects on individual animals and on population-level health, particularly for threatened and migratory species.

The Act, at s 11, defines 'significant impact' as an impact of major consequence having regard to: (a) the context and intensity of the impact; and (b) the sensitivity, value and quality of the environment impacted on and the duration, magnitude and geographic extent of the impact. Conservation advice under the EPBC Act for the Far Eastern Curlew[10] states that "All internationally or nationally important habitat that exceeds the above thresholds is considered habitat critical to the survival of the species." The degradation or loss of designated important habitat will have a disproportionately detrimental impact on the species' populations and must be avoided. Habitat critical to the survival of the species should not be destroyed or modified."

In relation to the ODA, Inpex states that "The construction would occur within an approximately 25 to 50m wide temporary construction corridor, which may widen in areas up to 200 m to facilitate access, soil treatment and temporary work areas and would be dependent on the on-site conditions and chosen construction methods."

We note that the best available research on flight initiation distance (the distance at which wildlife respond to disturbance behaviourally (e.g., walk, run, flee)) for Far Eastern Curlews found that disturbance can occur from up to 196m away.[11]

In that context, the 200m-wide construction area, plus 196m maximum disturbance distance for the critically endangered species shows that a total of 186,000$m^{2,}$ or 18.6HA of nationally significant habitat that is vital for survival of the species would be impacted.

Inpex states that "Given the vast area of shoreline habitat at Middle Arm, the vegetation clearing and earthworks are unlikely to result in significant disturbance to fauna or long-term impacts on faunal communities in the area."[12]

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[10] Australian Government, Department of Climate Change, Energy, the Environment and Water (2023), Conservation Advice for Numenius madagascariensis (far eastern curlew) . Accessed via https://www.environment.gov.au/biodiversity/threatened/species/pubs/847-conservation-advice- 18122023.pdf (Far Eastern Curlew Guidelines)

[11] See page 329 in Glover, H. K., Weston, M. A., Maguire, G. S., Miller, K. K., & Christie, B. A. (2011). *Towards ecologically meaningful and socially acceptable buffers: Response distances of shorebirds in Victoria, Australia, to human disturbance*. Landscape and Urban Planning, 103(3–4), 326–334.

[12] See page 202 of the SID

Inpex has not mapped roosting or feeding habitat across Darwin Harbour for the Far Eastern Curlew, and relies on an assumption that 'shoreline habitat' is interchangeable; this is manifestly incorrect.

In addition, we note that Inpex has failed to consider the temporal context in which this disturbance may occur. When migratory shorebirds arrive in Darwin Harbour, much of their fat stores have been depleted due to a long migratory journey, Any disturbance as these birds rest and feed during this vulnerable period is of particular concern.

Industry guidelines state that any activity that diminishes the capacity of shorebirds to use an area for roosting or foraging, or that reduces the availability of food resources, constitutes habitat degradation and is highly likely to cause a significant impact. This includes situations where acid sulphate soils (ASS) are introduced or exposed within habitat. When ASS are exposed to oxygen, they can alter the chemical balance of the environment, lowering pH and releasing heavy metals.[13]

Inpex acknowledges that ASS may be present within the shore-crossing area and that they can pose environmental risks when exposed for extended periods. However, the proponent does not address how these risks may affect migratory shorebird habitat.

While we are particularly concerned about unacceptable impacts on the Far Eastern Curlew, the same risks and impacts apply to other migratory species. BLTE submits that Inpex is incorrect in concluding that that impacts to terrestrial ecosystems due to vegetation removal and indirect construction impacts including disturbance, erosion, and ASS disturbance are "low" and the consequences are "insignificant[14]. In making this conclusion, Inpex has failed to consider relevant Conservation Advice and the significance of impacted habitat. BLTE submits that potential impacts are significant, and that Inpex has not identified mechanisms to appropriately mitigate or manage those risks. These impacts include habitat loss from the onshore inlet station and temporary construction area degradation, and increased disturbance throughout the 30 year period of the project in intertidal feeding and roosting sites.

2. Onshore CO_2 release

The project includes a 1.2-kilometre onshore pipeline for transport of carbon dioxide. Inpex has not assessed the risks of a leak or loss of containment on bird life in the surrounding area.

Release of CO_2 poses risks that wildlife may be unable to avoid because the gas is colourless and odourless. CO_2 can settle close to ground level and act as an asphyxiant[15]. We contend that any release of CO2 may affect the health of migratory shorebirds in the vicinity of the pipeline.

As discussed above, the saltpans within the ODA represent significant habitat for the Far Eastern Curlew, and also provide habitat for a range of migratory shorebirds. Introducing a pipeline that brings risks of reduced health or direct mortality may be inconsistent with the Industry Guidelines on avoiding and mitigating impacts on EPBC Act listed migratory shorebird species, and Inpex have failed to demonstrate that this does not represent an unacceptable risk.

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13 Australian Government, Department of Climate Change, Energy, the Environment and Water (n.d.) Acid Sulfate Soils, accessed via https://www.waterquality.gov.au/issues/acid-sulfate-soils

14 see page 152-153 of the Referral document

15 Parliament of Australia, House of Representatives Committees. (n.d.). *Chapter 5: The environmental benefits and risks of CCS and public perception* (pp. 55–68). https://www.aph.gov.au/parliamentary_business/committees/house_of_representatives_committees?url=scin/geosequestration/chapter5.htm

3. Dredging and Spoil Disposal Impacts

a. Dredging Works

The project includes dredging for the shore crossing and pipeline installation, with spoil disposal in Beagle Gulf approximately 12 km northwest of Lee Point.

Former Director/Chief Scientist of the Marine Biodiversity Group of the Department of Natural Resources, Environment and the Arts, Professor Karen Edyvane, has previously argued that "the current water quality and environmental quality monitoring and assessment in Darwin Harbour.. fails to provide an adequate and integrated framework to detect and assess anthropogenic impacts in Darwin Harbour."[16]

Given the lack of robust baseline data, Professor Edyvane concluded that the precautionary principle should be applied to any project involving seabed disturbance in Darwin Harbour. Digging trenches for pipeline burial disturbs marine life in the installation process, and in areas with soft sediments, benthic communities will recover in a year or two, but in hard substrate recolonisation might take up to 10 years. This is an important consideration for Darwin Harbour's vast intertidal zones, which provide important low-tide feeding grounds for numerous species of Migratory Shorebirds.[17]

b. Spoil disposal

Dredge spoil disposal can reduce water quality and increase turbidity, increase heavy metal concentrations, and smother sensitive habitats, impacting foodwebs on which shorebirds rely.

This is concerning because the shoreline at Lee Point, and North Darwin more broadly is internationally significant habitat for migratory shorebirds, including the Endangered Great Knot, Greater Sand Plover, Red Knot, Siberian Sand Plover, Sanderling. Furthermore, it is classified as nationally significant for its species diversity, with up to 25 species using the mudflats and roosting sites in the area. It also supports nationally significant populations of Far Eastern Curlew, Ruddy Turnstone, Grey-tailed Tattler, Grey Plover, Terek Sandpiper, Siberian Sand Plover, Black-tailed Godwit, Bar-tailed Godwit and Red-necked Stint.

16 See Edyvane, K. (2022). *Submission 311 — Santos Darwin Pipeline Duplication (DPD) Project.* Northern Territory Environment Protection Authority

17 Lilleyman et al (n.2, 3 & 7)

Figure 3: Intertidal mudflats at Lee Point/North Darwin, where spoil from dredging works may impact invertebrate prey shorebirds rely on.

4. Construction Vessel Disturbance

The project will involve significant vessel traffic during construction, surveys, and installation activities. Disturbance causes shorebirds to expend extra energy keeping watch and fleeing by walking or flying instead of just resting or feeding, resulting in reduced weight gain that is vital to enable birds to complete long migrations back to their northern hemisphere breeding grounds.[18]

Construction vessel disturbance should be considered in relation to direct impacts on shorebirds, and as a compounding factor that may intensify the impacts associated with other parts of the project.

5. Cumulative Impacts with Middle Arm Industrial Development and other developments in Darwin Harbour

The Federal government has recently committed $1.5 billion of public money towards subsidising the Middle Arm gas and petrochemical hub, which will cause damage to important shorebird habitat. The BCCS Project is designed to service this broader industrial precinct, contributing to cumulative impacts on Darwin Harbour's ecology. Recently, a Northern Marine Complex Development Area was established in Darwin Harbour and this area is known to include saltpan and mangrove habitat that hosts migratory shorebirds.

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18 Lilleyman, A., Jackson, M., & Dielenberg, J. (2021). Migratory shorebirds and artificial roosts. Wetlands Australia, (33). Department of Agriculture, Water and the Environment. https://www.dcceew.gov.au/water/wetlands/publications/wetlands-australia/february-2021/migratory-shorebirds-and-artificial-roosts

The BCCS project must be considered in the context of the cumulative environmental effects caused by multiple actions and projects associated with the Middle Arm gas and petrochemical hub and the Northern Marine Complex Development Area. We have outlined here the potential impacts on migratory shorebirds from one project, but contend that these will apply to multiple other projects in Darwin Harbour, thus manifesting in significant cumulative impacts on shorebird populations in the region.

Recommendations

We urge the NT EPA, pursuant to s S 55(5)(b) of the *Northern Territory Environment Act 2019* should determine that the proposed action is unacceptable because it is likely to have significant impacts that cannot be appropriately avoided, mitigated or managed.

Failing this, pursuant to S 55(5)(a) of The Act, the NT EPA should determine that an environmental impact assessment is required for the referred action or strategic proposal to ensure a more rigorous level of assessment, supported by comprehensive baseline data, independent analysis, and a precautionary approach to decision-making.

Kind regards,

Mitch Rose
Co-convenor – BirdLife Top End

Appendix - list of migratory shorebirds recorded in Darwin Harbour and their status under *Environment Protection and Biodiversity Conservation Act* 1999.

Common Name	Scientific Name	EPBC Act Status
Far Eastern Curlew	*Numenius madagascariensis*	Critically Endangered
Curlew Sandpiper	*Calidris ferruginea*	Critically Endangered
Great Knot	*Calidris tenuirostris*	Critically Endangered
Bar-tailed Godwit	*Limosa lapponica*	Vulnerable (baueri subspecies)
Greater Sand Plover	*Charadrius leschenaultii*	Vulnerable
Lesser Sand Plover	*Charadrius mongolus*	Endangered
Red Knot	*Calidris canutus*	Endangered
Sharp-tailed Sandpiper	*Calidris acuminata*	Vulnerable

Whimbrel	*Numenius phaeopus*	Migratory
Grey-tailed Tattler	*Tringa brevipes*	Migratory
Terek Sandpiper	*Xenus cinereus*	Migratory
Common Greenshank	*Tringa nebularia*	Migratory
Marsh Sandpiper	*Tringa stagnatilis*	Migratory
Wood Sandpiper	*Tringa glareola*	Migratory
Common Sandpiper	*Actitis hypoleucos*	Migratory
Ruddy Turnstone	*Arenaria interpres*	Migratory
Red-necked Stint	*Calidris ruficollis*	Migratory
Sanderling	*Calidris alba*	Migratory
Broad-billed Sandpiper	*Calidris falcinellus*	Migratory
Grey Plover	*Pluvialis squatarola*	Migratory
Pacific Golden Plover	*Pluvialis fulva*	Migratory
Red-capped Plover	*Charadrius ruficapillus*	Migratory
Little Ringed Plover	*Charadrius dubius*	Migratory
Oriental Plover	*Charadrius veredus*	Migratory
Black-tailed Godwit	*Limosa limosa*	Migratory
Asian Dowitcher	*Limnodromus semipalmatus*	Migratory