High Pathology Avian Influenza

H5N1- clade 2.3.4.4b

Preparedness Planning

Islands

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Purpose and Audience

In the Northern Territory (NT), the Northern Territory Department of Agriculture and Fisheries (NT DAF) is the lead agency for biosecurity emergencies and leads all phases of emergency management for a H5 bird flu incursion in the NT. The aim in response to the H5 Bird flu will be to minimise impacts on NT wildlife populations, domestic animals, people and the environment. Eradication of H5 bird flu in wildlife is not considered feasible and will not be attempted. Management will eventually transition following H5 bird flu becoming endemic within wildlife populations.

Objectives for a response in wildlife will vary, but may include:

- Ensuring public safety and Work Health and Safety (WHS),
- Identifying the source, extent and spread of diseases,
- Minimising the conservation impact of disease where possible,
- Enhance the surveillance of wild bird populations to identify at risk populations and monitor impacts,
- Managing animal welfare,
- Enhancing biosecurity for captive wildlife.

Within this context, this document is designed to assist wildlife managers to:

- Enable early detection of H5 avian influenza and infection in other susceptible species at priority sites.
- Implement biosecurity measures to reduce the risk of H5 avian influenza establishment and spread.
- Minimise risks to human, animal, and environmental health posed by H5 avian influenza.
- Ensure land/wildlife managers and biosecurity representatives working within the site, or deployed during an incident, are prepared for outbreak response and recovery.
- Establish communication, surveillance, and reporting protocols consistent with relevant legislation, emergency management arrangements, animal welfare requirements, and workplace health and safety obligations.

This document identifies sites of significance, including areas where key species are likely found. Some sites relate to species-specific risks - for example, wetlands important for populations of magpie geese or major shorebird aggregation areas, while others are recognised as matters of national significance, such as islands. Collectively, this information outlines which actions are eligible or ineligible for cost-sharing and highlights any further work required to refine each action. This supports more targeted planning and helps clarify the appropriate cost-sharing arrangements.

Broadly, preparedness and response actions aim to:

- protect people by reducing contact with infected birds and contaminated environments,
- prevent virus spread, including via footwear, clothing, or equipment,
- minimise stress and build resilience in wildlife populations.

This document outlines actions to support conservation and management of a potential an H5 avian influenza outbreak in wildlife populations. It aligns with Commonwealth priorities and obligations and informs future management and investment decisions to mitigate impacts on wildlife.

Introduction

This is a Preparedness document for the offshore islands of the Northern Territory (NT) that focuses on landscape scale planning in response to a potential incursion of High Pathology Avian Influenza, H5N1, clade 2.3.4.4b (herein referred to as HPAI). Specifically, the document focuses on site and landscape scale considerations, and addresses selected avian species across five Island archipelagos in the NT. They are, Tiwi Islands, Coburg Peninsula, Northeast Arnhem Land, Groote Eylandt and the Sir Edward Pellew Islands (Chatto 1990, 2001).

These islands function as critical refugia for seabirds and migratory taxa, buffering populations from pervasive mainland threats and supporting species that are extinct or near-extirpated on the mainland, including island-dependent avifauna. They are a focal point for conservation action due to their high priority status under Australian Government frameworks, their ecological significance, associated cultural values, and their potential role in avian disease ecology.

The islands also frequently support large aggregations of roosting, breeding, and congregating birds. This includes taxa listed as Matters of National Environmental Significance (MNES), such as shorebirds, migratory waders, and colonial breeding seabirds. It is so significant that the avifauna constitute a major component of the biodiversity values underpinning island prioritisation, encompassing species listed under national threatened-species legislation as well as migratory species protected under international agreements, including CAMBA, JAMBA, and the Bonn Convention.

Additional Northern Territory locations and species of concern for HPAI are addressed in complementary preparedness documents. Together, these materials identify species and locations at greatest risk from HPAI introduction due to ecological sensitivity, proximity to vulnerable environments, or association with MNES. Supporting documents, including the Wildlife Actions Register and a risk assessment and resource guide, inform response planning and operational decision-making.

An Emergency Response to the arrival of HPAI will be activated via the National Management Agreement (NMA) at the scale deemed appropriate by a potential outbreak. The agreement functions in parallel with the Emergency Animal Disease Response Agreement (EADRA), providing interoperability of governance and decision-making.

Vaccination or translocation are currently not considered to be viable options for management of wild bird populations in the NT. Instead, actions will focus on HPAI preparedness (e.g., surveillance and population monitoring, mitigating existing threats via feral animal and weed control), response (e.g., carcass removal from some locations, management of public access to infected areas) and recovery (e.g., population monitoring).

Species at Risk

Avian fauna that frequent NT Islands may play a dual role in HPAI epidemiology, functioning both as vectors that enable virus dispersal along migratory routes and as susceptible hosts that can experience substantial mortality. Several avian species associated with offshore NT islands are therefore considered vulnerable to HPAI. For HPAI preparedness planning, vulnerable species were grouped into assemblages based on ecological characteristics and habitat use, these include:

- Islands - offshore islands and associated avian assemblages, including colonial breeding seabirds and shorebirds that regularly use islands for roosting (Ray Chatto surveys, 1990-2001).
- Shorebirds - species occurring along mainland beaches and coastal mudflats, estuaries, and wetlands, including EPBC-listed migratory and resident species (Garnett, 2008, 1987).
- Colonial Waterbirds - freshwater and estuarine colonial breeders in wetlands and rivers.
- Barkly Tablelands- inland, episodic wetland-dependent species (Jaensch, 2003).
- Magpie goose- a culturally and ecologically significant species that forms large aggregations in floodplain wetlands and is of particular relevance due to its abundance, mobility, and susceptibility to HPAI disease impacts (Clancy, 2020).

The current document includes species with documented, repeated use of offshore NT islands for breeding or roosting and largely excludes species primarily recorded from mainland mudflats, estuaries, or inland wetlands. Ecological traits that heighten HPAI vulnerability in islands species include:

- Colonial breeding and high contact rates and potential for rapid transmission.
- Use of habitats overlapping with other susceptible species.
- Documented susceptibility or exposure to clade 2.3.4.4 HPAI viruses (Wildlife Health Australia, 2024).

Target Species

Background

The following detail may assist in the scenario of developing a NMA Response Plan. This includes a description and estimated number and species in Wildlife Risk Assessment Template. Additionally, the catchment profile information can help define the 'vicinity' as per the AUSVETPLAN Avian influenza response strategy template. The intention is to provide habitat information, as well as estimates, not precise numbers, of susceptible species in the vicinity. This information requires updating on a case-by-case basis.

The target species include Island Seabirds that exhibit island-nesting and colonial breeding (Table 2). In addition to migratory waders that exhibit behaviours such as roosting (not nesting) on islands and foraging in intertidal habitats.

Target and Associated Species Table

Table 1: NT Island species of interested regarding HPAI preparedness and response on NT Islands (taxonomy and sequencing follow AviList: (Rheindt et al., 2025)).

Scientific Name	Common Name	Order	Family Scientific Name	Risk Group/ Family Name	Risk sub-group	Estimated HPAI Susceptibility Index
Phaethon rubricauda	Red-tailed Tropicbird	Phaethontiformes	Phaethontidae	Tropicbirds	Seabird	0.53
Pluvialis squatarola	Grey Plover	Charadriiformes	Charadriidae	Plovers, Dotterel and Lapwings	Plovers, Dotterel and Lapwings	0.04
Pluvialis fulva	Pacific Golden Plover	Charadriiformes	Charadriidae	Plovers, Dotterel and Lapwings	Plovers, Dotterel and Lapwings	0.04
Anarhynchus mongolus	Lesser Sand Plover	Charadriiformes	Charadriidae	Plovers, Dotterel and Lapwings	Plovers, Dotterel and Lapwings	0.04
Anarhynchus leschenaultii	Greater Sand Plover	Charadriiformes	Charadriidae	Plovers, Dotterel and Lapwings	Plovers, Dotterel and Lapwings	0.04
Anarhynchus veredus	Oriental Plover	Charadriiformes	Charadriidae	Plovers, Dotterel and Lapwings	Plovers, Dotterel and Lapwings	0.04
Numenius phaeopus	Eurasian Whimbrel	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Numenius minutus	Little Curlew	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Numenius madagascariensis	Far Eastern Curlew	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Limosa lapponica	Bar-tailed Godwit	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Limosa limosa	Black-tailed Godwit	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Arenaria interpres	Ruddy Turnstone	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Calidris tenuirostris	Great Knot	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Calidris canutus	Red Knot	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Calidris falcinellus	Broad-billed Sandpiper	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Calidris acuminata	Sharp-tailed Sandpiper	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21

Calidris ferruginea	Curlew Sandpiper	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Calidris ruficollis	Red-necked Stint	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Calidris alba	Sanderling	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Limnodromus semipalmatus	Asian Dowitcher	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Xenus cinereus	Terek Sandpiper	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Actitis hypoleucos	Common Sandpiper	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Tringa brevipes	Grey-tailed Tattler	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Tringa nebularia	Common Greenshank	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Tringa glareola	Wood Sandpiper	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Tringa stagnatilis	Marsh Sandpiper	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Tringa guttifer	Nordmann's Greenshank	Charadriiformes	Scolopacidae	Snipe, Sandpipers, Godwits, Curlew, Stints and Phalaropes	Waders, gulls	0.21
Anous stolidus	Brown Noddy	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Chroicocephalus novaehollandiae	Silver Gull	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Onychoprion anaethetus	Bridled Tern	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Sternula albifrons	Little Tern	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Hydroprogne caspia	Caspian Tern	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Sterna dougallii	Roseate Tern	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Sterna sumatrana	Black-naped Tern	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Thalasseus bengalensis	Lesser Crested Tern	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Thalasseus bergii	Greater Crested Tern	Charadriiformes	Laridae	Gulls, Terns and Noddies	Waders, gulls	0.88
Pandion haliaetus	Osprey	Accipitriformes	Pandionidae	Osprey	Raptors	0.11

Haliaeetus leucogaster	White-bellied Sea-Eagle	Accipitriformes	Accipitridae	Eagles, Kites and Goshawks	Raptors	0.68

Distribution and Movement

NT Island Assemblages

Avian assemblages of the NT exhibit distinct spatial and temporal patterns, with colonial breeding concentrations commonly occurring on offshore islands (Chatto, 2001). Surveys from 1990-2001 identified 147 active tern and gull colonies, confirming the region's importance for colonial nesting seabirds (Chatto, 2001).

The Tiwi Islands function as part of the broader Top End colonial seabird network, supporting island colonies of terns including Greater Crested Tern (*Thalasseus bergii*), Little Tern (*Sternula albifrons*), and Bridled Tern (*Onychoprion anaethetus*). The islands provide critical nesting substrate on sand, coral rubble, and rocky platforms, with colonies showing variable annual usage patterns (Chatto, 2001).

Coburg Peninsula serves primarily as mainland habitat for Little Tern's nesting on beaches, while other colonial seabird species utilise offshore islands in the vicinity. The peninsula's extensive intertidal flats also provide important foraging areas for migratory shorebirds including Red-necked Stint (*Calidris ruficollis*), Sharp-tailed Sandpiper (*C. acuminata*), and Grey-tailed Tattler (*Tringa brevipes*) during their non-breeding periods (Chatto, 2001, Ward and Young, 2014).

North East Arnhem Land represents a significant colonial seabird breeding area in the Northern Territory, supporting major concentrations of Bridled Tern, Roseate Tern (*Sterna dougallii*), Black-naped Tern (*S. sumatrana*), and Common Noddy (*Anous stolidus*). The region's numerous offshore islands and extensive coastal wetlands also provide critical staging habitat for migratory shorebirds including Great Knot (*Calidris tenuirostris*), Bar-tailed Godwit (*Limosa lapponica*), and the Eastern Curlew (*Numenius madagascariensis*) (Chatto, 2001, Noske, 2021).

Groote Eylandt and the Sir Edward Pellew Islands form the core of the eastern Top End colonial seabird breeding complex, supporting the largest and most diverse assemblages in the Territory. These sites host significant populations of Greater Crested Tern, Red-tailed Tropicbird (*Phaethon rubricauda*), and multiple tern species, with colonies ranging from single pairs to tens of thousands of breeding adults.

The surrounding waters and intertidal systems of the island areas support internationally important numbers of migratory shorebirds, particularly during the winter months (April-September) (Chatto, 2001, Clemens *et al.*, 2016).

Island Shorebirds/ Migratory Waders Population Connectivity to NT Islands

The East Asian - Australasian Flyway (EAAF) connects NT coastal islands with breeding grounds in Siberia, Alaska, and East Asia (Figure 1). Migratory shorebirds such as Red-necked Stint (*Calidris ruficollis*), Great Knot (*Calidris tenuirostris*), and Bar-tailed Godwit (*Limosa lapponica*) rely on NT islands as critical staging and roosting habitat during northward (March- May) and southward (August- October) migrations (Koleček *et al.*, 2021, Noske, 2021).

The seasonal predictability and habitat quality of NT sites make them essential for maintaining flyway-scale population viability, particularly for species that have lost significant habitat elsewhere along the flyway (Koleček *et al.*, 2021, Noske, 2021). This international connectivity places NT

assemblages at the centre of global conservation networks and international agreements such as the East Asian-Australasian Flyway Partnership. This connectivity also creates potential pathways for HPAI introduction, as migratory shorebirds may carry viruses over thousands of kilometres. Improving understanding of both current future migratory connectivity among Australian shorebird populations and their flyway sites is therefore essentail for predicting and mitigating HPAI incursion risks.

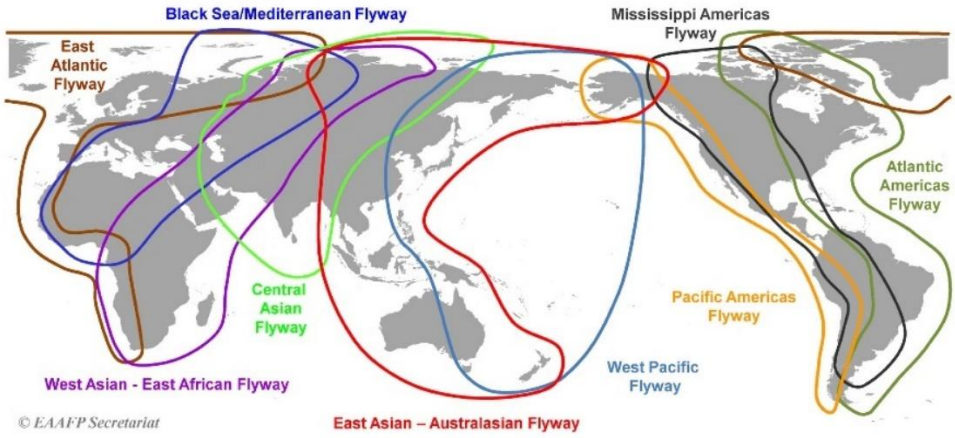


Figure 1: The major flyways around the world. The East Asian - Australasian Flyway (light blue line) extends from the Russian Far East and Alaska, southwards through East Asia and South-east Asia, to Australia and New Zealand encompassing ~22 countries.

Seasonal Movement and Breeding Phenology on NT Islands

Most shorebirds in Australia are long-distance migrants that breed in the northern hemisphere and spend the austral summer on Australian coasts in large aggregations. Their migration timing is shaped by the phenology of food resources, reproductive cycles, and survival requirements. Australia lies within the East Asian- Australasian Flyway (EAAF), a critical migratory corridor supporting millions of shorebirds (Figure 1).

Upon arrival, shorebirds depend on intertidal habitats for foraging on benthic invertebrates exposed at low tide. Their foraging and roosting are closely linked to tidal cycles: at high tide, when feeding areas are submerged, birds move to roosts on beaches, mangroves, rocky reefs, or ponds. Roost sites are selected based on proximity to feeding grounds, predator visibility, thermoregulation, tidal conditions, and disturbance levels (Rogers et al., 2006; Rosa et al., 2006; Zharikov & Milton, 2009) Rosa et al., 2006).

Colonial seabirds display species-specific breeding phenologies, generally occurring between May and November. For example, Greater Crested Terns have relatively short, regular breeding seasons, while Bridled Terns and Little Terns maintain extended periods. Roseate Terns exhibit bimodal breeding, sometimes nesting twice within a single year. Nesting substrates include sand, rock, or coral rubble, with Bridled Terns often nesting under rocks or within dense vegetation (Chatto, 2001).

Island shorebirds and migratory waders primarily use Northern Territory islands and adjacent intertidal zones for roosting during migration. Peak abundances correspond with flyway movement periods, typically during northward migration (March-May) and southward return (August–October), reflecting predictable seasonal patterns along the EAAF (Noske, 2021).

Threats

Island shorebirds / migratory waders are regarded as the primary vectors introducing avian influenza viruses into Australia (Wille et al., 2024). However, evaluating and predicting the risk of HPAI incursion is challenging as these species are increasingly affected by global change pressures along migratory flyways. Long-term monitoring reveals significant population declines across multiple migratory shorebird species, with migrants disproportionately affected compared to resident species (Clemens *et al.*, 2016, Studds *et al.*, 2017). Continental-scale analyses demonstrate that many target species, including Great Knot, Eastern Curlew, and Curlew Sandpiper, have experienced severe population reductions linked to habitat loss at key staging sites along the flyway (Studds *et al.*, 2017, Koleček *et al.*, 2021). Island bird assemblages face multiple additional threats including:

- Habitat loss and degradation
- Disturbance during breeding and roosting periods,
- Introduced species predation, nest destruction and competition are threats listed as Key Threatening Processes under EPBC Act.
- Climate-related impacts including sea-level rise and extreme stochastic weather events.
- Highly Pathogenic Avian Influenza (HPAI) represents an emerging threat of concern, particularly in the sites listed in this document.

Current Management Actions

Island- nesting Seabirds

Management of island-nesting seabirds in the Northern Territory is primarily guided by the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), particularly provisions relating to threatened and marine species and the protection of breeding colonies in Commonwealth areas. The Act regulates actions likely to have a significant impact on seabird colonies and provides the statutory basis for assessing and mitigating risks to island-based breeding populations. Broader international frameworks, including the Ramsar Convention and the East Asian-Australasian Flyway Partnership.

On-ground management is largely area-based and focused on the protection of nesting islands. Key actions include safeguarding breeding colonies, population monitoring, and the mitigation of threats such as invasive predators and human disturbance. Protection of breeding sites requires management of both the immediate nesting habitat and the surrounding foraging areas that support breeding adults and chicks. Eradication or control of feral animals, particularly rodents and cats, remains a central management strategy (Ecosure, 2009). Management is undertaken in collaboration with Indigenous landowners and local communities, recognising the importance of Indigenous knowledge and custodianship in island conservation.

Recovery plans for EPBC-listed threatened seabird species provide additional, site-specific guidance. Historical surveys, including those conducted by Chatto (2001, 2003), inform management priorities and have identified high-value island groups such as Groote Eylandt, the Sir Edward Pellew Islands and the Tiwi Islands. Long-term monitoring has identified declines in several seabird populations.

Island shorebirds and Migratory Waders

Island-roosting shorebirds and migratory waders are protected under the EPBC Act and are more directly linked to Australia's international migratory bird obligations, including the Convention on Migratory Species (CMS) and bilateral agreements with Japan, China and the Republic of Korea (JAMBA, CAMBA, ROKAMBA). These frameworks underpin flyway-scale conservation of migratory shorebirds and guide national actions to protect critical habitats used during migration.

These species rely on intertidal flats, beaches, and coral rubble associated with islands, particularly during migration. Management focuses on maintaining high-quality roosting and feeding habitats, minimising human disturbance, and monitoring population trends. The Wildlife Conservation Plan for Migratory Shorebirds guides conservation actions, while the National Directory of Important Migratory Shorebird Habitat (2025) provides mapped records of critical island roosts.

Island roosting shorebirds, including Red-necked Stint, Bar-tailed Godwit, and Sharp-tailed Sandpiper, are highly dependent on the spatial and seasonal availability of these island habitats. Effective conservation requires integrating habitat management with flyway-scale considerations, recognising that these islands function as essential stopover sites for species traveling thousands of kilometres along the East Asian-Australasian Flyway.

Public Interest

The Northern Territory's Island avian populations are of international conservation significance due to their role in the East Asian-Australasian Flyway. The flyway supports over 50 migratory waterbird species and connects 22 countries across the Asia-Pacific region (Szabo et al., 2016). NT Islands may serve as a stop-over destination for many flyway species.

Northern Territory islands hold considerable public importance due to their ecological, heritage, and conservation values. Many of these islands, such as those in the Cobourg Peninsula region, are Ramsar-listed. Government programs and Indigenous partnerships prioritise habitat protection, monitoring, and threat mitigation, reflecting their high conservation status. Seabird colonies also hold cultural significance as islands form part of Indigenous sea-country, often containing archaeological and heritage sites, and management practices integrate conservation with custodianship.

Island habitats are recognised as critical stopover and staging sites for migratory species protected under international agreements. Public interest supports measures to manage human disturbance, restore island habitats, and monitor shorebird populations. Indigenous land and sea management continues to play a key role in balancing conservation, cultural practices, and access to these islands.

Susceptibility to HPAI

Recent global analyses demonstrate that HPAI has escalated into an unprecedented panzootic affecting wild birds across multiple continents, creating sustained viral circulation within avian populations and driving repeated introductions along major flyways (Couty et al., 2026). Migratory birds are recognised as key vectors for ongoing virus dispersal, broadening the potential pathways through which highly pathogenic viruses may reach remote island ecosystems such as those in the NT.

High-density colonial breeding on Northern Territory offshore islands creates conditions conducive to the transmission of HPAI. Species such as Bridled Tern, Greater Crested Tern and Red-tailed Tropicbird form large nesting aggregations on islands including Groote Eylandt, the Sir Edward Pellew Islands and the Tiwi Islands, where close contact during breeding increases disease transmission risk.

International experience shows that HPAI incursions on previously isolated islands can result in mass mortality, reduced breeding success and long-term population impacts, highlighting the need for targeted surveillance and colony-level health monitoring (Couty et al., 2026; Leguia et al., 2023).

Shorebirds using NT offshore islands as roosting and staging sites are vulnerable to HPAI due to their long-distance migratory connectivity with regions where the virus is established. Species such as Red-necked Stint, Sharp-tailed Sandpiper, Bar-tailed Godwit and Eastern Curlew congregate in large numbers during peak migration periods (March-May and August-October), creating seasonal windows of elevated transmission risk. Mixed-species roosting and temporal overlap with island-nesting seabirds may further facilitate virus spread.

Maintaining high-quality, low-disturbance island roosts is therefore critical for both avian conservation and HPAI risk reduction. Targeted surveillance, population monitoring and management of exposure pathways are essential to protect vulnerable assemblages and sustain the role of NT islands as key refugia within the EAAF.

Recommended Biosecurity Controls

Biosecurity preparedness for HPAI at target NT Island sites should be designed to operate at a landscape scale that could remain adaptable to changing conditions, associated wildlife movements and a potential HPAI incursion.

NT HPAI Wildlife Actions Register

The Wildlife Actions Register accompanies this document and summarises the actions considered in HPAI preparedness planning for the NT. It outlines key management activities, their alignment with the National Management Agreement (NMA), cost-sharing eligibility, and the likely lead agency for implementation.

Activities that may be subject to restriction may include, but are not limited to:

- tourism
- access to public spaces e.g., beaches, lakes.
- bird banding
- population monitoring or management activities
- research and environmental studies (with or without interaction with wildlife)
- pest animal control activities
- wildlife translocations
- recreational hunting.

There may be regular activities undertaken at the site that are essential to the health and welfare of the wildlife population, such as monitoring or maintenance activities. Permits or restriction exemptions may be required for certain activities if deemed appropriate by government authorities. A summary of the actions is provided below in Tables 3 to 6.

All Activities

Table 2: Activities during all phases

#	Management Category	Management Activity	Relative Priority - e.g., high/medium/low	Expected conservation benefit (to support implementation in emergency settings)	Biodiversity Outcome if No Action is Taken	Biodiversity Outcome if Action is Implemented
1	Control measure	**Long-term Population Monitoring - Magpie goose**	High	Supports conservation management of an iconic species, informs sustainable cultural harvest, and provides baseline data for detecting HPAI-related population impacts.	Mass mortality events may remain undetected until severe population decline occurs, potentially leading to collapse of harvestable populations and loss of ecological function.	Early detection of population impacts enables targeted management interventions, adaptive harvest controls and maintenance of sustainable, resilient populations.
2	Control measure	**Long-term monitoring- Wildlife Populations**	Medium	Supports ecosystem health assessment, early detection of population declines, and evaluation of HPAI impacts and recovery outcomes.	Population declines and local extinctions may occur without detection	Early warning of disease impacts supports evidence-based recovery planning, prioritisation of interventions and improved conservation outcomes.

Preparedness Activities

Table 4: Preparedness - Including resilience building and management activities

#	Management Category	Management Activity	Relative Priority - e.g., high/medium/low	Expected conservation benefit (to support implementation in emergency settings)	Biodiversity Outcome if No Action is Taken	Biodiversity Outcome if Action is Implemented
3	Surveillance	**Risk-Based Wildlife Surveillance (early detection)**	High	Critical for early detection of HPAI incursions, enabling timely response activation, reduced disease spread, and coordinated community engagement in emergency procedures.	Delayed detection may allow uncontrolled spread of HPAI across wildlife populations and into poultry systems, increasing biodiversity loss and economic impacts.	Rapid detection supports early containment, targeted response measures and maintenance of market and tourism confidence through proof-of-freedom evidence.
4	Surveillance	**Develop culturally appropriate wildlife biosecurity protocols**	High	Strengthens culturally informed preparedness and response capacity, integrates traditional ecological knowledge, and supports eDLPEective collaborative management.	Reduced compliance, mistrust and delayed reporting in remote and culturally sensitive areas may hinder response effectiveness.	Strong community participation improves surveillance coverage, reporting rates, cultural legitimacy and on-ground biosecurity outcomes.

5	Control measure	**Develop Carcass Management / Disposal Guidelines**	High	May reduce environmental viral loading, minimises secondary transmission risk, and improves responder safety and operational consistency.	Infected carcasses may increase scavenger exposure, environmental contamination and ongoing viral persistence in wetlands and waterways.	Effective carcass management reduces environmental viral load, breaks transmission pathways and protects sensitive wetland ecosystems.
6	Risk Assessment	**Data, Mapping and Modelling**	Medium	Improves risk assessment, resource prioritisation, epidemiological modelling, and evidence-based decision-making during preparedness and response activities.	Responses may be poorly targeted, inefficient and unable to prioritise high-value biodiversity assets.	Data-driven decision-making enables precise targeting of surveillance and protection measures for threatened species and MNES sites.
7	Risk Assessment	**Identify HPAI activities relevant to Threatened Species/ MNES**	High	Supports protection of threatened species and MNES, reduces risk of local population decline or extirpation, and enables rapid implementation of targeted response measures.	Highly vulnerable species or genetically distinct populations may suffer irreversible decline or extinction before interventions are mobilised.	Early prioritisation enables rapid activation of targeted protections and improves survival prospects for vulnerable species
8	Risk Assessment	**Develop Integrated Wildlife Response Plan**	High	Improves preparedness, coordination and operational efficiency while reducing the likelihood of fragmented response actions and ineffective resource allocation.	Fragmented governance and unclear responsibilities may delay response actions and reduce effectiveness.	Coordinated multi-agency mobilisation enables rapid, consistent and effective wildlife response operations across jurisdictions.
9	Risk Assessment	**Establish Decision Triggers & Wildlife Biosecurity Controls**	High	Supports timely and evidence-based decision-making, reduces disease spread risk, and strengthens implementation of proportionate control measures.	Delayed or inconsistent decisions may increase transmission and ecological damage.	Objective and defensible trigger mechanisms support timely implementation of effective biosecurity and containment measures.
10	Communications	**Communications Strategy**	High	Reduces misinformation and public concern, improves stakeholder coordination, and supports effective implementation of response measures.	Public confusion, misinformation and poor compliance may increase wildlife disturbance, illegal access and disease spread.	Clear and coordinated communication improves public confidence, stakeholder cooperation and adherence to biosecurity measures.
11	Control measure	**Feral Pest Control/Culling - Pigs and Buffalo**	Medium	Improves habitat condition and native species resilience while reducing scavenger-mediated spread	Habitat degradation and scavenger-mediated spread may increase wildlife vulnerability to HPAI and reduce recovery capacity.	Improved habitat condition and reduced scavenger pressure strengthen ecosystem resilience and native species survival.
12	Control measure	**Weed Reduction Activities**	Low	Enhances habitat resilience and supports healthier wildlife populations	Habitat degradation may concentrate birds into small refugia, increasing transmission risk and ecological stress.	Improved habitat distribution supports dispersed populations, reducing disease transmission and enhancing resilience.

Response Activities

Table 5: HPAI Incident Response Activities. Where indicated activities may be eligible under NMA cost-sharing arrangements, noting approval is at the discretion of the National Management Group. Eligible costs are those that are above and beyond the resource costs of a party that exists for / or are required to carry out its Normal Biosecurity and normal conservation commitments. NMA- Schedule 3

#	Management Category	Management Activity	Relative Priority - e.g., high/medium/low	Expected conservation benefit (to support implementation in emergency settings)	Biodiversity Outcome if No Action is Taken	Biodiversity Outcome if Action is Implemented
13	Control measure	**Humane Euthanasia**	Medium	Primarily supports animal welfare outcomes while reducing unnecessary suffering and maintaining public confidence in response activities.	Infected wildlife may experience prolonged suffering and continue shedding virus into the environment.	Reduced animal suffering and lower viral shedding contribute to improved welfare and biosecurity outcomes.
14	Surveillance	**Establish Surveillance in Outbreak Areas**	High	Defines extent of infection, improves situational awareness, and reduces risk of undetected spread to wildlife, livestock and humans.	Disease spread beyond the initial outbreak zone may remain undetected, increasing risk to wildlife and poultry sectors.	Enhanced surveillance enables targeted containment and protection of uninfected populations and ecosystems.
15	Surveillance	**Establish Surveillance for Surrounding Outbreak Areas**	High	Improves early detection at surrounding high-risk sites and reduces broader ecological and agricultural impacts.	Secondary outbreaks in isolated or high-value ecological areas may remain undetected until severe impacts occur.	Early detection in surrounding areas supports rapid protective actions and reduces risk to sensitive ecosystems.
16	Control measure	**Strategic and Targeted Feral Animal Control (Buffalo/Pig)**	Medium	Reduces potential for scavenger-mediated disease spread and lowers risk of HPAI transmission into unaffected areas and spillover species.	Feral animals may amplify environmental contamination and contribute to ongoing disease spread.	Reduced scavenger activity lowers environmental viral loads and supports outbreak containment.
17	Control measure	**Consider immediate hunting suspension- Magpie Goose Harvesting**	High	Reduces human-mediated spread risk, limits disturbance to infected wildlife populations, and protects community and cultural values.	Human-assisted spread through contaminated equipment, vehicles and movement between sites may accelerate disease transmission.	Reduced movement-related transmission supports containment and enables earlier recovery of hunting activities.
18	Control measure	**Limit Non-essential Access**	High	Reduces disturbance-driven dispersal and minimises mechanical spread through fomites, vehicles and human movement.	Increased human disturbance may disperse infected birds and spread virus between colonies and wetlands.	Reduced disturbance and human-mediated spread help localise outbreaks and support wildlife recovery.

19	Environmental Management	**Implement Carcass Disposal**	High	Reduces environmental contamination and wildlife exposure risk while supporting effective outbreak containment.	Persistent carcasses may contaminate wetlands and maintain long-term environmental reservoirs of virus.	Removal and safe disposal reduce environmental contamination and improve conditions for ecosystem recovery.
20	Environmental Management	**Decontamination Procedures**	High	Maintains operational biosecurity and reduces risk of cross-site contamination and spillover transmission.	Personnel, vehicles and equipment may become vectors for disease spread between sites.	Strong biosecurity protocols maintain operational integrity and minimise human-assisted transmission.
21	Communications	**Distribute Communications Products**	High	Supports compliance with response measures, improves public understanding, and maintains stakeholder confidence.	Poor awareness and misunderstanding may result in non-compliance, unauthorised access and increased spread risk.	Consistent messaging improves compliance, supports containment measures and enhances public trust.

Post Incursion Activities

Table 6: Post-incursion activities to build population resilience and ensure population management is appropriate.

#	Management Category	Management Activity	Relative Priority - e.g., high/medium/low	Expected conservation benefit (to support implementation in emergency settings)	Biodiversity Outcome if No Action is Taken	Biodiversity Outcome if Action is Implemented
22	Environmental Management	**Weed Reduction/ Land Management**	Medium	Restores habitat quality, supports ecosystem resilience, and reduces conditions that may facilitate disease spread.	Degraded habitats may limit recovery of surviving populations and reduce long-term ecosystem resilience.	Restored habitats improve ecosystem functionality and support recolonisation and population recovery.
23	Environmental Management	**Feral Pig and Buffalo control**	High	Supports wildlife recovery, improves habitat resilience, and maximises post-outbreak survivor recruitment and population stability.	Feral pests may suppress recovery of vulnerable native species through predation, habitat destruction and disturbance.	Reduced pest pressure supports rapid recovery and stabilisation of native wildlife populations following HPAI impacts.

Disease Surveillance

Active Surveillance

- Targeted sampling: Regular collection of faecal samples or swabs at key sites
- Sentinel species monitoring: Focused surveillance of species known to be highly susceptible to HPAI (e.g., waterfowl, gulls) that may serve as early indicators of virus presence.

Passive Surveillance

- Mortality monitoring: Systematic reporting and investigation of shorebird mortality events.
- Behavioural monitoring: Observation for signs of illness in shorebird populations, including lethargy, neurological signs, or unusual behaviour.

Surveillance Priorities

- High-priority sites: sites supporting large shorebird concentrations or threatened species.
- High-priority species: Far Eastern Curlew, Curlew Sandpiper, and other critically endangered or highly susceptible species.
- High-risk periods: Peak migration periods (September-November, March-May) when birds are arriving from or departing to regions where HPAI may be present.
- Trigger events: Increased surveillance following HPAI detections in nearby regions or along the flyway.

Population Monitoring

Regionally, baseline data on shorebird distribution and abundance are informed by limited studies such as Chatto (2001, 2003)**,** which surveyed shorebirds along the NT coastline and offshore islands. The surveys provided essential information on species' habitat use and baseline population trends.

BirdLife Australia runs the Australian Shorebird Monitoring Project, which aggregates survey data from across Australia - supporting counts at ~520 key shorebird sites. This monitoring supports long-term trend analyses, including national-scale population change assessments for many species. The Australian National Directory of Important Migratory Shorebird Habitat (2025) was published, under which updated population estimates for the 37 migratory shorebird species recognised under national legislation have been highlighted. For many species, these new estimates form the basis for identifying key sites (wetlands, intertidal flats) for conservation and for fulfilling national/international obligations (e.g., under the Environment Protection and Biodiversity Conservation Act 1999 and agreements like the Ramsar Convention) and continue to be a focus for HPAI mitigation activities. Seasonal aggregation periods correspond with predictable high-density use, which can inform timing of targeted surveillance and monitoring activities and aligning sampling with peaks in shorebird abundance.

Limitations in Population Monitoring

While many avian colonies /wader aggregations are well documented, species presence and abundance vary seasonally, and between islands. Much of the freely available, existing data are often aggregated so "*common in NT island environment*" does not imply species are common on every island. Remote and small islands may have limited survey data and thus absence of record doesn't always mean absence of birds, but potentially a lack of observation.

HPAI population monitoring and disease surveillance on key islands is critical as they represent high risk locations with migratory bird staging sites, colonial breeding sites and critical biodiversity refuges.

Restricted Access / Site Closure

In the event of HPAI detection on NT islands, temporary access restrictions may be an appropriate measure to reduce indirect disease spread and minimise additional stress on affected birds. While rapid virus spread is likely via natural movements of highly mobile species such as shorebirds, limiting human access to key habitats can reduce the risk of human-mediated transmission through contaminated footwear, vessels, vehicles or equipment. Additionally, disturbance alters spatial use, increasing contact rates among birds, therefore reduced disturbance also lowers the likelihood of disease transmission risk.

Access restrictions would operate as a supporting risk-management measure rather than a standalone response. Consistent with AUSVETPLAN, restricted areas, enhanced surveillance and biosecurity measures are appropriate where HPAI poses a risk to wildlife, while avoiding ecologically damaging interventions such as culling.

In the NT island context, temporary closures would support targeted or feral pest eradication, recognising that outbreak outcomes depend on integrated surveillance, biosecurity and adaptive management rather than access controls alone.

Feral Pest Species Culling

Under AUSVETPLAN, routine culling or population reduction of wild animals (including feral species) is not recommended as a primary HPAI emergency response measure to eradicate disease in wild birds, as there is little evidence it effectively reduces virus transmission and it may increase disease spread by causing animals to disperse, mix more widely, or experience stress. However, AUSVETPLAN does recommend targeted feral pest control as a supporting, risk-based action where there is a clear and defensible link to biosecurity or outbreak management objectives, rather than disease eradication in wild birds. For example, controlling feral scavengers may be considered where they are spreading contaminated material (e.g., moving carcasses between sites), interfering with surveillance or carcass management, or increasing the risk of transmission to domestic species such as poultry, or sensitive wildlife areas.

Any such action must be considered site-specific, proportionate, coordinated with surveillance and access restrictions, and designed to minimise disturbance to infected or susceptible bird populations. In practice, AUSVETPLAN places much greater emphasis on restricted access, biosecurity, surveillance, and carcass management, with feral animal control used only where it clearly supports those measures and does not exacerbate disease spread or ecological harm.

Carcass Management

Due to the remote and vast landscape in the NT, in most situations, it is considered appropriate to leave wild bird carcases in situ, carcass removal may be justified in some situations e.g., public places, in close proximity to poultry operations and densely populated public spaces to reduce potential disease transmission and improve social amenity. Carcass management will typically be carried out by specially trained personnel, however, a public guidance document is available via the IMT website, should this be necessary. The use of appropriate PPE is essential to ensure carcasses are removed safely.

Key Sites/ Locations at Risk

The Northern Territory coastline extends over 10,000 km between 129-138° E and 11-16.5° S, encompassing the Timor Sea, Arafura Sea and Gulf of Carpentaria. It is dominated by mangrove-backed mudflats, estuaries, and monsoonal floodplains that flood during the wet season and recede in the dry, concentrating large numbers of waterbirds and shorebirds (Chatto, 2005, East, Hamilton and Garner, 2008). The sites discussed in this report are all offshore Island sites which occur within tropical monsoonal zones shaped by strong tides and trade winds (Akerman et al., 2014; Short, 2020).

The following sites represent important ecological interfaces for migratory and resident species, requiring integrated HPAI surveillance and population monitoring of biodiversity, movement, and mitigation of disease risk. The sites are highly remote and are delineated by natural boundaries.

For ease of planning with HPAI response agencies, the selected sites align with the Integrated Marine and Coastal Regionalisation of Australia (IMCRA (v4.0-Meso-scale)) Bioregions, (Figure 2). They are:

- Tiwi Islands,
- Coburg,
- NE Arnhem,
- Groote,
- Sir Edward Pellew Islands.

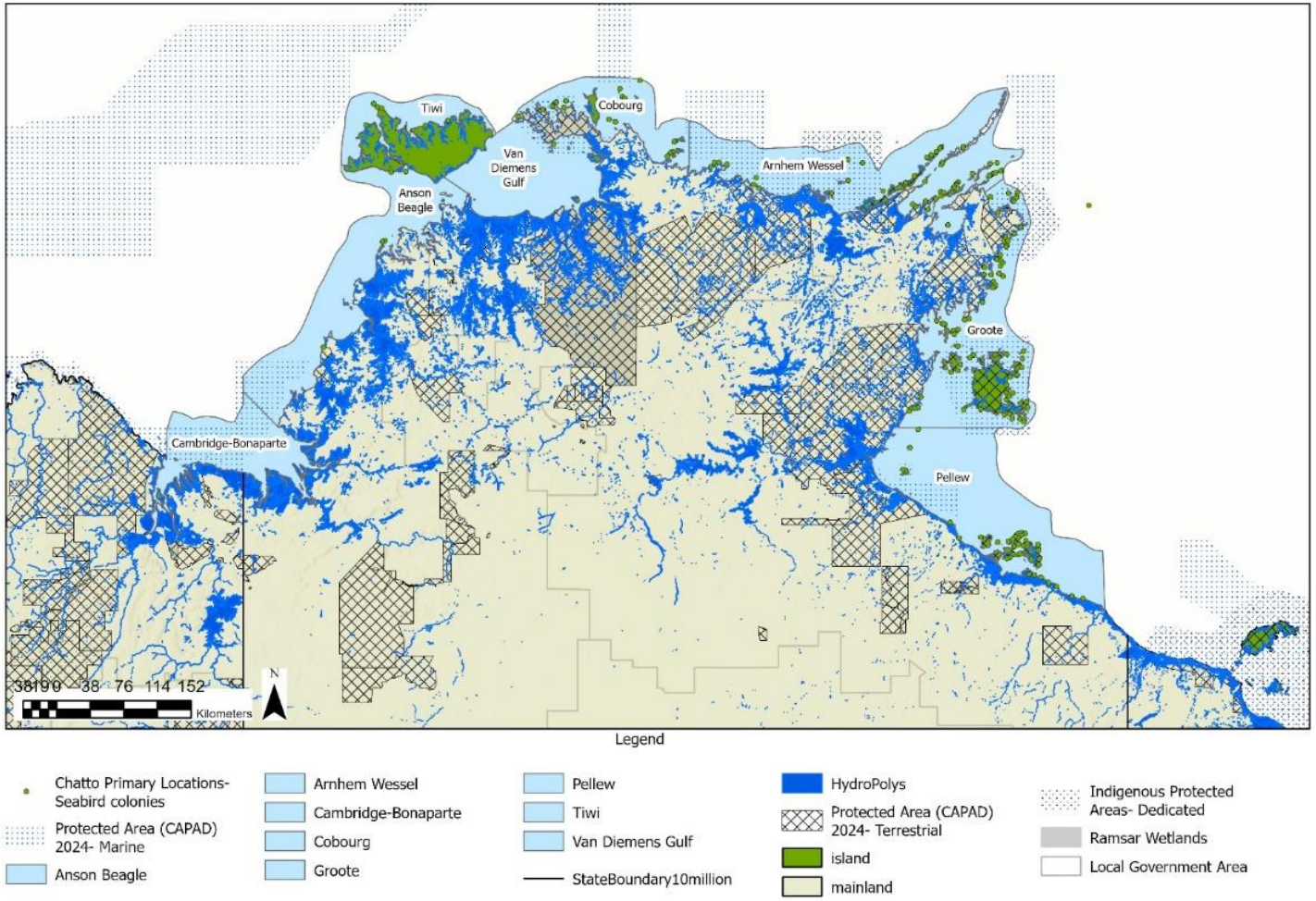


Figure 1: Key sites/ geographic locations in the Northern Territory relevant to this report are shaded light blue, represented by Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Bioregions. CAPAD, Indigenous Protected Areas, Hatched areas constitute separate management areas/ units and are not considered in this particular document.

Islands Profile

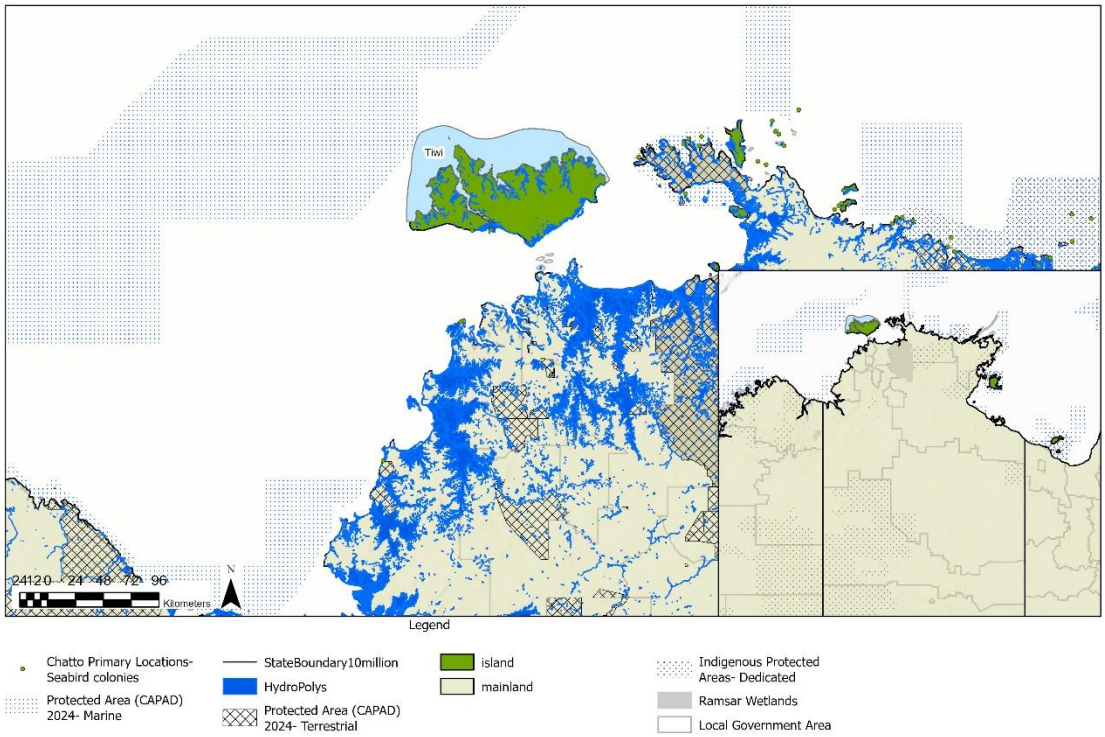
The following detail can assist in forming the information required in the scenario of a potential NMA Response Plan. Additionally, the catchment profile information can help define the 'vicinity' as per the AUSVETPLAN Avian influenza Response strategy template.

This information requires updating on a case-by-case basis. There is significant variation in the distribution, density, and habitats of wildlife between and within island of the Northern Territory, which may change seasonally, and the information presented here is relevant at a IMCRA scale.

Limited access to the Top End and offshore islands- especially during the wet season- restricts data detail. As such, the information provides regional context rather than precise site-level estimates.

Tiwi Islands / Bathurst and Melville Islands

Map



Key Detail

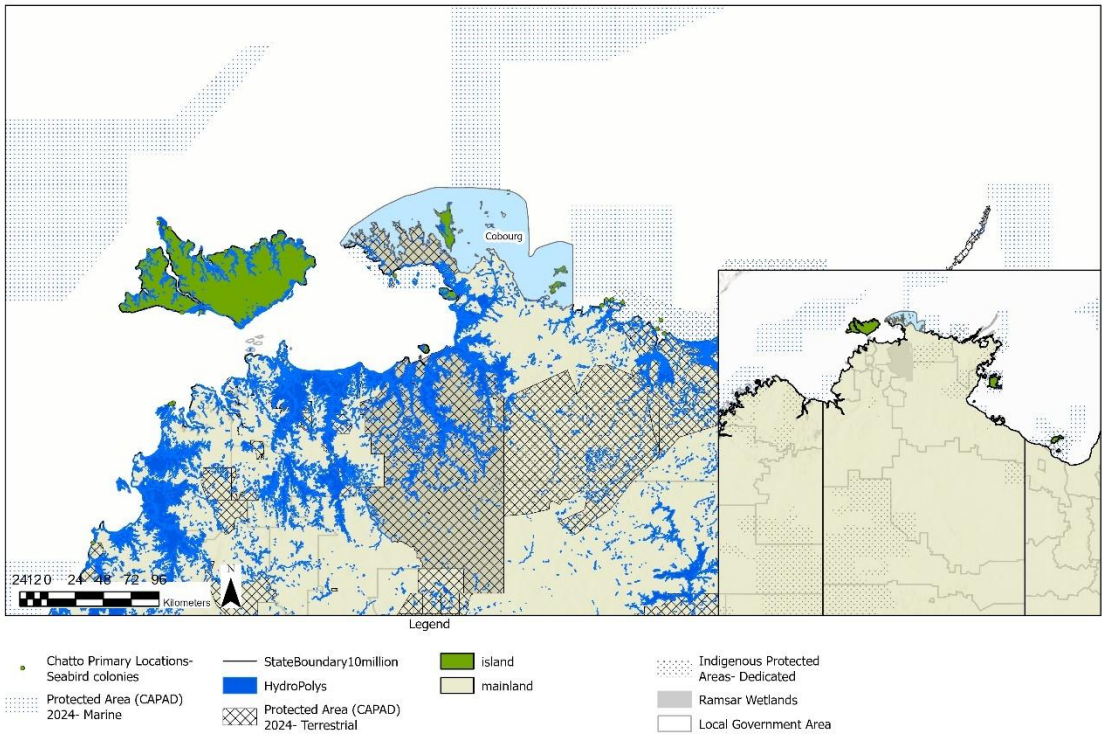
Location	Tiwi Islands
Site Overview	
Coordinates (approx.):	11°20′ to 11°45′ S, 130°30′ to 131°30′ E
Catchment Area	~ 8,000 km² (Tiwi Land Trust area) covering Melville, Bathurst and many smaller islands
River Length	No large mainland “rivers” as such, drainage is via many creeks, wetlands, springs, and minor watercourses.
Proximity to urban areas	Extremely remote from urban centres and separated by water - Accessible only by air or boat, no direct public roads. Closest community: Wurrumiyanga, Milikapiti, Pirlangimpi
Ecological and Land Context	

Access and Tenure Description	The Tiwi Islands are Aboriginal freehold land, vested in the Tiwi Aboriginal Land Trust. Traditional Owners maintain strong customary management regimes, with increasing formal governance under an Indigenous Protected Area (IPA) framework. Forestry plantations (on Melville), tourism, some mining, and commercial fisheries are among supplementary land uses, but most lands are managed for traditional uses, conservation, and community livelihood. Basic infrastructure: roads, harbours / boat ramps. Remote tracks, ferry or boat access for coastal / marine surveillance. Ranger outposts and marine rangers operate in many locations. Plantation forestry infrastructure (roads, plantation plots) on Melville. Community infrastructure in major settlements. Fisheries along coasts.
Ecosystem Description	Island wetlands, Eucalyptus and monsoon forests, intertidal systems. The Tiwi Islands lie off the northern coast of the Northern Territory. The landscapes are composed of sandy and lateritic soils, rises, plains, coastal cliffs, rocky headlands, interspersed with perennial springs and rainforest patches, eucalypt woodlands, and extensive mangrove and wetland systems.
Key biological features	The Tiwi Islands represent a biodiversity hotspot, with exceptionally high species richness, many endemic and threatened taxa, and relatively intact ecosystems due to their isolation. There are eleven plant taxa entirely endemic to the Islands, and many more plant and animal species that are threatened, rare or have restricted distributions. Vegetation includes well-developed eucalypt forests, rainforest patches around springs, melaleuca and acacia woodlands, mangroves, and coastal beach and rocky headlands. Wetland ecosystems, including intertidal mudflats, coastal creeks, seasonal inundated flats, and estuarine zones, support large populations of waterbirds, migratory shorebirds, seabirds, and marine fauna (e.g., turtles, dugongs, dolphins). The hydrological connectivity between coastal, estuarine, and terrestrial zones (especially via creeks and mangrove fringe) underpins seasonal breeding, foraging, and migrations. Because many wetlands dry in the dry season and refill in the wet, the islands' ecological dynamics are strongly tied to rainfall and tidal cycles
Fauna and Ecological Significance	The Tiwi Islands support numerous threatened and migratory species. There are ~ 31 threatened animal species and 19 threatened plant species recorded within the IPA boundary. Birdlife includes both resident waterbirds and internationally migratory species, many using coastal estuaries, seagrass beds, mangroves, and intertidal mudflats as feeding or breeding grounds. Sea turtles, marine mammals (dugongs, dolphins), saltwater crocodiles are also present. Fauna endemism is strong.
Wildlife Density & Diversity	High - Seasonal congregations, Seabird colonies.
Existing Ecological Threats	Feral animals (pigs, buffalo and horses) and weeds (Mimosa)
Reservoir Hosts (e.g., Nearby Domestic Bird Presence)	High- colony nesting and presence of poultry or domestic ducks/geese.
Cultural and Social Context	
Cultural and Social features	The Tiwi people maintain strong cultural, spiritual, and social ties to the Islands' land, sea, wildlife, and cultural sites. The population is relatively low (~2,600) in communities such as Wurrumiyanga, Milikapiti, Pirlangimpi. Social infrastructure is concentrated in these towns. Activities include customary hunting, fishing, gathering, arts, cultural tourism. Tourism is but growing, commercial fisheries and plantations are present.
Key Stakeholders	• Tiwi Traditional Owners, clan groups, Tiwi Land Council • Tiwi Indigenous Rangers and Sea Country Rangers • NGOs, researchers, universities involved in ecology and conservation science • Tourism operators, plantation forestry entities, fishing community
Local Government Authority	Tiwi Islands Regional Council
Conservation Management organisations	Tiwi Aboriginal Rangers
Land Use and Human Activity	
Key Land Use Types	Forestry, traditional land use.
Human Use and Activity frequency	Primarily in the main Tiwi communities with fishing, gathering, arts, and some tourism. Access to remote parts of islands is by transport, seasonal conditions. Visitors typically require permits or coordination through Land Council. Some commercial activity

	(plantation forestry, fishing) operates, especially near transport hubs or accessible coastlines. Commercial crocodile egg harvest via helicopter during wet season. Moderate activity- ranger programs, traditional land use, research, air and road access.
Risk and Management	
Site biosecurity implications	Needed measures include: • hygiene and disinfection protocols for boats, equipment, footwear, mortality event reporting systems via Ranger network, • public awareness in communities, • regulation of domestic bird keeping, • monitoring of feral animal populations, • controlling introductions of invasive species, • where feasible restrict access during bird breeding / gathering seasons, • ensure monitoring of waterbird health.
Management Implications	The IPA Plan of Management (2023-2033) provides a governance framework that must embed biosecurity and disease risk assessments. Land use changes should be evaluated for disease risk and ecological impact. Ensuring Traditional Owners have decision making authority, and that resources (ranger capacity, funding, partner agencies) are sufficient to carry out needed surveillance and response is critical in forming an effecting response to HPAI.
Surveillance and Monitoring	Recommended activities: • Regular monitoring of waterbird populations especially in coastal estuaries, mangrove fringes, mudflats, wetland patches. • Detection and investigation of bird mortality or disease symptoms through Ranger network and community reports. • Monitoring of threatened/endemic species populations and their habitat condition. • Marine surveillance (marine mammals) in coastal waters.

Coburg Peninsula

Map



Key Detail

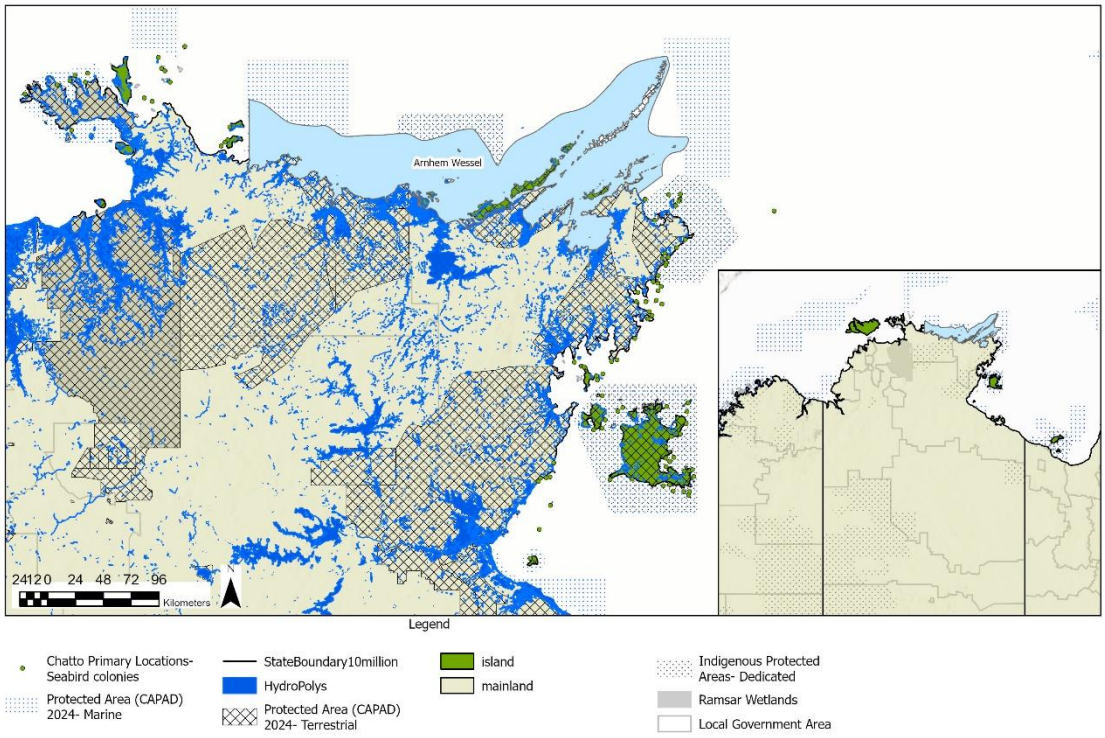
Location	Coburg Peninsula
Site Overview	
Coordinates (approx.):	~11.35° S, 132.10° E
Catchment Area	Coastal catchments draining small seasonal creeks and lagoons into Port Essington and Van Diemen Gulf
Proximity to urban areas	Conservation reserve, Indigenous land management, low-impact tourism, research, and traditional hunting and fishing
Ecological and Land Context	
Access and Tenure Description	The Coburg Peninsula lies within Garig Gunak Barlu National Park, a jointly managed conservation reserve combining the former Gurig National Park and Cobourg Marine Park. Land tenure is Aboriginal freehold under the Aboriginal Land Rights (Northern Territory) Act 1976, leased back to the Northern Territory Government and managed collaboratively by the Garig Gunak Barlu Board of Management, comprising Traditional Owners and the NT Parks and Wildlife Commission. Access is primarily via 4WD track from Oenpelli (Gunbalanya) or by light aircraft and charter vessel to Port Essington. Infrastructure is minimal, designed to support conservation management and low-impact tourism. Seasonal access restrictions apply during the wet season (November-April). Existing facilities include ranger housing, an airstrip, visitor campsites, and minimal utilities. Communication and emergency systems are in place to support park operations.

Ecosystem Description	The Cobourg Peninsula Ramsar site is globally significant representative of a near-natural tropical coastal wetland complex with high habitat diversity. It provides critical breeding, foraging, nursery and migratory habitats. It functions as a refuge for threatened species and as one of the best-preserved coastal ecosystems in northern Australia. Joint Indigenous-government management safeguards both ecological and cultural values. The park covers approximately 4,500 km², including the peninsula, surrounding islands, and adjacent marine waters comprising monsoon forest, dune systems, freshwater lagoons, mangroves, salt flats, coral reefs, and seagrass meadows. The Cobourg Peninsula Ramsar Status was declared on 8 May 1992, across ~220,700 ha. It meets multiple Ramsar criteria for supporting threatened species, waterbird aggregations, and representative wetland types of the bioregion.
Key biological features	The peninsula supports a mosaic of terrestrial, coastal, and marine habitats, providing breeding and foraging grounds for colonial seabirds, migratory shorebirds, marine turtles, and dugongs. Extensive intertidal flats, mangroves, and seagrass meadows underpin high productivity and biodiversity, while adjacent coral reefs sustain diverse fish and invertebrate communities.
Fauna and Ecological Significance	Coburg is a critical site within the East Asian-Australasian Flyway, hosting large seasonal aggregations of migratory shorebirds such as Bar-tailed Godwits, Red-necked Stints, and Eastern Curlews. Offshore islands support breeding colonies of Bridled Terns, Roseate Terns, and Common Noddies.
Wildlife Density & Diversity	High - supports large seabird and shorebird colonies, important stopover site for migratory birds in the EAAF
Existing Ecological Threats	Feral animals (pigs, buffalo and horses) and weeds (Mimosa)
Reservoir Hosts (e.g., Nearby Domestic Bird Presence)	Minimal domestic animals
Cultural and Social Context	
Cultural and Social features	The peninsula is sea-country of the Arrarrkbi people and associated Aboriginal groups.
Key Stakeholders	Iwaidja Traditional Owners, the Garig Gunak Barlu Board of Management, the Northern Territory Parks and Wildlife Commission, and regional conservation and research partners. Secondary stakeholders include low-impact tourism operators, researchers, and biosecurity agencies.
Local Government Authority	Unincorporated area - managed by the NT Government, nearest administrative centre: Darwin (West Arnhem Region)
Conservation Management organisations	Jointly managed by Traditional Owners (Iwaidja, Garig, and other clan groups) and the Northern Territory Parks and Wildlife Commission under the Garig Gunak Barlu Board of Management
Land Use and Human Activity	
Key Land Use Types	Managed for conservation, regulated low-impact tourism (camping, fishing, boating), research, and traditional Indigenous use. Access is controlled (permits

	required), infrastructure (ranger station, minimal visitor facilities). Surrounding waters support recreational and commercial
Human Use and Activity frequency	Restricted public access, eco-tourism (camping and fishing), ranger and research activities, access by 4WD or light aircraft only. Access is strictly controlled through permits. Visitation is seasonal (May-October) and to designated camping and fishing areas. Ranger stations at Black Point and nearby islands support management operations. Traditional subsistence activities continue under cultural protocols, maintaining low human pressure on ecosystems. Access is controlled (permits required), infrastructure (ranger station, minimal visitor facilities). Surrounding waters support recreational and commercial fisheries under regulation.
Risk and Management	
Site biosecurity implications	Biosecurity protocols focus on preventing introduction of invasive species and pathogens via visitors, vessels, or equipment. Procedures include cleaning of gear and boats, waste management, restricted access to sensitive breeding sites, and disease surveillance in waterbirds. Collaboration with rangers ensures ongoing biosecurity compliance and reporting.
Management Implications	The ecological importance and isolation of Coburg require a precautionary management approach. Ongoing surveillance for emerging threats- particularly HPAI is essential.
Surveillance and Monitoring	Past monitoring focuses on seabird colonies and migratory shorebird numbers. Long-term datasets from Chatto (2001) and subsequent NT surveys guide trend analysis. Recommended activities: • Regular monitoring of shorebird populations • Detection and investigation of bird mortality or disease symptoms through Ranger network and community reports. • Monitoring of threatened/endemic species populations and their habitat condition. • Marine surveillance (marine mammals) in coastal waters.

North-East Arnhem

Map



Key Detail:

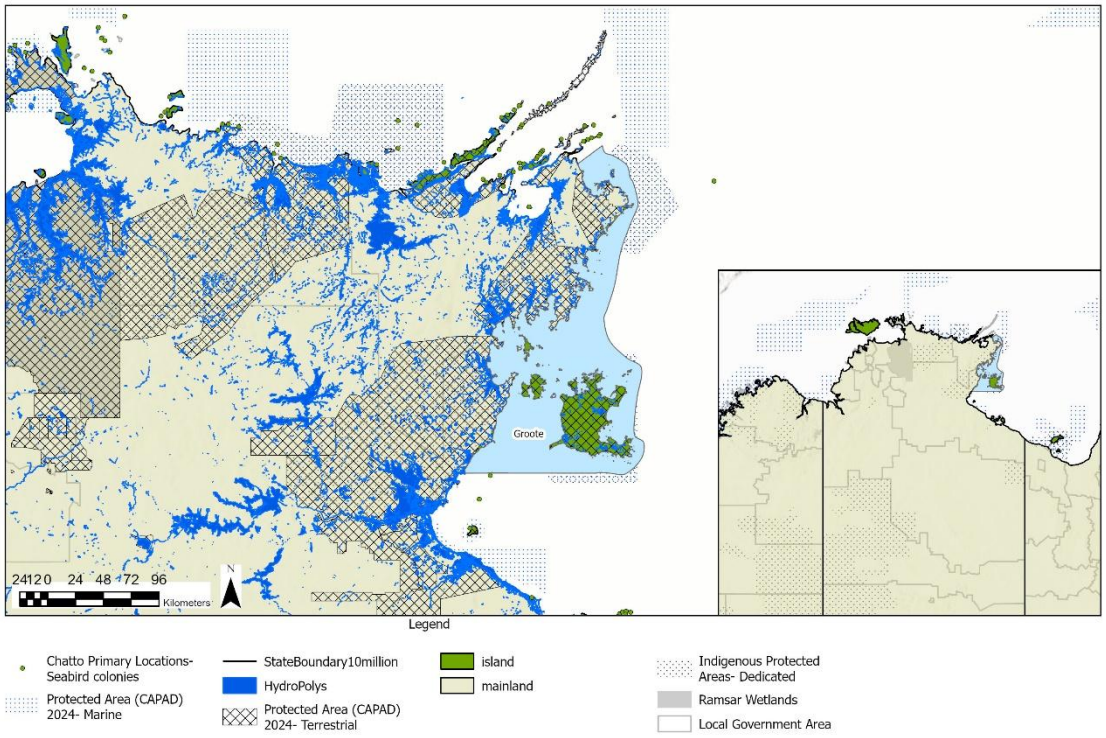
Location	**North-East Arnhem Land**
Site Overview	
Coordinates (approx.):	~12.25° S, 136.75° E
Catchment Area	Includes parts of the Goyder, Cato, and Buckingham River catchments, draining into coastal estuaries and the Arafura Sea.
Proximity to urban areas	Indigenous community, Indigenous land management and traditional hunting and fishing
Ecological and Land Context	
Access and Tenure Description	Land tenure is predominantly Aboriginal freehold land, managed by Traditional Owners under the Aboriginal Land Rights (Northern Territory) Act 1976, with joint management through Indigenous Protected Areas (IPAs) such as the Dhimurru IPA. Additional tenure includes Crown land and conservation reserves managed collaboratively with the Northern Land Council (NLC) and NT Parks and Wildlife Commission. Managed under multiple Indigenous Protected Area (IPA) agreements, whose functions include feral animal and weed control, fire management, recreation-area regulation, cultural & natural resource stewardship Access is restricted through permits issued by Traditional Owners (Northern Land Council). Main access routes via Nhulunbuy (Gove), local airstrips, and coastal tracks. Infrastructure is minimal, with small landing areas for boats and helicopter pads in selected locations. Ranger outposts facilitate management and emergency access.

Ecosystem Description	Extensive intertidal flats, mangrove-lined estuaries, coastal dunes, monsoon forests, and offshore islands. Includes rich marine habitats. These ecosystems support high productivity and provide critical habitat for migratory shorebirds. Coastal and marine island/peninsula country in the "Arnhem Coast" bioregion includes mangrove-lined coast, tidal flats, salt-flats, floodplains, paperbark (Melaleuca) wetland and sedge/swamp systems, inland eucalypt savannah / woodland, monsoon forest patches, dune-systems, intertidal and nearshore marine habitats. The coastal zone of North-East Arnhem Land includes extensive mangrove forests, tidal flats, estuaries, and offshore islands along the Arafura Sea.
Key biological features	The offshore islands of North-East Arnhem Land are characterised by rocky outcrops, sandy beaches, and intertidal zones, surrounded by fringing coral reefs and seagrass beds. These islands support dense mangrove patches and provide critical nesting and roosting habitats for seabirds.
Fauna and Ecological Significance	Islands host major breeding colonies of colonial seabirds. High plant and animal diversity, intact faunal assemblages including species seldom found in protected areas elsewhere in NT, important feeding/nesting habitat.
Wildlife Density & Diversity	supports major concentrations of migratory shorebirds and seabirds. Offshore islands host large breeding colonies of Crested, Bridled, and Roseate Terns.
Existing Ecological Threats	Feral animals (pigs, buffalo and horses) and weeds (Mimosa)
Reservoir Hosts (e.g., Nearby Domestic Bird Presence)	domestic animals in remote areas
Cultural and Social Context	
Cultural and Social features	North-East Arnhem Land is one of Australia's most significant cultural landscapes, home to the Yolŋu people. The offshore islands hold deep cultural significance for the Yolŋu peoples, forming part of traditional sea country with numerous sacred sites and customary fishing grounds. Traditional Owners maintain strong connections through ongoing cultural practices, and Indigenous ranger programs actively manage these areas.
Key Stakeholders	Yolŋu Traditional Owners, Northern Land Council. Collaborative management ensures Indigenous leadership alongside government and scientific partners.
Local Government Authority	East Arnhem Regional Council
Conservation Management organisations	Managed under a combination of Aboriginal Land Trusts, Northern Land Council (NLC). Includes protected areas such as Dhimmurru and Laynhapuy Indigenous Protected Areas and the Australian Government's IPA Program.
Land Use and Human Activity	
Key Land Use Types	Indigenous conservation areas, traditional land management, low-impact tourism, research, and small community settlements. Coastal areas support subsistence fishing and hunting, and commercial operations.
Human Use and Activity frequency	daily use by local Aboriginal communities and ranger programs, low seasonal visitation by tourists and researchers. Access to the offshore islands is highly regulated to Indigenous use, ranger patrols, and controlled scientific or eco-tourism visits. Transport is primarily by small boats or helicopters, minimising disturbance. Indigenous land management, cultural use and recreation. Possibly small-scale commercial fishing and research. Permit required for access (*eastarnhemland.com.au*) There are no permanent settlements on the islands. Facilities include ranger shelters and monitoring stations equipped for wildlife surveys and biosecurity checks.

Risk and Management	
Site biosecurity implications	Strict hygiene protocols for all visitors and equipment, quarantine zones for sensitive areas, and ongoing wildlife health surveillance are enforced.
Management Implications	Maintaining the islands' ecological integrity requires ongoing Indigenous leadership, strong biosecurity controls, and coordinated monitoring. Protection of breeding seabirds and marine turtles is a high priority, alongside preserving cultural values. Mining leases and associated development near Nhulunbuy (Gove) pose pressure around urban/township zones, weed invasion near township, risk of feral animals/introduced species, need for careful weed/feral control and culturally appropriate fire regimes. Community-based natural & cultural resource management via Dhimurru (rangers & Traditional Owners) combining Indigenous knowledge with western science, permit-based visitor management, weed/feral control, fire and habitat management, sustainable use aligned with traditional customs and biodiversity conservation.
Surveillance and Monitoring	Strict hygiene protocols for all visitors and equipment, quarantine zones for sensitive areas, and ongoing wildlife health surveillance are enforced to prevent invasive species and disease introduction. Maintaining the islands' ecological integrity requires ongoing Indigenous leadership, strong biosecurity controls, and coordinated monitoring. Protection of breeding seabirds and marine turtles is a high priority, alongside preserving cultural values. Regular seabird colony counts, marine turtle nest monitoring, invasive species inspections, and pathogen screening are conducted by Indigenous ranger teams and researchers.

Groote Eylandt

Map



Key Detail:

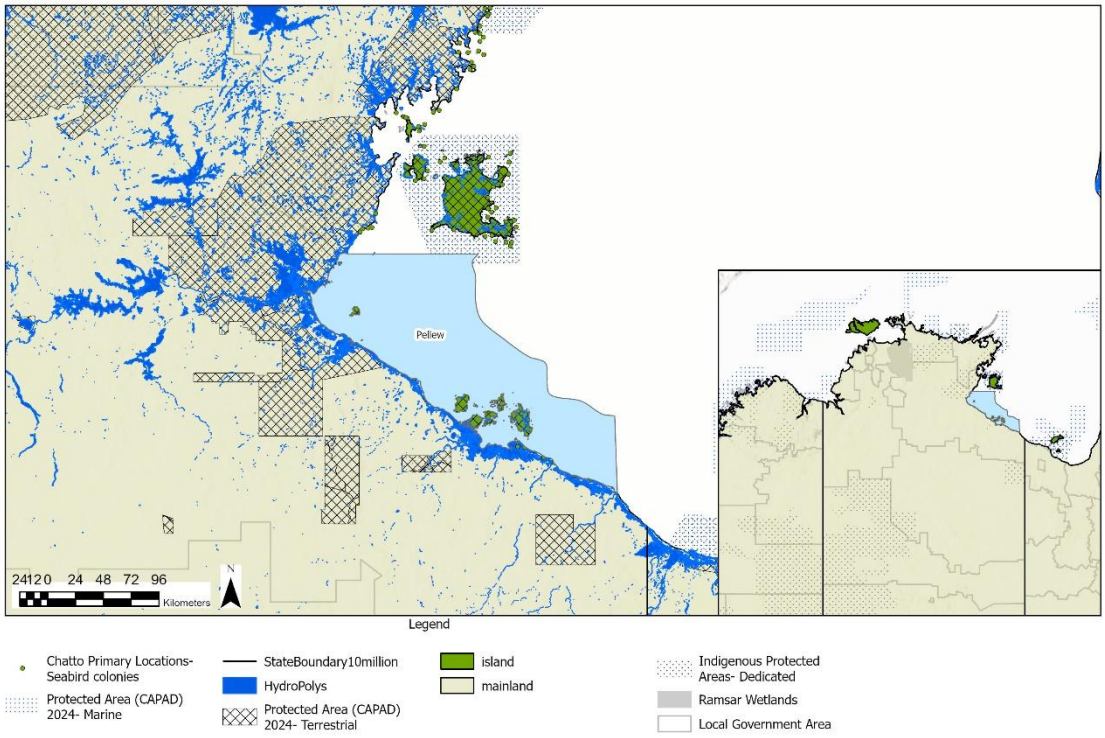
Location	Groote Eylandt- associated islands (Groote Archipelago) under Anindilyakwa Land Council & Anindilyakwa Indigenous Protected Area (IPA)
Site Overview	
Coordinates (approx.):	~13°59'S 136°30'E
Catchment Area	~ 12,000 km² (island and surrounding marine waters)
Proximity to urban areas	Located in the Gulf of Carpentaria, northeast of Northern Territory mainland
Ecological and Land Context	
Access and Tenure Description	Archipelago of ~2,300 km² land (plus surrounding marine/sea country) under Aboriginal freehold title, IPA established 2006, land & sea managed by Anindilyakwa Land and Sea Rangers. Groote Eylandt, covering approximately 2,326 km², is part of the Gulf of Carpentaria bioregion. It is predominantly Aboriginal freehold land managed by the Anindilyakwa Land Council. Ranger programs conduct feral-animal (cats) control, invasive weed control, monitoring threatened species, biosecurity screenings (e.g., cane-toad dog sniffers) and monitoring turtle & seabird nesting / populations. Infrastructure supports logistical needs, including the Angurugu airstrip, community roads, ranger outposts, and boat ramps. Roads are unsealed, minimising landscape fragmentation. Permanent infrastructure is sparse, emphasising low-impact community facilities and mining infrastructure designed with environmental safeguards. Ranger stations serve as bases for ecological monitoring and biosecurity enforcement.

Ecosystem Description	Coastal mangroves, tidal mudflats, sandy beaches, coral reefs, seagrass beds, offshore islands. The island's tenure supports a mosaic of ecosystems shaped by monsoonal climate, seasonal freshwater flows, and tidal influences. Coastal habitats include extensive mangrove forests, intertidal mudflats, coral reef systems, and seagrass meadows vital for juvenile fish and invertebrates. Tropical savannah woodlands, monsoon vine forest patches, wetlands/paperbark/pandanus wetlands, mangroves & coastal mudflats, sandy beaches, coral reefs and seagrass beds, coastal dune systems and nearshore marine habitat, intertidal flats and offshore islets.
Key biological features	The island's offshore reefs are part of the Arafura Sea marine province and host rich coral assemblages. Mangroves and seagrass beds provide nursery habitats for commercially and ecologically important species. The intertidal zones serve as critical feeding grounds for migratory shorebirds.
Fauna and Ecological Significance	Groote Eylandt supports internationally significant seabird colonies. Migratory shorebirds such Bar-tailed Godwit and Great Knot depend on the mudflats during non-breeding seasons, linking the site to the East Asian-Australasian Flyway. The archipelago records ~900 plant species and ~330 vertebrate species. It supports endangered or threatened mammals, marine turtle nesting, substantial marine-bird and seabird colonies, migratory shorebirds and rich marine life.
Wildlife Density & Diversity	High- important seabird colonies and migratory shorebirds
Existing Ecological Threats	Feral animals (pigs, buffalo and horses) and weeds (Mimosa)
Reservoir Hosts (e.g., Nearby Domestic Bird Presence)	Minimal domestic bird presence
Cultural and Social Context	
Cultural and Social features	High- traditional lands of the Anindilyakwa people with many sacred sites and cultural practices. The Anindilyakwa people maintain custodianship through customary law, with traditional ecological knowledge guiding sustainable resource use and biodiversity protection. Sacred sites are integral to land and sea management, and cultural burning practices support habitat health. Indigenous ranger programs facilitate conservation activities. Traditional land and sea of the Anindilyakwa people (14 clan groups). Traditional practices and sustainable management via the Anindilyakwa Land Council and ranger programs.
Key Stakeholders	Stakeholders include the Anindilyakwa Land Council, Northern Land Council, GEMCO,, and scientific research institutions conducting ecological surveys.
Local Government Authority	East Arnhem Regional Council
Conservation Management organisations	Anindilyakwa Land Council, Northern Land Council
Land Use and Human Activity	
Key Land Use Types	Indigenous land management, conservation, mining, cultural and recreational use
Human Use and Activity frequency	Mostly Indigenous cultural activities, low-impact tourism, mining for manganese is significant. Access is via a regional airport (Angurugu) and boat traffic. Indigenous land use, some tourism and recreation (with permits via Anindilyakwa Land Council), commercial mining (manganese) on part of the island (west coast near GEMCO operations), fishing and charter boat operations, regulated recreational fishing, low-impact tourism, scientific research.
Risk and Management	
Site biosecurity implications	Ranger-led surveillance complements government inspections, ensuring early detection of invasive species or disease outbreaks.

Management Implications	Effective management requires integrating Indigenous knowledge with adaptive scientific monitoring, maintaining strict biosecurity, regulating mining impacts, and managing visitor access. Conservation plans emphasise protecting breeding habitats and culturally significant sites. Potential threats from feral cats (predation on native fauna), invasive weeds, risk of cane-toad invasion, mining impacts (GEMCO), disturbance of nesting seabirds / turtles, invasive species via freight / equipment, and fire-regime management. Implementation of Threatened Species Management Plan (2019-2028), focusing on feral-animal control, invasive-weed management, biosecurity for marine and terrestrial ecosystems, threatened species monitoring, and integrating traditional ecological knowledge with modern conservation science.
Surveillance and Monitoring	Ecological monitoring may include annual seabird colony counts and tagging of migratory shorebirds. Ranger programs may collect long-term data critical for detecting ecological changes and emerging HPAI threats.

Sir Edward Pellew Islands

Map



Key Detail:

Location	Sir Edward Pellew Islands
Site Overview	
Coordinates (approx.):	~15°36′S, 136°50′E
Catchment Area	McArthur River catchment (~20,000 km²) discharges into surrounding estuarine systems
River Length	McArthur River is ~300 km from source to the Gulf of Carpentaria
Proximity to urban areas	~50 km northeast of Borroloola, at the mouth of the McArthur River, Gulf of Carpentaria
Ecological and Land Context	
Access and Tenure Description	The islands cover approximately 2,100 km² and are predominantly Aboriginal freehold land, managed by Traditional Owners through the Northern Land Council (NLC). The Sir Edward Pellew Islands comprise a cluster of six major islands and numerous smaller islets situated at the mouth of the McArthur River in the southwestern Gulf of Carpentaria, Northern Territory. Minimal infrastructure exists beyond ranger bases, temporary shelters, and monitoring installations. Facilities are designed for low-impact management and field research. Access is by boat or light aircraft. There are small airstrips on Vanderlin and West Islands, and temporary camps for rangers and researchers. No permanent transport or road networks exist.
Ecosystem Description	Archipelago of six main islands and numerous smaller islets featuring mangrove-lined estuaries, intertidal flats, seagrass meadows, coral reefs, and sandy beaches, influenced by monsoonal and tidal regimes at the mouth of the McArthur River.

	The region includes coastal dunes, tidal mudflats, mangrove forests, saltmarshes, and fringing coral reefs, forming one of the Northern Territory's most intact island ecosystems.
Key biological features	The islands support extensive mangrove systems dominated by *Avicennia marina*, *Rhizophora stylosa*, and *Sonneratia alba*, as well as intertidal flats and seagrass meadows that serve as critical feeding areas for shorebirds and marine megafauna.
Fauna and Ecological Significance	The Sir Edward Pellew Islands are of international importance for migratory shorebirds within the East Asian- Australasian Flyway. Species such as Bar-tailed Godwit, Great Knot, Red-necked Stint, and Eastern Curlew occur in significant numbers. The islands host major breeding colonies of terns and noddies, including Bridled Terns, Roseate Terns, Little Terns, and Common Noddies, identified in Chatto (2001) as among the most significant in northern Australia. Turtles nest on several beaches, while dugongs and coastal dolphins frequent nearby seagrass areas.
Wildlife Density & Diversity	High, supports large seabird colonies (Bridled Terns, Common Noddies, Roseate Terns), nesting turtles (Green, Flatback, Hawksbill), dugongs, dolphins, and rich intertidal invertebrate communities
Existing Ecological Threats	Feral animals (pigs, buffalo and horses) and weeds (Mimosa)
Reservoir Hosts (e.g., Nearby Domestic Bird Presence)	Islands are relatively free of domestic birds
Cultural and Social Context	
Cultural and Social features	Very high- part of Yanyuwa, Marra, and Garrwa sea country, with sacred sites, songlines, and areas of ceremonial importance. The islands form part of the traditional estates of Yanyuwa, Marra, and Garrwa peoples. The islands are culturally protected and managed through Indigenous ranger programs, integrating traditional ecological knowledge.
Key Stakeholders	Yanyuwa Traditional Owners, Northern Land Council, Li-Anthawirriyarra Sea Rangers and NT Parks and Wildlife Commission. Collaborative partnerships between Traditional Owners, researchers, and government agencies underpin conservation, biosecurity, and marine management.
Local Government Authority	Roper Gulf Regional Council
Conservation Management organisations	Yanyuwa Traditional Owners, Li-Anthawirriyarra Sea Ranger Unit, Northern Land Council (NLC), NT Parks and Wildlife Commission
Land Use and Human Activity	
Key Land Use Types	Indigenous land management, conservation, research access, small-scale subsistence fishing and hunting
Human Use and Activity frequency	Ranger patrols, Indigenous subsistence activities, and periodic research visits. Restricted access primarily for Indigenous management, research, and occasional low-impact tourism, most islands uninhabited. Access is restricted and primarily associated with Indigenous land management, small-scale fishing, and scientific research. tourism occurs under permit. Most islands are uninhabited.
Risk and Management	
Site biosecurity implications	Ranger teams may conduct regular inspections for invasive species e.g., rat and ant surveillance, and wildlife disease checks.
Management Implications	Conservation management focuses on maintaining the islands' condition and minimising external pressures such as pollution and invasive species. Continued coordination between Traditional Owners and agencies ensures culturally appropriate management and biosecurity vigilance.
Surveillance and Monitoring	The Li-Anthawirriyarra Sea Rangers conduct ongoing shorebird and seabird monitoring, marine turtle nesting surveys, and habitat condition assessments. Scientific partners support remote sensing, biodiversity surveys, and water quality monitoring linked to the

	McArthur River system. Periodic aerial surveys provide population estimates for key species and track changes in coastal habitat extent.

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