



Submarine Rotational Force – West Infrastructure Project

Managing impacts on the marine environment

The Australian Government is upgrading and building new infrastructure at HMAS Stirling on Garden Island/*Meeandip* to support conventionally armed, nuclear-powered submarines, for both visiting and rotational submarines and for Australia's own nuclear-powered submarines in the future. Work has already started and will continue over the next decade.

Defence is responsible for delivering critical infrastructure at HMAS Stirling to accommodate SRF-West. This factsheet outlines the infrastructure work that may impact the marine environment and details how Defence is carefully managing construction activities to reduce impacts.



What are we building in the marine environment?

HMAS Stirling is an established naval base, with existing piers and wharves including:

- Diamantina Pier and Moresby Harbour, located in Careening Bay
- Armament Wharf, located on the north of Sulphur Bay.

The SRF-West Infrastructure Project will:

- upgrade Diamantina Pier to accommodate nuclear-powered submarines
- increase the small boat berthing capacity within Moresby Harbour (including force protection vessels, harbour tugs and dive boats)
- upgrade the utilities, services and berthing facilities at Armament Wharf to accommodate nuclear-powered submarines.



Our commitment to the environment

Defence understands the importance of local environmental values, including seagrass and marine wildlife. The SRF-West Priority Works project has been approved under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC number 2024/10031), which provides a framework to protect and manage nationally and internationally important plants, animals, habitats, heritage and places.

Defence is committed to ensuring the project meets the requirements of the EPBC Act. Our construction program and methods have been designed to avoid and reduce significant impacts on the marine environment. A Construction Environmental Management Plan (CEMP) has been prepared for the project. This is actively implemented and monitored for compliance with the project's conditions of approval.



All referral documentation, including the approval document, is available on our website at www.defence.gov.au/srf-west.

Little penguins

Little penguins are a fixture of Australia's southern coastline and have high environmental, social, cultural and economic value. They're the smallest of all penguins and are the only species that lives permanently in Australia.



Partially fledged chick in a nest site near Oxley Wharf June 2026

About the little penguin colony on Garden Island/Meeandip

The current little penguin population is found within rock walls and artificial nesting boxes on Garden Island/Meeandip. There is a main colony on the western shore of Careening Bay and slipway area, along with scattered nesting sites on the western edge of Moresby Harbour, the eastern edge of Careening Bay and along the northwestern shore of Careening Bay to Colpoys Point.

Based on the number of breeding pairs and signs of active burrows from 2021-2024, the number of breeding adults on Garden Island/Meeandip is estimated to be approximately 200 individuals. It should be noted that this does not include active burrows in one particular area as it has only recently been included for monitoring.

How the little penguins came to be on Garden Island/Meeandip

Around 1975, a limestone wall was built in Careening Bay which now extends from Colpoys Point in the north to the southern rock wall of the Moresby Harbour in the south. Little penguins were first observed nesting in the rock wall in 1986. Before this, there were no reports of little penguins nesting on the island.

Breeding, feeding and moulting

Little penguins usually lay eggs between April and November, but breeding can start as early as March. However, the penguins don't all lay eggs at the same time, and it takes approximately 13 weeks from egg lay to fledged chicks leaving the nest. If the penguins start breeding early enough in the season, and they are in good body condition, they can successfully breed twice during the season. This is called 'double-brooding'. Breeding timing and success depends on food supply, especially small schooling fish such as pilchards, anchovies, scaly mackerel and sandy sprat. During breeding, the little penguins forage in Cockburn Sound/Derbal Nara.

After breeding, the penguins moult. This is the most important stage of the penguins' annual cycle, as the feathers get worn during the year, affecting their swimming efficiency and waterproofing. The little penguins temporarily lose their waterproofing as their old feathers get pushed out by new ones. As a result, they are confined to land during the 2-3 week process, which generally occurs any time between November and February.

Threats

Through a long-term monitoring program, we now know more about the potential threats to the island's little penguins. These include:

- impacts to food availability
- foxes
- injuries from collisions with watercraft (such as jet skis).

Little penguin research and monitoring on Garden Island/Meeandip

Formal monitoring of the Garden Island/Meeandip little penguin colony began in 2001 and has continued to improve understanding of the species' breeding biology, habitat use, foraging behaviour and threats. Much of what is known about the colony comes from the work of Dr Belinda Cannell, a conservation seabird ecologist from the University of Western Australia, who has monitored the colony since 2001.



Using a burrowscope to inspect a nest site

The Garden Island/Meeandip colony is one of the two in the region that breeds close to an active naval and industrial environment. Nest sites in the rock wall at Careening Bay are checked regularly.

Special equipment, including a 'burrowscope', can be used to inspect deep or winding burrows for penguins, eggs or chicks.

This monitoring provides information on breeding numbers, timing of breeding, success, chick growth, body condition, moult, diet, foraging areas, timing of arrival and departure and threats.

Through this long-term monitoring, Defence has developed a clear picture of how the little penguins live on Garden Island/Meeandip and has taken action to avoid risk and respond to threats, including ongoing fox control on the island and conservation programs.



View of environment at Armament Wharf, looking east

How the SRF-West Infrastructure Project works to protect the little penguins

As part of the EPBC Act approval for the SRF-West project, Defence is required to implement a range of mitigation, monitoring and management measures to protect little penguins. These include:

- **Construction timing** – piling and dredging are restricted to specific time windows to avoid the most sensitive times for little penguins. This is done through specifying times of the day in which maritime construction works can be undertaken (including timing of vessel movements).
- **Noise and vibration controls** – there are construction safe working distances around nesting sites and noise and vibration thresholds that are monitored in real time. Additionally, machinery has been specially selected to minimise noise and vibration, noise-reducing boards have been placed along fences adjacent to the main colony and real-time camera monitoring of burrows and nest activity helps check if there are changes to penguin behaviour or burrow integrity.
- **Light management** – lighting near nesting areas is avoided as much as possible. Lighting required for operation is directed away from little penguin nesting sites and their arrival/departure areas, and light spill from nearby activities is minimised using a range of measures in accordance with best practice lighting design. This includes shielding to reduce light spill, use of adaptive light controls to manage light timing, intensity and colour, and use of lights with reduced or filtered blue, violet and ultraviolet wavelengths.
- **Water quality protections** – silt curtains (where appropriate) are used during dredging activities and surface runoff and contaminants are being carefully managed to prevent pollution.
- **Physical barriers and avoidance zones** – the little penguin colony in Careening Bay has been designated as an avoidance zone, meaning no direct construction impacts are allowed.
- **Marine fauna observers** – specifically trained and experienced personnel will monitor penguin and marine fauna activity in the water during maritime construction works (piling and dredging) and ensure compliance with mitigation measures.
- **Fox and cat management** – a Fox and Cat Management Plan is being implemented to reduce the risk of predation on little penguins, including targeted control measures and ongoing monitoring of predator activity.
- **Ongoing penguin monitoring** – ongoing monitoring of little penguin behaviour, breeding and abundance is conducted by qualified seabird ecologists to identify any changes in penguin activity during construction activities. Any changes or impacts can be quickly identified, adaptively managed and impacts mitigated.



Syngnathids

Garden Island/*Meeandip* is home to two syngnathid species: the Western Australian seahorse, which has been recorded around Diamantina Pier, and the pugnose pipefish, which has been recorded in Careening Bay. These species are often found around jetties, pylons and seagrass meadows.

Under the EPBC approval conditions, syngnathids must be relocated to reduce the risk of harm from construction activities in the project area. This helps to avoid harm to individual syngnathids from damage to their habitat. Syngnathids are moved to carefully chosen release sites that closely match the conditions they need to survive, settle and behave naturally.

Release sites will be monitored in line with the approval conditions and the Syngnathid Management Plan. This plan, including the relocation method and site selection process, was prepared under the guidance of suitably qualified syngnathid specialists engaged for the project and is available on the project website.

Seagrass meadows and water quality

There are seagrass meadows located within Careening Bay and adjacent to Armament Wharf. These may be impacted – primarily from activities that may stir up marine sediment, like dredging, as well as inputs from stormwater run-off and potential fuel and oil spills.



Successfully relocated Western Australian seahorse

The Soil and Water Quality Management Annexure, part of the CEMP, documents the controls and procedures that are in place to prevent and reduce the risks of stormwater run-off from construction sites. This includes measures like silt fences and other barriers to prevent sediment washing from a construction site into a stormwater drain, as well as water quality monitoring.

To avoid and reduce impacts to seagrasses, maritime disturbance footprints have been reduced to the minimum area required for the work, and are bound by the conditions of approval for the project.



How do I find out more about the Project?



To find out more about the planned infrastructure works at HMAS Stirling you can visit www.defence.gov.au/srf-west, or email the Project team at srf-west.infrastructureproject@defence.gov.au.

