STAR OF THE SOUTH

ENVIRONMENTAL ASSESSMENT

BIRDS

UNDERSTANDING BIRDS

We've studied domestic and migratory seabirds, shorebirds along the Gippsland coast, and Bass Strait migrants that move between Tasmania and Victoria.

How we studied them

Researchers spent more than 4,600 hours surveying birds in and around the project area to understand how they use it and which species may be present, including:

- Aerial surveys with technology to record bird flight heights
- Boat surveys
- Shore surveys
- Satellite tracking of over 300 seabirds
- Monitoring breeding colonies on nearby islands

This work was supported by consultation and analysis of existing data sets to build a comprehensive picture.

What we found

Bass Strait is an important region for seabirds and there are key shorebird habitats along the coast.

Researchers recorded 35 seabird species in the wind farm area, including albatross, gannets, gulls, terns and Little Penguins. Short-tailed Shearwaters were the most numerous during breeding season.

Surveys along Ninety Mile Beach found 40 shorebird species, mostly at McLoughlins Beach. Only 14 were present at Reeves Beach.

Small numbers of Bass Strait migrants were seen, including White-throated Needletails and Swamp Harriers. The project area does not overlap with the main migratory corridor for endangered species like the Boobook Owl, Swift Parrot or Orange-bellied Parrot.

We've shaped the project to avoid and reduce risks to birds.

Here's a few examples:

- Selecting a site that avoids critical bird habitats and migration paths
- Designing turbines with extra space underneath for birds to forage
- Reducing turbine numbers from 400 to a maximum of 147
- Using only the minimum lighting needed for safety
- Installing the shore crossing underground to protect shorebird habitat
- Monitoring birds interactions and adapting if needed to keep impacts low.
- Positioning turbines at least 1 km apart to maintain clear flyways for birds moving through the area.

Some of these are explained further over the page.

Field work close up. Researchers travelled nearly 100 km offshore to find and tag Albatross. Using light-weight GPS tags which run on solar power and fall off when birds shed their feathers, we were able to see exactly where and how high these birds were flying 24/7 hours a day.

Scan the QR code to hear from Rohan about his bird surveys.

Tagging was undertaken by Monash University under animal ethics and state permits.

MINIMISING COLLISION RISK

We've designed the project to reduce the risk of birds colliding with turbines.

Our research shows that most birds in the project area fly low over the water - typically between 0.5 m and 10 m, with the vast majority of recorded flights below 35 m.

In response, we've increased the turbine 'air gap' – the space between the blades and the water to 35 m.

This creates a safe area for birds at the height they naturally fly at.

Predicting collision risk

Specialists used a well-established international modelling tool that estimates collision risk based on real-world data.

This model uses information from local surveys - such as how often birds fly through the area, flight height and speed to predict how many collisions could occur each year.

Because offshore wind is new in Australia, there is some uncertainty about how local species will respond. To manage this, we took a conservative approach, applying worst-case assumptions and overestimating bird numbers where information was limited.

For most species, the predicted number of collisions has no measurable effect on their estimated population size.

The project is not expected to affect the long-term health or survival of any bird species.

Modelling indicates that increasing the air gap will reduce potential collisions by 40% on average for all species, and by up to 70% for key species like the Shy Albatross.

Not to scale

Adapted from Smales (2017)

CHOOSING THE RIGHT LOCATIONS

We've carefully chosen the wind farm site and cable route to avoid key bird habitats and migration paths.

Where the cables come ashore at Reeves Beach, we'll use underground drilling rather than open trenching. This helps avoid disturbing the beach and dunes where shorebirds live and breed.

MANAGING LIGHT

Artificial light at sea can sometimes attract birds and affect their behaviour, causing them to become disoriented or land on the water or vessels.

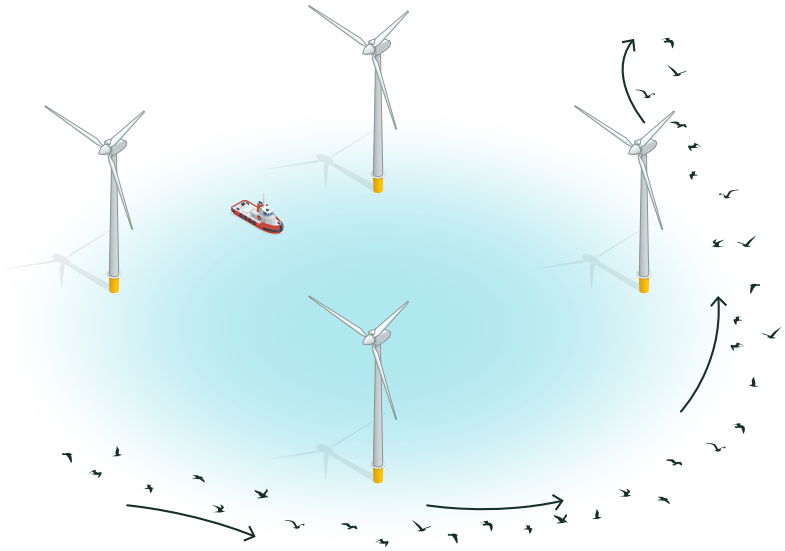
This is most relevant for burrow-nesting shearwaters, petrels, prions and storm-petrels, which are more sensitive to light.

To manage this, we'll:

- Use only the minimum lighting required for safety
- Implement a vessel artificial light management plan
- Monitor for birds onboard vessels
- Have a clear response plan to safely handle any birds that may become grounded on a vessel
- Use hooded lights where possible so light is not shining upwards.

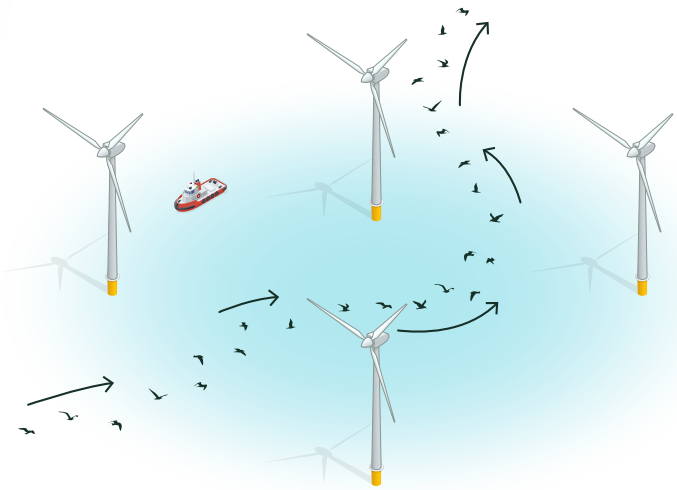
MICRO-AVOIDANCE

Birds fly in and around the turbines, avoiding the blades as they spin



MACRO-AVOIDANCE

Birds avoid the wind farm area entirely



MESO-AVOIDANCE

Birds avoid flying near turbines

How birds avoid turbines

Studies from around the world show that seabirds are very good at detecting and avoiding turbines.

Different species show different types of avoidance behaviour, as shown in the diagram above.

At the Aberdeen Offshore Wind Farm in Scotland, more than 10,000 bird flights were analysed over two years using cameras and sensors. No collisions or even near-misses were recorded. Originally, up to 8.5 collisions were expected per turbine each year at this wind farm. Recent studies suggest the real number is less than one.

Similar results have been found at other offshore wind farms.

Real-world collision rates are often much lower than models predict.

Further reading

Detailed information on this topic is available in Star of the South's environmental assessment documentation:

- EIS Chapter 12 – Ornithology and bats
- EIS Attachment IV- Seabird monitoring and management framework

LONG-TERM MONITORING

We'll monitor how birds in Bass Strait respond to the turbines and ensure impacts remain low over the life of the project.

1 Monitor

We'll use remote sensing technologies (such as cameras and radar) and expert field surveys to understand how seabirds interact with turbines.

2 Review and reassess

Each year, we'll review the monitoring data and compare it against original predictions. Independent experts will be involved to ensure the process is robust and transparent. If we see anything unexpected, like birds flying closer to turbines than predicted, we'll investigate further and reassess the level of risk.

3 Take action

If monitoring identifies a potential risk to bird populations, we'll take action. Actions could include increasing monitoring effort, trialling new technologies, or supporting conservation efforts such as habitat restoration or research.

This adaptive approach will ensure we remain responsive to protect birds and provide confidence that environmental outcomes continue to be met.

BIRD PROTECTIONS AND THREATS

Many bird species are protected under international, Australian and Victorian law.

In Australia, the biggest threats to birds are climate change and extreme weather, such as drought, fire and heatwaves. Other key pressures include invasive predators like cats and habitat loss. In comparison, the risk from turbines is extremely small.

Offshore wind will cut carbon emissions, helping limit the severity of extreme weather caused by climate change. This will support the long-term health of birds and the habitats they rely on at sea and on land.

About Star of the South

Star of the South is Australia's most advanced offshore wind energy project. It will harness strong and consistent Bass Strait winds to power 1.2 million homes, cut emissions and create regional jobs.

It includes:

- An offshore wind farm located in Commonwealth waters off the Gippsland coast
- A transmission system of offshore substations and underground cables to transmit electricity from the turbines to the grid.

A PROJECT BY
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We acknowledge the people of the Gunaikurnai nation as the original custodians of Country and pay respect to Elders past and present.