BIRDLIFE EAST GIPPSLAND

Submission on the

29 June 2026

Star of the South
Environmental Impact Statement/ Environmental Effects Statement

EPBC# 2020/8650

CONTENTS

1. RELEVANCE TO BIRDLIFE EAST GIPPSLAND

Birdlife East Gippsland is a branch of Birdlife Australia (which is in turn the national member of Birdlife International) covering members of Birdlife Australia in East Gippsland and Wellington shires in Victoria. We take the opportunity to speak for the birdlife of our region. The following comments consider only those aspects of the Star of the South Offshore Windfarm Commonwealth Environmental Impact Statement and the Victorian Environmental Effects Statement, which may impact on seabirds, international and Bass Strait migrants and resident shorebirds.

2. SUMMARY OF RECOMMENDATIONS

- As the construction of the Star of the South windfarm progress, ornithological studies should trace the direct impact of turbines on the precious southern ocean avifauna, perhaps utilising the camera systems deployed in North Sea studies and using weather radar to track migration routes.
- Acknowledge that Bass Canyon results are not strictly comparable to those in the wind farm area.
- Provide 'Population Pyramid' graphics for species flight heights, not just medians (and some ranges).
- Summarise any validation attempts elsewhere for the proposed risk minimisation strategies.
- Consider the benefits of painting one rotor blade in a distinguishing colour.
- Consider the potential to use weather radar to track migrating groups crossing Bass Strait (with possible species characterisation).
- Reduce the assumed measures of confidence in the migration flight paths and flight heights of unobserved palearctic species implied by listing them all as Low Risk, despite their flight paths being largely unknown and the fact that some migrate at night.
- Unproved flight paths for Bass Straight migrants and in particular that of Swift Parrots should not be relied upon for risk calculations.
- Far Eastern Curlew and Whimbrel fly low over water and frequently at night requiring a higher collision risk classification.
- Fairy, Little and Caspian Terns make breeding attempts in the area and should command a higher risk categorisation.
- Consider potential for aligning turbine distribution and shorter term rotor disposition to minimise the risks along known migration routes.
- A summary of the effectiveness of the light pollution management in other wind farms would be welcome.
- Consider how turbine bases might be made unattractive as perches for gulls, Black-faced Cormorants and other birds.
- The statement in Chapt. 12 p92 that '*collision risk is no greater that natural mortality*' implies that a 100% increase in species mortality is acceptable. Reword?
- That consideration be given to proactively mitigating any induced additional mortality by supporting state and volunteer bodies to improve management of the feeding and breeding areas of Corner Inlet and adjacent islands. Support for albatross mortality reduction initiatives in the southern ocean would also be a positive offset, as would support for Swift parrot conservation in Tasmania

3. INTRODUCTION

Birdlife East Gippsland welcomes the opportunity to comment on the Environmental Impact Statement: Star of the South Offshore Windfarm Project EPBC #2020/8650.

The sections of the EIS guidelines relevant to offshore ornithology and considered here are:

- Section 2.3 – Description of the proposed action and evaluation framework

- Section 2.6.2 – Listed marine species, migratory species, threatened species and ecological communities
- Section 2.7 – Relevant Impacts

  2.7.4 – Avifauna and marine mammal collision

  2.7.5. – Barrier effects of offshore infrastructure

We appreciate the important role of the Star of the South in the utilisation of offshore wind in the essential transition to renewable power source for Victoria and Australia more generally. As the most advanced project of its kind in Australia and the first to reach the stage of submission of a federal Environmental Impact Statement and Victorian Environmental Effects Statement, the information considered adequate for approvals at state and federal level are likely to set a precedent for further offshore wind farm projects under consideration. Naturally there will have been many other important considerations in the choice of this particular site for this windfarm. We are not commenting on these. However, many of the suite of shorebirds, seabirds and migratory birds in the area around the proposed wind farm site and through into Corner Inlet, where considerable shipping movement will be concentrated especially during the construction phase, are of considerable conservation significance. Although there has been twenty years of work on onshore and offshore windfarm impacts on birds, almost all of it has been in the northern hemisphere. Almost none of the species utilising the Bass Strait area which includes the windfarm, have been covered in these northern studies. It is for these reasons that we feel it appropriate to scrutinise the pioneering plans laid out in the Star of the South EIS/EES particularly closely.

Birdlife East Gippsland appreciates the very comprehensive literature and field study work undertaken by the Star of the South ornithological team, including the development of the risk assessment modelling and the proposed mitigating of foreseen impacts. Naturally none of this can be based on direct measures of impacts on local species of an operational offshore windfarm in the Bass Strait. The project team provided an exploration of the ornithological data in a Zoom call to Birdlife East Gippsland on 19 May 2026. The detailed report of the ornithological team is in Technical Appendix E of the EIS/EES statement and the findings are summarised in Chapter 12 of the main report, which then draws conclusions on the likely impacts, particularly on bird species listed as threatened to some extent under EPBC Act (inc, 2025 revision to regulations) listing and the Victorian Flora and Fauna Guarantee Act legislation (1988 and subsequent amendments in 2019). For each of these species a risk matrix has been presented in 24 tables. For all species and all impact and risk factors the risk is presented as no more than median (e.g. collision risks to Shy Albatross) and overwhelmingly presented as negligible to low. This submission is based around the information and conclusions presented in those two documents and focusses on the possible unintended safety effects for Australian birds.

4. Risk assessment matrix and collision risk methodology

Risk assessments: 35 bird species were recorded on the proposed windfarm site during the 26 months of ornithological surveys (see p15 of Technical Annex E). Many of these were relatively common and widespread species and were not subject to a more detailed assessment. Some species not seen but considered to be potentially present and of conservation significance,

were also assessed. The risk criteria cover all aspects of construction, operation and decommissioning. The weighting given to particular risk factors and to particular species are, of necessity, somewhat speculative. The risk matrix builds on a European Commission model in 2020 was most recently expanded for all potential Australian offshore and coastal wind farm areas in a detailed paper for DEECA by Reid and Baker (2025) and input from an expert workshop in Hobart in March 2025. That paper covered all 270 taxa (species and subspecies) including all migratory birds using marine areas. The methodology for risk described in this paper was essentially that used in the Star of the South studies, which predated the paper publication and was presumably developed in close collaboration with the paper's authors.

Given that the basic model structures were developed for norther hemisphere wind farms it would be useful to include a summary of any model validation work that has been carried out there.

Conclusions drawn re Bass Strait wind farms are discussed in the sections for Seabirds, International migrants, Bass Strait migrants and Resident Shorebirds.

5. Seabirds

Bass Canyon: Mention is made at various points in the EIS Submission of the parallel bird studies made at Bass Canyon just off the continental shelf in much deeper water. The striking boundary of abundance of sea at the continental shelf edge is well known. In particular albatross and other procellariforms are much more numerous there. That many oceanic species are more numerous than at the site of the windfarm clearly shows that preference. However, the survey methods used at the Bass Canyon appear to have differed dramatically from that at the farm site, with the use of berley to attract the birds. This is a standard birdwatching technique but it vitiates any numerical comparisons of species and individuals seen at the two sites. This should be acknowledged clearly and perhaps no emphasis should be placed on those comparative numbers, beyond acknowledging the much richer pelagic avifauna. Even the flight height data may be affected by the data collection method.

Flight Heights: Measurements made from boats and LiDAR agreed very well with each other, enhancing the confidence in both measures. Most species clearly spent most of their time quite close to the water surface (24 species of the 31 with height data had median flight heights below 15 m). However, figures in Chapter 12.2 give only median heights. It would be clearer to at least provide maximum heights, as in some places in the Technical Annex E. Far clearer still would be to include the graphics (shown to Birdlife East Gippsland in the Zoom presentation on May 19th) of all the data for each species in the form of population pyramid graphs, with height above water on the vertical axis and the proportion of measured individuals flying in each height category on the horizontal axis. If even a small percentage of the time of each individual bird was spent at heights over 35m this greatly reduces the significance of the median value.

The number of height observations made per species naturally differed with subject availability. However, to have any confidence in quoted medians there needs to be reasonable number of observations. The maximum median height given for any seabird was 35m for the Caspian tern, but there appears to be only one observation (Chapter 12: Table 12.2). Perhaps a minimum of, say, 30 observations should be used for the calculation of these important numbers which are so strongly linked to collision risk. Of the 31 species with median flight heights calculated, 12 medians were based on more than 30 observations and 15 on less than 15 observations.

Focussing in on those seabird species which have EPBC and/or FFG listings we find (Table 1) that of those 15 species, six had no height observations and only three had numbers of height observations which might be considered adequate for calculating means (Black browed Albatross 28, Shy-type Albatross 346 and White-faced Storm petrel 30).

Table 1: Australian conservation status of those of the 47 seabird species considered in the EIS as worthy of assessment against 18 risk criteria. Extracted from Chapt 12,Table 12.2 and associated text.

Species	Federal EPBC	Victorian FFG	# birds seen	# of flight heights measured	Median flight height
Wandering Albatross	Vu	Cr	3	0	
Southern Royal Albatross	Vu	Cr	?	0	
Black Browed Albatross	Vu	Vu	69	28	10m
Campbell Albatross	Vu		0	0	
Indian Yellow Nosed Albatross	Vu	En	27	7	5m
Shy-type Albatross	Vu	En	387	346	8m
Southern Bullers Albatross	Vu	En	6	5	6m
Southern Giant Petrel	En	En	?	0	
Northern Giant Petrel	Vu	En	16 (some may be Southern)	12	8m (Range 1-30m)
Soft plumaged Petrel	Vu		0		
White-faced Storm Petrel		En	25 *(sic)*	30	1m
Goulds Petrel	En		0		
Fairy Tern	Vu	Cr	?	5	14m
Little tern		Cr	?	9	15m
Caspian tern		Vu	?	1	35m

Only two species were considered endangered under EPBC classification and ten species vulnerable. The FFG has four species critically endangered in Victoria, six endangered and two vulnerable. Of those with a listing of endangered or critically endangered only the Shy albatross portion of the Shy-Type albatross (Shy and White faced), the Black-browed albatross and the White-faced Storm Petrel have significant numbers of flight height observations. Indeed, as mentioned, the Caspian Tern median . flight height appears to be based on a single record (35m)

Albatross and Giant Petrels: Reid and Baker (2025) list all the Albatross species (10 in all) as being at highest collision risk level in the Bass Strait area. They are very mobile when feeding on the continental shelf. Shy and White-capped Albatross appear to fly relatively close to the water surface resulting in Shy Albatross listed as at only Medium risk with 4 bird collisions/yr or 0.01% of Aust/NZ populations. The Medium risk is significantly affected by the Shy albatross's conservation rating. White Capped are much more numerous with modelled collision rates at 0.00001% of population per year. On the other hand, Giant Petrels were seen up to 30 m (only 12 height measurements). Given that nothing is known of the likely response of albatross and giant petrel to wind farms is it appropriate to label the risks as minor?

Black-faced Cormorant: The nearest breeding is at Notch Island, putting the wind farm within foraging range. To avoid casualties it may be good to make the turbine bases as unattractive as possible as perches or even breeding platforms given that 3% of flights are over 35m.

Smaller Petrels: Only the White-faced Storm Petrel was recorded in the surveys, making any generalisations as to behaviour very doubtful.

Little and Fairy terns: are both listed in Victoria as critically endangered, with Fairy tern listed as vulnerable nationally. The EIS/ EES documents conclude that they are not threatened from windfarm activities because major breeding colonies for Little terns are in WA and Fairy terns in SA Little Tern collisions are modelled at only 1.69 bird collisions / yr and therefore at Low risk. However, both they and Fairy and Caspian Terns continue to make breeding attempts in the islands around Corner Inlet and the Victorian government continues to expend considerable energy and resources on their conservation, for example by sand island renourishment in the Gippsland Lakes. Given that these three species were observed on the wind farm site, they deserve much closer attention in the EIS/EES documents and a higher risk ranking.

Barrier Effects:

The turbine spacing plan at 1.25 turbines per square Km is an important initiative and may very well reduce mortality on the wind farm. However, the complete lack of a yardstick against which to measure the likelihood of a negative barrier effects of the windfarm as a whole or individual units within it, can it confidently be said that (even allowing for the proposed spacing) that, for all 52 species assessed, the barrier effect is negligible?

Collision avoidance : Birds could avoid the whole wind farm site or turbines within it or blades within the turbines, but it is impossible to know for local species at present. That does not justify the assumption that much of the potential impact will be reduced by birds taking these avoidance measures.

Attractiveness:

The potential attractiveness of the turbines and their bases, especially for Gannet, Gt Crested Tern, Gulls, Black-faced Cormorant (modelled at 5.92 collisions/yr) and perhaps Little Penguin, is waved away as minor. For the flying species this might need some active discouragement of the birds from using the pylon bases. There must be oil rig models which would help clarify this.

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Notes relevant to the EIS and the Victorian EES

6. International Migrants

Corner Inlet is both a Ramsar site and a Marine National Park, with a Parks Victoria overlay specifically to shield vulnerable saltmarsh and migratory bird habitat from human and vehicular disturbance. Nearly 25% of the total Victorian shorebirds are found there. Corner Inlet records 35 waterbird species listed under international migratory bird agreements, with 26 of those species being palearctic migrants arriving down the East Asia- Australian Flyway. Critically

endangered Far Eastern Curlew, Curlew sandpiper and Great Knot utilise the area. Red Knot and Ruddy Turnstone have FFG endangered listing while Pacific Golden Plover, Red Knot and Ruddy Turnstone have EPBC vulnerable listings. The area also holds >1% of Australian Pied Oystercatcher, Sooty Oystercatcher, Red-necked Stint and Bar-tailed Godwit, among the >20,000 water and shore birds annually utilising the site. Fairy, Little and Caspian terns have all made nesting attempts in the Inlet including in recent years.

Part of the area is already heavily utilised by the offshore oil and gas industry but is vital that the construction and operational activities of the windfarm do not exacerbate the pressure on the resident and migratory shorebirds of the area. Direct turbine risks are largely unknown. Of transiting migratory waders, only a single Ruddy Turnstone was seen in the windfarm area during survey work, making assessment of the flight paths and collision risks very difficult.

Sanderling, Grey Plover and Bar-tailed Godwit were seen leaving the Corner Inlet feeding grounds on presumed migration flights. They apparently rose swiftly to depart at a flight height of c. 600m or more, which not unusual for migrating waders. However, Far Eastern Curlew are known to migrate over water at an average height of 156m with similar results for whimbrel, although there are records of flights over 4,000m (Gabait *et al* (2021). These species frequently migrate at night and must be classified as significantly at risk from wind turbines.

The Submission lists all migratory waders as low risks of collision. The rationale is not entirely clear, given that flight paths and heights are largely unknown and migration may occur at night for some species.

7. Bass Strait Migrants

Twenty eight species of known Bass Strait migrants were considered as potentially crossing the wind farm area. All were categorised as having a low or negligible prospect of occurrence on the farm area. This was mostly an expert panel decision. Of the four species actually seen in the wind farm area (Welcome Swallow, Flame Robin, Silvereye and White-throated Needletail) only the Needletail had threat listings – vulnerable on both the EPBC and FFG lists. The only other species on the list of potential migrants with threat listings were the three migratory parrots, Swift Parrot and Orange bellied Parrot (Critically endangered on both lists),and the Blue-winged Parrot (vulnerable on the EPBC list). The prospect of Orange-bellied Parrot passing through the wind farm area was deemed negligible (breeds in western Tasmania) and of Swift and Blue-winged Parrots to be low. Swift Parrot (not able to be bred in captivity) is the most immediately ugent conservation concern

Swift Parrot: Corner inlet is listed as containing feeding habitat for Swift Parrot and there are records of the species in that area. Reid and Baker (2025), looking specifically at the coastal Bass Strait area (as opposed to offshore), recorded the highest risk score to Swift Parrot. Two Swift Parrots were recorded at Woodside beach, on 90 Mile Beach opposite the wind farm site, during the Star of the South surveys of shorebirds on 90 mile Beach. There are Birdata records from Box Bank and more recently a 2024 record from Sunday Island, which sits close to the entry to Corner Inlet. From there, there are a scattering of records up the coastal area to Lakes Entrance and the well known Swift parrot sites on Raymond island, which have received numbers of Swift parrots travelling both from and to Tasmania every year for at least the last eleven years. These sites are not *en route* from eastern Tasmania to the inland box-ironbark forests of Victoria. The EIS/EES suggests that the flight route from eastern (and some northern)

breeding sites in Tasmania is likely to be through the chain of islands through the Furneaux group to Wilson's Prom. Although there are some land records on that route, there seems to be no compelling evidence for it being the main or only route. A more likely hypothesis would be that they migrate directly, given their annual appearance in numbers at Raymond Island (frequently being the first records for Victoria in the autumn), staying for a few days and then passing on. Overland movements are recorded as being just below the tree canopy. The flight height over sea is unknown. The Statement considers this as low risk, but there is not really enough information for any assessment of migration routes or wind turbine collision risks, although flight speeds through trees on windy days might suggest the capacity to avoid turbine blades.

The Swift Parrot Recovery Plan lists collision with human artifacts (fences, buildings, even cars) as significant risks to Swift parrots and reducing that impact is an objective of the National Recovery Plan for Swift Parrot. The Matters of National Environmental Significance Guidelines – Significant Impact Guidelines 1.1 state that '*The project will not interfere substantially with the recovery of the species'*. Given the rarity of Swift Parrot, the fact that the parrots move and feed in flocks, that the flight routes to East Gippsland are not established and the struggle to aid Swift Parrot recovery, it would be appropriate to acknowledge this with a higher risk rating than in the current documents.

This analysis may well be considered to also apply to the Blue-winged parrot, whose flight routes from Tasmania also remain unclear. 15 were seen at McGauran's beach in 2020.

Before dismissing the probability of these parrots making direct flights from Tasmania to sites on the East Gippsland coast we should take note of the unexpected results in the 2025 paper on the migration flights of Tasmanian Boobook (Zhou *et al* 2025) from Victoria to Tasmania which proved to be made in one journey, with no island hopping, and in so doing flew across a Bass Strait area earmarked for future wind farms.

8. Resident Shore Birds

***Reeves Beach*:** Near where the connector cables are proposed to cross the foreshore at Reeves Beach, the Star of the South ornithological team recorded Hooded Plover, Red-capped Plover and Masked Lapwing which are present on 90 mile beach year round. The breeding shorebirds on the beaches of the area which are of conservation significance are Hooded Plover (Vulnerable under the EPBC and Victorian FFG Acts) and Sooty Oystercatcher (Near Threatened (Advisory) in Victoria). Although these species are recorded breeding around the Corner Inlet and Wilsons Promontory in the south and further up 90 mile beach nearer Paradise Beach, the profile of the beach at Reeves Beach is steep and there is high wave action. One pair of non-breeding Hooded Plover were seen at Reeves Beach during the 2020-2022 surveys. These species have not recently been found breeding close to that site during the Birdlife Shorebird surveys and are unlikely to be significantly impacted.

Close inland from Reeves Beach, the shoreline surveys identified Fork-tailed Swift, White-throated Needletail, Gang-gang and Latham's Snipe as potentially at risk during the construction phase. Those risks would seem to be no higher than with any other construction work in the area. Swift Parrot and Blue Winged Parrot, also identified in the area, are probably more at risk in the course of getting from Tasmania to the site and back (see above) than once they have made a shore landing.

Post the construction phase, the intention is to bury cables and subsequent power lines connecting with the Latrobe valley power distribution systems. The risk of ongoing disturbance of threatened species will be very small and even in the construction phase would be unlikely.

Corner Inlet: The inlet lies only 7km from the wind farm site and holds nine species, resident and migratory) listed under EPBC (5 vulnerable, one endangered and three critically endangered). In addition. Hooded Plover, Sooty Oystercatcher, Red-capped Plover and Masked Lapwing all breed in the islands and shores around Corner Inlet. They are another cohort, along with the migratory waders, which could be impacted by oil spills or other major disturbance around the construction sites and transport channels.

9. MITIGATION ACTIVITIES

Proposed and Appreciated:

- Increase of the bottom of blade height to 35m. Modelling by Johnston *et al* (2014) estimated very substantial reductions in collision mortality. This is especially important for dynamic soarers using shear forces at low heights above water for energy conservation, and therefore flying at lower than 30m. Estimates from the current programme suggest an average of 40% collision risk reduction, including highr figures of 58% for Gannet and c.70% for Wandering Albatross and Shy-type Albatross, Great-crested Tern and Black-faced Cormorant.
- Spacing down to 0.25 turbines/square Km and a minimum spacing of over 1Km
- Reducing light spill from Turbines and vessels would be valuable for prions (esp Fairy prion, Common diving Petrel, Short-tailed, Huttons and Fluttering Shearwater but perhaps less so for night migrating shorebirds. The commitment to follow the National Light Pollution Guidelines for Wildlife is welcome. It is perhaps unlikely that 147static yellow light sources for turbines and 147 red flashing light for aviation will have no impact on bird movement. Impacts of lights should be part of the Seabird Monitoring and Management Plan with an evaluation in the current EIS submission of how such practices have worked elsewhere.
- Propellor guards for smaller service vessels
- Reducing impact of noise on diving birds especially in construction, by slow starts to pile driving and bubble curtains.
- Reducing construction noise impacts by soft start pile driving and bubble curtains.
- Seabird Monitoring and Management Plan implemented as the project evolves.

Additional proposals:

- Consider the potential for aligning turbines, or swinging rotors, to minimise collision risks for species such as Bar-tailed Godwit and Eastern Curlew which have reliable predictable migration pathways.
- Explicitly consider the possible avoidance benefits of painting one rotor red or black to reduce avian fatalities (May et al 2020)
- Summarise the literature on validation of the efficacy of the proposed mitigation measures and identify what validation work could be done for Star of the South.

- Consideration needs to be given to how any significant adverse effects identified in the Seabird Monitoring and Management Plan could be offset.
- Collision modelling – said to be used as a modification of a system utilised elsewhere. Include in the EIS any validations anywhere, of the method of calculating collision risks?
- There is the potential to now use weather radar to track groups of birds crossing Bass Strait. This could be tested now, even before construction work commences
- Given the uncertainties around offshore wind farm impacts on birds, Star of the South should perhaps consider precautionary offsets. Support could, for example, be given to efforts to reduce Swift Parrot mortality in Tasmania. Efforts to reduce albatross mortality in the southern ocean. Closer to home, help could be provided for the education of the general public and of fishermen, in the responsible management of the Corner Inlet habitat.

10. CONCLUSION

The concluding section of Chapter 12 of The EIS main document states that '*the Star of the South offshore windfarm is unlikely to have significant impacts on seabirds, shorebirds or Bass Strait migrants including EEPB and state FFG listed species and Commonwealth listed migratory species, nor the Commonwealth marine environment in which they occur'.*

Despite the very considerable amount of excellent work caried out on these issues, this statement appears difficult to justify in the absence of any capacity to verify the direct impact on any of those species for which there is no comparable data available (which is almost all of them, including all the albatross species). Increasing the turbine spacing and raising the lowest blade height above the water, are very positive (and no doubt expensive) mitigation measures. Likewise the confident statements that the very heavy construction and operation traffic will have no addition effect through collisions, oil leaks and light and sound pollution, seems over-stated.

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