

In the matter of Golden Plains Wind Farm

Permit Application No. PA170266

Planning Panels Victoria

Proponent: Westwind Energy Pty. Ltd.

Expert Witness Statement of Ian John Smales

Expert of Westwind Energy Pty. Ltd.

1 Name and address

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2 Area of expertise

- (a) I hold the degree of Master of Science from the University of Melbourne. My Masters dissertation was on the demography of a critically endangered bird, the Helmeted Honeyeater.
- (b) Since 1978 I have been professionally engaged in management, research and assessment of south-eastern Australia's fauna.
- (c) For the term of its work I was a member of the Scientific Advisory Panel to the South-West Victoria Brolga Research Project.
- (d) Since 2003, I have been involved in the assessment of potential or actual impacts on birds and bats of more than 35 commercial-scale wind energy projects.
- (e) I am the author of a chapter entitled *Vulnerable species – modelling of collision risk and populations as mitigation tools* in the work *Wildlife and Wind Farms: conflicts and solutions* (2017 Pelagic Publishing, Exeter U.K.).
- (f) I am senior author of *Appendix D Birds and Bats* of the *National Wind Farm Development Guidelines Public Consultation Draft* (Environment Protection & Heritage Council, Commonwealth of Australia October 2009).
- (g) I have the lead role in development and application of the Biosis Deterministic Collision Risk Model used for assessing potential risks of wind turbine collisions for birds. A description of the model was published in the international peer-reviewed literature 2013. I have applied the model to assessment of potential risk for numerous bird species for wind farms proposed and in operation in Victoria, South Australia, Tasmania, Queensland and Fiji.
- (h) My qualifications and experience are further detailed in Annexure A.

3 Scope

3.1 Instructions

I was commissioned by Westwind Energy Pty. Ltd. (Westwind) to provide a peer review of the report *Golden Plains Wind Farm – Environment Effects Statement - Brolga Impact Assessment Report No. 16064* ('BL&A Brolga assessment') prepared by Brett Lane & Associates for Westwind and appended to the EES.

I have since been engaged by White and Case, acting for Westwind, to prepare this witness statement and to:

- (a) formally adopt the information and opinions contained in my review; and
- (b) address submissions on the EES that are relevant to my area of expertise and respond to any relevant matters.

3.2 Process and methodology

I am solely responsible for preparation of the review and this statement.

I undertook a review of the BL&A Brolga assessment in an iterative manner. I reviewed and provided comments on four versions of the report (versions 2.9; 2.10; 2.12 and 2.13). In each iteration of the review process I provided comments on specific items, to which Brett Lane & Associates provided responses and/or addressed them in subsequent versions of the report. I have three remaining comments that I believe are worthy of consideration.

My review was focussed on the methods used by Brett Lane and Associates in undertaking their investigations and assessments. I gave particular attention to guidance for methods and processes for investigations of Brolgas and of potential impacts on the species of wind energy facilities, as set out in:

- *Scoping Requirements for Golden Plains Wind Farm Project Environment Effects Statement* (December 2017); and
- *Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population 2011, Revision 1 (Brolga Guidelines DSE 2012)*.

I also took account of the following legislation and government policies:

- *Ministerial Guidelines for Assessment of Environmental Effects under the Environmental Effects Act 1978* (7th Edition, DSE 2006)
- *Policy and Planning Guidelines Development of Wind Energy Facilities in Victoria* (DELWP November 2017)
- *Flora and Fauna Guarantee Act 1988*
- *Environment Effects Act 1978*.

The Brolga is not listed under any provision that constitutes a matter of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act is thus not relevant to the assessment of impacts on Brolgas.

The brief from Westwind for the review pertains particularly to how the BL&A Brolga assessment addresses the *Scoping Requirements for Golden Plains Wind Farm Project Environment Effects Statement*. My knowledge of the Golden Plains Wind Farm site does not extend to specifics such as the values of individual wetlands or measured rates at which Brolgas utilise the site.

I have read submissions to the Golden Plains Wind Farm EES Planning Panel related to Brolgas and provide comment on aspects relevant to my area of expertise.

4 Findings

4.1 Summary of opinions regarding the BL&A Brolga assessment

My review of the BL&A Brolga assessment is contained in a letter report dated 3rd April 2018 entitled *Peer review of investigations of Brolga by Brett Lane & Associates for Golden Plains Wind Farm*. I adopt the report as the basis for my expert witness statement and evidence in relation to BL&A Brolga assessment.

A summary of my findings is provided here.

I consider that overall the BL&A Brolga assessment has addressed items related to potential effects on the Victorian Brolga population as specified in *Scoping Requirements for Golden Plains Wind Farm Project Environment Effects Statement* (December 2017).

The *Brolga Guidelines* set out a three tiered approach that should be followed for such assessment, with each successive tier being triggered by specific findings of the preceding level. All three levels were triggered by the proposed Golden Plains Wind Farm and the BL&A Brolga assessment addresses all three of them.

The BL&A Brolga assessment outlines the quantitative modelling process they used to estimate Brolga mortalities that may occur due to collisions with turbines at Golden Plains Wind Farm and the subsequent population viability analysis used to ascertain a level of mitigation necessary to achieve zero net impact from this cause on the Victorian Brolga population. The methods followed in the BL&A Brolga assessment for Golden Plains Wind Farm to ascertain both a level of potential impact from mortalities and to determine the level of mitigation required to achieve zero net impact on the Victorian Brolga population are consistent with the methods set out in the *Brolga Guidelines*.

Consideration is made in the BL&A Brolga assessment of specific sites where measures might be taken to offset potential impacts of Brolga collision mortalities that may occur at Golden Plains Wind Farm. I recognise that prior to operation of the wind farm or the implementation of offset measures, the level of potential impact and of mitigation measures can be evaluated only on the basis of informed prediction and experience at existing operational wind farms in similar environments. To the best of my knowledge, to-date there has been no documented instance of a Brolga collision with a wind turbine in Australia, but risk modelling suggests that a low rate of collisions may occur. In my view, the offset measures proposed by the BL&A Brolga assessment have capacity to achieve the required zero net impact on the Victorian Brolga population, particularly if applied in an adaptive management approach.

If this is achieved then Golden Plains Wind Farm will not contribute to a cumulative impact on the Victorian Brolga population.

In my view the BL&A Brolga assessment for Golden Plains Wind Farm provides information that permits potential impacts on the Victorian Brolga population to be evaluated against relevant Victorian legislation and government policies. The BL&A Brolga assessment is of a level similar to that which has been provided for assessment of the species for EES decision processes for similar wind energy facilities in Victoria.

The following three aspects remain as comments from my review of the BL&A Brolga assessment.

Turbine-free buffer distances from breeding sites

The BL&A Brolga assessment (section 4.4) notes that determining the size of turbine-free buffers to remove any significant impact on Brolgas within their breeding home ranges, was informed by observations of the movements of breeding Brolgas at Macarthur Wind Farm since 2012 and breeding home range mapping prepared by Biosis in EES referrals for Peshurst and Mount Fyans Wind Farms.

The BL&A Brolga assessment notes that whereas the *Brolga Guidelines* provide for a 300-metre additional disturbance buffer between turbines and breeding or flocking site home ranges, findings at Macarthur Wind Farm indicate that this is unlikely to be required as the Brolga is not disturbed by operating wind turbines. I recognise that empirical evidence from Macarthur Wind Farm is informative but, as yet, I consider it remains a limited basis for understanding aspects such as appropriate turbine buffer distances for Brolgas.

With regard to Brolga breeding home-range mapping and the subsequent consideration of turbine-free buffer distances from breeding sites undertaken by Biosis for Peshurst and Mount Fyans Wind Farms, I note that these resulted in recommendation of turbine-free buffers with a total radius of 1133.8 m for each breeding site.

Collision risk assumptions

The BL&A Brolga assessment (section 4.4.3) details some aspects that may have added conservatism to assumptions used in the risk modelling. I note that there are aspects of the Band collision risk model used in the assessment that add further conservatism. A significant factor is that it assumes that every flight approaches a turbine at 90 degrees to the plane of the rotor-swept disk, i.e. from the angle that exposes every flight to the maximum possible area of sweeping blades, rather than the real situation in which a bird can approach a turbine from any possible angle. In combination the various sources of conservatism could mean that the results of the collision risk modelling are a substantial over-estimate.

Collision risk results

Appendix 5 of the BL&A Brolga assessment (Symbolix Collision Risk Modelling report) is clear that the metric of the collision risk model is the number of Brolga flights that are at risk of collision per annum, not the number of birds that may be involved in collisions. This distinction between flights-at-risk and individual birds-at-risk is not clear in the body of the report. I consider the difference is important to a correct understanding of the collision risk assessment.

4.2 Consideration of submissions

As with my review, my consideration of submissions is focussed principally on aspects related to the methods used in the BL&A Brolga assessment.

Submissions I have been provided with that raise matters related to Brolgas are numbers PP19/EES03, EES07, EES09, EES11, PP15, EES16, PP24/EES22, PP04 (DELWP) and PP27. The majority of submissions that are concerned about potential effects on Brolgas do not raise concerns about the methods used in the BL&A Brolga assessment. Some others draw attention to Brolga usage of particular wetlands or other specifics that are outside my knowledge of the site.

Submission PP19/EES03 raises a variety of concerns about the BL&A Brolga assessment and generally about assessment and monitoring of Brolgas by the wind energy industry in Victoria. The submission lacks reference to sources or literature citations and the great majority of it lacks detail sufficient to permit response. However, there is one point about which I have specific information as it relates to work undertaken by Biosis Pty Ltd. The submission lists a number of sites where it says that Brolgas had multiple successful nesting sites within five kilometres prior to commissioning of a wind farm and that there has been a complete absence of successful breeding in that zone since. Morton's Lane Wind Farm is included in the list. I have found no records of the species ever having bred within five kilometres of Morton's Lane Wind Farm in any Brolga breeding data (DELWP; Birdlife Australia and the Sheldon database) and neither are there any records of wetlands suitable for Brolga breeding within that zone.

Submissions PP19/EES03, PP15 and PP04 (DELWP) question the distance from Brolga breeding wetlands proposed as turbine-free buffers by the BL&A Brolga assessment. The *Brolga Guidelines* note that,

“In the case of breeding habitat “turbine siting would be used to exclude any significant reduction in breeding success caused by turbines” (Brolga Scientific Panel (2008). This will be achieved by establishing turbine-free areas around all potential Brolga nesting sites sufficient to have no significant impact on the likelihood of successful reproduction.”

The *Brolga Guidelines* further say,

“As a general recommendation, these guidelines recommend that a 3.2 km and 5 km radius turbine-free buffer from breeding sites and flock roost sites respectively, will adequately meet the objectives set for these habitats. However, recognising that the spatial requirements of Brolgas are not well understood, a proponent may propose reduced buffer areas providing that they can be shown to meet the objectives set for breeding and non-breeding habitats. Proposed buffer distances should meet with the satisfaction of DSE”.

The BL&A Brolga assessment has proposed a reduced buffer distance from breeding wetlands and has set out a rationale for doing so. I note that turbine-free buffers are intended to be “sufficient to have no significant impact on the likelihood of successful reproduction”. The buffer distance proposed is smaller than has been proposed for previous wind energy facilities within the range of Brolgas in Victoria. While some information about the response of Brolgas to the proximity of turbines is now available, particularly from experience at Macarthur Wind Farm (Wood 2013; 2014), at present the empirical basis for understanding the influence of buffer distances remains limited.

The potential for cumulative effects of multiple wind farms on the Victorian Brolga population is raised in general by submission EES16 and specifically by DELWP submission PPO4. In regard to cumulative impacts the *Scoping Requirements for Golden Plains Wind Farm Project Environment Effects Statement* require that the EES should:

“Assess the potential cumulative effects on listed species, in particular Brolga, from the project in combination with other wind energy facilities.”

A footnote (7) says:

“In order to assess cumulative impacts the EES needs to identify surrounding wind energy facilities that: (a) are operational; (b) have been approved; (c) have been referred under the Environment Effects Act 1978; and/or (d) are the subject of planning permit applications under the Planning and Environment Act 1987”.

This indicates which other wind energy projects to include, but it does not define how such an effect could or should be measured or addressed. Nonetheless, management of cumulative impacts is the stated overall objective of the *Brolga Guidelines* and it sets out the method to achieve this by the requirement that each wind farm within the range of Brolgas in Victoria should have a zero net impact on the Brolga population. If an impact does occur, mitigation measures must be taken to ensure that each wind farm achieves a zero net impact. This guidance has been applied to all wind energy projects within the range of the Victorian Brolga population that have been subject to approval since the publication of the *Brolga Guidelines*. In this manner application of the *Brolga Guidelines* is intended to result in no cumulative impact on the Victorian Brolga population.

Turbine collisions are a direct form of impact that is measureable, but to the best of my knowledge no Brolga mortalities due to turbine collisions have been documented to-date in Australia, despite regimes of searches aimed at detecting them that are in place as conditions of permits for relevant wind farms. Other, possible indirect impacts are discussed in the *Brolga Guidelines* and in the DELWP submission. They are the potential effects of habitat avoidance due to disturbance and ‘barrier’ effects on Brolga movements. With regard to disturbance, the *Brolga Guidelines* prescribe measures to avoid these by the application of turbine-free buffers on breeding and flocking habitats. Barrier effects may occur but a number of studies of cranes in the U.S.A. indicate that very large numbers of migrating cranes move through and around large wind energy facilities with little or no indication that their movements are impeded (Derby *et al.* 2013; Nagy *et al.* 2013). Whilst based on a relatively limited amount of data, Wood (2014) says that turbines at Macarthur Wind Farm site do not appear to deter Brolgas from utilising existing habitat there and that turbines there do not appear to significantly obstruct their flight paths.

In order to ascertain whether wind energy has indirect effects on Brolgas and that these accumulate to have an impact on the Victorian Brolga population, it would be necessary to distinguish such effects from multiple other influences on Brolga behaviours; to accurately quantify them and to determine that they are actual causes of impact on the population. I consider that would be extremely difficult to achieve and I do not consider it to be a realistic prospect. I am not aware of any guidance that has been provided by DELWP about how to quantify possible indirect effects on Brolgas.

Taking into account that prior to operation of a wind farm or the implementation of offset measures, the level of likely direct or indirect impact can be evaluated only on the

basis of informed prediction, the BL&A Brolga assessment has determined a predicted effect of Golden Plains Wind Farm on the Brolga population and has set out specific measures intended to achieve a zero net impact on the Victorian Brolga population. In respect of off-sets for potential impacts of the wind farm on Brolgas, the BL&A Brolga assessment has considered specific sites where measures might be taken to obtain off-sets. To the best of my knowledge, this is notable as the first instance where this has been done in detail during the pre-approval phase for a wind farm in Victoria.

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5 Declaration

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Planning Panel.



19th July 2018

Annexure A - Curriculum Vitae of Ian John Smales

Position

Principal Zoologist, Biosis Pty. Ltd.

Qualifications

MSc. University of Melbourne

Professional associations

Member: IUCN Species Survival Commission, Re-Introduction Specialist Group

Member: Australian Society of Herpetologists

Past Member: Helmeted Honeyeater National Recovery Team (1989 - 2016)

Past Member: Orange-bellied Parrot National Recovery Team (1994 – 2003)

Past member: Scientific Advisory Panel to the South-West Victoria Brolga Research Project

Honorary Life Member: Friends of the Helmeted Honeyeater (bestowed 2015)

Employment history

2013–present	Principal Zoologist, Biosis Pty Ltd
2003–2013	Senior Consultant Zoologist, Biosis Research Pty Ltd
1990–2003	Conservation Biologist, Conservation and Research Department, Zoological Parks and Gardens Board of Victoria
1989	Contractor to Department of Conservation and Environment, Victoria for establishment of Recovery Team for the Helmeted Honeyeater.
1978–1987	Fisheries and Wildlife Division, Victoria (subsequently Department of Conservation, Forests and Lands).

Professional Experience:

Ian Smales, Principal Zoologist with Biosis Pty Ltd has forty years of professional experience in wildlife research and natural resource management with the public and non-government sectors. He has been with Biosis since 2003. Ian has broad field expertise investigating the ecology, distribution and habitat requirements of Australian vertebrate fauna and has undertaken comprehensive research projects for birds and reptiles. Ian has authored or co-authored more than sixty scientific papers and consultant reports in those fields.

Ian's career has included periods with the Wildlife Management Section of Victoria's former Fisheries and Wildlife Division (1978 - 87) and as Conservation Biologist with the Zoological Parks and Gardens Board of Victoria (1990 – 2003). He has been involved with research and management for threatened fauna throughout his career and has been a long-standing member of the national recovery teams for the Helmeted Honeyeater and the Orange-bellied Parrot.

Ian has designed and managed numerous flora and fauna assessments for multiple development projects including a number of major Government infrastructure projects.

Ornithology

Ian's research on birds has encompassed population biology and his MSc dissertation is entitled "Population ecology of the Helmeted Honeyeater *Lichenostomus melanops cassidix*: long-term investigations of a threatened bird". It was based on his 20-year study of this critically

endangered bird. He has investigated bird abundance, habitat use and behaviours at numerous sites for woodland birds, shorebirds, raptors, owls and almost all other Australasian taxonomic groups. Ian has designed and led long-term investigations of bird and bat utilisation of many wind energy facilities throughout all eastern Australian states and in Fiji.

Wind turbine collision risk

Under Ian's management Biosis has led the development in Australia of numerical modelling of potential risks of bird and bat collisions with wind turbines. Biosis owns the only proprietary Avian Collision Risk Model developed in Australia for this purpose and it has been used for approximately 30 proposed wind energy projects in Australia and by authorities including the Commonwealth of Australia. Ian is the senior author of the 2013 description of this mathematical collision risk model published in the U.S. journal *Wildlife Society Bulletin*. He presented a paper on cumulative risk assessment at the first world conference on wind energy and wildlife in Trondheim, Norway in 2011 and was a member of the organising committee for the first Australian conference on the subject held in Melbourne in 2012. Ian was invited to prepare a chapter entitled *Vulnerable species – modelling of collision risk and populations as mitigation tools* in a two-volume international book on all aspects of wind energy and published in the UK in 2017.

Expert witness experience

Ian has provided expert witness evidence to a range of statutory planning hearings. These have included State-significant projects evaluated under Environment Effects Statements (Victoria) for the Victorian Long-term Storage Facility proposal, the Victorian Desalination Project, Sole Gas Extension and Wyndham Harbour Development.

He has provided expert evidence related to wind farm collision risk for various bird species for statutory hearings for multiple major wind energy projects.

Publications

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