

Mitigating potential impacts to Brolga at proposed Victorian Wind Energy Facilities

Mark Venosta, Biosis NZWEA 2014

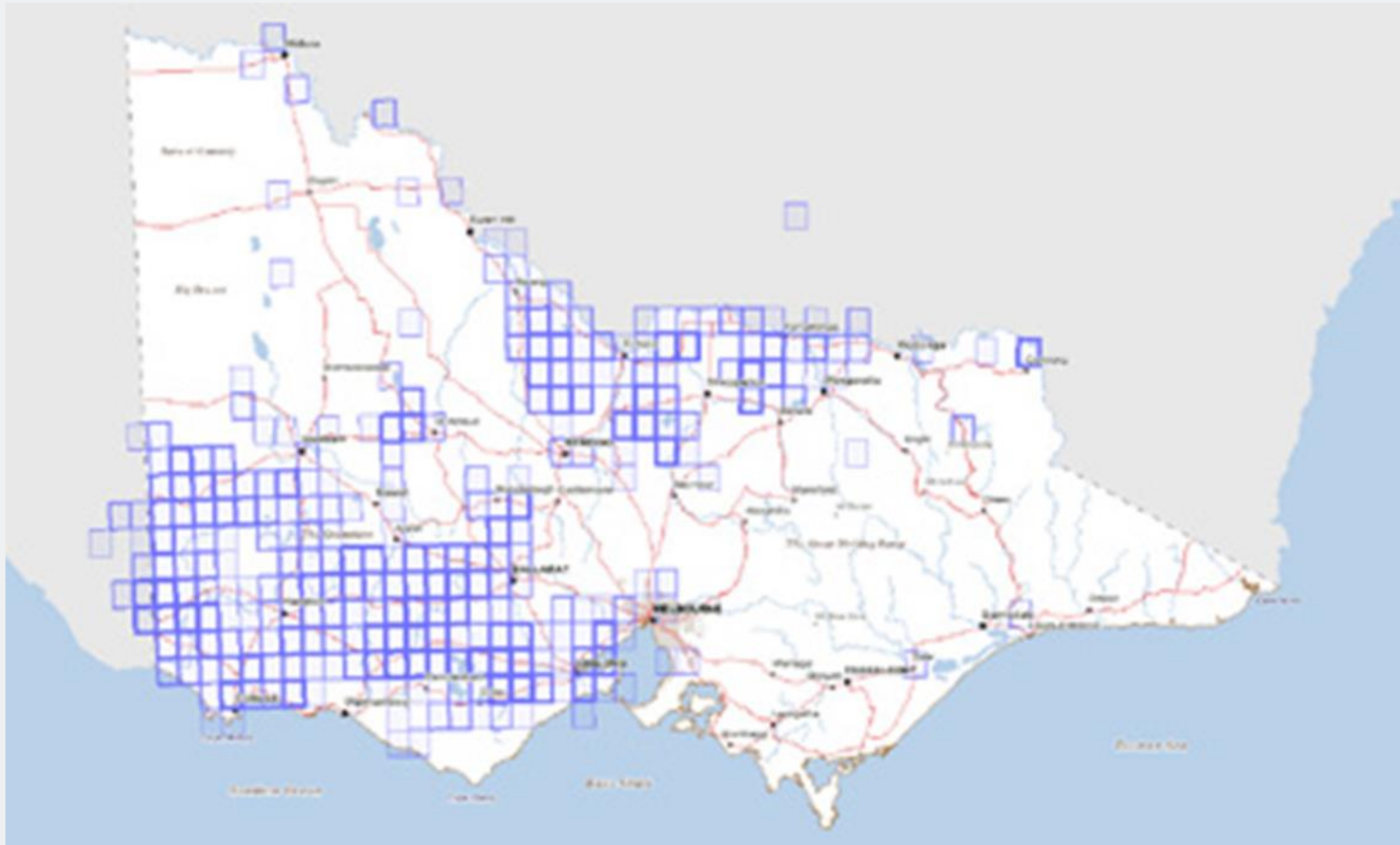


Presentation overview:

Why assess Brolga impacts?

- Prone to collision with power lines
- Turbines also?
- Threatened in Victoria, <1000 birds
- Historic wetland draining
- Range coincides with wind resource Vic/SA
- Species specific WF guidelines exist





Broilga distribution in Victoria (DEPI 2011)

State assessment guidelines

Released 2011

- Scientific Panel established
- Aim to avoid cumulative impacts
- Achieve zero net impact on population
- Guidelines used when Brolga or habitat is identified
- Breeding sites and flocking sites highlighted
- 3.2km & 5km breeding & flocking buffers
- Option to reduce buffers based on evidence
- Assessment approach based in risk level

Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population 2011

Revision 1 February 2012



Biosis assessments

2 sites in SW Victoria

- 2 sites proposing approximately 200+ turbines each
- On geologically recent volcanic flows
- Numerous shallow wetlands
- Previous Brolga records
- Both within proximity of flocking sites
- Both support breeding sites



Biosis assessments

Habitat assessment (Level 1&2)

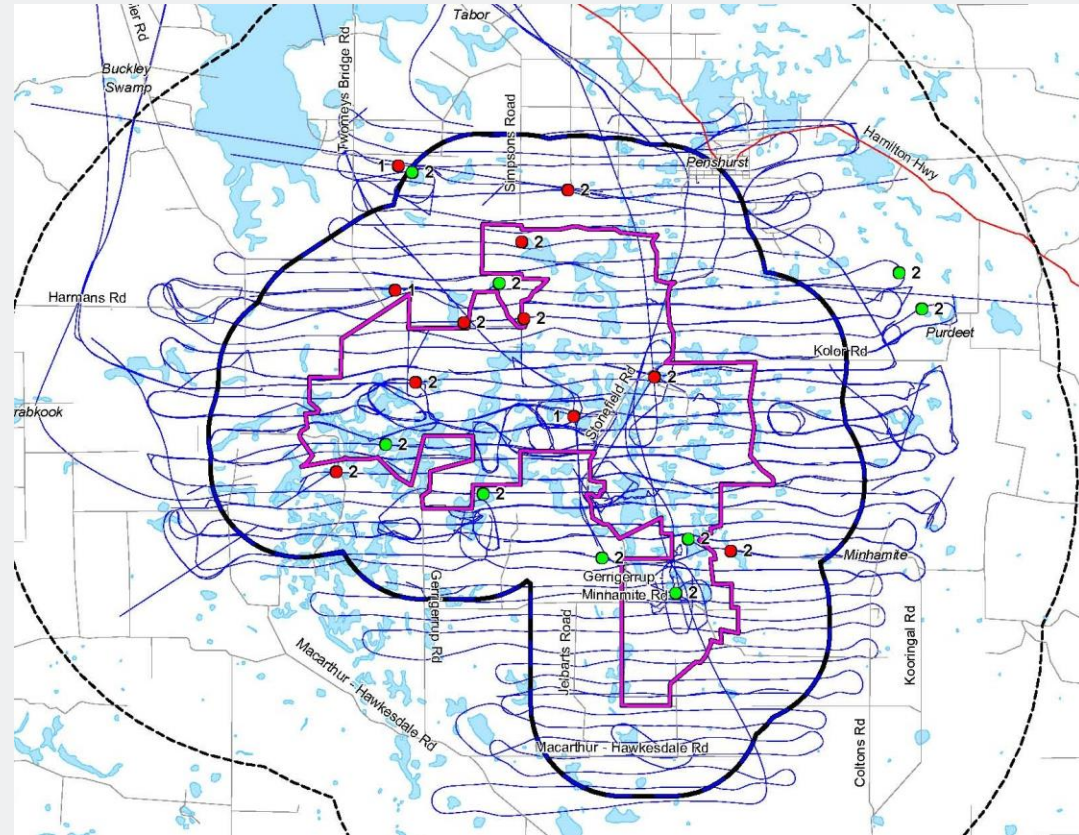
- Many wetlands identified as suitable for breeding in mid 2009
- Drought breaking rains in winter/spring 2009
- Aerial survey identified as appropriate given terrain
- Aerial methods reviewed and pilot found
- Surveys conducted by 2 observers in 172 Hp Cessna
- Brolga aerial survey publication is in prep



Biosis assessments

Aerial survey (Level 2)

- Our methodology used in Brolga guidelines
- 500 ft flight at 60-70 knots
- East-West transects at 500m apart
- Each observer covering 250m
- Follow pre planned transects
- Record Brolga locations
- Later ground truthing to pin point locations



Biosis assessments

Aerial survey results

- 37 Brolga observed at 20 locations
- 9 recorded as breeding sites (3 within site)
- Subsequently confirmed via ground truthing
- Another 2 breeding sites confirmed via ground truthing
- Rapid draining of wetlands over subsequent months
- Many sites abandoned
- 3 pairs persisted with nesting

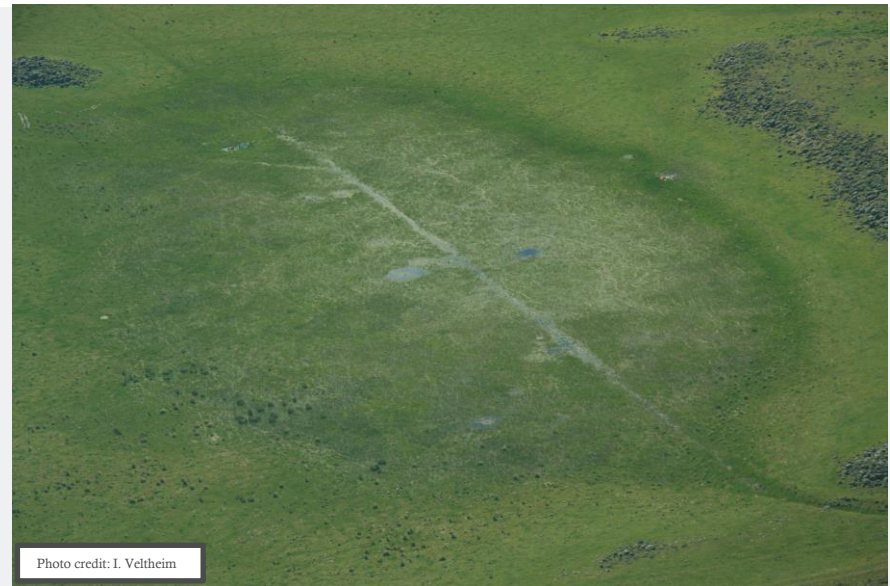


Photo credit: I. Veltheim



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Biosis assessments

Home range assessment (Level 2)

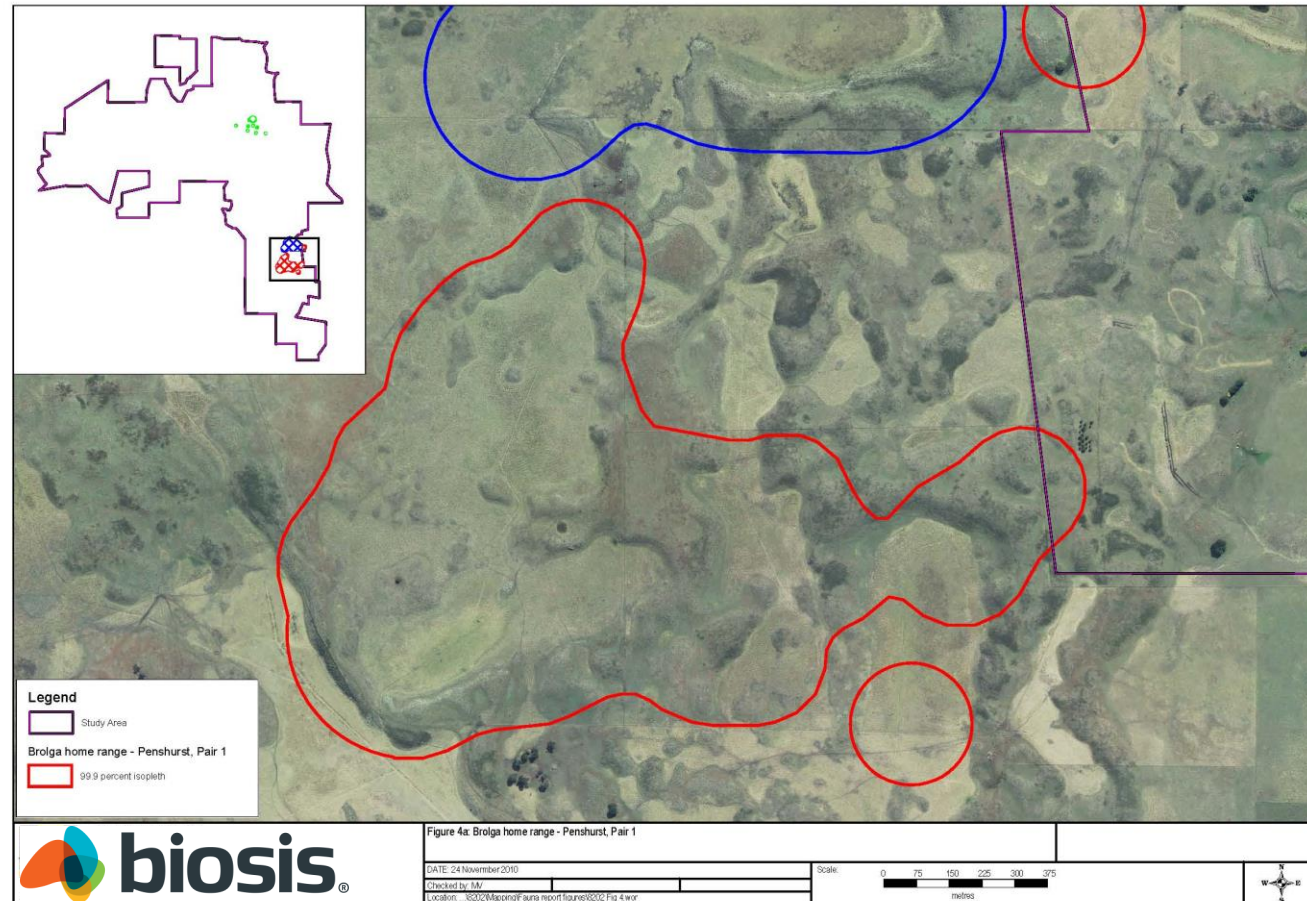
- Breeding home range study deemed useful for informing default buffering process
- Second site used at Mortlake where breeding sites also observed via aerial survey
- Home range data collected for 3 pairs at Penshurst and 4 pairs at Mortlake
- Pairs visited every 2 hours throughout day and position recorded
- 5 X 4 day field visits conducted between Nov 2009-Jan 2010



Biosis assessments

Home range assessment

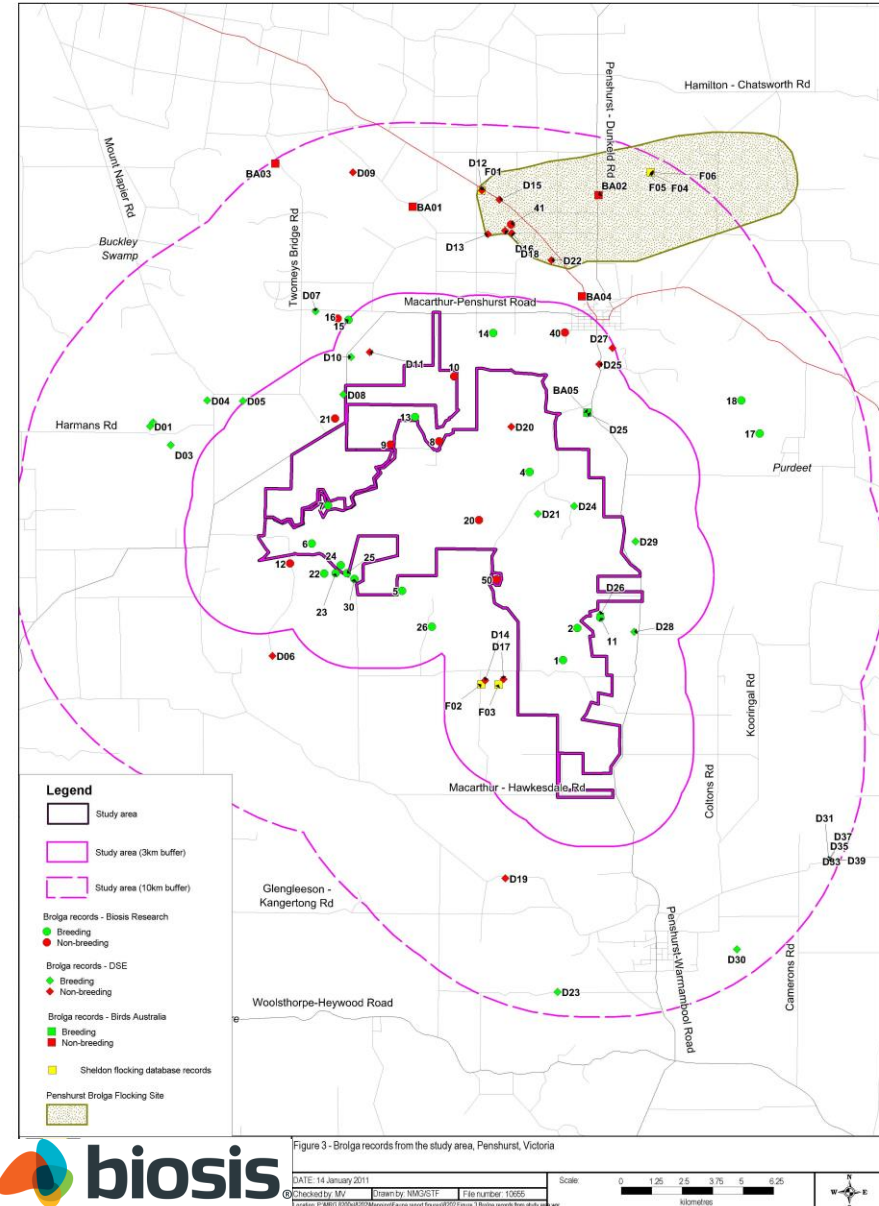
- Locations digitised and home range calculated using Kernel analysis
- 7 pairs breeding home range described
- 3 pairs successfully fledged chicks
- Several pairs attempted nesting multiple times
- Failures likely from rapid drainage of wetlands



Biosis assessments

Home range assessment and buffering (Level 3)

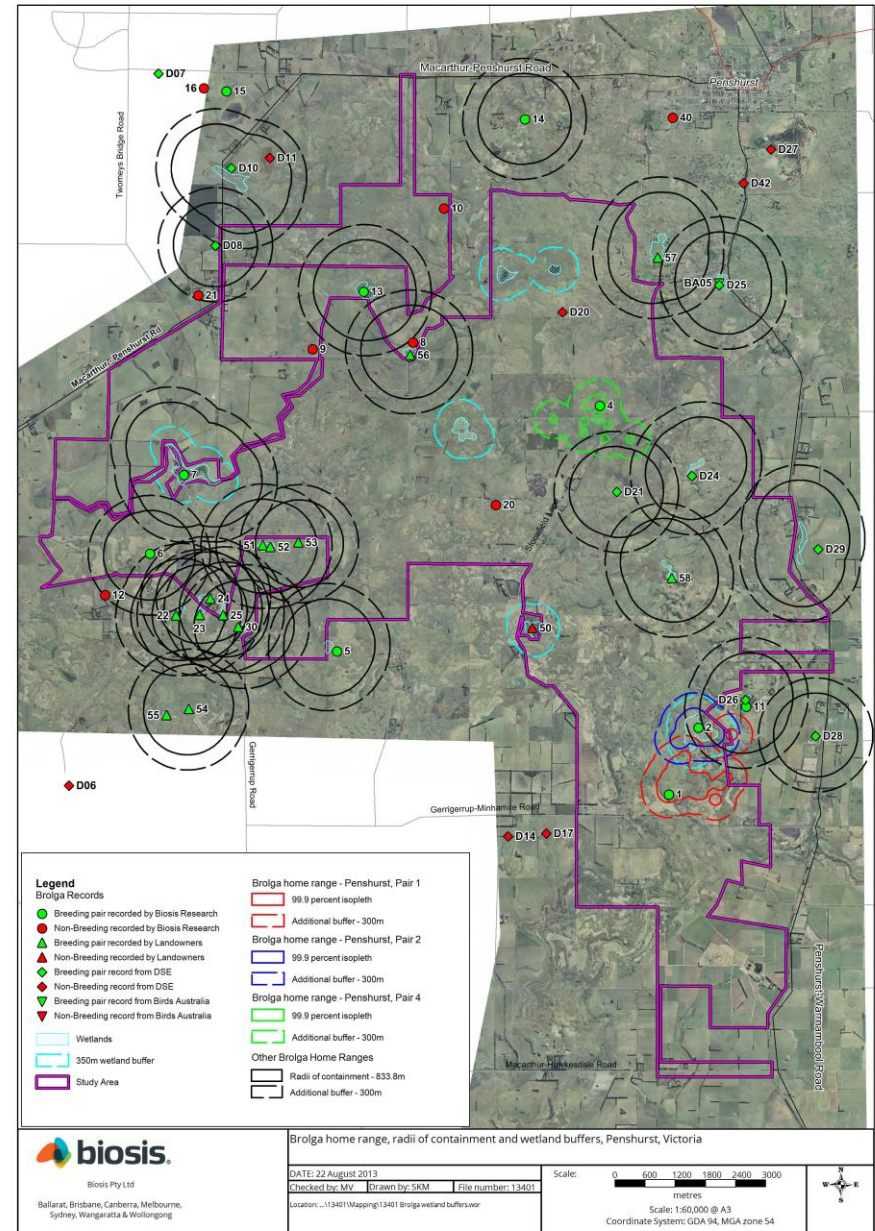
- What do we do with previous and other breeding record sites? See figure
- Symbolix develop Radius of Containment to represent probability that breeding records at a location are likely to be within a certain radius based on all data recorded
- This radius then used to buffer all failed nests and previous records of breeding
- Subsequently deemed to satisfy the Assessment Guidelines



Biosis assessments

Applying turbine free buffers

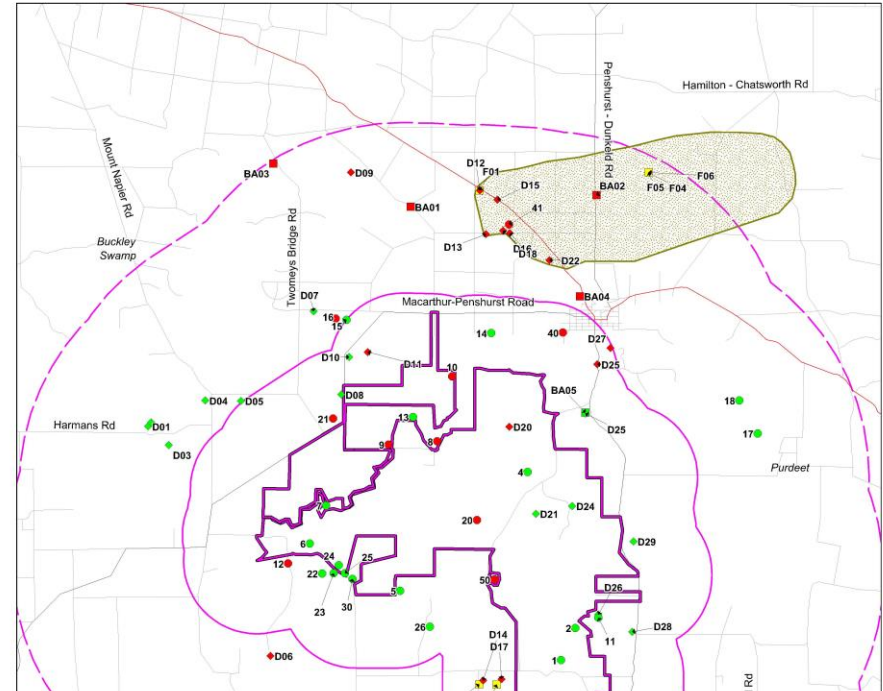
- 833.8m was upper C.I. for 99.9% radius of containment
- This was agreed to be a very conservative approach to buffering other breeding sites
- Guidelines state an additional 'disturbance' buffer of 300m be added
- Total buffer of 1,133.80m radius applied to failed sites and other breeding records



Biosis assessments

Flocking site assessment (Level 2)

- Nearby flocking site well documented
- Daily foraging/drinking sites also well known
- Consultation with local/species experts
- Appropriate to describe flocking site and surrounding resources rather than apply default 5km buffer
- Larger area than the default buffer distance
- Up to 290 birds there in 2013



Biosis assessments

Collision risk modelling (CRM) (Level 3)

- Biosis Deterministic Collision Risk Model used for Brolga
- CRM applied at a wide range of proposed wind farm sites in south-eastern Australia
- Virtually no flight data recorded during either breeding or general bird utilisation surveys
- All CRM scenarios endorsed by regulator prior to application. Scenarios based on what we know from other sites, literature and experts

Estimated annual number of Brolga collisions with turbines

Avoidance rate	95%	98%	99%
Breeding season	0.106	0.067	0.054
Flocking season	0.165	0.103	0.082
Annual total	0.272	0.170	0.135

Biosis assessments

Population Viability Analysis (PVA) (Level 3)

- PVA carried out by Melbourne University as per guidelines
- Annual mortality input from Biosis CRM figures
- Upper limit of CRM (0.272 Brolga per yr) will increase probability of falling to 450 Brolga or fewer in next 25 yrs by 0.025
- Melb University advised that this impact would be difficult to detect against existing background mortality
- Guidelines state that any predicted impact must be offset appropriately
- Power line marking/fence removal investigated so far, difficult to measure benefit of mitigation

Conclusion

No data on Brolga collisions

- No Wind Farm/Brolga collisions have been recorded to date
- Breeding attempts have been recorded within an operational site
- We have attempted to satisfy local guidelines and proponent has responded to significant constraints
- We've learnt much about the breeding behaviour of the species
- Looking out of a small plane with binoculars makes you sick!

Acknowledgements

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THANK YOU

Photo credit: I. Veltheim