

Appendix 2: Species Specific Guidance for Onshore Wind Energy Facilities – Victorian Brolga

Subject to application of the transitional provisions in section 4.6 of the Handbook, this guidance replaces the *Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population 2011, Revision 1 February 2012* (DSE 2012)⁸.

1. Brolga ecology

The Brolga is a long-lived bird that can live up to 30 years but have an average lifespan of around eight years in the wild. Like many crane species, they are highly wetland dependant throughout their entire lifecycle and require access to wetlands for breeding, roosting and foraging. Dryland habitat surrounding wetlands is important for foraging and includes cropping and grazing land. Brolga spend part of the year flocking before dispersing from flocking areas to breeding sites. At the end of the breeding season, most Brolga pairs and their young return to flocking areas for the flocking season. Some pairs may remain at or near breeding sites throughout the year.

1.1 Flocking

Brolga flocking areas provide habitat for Brolgas to drink, roost and feed during the drier months and are used by Brolgas until the following breeding season. Most flocking areas in Victoria are on private land. A flocking area comprises the wetland and non-wetland areas used by a Brolga flock (ten or more Brolgas) for roosting and feeding during the Brolga flocking season.

In Victoria, the Brolga flocking season is during the drier months of the year in summer and autumn, predominately from December to June.

1.2 Breeding

Once a breeding territory (incorporating the breeding home range) is established, Brolga tend to return to the same breeding site in subsequent years. As Brolgas reach maturity, they will pair up and select a breeding site when they are about three years old.

When selecting new breeding territories, there are preferred habitat characteristics. Brolgas require water to breed and prefer shallow, well-vegetated and seasonally inundated wetlands, primarily in temporary freshwater marshes and meadows wetland types. The south-west of Victoria is one of the regions where such wetland types are most abundant, although the Wimmera and northern Victoria also contain such habitats. Semi-permanent and permanent waterbodies are also known to be used by Brolgas for breeding (including farm dams), so long as the waterbody has extensive shallows with vegetation.

2. Risks to Brolga from the operation of wind energy facilities

The Brolga is listed as endangered under the FFG Act as it faces a high risk of extinction in Victoria. Wind energy facilities have the potential to impact Brolga breeding and flocking success. This guidance seeks to enable Victoria's energy transition while also protecting the Victorian Brolga from impacts during the development and operation of wind energy facilities and associated infrastructure.

Wind energy facility developments occur in Brolga habitat across the Brolga area of interest.

Small numbers of mortalities can pose a significant risk to the Brolga, because the species is long-lived, has a low reproductive rate and a small and declining population size.

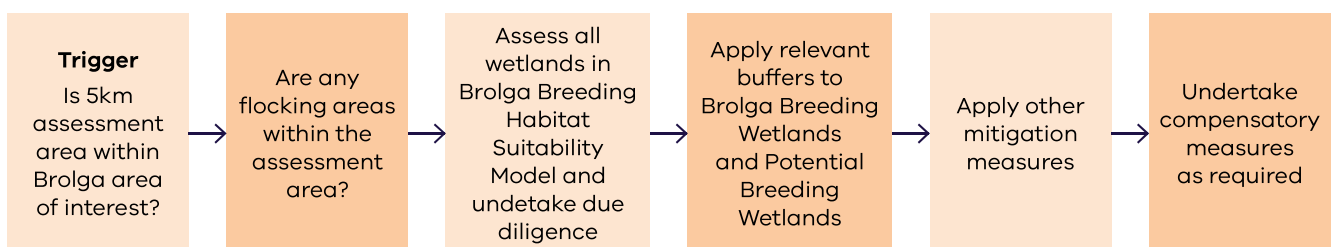
⁸ <https://www.environment.vic.gov.au/home/managing-impacts-of-renewable-energy-on-environment>

The risk to Brolga varies between flocking, migration and breeding seasons:

Table 8: Risks to Brolgas

Feature/ Behaviour	Risk	Description
Brolga flocking areas	Habitat loss, disturbance and collision with turbines, electricity transmission lines and fences	Based on annual survey results, it is estimated that 70 to over 90 per cent of the Victorian Brolga population flock annually within the Brolga flocking areas during the drier months of the year, predominately December to June. Any impact to these areas has the potential to impact a significant proportion of the Victorian Brolga population due to the large number of Brolga concentrated at flocking areas, greater number of daily flights and flight length.
Brolga Breeding Wetlands	Habitat loss, disturbance and collision with turbines, electricity transmission lines and fences	<p>Risk of reduced breeding success due to habitat loss, disturbance and collision, noting there is a low risk of collision with wind turbines, with appropriate buffers reducing this further.</p> <p>Brolgas have low breeding success rate in surviving from egg incubation to fledgling. Once a breeding territory is established, Brolgas tend to return to the same breeding site in subsequent years. Some wetlands have been known to support Brolga breeding for nearly 20 years. Protection of Brolga Breeding Wetlands is very important to maximise fledging success.</p>
Brolga migration	Collision	While there is a low risk of collision with wind turbines during migration between flocking areas and breeding sites, a small number of collisions could have an impact on the Victorian Brolga population. The application of appropriate buffers at flocking areas and breeding sites can reduce the likelihood of collision further.

3. Process for applying this guidance



3.1 Map the assessment area

The assessment area is a 5-kilometre (km) radius measured from the title boundaries of the wind energy facility and electricity transmission line(s) and includes the land subject to the planning permit application. If the boundary of the assessment area goes through a wetland that requires assessment for the purposes of this guidance, the whole wetland should be included in the assessment area.

Proponents should produce an assessment area map for the application showing the proposed wind energy facility site, including any associated infrastructure, with the 5km assessment area clearly demarcated. The map must include a legend and a scale bar. The steps below indicate any additional information that must be added to the assessment area map in preparation for a planning permit application.

3.2 When does this guidance apply?

The guidance only applies to planning permit applications, and any necessary environmental impact assessment, for:

- a wind energy facility
- an electricity transmission line directly associated with a wind energy facility to connect the facility to the electricity network.

The guidance applies if any part of the assessment area of a planning permit application falls within any part of the Brolga area of interest (Figure 1).

Proponents must determine whether any part of the assessment area is within the Brolga area of interest by overlaying the assessment area onto the Brolga area of interest. The Brolga area of interest can be obtained from <https://www.environment.vic.gov.au/home/managing-impacts-of-renewable-energy-on-environment>.

If no part of the assessment area falls within the Brolga area of interest, then this guidance does not apply.



Figure 1: A map of the Brolga area of interest where the guidance applies in Victoria

3.3 Assessment requirements

Assessments to identify Brolga flocking areas and Brolga Breeding Wetlands require engagement with local residents, representatives of local environmental agencies and council, and community environment groups. For Brolga flocking areas, the engagement should be included as part of the due diligence process to ensure there are no unmapped Brolga flocking areas within (wholly or in part) the assessment area. For Brolga Breeding Wetlands, the engagement can help to identify Brolga Breeding Wetlands that may not be identified through desktop assessment or field surveys.

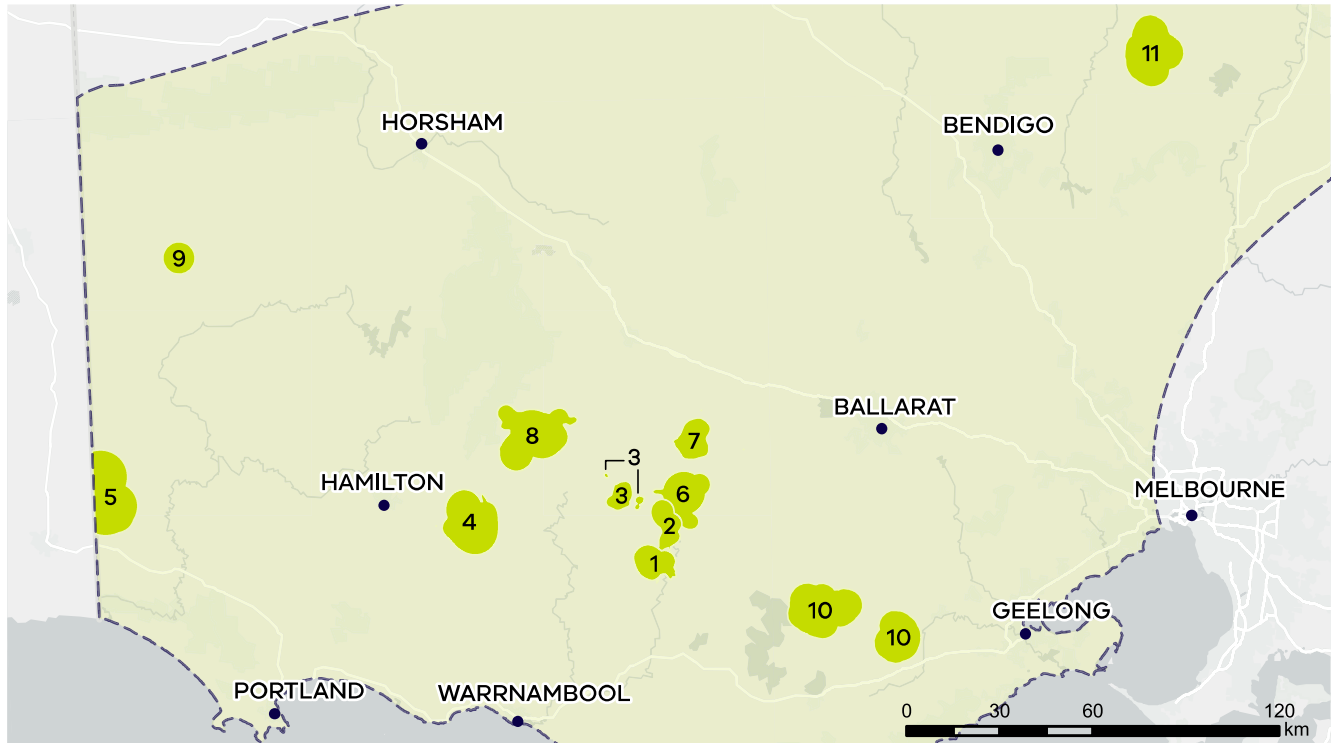
Where the assessment requirements refer to creation of maps or assessing spatial elements (such as whether any part of the use or development falls within the Brolga area of interest), it is assumed that this will be completed using a suitable Geospatial Information System.

Identifying Brolga flocking areas

Brolga flocking areas are to be avoided for the development of wind energy facilities. A flocking area comprises the wetland and non-wetland areas used by a Brolga flock (ten or more Brolgas) for roosting and feeding during the flocking season.

DEECA has prepared a flocking areas map (Figure 2) that clearly outlines the Brolga flocking areas that are to be avoided. This map has been developed based on flocking season home ranges derived from GPS tracking data and annual surveys of these flocking areas conducted by DEECA since 2009. It is estimated that 70 to over 90 per cent of the Victorian Brolga population flock annually within the Brolga flocking areas. Each flocking area differs in size and shape because some support larger flocks than others.

The Brolga flocking areas map must be obtained from The Brolga flocking areas map must be obtained from <https://www.environment.vic.gov.au/home/managing-impacts-of-renewable-energy-on-environment>. The map may be updated from time to time if new flocking areas are identified.



LEGEND

Area of interest:



Flocking area buffers:

- | | | | |
|--------------|---------------|-----------------|-----------------|
| 1 Penhurst | 4 Lake Bolac | 7 Streatham | 9 Edenhope |
| 2 Dundonnell | 5 Willaura | (Blue/Pink/Salt | 10 Cressy |
| 3 Darlington | 6 Streatham | Lake Complex) | 11 Dingee-Corop |
| | (Lake Wongan) | 8 Strathdownie | |

Figure 2: The Brolga flocking areas map

Due diligence requirements for unmapped Brolga flocking areas

Proponents are required to undertake due diligence to ensure there are no unmapped flocking areas within (wholly or in part) the assessment area. If a flocking area is identified, it must be mapped and treated as a Brolga flocking area.

For flocking areas in the Brolga flocking areas map where no Brolga GPS data was available, a 5km buffer was applied to mapped wetlands that met all three below criteria:

- two or more records of counts of 10 or more Brolgas
- records sourced from two or more consecutive Brolga flocking seasons (December to June), and
- records from more than one month.

A new Brolga flocking area (not mapped in 'Brolga flocking areas map') must meet the above criteria to be treated as a Brolga flocking area and buffering requirements will apply [see **section 4.1** of the Brolga guidance].

DEECA can assist with verification of unmapped flocking areas.

Identifying Brolga Breeding Wetlands and Potential Breeding Wetlands

DEECA has prepared the Brolga Breeding Habitat Suitability Model (Figure 3), which is available at <https://www.environment.vic.gov.au/home/managing-impacts-of-renewable-energy-on-environment>.

The Brolga Breeding Habitat Suitability Model extrapolates the remotely-sensed environmental characteristics of wetlands where Brolgas are known to breed to the wider landscape to predict the locations of suitable, high-quality Brolga breeding habitat in Victoria and includes known breeding wetlands⁹. The model should be used as the starting point to identify which wetlands require assessment for the purpose of this guidance. Further site surveys and assessment will be required to confirm if wetlands identified in the model are Brolga Breeding Wetlands or Potential Breeding Wetlands.

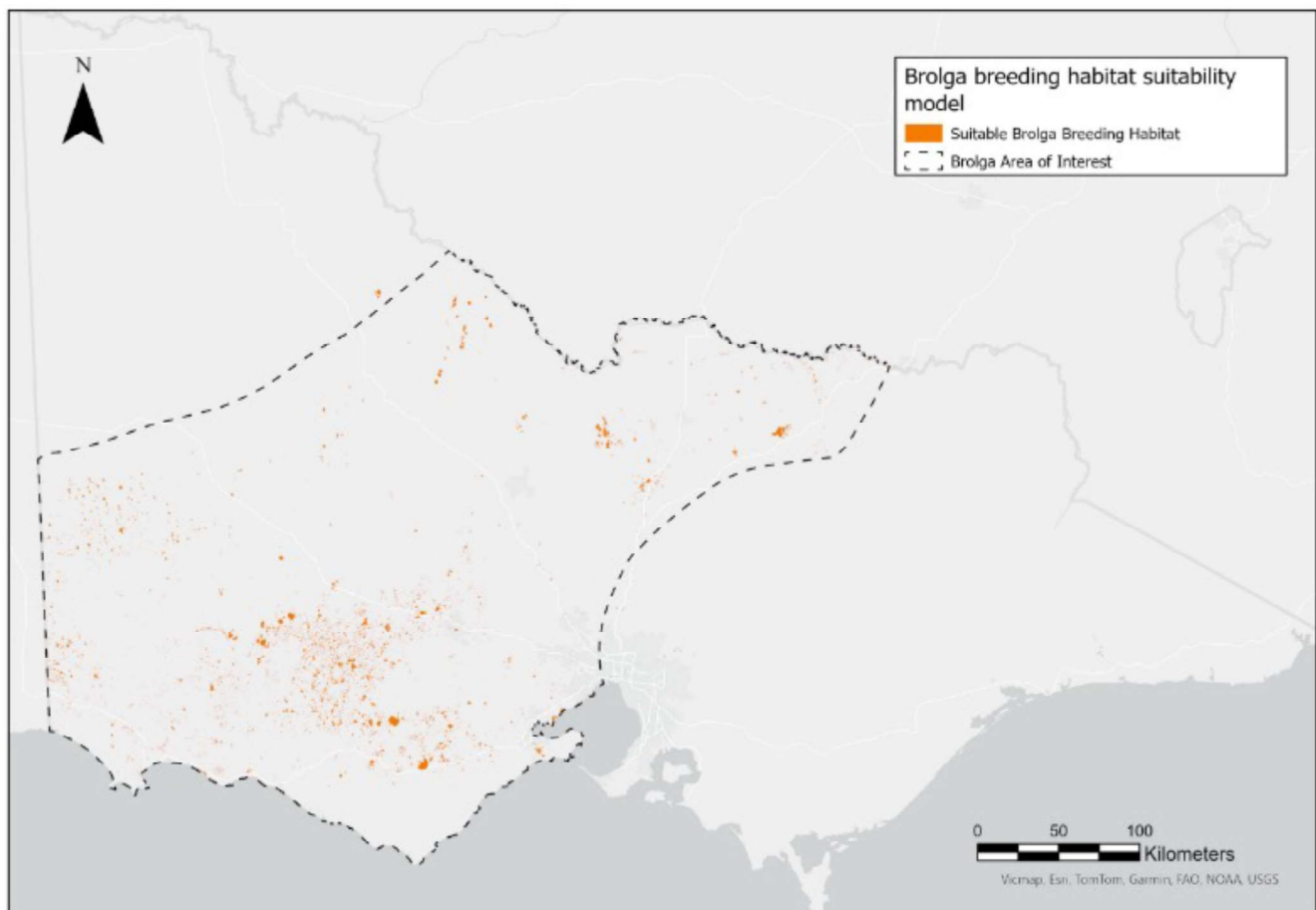


Figure 3: The Brolga Breeding Habitat Suitability Model

⁹ <https://engage.vic.gov.au/download/document/38641>

Assessment for Brolga Breeding Wetlands

For the purposes of this guidance, the definition of a **Brolga Breeding Wetland** is:

The nest of a Brolga breeding pair and the perimeter of the surrounding wetland. A breeding wetland also includes wetlands with previous verified records of Brolga breeding nests from the Victorian Biodiversity Atlas (VBA) and Birdlife in the last 20 years.

For the purposes of this guidance, the definition of a **Potential Breeding Wetland** is a wetland that meets all of the following criteria:

Table 9: Criteria to define a Potential Breeding Wetland

Criteria	Rationale
Does not have an associated Brolga breeding record in the past 20 years.	A wetland mapped in the Brolga Breeding Habitat Suitability Model with a known breeding record in the past 20 years is considered a Brolga Breeding Wetland.
Meets the inundation requirements of 120 days through breeding season in any year in the ten-year period preceding the commencement of assessment.	120 days of inundation during breeding season allows for nest building and incubation of Brolga chicks becoming mobile where the breeding pair may walk them to other wetlands.
Wetland with sufficient emergent vegetation, within and surrounding wetland, to allow for nest building.	Important for both nest building and protecting Brolga chicks from predators. Sufficient emergent vegetation includes: <ul style="list-style-type: none"> • vegetation not over one metre in height • presence of low wetlands plants that respond to shallow flooding that allow for food, nest construction and cover • trees and taller vegetation may be present but are generally interspersed with vegetation of lower height and areas of open water.

Assessment process

1. Identify all wetlands mapped in the assessment area from the Brolga Breeding Habitat Suitability Model. Due diligence is required to identify any other wetlands in the assessment area not shown in the model.
2. Of those wetlands, identify all Brolga Breeding Wetlands through a combination of desktop data review, field studies, hydrological analysis and consultation with local residents, representatives of local environmental agencies and council and community environment groups.
3. Field surveys must be conducted from July through the breeding season. This is to ensure that the Brolga Breeding Wetland can be identified for the purpose of applying the Breeding Wetland Buffer.
4. The following must be identified through this assessment:
 - If there are any breeding pairs within the assessment area, and how many.
 - For each breeding pair, the Brolga Breeding Wetland.
 - The Brolga Breeding Wetland is identifiable by conducting surveys from July through the breeding season, at least once per month for each wetland within the assessment area across two breeding seasons. This early commencement of field surveys will enable visual identification of either nest building or the Brolga pair with a chick in a nesting wetland prior to chick walking (or both).
 - All efforts must be made to identify the Brolga Breeding Wetland, as this is the wetland that a Breeding Wetland Buffer must start from. If the Brolga Breeding Wetland cannot be identified, explanation as to why must be provided in the assessment report. The buffer will start from a different location, as per the buffering assessment below.

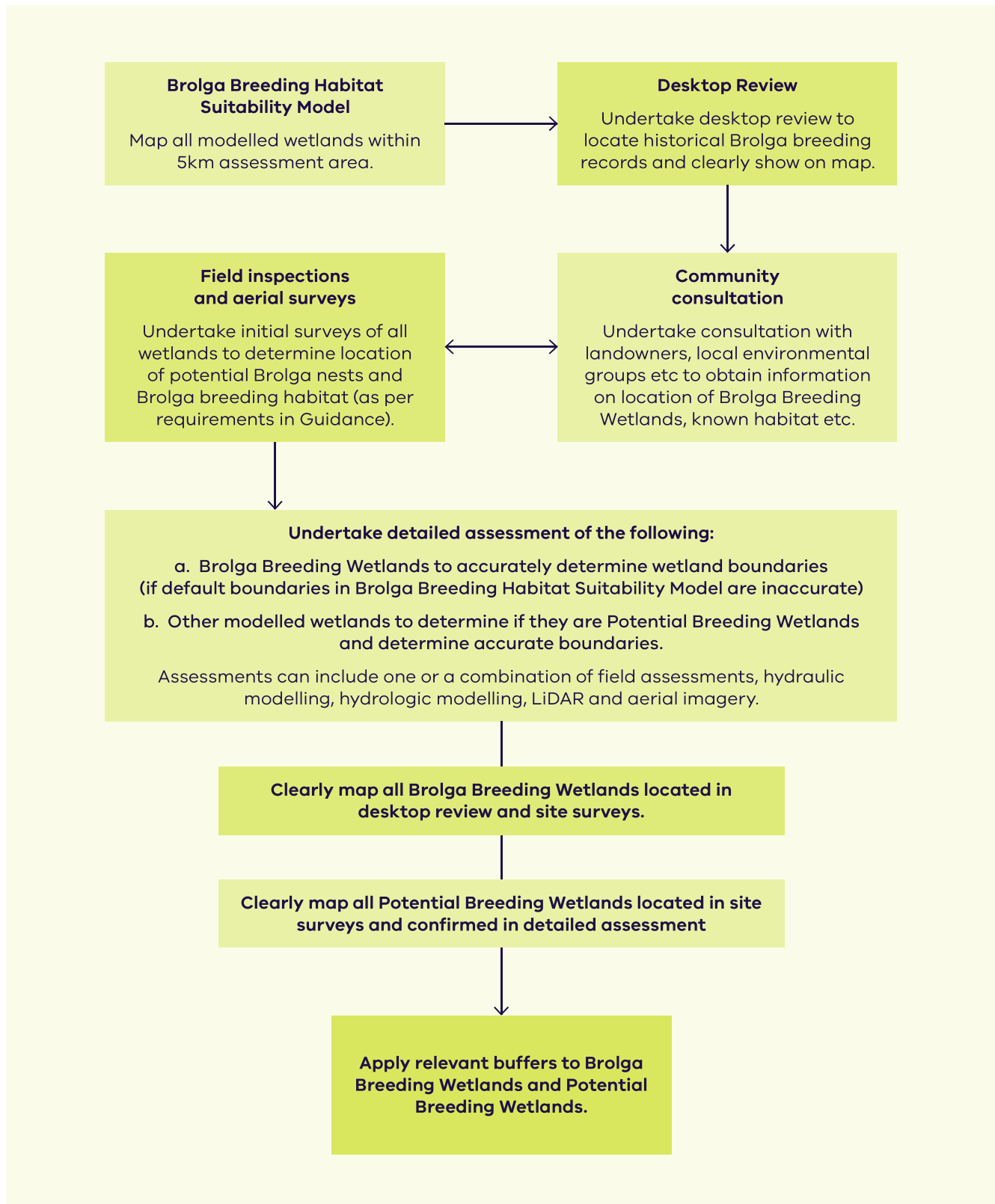


Figure 4: Steps in the process to identify, assess and buffer Brolga Breeding Wetlands and Potential Breeding Wetlands

4. Applying the mitigation hierarchy to manage impacts on Brolga

4.1 Measures to avoid impacts – Flocking Areas

The following measures apply to any wind energy facility to avoid impacts on the Victorian Brolga population:

- Any turbine, building or other structure or thing used in or in connection with the generation of electricity by wind force and anemometers is prohibited within a Brolga flocking area. This includes any electricity transmission lines connecting the wind energy facility to the electricity network.

To avoid impacts on Brolga flocking, the following assessments are required:

- Assess whether any part of the use and development is within an area mapped as a Brolga flocking area on the flocking areas map. Do this by overlaying the proposed wind energy facility site over the Brolga flocking areas map.
- Undertake due diligence to ensure there are no unmapped Brolga flocking areas within (wholly or in part) the assessment area [see section 3.3 of the Brolga guidance].
 - If a flocking area is identified, map the flocking area. The area will be treated as a Brolga flocking area and a default buffer area of 5kms for these areas is recommended. This is considered to protect most of the night and day roost wetlands and surrounding non-wetland foraging areas, likely to be used by Brolgas in these areas.
 - A proponent may propose a different buffer area, which must be supported by evidence that demonstrates how the proposed buffer will manage impacts to the night and day roost wetlands and surrounding non-wetland foraging areas. DEECA must be consulted on any proposed buffer distance that differs from the default, and confirm they are satisfied that the proposed buffer will provide adequate protection for the unmapped flocking area.
- Use and development for a proposed wind energy facility is prohibited within any part of a Brolga flocking area. Adjustment to the proposed use and development will be required to avoid the Brolga flocking area(s).

4.2 Measures to minimise impacts

The following measures apply to any wind energy facility to minimise impacts on the Victorian Brolga population:

- The Breeding Wetland Buffer must be applied to all wetlands that are Brolga Breeding Wetlands.
- The Potential Breeding Wetland Buffer must be applied to all Potential Breeding Wetlands, unless an alternative mitigation and compensation arrangement is agreed to the satisfaction of DEECA [see sections 4.3 and 4.4 of the Brolga guidance].
- The use and development of land for a wind energy facility or an electricity transmission line (directly associated with a wind energy facility or to connect it to the national electricity network) is prohibited within a Breeding Wetland Buffer or a Potential Breeding Wetland Buffer unless the following conditions are met:
 - The use or development is for underground cabling or an underground electricity transmission line (directly associated with a wind energy facility or to connect a wind energy facility to the national electricity network) and measures to minimise disturbance and habitat loss impacts for Brolga from construction activity are agreed to the satisfaction of DEECA and included within an approved Environmental Management Plan or Construction Environmental Management Plan for the wind energy facility.
 - The use or development of land is to maintain or upgrade an existing all-conditions internal access track or to construct a new all-conditions internal access track, provided the track:
 - meets any engineering standards or requirements imposed as part of planning approval; and
 - measures to minimise disturbance and habitat loss impacts for Brolga from construction activity, especially for Brolga Breeding Wetlands, are agreed to the satisfaction of DEECA and included within an approved Environmental Management Plan or Construction Environmental Management Plan for the wind energy facility.

Protection of Brolga Breeding Wetlands is very important to maximise fledging success. To manage risks that Brolga may need to find new breeding territories and new juvenile pairs seeking breeding territory, it is proposed to also protect other Potential Breeding Wetlands that have suitable breeding habitat. The Breeding Wetland Buffers are designed to protect three key habitat elements related to pre-fledging chick and adult breeding pair movements:

- The wetlands used for the nest, egg incubation and night roosting.
- The non-wetland areas around breeding wetlands used for foraging.
- The non-wetland areas used as movement corridors between nesting and night roost wetlands.

Application of Breeding Wetland Buffers

Buffer for a Brolga Breeding Wetland with no other Brolga Breeding Wetlands or Potential Breeding Wetlands within 2km home range area

1. A 900 metre (600 metre foraging buffer plus 300 metre disturbance buffer) buffer is required around a Brolga Breeding Wetland. The buffer must be applied from the boundary of the wetland.
2. The default boundary of each wetland must be based on the wetland boundary in the Brolga Breeding Habitat Suitability Model. However, hydrological analysis can be used to ground truth the model and demonstrate if the actual extent and/or boundary is different to what is included in the model (see further detail below).
3. Repeat for each Brolga Breeding Wetland identified within the 5km assessment area of the wind energy facility.

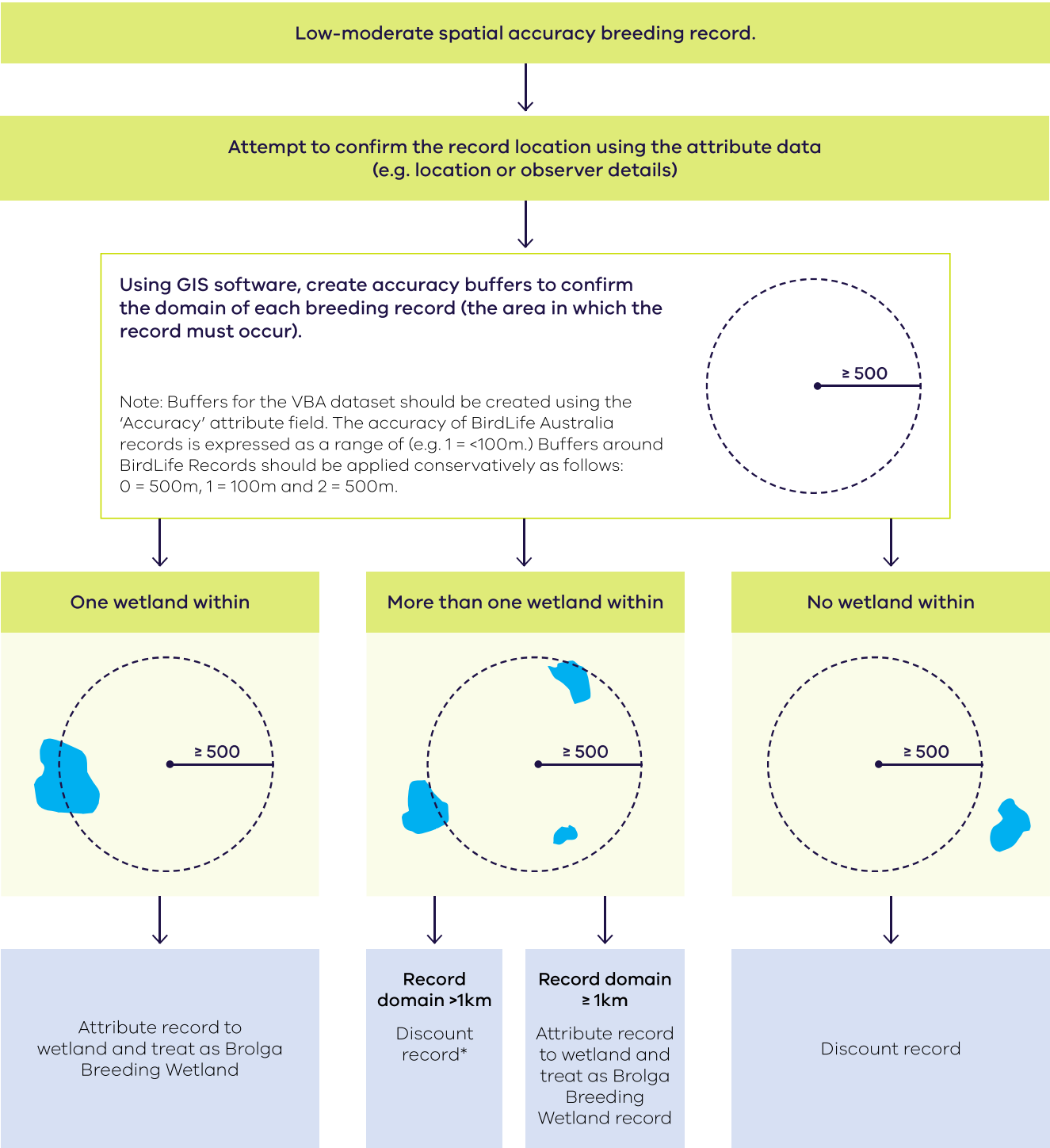
Buffer for a Brolga Breeding Wetland with other Brolga Breeding Wetlands and/or Potential Breeding Wetlands within 2km home range area

1. A 900 metre (600 metre foraging buffer plus 300 metre disturbance buffer) buffer is required around a Brolga Breeding Wetland. The buffer must be applied from the boundary of the wetland.
2. A buffer must also be applied from the Brolga Breeding Wetland to all other surrounding Brolga Breeding Wetlands and/or Potential Breeding Wetlands within 2km of the subject Brolga Breeding Wetland. This captures the home range of the Brolga. The areas between these wetlands must be buffered to protect movement corridors.
3. Apply the below steps to the subject Brolga Breeding Wetland:
 - 3.1 From the boundary of the Brolga Breeding Wetland, identify and map all surrounding Brolga Breeding Wetlands and Potential Breeding Wetlands within the 2km home range area around the subject wetland.
 - 3.2 The default boundary of each wetland must be based on the wetland boundary in the Brolga Breeding Habitat Suitability Model. However, hydrological analysis can be used to ground truth the model and demonstrate if the actual extent and/or boundary is different to what is included in the model (see further detail below).
 - 3.3 Apply a 900 metre buffer to each Brolga Breeding Wetland and Potential Breeding Wetland, the buffer must be applied from the boundary of the wetlands.
 - 3.4 Apply a movement corridor between all wetlands within 2km of the Brolga Breeding Wetland (measured from the widest extent of each wetland via straight lines).
 - 3.5 The resulting buffer is the Breeding Wetland Buffer for the Brolga Breeding Wetland.
4. Repeat for each Brolga Breeding Wetland identified within the 5km assessment area of the wind energy facility.

Wetlands do not require the Breeding Wetland Buffer if they meet any one of the below criteria:

Table 10: Criteria to define wetlands that do not need the Breeding Wetland Buffer

Criteria	Evidence requirements
A wetland with a historical breeding record older than 20 years.	The breeding record from the VBA or Birddata and disregarded wetland clearly shown and labelled on a map.
A wetland with a low accuracy breeding record discounted as per the protocol for managing such records.	Details of process undertaken to manage low accuracy breeding record/s as outlined in the Protocol in Figure 5 below.
The wetland is covered by a hardened, man-made surface (e.g. a road) and is therefore no longer capable of holding water or functioning as a wetland.	Date-stamped aerial or on-ground photographs with GPS coordinates, or contour maps with GPS coordinates, are required. The evidence must show that it is obvious that the mapped area has been incorrectly identified as a mapped wetland or the wetland has been permanently drained. Evidence requirements include, but are not limited to:
A modelled wetland has been incorrectly identified as a wetland, and the mapped area is not capable of functioning as a wetland.	<ul style="list-style-type: none"> contours show that the location is a hill rather than a depression and therefore the mapped area is not capable holding water on-ground photographs or satellite imagery clearly show a drainage channel impacting the wetland satellite imagery from previous breeding seasons show that no water was held in the wetland photographs clearly show the wetland has been planted with trees detailed hydrological modelling clearly shows that the wetland has been permanently drained and cannot hold water.
The wetland has been permanently drained.	



* Records may be discounted if adequate evidence is provided to indicate the accuracy tribute is incorrect (e.g. confirmation of inaccuracy from observer or source literature report). Discounted records must be retained in Assessment Reports as unvalidated database records.

Figure 5: Protocol for managing low-moderate accuracy breeding records

Application of Potential Breeding Wetland Buffers

1. A 300 metre buffer must be applied to each Potential Breeding Wetland identified in the Brolga Breeding Habitat Suitability Model within the 5km assessment area of the wind energy facility, but which is outside the 2km home range of a Brolga Breeding Wetland. The buffer must be applied from the boundary of the wetland.
2. The default boundary of each wetland must be based on the wetland boundary in the Brolga Breeding Habitat Suitability Model. However, hydrological analysis can be used to ground truth the model and demonstrate if the actual extent and/or boundary is different to what is included in the model (see further detail below).
3. Movement corridors are not required for Potential Breeding Wetland Buffers.

The following wetlands do not require a Potential Breeding Wetland Buffer:

Table 11: Criteria to define wetlands that do not require the Potential Breeding Wetland Buffer

Criteria	Evidence Requirements
A wetland that does not meet the required inundation requirements to allow for Brolga fledging.	Evidence that the wetland does not meet the inundation requirements of 120 days through breeding season in any year in the ten-year period preceding the commencement of assessment.
Wetlands less than 0.10ha in size.	Disregarded wetland/s clearly shown and labelled on map.
Permanent saline swamps, temporary saline swamps, saline marshes and meadows, estuaries, high country peatlands and intertidal flats and farm dams that do not have a known breeding record.	Disregarded wetland/s clearly shown and labelled on map.
Wetlands that are now covered by a hardened, man-made surface (e.g. a road) and are no longer capable of holding water or functioning as a wetland or have been permanently drained.	Date-stamped aerial or on-ground photographs with GPS coordinates, or contour maps with GPS coordinates, are required. The evidence must show that it is obvious that the mapped area has been incorrectly identified as a mapped wetland or the wetland has been permanently drained. Evidence requirements include, but are not limited to: <ul style="list-style-type: none"> • contours show that the location is a hill rather than a depression and therefore the mapped area is not capable holding water • on-ground photographs or satellite imagery clearly show a drainage channel impacting the wetland • satellite imagery from previous breeding seasons show that no water was held in the wetland • photographs clearly show the wetland has been planted with trees • detailed hydrological modelling clearly shows that the wetland has been permanently drained and cannot hold water.
A mapped wetland that has been incorrectly identified as a wetland and the mapped area is not capable of functioning as a wetland.	

Determining the boundaries of Brolga Breeding Wetlands and Potential Breeding Wetlands

1. As a default, the extent of a wetland is based on wetland boundary mapped in the Brolga Breeding Habitat Suitability Model.
2. If site surveys or hydrological analysis indicate that the modelled wetland boundary is incorrect, the wetland boundary can be realigned. The wetland boundary must be measured from the wetland basin at its greatest extent during breeding season when inundated for at least 120 days in any year in the ten-year period preceding the commencement of the assessment.
3. Assessment requirements to amend a wetland boundary include, but are not limited to the following:
 - Recorded rainfall data over a ten-year period
 - Satellite imagery
 - High-resolution topographic mapping (LIDAR)
 - Hydraulic and water balance modelling.

4.3 Measures to mitigate impacts

Other mitigation measures can be implemented to reduce the impacts of the proposed wind energy facility on the Brolga.

Table 12: Measures to mitigate impacts on Brolga

Mitigation measure	Description
Marking electricity transmission lines	Collision with electricity transmission lines is an important source of anthropogenic mortality for many crane species and is a recognised cause of Brolga mortality. Marking electricity transmission lines to reduce collision mortality has been demonstrated to markedly reduce collision risk for other species of cranes. A range of bird flight diverter products are commercially available.
Land management actions	<p>Water Regime Management Implementing water regime management to maintain the health and accessibility of Brolga Breeding Wetlands and Potential Breeding Wetlands. This ensures that critical wetland habitats are preserved and available for Brolga, promoting breeding success.</p> <p>Stock Control and Fencing Managing livestock and preventing overgrazing around Brolga Breeding Wetlands and Potential Breeding Wetlands through effective stock control can protect these sensitive areas from degradation, which is crucial for Brolga habitat preservation.</p> <p>Weed Management Implementing a weed management plan to control invasive plant species around Brolga Breeding Wetlands and Potential Breeding Wetlands will help maintain the integrity of the wetlands and the natural vegetation Brolga rely on for food and shelter.</p>

4.4 Compensatory measures

Section 6.3 of the Handbook sets out requirements for compensation of residual impacts on threatened bird and bat species from a renewable energy facility. In addition to those requirements, Brolga compensation must provide protection and enhancement of Brolga Breeding Wetlands and Potential Breeding Wetlands and must be combined with active and on-going management.

If the avoid, minimise and mitigate measures outlined above are applied to Brolga Breeding Wetlands and Potential Breeding Wetlands, there should be no or minimal residual risk to the Victorian Brolga population from a wind energy facility.

However, compensation can be required if project siting does not allow for the application of the buffer to a Potential Breeding Wetland that is within the 5km assessment area, but outside the 2km home range of a Brolga Breeding Wetland. Compensatory measures must be accompanied by the mitigation measures outlined in Table 12, Section 4.3 of this Brolga guidance and must be commensurate with the risk of not protecting a wetland that a Brolga breeding pair may use in the future.

The nature and extent of compensatory measures is determined by:

- the number of Potential Breeding Wetlands not buffered by a 300m buffer
- the size of the wetlands not buffered
- proximity and connectivity of wetlands to other shallow vegetated wetlands.

The purpose of Brolga compensation is to protect and enhance habitat to enhance breeding success at breeding sites. Maintaining water levels and reducing disturbance are likely to be the most effective ways of enhancing breeding success. Measures may include:

- restoration of the natural flooding regime of wetlands by closing drains
- increasing inundation frequency of Brolga Breeding Wetlands through artificial flooding
- creating new potential breeding habitat by damming or modifying existing wetlands or dams
- management of wetland vegetation condition through controlled grazing (or stock removal) to improve suitability as a breeding site
- addition of nesting material to Potential Breeding Wetlands to facilitate nest building, or
- fox control at breeding sites.

All measures above must be accompanied by active management to reduce predation during breeding, such as fox control measures.

Further compensation actions may be required if post-construction monitoring determines mortalities and/or significant disturbance to Brolga as outlined in any approved BAM Plan.



4.5 Information requirements

The information that must accompany a planning permit application where this guidance applies is:

Table 13: Information requirements checklist for applications

Information requirements and checklist	Format
A map that shows: <ul style="list-style-type: none"> <input type="checkbox"/> The assessment area for the proposal <input type="checkbox"/> All Brolga breeding records within the assessment area <input type="checkbox"/> Location of any Brolga Flocking Areas within the assessment area <input type="checkbox"/> Modelled wetlands from the Brolga Breeding Habitat Suitability Model <input type="checkbox"/> Other wetlands identified through the assessment process <input type="checkbox"/> A legend and a scale bar 	A PDF of the map and GIS spatial files.
Evidence requirements for: <ul style="list-style-type: none"> <input type="checkbox"/> Any disregarded Brolga breeding records <input type="checkbox"/> Any disregarded wetlands from the Brolga Breeding Habitat Suitability Model <input type="checkbox"/> Any wetland boundary realignments from the Brolga Breeding Habitat Suitability Model 	Short report and JPEG images.
If Breeding Wetland Buffers and/or Potential Breeding Wetland Buffers apply, the assessment area map that showing: <ul style="list-style-type: none"> <input type="checkbox"/> Location of all proposed infrastructure <input type="checkbox"/> Breeding Wetland Buffers <input type="checkbox"/> Potential Breeding Wetland Buffers 	A PDF of the map and GIS spatial files