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Salt Creek Wind Farm

Salt Creek Wind Farm Pty Ltd

Bat and Avifauna Management Plan

Version 6

22 June 2017

MOYNE SHIRE COUNCIL

THIS PLAN IS ENDORSED PURSUANT TO PLANNING PERMIT No. PL06/304.01 SUBJECT TO THE CONDITIONS OF THE PERMIT AND PROVISIONS OF THE MOYNE PLANNING SCHEME.

03/07/2017 .....

Date Signature for Responsible Authority

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Important note about your report

This report has been prepared on behalf of and for the exclusive use of Jacobs' client, and is subject to and issued in connection with the provisions of the agreement between Jacobs and its Client. Jacobs accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

1. Introduction

1.1 Purpose

The Bat and Avifauna Management (BAM) Plan identifies measures to monitor the impact of the Salt Creek Wind Farm on populations of significant avifauna species that may utilise the site, in particular:

- Brolga (*Grus rubicunda*)
- Southern Bent Wing Bat (*Miniopterus schreibersii bassanii)*, and
- Other species listed under the *Environment Protection and Biodiversity Conservation Act 1999,* the *Flora and Fauna Guarantee Act 1988* and the *Advisory list of Threatened Vertebrate Fauna in Victoria – 2013* (the Advisory List).

The BAM Plan has been prepared in accordance with Condition 33 (PL 06/304) of the planning permit issued by the Shire of Moyne for the Salt Creek Wind Farm. The requirements of this Condition are paraphrased below:

- A statement of the objective of the BAM Plan
- A Brolga and Bat Utilisation Monitoring Program that:
  - Is consistent with the Draft Guidelines for Bat Survey in relation to Wind Farm Developments (ARI, 2007)
  - Must be implemented as soon as the use commences[1]
  - Must run for a minimum of three years (but up to five years) in total[2]
  - Must include provisions for assessment of the influence of wet and dry climatic conditions on the utilisation of the subject land by Brolga and bat populations. These provisions are to allow for the splitting of the monitoring program over non-sequential years so that results better reflect the long term utilisation of the site by Brolgas and bats
  - The utilisation monitoring must occur in the first available 'dry', 'intermediate' or 'wet' year after the use commences. The determination of the year as 'dry', 'intermediate' or 'wet' must be endorsed by the responsible authority in consultation with the Department of Environment, Water, Land and Planning (DELWP) formerly known as the Department of Sustainability and Environment (DSE)
  - Provisions to assess the presence, behaviour and movements of any Brolga especially breeding pairs during their 'flocking' and 'breeding' behaviour periods, on the subject land and on land up to two kilometres away from any turbine (subject to third party approval being secured in writing by and at the sole cost of DELWP).
- A Bird and Bat Strike Monitoring Program to ascertain the species and numbers of any bird and bat strikes. The Program:
  - Must run for a minimum of three years in total
  - Must include a requirement for reporting any bird and bat strikes to DELWP within 7 days of the strike being detected
  - Must include the number of each species and preferably the age and sex of the birds and bats killed
  - Must include provisions that stipulate the timing and frequency of monitoring. This may include variations in timing and frequency of the monitoring so that it coincides with the behaviours and movements of specific species
  - Must, if installed, assess the occurrence of bird and bat strikes at turbines with aviation, obstacle, night time lighting versus those without
  - Must include studies on the efficacy of searches for carcasses of birds and bats, and the rate of removal of carcasses by scavengers, so that firstly correction factors can be determined to enable calculations of the total number of mortalities and secondly so that a bat and bird strike monitoring

[2] From the commissioning of the last turbine.

program can be designed to give meaningful results. Studies should be undertaken during different seasons to determine seasonal variation in these factors

- The impact monitoring must occur in the first available 'dry', 'intermediate' or 'wet' year after the use commences. The determination of the year as 'dry', 'intermediate' or 'wet' must be endorsed by the responsible authority in consultation with the Department of Sustainability and Environment (DELWP).

- Provisions for review of the Brolga and Bat Monitoring Program at the end of the third year of monitoring to determine if species responses to the range of 'dry', 'intermediate' and 'wet' climatic conditions have been adequately addressed. Any further monitoring will be targeted at those species for which the strike rates show biologically significant impacts.
- A Mitigation and Management Strategy for any biologically significant impacts on Brolgas and bats arising from the wind energy facility operations. The strategy:
  - Must include mortality rates (as agreed with DELWP) for specific species which would trigger the requirement for responsive management and mitigation measures to be undertaken by the proponent
  - Must include measures to offset any significant impact. Significant impacts are to be pre- determined by agreement with DSE, the Responsible Authority and the permit holder. These measures may include, but are not limited to management or improvement of habitat or breeding sites away from the subject land to improve breeding productivity, or other offsets as may be agreed by DELWP.
  - May include procedures for regular removal of all types of carcasses (mammals, birds and reptiles) likely to attract biologically significant 'birds of prey' to areas near turbines if there is deemed to be a significant risk of impact with the wind turbine rotor blades.
- Regular Reporting Requirements. Reports of the findings of the Brolga and Bat Monitoring Program:
  - Must be documented by the Proponent within agreed timeframes
  - Must be made available to the public by the Proponent in electronic form via a website operated by the Proponent
  - Must be available to undertake studies on cumulative impacts which are referred to in Condition 34.

1.2 Additional Requirements and Clarification

Since the planning permit was issued standards have changed with regard to preparation of the BAM. Accordingly the Department of Environment, Land Water and Planning (DELWP) and Moyne Shire have clarified the following requirements:

- For the purposes of the BAM plan the 'use commences' when the first turbine is commissioned and begins to generate electricity
- Prior to commission of the first turbine a separate protocol will be developed to qualify a 'wet', 'intermediate' and 'dry' standard to address the requirements of conditions 33.b)iv) and 33.c)vii), in consultation with DELWP, to the satisfaction of Moyne Shire Council, and
- For the purposes of the BAM plan, reference to 'the operation of the first turbine commences' refer to the point in time when the first turbine begins to generate electricity.

1.3 Proposed development

The proposed Salt Creek Wind Farm is to consist of up to15 Wind Turbine Generators (WTG's). Individual turbines will be limited to a maximum height of 150 meters (to the tip of the rotor blade).

The development of the proposed wind farm will involve:

- Construction of access tracks (5.5m wide) to allow the movement of vehicles and equipment between the wind turbines and the public road network
- Upgrade local public roads as required to allow for the passage of Over Dimensional vehicles
- Excavation, preparation and construction of reinforced, concrete foundations to support up to 15 wind turbines
- Establishment of level, hardstand areas (generally 20 m by 40 m adjacent to each turbine) to enable turbine erection and future maintenance access

- Development of a switch yard facility including an electrical substation and its associated control equipment; an operations and maintenance building; and a small parking area
- Undergrounding of electrical power and telecommunications cabling between the wind turbines and the switchyard facility.

The proposed wind farm was granted planning approval by the Moyne Shire Council on the 8th of June 2007 (Planning Permit No. PL06/304), subject to conditions. The Planning Permit issued by Moyne Shire Council stipulates the development of an Environmental Management Plan and a number of sub-plans and studies to demonstrate compliance with certain conditions prior to, and following on from, construction of the wind farm. Planning Permit No. PL06/304 was amended by Moyne Shire in February 2016 (PL06/304.01).

The development of an overhead transmission line from the proposed switchyard location connecting into the National Electricity Grid is not covered by the wind farm site planning approval (Planning Permit No. PL06/304) and is not included in the scope of this management plan.

1.4 Project site

1.4.1 Locations

The proposed Salt Creek Wind Farm site is situated in Victoria's western district, approximately 55km north of Warrnambool and 68km east of Hamilton, and 190km west of Melbourne (Figure 1.1). The closest township is Woorndoo (population approx. 50) located 1.5km to the northeast of the project site and Mortlake (population approx. 1,000) is located approximately 15km south east of the site.

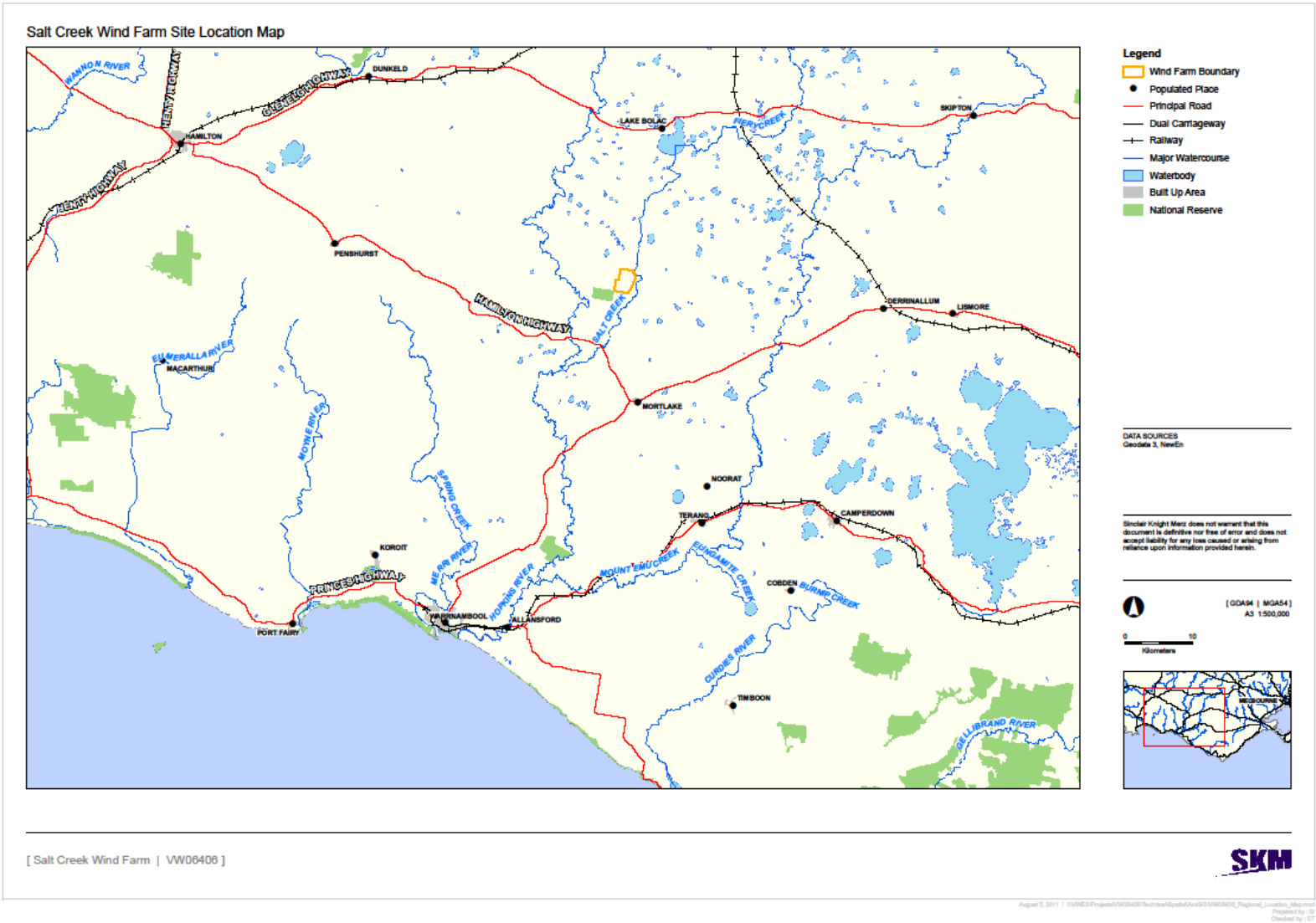

Figure 1.1 : Project site location

1.5 Site features

The project site comprises of approximately 750 hectares of grazing land located on the eastern edge of a large landholding operated as the Salt Creek Merino Stud.

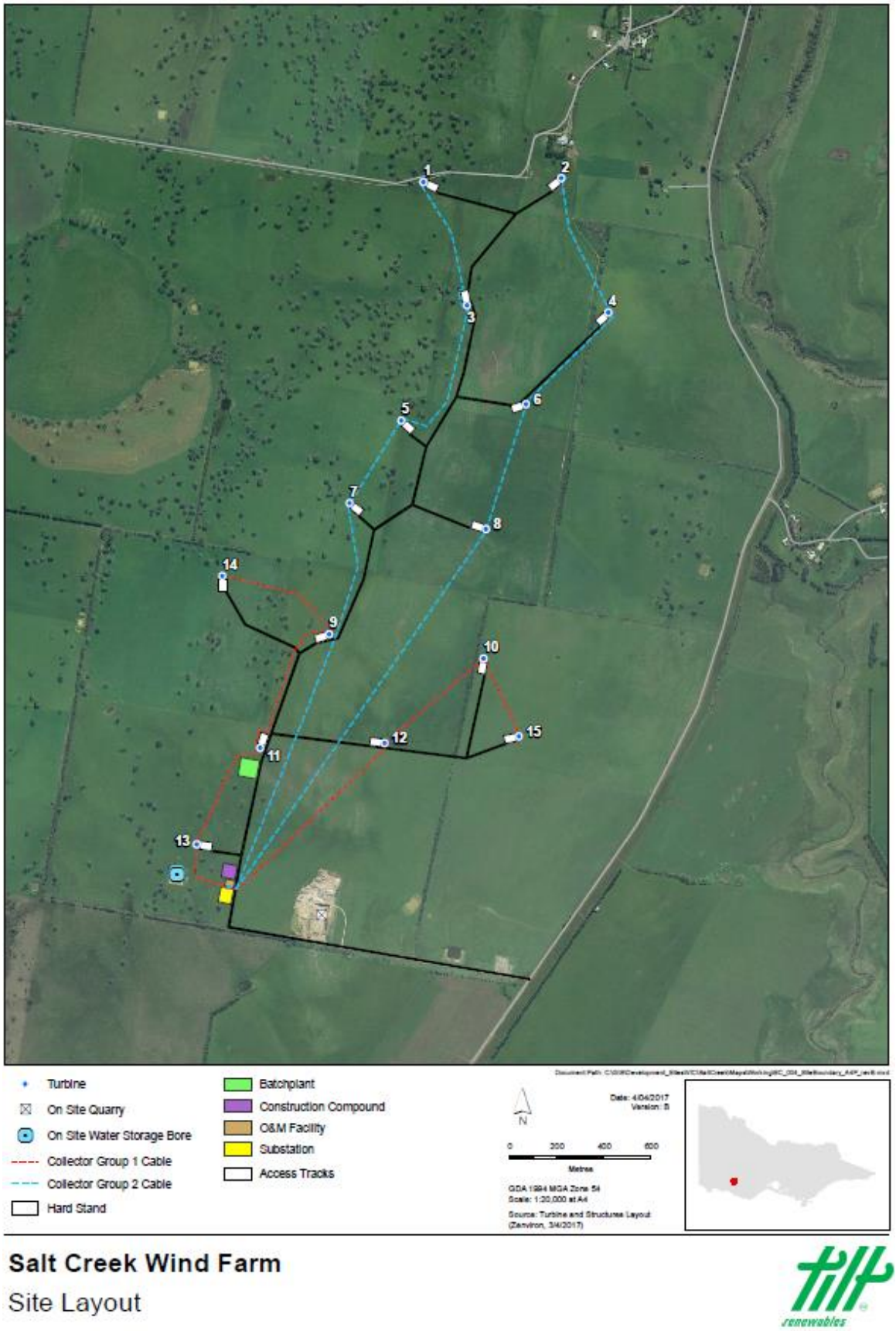

Figure 1.2 : Project site

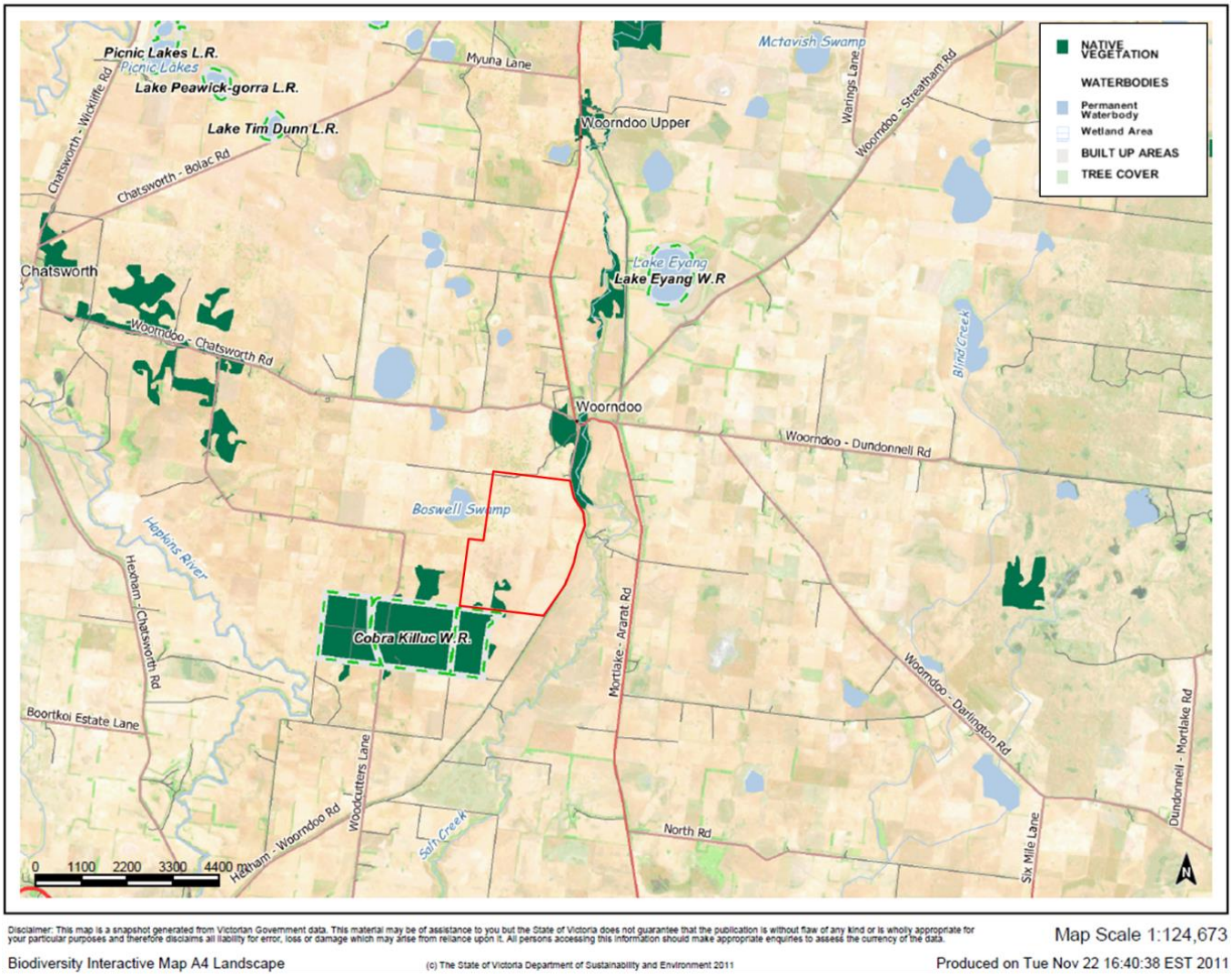

Figure 1.3 : Site context map, habitat features within approximately 5 km of the Salt Creek Wind Farm Site

1.6 Objectives

The objective of this Plan is to provide a program to monitor and report on the potential impacts of the Salt Creek Wind Farm on bats and avifauna, and in particular Brolga and Southern Bent-wing Bat, and provide response strategies (i.e. mitigation or offset measures) to avoid, negate or minimise any significant impacts.

The following working requirements are consistent with this objective:

- To monitor the collision rate of birds and bats with the operating wind turbines, in particular:
  - Brolga (*Grus rubicunda*)
  - Southern Bent Wing Bat (*Miniopterus schreibersii bassanii*), and
  - Other species listed under the Environment Protection and Biodiversity Conservation Act 1999, the Flora and Fauna Guarantee Act 1988 and the Advisory list of Threatened Vertebrate Fauna in Victoria – 2013 (the Advisory List).
- To implement management, mitigation and/or offset measures, where required to respond to the impact of turbines on birds and bats, and
- To report impacts of birds and bats within a public forum to allow for further studies into the cumulative impacts of wind farms on bird and bat populations.

1.7 Information sources

Several data sources have been reviewed to collate the following information. This includes preliminary studies and reports that contributed to the Planning Application. The information reviewed and the Departments contacted are listed below.

- NewEn Australia (2006). S*alt Creek Wind Farm: Planning Report to the Moyne Shire– Environmental Effects Act 1978.* NewEn Australia.
- Biosis Research (2005). *Preliminary Flora and Fauna: Assessment of the Proposed Salt Creek Wind Farm Site, Woorndoo, Victoria*. Report prepared for NewEn Australia, November 2005.
- Biosis Research (2006). *Bat Activity Report for the Proposed Salt Creek Wind Farm, Woorndoo, Victoria*. Report prepared for NewEn Australia, July 2006.
- Biosis Research (2006). *Bird utilisation studies at the Salt Creek Wind Farm site.* Report prepared for NewEn Australia, July 2006.
- Biosis Research (2006). *Regional Brolga survey for the Proposed Salt Creek and Salt Creek Wind Farms, Chatsworth, Victoria*. Report prepared for NewEn Australia, October 2006.
- Biosis Research (2017) *Salt Creek Wind Energy Facility – 2006 Brolga data assessment*. Memo prepared for Tilt Renewables, June 2017
- C.L. Hull & S. Muir (2010). *Search areas for monitoring bird and bat carcasses at wind farms using a Monte-Carlo model.* Australasian Journal of Environmental Management Vol. 17 , Iss. 2,2010
- Department of Sustainability and Environment (2012) Interim Guidelines for the Assessment Avoidance, Mitigation and Offsetting of Potential Wind farm Impacts on the Victorian Brolga Population 2011, Revision 1 February 2012. The State of Victoria Department of Sustainability and Environment 2011, Melbourne.
- Arthur Rylah Institute (2007). *Draft Guidelines for bat surveys in relation to wind farm developments.* Department of Sustainability and Environment.
- Information supplied by Kath Gosden and Richard Hill from the Department of Sustainability and Environment (DSE).
- Brett Lane and Associates (2015) *Salt Creek Wind Farm Change of Rotor Swept Area Height – Investigation of Impacts on Birds and Bats* Letter to Trustpower Australia Holdings Pty.Ltd

2. Pre-construction monitoring

This Section provides a summary of previous investigations completed at the Salt Creek Wind Farm to determine the level of utilisation of the site by birds and bats. The data collected from these studies provides baseline data, to which post-construction data can be compared to determine the impact of the Wind Farm on birds and bats.

2.1 Bat utilisation survey

A bat utilisation survey was undertaken by Biosis Research in 2006. The survey is reported in the following report:

- Biosis Research (2006). *Bat Activity Report for the Proposed Salt Creek Wind Farm, Woorndoo, Victoria.* Report prepared for NewEn Australia, July 2006.

The objectives of this study were to:

- Undertake a survey to determine the species of bats that occur within the proposed wind farm site
- Ascertain the heights at which different bat species fly through the site and identify species 'at risk' of turbine collisions, including any significant species
- Make comparisons of relative bat activity between (a) at a height of 1 metre within cleared pastures on the site and (b) at a height of approximately 50 metres (rotor swept height) within the site.

The survey involved placing an Anabat ultrasonic bat detector at a height of 50 metres above the ground and another at approximately 1 m above the ground attached to an existing monitoring tower located within the wind farm. The survey was carried out across a number of seasons and included the following survey periods:

- 19th - 21st October, 2005 (Spring): ground level
- 16th – 21st February, 2006 (Summer): ground level and 50 metres
- 24th – 27th April, 2006 (Autumn): ground level and 50 metres.

Five bat species were identified to the species level including:

1. White-striped Freetail Bat (*Tadarida australis*)
2. Southern Freetail Bat (*Mormopterus (long penis)*)
3. Southern Forest Bat (*Vespadelus australis*)
4. Chocolate Wattled Bat (*Chalinolobus morio*)
5. Gould's Wattled Bat (*Chalinolobus gouldii*).

The calls of a further nine species could not be identified to the species level. Rather these calls are attributed to a 'species call complex'. This is a cluster of two or more species that have very similar calls and cannot yet be differentiated using current technology. This includes the call of the EPBC listed Southern Bent-wing Bat (*Miniopterus schreibersii bassanii*). The quality of recordings using the Anabat, particularly sound interference reduces the detectability of some species.

Though it is difficult to detect the Southern Bent-wing Bat, it is considered unlikely that the species would make significant use of the site surrounding the wind farm given the surrounding habitat available. The species has a seasonal activity cycle, during winter they are inactive and congregate at over-wintering caves, in spring the females migrate to traditional maternity caves to give birth and in autumn, both sexes return to the over-wintering cave. The nearest known wintering cave is 70 km west of the site in Byaduk and the nearest maternity cave is in Warrnambool. Therefore the Salt Creek Wind Farm is outside of the migratory flight path of this

species, and there is little ecological (presence of forest habitat) or geographical (migratory flight path) reason why this species would make significant use of the Wind Farm site.

Two species and two species complexes were detected at rotor swept height (50 metres). The two species recorded at rotor swept height included the White-striped Freetail Bat and the Gould's Wattled Bat. Neither of these species is listed as threatened at the State or Federal Level. Two calls were recorded for this species at height. All other species were detected at ground level.

In total, 149 bat calls were recorded across the 20 detector-nights. This is considered a relatively low level of activity compared to woodland sites, and is likely attributed to the low level of habitat complexity where turbines are to be located. Based on the low level of bat activity recorded at the site, it is considered the potential impact to bats from the construction and operation of the wind farm is likely to be minimal.

It is considered that the bat activity studies completed to date provide adequate baseline data, from which to monitor the impact of the wind farm on bat activity diversity and activity. It is therefore not considered necessary to conduct any further bat surveys prior to the wind farm commencing operation.

2.2 Avifauna utilisation survey

An avifauna utilisation survey was undertaken by Biosis Research in 2006. The survey is reported in the following report:

- Biosis Research (2006). *Bird utilisation studies at the Salt Creek Wind Farm site.* Report prepared for NewEn Australia, July 2006.

The objectives of this study were to document the types of avifauna using the site and their relative levels of use of the site.

The survey involved point count surveys at six locations across the study area. The surveys involved:

- The selection and recording of six specified points to carry out repeat surveys
- Recording all birds observed at a single point in a 20 minute period
- The following details were recorded during each point counts survey:
  - Time, date and weather
  - The species, number, height of observation, distance from observer and behaviour of each bird or group of birds
- Two observers visited each of the six points separately and carried out a survey twice on a single day. With each point visited between 14 and 15 times across the survey.

The survey was carried out across a number of seasons and included the following survey periods:

- 19th - 21st October, 2005 (Spring)
- 14th – 16th February, 2006 (Summer)
- 24th – 27th April, 2006 (Autumn).

A total of 90 point counts were carried out, with a total of 1,008 observations of 30 species of birds. A total of 5,554 individual birds were recorded across the study. A majority of the observations were attributed to three bird species:

- the Australian Magpie (*Gymnorhina tibicen*)
- Long-billed Corella (*Cacatua tenuirostris*)
- Common Starling (*Sternus vulgaris*).

No bird species listed as threatened at the State or Federal level were recorded at the site.

The average flight height for most species was below 29 m, and therefore outside of the rotor swept area. However the average flight of five species including the Australian Shelduck (*Tadorna tadornoides*), Brown Falcon (*Falco berigora*), Ravens (*Corvus spp.*) and the Wedge-tailed Eagle (*Aquila audax*) is above this height, suggesting that some species may be at risk from collision with the turbines. The diversity and abundance of birds at the site was relatively low in comparison with other sites of greater habitat diversity, and it is considered that the incidence of collisions will be relatively low (Biosis, 2006).

It is considered that the bird utilisation studies completed to date provide adequate baseline data, from which to monitor the impact of the wind farm on bird species diversity, abundance and activity within the area. All species recorded, were common and widespread species. It is therefore not considered necessary to conduct any further bird surveys prior to the wind farm commencing operation.

2.3 Brolga survey

A regional Brolga survey was undertaken by Biosis Research in 2006. The survey is reported in the following report:

- Biosis Research, (2006). *Regional Brolga survey for the Proposed Salt Creek and Mortons Lane Wind Farms, Chatsworth, Victoria*. Report prepared for NewEn Australia, October 2006.

The objectives of this study were to:

- Review existing information on the status of Brolga within 40 km of the wind farm site
- Carry out field survey in both the flocking and breeding season to augment the review of existing information
- Describe the status of the species within the region surrounding both proposed wind farm site

Assess the potential collision risk. Existing information as to the distribution and behaviour of Brolgas within the Woorndoo area was obtained using the following sources:

- Southwest Victorian Flocking Site Database
- Atlas of Victorian Wildlife
- Birds Australia Atlas of Australian Birds
- Phillip Du Guesclin (DSE Portland)
- Conversations with local landowners.

The searches identified a number of regions that have been repeatedly utilised by flocking Brolga:

- Penhurst 13-72 individuals recorded
- Blackwood 43 – 150 individuals recorded
- Willaura 2-230 individuals recorded
- Dunkeld 3-50 individuals recorded
- Nerrin Nerrin/Streatham/Pura Pura 2-120 individuals recorded
- Darlington 2-80 individuals recorded.

Breeding had been recorded at seven sites within the study area, including:

- Woorndoo-Hexham area
- Lake Bolac
- Penhurst.

Surveys were undertaken to identify Brolgas within a 40 km radius of the wind farm site. Surveys were undertaken from the 18th to the 21st of April to coincide with the flocking season and from the 3rd to the 6th of October, 2006 to coincide with the breeding season for Brolga. Previous records from a number of databases were also analysed to aid in determining the likely occurrence of Brolgas within and in close proximity to the wind farm.

The field surveys identified a total of 212 Brolgas during the flocking season and 53 during the breeding season. It is considered likely that in wetter years Brolga would use ephemeral wetlands scattered around the Woorndoo region, however, there is little suitable breeding or flocking habitat within or immediately adjacent to the wind farm site (Biosis, 2006). Preferred breeding sites include shallow freshwater marshes that are less than 0.5 m deep and freshwater meadows that are less than 0.3 m deep (DSE Brolga information sheet). The survey indicated that Brolga activity in the immediate vicinity of the wind farm is likely to be quite low. The closest flocking site to the wind farm is located 20 km away from the site at Lake Barnie Bolac, Darlington. Historical records indicate this site has been repeatedly used by Brolga with between 2 to 80 individuals recorded at the site. During the Biosis Research 2006 survey, the closest record of Brolgas to the site, were two Brolgas observed during the flocking season survey in a paddock to the north of Cockatoo Swamp, on the Woorndoo-Chatsworth Road, Woorndoo. These individuals were likely feeding and not making permanent or regular utilisation of a site without suitable habitat as detailed above. This area is located 1.82 km to the north west of the wind farm boundary, and 1.83 km from the nearest proposed turbine location.

Though a number of Brolgas were identified during the breeding season, birds were not observed to be breeding. There are five sites where breeding has been observed in the past 40 years located within five kilometres of the proposed Salt Creek site. Breeding sites include a number of permanent and ephemeral wetlands in the wider vicinity of the Salt Creek site that provide breeding habitat when conditions are suitable.

In addition to the field survey and review a supplementary search was undertaken to assess Brolga records within 3 to 5 kilometres of the site and to apply the flocking criteria as provided in the DELWP Interim Brolga Guidelines (DSE 2012). There are three breeding records within 3km and one breeding record between 3-5km. There are no records within 5km that indicate flocking behaviour or that met the DSE 2012 criteria for flocking (Biosis, 2017).

It is considered that the regional Brolga studies completed to date provide adequate baseline data on the distribution and abundance of Brolgas within a 40 km radius of the site. Brolga mortality due to collision with the wind turbines will be monitored once the wind farm is in operation, to determine the impacts to this species.

3. Post operational monitoring program

This Section of the Plan describes the monitoring program to be undertaken as soon as the first turbine of the Salt Creek Wind Farm becomes operational. The monitoring program ensures compliance with Condition 33(b) of the Planning Permits that requires the development of a Brolga and Bat Utilisation Monitoring Program and Condition 33(c) that requires the development of a Bird and Bat Strike Monitoring Program.

As per Section 1.2, a separate protocol will be developed to address conditions 33.b)iv) and 33.c)vii). This protocol will be prepared in consultation with DELWP and approved and endorsed by Moyne Shire Council. All post-operational monitoring will subsequently comply with this protocol.

Alternate methods that can demonstrate improved accuracy of results may be implemented, subject to the review of the revised plan and consultation with and written agreement from DELWP and Moyne Shire Council; to the satisfaction of Moyne Shire Council.

3.1 Brolga utilisation monitoring program

The Brolga Utilisation Monitoring Program is to be implemented 'as soon as the use commences'. This is defined as the operation of the first wind turbine within the Salt Creek Wind Farm. That is as soon as operation of the wind farm begins. The Monitoring Program is to be implemented as per the methodology below.

The monitoring program will involve:

- Survey for flocking Brolga at previously utilised flocking sites, as well as artificial and natural water bodies within a 5 km radius of the wind farm site will be completed during the flocking season (December to June)
- Survey for nesting Brolga at previously utilised breeding sites, shallow freshwater marshes that are less than 0.5 m deep and freshwater meadows that are less than 0.3 m deep within a 3 km radius of the wind farm site will be completed during the breeding season (generally July to December).
- Condition 33.b)iv) requires provisions for the assessment of the influence of wet and dry climatic conditions on utilisation of the subject land by Brolga and bat populations. This will be addressed through the protocol mentioned in Section 1.2 of this plan.

3.1.1 Flocking season surveys

- Flocking surveys will be undertaken for two days each month from December to June.
- The objective is to determine whether Brolga are flocking within 5 kilometres of the wind farm site.
- Surveys will be completed at dawn and dusk
- Roaming surveys will include travelling to artificial water bodies and natural water bodies within a 5 km radius of the site
- Where habitats are located on private land in accordance with Condition 33b)v) of the Planning Permit, the survey of these areas will be: *"subject to third party land owner approval being secured preferably in writing by and at the sole cost of the Department of Sustainability and Environment"* (currently the Department of Environment, Land, Water and Planning). Where land owner approval cannot be obtained, these habitats will be observed from public land
- Sites will be travelled to by vehicle. Where access to private property is permitted, waterbodies will be approached on foot with due consideration of the sensitivity of birds to human disturbance
- All Brolgas observed during the survey will be recorded
- Where Brolgas are observed moving from a site, they will be followed by vehicle to determine whether their flight path includes the wind farm site in order to ascertain flight behaviours. Such observations will be restricted to the 5km radius of the search area
- A sample recording sheet is provided in Appendix A. The following details will be recorded for all Brolgas observed:

- Location (including GPS coordinates)
- Number of birds
- Distance from the nearest turbine
- Behaviour
- Maximum height
- Minimum height
- Broad habitat Description
- Any additional notes.

- Where a site is identified as a potential flocking site within the survey area further survey to determine whether it meets flocking site criteria will be required to confirm the nature of its use. Where a potential flocking site is observed within a 5 km radius of the wind farm site the DELWP Statutory Planning program will be immediately notified by email (bsw.planning@delwp.vic.gov.au).
- Flocking site must meet the following characteristics (evidence of flocking sites should include anecdotal evidence):
  - More than one year of recording
  - More than 10 Brolga observed at the site (DSE, 2012)
  - Brolgas observed more than one month at the site
  - Site comprises deep freshwater marsh or permanent open water
  - Be located within the 5 km search area.
- Survey at determined flocking sites will trigger further detailed survey. This will include dawn and dusk fortnightly roost watches for the duration of the flocking season (December – June) or until the use of the flocking site ceases. This is to observe:
  - The location of birds within the flocking site
  - Direction of flight paths to and from the flocking site
  - Number of birds arriving at and departing from the flocking site
  - The flight movement and behaviour relevant to the location of turbines
  - A determination of collision risk based on recorded flight movements and behaviours
  - The location of their likely daily foraging areas

3.1.2 Breeding season surveys

- Breeding surveys will be undertaken for two days each month from July to December.
- Surveys will include travelling to all previously utilised breeding sites, artificial water bodies and natural water bodies within a 3 km radius of the site
- Surveys will be completed during daylight hours
- Where habitats are located on private land in accordance with Condition 33b)v) of the Planning Permit, the survey of these areas will be: *"subject to third party land owner approval being secured preferably in writing by and at the sole cost of the Department of Sustainability and Environment"* (now DELWP). Where land owner approval cannot be obtained, these habitats will be observed from public land
- Sites will be travelled to by vehicle. Where access to private property is permitted, waterbodies will be approached on foot with due consideration of the sensitivity of birds to human disturbance
- All Brolgas observed during the survey will be recorded

- Where a breeding pair is observed nesting further survey will be required. The Statutory Planning Program, of DELWP will be immediately notified by email where Brolgas are identified breeding within a 3 km radius of the site
- Survey of nesting pairs should be completed once a week for the duration of the nesting/breeding event (i.e. from the time of detection until either the chicks fledge or the breeding attempt is confirmed as having failed). Nests and movements of the breeding pair should be observed for two hours each week. Survey will be completed at a distance from the site using binoculars, so as not to disturb the breeding pair. The following information should be recorded during this time:
  - Location of the nest
  - Details of flights and walks taken including the direction, height above the ground for flights, distance flown and distance travelled from breeding site.

3.1.3 Process for notifying DELWP

Qualified and experienced Ecological Surveyor engaged to undertake the Brolga survey will identify themselves to the DELWP Statutory Planning program prior to commencing flocking and breeding surveys for Brolga. At this time the preferred method of communication for the immediate reporting of flocking and breeding sites will be confirmed.

The qualified and experienced Ecological Surveyor will provide a schedule of survey dates by email to the DELWP Statutory Planning program so that DELWP is aware of times to expect notification of flocking and breeding sites.

The qualified and experienced Ecological Surveyor must report the identification of a flocking and breeding site within 24 hours of observing the site.

The qualified and experienced Ecological Surveyor must also report to the DELWP Statutory Planning program where it is considered that observations of Brolga flight paths, flocking, foraging or breeding sites are likely to result in an increased risk of a Brolga colliding with a turbine. At this time the Wind Farm Contractor and DELWP will determine the requirement for additional survey.

3.2 Bat utilisation monitoring program

The Bat Utilisation Monitoring Program is to be implemented ‘as soon as the use commences’. This is defined as the operation of the first wind turbine within the Salt Creek Wind Farm. The Monitoring Program is to be implemented as per the methodology below and in accordance with ‘Draft Guidelines for Bat Surveys in Relation to Wind Farm Developments’ (ARI, 2007).

The Bat Utilisation Monitoring Program will utilise similar methods as per the bat activity survey undertaken prior to construction with some additions to meet the ARI Guidelines (ARI, 2007). That is, Anabat ultrasonic bat detectors will be used to monitor bat activity at a height of 50m and up to 1 m off the ground. The Anabats will be attached to a meteorological mast or turbine at four sites across the wind farm. The co-ordinates of these points will be recorded. The Anabats will be Program to operate between sunset and sunrise over a six week period, over two periods, during early summer to early autumn (November – March) when bats are likely to be most active, as indicated through knowledge of a number of species seasonal cycles and results of the pre-construction survey. In accordance with the ARI Guidelines, the two Anabats at each of the four sites will operate at the exact same time to allow direct comparison. The period of sampling will be scheduled during optimal weather conditions, which are relatively mild with no rain and preferably only light winds.

Anabats will be attached to Turbine 2, 5, 10 and 13 as per the map provided in Appendix B.

Condition 33.b)iv) requires provisions for the assessment of the influence of wet and dry climatic conditions on utilisation of the subject land by Brolga and bat populations. This will be addressed through the protocol mentioned in Section 1.2 of this plan.

Reporting of Anabat results is to be consistent with the ARI Guidelines with the following to be requested from the consultant analysing the bat calls and included in the report provided to the Responsible Authority and DELWP:

- The number of calls recorded
- A sample frequency versus time graph of each species identified during the survey (the graphs must be of species recorded and identified during the survey)
- For species with similar call characteristics, a written description of the characteristics used to distinguish these species must be included in the methods
- An indication of the proportion of calls identified, ie. the total number of calls processed and the percentage of these that were identified
- A description of the reference library used for the identification process, including the number of calls available for each species for that region.

3.3 Bird and bat strike monitoring program

The aim of the Bird and Bat Strike Monitoring Program is to estimate the number of avian and bat fatalities attributable to wind turbines. This program will also consider deaths of bats through barotraumas. The Program comprises three components:

- Systematic carcass searches in the vicinity of the wind turbines
- Scavenger trials to determine the number of carcasses that may be removed by scavengers prior to collection
- Search efficiency trial to determine the effectiveness of carcass searches.

As a minimum requirement the survey program must be overseen by an experienced ecologist who will:

- Conduct training programs
- Undertake spot audits, and
- Assist in setting up scavenger trials.

3.3.1 Carcass searches

The objective of carcass searches is to identify any bats or birds in the vicinity of the wind turbines that have been injured or killed. The search should identify both direct evidence, such as part or whole carcasses of birds and bats as well as indirect evidence, such as feather spots from birds. The procedure for carcass searches is detailed below.

Personnel implementing the carcass search should be adequately trained to effectively conduct the carcass searches. Where the carcass searches are not completed by an experienced ecologist, the person completing the searches will be trained by an experience ecologist. Assessment of the adequacy of the training will include a mock carcass search. Evidence of the training must be provided to DELWP within 30 days of the training taking place.

3.3.1.1 Site selection and frequency of carcass searches

As the wind farm comprises up to15 turbines only, all turbines will be searched as part of the carcass search program. Each turbine will be searched once a month, every month for the first 12 months of operation. Based on the results of the first year of carcass searches and the results of scavenger trials the frequency and number of turbines searched may be altered based on the following factors:

- The length of time a carcass is detectable before it is scavenged

- If a clear relationship is identified between the timing of collisions and the behaviour and movement of certain species, than the timing and frequency of searches may be altered to better coincide with times when collisions are most likely
- If the distribution of carcasses collected indicates that some turbines are more likely to cause higher mortality rates than others
- The need to assess the variation in the occurrence bird and bat strikes at turbines with aviation, obstacle night-time lighting versus those without, if such lighting is present. Current specifications for the Salt Creek Wind Farm do not include aviation, obstacle night-time lighting.

The frequency of carcass searches may alter prior to the completion of the first year of monitoring if a significant impact occurs, requiring the intensity of the surveys to increase.

Any change in the frequency of the surveys will be made in consultation with and with agreement from DELWP and Moyne Shire Council.. Moyne Shire Council will be notified of any change to the frequency and number of turbines searched and the rationale behind the change outlined in writing.

3.3.1.2 Search area

In order to ensure carcass searches are systematic and repeatable semi-permanent quadrants are to be set up surrounding each turbine. Current advice from DELWP is that best practise for determining search areas based on the proposed turbine dimensions and the species of interest is Hull and Muir 2010 *Search areas for monitoring bird and bat carcasses at wind farms using a Monte-Carlo model* (Australasian Journal of Environmental Management). In accordance with best practice this methodology will be employed in consultation with DELWP and to the satisfaction of Moyne Shire Council. Based on the current specifications of 87m tower height and 63m blade length, the search zones have been calculated as follows: inner search zone to 77m radius; outer search zone from 77m to 132m radius.

Transects will be spaced 4 metres apart in the inner zone, and 10 metres apart in the outer zone.

Surveys for bats will be refined for those periods in the year when in particular southern bent-wing bats are most active (Early Summer to Early Autumn) and are most likely to be encountered foraging.

The search area may be altered at the end of the first year based on the distribution of carcasses identified. Any alteration to search areas shall only be undertaken following consultation with and written agreement from DELWP and Moyne Shire Council and to the satisfaction of Moyne Shire Council.

3.3.1.3 Search method

Prior to beginning the carcass search program, that is just prior to the operation of the wind farm commencing, a ‘clean sweep’ of all turbine areas will be undertaken to remove any carcasses or partial remains. Gloves are to be worn to handle carcasses.

During each carcass search the searcher is to walk along each transect searching an area along either side of the transect, out to half the transect width (e.g. 2 metres either side of inner zone transect, 5 metres either side of outer zone transect).

A record of the date, turbine, weather, time of search and person undertaking the search will be kept for each carcass search undertaken, even where no carcasses are identified. The record will include whether the turbine assessed has aviation, obstacle, night-time lighting. The records will allow for comparison of a number of factors in comparison to the incidence and detection of bird and bat strikes.

The following information should be recorded for each carcass search undertaken:

- Observer (or observer identifier)
- GPS tracking of observer, with GPS tracks made available to DELWP upon request
- Survey Date, time of search, time taken to conduct search, turbine identifier*

- Location of turbine searched (eg end or middle of turbine string/ridgeline (or rise)/ near
- Waterbody/ near remnant vegetation and distance from the feature)
- Substrate conditions (e.g. height and density of vegetation, rocks and divots).
- Weather conditions over previous five days and nights – including temperature, wind speeds, rainfall events
- Any onsite works in the previous five days that may affect bird and bat movements – e.g. night maintenance
- Identify if turbine is lit during darkness or low visibility periods
- Digital photo from turbine base in each direction of compass (to focus on vegetation and other factors that may affect observability at site) north, east, south and west*
- Actual area searched for each turbine*
- Presence of any stock or other land use (e.g. cattle, sheep, cropping).
- Any predator control measures recently undertaken.

Where a carcass or feather spot is located the following information should be recorded:

- Time of find
- Location - distance and direction in relation to turbine base and GPS coordinates
- Type of remains (carcass / feather spot)
- Species and sex (age if possible)
- Outline of injury – no visible sign, wing, lacerations, wing plus one or more other, unidentifiable due to state of decay
- Degree of decay
- Evidence of scavenging or movement
- Digital photos
- Substrate conditions at within one square metre of where carcass located (e.g. height and density of vegetation, presence of stock and etc)
- Distance from observer to carcass when first located*
- Distance of carcass to nearest point on transect line*

A feather spot is defined as ten or more feathers present at one location. An example data sheet is included in Appendix C.

The same information, excluding asterisked points will be recorded for any incidental finds of dead or injured birds or bats within the wind farm site.

All carcasses will be positively identified by an appropriately qualified and experienced ecologist. Carcasses should be handled using the detailed carcass handling procedure and labelled and retained frozen for future use in scavenger and observer trials. Carcasses must be made available to DELWP upon request.

All carcasses identified are to be removed from the site to avoid recounting. The removal of carcasses will also avoid enticing predator species to within the impact zone of turbines. As outlined above, all carcasses must be identified to:

a) Determine if the species is listed as threatened under the *Environment Protection and Biodiversity* Act 1999 (EPBC Act), *Flora and Fauna Guarantee Act1988 (FFG Act) or on the Advisory list of Threatened Vertebrate Fauna in Victoria – 2013* (the Advisory List)

b) Determine if the carcases are indigenous or introduced species.

This information will determine whether a significant impact, i.e. the death of a threatened species has occurred.

Mortalities of Brolgas (*Grus rubicunda*), Southern Bent Wing Bat (*Miniopterus schreibersii bassanii*) and EPBC Act and FFG Act and other advisory listed species will be report to DELWP and Moyne Shire Council within two days of a strike. All other bird and bat strikes are to be reported annually DELWP and Moyne Shire Council.

The operator of the wind farm, Salt Creek Wind Farm Pty Ltd, will obtain a permit under the state *Wildlife Act 1975* from DELWP to handle and keep native wildlife (including dead wildlife) in order to undertake the above monitoring program.

3.3.1.4 Carrion removal program

Other carcasses identified within the wind farm that are not a result of a turbine strike; i.e. poisoned rabbits and foxes, or dead livestock will be removed to prevent enticing predator species to within the impact zone of the turbines. The frequency of searches for carcasses will be dependent on the level of risk of carcasses being present as follows:

- Within cropped paddock or paddocks without stock carrion removal searches will be limited to periods following fox and rabbit baiting. These areas will be searched two weeks and four weeks following baiting activities
- Within stocked paddocks carrion removal searches with be completed once a month and as per the above timetable following baiting
- Within stocked paddocks during lambing a weekly search for carcasses should be undertaken.

Carcass removal searches and logging of searches and finds are the responsibility of the Site Manager

Deaths, within the vicinity of turbines, that are clearly unrelated to turbine strike that is a terrestrial (non-flying) species (eg. sheep, kangaroos, rabbits and foxes) will be removed immediately as identified.

The location of all other species will be left in-situ and the location of the carcass recorded. If the person conducting the carcass removal program is not a qualified ecologist, the project ecologist should be contacted. The project ecologist is to follow the protocol for incidental finds as provided in Section 3.3.1.5.

All reporting related to the carrion removal program will be reported annually

3.3.1.5 Protocol for dealing with incidental finds

Where a bat or bird is found outside of the carcass search program the following protocol should be implemented:

- If the find is made within five days of a scheduled carcass survey, then the form provided in Appendix B will be completed and the body left in-situ
- If the find is made more than five days before a scheduled carcass survey, then the form provided in Appendix B will be completed and the body collected. Carcasses should be handled using the detailed carcass handling procedure and labelled and retained frozen for future use in scavenger and observer trials. Carcasses must be made available to DELWP upon request.

3.3.1.6 Protocol for dealing with injured birds and bats

Where an injured bird or bat is observed the following procedure will be completed:

- The injured animal is to be assessed by an ecologist or Site Environmental Officer
- Handling of sick or injured animals will be avoided where possible, or if not, minimised
- Handling of animals will only be undertaken by an Ecologist or Authorised Wildlife Carer
- Injured and sick animals will be transferred to suitable temporary housing as soon as possible. This is likely to be a calico or hessian bag, placed within a box

- Sick or injured animals will be kept separate from other animals in a quiet, safe area
- Injured or sick animals will be transferred to a Veterinarian or other suitably qualified carer
- Injured or sick animals will be taken to a Veterinary as soon as possible
- Animals whose injuries can be treated and stand a good chance of a successful return to the wild (as determined by the Veterinarian), will be placed into the care of a local and accredited party. Zoos Victoria will be contacted if the injured animal is a threatened species
- Animals that are unable to be treated will be humanely euthanized. Euthanasia will only be carried out by a Veterinarian.

DELWP will be informed of any injured listed birds or bats identified within the wind farm site within two days.

All wind farm personnel will be informed of the protocol for dealing with injured birds and bats during the induction program.

The nearest veterinary clinic is located at 72 Dunlop Street Mortlake (Ph. 03 5599 2612). The Wildlife Rescue phone number is 1300 094 535.

3.3.2 Scavenger trails

The objective of scavenger trials is to determine the number of carcasses that are likely to have been removed by predators prior to detection by the searcher. The trials may also provide information as to a suitable time period between searches to allow for the greatest efficiency in search effort and detection of carcasses in particular relevant to:

- Brolga (*Grus rubicunda*)
- Southern Bent Wing Bat (*Miniopterus schreibersii bassanii*), and
- Other species listed under the *Environment Protection and Biodiversity Conservation Act 1999*, the Flora and Fauna Guarantee Act 1988 and the Advisory list of Threatened Vertebrate Fauna in Victoria – 2013 (the Advisory List).

The trials are to be conducted during each season in the first year of monitoring. Trials should be completed in the middle of each season in January, April, July and October. The trials will be undertaken in accordance with the following process:

- Scavenging rate trials will be conducted independently of searcher efficiency trials
- Turbines will be selected each season
- Two carcasses will be randomly placed within the carcass search area of the selected turbine
- Carcasses will be of native species, where available; otherwise, surrogate non-native species will be used
- Ten carcasses of each size class of interest will be used each season.
- Each trial will utilise a combination of large birds and bats carcasses that approximate those relevant to:
  - Brolga (*Grus rubicunda*)
  - Southern Bent Wing Bat (*Miniopterus schreibersii bassanii*).
- Other size classes may be introduced in subsequent trials if mortalities of other species listed under the *Environment Protection and Biodiversity Conservation Act 1999*, the *Flora and Fauna Guarantee Act 1988* and the Advisory list of Threatened Vertebrate Fauna in Victoria – 2013 (the Advisory List) are detected. This need will be determined in consultation with and with agreement from DELWP and Moyne Shire Council, to the satisfaction of Moyne Shire Council.
- Appropriate domestically bred surrogates include; brown mice for bats, quail for small birds, pigeons for medium birds and geese for large birds

- Where bat carcasses are substituted with mice during any scavenger trial then a single comparative trial should be completed in the same season as the initial trial. Six bats and six mice should be distributed across six turbine, with one specimen of each at each turbine
- Species used are to be discreetly marked (e.g. a piece of dull coloured electrical tape wrapped around the right leg) so that they may be distinguished from actual bird and bat strikes
- Each carcass will be given an individual identifier so that it is possible to identify their initial location if relocated by a scavenger
- Carcasses should be handled using the carcass handling procedure to reduce the likelihood of human scent deterring scavengers
- The GPS location of each carcass and the type of carcass is to be recorded
- The carcasses are to be checked over a period of 30 days, with carcasses being monitored every day for the first ten days, and then every third day until all carcasses have disappeared. At the completion of the 30 day period all remaining carcasses or evidence of the carcasses is to be removed. Evidence from previous domestic scavenger trials have determined that carcasses are almost all scavenged within five – 10 days. (Brett Lane & Associates, 2014). The lengthening of survey frequency after 10 days is not anticipated to impact markedly on scavenger trial data.
- Notes are to be recorded each search day as to the presence or absence of each 'detection' carcass and where still present the condition of the carcass and any evidence of scavenging. The following attributes are to be recorded:
    - Observer (or individual identifier)
    - Dates of surveys
    - Type of carcass (and representative category)
    - Condition of carcasses at placement (fresh/ frozen/ approximate time since death/existing injuries)
    - Turbine identifier
    - Distance and direction from turbine base and GPS location
    - State of vegetation/ substrate where carcass is situated (high/ medium or low vegetation (and percentage cover of each within one square metre of carcass placement) /bare ground/ amongst rocks / visibility of carcass from the air)
    - Date of observation
    - Condition of carcass at each daily visit, any relocation of carcass
    - If partially scavenged then best guess at type of scavenger
    - Digital photographs of carcass if partial scavenging has occurred
    - Date of carcass removal (if occurs)
    - Presence and abundance of stock on site, or other land use (cattle/sheep/cropping)
    - Details of any recent or current predator control measures being undertaken within the site.
- The rate of bird and bat deaths attributed to turbines will be adjusted based on the results of the assessment
- The collected raw data is to be submitted to DELWP electronically.

3.3.3 Searcher efficiency trials

The objective of searcher efficiency trials is to determine the percentage of bat and avifauna carcasses detected by searches, to allow bird and bat strike counts to be adjusted for searcher bias.

- Searcher efficiency trials will be conducted throughout the first year of monitoring, with the searcher to be unaware of the trial dates

- Consistent with scavenger trials, searcher efficiency trials are to be conducted during each season in the first year of monitoring. Searcher efficiency trials should be completed in the middle of each season in January, April, July and October.
- Carcasses used will be discreetly marked with an identification number and placed at turbines by a person not conducting the turbine carcass search, early in the morning prior to scheduled turbine carcass searches. The GPS location of each carcass and the type of carcass is to be recorded
- Carcasses will be of native species, where available; otherwise, surrogate non-native species will be used. Trial carcasses will include both large, medium and small birds and small bat carcasses as are expected at the site
- To ensure trials provide statistically robust results for species of interest carcasses used are to approximate the following:
  - Brolga (*Grus rubicunda*)
  - Southern Bent Wing Bat (*Miniopterus schreibersii bassanii*), and
  - Other species listed under the *Environment Protection and Biodiversity Conservation Act 1999*, the *Flora and Fauna Guarantee Act 1988* and the Advisory list of Threatened Vertebrate Fauna in Victoria – 2013 (the Advisory List).
- Species used are to be discreetly marked (e.g. a piece of dull coloured electrical tape wrapped around the left leg) so that they may be distinguished from actual bird and bat strikes
- A minimum of ten of each type of carcass (large, medium and small birds and small bat carcasses) are to be used in searcher efficiency trials throughout the year
- A target number of 60 carcasses will be placed during scheduled turbine carcass searches over the course of the survey year
- Turbines to be used for searcher efficiency trials will be randomly selected as a subset of the broader wind farm
- Trial carcasses will be placed randomly within the usual mortality search area as defined in Section 3.3.1.2
- The placement of carcasses will be distributed across the year to include differing seasonal conditions including when the grass is high and low. Carcasses will be placed in the variety of ground cover types that occur across the wind farm site
- Any carcasses not found during searches will be retrieved at the end of the survey day. Any carcasses that are unable to be re-located will be noted as they may have been scavenged. This will be accounted for in the calculation of searcher efficiency
- The rate of bird and bat strikes will be adjusted based on the results of the assessment
- Ideally the same searcher should conduct all carcass searches. Where more than one searcher is utilised, all individual searchers must have completed an independent searcher efficiency trial
- The raw data obtained during these trials must be provided to DELWP as a minimum the following information must be collected:
  - Name of the searcher
  - Weather conditions during the trial
  - Visibility of carcasses
  - Category and condition of each carcass identified and not identified.

4. Mitigation and management strategy

This Section of the Plan outlines a mitigation and management strategy to ensure compliance with Condition 33e) of the Planning Permit.

The aim of the mitigation and management strategy is to have an objective of zero net-impact for:

- Brolga (*Grus rubicunda*)
- Southern Bent Wing Bat (*Miniopterus schreibersii bassanii*), and
- Other species listed under the *Environment Protection and Biodiversity Conservation Act 1999*, the *Flora and Fauna Guarantee Act 1988* and the Advisory list of Threatened Vertebrate Fauna in Victoria – 2013 (the Advisory List).

The mitigation and management strategy will provide a clear stages approach to significant impacts, consistent with Condition 33b of the Planning Permit. Figure 4.1 provides a summary of the administrative stages of the strategy, with further detail for each stage provided below.

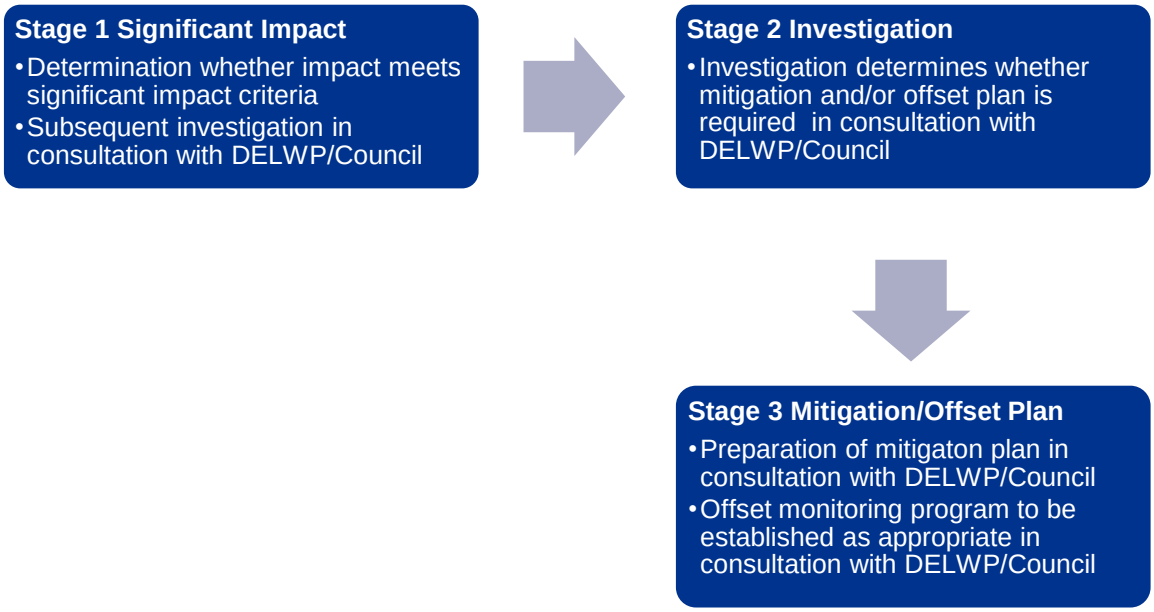

Figure 4.1 : Sumary of mitigation and mananagement strategy flow chart

4.1 Definition of a significant impact

A significant impact on Birds and Bats arising from the operation of the Salt Creek Wind Farm that requires the implementation of mitigation measures and offsetting is defined as:

- A threatened bird or bat (or recognisable parts thereof) listed under the EPBC Act, FFG Act or on the Advisory List, is found dead or injured within the wind farm footprint once the operation of the first turbine within the wind farm has commenced (likely species are listed in Appendix A).

4.2 Response measures for significant impacts

Where a significant impact is identified the following process should be undertaken:

- The significant impact will be reported to Moyne Shire Council and DELWP within two days of the significant impact being identified

- An investigation is to be conducted into factors that are likely to have led to the significant impact including the time of year, life cycle of the species, weather conditions. The scope of the investigation must be developed in consultation with and with agreement from DELWP and Moyne Shire Council, to the satisfaction of Moyne Shire Council.
- An investigation will be commenced within seven days of the of the significant impact
- An evaluation of the likelihood of further collisions by the species is to be conducted.

The investigation is to be undertaken by a qualified ecologist, and must be completed within two months of the significant impact taking place. A report will be prepared at the completion of the investigation in consultation with DELWP and to the satisfaction of Moyne Shire Council. Based on the outcomes of the investigation and the findings in the report, Moyne Shire Council will decide and advise whether a subsequent mitigation and/or offset plan is required, in consultation with DELWP.

4.2.1 Mitigation Plan

If required by Moyne Shire Council, a mitigation plan will be prepared that considers:

- The factors that have contributed to the significant impact and the risk of further collisions by the species.
- The efficacy and appropriateness of offset measures in response to any significant impacts in consultation with DELWP and to the satisfaction of Moyne Shire Council

Where the death of a Brolga or Southern Bent-wing Bat or other listed threatened species is recorded, mitigation measures should be implemented that contribute to the objective of a zero net impact to these species.

Mitigation measures to be implemented may include but are not limited to:

- Modification of habitat
- Implementation of detailed survey program to collect further information on the source of activities resulting in significant impacts
- Bird and bat deterrence programs to consider flight path observations to include:
    - Consideration results of latest trials for deterring bats from turbines, this should include investigation of electromagnetic and acoustic deterrents. Where found to be effective, such devices should be implemented, and effectiveness of devices at Salt Creek Wind Farm monitored
    - Where investigations determine that the risk to the Southern Bent-wing Bat to be injured or killed by a turbine, for the life of the wind farm, is greater than the aim, consideration should be given to the shutdown of turbines during peak activity periods for the Southern Bent-wing Bat
- In the event that significant impacts are reoccurring in a spatial or temporal pattern, the temporary shutdown of turbines for high risk periods and in high risk locations may be considered.

Research into appropriate mitigation measures for wind farms is an expanding field, where mitigation measures are required to be implemented; current best practise measures should be used in consultation with DELWP and Moyne Shire Council; to the satisfaction of Moyne Shire Council.

4.3 Offset measures for significant impacts

If required by Moyne Shire Council, an offset plan will be prepared. The offset plan is to be developed in consultation with DELWP and Moyne Shire Council and to the satisfaction of Moyne Shire.

Specific Offset Measures are to be determined at the time it is determined an offset is required, so that the offset may consider the species impacted and the significance of the impact.

Offsets aim to deliver an overall conservation outcome that improves or maintains the viability of the specie(s) impacted.

4.3.1 Offset measures for key significant impacts

The following provides further detail as to the appropriate offset approaches for impacts to particular species determined to be a significant impact.

4.3.1.1 Brolga

Consistent with current Brolga interim guidelines (DSE 2012) offset options the following measures may be considered appropriate:

- Reducing the Mortalities from powerlines (if and when determined)
- Protection and enhancement of breeding sites by:
  - restoration of the natural flooding regime of wetlands by closing drains;
  - increasing inundation frequency of 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;
  - fox control measures at breeding sites.

Offset options chosen must be supported by an appropriate monitoring regime in consultation with DELWP and Moyne Shire Council and to the satisfaction of Moyne Shire Council

4.3.1.2 Southern Bent Wing Bat

Consistent with the broader management recommendations for species recovery for the Southern Bent Wing Bat, the following measures may be considered appropriate

- Revegetation programs to provide feeding habitat and corridors
- Long-term protection of existing habitat for the subject species away from the subject land
- Restoration or rehabilitation of existing degraded habitat away from the subject land
- Assisting in further surveys or the removal of threatening processes such as contributing to a predator control program
- Contributing to relevant research or education programs.

Offset options chosen must be supported by an appropriate monitoring regime in consultation with DELWP and Moyne Shire Council and to the satisfaction of Moyne Shire Council

4.3.1.3 General offset arrangements

All agreed offsets should meet the following criteria:

- Be targeted to species impacted by the significant impact
- Aim at achieving a long-term conservation outcome that should also be cost-effective
- Be commensurate with the magnitude of the significant impact
- Where possible be located within the same vicinity of the wind farm
- Be delivered in a timely manner
- Be enforceable, monitored and audited (DEWR, 2007).

Where an offset is required, the most effective offset should be discussed with and agreed to by DELWP and Moyne Shire Council. Salt Creek Wind Farm Pty. Ltd. or the contractor must supply evidence to DELWP and Moyne Shire that the proposed offset results in a zero net-impact to the relevant species.

Any offset must be initiated within twelve months of the initial detection of the significant impact.

Salt Creek Wind Farm Pty. Ltd. or the contractor must provide a management plan by the completion of the 12 month period that includes the following:

- The rationale as to how the offset will contribute to the objective of a zero net impact to the species
- A monitoring and reporting schedule that allows for the provision of sufficient evidence that the outcome of the offset has been achieved. Monitoring and reporting should be provided for a period of three years
- A contingency plan for implementing additional offset measures, if it is found that the proposed offset measures do not achieve the desired outcome
- The report must be provided to and approved in writing by DELWP and Moyne Shire Council. Appropriate evidence must be provided to DELWP and Moyne Shire Council on an annual basis for the lifetime of the management plan that demonstrates that Salt Creek Wind Farm Pty. Ltd. or the contractor has met the requirements of the plan.

4.4 Process for reporting and implementing mitigation and offset measures for significant impacts

- Where a significant impact occurs, the DELWP Statutory Planning Program and Moyne Shire Council are to be notified within two days of the significant impact being detected. At this time DELWP and Moyne Shire Council are to nominate the soonest convenient date to meet to discuss the implementation of mitigation and offset measures.
- An investigation by a qualified and experienced ecologist is to be completed into the species implicated to determine the occurrence of the species in the area and factors that are likely to have led to the significant impact including the time of year, life cycle of the species, weather conditions, and an assessment of the likelihood of the significant impact reoccurring. The investigation must be initiated within seven days of the significant impact being detected.
- Where an impact has occurred to a Brolga or Southern Bentwing-Bat, appropriate mitigation measures and/or offsets as described in Section 4.2 and Section 4.3 are to be implemented to achieve a zero net loss of individuals of either of these species.
- For all other species:
    - The results of the investigation are to be provided to DELWP and Moyne Shire Council. Where it is considered there is a high likelihood of the significant impact re-occurring within the following 12 month period appropriate offset and mitigation measures are to be developed in consultation with agreed to by DELWP and Moyne Shire Council.
    - If it is considered unlikely that the significant impact will reoccur, carcass monitoring is to continue as documented in Section 3.3.1.1. The frequency of carcass monitoring may be increased for a period following the significant impact to determine whether factors such as weather are contributing to the occurrence of significant impacts.
    - The duration of increased monitoring should consider:
        - Whether the significant impact occurred during a period of seasonal activity. Where this is the case increased monitoring should be completed for the duration of the period and for one month following the active period.
        - The results of the carcass removal program. The period of time between carcass surveys should be less than the median period for removal of the type of carcass.
    - If a further significant impact is recorded for the particular species within a 12 month period then mitigation measures are to be agreed to and implemented. Where this 12 month period continues after the 3 year specified monitoring period, a continued monitoring program should be determined in consultation with DELWP and Moyne Shire Council, to the satisfaction of Moyne Shire Council. This program may be reduced to high risk periods or high risk areas of the wind farm.

4.5 Responsibility for management and monitoring requirements

Table 4.1 and Table 4.2 provide a summary of the key responsibilities for each of the management measures proposed in the BAM Plan.

Table 4.1 : Management requirments

Management Measure	Phase	Timing	Responsibility
Brolga Utilisation Monitoring Program (breeding): Survey of the presence, behaviour and movement of Brolga during the breeding season in a variety of climatic conditions (within 3km radius)	Post construction	Two days per month from July to December. For a minimum of three years including wet, intermediate and dry climatic conditions.	Consultant engaged by SCWF (Site Manager)
Brolga Utilisation Monitoring Program(flocking): Survey of the presence, behaviour and movement of Brolga during the flocking season in a variety of climatic conditions (within 5km radius)	Post construction	Two days per months from December to June. For a minimum of three years including wet, intermediate and dry climatic conditions.	Consultant engaged by SCWF (Site Manager)
Bat Utilisation Monitoring Program Survey of the type and abundance of bat species utilising the site over a variety of climatic conditions	Post construction	Two six week periods of consecutive nights, in early summer (November) and early autumn (March). For a minimum of three years including wet, intermediate and dry climatic conditions.	Consultant engaged by SCWF (Site Manager)
Bird and Bat Strike Monitoring Program: Survey of the number of deaths of birds at bats as a result of interaction with turbines, taking into account loss of carcasses to scavengers and searcher efficiency.	Post construction	Once a month (or as amended to the satisfaction of Moyne Shire Council). For a minimum of three years including wet, intermediate and dry climatic conditions.	SCWF representative (Site Manager)
Carrion removal program: All carrion identified within the wind farm site is to be removed to prevent the attraction of indigenous predators to the site	Post construction	Dependent on the risk level associated with baiting and lambing.	SCWF representative (Site Manager)
Mitigation measures to be implemented to minimise the occurrence of significant impacts.	Post construction	If determined required by Moyne Shire Council in consultation with DELWP based on significant impact investigation.	SCWF representative (Site Manager)in consultation with DELWP and Moyne Shire Council
Offset to be implemented to account for the occurrence of a significant impact.	Post construction	If determined required by Moyne Shire Council in consultation with DELWP based on significant impact investigation.	SCWF representative (Site Manager) in consultation with DELWP and Moyne Shire Council

Table 4.2 : Monitoring Requirements

Purpose	Phase	Timing	Responsibility
Survey the number of deaths of birds and bats as a result of interaction with turbines, taking into account loss of carcasses to scavengers and searcher	Operation	Minimum of three years	MLWF representative

Purpose	Phase	Timing	Responsibility
efficiency.			(Site Manager)
Survey the presence, behaviour and movement of Brolga within the subject site in flocking and breeding seasons in a variety of climatic conditions.	Operation	Minimum of three years	Consultant managed by SCWF (Site Manager)
Survey the type and abundance of bat species utilising the site over a variety of climatic conditions.	Operation	Minimum of three years	Consultant managed by SCWF (Site Manager)

5. Regular reporting requirements

This Section of the Plan outlines the regular reporting requirements to be undertaken by Salt Creek Wind Farm Pty Ltd to document the results of the Bat and Avifauna Monitoring Program.

Reporting is to be conducted annually for the three years of operation for which monitoring occurs, with the year beginning the month the operation, defined as the commissioning of the first wind turbine, of the wind farm commences. The need for reporting following the completion of the three years of monitoring is to be determined in conjunction with the Shire of Moyne and DELWP. Submission of reporting is to DELWP and Moyne Shire Council, to the satisfaction of Moyne Shire Council.

5.1 Review of bird and bat monitoring program

In accordance with Condition 33 d) of the Planning Permit, the Brolga and Bat Utilisation Monitoring Program and the Bird and Bat Strike Monitoring Program will be reviewed annually as well as at the end of the third year of monitoring to determine if the monitoring program has adequately assessed the species response to the range of ‘dry’, ‘intermediate’ and ‘wet’ climatic conditions.

At this time it will be determined whether further monitoring is required to target species for which strike rates are considered biologically significant. The definition of biologically significant impact is discussed in Section 4. Any requirements for further survey work within a specified time period will be in consultation with DELWP and Moyne Shire Council; to the satisfaction of Moyne Shire Council.

5.2 Annual reporting

An annual report will be produced 12 months after the operation of the first turbine of the wind farm commences and on that date annually for a minimum of three years. The three years may not be consecutive to account for the inclusion of a ‘wet, intermediate and dry’ year.

In accordance with Condition 33f) of the Planning Permit, the annual report will be available to the public in an electronic format via a website operated by Salt Creek Wind Farm Pty Ltd or its parent company. The results of the Brolga and Bat Monitoring Program will also be provided to studies on cumulative impacts.

All raw data regarding mortality, utilisation and other relevant associated trials shall be made available with the annual reporting.

As per 1.2, a separate protocol will be developed to address conditions 33.b)iv) and 33.c)vii) relating to consideration of “dry”, “intermediate” and “wet” climatic conditions. This protocol will be prepared in consultation with DELWP and approved and endorsed by Moyne Shire Council. All post-operational monitoring will subsequently comply with this protocol. Annual reporting will also address climatic conditions as outlined in the protocol. Monitoring will be undertaken for a minimum of three years (but up to five years) in accordance with conditions 33.b)iv) and 33.c)vii)of the permit.

5.3 First year reporting

Reporting in the first year is to include:

- Confirmation as to the determination of the year as ‘dry’, ‘intermediate’ or ‘wet’
- Post-construction bird and bat utilisation survey methodology and results (where relevant), including sites sampled, survey effort, species identified
- Methodology and results from scavenger surveys including scavenger rates per size category and type, ground cover and season. This should also include an indication of what seasonal scavengers were on site based on carcass observations and sightings and estimates of rates per each scavenger species for size category and type, ground cover and season

- Methodology and results from observer efficiency trials including the searcher efficiency of each observer for each carcass size (birds) and type (birds and bats), ground cover category and season
- Summary of details of all mortality searches including search methodology, number and frequency of turbine searches, vegetation condition, bird and bat remains found at each turbine, weather and vegetation conditions, area searched, survey days per year, number of searchers
- Details of any incidental finds
- Annual and seasonal estimates of mortality per turbine, per MW rated, per megawatt produced, and per rotor swept area for small, medium and large birds and bats. This should also include calculations of mortalities for any species whose death was defined as a 'significant impact'
- Methodology and justification for all calculations of mortality including searcher efficiency trials, scavenger trials, actual search area (and area not searched due to non-participating landowners), and references for this methodology
- Comparison between mortality rates at lit and unlit sites if applicable, including statistical limitations of splitting sample size
- Details of any reports of significant impacts and subsequent measures undertaken including details of investigation, and any mitigation and / or offset measures. The progress of these measures should be reported here as should any monitoring to determine if these methods have been successful in meeting desired objective
- Details of any fox (or other scavenger control) including dates, locations (in relation to turbines) and takes as this will impact on scavenger rates detected in scavenger trials
- Results of the Brolga Utilisation Monitoring Program across the flocking and breeding season
- Results of the Bat Utilisation Monitoring Program.
- Results of any carrion removal undertaken in accordance with 3.3.1.4.

The required frequency of searches and number of turbines searched will be reviewed in consultation with DELWP and Moyne Shire Council; to the satisfaction of Moyne Shire Council and a clear rationale provided for any changes to the search program in the following years. Any alteration to methodology will only be undertaken in consultation with and with agreement from DELWP and Moyne Shire Council; to the satisfaction of Moyne Shire Council.

5.3.1 Second year reporting

Reporting in the second year is to include the following:

- Confirmation as to the determination of the year as 'dry', 'intermediate' or 'wet'
- The survey methods (including list of observers, dates and times of observations)
- Results of the Brolga Utilisation Monitoring Program across the flocking and breeding season
- Results of the Bat Utilisation Monitoring Program
- Results of the Bird and Bat Strike Monitoring Program consistent with the first year reporting. Carcass Search results should be adjusted in consultation with DELWP and to the satisfaction of Moyne Shire Council, based on the results of the Scavenger Survey and Searcher Efficiency results from Year 1. The required frequency of searches and number of turbines searched will be reviewed and a clear rationale provided for any changes to the search program in the following years. Any alteration to methodology will only be undertaken in consultation with and with written agreement from DELWP and Moyne Shire Council, to the satisfaction of Moyne Shire Council.
- The occurrence of any significant impact, and the mitigation measures and offset that have been implemented.

5.3.2 Third year reporting

At the conclusion of the third year the Bird and Bat Monitoring Program is to be reviewed to determine if species response to the range of ‘dry’, ‘intermediate’ and ‘wet’ climatic conditions has been adequately addressed.

Reporting is to include the same information as that reported in Year 2 and in addition include:

- A comparison of the results of bird and bat utilisation of the site before and after the operation of the first turbine commenced, and across ‘dry’, ‘intermediate’ and ‘wet’ climatic conditions
- A comparison of bird and bat mortality rates across ‘dry’, ‘intermediate’ and ‘wet’ climatic conditions
- The third year report is to be reviewed by the Shire of Moyne and DELWP. A review meeting is to be held between the Shire of Moyne, DELWP and Salt Creek Wind Farm Pty Ltd to determine whether permit conditions have been adequately addressed, and to determine whether further monitoring and reporting is required.

6. Summary

The following table summarises the mitigation measures to be undertaken during each phase of operation in relation to the requirements of the Bat and Avifauna Management requirements within and adjacent to the Salt Creek Wind Farm.

Table 6.1 : Summary of mitigation measures to minimise impacts on bats and avifauna at Salt Creek Wind Farm

BAMP Section	Management action	Description of action	Location	Timing	Frequency	Responsibility	Standard to be achieved	Monitoring and Reporting	Completed (Yes/No)
2.1	Bat utilisation survey	Survey of the type and abundance of bat species utilising the site over a variety of climatic conditions.	Within Salt Creek Wind Farm and surrounding area	Completed 2006	Completed 2006	Consultant managed by Salt Creek Wind Farm Pty Ltd	Ability to determine likelihood of impact of wind farm on bats.	Reporting presented within the planning submission.	Yes
2.2	Avifauna utilisation survey	Survey of the type and abundance of bird species utilising the site over a variety of climatic conditions.	Within Salt Creek Wind Farm and surrounding area	Completed 2006	Completed 2006	Consultant managed by Salt Creek Wind Farm Pty Ltd	Ability to determine likelihood of impact of wind farm on birds.	Reporting presented within the planning submission.	Yes
2.3	Brolga Survey	Survey of the flocking and breeding locations of Brolga within 40 km of the subject site.	Within a 40 km radius of the wind farm site.	Completed 2006	Completed 2006	Consultant managed by Salt Creek Wind Farm Pty Ltd	Ability to determine likelihood of wind farms of Brolgas.	Report presented within the planning submission.	Yes
3.1.2	Brolga utilisation Monitoring Program - breeding	Survey of the presence, behaviour and movement of Brolga during the breeding season in a variety of climatic conditions.	Within a 3 km radius of the wind farm site.	Two days each month from July to December	For a minimum of three years including wet, intermediate and dry climatic conditions.	Consultant managed by Salt Creek Wind Farm Pty Ltd	Knowledge of the home range of all breeding pairs of Brolga that utilize habitat within a 3 km radius of the wind farm site.	Any observation of nesting Brolga must be immediately reported to the DELWP Statutory Planning Program. The results of the survey will be reported within the Annual Report.	
3.1.1	Brolga Utilisation Monitoring Program - flocking	Survey of the presence, behaviour and movement of Brolga in flocking in a variety of climatic conditions.	Within a 5 km radius of the wind farm site.	Two days each month from December to June	For a minimum of three years including wet, intermediate and dry climatic conditions.	Consultant managed by Salt Creek Wind Farm Pty Ltd	Knowledge of any flocking sites within a 5 km radius of the wind farm site. Detailed knowledge of Brolga foraging areas and flight paths.	Any observation of Brolga flocking within a 5 km radius of the site must be immediately reported to the DELWP Statutory Planning Program. The results of the survey will be reported within the Annual Report.	

BAMP Section	Management action	Description of action	Location	Timing	Frequency	Responsibility	Standard to be achieved	Monitoring and Reporting	Completed (Yes/No)
3.2	Bat Utilisation Monitoring Program	Survey of the type and abundance of bat species utilising the site over a variety of climatic conditions.	Within the Salt Creek Wind Farm site.	Two periods between early summer (November) to early autumn (March) for six weeks each period	For a minimum of three years including wet, intermediate and dry climatic conditions.	Consultant managed by Salt Creek Wind Farm Pty Ltd	Knowledge of the type of Bats that fly through the wind farm site.	The results of the survey will be reported within the Annual Report.	
3.3	Bird and Bat Strike Monitoring Program	Survey of the number of deaths of birds at bats as a result of collision with turbines, taking into account loss of carcasses to scavengers and searcher efficiency.	Within the rotor swept area beneath each turbine.	Once a month for the first 12 months of operation.	For a minimum of three years including wet, intermediate and dry climatic conditions.	Salt Creek Wind Farm Pty Ltd representative	Quantitative evidence of the impact of the Salt Creek Wind Farm on avifauna.	Any significant impact must be immediately reported to the DELWP Statutory Planning Program. The results of the survey will be reported within the Annual Report.	
3.3.1.4	Carrion removal program	All carrion identified within the wind farm site is to be removed to prevent the attraction of indigenous predators to the site.	Within the Salt Creek Wind Farm site.	Dependent on the risk level associated with baiting and lambing.	For the duration of wind farm operation.	May be completed by the landowner, land manager of contract engaged by the Salt Creek Wind Farm Pty Ltd.	All carrion disposed of outside of the Salt Creek property.	The results of the carrion removal program will be reported within the Annual Report.	

BAMP Section	Management action	Description of action	Location	Timing	Frequency	Responsibility	Standard to be achieved	Monitoring and Reporting	Completed (Yes/No)
4.2	Mitigation Measures for Significant Impacts	Mitigation measures to be implemented to minimise the occurrence of significant impacts.	Where appropriate	Investigation must begin within seven days of significant impact being reported.	Where investigation identifies high likelihood of significant impact re-occurring.	Salt Creek Wind Farm Pty Ltd representative in consultation with DELWP and Moyne Shire Council.	A zero net-loss of - Brolga (*Grus rubicunda*), Southern Bent Wing Bat (*Miniopterus schreibersii bassanii*), and other species listed under the Environment Protection and Biodiversity Conservation Act 1999, the Flora and Fauna Guarantee Act 1988 and the Advisory list of Threatened Vertebrate Fauna in Victoria – 2013 (the Advisory List).	Any significant impact must be immediately reported to the DELWP Statutory Planning Program. An investigation into the Significant impact will be supplied to DELWP within 2 months of the significant impact. The results of any mitigation activities will be reported within the annual report.	
4.3	Offset measures for significant impacts	Offset to be implemented to account for the occurrence of a significant impact.	Where appropriate	Offset measures must be initiated within 12 months of the significant impact occurring.	Where the implementation of identified mitigation measures are found insufficient to prevent the occurrence of significant impacts.	Salt Creek Wind Farm Pty Ltd representative in consultation with DELWP and Moyne Shire Council.	A zero net-loss of Brolga (*Grus rubicunda*), Southern Bent Wing Bat (*Miniopterus schreibersii bassanii*), and other species listed under the Environment Protection and Biodiversity Conservation Act 1999, the Flora and Fauna Guarantee Act	A management plan outline the implementation of the offset and monitoring of the success of the offset must be supplied to DELWP within 12 months of the significant impact taking place. A follow up annual report must be provided to DELWP for the lifetime of the management plan, demonstrating compliance with the management plan.	

BAMP Section	Management action	Description of action	Location	Timing	Frequency	Responsibility	Standard to be achieved	Monitoring and Reporting	Completed (Yes/No)
							1988 and the Advisory list of Threatened Vertebrate Fauna in Victoria – 2013 (the Advisory List).		
5	Regular Reporting Requirements	Proposed survey schedule to be submitted at the beginning of each year and survey results reported at the end of the year.	For the Salt Creek Wind Farm site.	Annually	For a minimum of three years including wet, intermediate and dry climatic conditions.	Salt Creek Wind Farm Pty Ltd representative	Responds to all DELWP requirements for reporting.	Annual report to be submitted to DELWP and the Moyne Shire Council.	

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Western EcoSystems Technology, Inc. (2003) *Avian and Bat Mortality associated with the initial phase of the Foote Creek Rim Windpower Project, Carbon County, Wyomin*. Report prepared for SeaWest Windpower, Inc. San Diego, California.

Appendix A. Species of significance likely to visit the site (Biosis 2005)

Common Name	Scientific Name	EPBC Threatened Species	FFG	DELWP Advisory List
Australasian Shoveler	*Anas rhynchotis*	-	-	VU
Australian Painted Snipe	*Rostratula australis*	EN	L (as *Rostratula benghalensis)*	CR
Blue-billed Duck	*Oxyura australis*	-	L	EN
Brolga	*Grus rubicunda*	-	L	VU
Southern Bent-wing Bat	*Miniopterus schreibersii bassanii*	CR	L	CR
Great Egret	*Ardea alba*	-	L	
Grey Goshawk	*Accipiter novaehollandiae*	-	L	VU
Hardhead	*Aythya australis*	-	-	VU
Latham's Snipe	*Gallinago hardwickii*	-	-	NT
Musk Duck	*Biziura lobata*	-	-	VU
Whiskered Tern	*Chlidonias hybridus*	-	-	NT
White-bellied Sea Eagle	*Haliaeetus leucogaster*	-	L	VU

CR – Critically Endangered

EN – Endangered

VU – Vulnerable

NT – Near Threatened

L - Listed

Appendix B. Brolga roaming record sheet

Roaming Counts - Brolga				Flocking				Breeding	
Page number		**Ref No:**		**Observer:**		**Date:**		**Start time:**	
								Finish Time:	

Weather Enter one of the following categories	**Visibility** 0. Fine 1. Partly Cloudy 2. Overcast 3. Heavy Cloud 4. Mist/fog 5. Rain	Cloud: nil 20% 40% 60% 80% 100% Cloud: nil	Precipitation	Temperature	Wind: nil light medium strong	Wind Direction
Start						
Finish						

ID No.	**No. of Birds**	**Distance from nearest turbine**	**Behaviour**	**Maximum Height**	**Minimum Height**	**Broad habitat description**	**Breeding?**	**Notes**

Appendix C. Bird and bat carcass recording sheet

Bat/Bird Strike Monitoring Program				Season				Turbine No.	
Page number		Ref No:		Observer:		Date:		Start time:	
								Finish Time:	

Weather Enter one of the following categories	Visibility Fine 3. Heavy Cloud Partly Cloudy 4. Mist/fog Overcast 5. Rain	Cloud: nil 20% 40% 60% 80% 100% Cloud: nil	Precipitation	Temperature	Wind: nil light medium strong	Wind Direction
Start						
Finish						

ID No.	Carcass (Y/N)	Feather Spot (Y/N)	Time body found	Species	Approx age (juv/adult)	Sex	Distance from mast (m)	Easting	Northing	Scavenged (Yes/No)	Vegetation at site	Notes