6. PROPOSED ACTION ACTIVITIES AND POTENTIAL IMPACTS

The Proposed Action has the potential to impact on the ecological values within the Study Area during the construction, operation and decommissioning phases. The activities likely to result in potential ecological impacts during each phase are outlined in the following subsections.

6.1 CONSTRUCTION PHASE ACTIVITIES

The construction phase of the Proposed Action will consist of a variety of activities, including vegetation clearing and construction of WTGs and associated infrastructure. The construction phase is anticipated to have a duration of 24 to 48 months.

The construction phase activities have the potential to impact ecological values, through habitat disturbance and mortality, within the Study Area as a result of:

- Vegetation clearing for new access tracks, temporary construction compounds and laydown areas, borrow pits, water storage, batching plants, turbine hardstands, trenches, the electrical switching station, overhead powerlines and associated earthworks;
- excavating trenches associated with reticulation and instrumentation cables;
- blasting for turbine foundations (if required);
- construction traffic movements; and
- plant operations (rock crushing and batching plants).

Under the initial design scenario, the construction phase is anticipated to result in a total Disturbance Footprint of 1,438.0 ha across the Project Area and up to 1.9 ha of Proposed Access Route Impact Area, including within MNES habitats. See Section 9 for MNES impact discussion.

6.2 OPERATIONAL PHASE ACTIVITIES

The operational phase activities of the Proposed Action include:

- Operation of the WTGs for an estimated 30–35 year period; and
- routine maintenance and servicing of WTGs, access tracks, electrical installation and infrastructure (as required).

Potential impacts to ecological values within the Study Area, as a result of the above listed operational activities, include:

- Direct mortality as a result of bird and bat collision risks with WTGs;
- potential vehicle mortality and incidents as a result of vehicular movements, for maintenance, during the operational phase;
- habitat disturbance in the form of sound, light, dust, vibrations (albeit at a smaller scale than construction phase impacts) as a result of vehicular movements, for maintenance, during the operational phase; and
- potential hazardous materials exposure.

While operational phase activities occur for considerably longer than the construction phase, potential impacts are anticipated to be of lower frequency, more indirect in nature, and of lower intensity than those during the construction phase.

6.3 DECOMMISSIONING PHASE ACTIVITIES

If a decision was taken to decommission the Proposed Action, the decommissioning activities are anticipated to involve:

- Dismantling and removal of WTGs;
- removal of electrical reticulation where not part of the permanent network infrastructure;
- responsible disposal/recycling/reuse of infrastructure removed from the Study Area in accordance with the waste hierarchy; and
- rehabilitation of all land disturbance in accordance with good practice at the time, and where not required for ongoing grazing of agricultural uses.

It should be noted that:

- Underground cabling and hardstand pads will be left in situ, or deep ripped where rehabilitation is required;
- turbine foundations may be left up to 500 mm below rehabilitated ground level, as there is no risk to people or livestock;
- excavations will be backfilled and rehabilitated; and
- access tracks may be retained for the landholder's benefit, or rehabilitated.

Potential impacts to ecological values, as a result of decommissioning activities are of lower magnitude, than the construction phase. The decommissioning footprint will align with the construction and operation footprints to the greatest extent practicable, with no additional vegetation clearing anticipated to occur during the decommissioning phase.

Following decommissioning activities, the disturbed Project Area is to be rehabilitated in accordance with applicable legal requirements and land use agreements.

6.4 POTENTIAL IMPACTS TO ECOLOGICAL VALUES

Potential impacts as a result of the Proposed Action largely revolve around habitat loss and disturbance, particularly during the construction phase; while bird and bat collision with WTGs is the most prevalent impact during the operational phase. In the event that the Proposed Action is decommissioned, impacts will be largely similar to those during the construction phase, albeit of lower magnitude. Detailed information has been included in Table 6-1.

The Disturbance Footprint is up to 1,438.0 ha. Direct disturbance to MNES, including TECs, threatened species and migratory species, will predominantly occur by habitat loss and degradation as a result of vegetation clearing. Direct disturbance to MNES is further detailed in Section 9.

TABLE 6-1: SUMMARY OF PROJECT IMPACTS

Impact	**Phase**	**Relevance to the** Proposed Action
Clearing remnant and regrowth vegetation and the loss of habitat for native fauna	Construction only	• The Disturbance Footprint is anticipated to have a total area of 1,438.0 ha and will be impacted by the clearing of remnant and regrowth vegetation. • The removal of remnant and regrowth vegetation will negatively impact native species by significantly reducing species composition and structural diversity within the Disturbance Footprint. • Clearing of remnant and regrowth vegetation will result in the permanent removal of vegetation types and the habitat values (i.e., foraging, breeding, dispersal habitats etc.) for MNES and native fauna for the life of the Proposed Action. • Vegetation clearing is proposed to occur within the Disturbance Footprint. As such, habitat loss is likely to have a greater impact to flora and fauna species with smaller home ranges and specific habitat requirements (e.g. small mammals, amphibians and reptiles) compared to species with larger home ranges and more general habitat preferences (e.g., larger mammals and generalist birds).
Indirect impacts to species behaviour through creating barriers to movement and dispersal		• The construction of WTGs may result in barriers to movement for species accessing and dispersing throughout the Project Area. • Barriers to species movement and dispersal will be resultant from habitat clearing and fragmentation and/or short-term construction activities during construction. For example, roads have a more open canopy, lack ground cover and have different thermal characteristics than the surrounding habitat (Shine et al., 2004), often creating a microhabitat where predation risk is higher (Sheppard et al., 2008), and potentially resulting in behaviour changes and avoidance of these areas by certain species (Fahrig, 2007). • It is expected that creating barriers to movement and dispersal may impact native species through changing dispersal behaviours, reducing access to resources (e.g., water, food, breeding (e.g., hollows, mate selection etc.)), and depending on the strength of the barrier, disrupt ecosystem function and gene flow throughout the Project Area, in an area that may impede local movement to certain species (Sheppard et al., 2008).

Impact	Phase	**Relevance to the** Proposed Action
		• Therefore, it is likely that this impact will have a greater negative effect to native species that are more vulnerable to predation and are unable to disperse through non-remnant habitat, when compared to species with a lower predation threat and have greater dispersal ability, particularly within cleared, non-remnant habitat.
Indirect impacts to adjacent habitat areas as a result of the introduction and/or spread of weed and pest species		• As a result of the removal of vegetation and introduction of foreign material during the construction phase, there is potential for the introduction and/or spread of weeds and pest species throughout the Study Area. This introduction or spread of weeds and pests could be a result of on-foot movement, vehicular movement and the disruption and movement of vegetation. • Two Weed of National Significance (WoNS), velvety prickly pear and *Opuntia* spp., was recorded within the Project Area. An additional four invasive flora (not listed as WoNS) were recorded within the Project Area, being: blanket grass, buffel grass, devil's-tongue, and guinea grass. • Seven invasive fauna species were recorded within the Study Area, being: European cattle, feral pig, domestic dog, *Canis* spp.; feral cat, house mouse, and black rat. • Invasive flora and fauna have the potential to negatively impact native flora and fauna communities through competition for resources and/or predation/parasitism. • Native fauna are susceptible to degradation by feral pigs, and a range of mammal and bird species are known to be vulnerable to predation from domesticated dogs and cats. • Construction activities have the potential to exacerbate the likeliness of invasive species establishing in the Project Area.
Fragmentation of connectivity areas		• Habitat fragmentation is defined as a process during which "*a large expanse of habitat is transformed into a number of smaller patches of smaller total area, isolated from each other by a matrix of habitats unlike the original*" (Wilcove et al., 1986). • Fragmentation has the potential to negatively impact ecological values and native species through habitat loss, habitat patch isolation (disrupting connectivity and reducing dispersal ability and gene flow), reducing patch size (small habitat patches may not be able to sustain local populations or potentially individual territories) and edge effects (more edges increase the

Impact	Phase	**Relevance to the** Proposed Action
		probability of individuals leaving the habitat patch, increasing mortality rates and reducing reproduction rates) (Fahrig, 2003). • Specifically, creating more extensive edges through fragmentation increases the colonisation by exotic plant and animal species, and allowing for more effective hunting of predators (Neldner, 2017). • Additionally, certain native species such as noisy miners (*Manorina melanocephala*) and yellow-throated miners (*M. flavigula*) may also benefit from fragmentation and disrupt the ecological functioning within woodland habitat patches by outcompeting insect- and nectar-feeding bird species (Neldner, 2017). • The Project Area contains connective stands of remnant vegetation, that if inappropriately worked on, may result in fragmentation of native species connectivity areas. • The Disturbance Footprint intersects connected remnant areas and will result in further fragmentation.
Indirect impacts to adjacent habitat areas, as a result of noise, blasting, dust, runoff and erosion, including impacts to downstream environments	Construction and operation	• Construction traffic movements and plant operations will result in light and noise pollution, vibrations and dust generation that has the potential to negatively impact adjacent vegetation communities and MNES habitats. • Light and noise pollution have the potential to affect the physiology, behaviour and reproduction of a range of animal taxa, with these effects including reduction in animal fitness, increased risk of predation, reduced success or alternations of acoustic communication, increase vigilance and reduced reproductive success (Newport et al., 2014). • In Australia, it has been shown that many species, such as squirrel gliders, are negatively affected by noise and light pollution and show a decrease in activity levels as light and noise pollution increase (Francis et al., 2015). • Studies suggest that the consistency of noise is more important than volume, with irregular and unpredictable noise being emitted during construction and decommissioning likely to be more disruptive to wildlife (Jones et al., 2015). For the general native fauna communities, individuals may relocate to adjacent areas during times of noise disturbance.

Impact	Phase	**Relevance to the** Proposed Action
		• Blasting will result in disturbance to wildlife through vibration, noise and possibly injury from flying rock. Blasting will occur infrequently; however, may result in the displacement of nearby wildlife from retained foraging and breeding habitat. • Dust generated by vehicle and machinery movements has the potential to smother vegetation directly adjacent to work areas and inhibit plant growth and palatability for native fauna. While this is expected to occur, these effects will be localised and there are effective mitigation measures available to limit dust generation and dispersion. • Erosion as a result of construction can alter the physical condition of an environment through the removal of topsoil and potential run off into nearby waterways, and indirectly impact aquatic habitats (e.g., changing the physical and /or chemical condition of waterways within the Study Area and within downstream environments). • Additionally, the Proposed Action may result in pollution of waterways and aquatic habitats within the Study Area and downstream environments as a result of inappropriate vegetation management (e.g., through the use of herbicides, pesticides etc.) or potential fuel, chemical or hazardous material spills.
Direct mortality or injury to native fauna		• The construction and operational phases of the Proposed Action will result in an increase of vehicular and machinery traffic movements within the Study Area. Peak traffic periods will predominantly occur during the construction period, with operational vehicle movements likely to be minimal. While many fauna groups are highly mobile (e.g., birds) and are likely to move when machinery and vehicles approach, other less mobile groups (e.g., reptile and amphibians) may be more vulnerable to this impact. • Similarly, excavation, during the construction phase, may cause a trapping hazard for fauna groups, particularly amphibians, small reptiles, and small mammals.
Direct disturbance to MNES values (including habitats)		• Disturbance to MNES has been summarised in the MNES Impact Assessment Section (Section 9). • Detailed SIAs for all MNES known, likely or with the potential to occur within the Study Area are provided in Appendix F.

Impact	Phase	**Relevance to the** Proposed Action
Direct mortality or injury to birds and bats as a result of WTG collisions	Operation only	• Operation of the WTGs has the potential to cause direct mortality or injury to avian fauna (i.e., birds and bats). • Risks to birds from wind farm developments are highest in areas where large numbers of birds congregate (e.g., Tarifa, Spain or Altamont Pass, USA). At these locations, millions of birds migrate annually and must pass through large wind farm areas. Wind farm development in areas of lower importance to birds and bats record substantially lower impacts (EPHC, 2010). As discussed in Section 5.2.4.1, the Study Area is not intersected by a migratory flyway. It is anticipated that the risk to birds and bats in the Project Area will be low compared to wind farm developments in Spain or the USA, which are intersected by migratory flight paths. • On occasions where birds and bats do not avoid WTGs, it is expected that injury or mortality may occur. • Any incidental mortality is linked closely to the turbine Rotor Swept Area (RSA) height. RSA height refers to the between the tips of the rotor blades of a wind turbine generator. The RSA height to be adopted for the Proposed Action is 80 - 270 m. RSA is important to note as it dictates the risk of impacts to birds and bats. Bird and bat species found to be flying at or above RSA are at a higher risk from barotrauma and rotor collision than those that fly below the RSA. Several studies and technical reports at other wind farms, including Bango Wind farm's Ecological Assessment (2019) and Dulacca Renewable Energy Proposed Action Fauna Technical Report (2018) have proven this theory. Studies investigating the impact from collision of birds and bats in operating wind farms, indicated there is a risk to local bird and populations, particularly when RSA heights are close to forest and woodland canopies (e.g. 27-125 m) (Hull & Cawthen, 2013). • Identified raptor species within the Project Area are capable and have been observed flying at RSA heights; however, studies committed to raptor species (e.g., wedge-tailed eagle) assessed in the Bango Wind Farm Ecological Assessment (2019), identify collisions to occur with a 99% avoidance rate (or approximately 0.3% of individuals). Studies have also indicated that the level of bird use at the site and behaviour are important factors for assessing risk. Raptor fatalities appear to increase as raptor abundance increases; other species appear to avoid collisions with WTGs (NWCC, 2010). The impact of collision to raptor species would therefore not be considered adverse.

Impact	Phase	**Relevance to the** Proposed Action
		• The majority of avian species recorded in the Project Area are woodland-dwelling, low-flying bird species. These species require woodland dominated by *Eucalyptus* spp., *Callitris* spp. and *Acacia* spp., often with hollows for nesting and roosting habitat (BirdLife, 2019). Most woodland species were observed flying below, or to the maximum height of the woodland canopy (15 m or below). • While few studies have been conducted to investigate the significant impacts of RSA on collision incidence, it is considered that passerine species, due to their fast flight patterns and high flight, and migratory species, may be at higher risk than other species (Erickson et al., 2001). The field surveys identified no passerine species that would be at greater risk to collision. Additionally, no migratory birds were recorded within the Project Area during the field surveys. • Overall, collision rates are considered to be very low for the majority of Australian bird species, including those recorded within the Proejct Area and surrounds (Smales & Muir, 2005). Empirical evidence shows that birds (both raptors and small birds) have a very high rate (99%), of wind turbine avoidance (Smales & Muir, 2005; Whitfield & Madders, 2005; Pendlebury, 2006).
Impacts from turbine collisions to migratory birds and other fauna species		• Migratory birds may be impacted by turbine collisions when flying over the Project Area. While the Project Area does not occur over any known migratory flyways, migratory species have the potential to traverse the Project Area. • Fork-tailed swift and white-throated needletail are listed as migratory under the EPBC Act and may be impacted by turbine collisions, as the species can fly from 1–300 m and 1–1,000 m above the ground, respectively (Higgins, 1999). Any direct collision with wind turbines would likely result in serious injury and/or death to individuals. • Turbines occur at heights that are unlikely to affect arboreal species who occupy and move within the canopies of woodlands and open forests, some 40 metres below the height of moving turbine blades. Specifically, operational impacts to Corben's long-eared bat are expected to be low as the species has low flying height (Churchill, 2008).

Impact	Phase	**Relevance to the** Proposed Action
Barotrauma		• Barotrauma is a result of moving turbines creating a drop in atmospheric pressure at the tip of the turbine blades and can result in rapid or excessive pressure changes that can cause tissue damage to air-containing structures. Barotrauma predominantly effects microbats and may lead to bat mortality; however, bat mortality as a result of barotrauma is highly contentious and where data is available, drastic changes in mortality rates have been reported, for example, 1.6 bats per WTG per year to over 90 bats per turbine per year (Bango, 2019). • Migrating bats have an increased mortality rate near moving turbine blades at wind farms; however, studies investigating forensic pathology data strongly suggest that the traumatic injuries (collision) sustained at wind farms is the major cause of bat mortality, and that barotrauma is a very minor cause of bat mortality (Grodskey et al., 2011; Rollins et al., 2012).
Impacts to MNES and MNES habitats as a result of the removal of infrastructure and movement of all vehicles and machinery	Decommissioning	• Clearing of rehabilitated vegetation will result in the permanent removal of vegetation types and the habitat values (i.e., foraging, breeding, dispersal habitats etc.) for MNES and native fauna for the life of the Proposed Action. • Increased traffic movements and plant operations will result in light and noise pollution, vibrations and dust generation that has the potential to negatively impact adjacent vegetation communities and MNES habitats. • As a result of the removal of vegetation and introduction of foreign material, there is potential for the introduction and/or spread of weeds and pest species throughout the Study Area. This introduction or spread of weeds and pests could be a result of on-foot movement, vehicular movement and the disruption and movement of vegetation. • The decommissioning phase (if applicable) will result in an increase of vehicular and machinery traffic movements within the Study Area. While many fauna groups are highly mobile (e.g., birds) and are likely to move when machinery and vehicles approach, other less mobile groups (e.g., reptile and amphibians) may be more vulnerable to this impact. • Similarly, excavation, for the removal of infrastructure, may incur a trapping hazard for fauna groups, particularly amphibians, small reptiles, and small mammals.

7. AVOIDANCE, MANAGEMENT AND MITIGATION

7.1 AVOIDANCE AND MITIGATION PROCESS

Potential impacts of the Proposed Action will be managed in a manner consistent with the industry standard management approaches for wind farm activities, and, where relevant, additional measures will be implemented.

The Disturbance Footprint will consist of widely spaced WTGs and associated infrastructure, such as access tracks, underground electrical connections, overhead transmission lines, battery storage and substations. Due to the large size of the Project Area, and the widely spaced nature of the Disturbance Footprint, the ecological surveys were undertaken prior to and concurrently with landholder agreements and a preliminary design process. This approach was intended to guide the proposed design of the Disturbance Footprint to avoid and minimise potential impacts where possible.

The Proposed Action will include a total of 143 WTGs spread throughout the Project Area. A summary of the WTG locations, whether located in cleared areas or remnant vegetation is provided in Table 7-1, to provide an overview of the avoidance of MNES habitat to date.

TABLE 7-1: WTG LOCATIONS

WTGs	Cleared Areas	Remnant or Regrowth Native Vegetation	Total
Number of WTGs	76 WTGs	67 WTGs	143 WTGs

As per the above table, 76 WTGs are currently proposed in cleared areas, being 53% of the total WTGs; while 67 WTGs are currently proposed in remnant or regrowth native vegetation areas, equaling 47% of the total WTGs proposed. The majority of WTGs have been located in cleared areas, with only unavoidable impacts to remnant or regrowth native vegetation occurring where turbines are required to be located to maximise access to required wind resources.

7.1.1 TWO-STAGE DESIGN PROCESS

While vegetation and habitat mapping were considered in site selection, environmental disturbance is not entirely avoidable. The Disturbance Footprint will consist of widely spaced WTGs and associated infrastructure that will occupy a large area (up to 1,438.0 ha, being 7% of the Project Area), some of which includes remnant vegetation. As a result, ecology surveys have been and will continue to be conducted to guide the design to avoid and minimise unavoidable impacts to the greatest extent possible, across two design phases. For the Proposed Action, it is in the second design phase of avoiding ecological values identified as important on a federal and/or state level as the field campaigns have learnt about the Study Area on a broad scale. The detailed design phase will occur when the operational footprint is finalised, areas of disturbance are surveyed before clearing is to occur to identify at a micro level any remaining impacts to federal and/or state significant matters.

The two-stage design process includes:

- First design phase – avoidance of identified important ecological values; and
- Detailed design phase – pre-clearance surveys.

The first design phase was based on avoidance of identified important ecological values (vegetation and potential mapped habitat for listed threatened species) identified from the desktop and field surveys. The findings from these surveys documented important ecological values across the Project Area at a broad scale, to assist the Proponent in refining the Disturbance Footprint design to avoid and minimise potential impacts to ecological values with the current Disturbance Footprint being amended to reflect this.

The detailed design phase will involve pre-clearance surveys to target known, likely and potentially occurring listed TECs, threatened and/or migratory species or micro-habitat features at proposed infrastructure locations (operational footprint) in the Study Area within the weeks/months prior to clearing. Where required and feasible, infrastructure will be micro-sited (re-located or moved) up to 100 m to avoid large hollow bearing trees, nests, rock falls and other important micro habitat features.

This two-phase design and avoidance process will allow for all planned areas of disturbance to be adequately assessed in accordance with the *State Code 23* and *State Code 16* field survey requirements, as well as identification of potential MNES values in accordance with relevant Commonwealth guidance.

7.2 MANAGEMENT AND MITIGATION

Potential direct and indirect impacts to MNES as a result of the Proposed Action, as outlined in Section 6, will be managed and mitigated in accordance with the expected procedures for wind farm activities.

The management and mitigation measures, specific to MNES, to be implemented during the construction, operation and decommissioning phases of the Proposed Action are discussed in Table 7-2.

TABLE 7-2: KEY MANAGEMENT AND MITIGATION MEASURES

Impact	Hierarchy	**Relevance to the** Proposed Action
Refinement of WTG layout	Avoid	• The Disturbance Footprint is the result of iterative refinements during the first design phase based on the constraints that the preliminary impact assessments have identified. • Locating the Disturbance Footprint in areas away from key habitat (higher quality vegetation – such as fringing riparian habitat, Brigalow woodlands and *Eucalyptus crebra* dominated woodland and open woodland, as well as well vegetated gullies) as much as practicable. • Areas of habitat for listed threatened species will be further minimised at the micro-siting stages to the maximum extent possible.
Clearing vegetation and the resultant loss of habitat	Avoid	• *The detailed design phase will be implemented. Impacts to areas of higher quality native vegetation, and areas that identified threatened flora and fauna habitat from the first design phase, will be further minimised with micro-siting stages during the pre-clearance surveys.* • Additional field surveys (micro-siting) will be undertaken of the Disturbance Footprint, targeting listed threatened flora species with potential to occur, to define locations of populations, and propose additional avoidance measures, such as flora species translocation, seed collection and propagation.
	Minimise	• A pre-clearance assessment of potential habitat values, where potential risks to fauna may occur, will be undertaken prior to clearing. • Where potential risks are identified from pre-clearance assessment, a qualified fauna spotter-catcher will conduct a search immediately prior to clearing of vegetation for the presence of fauna species. Where fauna (or important nesting sites for listed threatened fauna) are detected, the spotter catcher will assess and implement the most appropriate method to avoid or minimise impacts from clearing. • A Vegetation and Fauna Management Plan (VFMP) will be developed and implemented throughout the construction phase. • To prevent unnecessary land and vegetation disturbance, vehicles and equipment will be retained within the approved work zone. • Workers will be made aware of management requirements during inductions and through regular checks during construction. General site inductions will outline potential risks and impacts to the environment,

Impact	Hierarchy	Relevance to the Proposed Action
		management strategies and methodologies to avoid, minimise and mitigate the potential risks and impacts relevant to the onboarding workers and contractors. • A Vegetation and Fauna Management Plan will be implemented to ensure that clearing is undertaken in accordance with legislative standards and requirements. • A preliminary Post Construction Rehabilitation Plan will be implemented to rehabilitate temporary vegetation clearing in mapped remnant vegetation to pre-construction composition, function and structure.
Direct disturbance to MNES	Avoid	• Areas of identified threatened flora and fauna habitat will be avoided and minimised to the greatest extent practicable at design and micro-siting stages. • The Disturbance Footprint is the result of iterative refinements during the first design phase based on the constraints that the preliminary impact assessments have identified.

	Minimise	• Specific Management Plans (e.g., FVMP) will be developed to manage and mitigate impacts to listed threatened species known, likely or with the potential to occur within the Study Area and will include commitments on the following:
		  ◦ Speed limits on access roads across the Study Area;
		  ◦ All vehicles plant, equipment and machinery will remain within the designated access tracks where appropriate for tasks at hand;
		  ◦ Vegetation will only be removed that has been approved to be cleared;
		  ◦ Micro-siting will occur at all potential turbine locations that are mapped as breeding, denning or foraging habitat for koala, squatter pigeon (southern), greater glider (southern and central), yellow-bellied glider (south-eastern) and Corben's long-eared bat to minimise impacts to habitats. Clearing within areas of koala habitat will be undertaken under the direction of a suitably qualified and registered fauna spotter-catcher; and
		  ◦ Where disturbance to threatened species habitat is required, individuals and surrounding micro-habitat features (e.g., logs etc.) will be translocated to nearby suitable areas (if possible).

Impact	Hierarchy	Relevance to the Proposed Action
Indirect impacts to species behaviours through creating barriers to movement and dispersal	Avoid	• Infrastructure will be located to first avoid and then minimise the impacts of edge effects or dissecting tracts of native vegetation so that species dispersal is not significantly impeded. • Pre-clearance surveys and on ground micro-siting will ensure infrastructure is located in areas which avoid, and subsequently minimise edge effects and the isolation, fragmentation, or dissection of tracts of native vegetation to the greatest extent practicable.
	Manage	• Construction activities and machinery will be required to occur and stay within discrete work zones and not impact adjacent vegetation.
	Mitigate	• Progressive restoration of access corridors will occur once construction has been completed.
Indirect impacts to adjacent habitat areas as a result of noise, blasting, dust, runoff and erosion, including impacts to downstream environments	Minimise	• Dust will be minimised through engineering controls on machinery and other available dust suppression controls (e.g., water spraying). • Where identified as required, a qualified fauna spotter-catcher will conduct a search immediately prior to clearing of vegetation for the presence of fauna species. Where fauna are detected, the fauna spotter catcher will assess and implement the most appropriate method to avoid or minimise impacts as a result of clearing. • Staff and contractors will be made aware, through general site induction and training, of the potential to generate dust emissions and mitigation and management measures that should be implemented. • Vehicles, plant and machinery will comply with site-specific speed limits to minimise dust generation. • Sediment and erosion control will be managed in accordance with the Queensland Erosion and Sediment Control Plan, the Proposed Actions Environmental Sediment and Erosion Control Plan and the Contractor's erosion and sediment control procedures. • Where required, watercourse crossing points will be adequately stabilised to prevent erosion. • Construction activities will not interfere or block natural drainage (e.g., disturbing channel contours).

Impact	Hierarchy	Relevance to the Proposed Action
Indirect impacts to adjacent habitat areas as a result of an introduction or spread or weed and pest species	Avoid	• A biosecurity plan will be developed and implemented for the Proposed Action and will include the requirements of individual property biosecurity plans, including measures such as vehicle wash downs, weed certification and obligations limit construction traffic to defined access tracks throughout the Study Area. • Activities will be planned so that movement of vehicles, plant, machinery and equipment will be in accordance with the requirements of the individual property biosecurity plans. • Access to a landholder's property will not occur unless authorised under a land use agreement. • Staff and contractors will be given information on the location and consequences of biosecurity threats in the Study Area.
	Minimise	• Weed management and control methods will depend upon the location, weed species identified, the degree of the infestation, relevant landholder agreement, and local, state and national regulatory requirements. • Imported material able to transport weed and seed will be assessed, and a Weed Hygiene Declaration will be implemented, to ensure material is free of contamination, disease and invasive weeds and no contamination occurs. • WoNS and restrictive invasive species will be identified and monitored in the Study Area. Appropriate weed monitoring will occur to ensure new weed species are identified, recorded and controlled. • Staff and contractors will be made aware, through general site induction and training, of the potential to exacerbate weed and pest related risks, biosecurity site requirements (e.g., weed certification) and mitigation and management measures.
Direct mortality or injury to native fauna during construction and operation	Minimise	• Where identified as required, a qualified fauna spotter-catcher will conduct a search immediately prior to clearing of vegetation for the presence of fauna species. Where fauna are detected, the fauna spotter catcher will assess and implement the most appropriate method to avoid or minimise impacts as a result of clearing. • Staff and contractors will be made aware, through general site induction and training, of the potential impacts on native fauna, reporting requirements and mitigation and management measures that are to be implemented.

Impact	Hierarchy	Relevance to the Proposed Action
		• No driving will occur in unauthorised areas and will be carried out at safe speeds designated for the Study Area. • Injured, sick or dead fauna will be recorded and reported, during all phases of the Proposed Action. This can be carried out by a fauna spotter-catcher during periods where disturbance is expected to occur (primarily, during construction activities). • Injured or sick fauna will be taken to the nearest wildlife carer or veterinarian if practical.
Fragmentation of connectivity areas	Avoid	• Pre-clearance surveys and on ground micro-siting will ensure infrastructure is located in areas which avoid, and subsequently minimise edge effects and the isolation, fragmentation, or dissection of tracts of native vegetation. • Design has ensured that minimal water crossings are present within the Disturbance Footprint.
	Manage	• Clear marking of areas to be impacted and non-impacted, ensuring that the Disturbance Footprint does not extend further than required to create unnecessary fragmentation.
	Mitigate	• Areas that have been cleared and are no longer required will be allowed to naturally revegetate. Revegetation works will generally be limited to encourage natural regrowth.
Impacts from turbine collision (to threatened and/or birds and bats)	Avoid	• Locate WTGs away from key bird and bat habitats (waterways and drainage lines). • Design of a turbine with a RSA >40 m above ground level to provide a collision-free foraging zone within the canopy and 20 m above the canopy. (Current RSA is approximately 80 – 270 m above ground). • Adaptive management approach applied within the Bird and Bat Management Plan (BBMP).
	Minimise	• A Bird and Bat Management Plan (BBMP) will be developed and implemented and will consider potential impacts to birds and bats as a result of the Proposed Action. The BBMP will further discuss mitigation measures to address potential impacts to threatened and/or migratory species with a known, likely or potential to occur within the Study Area.

Impact	Hierarchy	Relevance to the Proposed Action
Barotrauma	Avoid	• A BBMP will be designed to assist in mitigating impacts to bats, including additional surveys prior to determining final design. • Impact mitigation will be largely avoiding microbat habitat, including woodlands.
	Minimise	• Reducing lights on operating WTGs will assist in the reduction of insect presence and limit potential feeding opportunities for bats in close proximity to the WTGs.
Decommissioning	Minimise	• If decommissioning is required, management and mitigation measures will closely align with those during the construction phase. • The decommissioning footprint should align with the construction and operation footprints to the greatest extent practicable to avoid additional impacts to MNES. • Pre-decommissioning surveys will be required to identify the presence, or potential presence of MNES flora and fauna and their associated habitats within the Study Area, at the time of decommissioning. • Decommissioning works, and associated access tracks etc., should avoid and minimise impacts to retained MNES habitats. • Exclusion zones will be required, and all vehicular movements must remain within the approved working area, to avoid impacts to MNES habitats.

8. REHABILITATION

Rehabilitation efforts for flora and fauna will focus on maintaining ecosystem functionality, through minimising the disturbance and rehabilitating in accordance with pre-clearance vegetation or otherwise agreed with the landowner as well as applicable legal requirements and standards.

Rehabilitation aims to implement environmental management practices and procedures that:

- Restore and improve areas disturbed during the construction phase;
- reinstate connectivity of fauna habitats, thus improving ecological processes;
- minimise soil erosion and sedimentation;
- prevent/minimise the outbreak of exotic species within the area of rehabilitation;
- ensure that topsoil is managed effectively; and
- monitor, inspect and maintain the revegetated areas.

The key rehabilitation objectives for the Proposed Action are:

- Ensure that rehabilitation of vegetation post-construction not required for the operation of the project is properly planned in a manner that promotes self-sustaining ecosystems;
- ensure rehabilitation of native vegetation can develop into a viable ecological system, comparable to pre-clearing native vegetation and its land uses;
- ensure rehabilitation continues until ecosystems and all impacted areas are self-sustaining;
- restore pre-clearance levels of biodiversity and ecosystem functionality;
- re-planting to be consistent with pre-clearance BHTs as identified within Section 0;
- ensure all meaningful efforts to minimise clearing endangered REs;
- ensure connectivity for native wildlife through species-specific management practices including:
    - groundcover revegetation will focus on establishing a diverse grassy understory suitable for foraging, to provide for small native mammals and birds;
    - maintain connectivity for koala habitat;
    - larger logs that are cleared from the Study Area will be placed within the revegetation area to provide additional habitat features; and
    - ensuring a fauna spotter catcher is present to re-located fauna within the Disturbance Footprint during clearing activities.
- reusing topsoil and utilising mulch made from cleared vegetation;
- preventing erosion from soil, particularly on sloped terrain; and
- ensuring exotic plant species do not take hold and dominate regrowth vegetation.

8.1 CONSTRUCTION AND OPERATION

8.1.1 CONSTRUCTION

At this early stage of the Proposed Action, and to demonstrate how impacts will be avoided, minimised and mitigated, a preliminary Vegetation and Fauna Management Plan has been developed to provide overarching principles and mitigation measures.

The Vegetation and Fauna Management Plan will be finalised once the detailed design has been completed, and prior to construction commencing. It will also outline the rehabilitation requirements for the Proposed Action.

The Proposed Action will require temporary disturbance to remnant vegetation and MNES habitats. Following the completion of the construction phase, areas which are not necessary for operation and maintenance have the potential to be rehabilitated in accordance with a Post-Construction Rehabilitation Plan.

Dependent on the location of the disturbance and potential continued use through the life of the Proposed Action, the post-construction rehabilitation activities are anticipated to include:

- Mulching of cleared vegetation for use in rehabilitated areas;
- topsoil stockpiling for use in rehabilitated areas;
- natural regeneration of groundcover;
- hydro-seeding of battered slopes to promote growth and bank stability;
- direct seeding of native plant and grass species; and
- planting of native species tube-stock where appropriate and no further disturbance is required.

8.1.2 OPERATION

Following the completion of the construction phase, construction laydown areas and widened access tracks not required for operation will be rehabilitated to the pre-development conditions, unless otherwise agreed with landowners, or the area is required for safety purposes (e.g., bushfire setbacks).

8.2 DECOMISSIONING REHABILITATION

Each WTG generally has a useful life of approximately 30 years, after which the WTG, footings (down to 0.5 m below natural ground surface) and any overhead transmission lines will be removed and the area returned to pre-development conditions, in consultation with the relevant landowner, as well as in accordance with applicable legal requirements and standards.

Rehabilitation activities will be undertaken in the post-construction phase and at the end-of-life decommissioning phase. A detailed Rehabilitation and Decommissioning Plan will be prepared in the early stages of operation, as part of the post-construction activities and will include overarching principles for the decommissioning phase.

9. MNES IMPACT ASSESSMENT

9.1 SUMMARY OF MNES IMPACT ASSESSMENT

The MNES SIA conducted in this Report determines the significance of impacts to MNES by referring to the SIG 1.1 (DoE, 2013). The SIA considers the direct and indirect impacts and disturbances detailed in Table 6-1 as well as the avoidance, mitigation and management measures outlined in Table 7-2. Table 9-1 summarises the outcomes of the impact assessment for MNES concluded as known, likely and potentially occurring in the Study Area, with detailed assessments provided in Appendix F. Direct removal of habitat for MNES is provided in Table 9-1 and have been calculated by overlapping MNES habitat with the Disturbance Footprint. It is important to note that the direct disturbance to MNES is likely to be lower than these values as they are maximum disturbance estimates. Figure 5-3 to Figure 5-9 show the Disturbance Footprint overlayed against MNES values for this SIA.

The current assessment of impacts to MNES within the Proposed Access Route on Cecil Plains Moonie Road are based on a preliminary transport route traffic study that has identified nine locations where minor road improvements and upgrades are required to facilitate movement of construction traffic. These minor road upgrades are estimated to result in impacts to approximately 1.9 ha of native vegetation that has the potential to support the MNES species and communities assessed as part of the wind farm aspect of the Proposed Action. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action.

As a result of the SIA, the Proposed Action, in its current form, is considered likely to have a significant impact on the following MNES:

- koala;
- diamond firetail; and
- greater glider (southern and central).

Where significant impacts to these MNES cannot be avoided, the Proponent is committed to preparing an Offset Management Strategy, as further discussed in Section 10.

Significant Impact Guidelines (SIG) 1.1 criteria is described below that was applied to the MNES known, likely and potential to be impacted by the Project. The SIA criteria for MNES differ depending on the category of matter being assessed. The matters (identified as relevant to the Proposed Development) that must undergo an SIA are:

- Threatened ecological communities;
- Threatened species listed as vulnerable;
- Threatened species listed as endangered or critically endangered; and
- Migratory species.

For critically endangered and endangered species the criteria is;

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of a population;
- reduce the area of occupancy of the species;
- fragment an existing population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of a population;
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat;
- introduce disease that may cause the species to decline; and/or
- interfere with the recovery of the species.

For critically endangered and endangered ecological communities the criteria is;

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- reduce the extent of an ecological community;
- fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines;
- adversely affect habitat critical to the survival of an ecological community;
- modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns;
- cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting;
- cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:
    - assisting invasive species, that are harmful to the listed ecological community, to become established; and/or
    - causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community; and/or
- interfere with the recovery of an ecological community.

For vulnerable species the criteria is;

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species;
- reduce the area of occupancy of an important population;
- fragment an existing important population into two or more populations;

- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of an important population;
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;
- introduce disease that may cause the species to decline; and/or
- interfere substantially with the recovery of the species.

For listed migratory species the criteria is:

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;
- result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; and/or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

TABLE 9-1: SUMMARY OF MNES IMPACT ASSESSMENT

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
Threatened Ecological Communities				
Brigalow (*Acacia harpophylla* dominant and co-dominant)	67.3 ha in the Project Area 1.4 ha in the Proposed Access Route Area	0.3 ha in the Disturbance Footprint 0.0 ha in the Proposed Access Route Impact Area	A total of 14 patches of Brigalow TEC are present within the Project Area, covering an area of 67.3 ha. The Proposed Action will clear 0.3 ha, being 0.5% of the total Brigalow TEC within the Project Area. The Proposed Access Route contains 1.4 ha of Brigalow TEC, of which 0.0 ha (0.0%) will be impacted by the Proposed Action in the Proposed Access Route. Therefore, the Study Area contains 68.7 ha of Brigalow TEC habitat, of which, 0.3 ha is expected to be impacted by the Proposed Action. A significant impact assessment was undertaken against the SIG1.1 and the Proposed Action is unlikely to result in a significant impact to the TEC, as clearing will not: • Reduce the extent of the ecological community; • fragment or increase fragmentation of an ecological community; or • interfere with the recovery of the ecological community.	**Unlikely**

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence of Brigalow TEC until further ground-truthing along the Proposed Access Route has occurred. No impact to Brigalow TEC is proposed in the Proposed Access Route. The detailed impact assessment is provided in Appendix F.	
Poplar box grassy woodland on alluvial plains	157.0 ha in the Project Area 0.1 ha in the Proposed Access Route	0.1 ha in the Disturbance Footprint 0.1 ha in the Proposed Access Route Impact Area	A total of 12 patches of poplar box TEC are present within the Project Area, comprising 157.0 ha. The Proposed Action will clear 0.1 ha, being 0.1% of the total poplar box TEC within the Project Area. The Proposed Access Route contains 0.1 ha of poplar box TEC, of which 0.1 ha (100%) will be impacted by the Proposed Action in the Proposed Access Route. Therefore, the Study Area contains 157.1 ha of poplar box TEC, of which, 0.2 ha is expected to be impacted by the Proposed Action. A significant impact assessment was undertaken against the SIG1.1 and the Proposed Action is unlikely to result in a significant impact to the TEC, as clearing will not: • Reduce the extent of the ecological community;	**Unlikely**

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			• fragment or increase fragmentation of an ecological community; or • interfere with the recovery of the ecological community. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence of poplar box TEC until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action. Therefore, a significant impact to poplar box TEC is unlikely to occur. The detailed impact assessment is provided in Appendix F.	

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
Threatened Flora				
Tara wattle (*Acacia lauta*)	6,418.2 ha in the Project Area 190.4 ha in the Proposed Access Route	479 ha in the Disturbance Footprint 0.1 ha in the Proposed Access Route Impact Area	Tara wattle is considered having the potential to occur within the Study Area, as the species has not previously been recorded and was not recorded during field surveys. The Project Area contains 6,418.2 ha of potential Tara wattle habitat, of which 479.0 ha (7.5%) will be impacted by the Proposed Action in the Project Area. The Proposed Access Route contains 190.4 ha of potential Tara wattle habitat, of which 0.1 ha (0.1%) will be impacted by the Proposed Action in the Proposed Access Route. Therefore, the Study Area contains 6,608.6 ha of potential habitat for Tara wattle, of which, 479.1 ha is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action.	**Unlikely**

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			An important population assessment was conducted and concluded that the Study Area does not contain an important population of the species. Additionally, the Study Area does not contain habitat critical to the survival of the species based on survey effort not identifying any supporring habitat for a population or individuals (Section 4.4.2) and habitat being considered potential only. Therefore, following the significant impact assessment, a significant impact is unlikely to occur to Tara wattle. The detailed important population assessment and impact assessment is provided in Appendix F.	
Prostanthera sp. Dunmore (D.M. Gordon 8A)	5,362.2 ha in the Project Area 185.6 ha in the Proposed Access Route	426.2 ha in the Disturbance Footprint 0.1 ha in the Proposed Access Route Impact Area	*Prostanthera* sp. Dunmore is considered having the potential to occur within the Study Area, as the species has not previously been recorded and was not recorded during field surveys. The Project Area contains 5,362.2 ha of potential *Prostanthera* sp. Dunmore habitat, of which 426.2 ha (7.9%) will be impacted by the Proposed Action in the Project Area. The Proposed Access Route contains 185.6 ha of potential *Prostanthera* sp. Dunmore habitat, of which 0.1 ha (0.1%) will be impacted by the Proposed Action in the Proposed Access Route. Therefore, the Study Area contains 5,547.8 ha of potential habitat for *Prostanthera sp*.	**Unlikely**

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			Dunmore, of which, 426.3 ha is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action. An important population assessment was conducted and concluded that the Study Area does not contain an important population of the species. Additionally, the Study Area does not contain habitat critical to the survival of the species based on survey effort (Section 4.4.2) and habitat being considered potential only. Therefore, following the significant impact assessment, a significant impact is unlikely to occur to *Prostanthera sp.* Dunmore. The detailed important population assessment and impact assessment is provided in Appendix F.	

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
Threatened Birds and Bats				
Diamond firetail (*Stagonopleura guttata*)	8,091.3 ha in the Project Area 217.2 ha in the Proposed Access Route	433.3 ha in the Disturbance Footprint 0.8 ha in the Proposed Access Route Impact Area	Diamond firetail is known to occur within the Project Area, based on a desktop record. The species was not recorded during the field surveys. The Project Area contains 8,091.3 ha of diamond firetail habitat, of which 433.3 ha (being 5.4% of the total habitat) will be impacted by the Proposed Action in the Project Area. The Proposed Access Route contains 217.2 ha of diamond firetail habitat, of which 0.8 ha (0.4%) will be impacted by the Proposed Action in the Proposed Access Route. Therefore, the Study Area contains 8308.5 ha of diamond firetail habitat, of which, 434.1 ha is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action. Following the important population assessment, as per SIG1.1, the Study Area does not support an important population of diamond firetail. However, the Proposed Action will:	**Likely**

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			• Impact habitat critical to the survival of the species; and • interfere with the recovery of the species (as clearing exceeds 200 ha of habitat). Therefore, a significant impact to diamond firetail is likely to occur. The detailed important population assessment and impact assessment is provided in Appendix F.	
Glossy black-cockatoo (south-eastern) (*Calyptorhynchus lathami lathami*)	1,288.0 ha in the Project Area 4.8 ha in the Proposed Access Route	39.1 ha in the Disturbance Footprint 0.1 ha in the Proposed Access Route Impact Area	Glossy black-cockatoo (south-eastern) is known to occur within the Project Area due to direct sightings during field surveys. The Project Area contains 1,288 ha of foraging and dispersal habitat for the species; however, does not contain breeding habitat. A total of 39.1 ha (being 3% of total habitat) will be impacted by the Proposed Action in the Project Area. The Proposed Access Route contains 4.8 ha of foraging and dispersal habitat for the species; however, does not contain breeding habitat. A total of 0.1 ha (being 2.1% of total habitat) will be impacted by the Proposed Action in the Proposed Access Route. Therefore, the Study Area contains 1,292.8 ha of foraging and dispersal habitat, of which, 39.2 ha	**Unlikely**

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action. Following the important population assessment, as per SIG1.1, the Study Area does not support an important population of glossy black-cockatoo (south-eastern). Additionally, the Proposed Action will not adversely affect habitat critical to the survival of the species or interfere with the recovery as breeding habitat does not occur within the Study Area and clearing of 39.1 ha will not limit the species ability to disperse and forage. Therefore, a significant impact to glossy black-cockatoo (south-eastern) is unlikely to occur. The detailed important population assessment and impact assessment is provided in Appendix F.	

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
Latham's snipe (*Gallinago hardwickii*)	65.7 ha in the Project Area 0.0 ha in the Proposed Access Route	0.4 ha in the Disturbance Footprint 0.0 ha in the Proposed Access Route Impact Area	Latham's snipe has the potential to occur within the Study Area and potential habitat for the species has been mapped, totaling 65.7 ha. Following the important population assessment, as per SIG1.1, the Study Area does not support an important population of Latham's snipe. Additionally, the Proposed Action will not adversely affect habitat critical to the survival of the species or interfere with the recovery as breeding habitat does not occur within the Study Area and clearing of 0.4 ha will not limit the species ability to disperse and forage. Therefore, a significant impact to Latham's snipe is unlikely to occur. The detailed important population assessment and impact assessment is provided in Appendix F.	**Unlikely**
Southern whiteface (*Aphelocephala leucopsis*)	872.0 ha in the Project Area 3.9 ha in the Proposed Access Route	3.6 ha in the Disturbance Footprint 0.1 ha in the Proposed Access Route Impact Area	Southern whiteface has the potential to occur within the Study Area and potential habitat for the species has been mapped, at 872 ha across the Study Area, of which 3.6 ha (0.4%) will be impacted by the Proposed Action in the Project Area. The Proposed Access Route contains 3.9 ha of southern whiteface habitat, of which 0.1 ha (2.6%) will be impacted by the Proposed Action in the Proposed Access Route. Therefore, the Study Area contains 875.9 ha of potential habitat for southern whiteface, of which,	**Unlikely**

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			3.7 ha is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action. Following the important population assessment, as per SIG1.1, the Study Area does not support an important population of southern whiteface. While the Study Area contains habitat critical to the survival of the species, such minimal clearing (3.6 ha, being 0.4% of the total available potential habitat) is unlikely to result in an adverse impact; and as such, the Proposed Action will not adversely affect habitat critical to the survival of the species or interfere with the recovery of the species. Therefore, a significant impact to southern whiteface is unlikely to occur. The detailed important population assessment and impact assessment is provided in Appendix F.	

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
Squatter pigeon (southern) (*Geophaps scripta scripta*)	Breeding habitat		Squatter pigeon (southern) has the potential to occur within the Study Area. The Project Area contains 3,472.8 ha of potential breeding habitat, and 5,314.9 ha of potential foraging and dispersal habitat, of which, 290.7 ha (being 8.4% of the total) and 245.9 ha (being 4.6% of the total) respectively, will be cleared for the Disturbance Footprint. The Proposed Access Route contains 89.0 ha of potential breeding habitat, and 130.7 ha of potential foraging and dispersal habitat, of which, 0.1 ha (being 0.1% of the total) and 0.8 ha (being 0.6% of the total) respectively, will be cleared for the Proposed Access Route. Therefore, the Study Area contains 3,561.8 ha of potential breeding habitat, and 5,445.6 ha of potential foraging and dispersal habitat, of which, 290.8 ha of potential breeding habitat, and 246.7 ha of potential foraging and dispersal habitat is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action.	**Unlikely**
	3,472.8 ha in the Project Area 89.0 ha in the Proposed Access Route	290.7 ha in the Disturbance Footprint 0.1 ha in the Proposed Access Route Impact Area		
	Foraging and dispersal habitat			
	5,314.9 ha in the Project Area 130.7 ha in the Proposed Access Route	245.9 ha in the Disturbance Footprint 0.8 ha in the Proposed Access Route Impact Area		

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			Following the important population assessment, as per SIG1.1, the Study Area does not support an important population of squatter pigeon (southern). There are no recent records of the squatter pigeon (southern) within the Study Area, and therefore, the species is unlikely to utilise habitat within the Study Area as habitat critical to survival. As such, a significant impact to squatter pigeon (southern) is unlikely to occur. The detailed important population assessment and impact assessment is provided in Appendix F.	
White-throated needletail (*Hirundapus caudacutus*)	Entire aerial space above Study Area	0.0 ha	White-throated needletail has the potential to occur as an aerial visitor over the Study Area. The entirety of the Study Area is considered suitable for aerial foraging; however, does not contain roosting habitat. Following the important population assessment, as per SIG1.1, the Study Area does not support an important population of white-throated needletail, and as the species is almost exclusively aerial, the Proposed Action is unlikely to result in a significant impact on white-throated needletail. The detailed important population assessment and impact assessment is provided in Appendix F.	**Unlikely**

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
Threatened Mammals				
Koala (*Phascolarctos cinereus*)	Breeding and foraging habitat		The koala is known to occur within the Project Area due to indirect observations of scats. The Project Area contains 8,787.7 ha of breeding and foraging habitat, and 5,921 ha of dispersal habitat for the koala. Of this, a total of 536.4 ha of breeding and foraging habitat will be cleared, and 499.4 ha of dispersal habitat will be disturbed for the Disturbance Footprint. The Proposed Access Route contains 234.8 ha of breeding and foraging habitat, and 10.7 ha of dispersal habitat for the koala. Of this, a total of 0.9 ha (being 0.4% of the total) of breeding and foraging habitat will be cleared, and 0.0 ha (being 0.0% of the total) of dispersal habitat will be disturbed for the Proposed Access Route. Therefore, the Study Area contains 9,022.5 ha of breeding and foraging habitat, and 5,931.7 ha of dispersal habitat, of which, 537.3 ha of breeding and foraging habitat, and 499.4 ha of dispersal habitat is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route	**Likely**
	8,787.7 ha in the Project Area 234.8 ha in the Proposed Access Route	536.4 ha in the Disturbance Footprint 0.9 ha in the Proposed Access Route Impact Area		
	Dispersal habitat			
	5,921.0 ha in the Project Area 10.7 ha in the Proposed Access Route	499.4 ha in the Disturbance Footprint 0.0 ha in the Proposed Access Route Impact Area		

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			are unlikely to contribute to the significance of the impacts associated with the Proposed Action. Following an assessment against the SIG1.1, clearing for the Proposed Action in koala habitat will: • Lead to a long-term decrease in the size of a population; • reduce the area of occupancy for the species; • adversely affect habitat critical to the survival of a species; and • interfere with the recovery of the species. Therefore, the Proposed Action is likely to result in a significant impact on the koala. The detailed impact assessment is provided in Appendix F.	
Greater glider (southern and central) (*Petauroides volans*)	Breeding/denning habitat		The greater glider (southern and central) is considered having the potential to occur within the Project Area. The Project Area contains 2,861.8 ha of potential breeding and denning habitat, and 2,671.7 ha of potential foraging and dispersal habitat, of which, 113.5 ha (being 4% of the total) and 260.6 ha (being 9.5% of the total) respectively, will be cleared for the Disturbance Footprint. The Proposed Access Route contains 202.1 ha of potential breeding and denning habitat, and 37.8 ha of potential foraging and dispersal habitat, of	**Likely**
	2,861.8 ha in the Project Area 202.1 ha in the Proposed Access Route	113.5 ha in the Disturbance Footprint 0.8 ha in the Proposed Access Route Impact Area		
	Foraging and dispersal habitat			
	2,671.7 ha in the Project Area	260.6 ha in the Disturbance Footprint		

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
	37.8 ha in the Proposed Access Route	0.1 ha in the Proposed Access Route Impact Area	which, 0.8 ha (being 0.4% of the total) and 0.1 ha (being 0.3% of the total) respectively, will be cleared for the Proposed Access Route. Therefore, the Study Area contains 3,063.9 ha of potential denning and breeding habitat, and 2,709.5 ha of potential foraging and dispersal habitat, of which, 114.3 ha (3.8%) of potential denning and breeding habitat, and 260.7 ha (9.6%) of potential foraging and dispersal habitat is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to the significance of the impacts associated with the Proposed Action. Following an assessment against the SIG1.1, clearing for the Proposed Action in greater glider (southern and central) habitat will: • Adversely affect habitat critical to the survival of a species; and • interfere with the recovery of the species. Therefore, the Proposed Action is likely to result in a significant impact on the greater glider (southern and central).	

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			The detailed impact assessment is provided in Appendix F.	
Yellow-bellied glider (south-eastern) (*Petaurus australis australis*)	Breeding/denning habitat		The yellow-bellied glider (south-easter) is considered having the potential to occur within the Project Area. The Project Area contains 2,861.8 ha of potential breeding and denning habitat, and 2,671.7 ha of potential foraging and dispersal habitat, of which, 113.5 ha (being 4% of the total) and 260.6 ha (being 9.5% of the total) respectively, will be cleared for the Disturbance Footprint. The Proposed Access Route contains 202.1 ha of potential breeding and denning habitat, and 37.8 ha of potential foraging and dispersal habitat, of which, 0.8 ha (being 0.4% of the total) and 0.1 ha (being 0.3% of the total) respectively, will be cleared for the Proposed Access Route. Therefore, the Study Area contains 3,063.9 ha of potential denning and breeding habitat, and 2,709.5 ha of potential foraging and dispersal habitat, of which, 114.3 ha (3.8%) of potential denning and breeding habitat, and 260.7 ha (9.6) of potential foraging and dispersal habitat is expected to be impacted by the Proposed Action. The Proposed Access Route has been assessed using desktop resources (state mapped REs), utilising REs to map potential occurrence until further ground-truthing along the Proposed Access Route has occurred. The scale of the additional estimated impacts for the Proposed Access Route are unlikely to contribute to	**Unlikely**
	2,861.8 ha in the Project Area 202.1 ha in the Proposed Access Route	113.5 ha in the Disturbance Footprint 0.8 ha in the Proposed Access Route Impact Area		
	Foraging and dispersal habitat			
	2,671.7 ha in the Project Area 37.8 ha in the Proposed Access Route	260.6 ha in the Disturbance Footprint 0.1 ha in the Proposed Access Route Impact Area		

Species or ecological community	Habitat within Study Area	Direct Disturbance	Discussion Summary	Significant Impact
			the significance of the impacts associated with the Proposed Action. Following the important population assessment, as per SIG1.1, the Study Area does not support an important population of the species. Therefore, the Proposed Action is unlikely to result in a significant impact on the yellow-bellied glider (south-eastern). The detailed important population assessment and impact assessment is provided in Appendix F.	
Migratory Birds				
Fork-tailed swift (*Apus pacificus*)	Entire aerial space above Study Area	0.0 ha	Fork-tailed swift has the potential to occur as an aerial visitor over the Study Area. The entirety of the Study Area is considered suitable for aerial foraging; however, does not contain roosting habitat. An ecologically significant proportion of the population for fork-tailed swift is 100 individuals (0.1% as nationally important) (DoE, 2015). As the species has not been recorded within or over the Study Area previously, the Study Area does not contain an ecologically significant proportion of the population. Following impact assessment, as per SIG1.1, the Proposed Action is unlikely to result in a significant impact on fork-tailed swift. The detailed impact assessment is provided in Appendix F.	**Unlikely**

9.2 BIRD AND BAT RISK ASSESSMENT

9.2.1 BIRD AND BAT RISK ASSESSMENT

Wind farms are known to impact birds and bats through collision with operating turbines. This section provides a detailed risk assessment for listed threatened and migratory birds and bats, using field data from surveys, desktop sources of historical records and literature on the ecology and characteristics of the species, to assess collision risk during the operational phase of the Proposed Action. This risk assessment has considered the likelihood of impact, and potential consequences of events including collision with wind turbines, as well as the impact of construction and operation on the Proposed Action causing changes in site utilisation by bird and bat species.

The risk assessment was based on the Risk Evaluation Matrix Model which complies within the *AS/NZS ISO 31000 Risk Assessment Standard: 2018*. This risk assessment considers the likelihood of an event (collision with WTGs and impact to site utilisation) (Table 9-2), and the consequences should the event occur (Table 9-3). Through calculating the likelihood and the consequence, an overall risk rating is assigned to each species and the risk of potential impact to a species because of the operation of the Proposed Action (Table 9-4). Such impacts include the direct collisions with WTGs as well as indirect impacts such as the deterrence of migratory flightpaths.

TABLE 9-2: LIKELIHOOD OF EVENT CRITERIA

Likelihood	Description
Certain	It is expected to occur in most circumstances. The risk event could occur in any year (>95%).
Almost certain	It will probably occur in most circumstances. The risk event could occur in any year (>50%).
Likely	It may occur at some time. It is equally probable that the risk event could or could not occur in any year (50%).
Unlikely	It could occur at some time. It is probable than not that the risk event could occur in any year (<50%).
Rare	It may occur in exceptional circumstances. It is improbable that the risk event could occur in any year (<5%).

TABLE 9-3: CONSEQUENCE OF EVENT CRITERIA

Negligible	Low	Moderate	High	Severe
Occasional individuals lost but no reduction in local or regional population viability.	Repeated loss of small numbers of individuals but no reduction in local or regional population viability.	Moderate loss in numbers of individuals, leading to minor reduction in localised or regional population viability for between one and five years.	Major loss in numbers of individuals, leading to reduction in regional or state population viability for between five and 10 years.	Extreme loss in numbers of individuals, leading to reduction in regional or state population viability for a period of at least 10 years.

TABLE 9-4: RISK MATRIX OF RISK LEVEL BASED ON LIKELIHOOD AND CONSEQUENCE

Likelihood	Consequence				
	Negligible	Low	Moderate	High	Severe
Certain	Negligible	Low	High	Severe	Severe
Almost certain	Negligible	Low	Moderate	High	Severe
Likely	Negligible	Low	Moderate	High	High
Unlikely	Negligible	Negligible	Low	Moderate	High
Rare	Negligible	Negligible	Negligible	Low	Low

Only two listed threatened birds, diamond firetail and glossy black-cockatoo (south-eastern), were recorded within the Project Area during the desktop assessment and field surveys. Additionally, white-throated needletail is likely to occur and the following threatened and migratory birds and bats have the potential to occur:

- fork-tailed swift;
- Latham's snipe;
- southern whiteface; and
- squatter pigeon (southern).

It should be noted that these species were not recorded during the field surveys for the Proposed Action.

Nonetheless, the risk assessment took a conservative approach to determine the risk level for each listed threatened and/or migratory species that is considered known, likely or with the potential to occur within the Project Area, by considering hypothetical risks to the species if they were to occur.

This approach considered profiling species based on information obtained from the published literature and the following factors when considering the risk level:

- Whether species were, based on the LoO criteria, known, likely, potential or unlikely to occur within the Project Area;
- existence of records in the Project Area and Locality;
- existence of records in a broader Locality (with this broader Locality being a 100 km radius search area of the Project Area);
- flight heights inside or outside of RSA, based on literature and realistic observations for
- the Locality; and
- amount of known or potential habitat in the Project Area.

Full detail of this approach, as well as the limitations and assumptions of the approach, are included as part of a draft BBMP. The results of this approach are considered to provide a risk result as a 'worst-case' scenario, based on the use of literature due to the lack of on-ground field observations during the field surveys.

9.2.2 RISK ASSESSMENT RESULTS

As a result of the risk assessment, three listed threatened species were assessed as having a 'low' or 'moderate' risk of collision (refer to Table 9-5). All other listed bird and bat species were considered to have 'negligible' risk of impact from collision with WTGs and any indirect impacts associated with the Proposed Action (e.g., barrier effects from WTGs). Following this, seven raptor species were incorporated in the risk assessment, three of which had a 'low' risk and the remainder had a 'negligible' risk of impact. It is emphasised that this risk assessment assumes a worst-case scenario for most of the species, based upon literature and realistic observational expectations. Therefore, the final risk ratings assigned to species that have the potential to occur within the Project Area are conservative and enable this worst-case scenario to be considered.

A full detailed risk assessment with conclusions can be found in Appendix G.

TABLE 9-5: LISTED BIRD AND BAT RISK ASSESSMENT RESULTS

Species	EPBC Act Status	Likelihood of Event	Consequence of Event	Risk Rating
fork-tailed swift	Mi	Likely	Moderate	**Moderate**
Latham's snipe	V, Mi	Likely	Negligible	**Negligible**
glossy black cockatoo (south-eastern)	V	Likely	Low	**Low**
squatter pigeon (southern)	V	Rare	Moderate	**Negligible**
white-throated needletail	V and Mi	Almost certain	Moderate	**Moderate**

Species	EPBC Act Status	Likelihood of Event	Consequence of Event	Risk Rating
Black kite	-	Almost certain	Low	**Low**
Black-shouldered kite	-	Almost certain	Low	**Low**
Brown falcon	-	Unlikely	Low	**Negligible**
Nankeen kestrel	-	Unlikely	Negligible	**Negligible**
Spotted harrier	-	Rare	Low	**Negligible**
Wedge-tailed eagle	-	Almost certain	Low	**Low**
Whistling kite	-	Likely	Negligible	**Negligible**

Note: E = endangered; V = vulnerable; Mi = migratory; - = not listed

9.2.3 BIRD COLLISION RISK MODELLING

The Band Collision Risk Model (Band, 2007) has been used to predict the total number of bird and bat collisions that may result from the development of the Proposed Action. The Band Model is routinely used in wind farm assessment studies across the world. This method of collision risk modelling (CRM) requires the input of parameters that describe species-specific biometrics, flight speeds and characteristics and the expected amount of flight activity in the Project Area. Furthermore, the model requires the input of wind turbine specific information such as the turbine blade size and pitch, turbine height and rotor rotation period, as well as the proportion of time the turbines will be operational (Band, 2007).

There are currently no listed threatened or migratory species data that supports the development of a CRM to support the MNES SIA. White-throated needletail and fork-tailed swift have been assessed as 'potential' to occur, based on the Study Area being within their known distribution. There have been no observations of these species across the six BUS trips that have been completed and CRM requires field data to be completed. More data is required to effectively undertake the CRM, and as such, the CRM will be conducted following the collection of the second year BUS data and the finalisation of the Disturbance Footprint design and layout to improve the validity of the results.

10. OFFSET REQUIREMENTS

A SIA was undertaken for relevant MNES against the SIG 1.1 (DEWHA, 2013). The SIA concluded that there is likely to be a significant impact to:

- koala;
- diamond firetail; and
- greater glider (southern and central).-

For detailed SIAs, refer to Appendix F.

Where significant impacts to these MNES cannot be avoided, the Proponent is committed to preparing an Offset Management Strategy, which specifically outlines the requirements to deliver and manage appropriate land-based offsets, in accordance with the conditions of approvals. The siting and design will be further refined during the detailed engineering design phase, to reduce impacts where possible. There is an incentive to minimise the actual impact area in order to reduce the offset requirements.

There is a preference for offset areas to be located within the Project Area. Once the offset area(s) have been identified, and adequate surveys have been undertaken to confirm species habitat and habitat quality, an Offsets Area Management Plan will be prepared for the implementation and ongoing management of the selected offset area(s).

TABLE 10-1: POTENTIAL OFFSET REQUIREMENTS

Species	EPBC Act Status	Habitat Type	Significant Impact (ha)
Koala (*Phascolarctos cinereus*)	E	Breeding and foraging habitat	537.3
		Dispersal habitat	499.4
Diamond firetail (*Stagonopleura guttata*)	V	Potential habitat	434.1
Greater glider (southern and central) (*Petauroides volans*)	E	Potential breeding/denning habitat	114.3
		Potential foraging and dispersal habitat	260.7

Note: E = Endangered; V = Vulnerable

11. ASSUMPTIONS AND LIMITATIONS

This MNES SIA Report provides a summary of the MNES that have been determined as known, likely or potentially occurring at the Study Area based on the six field surveys undertaken in December 2023, February, May, July/August, December 2024 and February/March 2025. Sampling methods were distributed across the Study Area to obtain a spread of survey locations and across six survey events. Impacts to identified MNES are based on ERM's understanding of the Proposed Action and the information supplied by the Proponent including the Disturbance Footprint.

The absence of a species from a database list or observational studies does not confirm its absence from the Study Area. The lack of existing records from databases is more likely to indicate a low historic sampling effort in the region, as opposed to an absence of threatening processes and species. To overcome these limitations, the likelihood of occurrence assessment takes a precautionary approach and identifies species that have the potential to occur, based on field-verified habitat suitability mapping, in order to assess potential impacts accordingly. The final likelihood of occurrence assessment to identify species that are known, likely or have the potential to occur in the Study Area and be subject to impacts has been developed based on results of targeted species surveys and habitat mapping that incorporates field data on specific habitat requirements as defined in relevant DCCEEW and State guidance. It should be noted that this assessment is initially guided by a desktop search derived by distribution modelling for EPBC Act species (PMST Search), however NC Act listed species are identified through records alone, resulting in a more restricted initial search for NC Act species than EPBC Act species.

On 21 September 2024, a change was made under section 209 of the EPBC Act to the 'List of Migratory Species (13/07/2000)', which included the delisting of select migratory birds including rufous fantail. Therefore, while the species was originally included in the Ecological Assessment Report (ERM, 2024) as potential to occur within the Study Area, as the Proposed Action has not been referred to DCCEEW at the writing of this MNES SIA Report, rufous fantail is no longer considered for the MNES SIA. Moving forward, this species is not required to be considered further.

12. CONCLUSION

An ecological assessment was undertaken to determine the ecological values present within the Study Area. The ecological assessment included a desktop review and six field survey events, in December 2023, February, May 2024, July/August, December 2024 and February/March 2025, to determine the likelihood of occurrence of TECs and listed threatened and migratory species and their habitat within the Study Area.

This MNES SIA Report concluded that two TECs and three threatened species are known to occur within the Study Area, being:

- Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC;
- poplar box grassy woodland on alluvial plains TEC;
- koala (*Phascolarctos cinereus*);
- diamond firetail (*Stagonopleura guttata)*; and
- glossy black cockatoo (south-eastern) (*Calyptorhynchus lathami lathami).*

Additionally, one EPBC Act listed species, white-throated needletail (*Hirundapus caudacutus*) (All aerial space above Study Area considered foraging habitat) is likely to occur within the Study Area, and seven threatened species and one migratory species have the potential to occur, being:

- *Prostanthera sp.* Dunmore (D.M. Gordon 8A);
- Tara wattle (*Acacia lauta*);
- greater glider (southern and central) (*Petauroides volans*);
- yellow-bellied glider (south-eastern) (*Petaurus australis australis)*;
- southern whiteface (*Aphelocephala leucopsis*);
- Latham's snipe (*Gallinago hardwickii*);
- squatter pigeon (southern) (*Geophaps scripta scripta*); and
- fork-tailed swift (*Apus pacificus*).

The potential impact associated with the Proposed Action, specific to MNES, include:

- Clearing of native vegetation and habitat for TECs and threatened and migratory species;
- habitat fragmentation;
- disturbance or displacement of fauna species from foraging or roosting habitat, or breeding places;
- degradation of threatened species habitats as a result of dust, erosion or accidental release of hazardous materials;
- fauna injury during construction activities and movement of machinery and vehicles; and
- bird and bat collisions with WTGs during operational activities.

Relevant mitigation measures will be implemented to reduce the effects of the construction, operation and decommissioning phases of the Proposed Action.

A SIA has been undertaken, for each of the above MNSES, in accordance with SIG1.1 (DEWHA, 2013). As a result of the SIAs, the Proposed Action is considered likely to have a significant impact on the following MNES:

- diamond firetail;
- koala; and
- potential habitat for greater glider (southern and central).

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