



Title of Proposal - Clarke Creek Wind Farm

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Energy Generation and Supply (renewable)

1.2 Provide a detailed description of the proposed action, including all proposed activities.

The key component of the Wind Farm project (Project) include

- Up to 195 wind turbines and hardstand infrastructure
- Up to 13 temporary wind monitoring towers
- Up to 13 permanent wind monitoring towers
- Up to Four new substations
- Up to two permanent site offices, workshops and warehouses
- Up to two small office, lunch room, amenities and ablutions
- Up to 257 km of gravel capped roads
- Up to Four new permanent site entries
- Underground power and communication cables
- Up to 120 km of medium voltage (33 kV) overhead powerlines
- Up to 19 km of high voltage (275 kV) overhead powerlines
- New fencing with grids and gates
- Up to nine laydown and stockpile areas
- Up to six temporary construction compounds
- Up to six temporary site entrances
- One temporary accommodation camp with capacity for up to 300 people
- Temporary concrete Batching Plants
- Water Storage

A detailed description of the proposed action, including all proposed activities is included in the Construction Management Plan sections 2 and 4. This file has been uploaded and is labelled "Appendix S. Construction Management Plan.pdf"

The Project is proposed over 11 freehold lots with a total area of the lots of approximately 76,300 hectares (ha). The Project will involve the construction and operation of a wind farm and ancillary infrastructure, utilising turbines that will generate clean and renewable electricity from the power of wind. The final Project construction footprint is anticipated to cover around 1,792 ha, with an operational footprint is approximately 828 hectares (ha).

The detailed design stage, is when the wind turbine make and model selected will be completed and informed by future work on wind energy modelling from existing onsite monitoring masts,



geotechnical investigations, ecological constraints, network capacity connection constraints, and the market for renewable energy.

The Project infrastructure is comprised of linear, non-linear and temporary infrastructure. The overall footprint of the infrastructure is determined by the final wind farm design and design of roads, cabling and overhead lines. To accommodate these various scales and stages of the wind farm, various optional infrastructure has been included within the Project (e.g. several substation locations are included). A maximum Project is described, within which the Project will be accommodated. The Project layout has been developed to avoid, where possible, and reduce impacts on known environmental constraints.

To accommodate any on site constraints, the wind turbines, as well as the required supporting infrastructure (roads, powerlines and underground cables), may move up to 200 metres (m) from their proposed location (known as micro-siting).

In the final design, the clearing areas will not exceed the clearing specified in the referral of up to 1,425.2 ha of koala habitat and up to 44.7 ha of Semi Evergreen Vine Thicket (SEVT).

Post construction, the areas cleared to create batters and corners will be rehabilitated providing that always roads and hardstands are maintained and need to remain passable for large turbine loads in the event of a blade replacement during operation. The total area for rehabilitation is dependent on the final design.

The Project construction may be:

- completed in its entirety during one construction period of around 30 months, or
- staggered to construct the project progressively in two or more stages over a 36 month period, or
- staggered over a longer period, where some stages of the wind farm are operational for a period of time, and the balance of the project is completed at some point in the future.

Files uploaded under 1.4.:

Shape files showing Ground Truthed Regional Ecosystems

Filename "GroundTruthedRegionalEcosystemShapeFiles_221117.zip"

Shape files showing Wind Farm Layout-Filename "171123_ClarkeCreekWindFarm_Layout.zip"

KMZ files showing Wind Farm Layout-

Filename "171123_ClarkeCreekWindFarm_LayoutFiles.kmz"

PDFs of wind farm layout, Threatened Species and Ground Truthed Regional Ecosystems.

"Clarke Creek Wind Farm Maps.zip"



1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
This polygon shows the1 general area for the project but does not show the actual project boundary. Please refer to the kmz or shape files for the actual location of the project.		-22.483223135699	149.16359014823
This polygon shows the2 general area for the project but does not show the actual project boundary. Please refer to the kmz or shape files for the actual location of the project.		-22.506426712118	149.35203142478
This polygon shows the3 general area for the project but does not show the actual project boundary. Please refer to the kmz or shape files for the actual location of the project.		-22.798550988771	149.49176378562
This polygon shows the4 general area for the project but does not show the actual project boundary. Please refer to the kmz or shape files for the actual location of the project.		-22.954812141121	149.53673906639
This polygon shows the5 general area for the project but does not show the actual project boundary. Please refer to the kmz or shape files for the actual location of the project.		-22.907383439891	149.43408556297
This polygon shows the6		-22.777343842379	149.34928484275



Area	Point	Latitude	Longitude
general area for the project but does not show the actual project boundary. Please refer to the kmz or shape files for the actual location of the project. This polygon shows the7		-22.741885730299	149.31083269432
general area for the project but does not show the actual project boundary. Please refer to the kmz or shape files for the actual location of the project. This polygon shows the8		-22.483251236277	149.16361160591
general area for the project but does not show the actual project boundary. Please refer to the kmz or shape files for the actual location of the project. This polygon shows the9		-22.483223135699	149.16359014823

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The Project proposal is the development of up to 195 wind turbines and associated ancillary infrastructure to be developed within the locality of Clarke Creek, approximately 150 kilometres (km) north-west of Rockhampton in Central Queensland. The region is dominated by agricultural



activities (primarily beef cattle production), and large areas of the landscape are extensively cleared, although areas of remnant and regrowth native vegetation are also present in the Clarke Creek area. The Project is located within the LGAs of Isaac Regional Council and Livingstone Shire Council and is bounded to the east by the Bruce Highway (A1) and to the west by the Marlborough Sarina Road. The southern end of the Project is bisected by Marlborough-Sarina Road.

The closest townships to the Project are Ogmoo and Marlborough approximately 30 km to the east and St Lawrence approximately 30 km north-east. Other small settlements are located throughout the region within the localities of Lotus Creek, Clarke Creek, Ogmoo and Mount Gardiner which are intersected by the Project area.

The largest nearby towns include Rockhampton to the south-east and Mackay to the north-east.

11 freehold lots with a total area of the lots of approximately 76,300. They are Lots 8 RP614441, 10 RP614442, 1 SP153335, 8 ROP41, 23 CP896088, 18 RP848821, 1 RP801235, 23 MC602, 3 RP801346, 3 ROP178, 4 ROP192.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

Construction Disturbance Footprint-1792 Ha - Operational Footprint 828 Ha

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. 11 freehold lots. Described in 1.5 Above.

1.8 Primary Jurisdiction.

Queensland

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

Yes



1.10.1 Is there a local government area and council contact for the proposal?

Yes

1.10.1.0 Council contact officer details

1.10.1.1 Name of relevant council contact officer.

Chris Lee, Principal Planner, Department of State Development, Manufacturing, Infrastructure and Planning

1.10.1.2 E-mail

chris.lee@dilgp.qld.gov.au

1.10.1.3 Telephone Number

07 3452 7694

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 02/2019

End date 01/2022

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

An application has been lodged for a Development Permit for a Material Change of Use (Wind Farm) and a Development Permit for Operational Works (Clearing Native Vegetation) under the Queensland *Planning Act 2016*, and an application for a decision under Section 62 of the Queensland Transport Infrastructure Act 1994.

In support of this application, specialised ecological assessment, landscape and visual impact (LVIA), noise and vibration, traffic impact assessment, route survey, stormwater, electromagnetic interference (EMI), aviation impact statement, shadow flicker and construction management assessments have been undertaken to determine the likely impacts of the Project and how these impacts can be managed.

The project is currently being assessed by Department of State Development, Manufacturing, Infrastructure and Planning against

- State code 1: Development in a state-controlled road environment



-
- State code 23: Wind farm development
 - State code 16: Native vegetation clearing

It is understood that additional statutory approvals will be required prior to the establishment of the Project, which are likely to include the following approvals:

- Relevant Purpose Determination (DNRM)
- Material Change of Use (MCU) for concrete batching (Local council)
- Ministerial Determination – Reconfiguration of a Lot (ROL)
- Reconfiguration of a Lot (Local council)
- Building Works Permit (Local council/certifier)
- Plumbing and Drainage Works Permit (Local council)
- Operational Works Permit (Excavating and Filling) (Local council)
- Vegetation Clearing Offset Process (DNRM)
- Riverine Protection Permit (if works cannot comply with Riverine Protection Permit exemption requirements) (DNRM)
- Operational Works for Waterway Barrier approval (if works cannot be undertaken in accordance with the Accepted Development Requirements) (SARA/DAF)
- Operational Works for Taking or Interfering with Water (Required if not taking water from a licenced and approved source. Approval may result in additional licence requirements i.e. water allocation / licence) (SARA/DNRM)
- Road Corridor Permits, Traffic Control Permits and Extra Wide Vehicle approval (DTMR)
- Species Management Plan (if impacts on Nature Conservation Act species) (DEHP)
- Aboriginal Cultural Heritage Duty of Care (Department of Aboriginal and Torres Strait Islander Partnership (DATSIP)/Relevant Aboriginal Party/ies)

These approvals will be obtained when Clarke Creek Wind Farm has appointed an Engineering,



Procurement, and Construction (EPC) contractor, confirmed detailed design and construction commencement is imminent.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

The proponent has identified and subsequently engaged with several key stakeholders on the Project and will continue to liaise with these the community during the pre-construction phase, construction and operational phases of the Project. The proponent has undertaken presentations or been involved in meetings with the following organisations:

- Presentation to Officers and Councillors of Isaac Regional Council - Sept 2017)
- Presentation to Officers and Councillors Livingstone Shire Council - Sept 2017)
- Public Exhibition held at the campdraft facilities in Clarke Creek – Sept 2017, and
- Meeting the Clarke Creek Community Reference Group Executive – Nov 2017.

CCE has had ongoing discussions with nearby landowner since late 2016 when CCE installed its first temporary wind monitoring mast.

Direct community engagement has also commenced via the Project's website (<http://www.clarkecreekwindandsolar.com.au>) with individuals or businesses contacting CCE to register their interest in future work opportunities or find out more about the project. These commitments are as follows:

- The Proponent will ensure that the construction and operational workforce of the Project does not degrade the quality of the current Telstra mobile communications for existing users. The Proponent will liaise with the community to investigate solutions to provide sufficient mobile coverage in order to upgrade the existing Telstra communications tower at Clarke Creek, or to install communications equipment on a new tower or wind farm infrastructure.
- The Proponent will endeavour to ensure that there is no movement of oversize over mass (OSOM) vehicles, such as large turbine components, cranes and 275kV transformers on the Clarke Creek School bus route during times when the school bus is operating.
- The Proponent will develop a transport schedule for OSOM vehicles through the Broadsound



Range in consultation with other road users including the local community, Shire Councils and DTMR with the aim of reducing the impact on other road users.

- The Proponent will provide \$200,000 every year (increasing with CPI) for projects or initiatives within the local region. The projects to receive funding will be determined by a committee comprising of a representative of the wind farm owner and other volunteer representatives. The volunteer representatives can be members of the local community living near to the wind farm, representatives/officers of Isaac and Livingstone Council and representatives of wind farm host landowners.

The Project intersects one Native Title Application/Claim (QC2013/004), lodged by Barada Kabalbara Yetimarala People in 2013. The Barada Kabalbara Yetimarala People have been contacted about the Project with meetings planned for Q1-Q2 2018 with the mutual aim of entering into a Cultural Heritage Management Agreement.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

A Planning Report has been prepared by AECOM Australia Pty Ltd (AECOM) on behalf of the proponent Clarke Creek Energy Pty Ltd (CCE), in support of a development application seeking a Development Permit for a Material Change of Use (Wind Farm) and a Development Permit for Operational Works (Clearing Native Vegetation) under the *Planning Act 2016* (Planning Act) for the proposed Clarke Creek Wind Farm (the Project). The application also required a decision under section 62 of the *Transport Infrastructure Act 1994*.

The project is currently being assessed by Department of State Development, Manufacturing, Infrastructure and Planning against the following Queensland State Codes.

- State code 1: Development in a state-controlled road environment
- State code 23: Wind farm development
- State code 16: Native vegetation clearing



1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

No



Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The [interactive map tool](#) can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

- [Profiles of relevant species/communities](#) (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- [Significant Impact Guidelines 1.1 – Matters of National Environmental Significance](#);
- [Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies](#).

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
Introduction. This table is provided is also	A detailed assessment of the potential impacts



Species	Impact
provided in an alternative format in document "Attachment for 2.4 and 2.5.pdf"	of the proposed action, including potential impacts to commonwealth listed threatened species and ecological communities is provided in the Ecological Assessment (EA) report prepared by NGH Environmental (2017) which accompanies this referral. The report details the site assessment methods, results, potential impacts, and recommended mitigation measures, including provision of a Biodiversity Offset Strategy (BOS) to mitigate potential impacts of the proposed action. A draft Biodiversity Offset Strategy (BOS), included with this referral and uploaded with filename "Biodiversity Offset Strategy_v4.pdf" together with supporting spreadsheets named "offset-assessment-guide - Koala_V3 KM.xlsx" and "offset-assessment-guide - SEVT TEC_V3 KM.xlsx". A summary of the key components of the report as it applies to listed threatened species and ecological communities is provided below. Site Assessment Methods The site assessment methods are described in Section 6 of the EA, and included a combination of background review and desktop assessment, and an extensive field survey program, as described below (with relevance to EPBC MNES): Desktop Assessment: The desktop assessment included searches of publicly available databases (such as Birddata and Atlas of Living Australia), as well as the DoEE Protected Matters Search tool (PMST), within a 20 km search area using the coordinates (corners of a bounding polygon) for the proposed windfarm location (refer to Table 4 and Appendix 1A of the EA for the search area and results of the PMST). Site Survey: Two separate biodiversity site assessment field surveys were conducted between 13th and 27th of March, 2017 and between 11th and 25th September, 2017 to capture both wet and dry (or, pre-wet) season information. The specific survey methods, survey locations, and overall survey effort are described in detail in Section 6.2 of the EA. Where relevant, surveys were undertaken in accordance with relevant EPBC Act survey guidelines (as listed in Section 6.2.2



Species	Impact
	of the EA). Survey Results A full description of the desktop and field survey results is provided in Section 7 of the EA (NGH 2017). A brief summary of the results as they apply to listed threatened species and ecological communities is provided below. Flora and vegetation communities: Records exist for 15 threatened flora species and five threatened ecological communities (TEC) within a 20 km radius on EPBC Search Tool, as well as seven records of threatened flora species on the QLD Wildlife Online. An evaluation of each of the threatened flora species included in the database search results for their potential to occur within the study area is provided in Appendix 3 of the EA. Two (2) threatened flora species were confirmed present on-site during the field surveys. These were both Cycad species, and included <i>Cycas megacarpa</i> and <i>C. ophiolitica</i>, both of which are listed as Endangered under the EPBC Act. All other species included in the database search results were considered either unlikely to occur at the site, or unlikely to be affected by the proposed action. The locations of the two Cycad species recorded on site is provided on Figures F11, F12 and F13 of the EA. The location illustrates opportunistic records only, and do not represent a detailed survey of all individuals present in the project area, or the overall extent of distribution of the species within the subject site (given the extensive area and difficult to terrain it was impossible to cover all of the project area). The potential impacts of the project on these two species and recommended mitigation measures are described further below. Four main vegetation communities were found to be present on site, in areas likely to be impacted by the development of the Clarke Creek wind farm, one of which has been identified as being a Threatened Ecological Community (TEC). These vegetation communities are described as: • Vegetation Community 1: <i>Eucalyptus crebra</i> Open Woodland; • Vegetation Community 2: Riparian Vegetation; • Vegetation Community 3: Semi-Evergreen Vine



Species	Impact
	Thicket (SEVT); and, • Vegetation Community 4: Wetland/Alluvial plains. Vegetation Community 3 (SEVT) is analogous to the EPBC TEC Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions. The potential impacts of the project on tis TEC and recommended mitigation measures are described further below. Other TEC included in the database search results were considered either unlikely to occur at the site, or unlikely to be affected by the proposed action, including the Brigalow (Acacia harpophylla dominant and codominant) TEC, which was specifically considered during the site surveys to determine if it was present at the site. Fauna and Fauna Habitats: The fauna surveys conducted at the site resulted in 203 species of fauna being recorded (listed in Appendix 4 of the EA). In summary, the total number for each fauna group included: • 132 bird species; • 17 species of mammals (excluding microbats) of which seven species are introduced; • A total of 20 microbat species were identified being potentially or definitely present on site; • 25 reptile species; and, • 11 amphibian species, one of which is introduced. With regard to EPBC listed threatened species recorded at the site, - Squatter Pigeon (<i>Geophaps scripta scripta</i>, Vulnerable under the EPBC Act). Species was recorded incidentally during the September survey at two localities, and incidentally on two occasions during the March survey, once near the southern part of the proposed wind farm site and once well south-east of the wind farm site. • Koala (<i>Phascolarctos cinereus</i>, Vulnerable under the EPBC Act). Koala and evidence of the presence of Koala have been confirmed (17 koalas were heard or sighted on site) throughout the project area. Additional information on the use of the project area by Koala is provided below. • Greater Glider (<i>Petauroides Volans</i>, Vulnerable under the EPBC Act). A small population was recorded at the site within highly fertile areas of the riparian community with a high concentration of



Species	Impact
	remnant, old growth, <i>Eucalyptus tereticornis</i>. This community had low-level disturbance, with 13 individuals seen in an area no larger than 3 ha. The locational records of each of the above threatened species is provided in Figures F11, F12 and F13 of the EA. An evaluation of each of the threatened fauna species included in the database search results for their potential to occur within the study area is provided in Appendix 3 of the EA. With regard to the potential occurrence at the site of other listed threatened species included in the database searches, the following is specifically noted: - Viable habitat for the Northern Quoll (<i>Dasyurus hallucatus</i>) (Endangered under the EPBC Act) was found on site, and this species is listed as likely to occur within the region, however, no evidence of the species presence within the project area was found, despite a survey effort of 20 cameras set up for a combined period of 24 days across the project area in suitable locations. - Calls of <i>Nyctophilus corbeni</i> (Vulnerable under the EPBC) were included as possible records of the species in the bat call analysis results (refer to Section 6.2.2 and 7.3.4 as well as Appendix 9 of the EA for a full description of the bat call analysis methods and results). Calls of this species are not distinguishable reliably from other sympatric <i>Nyctophilus</i> species using Anabat/songmeter detectors. <i>Nyctophilus gouldi</i> and <i>Nyctophilus geoffroyi</i> were all captured in the harp traps during the survey, while <i>Nyctophilus corbeni</i> was not captured at all. The calls recorded by the songmeter and anabats match these three non-threatened species because they were recorded contemporaneously with and at the same location of their capture. Therefore, while <i>Nyctophilus corbeni</i> could occur within or near the project area, it is considered unlikely that it is present within the surveyed area based on the comparative capture results. - No threatened species of reptile was found during the survey, however habitat suitable for the Ornamental Snake (<i>Denisonia maculata</i>) was identified. - No threatened amphibians were



Species	Impact
	recorded on site Potential Impacts A detailed assessment of the impacts of the proposed action for all ecological matters is provided at Section 8 of the EA. A summary of the anticipated impacts for listed threatened species and ecological communities is provided below.
The commonwealth listed threatened flora species recorded or considered likely to occur at the site includes the two endangered (under the EPBC Act) Cycad species, <i>Cycas megacarpa</i> and <i>Cycas ophiolitica</i> .	An assessment of the significance of the impacts of the proposed action on the Cycads under the commonwealth significant impact criteria for endangered species is provided at Chapter 8 of the EA. In summary, the impacts of the project on both Cycad species will mainly involve direct clearing for the construction of access roads. Few Cycads were observed along the top of ridgelines where the turbines will be located (and roads largely located as much as possible), with most observations of these species made along mid-slopes of hills. Other infrastructure such as substations and site compounds will largely be located on flatter areas of the site which generally were found not to support Cycads. The largest numbers/density of Cycads were found across the northern project areas; however, individual Cycads were found to occur across most of the site. Given the size of the site and difficult terrain with limited access, it has not been possible to map every individual, or the exact boundaries of the distribution of Cycads within the site. Therefore, it is not possible at this time to estimate how many individuals may occur within the development footprint. In order to reduce the potential impacts to these species, micro-siting will be used during the detailed design of roads to avoid Cycads where practical. Where avoidance is not possible, they will be collected and translocated to suitable areas outside of the development footprint in accordance with the (draft) prescribed Cycad management measures provided at Appendix 6 of the EA, and including at a minimum the following mitigation measures: • Pre-clearance surveys within road alignments to identify and mark individual Cycads • Avoidance of Cycads where possible by relocating the access track



Species	Impact
	alignment (micrositing). • Where there is unavoidable clearing, the Cycads will be translocated under a best practice method outside of the clearing area. These species can be successfully transplanted. • Propagation of any <i>Cycas megacarpa</i> and <i>Cycas ophiolitica</i> may be undertaken if translocation efforts have not reached desired success rates Given the above measures, and that there is a large and healthy population of both species throughout the region it was concluded that the project is unlikely to lead to result in a significant impact to this species.
Koala	Koalas were found to be present throughout the project area with 17 recorded (heard or seen) during site surveys. There is currently 39,560 ha of vegetation mapped as being suitable to koala within the project study area (defined the property boundaries of the involved landholders). The habitat currently forms a contiguous landscape over the ridgelines with limits to connectivity in the flats which contain the more extensively cleared agricultural lands. The current project design requires the removal of up to 1,425.2 ha of koala habitat (less than 4% of the habitat within the project study area). The koala habitat in the region is estimated to extend well beyond the limits of the study area. The impact of this clearing will include localised losses of habitat from areas immediately adjacent to the existing tracks as well as from the construction of new tracks/roads through the ridge lines. Post-construction, the roads will generally be between 6-15 m in width, with slopes and batters to be rehabilitated or otherwise revegetated for soil stability. While roads and turbines could potentially disrupt movement through physical barriers, access to these roads and structures will be restricted to private use only (for farmers and wind farm staff), and with strict speed limits. With these measures in place, it is not expected that the roads and turbines will pose a barrier to koala movement. A number of management and mitigation measures were taken into consideration to minimise potential impacts on



Species	Impact
	koala which are summarised in Section 8.5, Section 10, and Appendix 6 of the EA which includes the Development and implementation of a Fauna Management Plan to outline protection measures to minimise impacts on koala. In summary, complete avoidance of clearing koala habitat will not be achievable and a up to 1,425.2 ha of suitable koala habitat will require removal. Given the high population of koalas through this area, it is expected that the removal of this habitat could have some impact on the local population. Provision of a koala habitat offset is therefore proposed to compensate the loss of vegetation on site. The offset requirements have been calculated using the EPBC Offset calculator and it was found that approximately 3,016.5 ha of suitable habitat was required to offset the project impacts on koala. Further details of the offset requirements are included in the (draft) Biodiversity Offset Strategy (BOS), included with this referral.
Greater Glider	A healthy population of greater gliders were found adjacent to and within parts of the riparian vegetation of the project area. A total of 1,822 ha of riparian vegetation is available in the project area and the project will require the clearing of 18.3 ha (<1% of the total available area) of good quality greater glider habitat within the riparian vegetation community. The clearing of the vegetation in the waterway may have some impacts on the Greater Glider population, mainly through the loss of hollow-bearing trees which provide denning sites, and fragmentation of movement corridors along suitable riparian habitats. The removal of hollow-bearing trees can be avoided to some extent through micro-siting during detailed design or construction. Additionally, the felling of any hollow-bearing trees would be managed in accordance with a tree felling protocol, including the use of a fauna spotter to reduce potential impacts to resident fauna through death or injury. Nest box installation and/or other methods of habitat replacement will also combine with the above factors to greatly



Species	Impact
	reduce the potential impacts on the local population. During the construction phase, gliders may avoid the areas around the roads and turbines due to disturbance. The construction of roads through riparian zones may also disrupt glider movements in these areas. Greater Gliders are recorded as being able to glide long distances, with recorded “flights” of up to 100 m (Museum Victoria 2017). The clearing for road corridors will generally be up to 35 m in width across the majority of areas of mapped suitable habitat across the site (noting that the mapped habitat for this species is typically located in the riparian zones where construction widths are likely to be narrower than the steeper slopes that require wider construction widths of up to 200 m), and post-rehabilitation, tracks will on average be about 10 - 15 m wide. This narrow corridor, combined with the anticipated low traffic volumes should not result in any movement barriers for the Greater Glider, and consequently, it is not expected that the project will result in any fragmentation of habitat for the Greater Glider. Rehabilitation activities will also be undertaken to enhance the riparian vegetation, where disturbance is to occur along the waterway. The aim of these activities will be to increase the buffering functions of the existing riparian zone by revegetating the top of bank and controlling weeds within the understorey within the riparian vegetation. Given the above, it is considered unlikely that the proposed action would result in a significant impact on the Greater Glider population living in the project area.
Squatter Pigeon	Squatter Pigeons were observed in proximity to water bodies throughout the project area. They are a locally nomadic species and will use vegetated corridors to disperse to areas with permanent water and better feeding grounds (DoTE 2017). The Squatter Pigeon ranges in tropical, open, dry sclerophyll woodlands and, savannahs of north-eastern Australia (Higgins & Davies 1996). Sightings are generally in the grassy understorey of eucalypt woodland, close



Species	Impact
	to permanent water bodies (Garnett 1993). Nests are located on the ground, sometimes among, or sheltered by vegetation, including short, dry grass, grass tussocks or bushes (Frith 1982). Approximately 18.3 ha of riparian vegetation will potentially require removal for the project. As this clearing is linear, there will be large tracts of habitat surrounding the clearing for wildlife to disperse into. Squatter pigeons are nomadic and dispersal through the riparian corridor will remain possible. With regard to long-term operational impacts, this species is generally low-flying and spends much of its time on the ground. The species is therefore not considered to be at risk from collisions with turbines. Given the low population through the site and the higher population in the stock yards and farm dam areas outside the project area, as well as the low probability of being impacted by turbine collisions, it is considered unlikely that the project will result in a significant impacts to the local population of Squatter Pigeons.
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions (SEVT)	The threatened communities listed as endangered and which have been recorded at the site includes the Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions (SEVT). An assessment of the significance of the impacts of the proposed action under the commonwealth significant impact criteria for threatened ecological communities is provided at Chapter 8 of the EA. In summary, the proposed action would result in the removal of up to 44.7 ha of mapped SEVT. A total of 3,719.3 ha of SEVT was mapped across the study site. This equates to a reduction of approximately 1% of the total mapped extent community across the subject site. This extent in the reduction of the EEC may be considered significant, however based on the site observations, including review of aerial imagery of the vegetation across the broader surrounding region, as well as review of the existing QLD state Regional Ecosystem maps, there is substantially more patches of this community present in the area. As such,



Species	Impact
	the overall portion of removal of the EEC in the region is unlikely to result in a significant impact. The project also has the potential to result in some fragmentation of this community as a result of clearing for linear infrastructure such as roads and underground and overhead powerlines. The as -constructed road corridor width is expected to be about on average 10 – 15 m, with adjacent disturbed areas rehabilitated with suitable species for this community. Overhead powerline clearing requirements will vary depending on voltage, but will be up to a maximum of 45 m in width (for high voltage powerlines), in line with standard utility infrastructure management requirements, with areas beneath the powerlines to be regularly maintained (i.e. slashed). Road designs have been designed to avoid where practical, or otherwise minimise to the greatest extent possible. All turbines, construction compounds, laydown areas, substations, wind monitoring towers, and office and workshops have been located to avoid SEVT. To ensure that the removal of up to 44.7 ha of the SEVT that occurs within the site and which cannot be avoided, does not result in a significant long-term reduction, a BOS will be implemented to manage and conserve existing areas of SEVT within the local area, including if required, further financial offset provisions.
Conclusion	The EA concluded that the project has the potential to result in a significant impact to the following species and ecological communities: - Koala (Project will result in the removal of 1,425 ha of core koala habitat) - Semi-Evergreen Vine Thicket (Project will result in the removal of 44.7 ha of SEVT) A Biodiversity Offset Strategy (BOS) will be developed and implemented to offset these impacts. A preliminary BOS has been prepared and is included with this referral for consideration and further consultation with the DoEE.



2.4.2 Do you consider this impact to be significant?

Yes

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?

Yes

2.5.1 Impact table

Species	Impact
The commonwealth migratory species recorded or considered likely to occur at the site includes the following entities: • White-throated Needletail (<i>Hirundapus caudacutus</i>), • Rainbow Bee-eater (<i>Merops ornatus</i>), • Rufous Fantail (<i>Rhipidura rufifrons</i>) and • Satin Flycatcher (<i>Myiagra cyanoleuca</i>) . This table is provided is also provided in an alternative format in document "Attachment for 2.4 and 2.5.pdf"	An assessment of the significance of the impacts of the proposed action under the commonwealth significant impact criteria for migratory species is provided at Chapter 8 of the EA. In summary, the project is considered unlikely to result in any large-scale fragmentation of habitat, and accordingly, is unlikely to destroy or isolate any areas of important habitat for listed migratory species. Specifically, the project is located within an extensive area of remnant vegetation, with only a small percentage (>5%) of the total available habitat within the project study area to be removed, and with extensive areas of vegetation occurring in surrounding areas outside of the study area. As such, there will be sufficient habitat available for these species in the region after development of the CCWF. Additionally, highly mobile species (such as the migratory bird species recorded at the site), would not be affected by the project in terms of fragmentation or isolation of habitats. No migratory pathways or high use flight corridors of these species are known or predicted to occur through the CCWF site that would be disrupted or result in an increased risk of collision with turbines. The large tracts of suitable habitat present throughout the area outside of the project site will act as suitable rest and foraging areas. The project is also not expected to result in any substantial modification (through altered fire or hydrological regimes or nutrient cycles) within adjacent areas of the retained areas of vegetation to the extent that it might disrupt the life-cycle of these



Species	Impact
	species. No invasive fauna or flora species are listed as a known threat to these migratory species. Pest management measures will be developed to ensure that the current pest species do not increase in population or range and that no new pest species are introduced into the area as a result of the project. It is not expected that the project will result in the establishment of invasive species that will be harmful to these migratory species. Individuals of the migratory species listed above that may occur in the project area on occasion, are not considered to be an ecologically significant proportion of their respective populations. The proposed action is not likely to seriously disrupt the lifecycle of any of these migratory species. Furthermore, no ecologically significant areas were identified as occurring within the project area. Some ecologically significant areas were identified in the flats, outside of the project area. Given the above, the proposed action is considered unlikely to result in a significant impact to listed migratory species.

2.5.2 Do you consider this impact to be significant?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?



No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No



Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

The flora and fauna relevant to the project area are described in detail in the accompanying EA. Given the extensive area covered by the project (circa 76,300 ha) it is not possible to describe all flora and fauna recorded at the site. To summarise the key findings, the threatened flora and fauna species detected during the field survey include:

- *Cycas megacarpa* (Cycad species) (endangered NC act, endangered EPBC Act, vulnerable IUCN);
- *Cycas ophiolitica* (Cycad species) (endangered NC Act, endangered EPBC Act, vulnerable IUCN);
- Squatter Pigeon (southern subspecies) (*Geophaps scripta scripta*) (vulnerable NC Act, vulnerable EPBC Act);
- Koala (*Phascolarctos cinereus*) (vulnerable NC Act, vulnerable EPBC Act);
- Greater Glider (*Petauroides volans*) (vulnerable NC Act, vulnerable EPBC Act); and
- Migratory birds such as White-throated Needle tailed (*Hirundapus caudacutus*), Rainbow Bee-eater (*Merops ornatus*), Rufous Fantail (*Rhipidura rufifrons*) and Satin Flycatcher (*Myiagra cyanoleuca*) were also recorded on site.

The site has also been subject to disturbance from grazing, land clearing and pasture modification associated with the rural agricultural enterprises being undertaken in the locality. A number of weed species were recorded at the site, including Weeds of National Significance (WoNS), restricted invasive plants listed under the *Biosecurity Act 2014* (see Table 8 of the EA) and other environmental weed species. Additionally, a total of six invasive animal species were recorded on site via direct visual observations or evidence of presence (scats). A complete list of pest animals identified on site is provided in Table 10 of the EA, including notation of their pest status under the Biosecurity Act.

A full list of all flora and fauna species recorded at the site is provided at Appendix 4 of the EA.



3.2 Describe the hydrology relevant to the project area (including water flows).

The Study Area is located on a catchment divide between two major catchment basins; the Fitzroy and Styx (refer to Figure 2). The Project Site is distributed throughout the Study Area with the majority of infrastructure located in the Isaac River catchment. Runoff from the Study Area originating in the Isaac catchment predominately flows in a westerly direction via a number of key tributaries including Lotus, Yatton, Clarke, Mundi, Stockyard, Bora, Clive and Apis Creeks.

The Isaac River, a major tributary of the Fitzroy River, covers an area of approximately 22,365 km² and represents approximately 15.7% of the Fitzroy Basin. The remaining south east portion of the Study Area is located in the Styx River catchment and drains in an easterly direction via the key Styx tributary of Tooloombah Creek and its tributaries of Sarsfield, Gilnorchie, and Magdalen Creeks.

Watercourses are typically well defined across the Study Area and show a dendritic drainage pattern with steep headwater streams falling rapidly into well-incised, valley-confined channels and ultimately to medium energy, moderately confined, sinuous channels traversing low rolling hills. Elevations across the Study Area typically range from a maximum of approximately 600 m AHD to a minimum of 100 m AHD. Land use across the Study Area predominately consists of extensively cleared agricultural land, primarily used for grazing. Significant areas of remnant or regrowth vegetation are predominately restricted to the elevated peaks and steep-sided valley slopes.

Due to its size, surface runoff across the Study Area is likely to be conveyed at a variety of scales. Stormwater originating as sheet flow will concentrate in localised drainage lines and hence to the tributaries and main channels of the higher order, local watercourses including Yatton, Clarke, Mundi, Stockyard, Bora Clive, Pluto and Tooloombah Creeks.

No publicly available stream gauge data is available for any of the local watercourses relevant to the Study Area. The closest publicly available stream gauge is located on the Isaac River, approximately 12 km upstream of the confluence with Clarke Creek (Isaac River at Yatton, 130401A). Data for the gauge was obtained from the DNRM Water Monitoring Information Portal in order to develop a high level characterisation of regional streamflow.

Figure 5 and Figure 6 of the Stormwater report which has been uploaded and named "Appendix J. Stormwater Report.pdf" respectively show median monthly discharge and daily flow duration for the Isaac River gauge (130401A). From the figures the following can be seen:



- Median daily discharge shows a similar seasonal distribution to rainfall and is highest during the wet season months of January through March with February having the highest median daily discharge of 107 ML/d.
- Median streamflow during the winter dry season (April through November) gradually reduces from a maximum of 13 ML/d in April to a minimum of 0.3 ML/d in October throughout.
- Cease to flow conditions are noted to occur on approximately 15% of all days (Figure 6) and the relatively shallow gradient of the flow duration from 20% to 60% probability of exceedance indicates a moderately significant baseflow contribution and is likely to be predominantly as a result of lagged interflow from the summer wet season rather than a spring fed groundwater interaction.

While the data presented in Figure 5 and Figure 6 enables the flow in the Isaac River at Yatton (reporting catchment area of 19,720 km²) to be characterised as moderately perennial, streamflow for watercourses relevant to the Study Area (approximately 775 km²) is likely to be highly ephemeral and episodic. Flow will typically be restricted to periods of high rainfall and subject to relatively rapid recession once rainfall has ceased.

3.3 Describe the soil and vegetation characteristics relevant to the project area.

The soil and vegetation characteristics of the project area include a combination of remnant, regrowth and non-remnant vegetation, across a variety of landforms and geology types, including steep hills/ ridges, valleys and watercourses, as well as flatter (predominantly cleared) terrain.

The soil and vegetation characteristics are best described the vegetation mapping (both state and ground-truthed mapping) which described the Regional Ecocysrtsems of the area. Regional ecosystems are vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil (Sattler and Williams 1999, *Vegetation Management Act 1999*).

The accompanying EA report provides detailed descriptions and maps of both the existing state (DNRM) maps as well as detailed ground-truthed maps across the project area which accurately describes the soil and vegetation characteristics of the project area (refer to Chapters 7 and 8 of the EA).



3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

There are no known outstanding natural features and/or any other important or unique values relevant to the project area.

3.5 Describe the status of native vegetation relevant to the project area.

Based on the vegetation mapping conducted for the project area, which included a combination of desktop and detailed site survey assessments, the site was found to support areas of both remnant and non-remnant vegetation. In general, the areas of remnant vegetation were recorded across most of the steeper hills and ridges where the turbines would be located, as well as much of the proposed access roads, as well as along some of the larger watercourses in the lower-lying parts of the site. The majority of the lower-parts of the site have been predominantly cleared for grazing and support areas of highly modified pastures, as well as some small pockets of non-remnant regrowth vegetation.

Aside from the cleared/modified non-remnant areas, four main vegetation communities were found to be present on site, in areas likely to be impacted by the development of the Clarke Creek wind farm, one of which has been identified as being a Threatened Ecological Community (TEC). These vegetation communities are described as:

- Vegetation Community 1: *Eucalyptus crebra* Open Woodland;
- Vegetation Community 2: Riparian Vegetation;
- Vegetation Community 3: Semi-Evergreen Vine Thicket (SEVT) (endangered ecological community) and,
- Vegetation Community 4: Wetland/Alluvial plains.

The distribution of these vegetation communities in the project area is described in Chapter 7.1 and shown in Figures F8, F9 and F10 of the accompanying EA . A detailed list of all flora species found within each community is also provided in Appendix 4 of the EA.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The project is located on land at an altitude of between 100m and 600m AHD.

3.7 Describe the current condition of the environment relevant to the project area.



The Clarke Creek region is characterised by agricultural activities (primarily beef cattle production), and large areas of the region are extensively cleared to support these uses. Within the project area, much of the western portion of the site is flatter terrain and has been almost entirely cleared for the agricultural uses. Environmental condition in these parts of the site is considered to be generally poor, with numerous weeds and pest animals observed in these parts of the site.

There are also extensive patches of remnant and regrowth native vegetation in the Clarke Creek area, occurring predominantly along upper hills and ridges, as well as along some drainage systems. Environmental condition along the hills and ridges is generally good, with an intact native remnant canopy, although the understorey was found to be quite variable given intermittent grazing pressures in these parts, which has resulted in invasive weeds becoming established, as well as reduced diversity and abundance of native understorey species, in a number of locations. In general, the overall condition of these parts were good.

The riparian zones also supported a relatively intact native remnant vegetation community, although the understorey values of many drainage systems were found to be dominated by invasive species such as Lantana and Rubber Vine. Additionally, some erosion was also evident in these places through intermitted stock access for drinking, as well as storm surges (e.g. Cyclone Debbie) which have resulted in flooding and bank erosion. Consequently, many of the riparian zones were considered to be in moderate to good condition.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

As described previously, National and World Heritage Properties within the local region of the proposed action include the Great Barrier Reef Marine Park (GBRMP).

The proposed action is located approximately 40 km from the GBRMP. Potential impacts on the GBRMP associated with the proposed action could occur as a result of bulk earthworks which could lead to erosion and sediment run-off entering waterways which drain into the GBRMP.

The bulk earthworks associated with the construction of the CCWF would be conducted in accordance with a Construction and Environment Management Plan which would include the implementation of erosion and sediment control measures in accordance with industry best-practice and relevant construction standards, as well as additional measures, such as timely rehabilitation of disturbed areas to limit the potential for erosion and sediment run-off to enter waterways from the construction footprint. The implementation of these measures, combined with the distance from the works area to the GBRMP mean that impacts to the GBRMP are considered unlikely.



3.9 Describe any Indigenous heritage values relevant to the project area.

A search of the Department of Aboriginal and Torres Strait Partnerships (DATSIP) Aboriginal Cultural Heritage Database and Register on 16 November 2017 (ID# 29721) indicates that there are a number of Aboriginal Parties with interests in the land within the Project Area. The DATSIP database recorded 8 cultural heritage sites within the Project Area. The small stone artefact assemblage within the Project Area suggests transient usage by male hunting parties, with the small flakes and backed blades associated with hunting tool repair dominating the collection. While there has been no detailed exploration of pre-colonial Aboriginal life in the Project Area itself, research has indicated that low intensity use of the site began around 4300 years ago.

Under the Aboriginal Cultural Heritage Act 2003 (ACH Act), the Project must meet its Duty of Care requirements including appropriate assessment, consultation and agreement of management measures.

The Project intersects one Native Title Application/Claim (QC2013/004), lodged by Barada Kabalbara Yetimarala People in 2013. The Barada Kabalbara Yetimarala People have been contacted about the Project with meetings planned for Q1-Q2 2018 with the mutual aim of entering into a Cultural Heritage Management Agreement.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

Freehold

3.11 Describe any existing or any proposed uses relevant to the project area.

Land use across the project area predominately consists of extensively cleared agricultural land, primarily used for grazing. The majority of the lower-parts of the site have been predominantly cleared for grazing and support areas of highly modified pastures, the higher ground is also been used for grazing and the understorey was found to be quite variable given intermittent grazing pressures.



Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

Alternative site locations

The reduction in impacts and avoidance started with the site selection:

In 2015 Lacour Energy, the owner of Clarke Creek Energy, identified that the recent advances in modern wind turbine technology meant that wind farms were a more viable proposition in locations which were not traditionally known as “windy”. At this time Queensland only had one operating wind farm, of 12 MW capacity at Windy Hill, compared to a combined total of over 3000 MW of installed capacity in the southern states. Lacour then undertook an extensive wind resource and constraints mapping exercise covering the entire state of Queensland. The study assessed a number of important factors for wind farm development including:

- Wind resource potential based on regional wind mapping to select potential sites that may have economic wind resource.
- Proximity to existing electricity network infrastructure to reduce the connection cost of any potential site and reduce the impact of additional long distance high voltage powerlines.
- Local land use with areas of existing Grazing activities in predominantly cleared or Least Concern Vegetation, to avoid impacts as far as possible on more sensitive areas
- Outside of National Parks, State Forest and other protected areas
- Distance from local communities to minimise impacts on any community with State



- Land tenure targeting Freehold Land to simplify the ability of Host Landowners to make decisions to become involved

The study identified that there are very limited places where there is sufficient wind resource, close to the power network and in cleared land. Most of these locations are either very small in area making them less economic, or close to remote communities and houses. The small number of wind farms that have already been consented and constructed in Queensland represent those limited opportunities for a project located in cleared land that can both minimise impacts on community and be economic. Therefore Lacour Energy recognised that most wind farm projects close to the network in areas of economic wind resource and away from community will be in areas with Regulated Vegetation.

As a result of the state-wide study the Clarke Creek Wind Farm site was identified as the highest potential large-scale wind farm site which was currently not under development (i.e. the Coopers Gap and Mt Emerald sites were already under development by other companies).

The key advantage that the Clarke Creek project has as a potential wind farm site, compared with many other projects currently under development in Queensland, is that it is located on the “backbone” of the Powerlink high voltage transmission network which links the north and south of the state. This very close proximity to the network, with the Broadsound substation located directly adjoining the site, means that saving of tens to hundreds of millions of dollars can be achieved in network connection costs when compared to other projects. By way of a comparison, other proposed wind farm projects in Queensland away from the network are proposed to be connected by the Powering North Queensland Plan which will require an investment in network connection of well over \$150 million. In addition the requirement to construct very long length powerlines also normally results in significant clearing of remnant vegetation, over above what is needed for the actual project, and thus the close proximity of the network to the Clarke Creek Wind Farm location is both an economic and environmental benefit.

Once the Clarke Creek site was identified Lacour began a process of: engaging with the local landowners to gauge their interest, installing initial wind monitoring equipment and undertaking a desktop analysis of the potential environmental impact. The desktop environmental study, completed in 2016, showed that the vast majority of the site was covered in vegetation “of least concern” and that there were no records of threatened flora or fauna on the site. On this basis the site was deemed to be an appropriate site for wind farm development, subject to actual site surveys conducted during the feasibility assessment.

Once Clarke Creek Wind Farm was selected to undertake wet and dry season surveys to



identify the impacts of a Wind Farm and following the results of these field surveys, a decision has been made to seek approval to construct and operate this wind farm.

The recommended environmental safeguards and mitigation measures to avoid or reduce the level of potential impacts of the project are detailed in Chapter 10 of the EA, and include measures associated with the following stages of the project:

- Final detailed design stage and micrositeing
- Construction stage
- Operation stage.

The recommendations provided below will be incorporated into the relevant management plans to be developed for the project. Preliminary (draft) management plans have been prepared and are included at Appendices 6 and 7 of the accompanying EA (in relation to biodiversity-specific management plans). Set out below is a summary of the recommendations for each of these stages to avoid or reduce impacts.

Final detailed design & micrositeing stage

The following mitigation measures have been undertaken in the design of the project and are recommended for any further detailed design, including micrositeing of turbines, roads and other infrastructure, to reduce or avoid unacceptable ecological impacts:

- Micrositeing of turbines and access roads where possible/feasible to avoid where practical the areas of the SEVT TEC as illustrated in Figures F8, F9 and F10 of the EA to minimise impacts on the TEC.
- Reduce as much as possible the clearing of riparian vegetation community. This will limit potential impacts to water quality from sediment and erosion of waterways during construction, but will also have the added benefit of reducing the potential for removal of large hollow-bearing trees present within this area.
- Final micrositeing of road alignments to be selected to reduce overall clearing footprint (such as avoiding steeper terrain or hard rock) to the greatest extent possible to reduce the extent of clearing of koala habitat.

To date, there has been no evidence of any established high use flight paths through the project



area of any threatened or at risk bird or bat species, and no collision risks that would result in a significant impact to a listed threatened species has been identified (given the general paucity of records of threatened or at risk species to adequately determine high use flight paths and associated collision risk). Based on this, no micro-siting of turbines is considered warranted at this stage to reduce any direct impacts from Rotor Strike/Barotrauma resulting from locating turbines within high-use flight paths.

Construction stage

A range of mitigation measures will be implemented to ensure that impacts on biodiversity during the construction phase are avoided where possible, and minimised where they cannot be avoided. The mitigation measures that would be employed during the construction phase for areas to be cleared to reduce the impacts on susceptible flora and fauna include:

- Vegetation clearing and disturbance will be minimised to the extent required to complete the works, including avoiding wherever practicable, excavations and vehicle/machinery movements inside the canopy dripline of large eucalypts.
- Tree protection standards will comply with Australian standard AS4970-2009 Protection of trees on development sites (Standards Australia, 2009).
- Prior to the commencement of work, a physical vegetation clearing boundary at the approved clearing limit is to be clearly demarcated and implemented.
- Identify and relocate and/or propagate *Cycas megacarpa* and *Cycas ophiolitica* that cannot be avoided and would be impacted by the construction of the turbines and associated infrastructures (refer to Cycad Management Protocols included in the *Construction Vegetation and Fauna Management* included at Appendix 6 of the accompanying EA.
- Pre-clearance survey of vegetation including locating, recording and marking specific habitat features (e.g. hollows, hollow bearing trees, hollow-bearing limbs, complex rock fissures and boulder piles) within one month of felling.
- The loss of critical tree-hollows and complex rocky outcrops and fissures could potentially be partially offset by the provision of artificial roosting/nesting/denning habitat adjacent to the cleared footprint. The use of temporary artificial nest/retreat sites such as nest boxes adjacent to the area proposed to be cleared is therefore recommended.
- Development of a tree felling protocol where the removal of hollow bearing trees cannot be avoided (including staged felling to allow potential resident fauna to move away from clearing areas).
- Presence of a fauna spotter during removal of habitat features including hollow-bearing trees and fallen hollow logs.



-
- Sections of hollow-bearing trees including fallen and felled sections of hollow trunks and branches should be salvaged where possible and placed outside of the development footprint.
 - Salvage and re-creation of boulder piles from the development footprint into suitable adjacent areas (to be specified in the final CVFMP) where possible.
 - Minimise night works. When undertaking night works, ensure lights (during nightworks and operation where necessary) are directed away from vegetation and adjacent habitats.
 - Use non barbed wire on exterior fencing where possible.
 - Cleared vegetation (not including salvaged hollow limbs and trunks) is to be stockpiled (not burned), and used for mulch to be respread over cleared areas that are planned to be rehabilitated after bulk earthworks have been completed, or, be beneficially used such as in sediment and erosion measures (i.e. to assist in bank stabilisation etc).
 - Dust and erosion from stockpiling activities to be managed to avoid escape into adjacent habitats that may smother vegetation or other important habitats such as rock crevices, or lead to impacts on water quality and aquatic habitats.
 - Bulk earthworks will be avoided during, and immediately following heavy rainfall events to protect soils and vegetation at the site.
 - Aquatic habitat will be protected by installation and monitoring of site specific sediment erosion controls in accordance with best practice guidelines. Any aquatic habitats to be removed (i.e. draining and in-filling of farm dams) would include a protocol for inspection of the dams by an ecologist as soon as possible after draining to capture and relocate any stranded aquatic fauna (such as frogs and turtles).
 - Trenches should be backfilled as soon as possible to minimise the chance of fauna becoming trapped. Any trench sections left open for greater than a day would be inspected daily, early in the morning and any trapped fauna removed. The use of ramps or ladders to facilitate trapped fauna escape is recommended (dependent on the size of trench needed).
 - Where feasible, construction materials should be stockpiled within the final development footprint to the greatest extent possible, and not stored on site for extended periods of time (e.g. periods of several months) as local fauna may take up residence and be injured when the materials are eventually moved.
 - Disturbed areas will be used for vehicle and machinery access, materials laydown, stockpiling of cleared vegetation and the deposition and retrieval of spoil whenever practicable.
 - Rehabilitation measures should include the following:
 - Ensure areas disturbed during construction (laydown areas, additional track widths,



cabling routes) are stabilised progressively during construction and restored back to original condition or re-vegetated with appropriate species (native in native dominated areas) as soon as practical.

- Where possible, landscape plantings and/or seeding within disturbed areas will be comprised of local indigenous species with the primary objective of addressing erosion and sedimentation issues, but also to be consistent with the biodiversity values of the existing surrounding vegetation (e.g. species selections are to be consistent with the surrounding vegetation RE composition, as well as meeting requirements for supplementation of feed tree species for threatened fauna such as the Koala and Greater Glider).
- Detail appropriate planting techniques for the different areas of the site, in consideration of climatic conditions (sterile cover crops may be required as an intermediate step to ensure early stabilisation of disturbed areas).
- Include monitoring to meet clear targets, regarding ground cover establishment.
- Weed management measures are to be developed and implemented, including measures to prevent the spread or introduction of weeds from offsite areas or between sites (particularly into “clear” zones), as well as Monitoring of control and preventative measures and ongoing adaptive management to suppress weeds.
- Soil and water impacts during construction are to be managed in accordance with best practice guidelines.
- Spill management and response measures are to be developed to prevent contaminants affecting surrounding environments. Vehicles would be speed limited onsite, to reduce risk of collision with fauna.

Operation Stage

A range of mitigation measures will be implemented to ensure that impacts on biodiversity during the operation stage of the project are avoided where possible, and minimised where they cannot be avoided. The mitigation measures that would be employed during the operation stage of the project to reduce the impacts on flora and susceptible fauna include:

- Development of a post-construction Bird and Bat Management Plan (BBMP) to determine if the project is having any (unacceptable) impacts on bird and bat population and to identify appropriate adaptive mitigation measures. The BBMP is to include, at a minimum, details on:
 - Bird and Bat monitoring regime
 - Management of nests if found on site (after construction)
 - Management of carcasses to reduce attractants to raptors within the vicinity of turbines



- Development and implementation of trigger levels and potential management measures if the wind farm is found to be having a significant negative effect on bird or bat populations,
- The development and implementation of a comprehensive feral predator monitoring and control programme is strongly recommended, in particular for cats and foxes.
- Continuation of rehabilitation monitoring and management from the construction stage to ensure that site rehabilitation and weed management objectives are met.
- Establishment of protocols to keep vehicle speeds down to reduce likelihood of collisions with wildlife and reduce dust generation.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

Based on the survey results, matters protected by the EPBC Act that were recorded or considered likely to occur at the site and which may be impacted on by the proposal include the following:

- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions) (SEVT), listed as Endangered under the EPBC Act.
- Cycad species (*Cycas megacarpa* and *Cycas ophiolitica*) listed as Endangered under the EPBC Act.
- Koala (*Phascolarctos cinereus*) listed as Vulnerable under the EPBC Act.
- Greater Glider (*Petauroides volans*) listed as Vulnerable under the EPBC Act.
- Squatter Pigeon (southern) (*Geophaps scripta scripta*) listed as Vulnerable under the EPBC Act.

For these matters, the desired environmental outcomes to be achieved are either the avoidance of a significant impact (through the design of the project as well as the measures described in 4.1 above), and where a significant residual impact cannot be avoided, then an environmental offset would be provided.

The accompanying EA report concluded that a significant impact was not likely in relation to the Cycad species, Greater Glider and Squatter, whilst a significant residual impact may occur for the SEVT TEC and the koala. For the SEVT TEC and koala, environmental offsets would be provided. A Biodiversity Offset Strategy has been prepared and is included with this submission.



Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

Listed threatened species and communities - Yes

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No



5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

N/A



Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

The company directors of Clarke Creek Energy Pty Ltd have a combined experience of over 35 years in similar projects and have no adverse environmental record in any jurisdiction.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

None

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

The company is a special project company for this project and currently has no environmental policy and planning framework, however it has committed to a Construction Environment Management Plan in the attached "Appendix S. Construction Management Plan.pdf" together with a suite of management plans and protocols outlined in the "Ecological Assessment" to manage the environmental impact of the construction and operation of the wind farm.

The construction of the Clarke Creek Wind Farm will be undertaken by a contractor with a proven track record in environmental performance on similar projects. As part of the selection process for the site contractor, the contractors will be required to provide the details of their corporation's environmental policy and environment management system.



6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

No



Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
Clarke Creek Wind Farm Ecological Assessment (EA) report prepared by NGH Environmental (2017). The report also lists additional references.	High	Flora and fauna surveys have been undertaken by suitably qualified personnel. There are always some uncertainties with ecological survey, and the survey limitations are presented in the report.
Clarke Creek Wind Farm Stormwater Report by AECOM. The report also lists additional references.	High	Stormwater report has been completed by suitable qualified personnel within AECOM.
Construction Management Plan by AECOM.	High	Construction Management Plan has been completed by suitable qualified personnel within AECOM.
Sediment and Erosion Control Plan by AECOM.	High	Sediment and Erosion Control Plan has been completed by suitable qualified personnel within AECOM.



Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

Clarke Creek Wind Farm is the focus for a wind energy project for Clarke Creek Energy. The selection of the project site is discussed in Section 4.1.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No



Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Director

9.2.2 First Name

James

9.2.3 Last Name

Townsend

9.2.4 E-mail

james@lacour.com.au

9.2.5 Postal Address

PO Box 7533

Cloisters Square
Perth WA 6850
Australia

9.2.6 ABN/ACN

ABN

34614169096 - CLARKE CREEK ENERGY PTY LTD

9.2.7 Organisation Telephone



(08) 9321 6632

9.2.8 Organisation E-mail

james@lacour.com.au

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

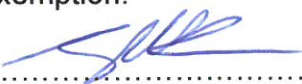
Small business

9.2.9.1 You must provide the Date/Income Year that you became a small business entity:

Wed, 08/10/2016

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:  Date: 08/01/18

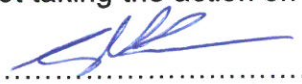
9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, JAMES TOWNSEND, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:  Date: 08/01/18

I, JAMES TOWNSEND, the person proposing the action, consent to the designation of CLARKE CREEK ENERGY PTY LTD as the proponent of the purposes of



the action describe in this EPBC Act Referral.

Signature:  Date: 08/01/18

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Director

9.5.2 First Name

James

9.5.3 Last Name

Townsend

9.5.4 E-mail

james@lacour.com.au

9.5.5 Postal Address

PO Box 7533

Cloisters Square
Perth WA 6850
Australia

9.5.6 ABN/ACN

ABN

34614169096 - CLARKE CREEK ENERGY PTY LTD

9.5.7 Organisation Telephone

(08) 9321 6632

9.5.8 Organisation E-mail



james@lacour.com.au

Proposed designated proponent - Declaration

I, JAMES TOWNSEND, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature: [Signature] Date: 08/01/18

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Director

9.8.2 First Name

James

9.8.3 Last Name

Townsend

9.8.4 E-mail

james@lacour.com.au

9.8.5 Postal Address

PO Box 7533

Cloisters Square
Perth WA 6850
Australia

9.8.6 ABN/ACN

ABN

34614169096 - CLARKE CREEK ENERGY PTY LTD



9.8.7 Organisation Telephone

(08) 9321 6632

9.8.8 Organisation E-mail

james@lacour.com.au

Referring Party - Declaration

I, JAMES TOWNSEND, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature:  Date: 08/01/18



Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. 171123_clarkecreekwindfarm_layout.zip
2. 171123_clarkecreekwindfarm_layoutfiles.kmz
3. appendix_f._ecological_assessment_part1.pdf
4. appendix_f._ecological_assessment_part2.pdf
5. appendix_f._ecological_assessment_part3.pdf
6. appendix_f._ecological_assessment_part4.pdf
7. appendix_f._ecological_assessment_part5.pdf
8. appendix_f._ecological_assessment_part6.pdf
9. appendix_f._ecological_assessment_part7.pdf
10. appendix_f._ecological_assessment_part8.pdf
11. appendix_f._ecological_assessment_part9.pdf
12. appendix_f._ecological_assessment_part10.pdf
13. appendix_f._ecological_assessment_part11.pdf
14. appendix_f._ecological_assessment_part12.pdf
15. appendix_j._stormwater_report_part1.pdf
16. appendix_j._stormwater_report_part2.pdf
17. appendix_q._sediment_and_erosion_control_plan_part1.pdf
18. appendix_q._sediment_and_erosion_control_plan_part2.pdf
19. appendix_s._construction_management_plan.pdf
20. attachment_for_2.4_and_2.5.pdf
21. biodiversity_offset_strategy_v4.pdf
22. clarke_creek_wind_farm_maps.zip
23. groundtruthedregionalecosystemshapefiles_221117.zip
24. offset-assessment-guide_-_koala_v3_km.xlsx
25. offset-assessment-guide_-_sevt_tec_v3_km.xlsx