Title of Proposal - Clarke Creek Solar 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.

Pacific Hydro proposes to develop the Clarke Creek Solar farm, located approximately 17 kilometres (km) south of the township of Clarke Creek in Central Queensland, within the Isaac Regional Council area. The proposed action will compromise the construction and operation of a large scale solar photovoltaic facility with battery storage capabilities with an estimated generation capacity of approximately 315MWac. The development area is approximately 940ha of rural land, partially covering two lots (Lot 7 RP860051 & Lot17 RP848822) with a proposed transmission line connection of 6km along Marlborough- Sarina Road into the Broadsound Substation.

The development area is approximately 940 hectares (ha) and located in an area subject to flood risk. Detailed flood modelling analysis concluded that the site is subject to flooding risk. As a result, the Project proposes to develop a minimum of 690 ha of land for the solar farm infrastructure with the option for an additional 250 ha that may be developed for solar farm infrastructure if it is deemed viable through the detailed design process. The two development scenarios are shown as ‘PV Array Area’ and ‘PV Array Area (subject to detailed design)’ in Figure 3 Development Area, included in the Planning Report for Material Change of Use Application uploaded to section 1.4. The final layout and capacity of the solar farm facility will be determined during detailed design stage and subject to the conditions of the development permit and any other approvals granted.

The Project will require the construction of a 275kV electricity transmission line (ETL) within the road reserve of the adjacent Marlborough Sarina Road. This new ETL will be connected to the existing Powerlink Broadsound Substation, located approximately 6km to the south-east of the proposed project site, along the Marlborough Sarina Road. The line route for the transmission line will be finalised during detailed design and an indicative option can be seen in Figure 4 Indicative Overhead Powerline Infrastructure included in the Planning Report for Material Change of Use Application uploaded at 1.4 of this referral.

The facility will be comprised of an array of solar photovoltaic (PV) modules, arranged in a horizontal grid pattern with gaps between the rows, grouped into batches. The panels will be mounted up to 4 metres above ground level, on a structure that may track the movement of the sun during day light hours. Inverter houses and kiosk transformers will be distributed throughout the array and an electrical substation constructed within the eastern part of the development area (adjacent to Marlborough- Sarina Road) to enable connection to the Broadsound Substation.

The built form will also include a site office/ warehouse, electrical substation, car parks and temporary lay down area and an area for future battery energy storage opportunities. Final site lay out will be finalised during detailed design but will be within the project development footprint currently indicated.

The development will not require reticulated water, sewerage or stormwater connections. Access to the development area will be via Marlborough- Sarina Road which connects to the eastern boundary of the development area.

The project seeks to generate electricity from renewable energy and connect into the National Electricity Market (NEM), whilst assisting in the reaching of greenhouse gas reduction targets in Queensland and Australia.

As the project is currently in the concept design phase, the precise details of the layout, design and specifications of all associated infrastructure has not currently been determined. Detailed design can only commence after a planning permit and other key approvals are granted and the conditions of the approval are known. It is likely that final design details and final construction methodologies will be determined after the engagement of a preferred contractor.

The proposed development of the land will comprise of the following:
• Solar panels constructed in a grid pattern
• Power conditioning units (including inverters, transformers and ring main units)
• Underground cabling
• Access tracks
• Electrical substation
• An area set aside for future battery energy storage opportunities (i.e. - within or adjacent to the electrical substation compound)
• Site office Operations and Maintenance (O&M) facility
• Temporary construction compound area including laydown area, temporary site offices and car parking
• New access / egress to Marlborough Sarina Road Communications tower(s)

The Project will result in a net community benefit and contribute positively to sustainable development, consistent with State and Local planning policies. The project is expected to deliver economic and environmental benefits through new employment creation providing a boost to the broader local and regional economy during and after construction. The Project will also provide an alternative source of renewable energy that is expected to power approximately 150, 000 households and result in savings of approximately 674670 tons of carbon dioxide emissions per year.

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

Area	Point	Latitude	Longitude
Solar Farm	1	-22.769109031809	149.33995440384
Solar Farm	2	-22.790277893496	149.36186268707
Solar Farm	3	-22.791088971448	149.36269953629
Solar Farm	4	-22.798744518321	149.35566141983
Solar Farm	5	-22.799239047911	149.32598545929
Solar Farm	6	-22.769346457813	149.32544901749
Solar Farm	7	-22.769109031809	149.33995440384
Transmission Line	1	-22.769069460769	149.33999731918
Transmission Line	2	-22.769049675244	149.34085562607
Transmission Line	3	-22.79013941629	149.36244204422
Transmission Line	4	-22.791722004546	149.36452343842
Transmission Line	5	-22.797992829909	149.37082126518
Transmission Line	6	-22.816309109145	149.39572289367
Transmission Line	7	-22.817129921458	149.39655974289
Transmission Line	8	-22.82309302382	149.40155938049
Transmission Line	9	-22.823785241008	149.40210655113
Transmission Line	10	-22.824398344721	149.40319016357
Transmission Line	11	-22.824803782756	149.40403774162
Transmission Line	12	-22.825545434574	149.40405919929
Transmission Line	13	-22.824418122214	149.40208509346
Transmission Line	14	-22.823453966079	149.40106048961
Transmission Line	15	-22.816956859031	149.39567997833
Transmission Line	16	-22.79729553629	149.36882033725
Transmission Line	17	-22.795970174057	149.36671748538
Transmission Line	18	-22.7949613076	149.36583772083
Transmission Line	19	-22.792983116407	149.36457171817
Transmission Line	20	-22.791924772333	149.36379924198
Transmission Line	21	-22.79108402586	149.36269417186
Transmission Line	22	-22.769069460769	149.33999731918
Clarke Creek Solar Farm and Transmission Line (approximate)	1	-22.791242765644	149.36275342409
Clarke Creek Solar Farm and Transmission Line (approximate)	2	-22.798858741482	149.35575822298
Clarke Creek Solar Farm and Transmission Line (approximate)	3	-22.799373051787	149.32586768572
Clarke Creek Solar Farm and Transmission Line (approximate)	4	-22.769104566731	149.32522395556
Clarke Creek Solar	5	-22.768827569196	149.34080222551

Area	Point	Latitude	Longitude
Farm and Transmission Line (approximate)			
Clarke Creek Solar Farm and Transmission Line (approximate)	6	-22.791717540208	149.36468461458
Clarke Creek Solar Farm and Transmission Line (approximate)	7	-22.797988365777	149.37112191622
Clarke Creek Solar Farm and Transmission Line (approximate)	8	-22.816265088269	149.39581969683
Clarke Creek Solar Farm and Transmission Line (approximate)	9	-22.817076011569	149.39669946139
Clarke Creek Solar Farm and Transmission Line (approximate)	10	-22.823721444958	149.40217116778
Clarke Creek Solar Farm and Transmission Line (approximate)	11	-22.824749875906	149.40414527361
Clarke Creek Solar Farm and Transmission Line (approximate)	12	-22.825620080639	149.40414527361
Clarke Creek Solar Farm and Transmission Line (approximate)	13	-22.824492768897	149.40195659106
Clarke Creek Solar Farm and Transmission Line (approximate)	14	-22.822060117017	149.39972499316
Clarke Creek Solar Farm and Transmission Line (approximate)	15	-22.816838668664	149.39539054339
Clarke Creek Solar Farm and Transmission Line (approximate)	16	-22.795476113823	149.36575749819
Clarke Creek Solar Farm and Transmission Line (approximate)	17	-22.791836233591	149.36337569658

Area	Point	Latitude	Longitude
Farm and Transmission Line (approximate)			
Clarke Creek Solar Farm and Transmission Line (approximate)	18	-22.791242765644	149.36275342409

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 proposed development area is located approximately 17 kilometres (km) south of the township of Clarke Creek in Central Queensland, within the Isaac Regional Council area, and occupies approximately 940 ha of rural land. The land is currently used for grazing purposes, which is consistent with the dominant land use in the surrounding area.

The eastern boundary of the development area directly adjoins the existing Marlborough Sarina Road. There are currently no buildings located at the site, however there are vehicular access tracks, small dams and pumps, and perimeter fencing and gates.

The following key land uses and features have been identified on the development area and in the surrounding area:

The predominant existing land use on the site is cattle grazing; Unimproved and largely un-developed rural properties surround the development area;Nearest residential house(s), being the current property owner’s residence, is within one kilometre of the development area. There is also a second project landholder’s house located within two kilometres of the development area. Marlborough Sarina Road (State controlled road network) immediately adjacent to the eastern boundary of the development area; andThree key / named waterways are in proximity of the site boundary:

- Isaac River, approximately 2.5 km to the west/south-west;

- Bora Creek, approximately 100 metres (m) (at the closest point) to the north-west; and

- Clive Creek, approximately 100 m (at the closest point) to the south-east.

A detailed summary of the site characteristics may be seen in below:

Site Aspect

Existing Development

Existing Use - Grazing purposes

Vehicle Entry Point/s - Via Marlborough Sarina Road.

Road Frontage and Length - The site has approximately 3.3km of road frontage to the State Controlled Marlborough Sarina Road. The site will be accessed via driveway new access/ egress to be constructed off Marlborough Sarina Road.

Services:

- Water: The development area is not serviced by reticulated water and does not have any access to irrigation.

- Sewerage: The development area is not serviced by a reticulated sewer.

- Stormwater: The development area is not serviced by stormwater infrastructure.

- Electricity: The development area is not serviced by electricity.

- Telecommunications: Mobile reception available in limited areas

Site Characteristics

Topography - The development area has a terrain slope of approximately 0 - 2 degrees across the vast majority of the site. In some areas that slope increases to 3-5 degrees.

Waterways - Four (4) mapped (unnamed) watercourses (Stream Order 1 and 2) intersect with the development area and 1 named watercourse (Clive Creek) and 1 unnamed watercourse cross the transmission line.

The mapped (unnamed) watercourses are small ephemeral and intermittent drainage channels. These waterways exhibit limited riparian vegetation, few habitat values and significant disturbance from cattle grazing and associated erosion. They are degraded, having been previously cleared, and are mapped as non-remnant regional ecosystem, with many weed species and limited native vegetation.

Regulated Vegetation - The development area is located within a Category X Area (therefore remnant vegetation does not exist on the proposed site). Two creek crossings contain regulated vegetation along Marlborough Sarina Road.

Contamination and Notifiable Activities - The development area is not registered on the Environmental Management Register (EMR) or Contaminated Land Register (CLR).

It has not been used for a Notifiable Activity.

Heritage Places - The development area is not a Cultural Heritage Place and does not adjoin a Heritage Place.

A review of the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP) Aboriginal and Torres Strait Islander Cultural Heritage Database and Register under the *Aboriginal Cultural Heritage Act 2003* was completed on 25 July 2018 and indicated that there are no records of cultural heritage over the development area or nearby.

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

690 ha minimum, up to 940 ha depending on detailed design process.

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Two lots-Lot 7 RP860071 and Lot 17 RP 848822 + transmission line in road reserve

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.

Donna Skinner

1.10.1.2 E-mail

Donna.Skinner@isaac.qld.gov.au

1.10.1.3 Telephone Number

07 4846 3500

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

Start date 07/2019

End date 07/2049

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

A Development Permit for a Material Change of Use for a Utility (Public) facility is required under the *Broadsound Shire Planning Scheme (2005)*. It is also referred to as a 'Renewable Energy Facility (Solar Farm)' in order to align with the new use definitions under the Queensland Planning Provisions (QPP).

Legacy planning schemes (such as the *Broadsound Shire Planning Scheme*) were developed at a time when renewable energy facilities were not considered as potential land uses, and thus the planning schemes do not allocate preferred areas for such facilities. However, in general, rural zones are considered the best location for renewable energy facilities, and the proposed development complies with the outcomes for the Rural preferred use area based on the following:

- The proposed use will not adversely impact on the amenity of the rural preferred use area or negatively affect the productive capacity of rural land;

- Risks associated with flood and bushfire natural hazards can be adequately managed;

- Development is connected to infrastructure networks where necessary and will be serviced by on-site infrastructure;

- Features or items that are ecologically or culturally significant will not be impacted by the Project.

A Development Application for a Material Change of Use has been submitted to the Isaac Regional Council which is attached to this EPBC Referral at 1.4. The report addresses the relevant town planning matters relating to the proposed solar farm, including the following:

Planning Act 2016 (PA) and *Planning Regulation 2017* (PR);State Planning Regulatory Provisions;State Planning Policy (where applicable);State Development Assessment Provisions; and *Broadsound Shire Planning Scheme*.

A Development Permit for Operational Works will also be required under the *Planning Act 2016* and *Planning Regulation 2017* for the clearing of Regulated Vegetation (for the proposed transmission line to Broadsound Substation) and for Waterway Barrier Works.

The development area is located within a Category X area (and therefore Regulated Vegetation

does not exist on the site where the solar farm itself is proposed). However, there are two creek crossings containing Regulated Vegetation along Marlborough Sarina Road over which the transmission line will traverse.

There are four mapped unnamed watercourses (Stream Order 1 and 2) intersecting with the development area that are small ephemeral and intermittent drainage channels exhibiting limited riparian vegetation with few habitat values, as well as 1 named watercourse (Clive Creek) and 1 unnamed watercourse that cross the transmission line .

Once detailed design is finalised, a Development Permit for Operational Works will be sought for the construction of the renewable energy facility.

A Building Works Permit will be required under the *Planning Act 2016* and *Planning Regulation 2017* once detailed design is finalised.

Approvals for the construction of the transmission line connecting into the Broadsound substation will be acquired before construction of the facility commences once the route is finalised during detailed design.

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

Meetings with Isaac Regional Council

Pacific Hydro representatives attended a pre-lodgement meeting with the Manager Planning and Land Development, the Town Planner, Director Planning, Environment and Community Services, and the Engineer facilitating traffic management from the Isaac Regional Council on 21 June 2017 to discuss the proposal outlined within this Planning Report.

In that meeting, Isaac Regional Council confirmed that the application would be Code assessable against the Broadsound Development Code within the *Broadsound Shire Planning Scheme*. It was recommended by Isaac Regional Council that whilst the proposed land use is defined as Utility (Public) within the Planning Scheme, the Project should be called a 'Renewable Energy Facility (Solar Farm)' to align with the new use definitions under the Queensland Planning Provisions (QPP).

A further meeting was held with Isaac Regional Council staff to discuss updates to the project and provide a presentation at the Council Ordinary Meeting on 26th February 2018.

Liaison with State Assessment Referral Agency

Pre-lodgement advice (Reference 1804- 4871 SPL) from State Assessment Referral Agency (SARA) confirmed the Development Application for a Material Change of Use Utility (Public) required a referral under the *Planning Act 2016* Schedule 10, Part 9, Division 4, Subdivision 2, Table 4 (Material change of use of premises near a State Transport corridor or that is a future State transport corridor). Pacific Hydro has referred the application to the Department of Main Roads and Transport (DTMR) for this planning aspect.

SARA has advised that the proposed development may require a subsequent Operational Works development application to be submitted under the *Planning Act 2016* for waterway barrier works. Further advice from SARA will be sought for an Operational Works permit at the detailed design phase.

SARA further advised on 20 April 2017 that the proposed solar farm would trigger a permit for clearing vegetation under Schedule 7, Table 3, Item 10 of the *Sustainable Planning Regulation 2009* unless adequate buffers are provided from remnant vegetation. As per the recommended buffers in the pre-lodgement advice (Reference SPL-0317-038267) a setback distance of 60 m from mapped remnant vegetation to the boundary fence was undertaken.

Consultation with Neighbours and Key Stakeholders

Pacific Hydro is committed to community and stakeholder engagement and it is a fundamental component of all our projects. Pacific Hydro draws on international practices (International Association of Public Participation – IAP2) to ensure that our engagement methodologies are consistent, practical and relevant to the communities where we operate and propose to operate.

To date, a series of meetings have been held with individual landowners whose properties are adjacent to or near to the development area, as well as other key stakeholders with a potential interest in the proposed solar farm development. These meetings were facilitated by Engagement and External Affairs Manager from Pacific Hydro, and the Principal of Echo Consultants between January 2017 and February 2018.

These meetings provided an opportunity to obtain feedback from the community early in the concept design process to identify and address potential issues and concerns. Pacific Hydro has received positive feedback and appreciation for its proactive consultation and engagement approach. There is also keen interest in potential employment opportunities, with some local capabilities identified. Pacific Hydro will continue to work with the community and Council to further identify and deliver long-term, sustainable benefits such as local partnerships. Pacific Hydro is committed to further consultation and engagement with stakeholders and the broader community at all stages of project planning, construction and operational phases.

A Community Engagement Plan which sets out Pacific Hydro’s approach to community consultation and engagement throughout all phases of the project has been provided as part of this Referral.

Cultural Heritage

Section 23(1) of the *Aboriginal Cultural Heritage Act 2003* requires that a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage. This is referred to as the cultural heritage duty of care.

Matters considered in determining whether a person has complied with the cultural heritage duty of care include:

The nature of the activity, and the likelihood of it causing harm to Aboriginal cultural

heritage;Whether the person searched the database and register for information about the area affected by the activity; The extent to which the person complied with the cultural heritage duty of care guidelines; and the nature and extent of past uses in the area affected by the activity.

A search of the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP) Aboriginal and Torres Strait Islander Cultural Heritage Database and Register under the *Aboriginal Cultural Heritage Act 2003* was completed in July 2018 and the results indicate that there are no records of cultural heritage over the development area or nearby.

Based on a high level assessment of the site and the history of clearing for grazing purposes, the development area has been assessed as a Category 4 area as per the *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines (the Guidelines). The Guidelines describe a Category 4 area as follows:

'Where an activity is proposed in an area, which has previously been subject to Significant Ground Disturbance it is generally unlikely that the activity will harm Aboriginal cultural heritage and the activity will comply with these guidelines.

In these circumstances…it is reasonable and practicable that the activity proceeds without further cultural heritage assessment.'

Despite this, Pacific Hydro intends to engage with the relevant Aboriginal Party prior to detailed design to conduct a site survey (walk through). A site specific Cultural Heritage Management Agreement (CHMA) or Cultural Heritage Management Plan (CHMP) to comply with the *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines is proposed to be developed for the design and delivery phase of the Project if agreed with the Aboriginal Party.

Barada Kalbabara Yetimarala People

Contact was made with Queensland South Native Title Services Pty Ltd who is the Native Title representative of the Barada Kalbabara Yetimarala People. A letter was sent to the representative to begin discussions surrounding the opportunities to develop a CHMA or CHMP if required.

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.

The proposed project has not been the subject of an environmental impact assessment; however the following assessments have been undertaken:

Environmental Assessment

An Environmental Assessment undertaken was undertaken by RPS Australia East Pty Ltd over

Lot 7 RP860051 and Lot 17 RP848822 and Marlborough Sarina Road to Broadsound Substation to assess flora, fauna, aquatic ecosystems and wetlands and any Matters of State Environmental Significance across the site. The results of this assessment are further described in Section 3.

Flood Assessment

Jacobs Consultancy was engaged to undertake a Flood Risk Assessment to determine the potential impact of the proposed Clarke Creek Solar Farm on flooding and drainage on the site and surrounds. The Flood Risk Assessment also considers the potential impacts of flooding upon the proposed Project and makes preliminary design recommendations that have been incorporated into the MCU application attached in Section 1.4 of this referral. The results of this assessment are further described in Section 3.

Visual Impact and Glare Assessment

A Solar Assessment was undertaken by Environmental Ethos to asses visual impact and glare.

The Project will not be visible from any other public roads (except for Marlborough- Sarina Road) or townships. The nearest township of Clarke Creek is 17 km away. The closest dwellings within 2km of the site are project landholder dwellings.

As cattle grazing is the predominant land use on surrounding properties, the potential for significant visual impacts on sensitive receptors was determined to be insignificant. There are three (3) rural project landholder dwellings within 2 km of the development site. These properties are potentially screened from the development area by existing vegetation along creek lines and/or topography between the dwelling and the Project site.

A further two (2) rural dwellings are located at distances between 2 and 10 kilometres from the site and are not considered to be within the view shed of the Project due to the distance, intervening topography and vegetation.

The results of the Solar Assessment undertaken by Environmental Ethos identified no glare hazard potential is likely to affect rural dwellings within the vicinity of the project.

The development area is located adjacent to the existing State- controlled Marlborough Sarina Road. Given the proximity to this State Controlled road and major thoroughfare, Pacific Hydro engaged Environmental Ethos to also undertake a Glare Assessment to support the Planning Report.

The results of the Solar Glare Hazard Analysis modelling found that no glare hazard potential is likely to affect travellers along Marlborough Sarina Road.

Traffic Assessment

Construction and operational traffic impacts associated with the Project have been assessed and a Traffic Assessment Report is included in this Referral.

The Report made the following assumptions:

Traffic generation has been based on the power output of the facility. A conservative figure of 500MWac was used (even though the project is estimated at 315MWac capacity) to ensure that sufficient traffic volumes can be accommodated.A 5 month construction period has been assumed for vehicle movements associated with civil works and delivery of equipment and materials to site. 5 months is considered conservative, and results in higher than anticipated peak vehicle movements across a shorter timeframe rather than what may actually occur in practice if the construction phase timeframe is over 8-12 months.Many construction projects source the majority of required fill / material on site. Discussions have been held with the project landholders, and further investigations including geotechnical investigations will be undertaken to determine the suitability of the material on site. At this stage, it is assumed that the bulk of the earthworks including foundations for the switchyard will be sourced on site.Given the remote location of the site, it is considered probable that the labour force will be transported to and from the site via mini buses (15 seat capacity).

The Traffic Assessment concluded that the anticipated increase in traffic volume during the construction of the Project can be accommodated within the existing road network without adversely impacting existing infrastructure.

As the solar farm is neither a significant consumer of raw materials, nor a significant generator of waste products there will be limited need for deliveries during the operational phase. Heavy vehicle movements during the operational phase are expected to be infrequent. Overall, the volume of traffic generated by the Project post-construction is likely to be minimal.

A new basic left-turn/basic right-turn intersection (BAL/BAR) is recommenced to be installed as part of the early/initial works associated with the Project. The intersection is to be configured in accordance with design set out in Austroads AGRD04-17 - *Rural property access specifically designed for articulated vehicles*.

At the detailed design stage, construction traffic management and road maintenance requirements will be determined in order to meet the requirements of both the Council and Department of Transport and Main Roads (DTMR). A Traffic Management Plan (TMP) is proposed to be developed at this stage in accordance with consultation with Council, DTMR and in accordance with any relevant conditions of approval. The Traffic Management Plan will address the following issues:

Traffic impacts including construction impacts; transportation routes for material delivery; construction timeframes; identified storage areas and access via state and local controlled roads; layout plans for proposed works on roads; and use of regulatory traffic signs.

The construction contractor will be required to determine the most appropriate means to house workers during construction of the project. Given the remote location of the site, the contractor may deem it appropriate to house the workers in a temporary accommodation facility on site. If this occurs, upon completion of the construction, any temporary construction facilities and/or accommodation will be decommissioned. The project’s TMP is proposed to be developed

during detailed design and incorporating consideration of the preferred accommodation and project delivery plan.

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
Cycas ophiolitica	Potential impacts include clearing and disturbance during construction. It is unlikely that this species is present within the proposed

Species	Impact
	action area as discussed in the Environmental Assessment. Historical broadscale clearing and the dominance of the exotic pasture grass buffel grass within the project area, is likely to exclude the presence of threatened flora from occurring. It is also considered unlikely that Cycas ophiolitica is present within the project area, due to species distinctive form and being able to access the majority of the project area during the field survey. This is discussed further in the Environmental Assessment attached in 2.14.
Dichanthium setosum	Potential impacts include clearing and disturbance during construction. It is unlikely that this species is present within the proposed action area as discussed in the Environmental Assessment. Historical broadscale clearing and the dominance of the exotic pasture grass buffel grass within the project area, is likely to exclude the presence of threatened flora, particularly blue grass from occurring. This is discussed further in the Environmental Assessment attached in 2.14.
Squatter pigeon (Geophas scripta scripta)	Potential impacts include loss of habitat, vehicle impacts, bird strike against structures and disturbance during construction. As discussed in the Environmental Assessment, it was determined that squatter pigeon are highly unlikely to be impacted by the proposed development due a lack of suitable habitat as a result of historical broadscale clearing and the dominance of buffel grass within the ground layer. Although squatter pigeons are likely to inhabit the region, the project area is only likely to provide marginal habit due to the dominance of the introduced buffel grass. Degradation of habitat by invasive weeds such as buffel grass is a known threat to the Squatter pigeon. No squatter pigeons were identified within the proposed action area during the field survey. This is discussed further in the Environmental Assessment attached in 2.14.
Koala (Phascolarctos cinereus)	Potential impacts include loss of habitat, vehicle impacts and disturbance during construction. As discussed in the Environmental Assessment, it was determined that koala are highly unlikely to be impacted by the proposed development due a lack of suitable habitat as a

Species	Impact
	result of historical broadscale clearing and the dominance of buffel grass within the ground layer. No koalas were identified during field surveys within the proposed action area during the field survey. This is discussed further in the Environmental Assessment attached in 2.14.
Brigalow (Acacia harpophylla dominant and co-dominant)	Potential impacts include clearing and disturbance during construction. It was determined during the Environmental Assessment that this ecological community is not considered to occur on the site. In Queensland, the listed Brigalow ecological community comprises 16 regional ecosystems, however due to the non-remnant status within the project area contained in Lot 17 on RP848822 and Lot 7 on RP860051, the Threatened Ecological Community Brigalow is not present within this section of the project area. The area did contain small stands of regrowth Brigalow, however these areas have been actively maintained (cleared), where the ground and shrub layers are heavily modified and consist predominantly exotic species. RE 11.3.1 Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains is one of several Regional Ecosystems that comprise the Threatened Ecological Community Brigalow. State Regional Ecosystem mapping shows RE 11.3.1 in the vicinity of Clive Creek and within the proposed transmission alignment. It was determined from the field survey that the RE mapping is incorrect in this area and the vegetation community present is consistent with RE 11.3.25 Eucalyptus tereticornius or E. camaldulensis woodland fringing drainage lines. The Threatened Ecological Community is therefore not considered to occur within the project area. This is discussed further in the Environmental Assessment attached in 2.14.

2.4.2 Do you consider this impact to be significant?

No

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
Fork tailed swift (Apus pacificus)	Potential impacts include loss of habitat, vehicle impacts, bird impacts against structures and disturbance during construction. No listed migratory fauna was observed on site during the field survey. The fork tailed swift is unlikely to occur in significant numbers, and consequently the likelihood of a significant impact is deemed to be extremely low. This is discussed further in the Environmental Assessment attached in 2.14.

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 any part of the environment in the Commonwealth marine area?

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.

Flora and Fauna

The Environmental Assessment was undertaken by RPS Australia East Pty Ltd over Lot 7 RP860051 and Lot 17 RP848822 to assess flora, fauna, aquatic ecosystems and wetlands and any Matters of State Environmental Significance across the site.

A search of the Queensland Department of Environment and Heritage Protection (DEHP) Wildlife Online database and the Commonwealth EPBC Protected Matters Search was undertaken for the investigation area and the area within a 5 km radius, to provide a list of potential protected species for the locality. The search identified that no species of conservation significance have been recorded in the search area.

A search for high risk areas for protected plant species was also undertaken using the DEHP Protected Plants Flora Survey Trigger Map. The search showed that the proposed Clarke Creek Solar Farm is not located in a high risk area, and consequently there is no requirement under the Nature Conservation Act 1994 (NC Act) for a comprehensive flora survey prior to undertaking any clearing.

From the Wildlife Online and EPBC Protected Matters database searches, only two threatened fauna species were identified as possibly occurring on site, including:

Squatter Pigeon (Geophas scripta scripta): EPBC Act – Vulnerable, NC Act – Vulnerable; and Koala (Phascolarctos conereus); EPBC Act – Vulnerable, NC Act – Vulnerable.

It was determined in the Environmental Assessment that the Squatter Pigeon and Koala are highly unlikely to be impacted by the proposed development due to the lack of suitable habitat as a result of historical broad scale clearing that has previously occurred and the dominance of buffel grass within the ground layer.

An assessment of the likelihood of occurrence of migratory fauna species is provided in the Environmental Assessment based on the known ecological requirements of each species and the current environmental conditions and habitat values of the site. Of the migratory species assessed, only one bird species - the fork-tailed swift - is considered to potentially occur within the project area. No listed migratory fauna were observed on site during the field survey. The fork- tailed swift is unlikely to occur in significant numbers, and consequently the likelihood of a significant impact is deemed to be extremely low.

The Environmental Assessment identifies that the EPBC-Act listed Threatened Ecological

Community Brigalow (Acacia harpophylla dominant and co dominant) is considered to ‘possibly’ occur. Although Brigalow regrowth was observed within areas of Lot 17 on RP 848822 and Lot 7 on RP860051, this vegetation did not meet the criteria of the Threatened Ecological Community due to its non-remnant status. Therefore, the Project is highly unlikely to result in a significant impact to the Threatened Ecological Community.

Mitigation measures such as the implementation of pest plant and animal management, erosion and sediment control measures, and bushfire management will be developed and addressed as part of the project specific EMP.

Cycas ophiliolitica was identified as 'possibly' occuring on site. This is considered unlikely, as historical broadscale clearing and the dominance of the exotic pasture grass buffel grass within the project area is likely to exclude the prescence of threatened flora from occurring. It is also considered unlikely that Cycas ophiolitica is present within the project area, due to species distinctive form and being able to access the majority of the project area during the field survey.

Dichanthium setosum was also identified as 'possibly' occurring on site. This is considered unlikely, as historical broadscale clearing and the dominance of the exotic pasture grass buffel grass within the project area is likely to exclude the prescence of threatened flora, particularly blue grass, from occurring.

Regulated Vegetation

The Regulated Vegetation State Mapping identifies the project area as Category X (non-remnant vegetation) on Freehold land, and therefore vegetation impacts are exempt according to Schedule 21, Part 2, Item 2 of the *Planning Regulation 2017* for the solar site itself. The field survey determined that the vegetation communities present within the project area contained in Lot 17 n RP848822 and Lot 7 on RP860051 is consistent with the Department and Environment Heritage Protection RE mapping Version 8.0 (RE mapping), which identified the area as containing non-remnant vegetation.

The proposed transmission line crosses two watercourses which are mapped as containing remnant revegetation. Clive Creek is mapped as containing homogenous polygon RE11.1.21/11.3.3/11.3

1/11.3.27 and the homogenous polygon (RE11.3.25), where an unnamed watercourse to the south of the proposed alignment contained the homogenous polygon RE11.11.10.

The field survey of the vegetation communities associated with Clive Creek and one unnamed watercourse within the proposed transmission alignment were determined to be inaccurate. The ground truthed vegetation communities present within the project area are described in further detail in the Environmental Assessment, a summary is provided in Table 4, provided in 3.1.1 of this referral.

Setbacks of 60 metres have been made from the Regulated Vegetation mapped along Bora and Clive Creek to ensure firebreaks are achieved.

The assessment of the area, historical broadscale clearing and the dominance of the exotic pasture grass buffel grass, which was observed to form almost a monoculture in area, is likely to exclude the presence of threatened flora species.

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

Jacobs Consultancy was engaged to undertake a Flood Risk Assessment to determine the potential impact of the proposed Clarke Creek Solar Farm on flooding and drainage on the site and surrounds. The Flood Risk Assessment also considers the potential impacts of flooding upon the proposed Project and makes preliminary design recommendations that have been incorporated into the MCU application.

The development area is intersected by four mapped (unnamed) watercourses (Stream order 1 and 2). They are described as small ephemeral and intermittent drainage channels. The watercourses have been previously cleared, and are mapped as non-remnant regional ecosystem, with limited vegetation including weed species (such as Parthenium). The waterways exhibit limited riparian vegetation, few habitat values and significant impacts from cattle grazing and associated erosion.

These Stream order 1 and 2 watercourses are also mapped as requiring Waterway Barrier Works approval. Under the Guide for the determination of waterways using the spatial data layer Queensland waterways for waterway barrier works, the Stream order 1 watercourses are classified as Low impact waterways, while the Stream order 2 watercourse is classified as a Moderate impact waterway and therefore can be assessed as “self-assessable” development.

The layout of the proposed development has been designed to avoid the Moderate impact waterway. It is noted that the state mapping differs to that mapping undertaken by Jacobs detailed modelling of the site and catchment area.

A Flood Risk Assessment has been undertaken by Jacobs to assess the potential impacts of the proposed Clarke Creek Solar Farm on localised flooding and drainage (the Jacobs report).

The Project area is adjacent to the Isaac River, Bora Creek and Clive Creek. Assessments have been undertaken by Jacobs to assess the flood risk from these sources, and the potential impact of the proposed Clarke Creek Solar Farm on flooding and drainage. The results of these assessments are documented in the hydrology report (see Section 3.2.1).

Hydraulic flood modelling was undertaken to estimate existing flood levels for the 1% Annual Exceedance Probability (AEP) flood event. Flooding from the Isaac River affects the lower south western part of the site. Local creeks (Bora Creek and Clive Creek) have been modelled and showed that Bora Creek has little impact on the development site (even in rare 0.2% AEP events), and Clive Creek shows a break out onto the site for a 0.2% AEP event. The results of the flood modelling for the 1% AEP flood event related to the Isaac River and the 1 % AEP Site Catchment Flooding can be seen in Figure 11 attached to Section 1.4 of this referral.

Impact on peak stormwater runoff from the site has been investigated in the hydraulic model. This indicated that the proposed development is not expected to have a significant impact on the peak run off as stormwater quality can be appropriately mitigated. No wetlands are expected to be impacted by the minor changes in stormwater runoff from the site.

The potential impact on water quality was assessed in a qualitative manner, and Jacobs Report concluded that the Project would have no significant impacts provided that appropriate stormwater management practices are adopted. Such management practices will be identified in the project-specific EMP to be developed during the detailed design phase and implemented during construction.

Based on the findings of the Flood Risk Assessment, Pacific Hydro has amended the concept design, as follows:

The layout proposed in the MCU Application has been based on the modelled 1% AEP events. The development area has been reduced to 690 ha (reduced from 940 ha) to allow for setbacks, Isaac River 1% AEP flood events and 1% Site Catchment AEP flood events;The concept design avoids development over the Moderate impact waterway (Stream Order 2); All infrastructure is setback a minimum 60 m from named waterways and associated regulated vegetation; The concept design allows for two development scenarios: a full development scenario and a partial development scenario. This approach provides flexibility to revise the project layout during detailed design.

The partial development scenario involves the development of land that is not subject to inundation in the 1% AEP Isaac River flood event and the 1% AEP catchment flooding event but may be subject to flooding in 0.2% AEP Flood Events. This can be seen in Figure 11 and Figure 12 % AEP Isaac River Flooding and 1% AEP catchment flooding attached in Section 1.4 of this referral report**.** The full development scenario proposes PV Arrays on areas within the wider catchment that may be inundated during 1% AEP events by smaller / shallower volumes of water. Development in these locations is subject to detailed design which would involve detailed geotechnical investigations and further flood risk analysis.

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

The development area is in an area of moderate to gently undulating low lands and plains, characterised by brown, red and grey self-mulching cracking clays over the majority of the site and hard pedal red duplex soils in the southeast of the site (Queensland Globe database)

The vegetation within the main project site is non-remnant managed pasture grassland, primarily buffel and buffalo grass, with occasional patches of regrowth and shrubs. Small stands of immature brigalow are present on site, actively controlled to maintain quality and extent of pastures. Drainage lines within the pasture land were commonly lined with black tea-tree, bauhinia, Sally wattle and immature brigalow. A number of introduced and pest plant species are present in localised areas.

Vegetation along the Marlborough-Sarina road reserve is non-remnant. Some areas of regrowth vegetation occur in patches but were too sparse/immature to be considered remnant. Riparian vegetation assocaited with Clive Creek and an unnamed watercourse near the exisiting substation was found to be remnant.

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

There is no remaining outstanding natural features relevant to the project area.

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

The native vegetation on the main project site is non – remnant.

There are two remnant patches along Marlborough Sarina Road associated with two waterway crossings that the proposed transmission line will traverse

The proposed transmission line intersects Clive Creek which is mapped as containing the heterogeneous polygon RE11.3.21/11.3.3/11.3.1/11.3.27 (Endangered) and the homogenous polygon (RE11.3.25). A second, unnamed watercourse near the south of the proposed transmission line contains the homogenous polygon RE11.11.10 (Of concern).

The field survey determined that the vegetation community associated with Clive Creek was the ‘Least concern’ RE 11.3.25 *Eucalyptus tereticornis* or *E. camaldulensis* woodland on fringing drainage lines.

The ‘Of concern’ RE 11.11.10 determined to be somewhat accurate. Whilst the community is structurally and floristically similar to RE 11.3.25 in the immediate riparian zone, the geology differs and metamorphosed rock is present instead of alluvium. There are no existing RE’s that accurately describe the community present (i.e. *M. leucadendra* dominated RE’s within Land Zone 11 in the Brigalow Belt). Consequently, this community has been merged into RE 11.11.10 (Of concern) which is locally common and occurs immediately north of the watercourse. The vegetation located within the western side of the road easement was considered to be non-remnant.

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

The development area has a terrain slope of approximately 0 - 2 degrees across the vast majority of the site. In some areas that slope increases to 3-5 degrees as shown in Figure 6: Terrain Slope attached in Section 1.4 of this referral.

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

Historical broadscale clearing of the project area has resulted in its landscape being heavily modified from its natural state. The following existing impacts of the project area were observed:

- The project area consisted of non-remnant vegetation with the exception of small patches of remnant vegetation associated with a number of watercourses, which are intersected by the proposed transmission line.

- Small patches of regrowth *A. harpophylla* were observed scattered throughout the project area.

- Ground cover was heavily dominated by pasture grasses, where a number of weed species (eg buffel grass, parthenium) were found to be prevalent.

- A number of salt tolerant forbs were observed within the project area, potentially indicating the presence of high salt concentrations within surface soils.

- Clearing associated with access tracks and fences.

- A medium level of noise disturbance from the adjacent Marlborough Sarina Road.

- Whilst no significant populations of feral animals were observed, it is likely that feral pig, cat and dog utilise the site given their widespread distribution in the area.

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

The project area is not a Cultural Heritage Place and does not adjoin a Heritage Place.

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

A review of the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP) Aboriginal and Torres Strait Islander Cultural Heritage Database and Register under the Aboriginal Cultural Heritage Act 2003 was completed on 25 July 2018 and indicated that there are no records of cultural heritage over the project area or nearby.

Contact has been made with the Native Title Claimants over this area and a walk over of the site will be arranged.

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

The project area is freehold land and the proposed transmission line route is State – controlled road reserve.

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

Existing use is cattle grazing and the proposed use is for a Renewable Energy Facility with associated infrastructure including battery storage.

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.

Environmental Management Plans

To ensure best-practice environmental management during construction and operation phases, the project will incorporate and implement a Construction and Environmental Management and Monitoring Plan (CEMMP) and an Operational and Environmental Management and Monitoring Plan (OEMMP) prior to commencement of construction and operation phases, respectively. The CEMMP and OEMMP will contain a series of Environmental Management and Monitoring Plans (EMMPs) relevant to each phase. The detailed EMMPs will be generally in accordance with the recommended mitigations made in the specialist assessments included in the Appendix to the MCU Application (i.e. Traffic, Flood Risk, Environmental and Glare Assessments) and the requirements of referral authorities.

It is expected that the following detailed EMMPs will be required for the Clarke Creek Solar Farm:

- Water Quality Management Plan (including stormwater management, sedimentation and erosion prevention, hazardous chemicals)

- Noise Management Plan

- Traffic Management Plan

- Fire and Emergency Management Plan

- Native Vegetation Management Plan

- Pest Management Plan

- Cultural Heritage Management Plan (or Agreement)

- Site Rehabilitation Plan

Potential impacts to water quality

At the detailed design phase potential impacts to water quality in the unnamed watercourses will be determined. The proposed development has been assessed against the land and catchment management water quality targets (as detailed in the Flood Assessment Report undertaken by Jacobs), and the development meets these targets. The risk of impacts to waters as a result of the solar farm construction and operation will be mitigated through measures prescribed in a project-specific EMP.

During detailed design stage, a Stormwater Management Plan will be prepared and mitigation measures developed to minimise the risk of adverse impacts to flooding risk within the catchment.

A range of mitigation measures to minimise potential impacts will be included in the project-specific EMP, which is expected to include the following:

Implementation of methods for minimising sediment-laden runoff, particularly during the construction phase, in accordance with best practice guidelines;

- Safe storage of hydrocarbon materials, to ensure that any spillages are contained;Use of water for dust suppression, to minimise airborne particulates;

- Vegetation of ground beneath solar panels with native grasses and other low growing herbaceous species, to stabilise the land, reduce peak stormwater flows and reduce sediment discharge via stormwater runoff;

- Use of glyphosate-based products (or similar non-residual and non-persistent herbicides) to manage pest plants on-site, to minimise the potential risk of harmful herbicide by-products entering the surface water receiving environment;

- Design, construction and maintenance of stream crossings in accordance with industry best practice; and

- A septic tank is proposed on site to service the site office and warehouse for the Operations and Maintenance Facility. This will be designed and operated in accordance with relevant statutory requirements and Australian Standards. Effluent will be removed from site and disposed of by a licensed operator.

Pest Plant and Animal Management

Pest plants and animals are a serious threat to the region’s economic, social and environmental sustainability. They adversely affect the healthy function of ecosystems, reduce primary industry productivity and profitability, and can have a significant impact on social, recreational and health values.

As a result, Pacific Hydro is committed to ensuring that pest plant and animal management is considered a priority for the project and all precautions will be undertaken to ensure that pest plants and animals are managed. A focus on pest plant management is particularly important during site construction and site rehabilitation to prevent pest plant spread to disturbed

locations. Appropriate mitigation measures will be prescribed in the project-specific EMP.

Bushfire Management

The proposed development includes the appropriate buffers/tracks to mitigate bushfire risk. Specifically, the proposed PV Array infrastructure has been setback between 10 m and 30 m from the development area boundary. This will allow for access and maintenance tracks for bushfire purposes around the perimeter of the development area.

The proposed electricity substation will be located in an area that is not flood affected (even in 0.2% AEP flood events). Supporting infrastructure including PCUs, operation and maintenance facility (and future battery storage) will be elevated on pads or supporting structures.

Security fencing will be provided around the solar farm and substation to ensure public safety is appropriately maintained and in accordance with relevant electricity and health and safety legislation.

The project also provides the following beneficial outcomes:

The Project is considered to enhance and facilitate the diversified growth of Isaac's (Broadsound's) economic development. Specifically, the proposed solar farm will provide

- Substantial job growth within the region during the construction phase that will expand into other service industries within the community with indirect economic benefits including, but not limited to, accommodation and retail needs.

- The proposed land use will help diversify the region's economic and employment base through the Project's operational phase and provide an income stream for the landholder's which is not reliant on agricultural conditions and markets.

- The Project provides the region with a renewable energy source with the added provision of battery storage;

- The Project has been assessed against the land and catchment management water quality targets, and the development meets these targets;

- The development area does not contain any known indigenous or non-indigenous cultural heritage, based on a review of the Aboriginal and Torres Strait Islander Database.

- Furthermore Pacific Hydro intends to engage with the relevant Aboriginal Party prior to detailed design to conduct a site survey (walk through).

- A site specific Cultural Heritage Management Agreement (CHMA) or Cultural Heritage Management Plan (CHMP) to comply with the *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines, is proposed to be developed for the design and delivery phase of the Project if

agreed with the Aboriginal Party

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.

There is no proposed impact on listed flora and fauna species and Threatened Ecological Communities.

An assessment of the likelihood of occurrence of migratory fauna species is provided in the Environmental Assessment based on the known ecological requirements of each species and the current environmental conditions and habitat values of the site. Of the migratory species assessed, only one bird species - the fork-tailed swift - is considered to potentially occur within the project area. No listed migratory fauna were observed on site during the field survey. The fork- tailed swift is unlikely to occur in significant numbers, and consequently the likelihood of a significant impact is deemed to be extremely low.

The benefits of the project generating electricity from renewable energy to assist in the reaching of greenhouse gas reduction targets in Queensland and Australia far outweighs the potential impacts proposed on matters protected by the EPBC Act.

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

No

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.

As stated in the Referral, the protected flora and fauna species and Threatened Ecological Communities identified as likely to occur in the Protected Matters database search are not present on site and therefore there is no proposed impact to these protected listed species.

The Migratory species listed as likely to occur on site; the fork – tailed swift whilst may occur on site it was deemed in the environmental assessment that the proposed project would not have a significant impact on this species.

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.

Founded in Australia in 1992, Pacific Hydro is a global developer, owner, and operator of renewable energy assets. It operates a high quality, diversified portfolio with an installed capacity of more than 880 MW across Chile, Australia, and Brazil; it is also developing a substantial number of projects totalling over 2 GW of potential capacity; and has a growing electricity retail business in Australia, Tango Energy.

Pacific Hydro has an established record of identification, development, and operation of renewable energy assets, and significant in-house expertise across our international operations.

Pacific Hydro was acquired by the State Power Investment Corporation (SPIC) through its subsidiary, State Power Investment Overseas of China (SPIC Overseas) in January 2016, after obtaining approval from the Australian Government's Foreign Investment Review Board (FIRB) and participating in a highly competitive international sale process. SPIC is one of the top five power generation groups in China, with US$131 Billion total assets and a total installed capacity that exceeds 120 GW.

SPIC's acquisition of Pacific Hydro has resulted in significant new investment, and a priority focus on growth in solar development. The proposed Clarke Creek Solar Farm development area is a highly suitable site which provides for very high levels of solar irradiation; and is in the vicinity of the existing Powerlink Broadsound substation, which will reduce the impacts associated with transmitting the generated electricity to the National Grid.

Pacific Hydro has built a strong reputation for engaging with the communities within which it operates and has a track record of collaborating with local communities to deliver lasting, and sustainable benefits.

Environmental Management System

Pacific Hydro has a certified ISO14001:2015 Environmental Management System (EMS) which overarches the management of all operating sites. To retain this certification, Pacific Hydro is required to show a process of review and continual improvement. This requirement is externally audited annually.

With relation to site specific environmental obligations, Pacific Hydro integrates the Environmental Management and Monitoring Plans (EEMPs) approved as part of the planning process, within its overarching EMS through the Environmental Aspects Register which is

maintained and monitored by a full-time Environmental Compliance Officer employed by Pacific Hydro.

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.

No past or present proceedings.

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.

Pacific Hydro has a certified ISO14001:2015 Environmental Management System (EMS) which overarches the management of all operating sites.

To retain this certification, Pacific Hydro is required to show a process of review and continual improvement. This requirement is externally audited annually. See attached ISO14001:2015 certification.

See attached Pacific Hydro Health, Safety and Environment Policy.

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?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

2018/8285 Prarie Solar Farm, Mitiamo, northern Victoria

2017/8000 Haughton Solar Farm, Queensland

2012/6542 Keyneton Wind Farm, South Australia

2008/4303 Wind Energy Facility 3km North East of Gulnare, South Australia

2007/3285 Crowlands Wind Energy Facility, Victoria

2005/2357 Run-of River power station - Bandicoot Bar - Kununurra Diversion Dam, Kununurra,

Western Australia

2003/933 Wind farm at Rous Head Harbour, Fremantle, Western Australia

2003/925 Yaloak Estate, Ballan, Victoria

2003/1100 Rosedale Ridge, Victoria

2003/1003 Clements Gap Wind Farm, South Australia

2003/1001 Sheoak Flat Wind Farm, Yorke Peninsula, South Australia

2000/18 Portland Wind Farm, Victoria

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
Department of Aboriginal and Torres Strait Islander Partnerships (July 2018) Cultural Heritage Database and Register Search	Excellent - register maintained by QLD Government - Department of Aboriginal and Torres Strait Islander Partnerships	N/A
Pacific Hydro (March 2018) Community Engagement Plan	Excellent: Report has been peer reviewed and signed off by an appropriately qualified person (Krista Kim, Pacific Hydro Engagement and External Affairs Manager). Pacific Hydro is committed to community and stakeholder engagement and it is a fundamental component of all our projects. Pacific Hydro draws on international practices (International Association of Public Participation – IAP2) to ensure that our engagement methodologies are consistent, practical and relevant to the communities where we operate and propose to operate.	N/A
Northern Consulting Engineers (July 2018) Traffic Assessment Report, prepared for Pacific Hydro	Excellent: Report has been peer reviewed and signed off by an appropriately qualified person (Derek Saw, RPEQ 7363). Derek Saw (RPEQ) heads up the traffic survey and traffic impact assessment team and has signed off on this report. With decades of experience designing and detailing roads and streets ranging from major highways to residential laneways, Northern	N/A

Reference Source	Reliability	Uncertainties
	Consulting Engineers now compliment these skills with the ability to undertake complex traffic surveys, parking surveys and complete Traffic Impact Assessments (TIA's) for traffic generating developments.	
Jacobs (February 2018) Flood Risk Assessment, prepared for Pacific Hydro	Excellent: Report has been peer reviewed and signed off by an appropriately qualified person (Michiel Riesenkamp - Senior Hydrologist). Jacobs is one of the world's leading providers in technical, professional and construction services. Jacobs is a 70,000 person global consulting firm with 5,000 employees in Australia. They specialise in architecture, engineering and construction, operations and maintenance, as well as scientific and consulting.	N/A
RPS Group Pty Ltd (February 2017) Environmental Assessment – Clarke Creek Solar Farm, prepared for Pacific Hydro	Excellent: Report has been peer reviewed and signed off by an appropriately qualified person (Laurence Liessman - Environment Manager - Townsville RPS) - Laurence is an environmental scientist with over 14 years experience in environmental consultancy within Queensland. He has experience in environmental investigations and project management for a wide range of client types including mining, utilities, defence, urban development and all levels of government. He is experienced in project management, client relations, interpreting environmental legislation, preparing and co-ordinating environmental approval documentation, environmental research, assessment and reporting. His specific expertise	N/A

Reference Source	Reliability	Uncertainties
	and experience covers numerous aspects of environmental services including; aquatic/terrestrial ecology, water quality, contaminated land, and acid sulphate soils). RPS is one of Australia's most experienced providers of environmental impact assessment and management, with demonstrated experience working on complex multi-disciplinary and multi-jurisdictional projects.	
Environmental Ethos (June 2018) Glare Impact Assessment Report, prepared for Pacific Hydro	Excellent: Report has been peer reviewed and signed off by an appropriately qualified person (Sian Crawford, Environmental Ethos Director). Environmental Ethos undertakes landscape and visual impact assessments for all development types, including solar farms, wind farms, grid and transmission infrastructure, transport projects, mines and quarries, oil and gas projects, residential and resort projects. Their visual impact assessment services are supported by GIS, photomontage and visibility modeling capabilities. Proactive consultation is a key part of their work and they participate in workshops and events for stakeholders and the public. Environmental Ethos has undertaken landscape and visual impact assessment for resource clients at International Finance Corporation (IFC) compliance standards.	N/A

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?

There are no feasible alternatives to the project other than the 'do nothing' case.

The project seeks to connect into the National Electricity Market (NEM) and contribute to reaching the greenhouse gas reduction targets in Queensland and Australia.

Given the current project development area avoids impacts to MNES, no alternatives to development at the site were considered.

The project has undergone design iterations to respond to the constraints identified by the various background studies for the project and to matters raised through consultation with State Agencies.

Based on the findings of the Flood Risk Assessment, Pacific Hydro has amended the concept design, as follows:

The layout proposed has been based on the modelled 1% AEP events. The development area has been reduced to 690 ha (reduced from 940 ha) to allow for setbacks, Isaac River 1% AEP flood events and 1% Site Catchment AEP flood events;The concept design avoids development over the Moderate impact waterway (Stream Order 2);All infrastructure is setback a minimum 60 m from named waterways and associated regulated vegetation;The concept design allows for two development scenarios: a full development scenario and a partial development scenario. This approach provides flexibility to revise the project layout during detailed design.

The partial development scenario involves the development of land that is not subject to inundation in the 1% AEP Isaac River flood event and the 1% AEP catchment flooding event but may be subject to flooding in 0.2% AEP Flood Events. The full development scenario proposes PV Arrays on areas within the wider catchment that may be inundated during 1% AEP events by smaller / shallower volumes of water. Development in these locations is subject to detailed design which would involve detailed geotechnical investigations and further flood risk analysis.

As a result of the Glare Assessment undertaken by Environmental Ethos, it was also determined that the substation would be positioned where it is currently located to ensure all glare to Marlborough Sarina Road is eliminated.

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

Environment & Development Mngr

9.2.2 First Name

Kim

9.2.3 Last Name

Derriman

9.2.4 E-mail

kderriman@pacifichydro.com.au

9.2.5 Postal Address

Level 13

700 Collins St
Docklands VIC 3008
Australia

9.2.6 ABN/ACN

ABN

56161024755 - PACIFIC HYDRO AUSTRALIA DEVELOPMENTS PTY LTD

9.2.7 Organisation Telephone

03 8621 6000

9.2.8 Organisation E-mail

phareception@pacifichydro.com.au

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

Not applicable

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: .....

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, MAJA BARNETT (DELEGATED AUTHORITY FOR KIM DERRIMAN), 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: 9/1/2019

I, MAJA BARNETT (DELEGATED AUTHORITY FOR KIM DERRIMAN), the person proposing the action, consent to the designation of Jack Henderson as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: 9/1/2019

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Environment and Development Planner

9.5.2 First Name

Jack

9.5.3 Last Name

Henderson

9.5.4 E-mail

jhenderson@pacifichydro.com.au

9.5.5 Postal Address

Level 13

700 Collins St
Docklands VIC 3008
Australia

9.5.6 ABN/ACN

ABN

56161024755 - PACIFIC HYDRO AUSTRALIA DEVELOPMENTS PTY LTD

9.5.7 Organisation Telephone

03 8621 6000

9.5.8 Organisation E-mail

phareception@pacifichydro.com.au

Proposed designated proponent - Declaration

I, Jack Henderson, 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: ..... Date: 9/1/2019

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Environment and Development Planner

9.8.2 First Name

Jack

9.8.3 Last Name

Henderson

9.8.4 E-mail

jhenderson@pacifichydro.com.au

9.8.5 Postal Address

Level 13

700 Collins St
Docklands VIC 3008
Australia

9.8.6 ABN/ACN

ABN

56161024755 - PACIFIC HYDRO AUSTRALIA DEVELOPMENTS PTY LTD

9.8.7 Organisation Telephone

03 8621 6000

9.8.8 Organisation E-mail

phareception@pacifichydro.com.au

Referring Party - Declaration

I, Jack Henderson, 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: 9/1/2019

Appendix A - Attachments

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

1. 1 Clarke Creek Planning Report_%Site Layout inc Tx line.pdf
2. 1_Appendix J Flood Risk Assessment Clarke Creek Solar Farm-compressed.pdf
3. 2_Appendix J Flood Risk Assessment Clarke Creek Solar Farm-compressed.pdf
4. 3_Appendix J Flood Risk Assessment Clarke Creek Solar Farm-compressed.pdf
5. Appendix H Clarke Creek Community Engagement Plan.pdf
6. Appendix H Clarke Creek Community Engagement Plan updated.pdf
7. Appendix K Environmental Assessment Clarke Creek Solar Farm-compressed.pdf
8. Clarke Creek Planning Report for MCU Application with KML file.zip
9. Clarke Creek and transmission line.zip
10. Group HSEQ Policy _EN (Version 4.0).pdf
11. MCU18 0017 Decision Notice and Attachments part 0001.pdf
12. MCU18 0017 Decision Notice and Attachments part 0002.pdf