Title of Proposal - Broadsound 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.

The proposed action relates to the construction and operation of a solar power (PV) facility and ancillary infrastructure with an approximate capacity of 392 MW at 353 Manly Access Road, Clarke Creek, Queensland on land formally described as Lot 2 RP801346 and Lot 1 RP801235 (Attachment A).
The detailed design, layout and electricity generating capacity of the solar farm are not confirmed, however, the project will consist of solar arrays, above and below ground cabling, substation and inverters, control building, internal access roads and car parking within the nominated development area (Attachment A). Solar panels will be mounted on tracker mounted arrays arranged in parallel rows. The proposed design aims to maximise the productive area for solar power generation and retaining spaces between the rows as fallow land (Ecology and Heritage Partners 2018).
Activities proposed during development of the site consist of vegetation clearing, excavation and earthworks, drilling and piling, trenching for underground services, construction and finally operation of the facility. A number of existing watercourse crossings will be upgraded to support larger vehicles and machinery during construction and operation.
The solar farm will connect to the electricity grid via the Broadsound Switching Station to be located adjacent to Marlborough-Sarina Road. The proposed solar farm connects to the grid on-site and Powerlink will be responsible for connection to the Broadsound Switching Station.

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
Broadsound solar farm maximum extent	1	-22.811404747615	149.38856825127
Broadsound solar farm maximum extent	2	-22.817433365885	149.3962518057
Broadsound solar farm maximum extent	3	-22.817433365885	149.3962518057
Broadsound solar farm maximum extent	4	-22.823912661977	149.40164712152

Area	Point	Latitude	Longitude
Broadsound solar farm maximum extent	5	-22.826172036906	149.40589745889
Broadsound solar farm maximum extent	6	-22.831296601069	149.40589745889
Broadsound solar farm maximum extent	7	-22.849375864753	149.42339147568
Broadsound solar farm maximum extent	8	-22.859169116842	149.41096662438
Broadsound solar farm maximum extent	9	-22.855853639904	149.40704244782
Broadsound solar farm maximum extent	10	-22.852992058616	149.40933068643
Broadsound solar farm maximum extent	11	-22.847417446376	149.40360922028
Broadsound solar farm maximum extent	12	-22.853745026794	149.39461759652
Broadsound solar farm maximum extent	13	-22.856608156292	149.39232934743
Broadsound solar farm maximum extent	14	-22.855100683405	149.3913474389
Broadsound solar farm maximum extent	15	-22.854950396697	149.38709711201
Broadsound solar farm maximum extent	16	-22.852087232283	149.38726018194
Broadsound solar farm maximum extent	17	-22.851334254924	149.39036725915
Broadsound solar farm maximum extent	18	-22.849828287694	149.391675318
Broadsound solar farm maximum extent	19	-22.84319838088	149.38644308258
Broadsound solar farm maximum extent	20	-22.846814739023	149.38153871579
Broadsound solar farm maximum extent	21	-22.821501361427	149.36649774678
Broadsound solar farm maximum extent	22	-22.811404747615	149.38856825127

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 site is located on rural land approximately 50 km west of Marlborough and 64 km east of Middlemount, Queensland, within the Isaac Regional Council (IRC) local government area. The

land is formally described as Lot 2 RP801346 and Lot 1 RP801235.

The project area (i.e. project area and surrounding land) is located within the Brigalow Belt North Bioregion and the Nebo – Connors Range subregion (11.12) and occupies approximately 1,370ha. Adjacent land includes the Marlborough-Sarina Road (north-east) and rural properties (north-west, south-west and south-east). The Manly Access Road intersects the proejct area in a north-east to south-west direction.

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

Disturbance 1223.24ha and Avoidance 145.52ha

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Lot 2 RP801346 and Lot 1 RP801235.

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.

Manus Basson

1.10.1.2 E-mail

records@isaac.qld.gov.au

1.10.1.3 Telephone Number

07 4941 8666

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

Start date 03/2020

End date 08/2051

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

The subject site is located within the Isaac Regional Council Local Government area. The project is subject to the provisions of the Broadsound Shire Planning Scheme 2015 and Queensland's Planning Act 2016.

On the 18 September 2018, a Development Permit for a Material Change of Use – Public Utility (approx. 392MW Renewable Energy Facility (Solar Photovoltaic PV Farm) and associated infrastructure) was issued by the Isaac Regional Council (a copy of this approval is included in Attachment B).

Queensland's Department of State Development, Manufacturing, Infrastructure and Planning was a concurrence agency for the MCU, triggered under 1) State Code 1: Development in a State-controlled Road Environment and 2) State code 6: Protection of State Transport Networks. Powerlink Queensland was an advice agency to the application and indicated no objection to the change application.

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

The project has been presented to local people on 27th March 2018, at a consultation meeting organised by the Clarke Creek Community Association.

A Cultural Heritage Management Plan, signed by all parties, has been in place since 19th June 2018 and the CHMP has been approved by the Department of Aboriginal and Torres Strait Islander Partnerships.

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.

An ecological assessment was undertaken by Ecology and Heritage Partners on 11 – 12 July 2017 (Attachment C). The scope of works for the assessment consisted of:

Describe the existing environment within the study area based on desktop analysis and field surveys;Identify, primarily through desktop review, the potential suite of species that are expected to use the study area, with a focus on threatened and conservation significant species;Describe the extent and type of vegetation communities within the study area with

respect to the Vegetation Management Act 1999 (VM Act) (Queensland) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Commonwealth) legislation;Complete a targeted survey for threatened flora species;Identify the legislative requirements pertinent to ecological values for the proposed development;Determine the triggers for potential impacts to ecological values under Commonwealth, state and local government legislation, policy and guidelines;Describe the fauna habitats occurring within the study area and potential linkages through the landscape; andComplete an assessment of the potential impacts on ecological values from the construction, operation and decommissioning of the proposed development with reference to relevant legislation and policy.
Key impacts associated with the project include the following:The removal of vegetation currently mapped as non-remnant vegetation under Queensland legislation, including regrowth vegetation and some mature trees;Slashing of grasses on an ongoing basis;Soil disturbance associated with pile driving, trenching and drilling;Decommissioning activities including disturbances to soils;The draining and reprofiling of existing farm dams (refer Figure 3 in Attachment C);Erosion, bank slumping and/or increased sedimentation to the downstream receiving environment during watercourse crossing upgrades (if the proposed mitigation measures are not implemented) andSlight reduction in landscape connectivity through construction of perimeter fencing;Weed invasion and proliferation; andDeath or injury to fauna.
The above potential impacts will be addressed through the avoidance and mitigation measured in Section 4 and via management plans condition in the Development Permit.

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
Brigalow (Acacia harpophylla dominant and co-dominant)	• Removal of 3 hectares of Brigalow (Acacia harpophylla dominant and co-dominant) threatened ecological community in two isolated

Species	Impact
	patches (refer Table 4 in Attachment C).
Koala	A recent PMST search of EPBC Act database and Queensland database wildlife records was undertaken using a 10 km buffer around central point -22.8662, 149.3952 within the property (refer Attachment D). • Noise disturbance during construction; • Slightly reduced habitat connectivity; and • Loss of adjacent supporting habitat (approximately 407 ha of habitat not-critical to the survival of the species).
Greater Glider	A recent PMST search of EPBC Act database and Queensland database wildlife records was undertaken using a 10 km buffer around central point -22.8662, 149.3952 within the property (refer Attachment D). • Noise disturbance during construction; • Slightly reduced habitat connectivity; and • Loss of adjacent supporting habitat (approximately 30.9 ha of marginal habitat).

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?

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

Desktop database searches identified nine threatened flora species, listed under the NC Act and/or EPBC Act that have been previously recorded or likely to occur within 20 kilometres of the study area (Ecology and Heritage Partners 2017) (refer to Table A3.1 and Figure 3 in Attachment C for a species list and known locations). No species listed as threatened under the EPBC Act were considered likely to occur within the study area, primarily due to the high levels of disturbance (Ecology and Heritage Partners 2017).

One significant species, Cycas terryana occurs as a localised population of less than 15 individuals located in a patch of RE 11.11.10 at the junction of Bottletree Creek and a tributary in the eastern portion of the study area (Ecology and Heritage Partners 2017). At the time of the ecological assessment, the species was not protected under the EPBC Act or the NC Act and no subsequent listing of the species has been made in the meantime.

Fauna

The desktop review identified 11 migratory species, 21 threatened fauna species (NC Act and/or EPBC Act) and 12 special least concern species (NC Act) that have been recorded or are predicted to occur within 20 kilometres of the site (refer to Figure 3 and Appendix 3 in Attachment C). A likelihood of occurrence assessment undertaken suggests that Tachyglossus aculeatus (short-beaked echidna) has a high – moderate likelihood of occurring on the site (Ecology and Heritage Partners 2017). All other species were assessed as being unlikely to occur (Ecology and Heritage Partners 2017) and therefore targeted and/or generic fauna surveys for EPBC Act listed species were not undertaken.

A recent EPBC Act search and a list of species records within a 10 km search radius of central coordinate -22.8662, 149.3952, is provided in is provided in Attachment D

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

The study area contains several watercourses as identified on the Vegetation Management Map (Refer to Figure 1 in Attachment C). Plum Tree Creek intersects the site centrally, Bottletree Creek is in the eastern portion of the site and an unnamed tributary occurs in the western portion. All watercourses drain to the Mackenzie River in the south. Bottletree Creek and Plum Tree Creek possess sandy beds and areas of exposed rocks and exposed bedrock. The banks are generally low and riparian vegetation is historically disturbed and currently supporting a

small number of larger remnant trees and regrowth, particularly in the upper reaches. All watercourses on the site are ephemeral and were not flowing at the time of the ecological investigation although small pools were present. The permanency of these pools is unknown. First order watercourses exist as drainage lines and do not contain permanent water, nor do they contain riparian vegetation.

Several small farm dams have been constructed to capture flows along the watercourses and overland flow. Dams contain limited habitat due to cattle related degradation. Fringing vegetation generally does not exist or exists as pasture grasses.

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

Landform and soils

The project area contains three land zones under Queensland's regional ecosystem framework, described broadly as:

Regional ecosystem land zone 11 – Metamorphosed rocks, forming ranges, hills and lowlands. Primarily lower Permian and older sedimentary formations which are generally moderately to strongly deformed (eastern parts of the project area).

Regional ecosystem land zone 4 - Tertiary-early Quaternary clay deposits, usually forming level to gently undulating plains not related to recent Quaternary alluvial systems. Excludes clay plains formed in-situ on bedrock (central and western parts of the project area).

Regional ecosystem land zone 3 - Recent Quaternary alluvial systems, including closed depressions, paleo-estuarine deposits currently under freshwater influence, inland lakes and associated wave-built lunettes. Excludes colluvial deposits such as talus slopes and pediments (associated with existing watercourses that intersect the site).

These land zones are consistent with the geology of the area which contains hilly land to the east of the site, plains central to the site and recent alluvial formations associated with existing watercourses that intersect the site.

The Atlas of Australian Soils mapping show four soil types within the project area, described as:

Qa11 - Hard pedal red duplex soils on low hilly to hilly lands with some strongly undulating marginal slopes (east of the project area).Qa13 - Hard pedal red duplex soils on undulating to strongly undulating lands with occasional high isolated hills (south-west of the project area).MM7 - Brown and red self-mulching cracking clays on moderate to gently undulating lowlands and plains (far north-west of the project area).

Vegetation communities

The study area contains a mix of cleared lands for pasture and native vegetation, mature regrowth along the western boundary and remnant vegetation along watercourses and in the

south-eastern corner of the site. Historical, systematic and cyclical clearing has occurred within the study area since the 1950's, initially to prepare land for grazing and subsequently to control regrowth. Regrowth vegetation is therefore at varying stages of maturity.

The following vegetation communities were confirmed to occur within the study area (refer to Figure 5 of Attachment C for vegetation mapping):

Highly disturbed Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines (Queensland RE 11.3.25) (refer page 24 of Attachment C for community description).Disturbed Eucalyptus crebra, Corymbia dallachiana and Corymbia erythrophloia grassy open woodland on deformed and metamorphosed sediments and interbedded volcanics (Queensland RE 11.11.10 – Of concern). Community occurs predominantly as regrowth vegetation and small patches of remnant vegetation (refer to page 25 of Attachment X for community description).E. crebra woodland on igneous rocks (Queensland RE 11.12.1 – Least concern). Community occurs as patches of remnant and regrowth vegetation (refer to page 25 of Attachment X for community description).Eucalyptus cambageana and Acacia harpophylla or Acacia argyrodendron woodland to open forest on Cainozoic clay plains (Queensland RE 11.4.8 – Endangered) / Eucalyptus spp. and/or Corymbia spp. grassy or shrubby woodland on Cainozoic clay plains (Queensland RE 11.4.2 – Of concern). Occurs as one small area of immature regrowth (refer page 26 of Attachment C for community description).Disturbed Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains (Queensland RE 11.4.9 – Endangered). Several patches of mature and immature regrowth occur in the study area, two of which meet the diagnostic criteria for the Threatened Ecological Community Brigalow (Acacia harpophylla dominant and co-dominant) (refer to page 18 of Attachment C for community description).Highly disturbed semi-evergreen vine thicket on old sedimentary rocks with varying degrees of metamorphism and folding (Queensland RE 11.11.18 – Of concern). Community occurs over a small area without the required species composition to meet the listing criteria for the Threatened Ecological Community Semi-evergreen vine thicket (refer to page 17 of Attachment C for community description).Non-remnant pasture grasslands comprising a suite of native and introduced grasses including Cenchrus ciliaris, Dichanthium sericium, Urochloa mosambicensis, Panicum decompositum and others (refer page 27 of Attachment C for community description).

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

No outstanding natural features or other important or unique values occur in the project area.

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

Several patches of brigalow regrowth occur within the project area. Two patches of Brigalow meet the diagnostic criteria to be classified as the Threatened Ecological Community Brigalow (Acacia harpophylla dominant and co-dominant) (refer Figure 5 of Attachment C). Ecology and Heritage Partners (2017) indicate that other patches observed in the project area form a monoculture of *Acacia harpohylla,* without a native understorey, and therefore do not meet the diagnostic criteria for classification as the TEC. The two patches are approximately 1.03 and 1.97 ha and are isolated from other regrowth and remnant vegetation.

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 area is on land ranging from 120 m AHD to 140 m AHD and classified as gently undulating.

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

The study area which is approximately 1,370 hectares in area consists of a mixture of cleared land with fringing native vegetation along most watercourses, thus if compared with the natural condition, all cleared areas have been heavily impacted.

Remnant communities have been subjected to impacts predominantly associated with edge effects and grazing. The narrow linear structure of riparian vegetation has exposed these communities to edge effects including weed invasion. Common weeds in these communities include rubber vine, lantana and invasive African grasses, which have resulted in patchy thickening of the understorey.

Several access tracks intersect the property and cross watercourses in the project area. Crossing points are exposed to potential erosion during flow events which impact on downstream water quality.

Non-remnant vegetation dominates the project area and includes mostly pasture grasslands. The pasture grasslands include a range of native and exotic grasses. These areas are of low habitat value for fauna as they lack many habitat elements such as fallen timber, deep leaf litter or hollow bearing trees.

Woodland and open woodland habitats are of moderate habitat quality due to the presence of mature hollow-bearing trees and diversity in the ground layer (i.e. fallen timber, native grasses and rocky habitat features in places). These habitats will be predominantly avoided and where regrowth vegetation is present, allowed to recover.

Due to the limited areas of habitat available and degraded nature of the understorey within existing patches, the diversity of mammal species is expected to be low and comprised of exotic rodents, such as House Mouse (Mus musculus) and Black Rat (Rattus rattus) and common native species.

Observed and likely impacts associated with cattle grazing at the site include:

The trampling and injury or death of native plants;Altered vegetation structure within remnant communities with subsequent reduction in fauna habitat availability;Decreased biomass and diversity;Probable changes to seed production, dispersal and germination through browsing on native vegetation;Disturbance to surfaces soils causing localised erosion and/or compaction;Increased populations of invasive plants.

The waterways occurring within the project area have been historically disturbed through the construction of dams and impoundments. Dams contain limited habitat for waterbirds (i.e.

macrophytes, fringing vegetation) and cattle accessing have created additional impacts. Observed impacts include soil compaction and vegetation trampling (Ecology and Heritage Partners 2016).

The surrounding landscape is characterised by an extensive patch of remnant vegetation to the east and cleared and degraded land to the west (i.e. aerial imagery). Connectivity within the site is limited, with no significant habitat to the west in which to connect with. Consequently, animal movement across the site is considered only relevant to highly mobile common species.

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

No Commonwealth Heritage Places or other places recognised as having heritage values are known to occur in the vicinity of the project area.

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

Indigenous heritage values will be determined by the Aboriginal Party, as per the ACHA, and protected or mitigated as per a Part 7 of the ACHA a CHMP has been agreed upon.

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.

The historical and current land use of the project area is cattle grazing.

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.

As part of the development approval conditions issued by Isaac Regional Council (FCRC), several management measures to avoid, minimise and mitigate impacts must be implemented by the proponent, including the development and application of management plans and specific design objectives.

Management plans for the approved solar farm include:

Construction environmental management plan;Erosion and sediment control plan; andDecommissioning and rehabilitation management plan.

Specific design requirements stipulated in the development permit include:

Internal driveways and access will be wide enough to support two vehicles and where necessary, culverts or suitable erosion protection measures must be made for stormwater drainage;The natural topography of the site is to be maintained so that it is generally free draining, the exception being minor works to prevent erosion and scouring;Provision of firefighting facilities and water storage in accordance with relevant Australian Standards and Queensland Fire and Emergency Services requirements;Permanent facilities on the site must provide for adequate treatment of wastewater. No treated wastewater contaminated with oil, grease or other contaminants are permitted to discharge into any natural watercourse and/or Council stormwater system.A waste storage will be designed to include the following:An impervious surface; and Contain enough storage space for the storage of the appropriate size refuse bin/s for the development.

Construction Environmenal Mangement Plan (CEMP)

The CEMP will be prepared by a competent person in accordance with the following guidelines. In general, as a minimum, the CEMP will include, but not necessarily be limited to the following:

A description of environmental issues and potential impacts;The proposed construction vehicle transport route(s); measures to ensure the safe and orderly ingress and egress of vehicles to and from the site;Proposed location/s of all areas on-site and/or off-site to be used for staff and contractor parking (including owner’s permission where on other land), storage of materials and

soil stockpile handling;The means by which the direction of traffic flows to and from parking areas will be controlled both on-site and off-site;Proposed location/s and dimensions of site sheds and facilities;Lawful source and disposal sites of any fill or excavated material;Measures to maintain the existing drainage pattern to avoid adverse impact on the downstream and upstream environments;Measures to maintain water quality in accordance with the general environmental values and water quality objectives outlined in the Queensland State Planning Policy;Measures to minimise unacceptable risk to existing land uses from flooding and erosion;Sediment retention measures to mitigate the transportation of sediment to downstream aquatic environments;Measures to control dust and other emissions such as fumes, sediments, light, noise or odour to avoid nuisance;Measures to mitigate noise impact on neighbouring activities;Measures to minimise the spread of weeds to and from the site;Contingency plans for emergency procedures for environmental incidents; andMeasures for the periodic review of environmental performance and continual improvement including record keeping.

Erosion and Sediment Control Plan

In accordance with the Development permit an Erosion and sediment control plan (ESCP) is to be prepared prior to construction by a competent person in accordance with the Best practice erosion and sediment control guideline (IECA, 2008).

Decommissioning and Rehabilitation Management Plan

A Decommissioning and rehabilitation management plan prepared and certified by a suitably qualified person must be prepared. The plan must include but not limited to:

Identification of structures, including but not limited to all solar panels, the substation, the control and facility building and electrical infrastructure, including underground infrastructure to be removed, except where the substation, control room or overhead electricity lines are transferred to or in control of the local electricity network operator, and how they will be removed;Measures to reduce impacts of the development on the environment and surrounding land uses; andDetails of how the land will be rehabilitated back to its predevelopment condition, including slope and soil profile.

Ecology

As onsite remnant vegetation will be mostly avoided during construction, impacts to species habitat and landscape connectivity is expected to be relatively minor. Whilst the action is unlikely to constitute a significant impact the proponent will employ the following avoidance and mitigation measures to retain the marginal habitat that is present and reduce the likelihood of impacts to threatened species populations, particularly koala and greater glider.

<u>Vegetation clearing</u>

The solar farm has been located to avoid all mapped remnant vegetation, some of which were confirmed to be non-remnant regrowth during the ecological assessment of the site.

The project development layout avoids impacts to field-verified remnant vegetation along Bottletree Creek and Plum Tree Creek and applies a minimum setback of 10 metres on either side of the watercourses or riparian vegetation (refer to Figure 5 in Attachment C), whichever is

greater.

A staged process of disturbance working from low biodiversity areas toward higher biodiversity areas in adjacent communities is proposed. No perimeter fencing will be constructed during the preliminary stages of work (i.e. vegetation clearing) to allow local wildlife to naturally move into adjacent habitat.

Buffers of approximately 16 metres are being applied to either side of the centreline of mapped watercourses (Ecology and Heritage Partners 2016). Buffers will also be in place around vegetation patches to be retained and these have been identified in the Bushfire Hazard Assessment report (Ecology and Heritage Partners 2016) (Attachment C).

Where possible trees will be trimmed rather than felled;Temporarily disturbed remnant habitats will be rehabilitated;Restrict the area of disturbed habitat to the proposed footprint and where possible retain or relocate significant habitat features such as hollow logs, tree hollows and other key microhabitat features;Avoid operating heavy machinery within an hour of dawn and dusk and avoid onsite work altogether during the night; A DES approved spotter/catcher or ecologist will be engaged to identify habitat trees that may be occupied by fauna.Vegetation will be cleared in the following manner to reduces potential injury and mortality:Investigate critical microhabitat features such as tree hollows prior to clearing. Resident animals should be relocated into alternative den sites; Warn resident fauna of impending clearing by gently disturbing habitat trees prior to clearing;Implement a staged or sectioned approach to clearing to minimise the active area of disturbance; Stage habitat disturbance working from low biodiversity (i.e. non-remnant/previously disturbed sites) toward higher biodiversity areas in adjacent communities is proposed.Avoid fencing the site during the preliminary stages of works to allow local wildlife to naturally move into adjacent habitats; andKeep ground disturbance to minimum required necessary to construct the solar array, associated structures and underground cabling.

The following specific avoidance, minimisation and mitigation measures have been recommended by Ecology and Heritage Partners (2017)

Invasive species

Restricted weed species (i.e. lantana and rubber vine) must be treated prior to the action commencing to ensure that weed propagative material is not spread to other areas. A weed control contractor who is licenced to use herbicides should be engaged to treat weed infestations;Implement quarantine protocols including washdown of vehicles prior to entry and exit from the site to manage and control invasive species including Sporobolus pyramidalis, S.natalensis, S.jacquemontii, and S.fertilis;Educate staff and contractors about quarantine protocols and risks involved with invasive species;Ensure that declared plant material or soils contaminated by declared plant material is managed and controlled onsite.
TrafficImplement measures to control and manage traffic related fauna mortality;Educate project staff to reduce speed whilst driving and minimise travel on the site during construction;Erect signage to prevent entry into habitat areas proposed for retention;Avoid and enforce unauthorised off-track driving with signage; andReport and record road kills.
Feral animalsControl feral animal abundance such as feral cats, pigs and wild dog where a significant problem is identified;Eradicate feral animals through localised live trapping;Remove any harbourage areas such as tips and dump sites;Modify existing habitat to make it less

suitable for cats e.g. reduce fragmentation by rehabilitating tracks and clearings and making it more structurally complex with shelter and escape sites; andEnsure waste is disposed of in tamper-proof bins and regularly removed from the site.

Watercourses and riparian areas

Construction stockpiles, machinery and other infrastructure should be wholly contained outside of the waterways to minimise the risk of sediments and pollutants being mobilised downstream;Buffers of at least 10 metres will be applied to the high bank of mapped watercourses and patches of vegetation to be retained; and
Watercourse crossings, where required, will be designed and engineered in accordance with the accepted development requirements for operational work that is constructing or raising waterway barrier works and through compliance with the 'Riverine protection permit exemption requirements (DNRM, version 1.02, 2016), including but not limited to:Upgrading existing bed level watercourse crossings to the minimum width necessary to enable access by construction vehicles and machinery;Minimising the area required to carry out the activity;Implementation of sediment and erosion controls;Disturbed bed and banks will be stabilised to protect against erosion;All fill will be free from contamination (e.g. weeds seeds, oils, chemicals and other contaminants);Disturbed banks must be returned to the pre-disturbance profile or similar;Natural stream bed controls or features that create natural waterholes (e.g. riffles, logs, sediment or rock bars) are to be retained;Excavated material that is not removed as waste will be spread evenly within the bed and banks of the watercourse to retain the flow of water;Any fill placed in the bed of the stream must not redirect flow into an adjacent bank;Access tracks or crossings must not interfere with the low flow of water;Constructed crossings must be provided with a scour apron and cut off wall on the downstream side to prevent bed erosion.All disturbed areas must be revegetated with trees, shrub and grasses endemic to the area, enough to re-establish a riparian environment and protect bed and banks from erosion.

Mitigation measures

Although most vegetation communities will be avoided the following measures will be taken to further minimise impacts:

As native plants provide valuable habitat and food resources for fauna, it is recommended that any landscape plantings that are undertaken as part of the proposed development are completed using 90% native species that are found within the surrounding area, provided that commercial quantities of seedlings/seed are available;Cattle will be removed from the study area prior to construction commencing. Removal of cattle will allow the understorey and ground cover within vegetation communities to regenerate and restore habitat values for fauna. Removal of cattle will also prevent eliminate erosion occurring along the waterways. Should sheep be allowed to graze around the solar farm, they would be fenced within a specified area and not within native vegetation communities or waterways.Where possible, use plain wire on the top two strands of perimeter fencing, as opposed to barbed wire which can capture aerial species.Hollow bearing trees removed during clearing will be relocated to link remaining habitat in the study area to offsite habitats. This will be undertaken either by placing hollows on the ground as habitat for ground dwelling species or coupled to trees as nesting habitat for arboreal species or birds.The natural undulating nature of the study area will provide 10 – 20 cm gaps beneath the perimeter fence, which will provide a passage of movement for ground-dwelling fauna underneath the fence (Ecology and Heritage Partners 2017) including koalas and

echidna.

Due to the potential presence of threatened fauna species within the proposed site a range of measures are proposed to minimise impacts to fauna and TEC, specifically koala, greater glider and the Brigalow TEC. Some of the recommendation have been drawn from referral guidelines. No offsets are proposed; however, the proponent intends to rehabilitate or revegetate parts of the site for visual amenity purposes, which also serve an ecological function in fragmented landscapes.

Koala (*Phascolarctos cinereus*)

Avoidance - The proposed development will not involve any substantial clearing or isolation of habitat critical to the survival of the species. Potential habitat proposed for removal consists of a sparse cover of trees within areas of non-remnant pasture grasslands.

Mitigation: As the site is not considered to be a critical habitat corridor for koala, exclusion fencing will be constructed to prevent access and divert koalas around the facility.

Offset: No offsets are proposed or deemed necessary.

Greater Glider (*Petaurus volans*)

Avoidance - The proposed development will not involve the clearing or isolation of habitat critical to the survival of the species, where only the removal of small patches of regrowth vegetation and isolated trees will occur. All mapped areas of remnant vegetation (and field verified remnant vegetation) will be avoided. No direct impact to greater glider is likely to occur.

Mitigation: Exclusion fencing is unlikely to inhibit greater glider access to the site. No barbed wire will be used on perimeter fencing within the vicinity of Bottle Tree Creek and Plum Tree Creek to prevent gliders or other aerial species being caught and stranded on the fence.

Offset: No offsets are proposed or deemed necessary.

Brigalow (*Acacia harpophylla*)

Avoidance - The proposed development will involve the clearing of approximately 3 hectares of Brigalow within two discrete and isolated patches that are consistant with the Brigalow TEC. A significant impact assessment completed for the Brigalow TEC (Ecological and Heritage Partners 2017) determined that the action is not likely to result in a signficant impact to the community.

Mitigation: As the construction of the solar farm will necestitate the clearing of the two discrete patches of TEC, mitigation measures are only applicable to fauna that have the potential to inhabit the areas. Mitigation measures relevant to fauna are provided above.

Offset: No offsets are proposed or deemed necessary as the action is not likely to result in a signficant impact to the community.

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.

No outcomes-based conditions are proposed for the action.

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.

Koala (*Phascolarctos cinereus*), Greater glider (*Petauroides volans*)

Significant matters have been identified and addressed and there is a low risk of a significant impact on a species population of koala or greater glider for the following reasons:

Onsite habitats for koala and greater glider are marginal (i.e. potentially supporting one or less individuals at any given time). Exclusion of these habitats from adjacent core habitat is unlikely to significantly impact populations utilising adjacent core habitat areas;Given the marginal nature of the available habitat no substantial reduction in the area of occupancy for either species is expected;Key local movement corridors and connectivity areas bypass the site and therefore the action is unlikely to fragment an important population of either species;The site does not support habitat critical to the survival of either koala or greater glider;During the breeding period, fauna spotter catchers will ensure that displaced individuals are safely relocated, thereby ensuring that the breeding cycle of an important population is not disrupted;A small amount of vegetation clearing is proposed, predominantly in non-remnant areas or poor-quality habitats and remnant woodlands are being retained. The removal of this vegetation is unlikely to cause species decline, either locally or regionally.A weed and pest management plan will be prepared to identify and control invasive species. The control of invasive species will mitigate adverse impacts on koala and greater glider;The root fungus Phytophthora is known to impact Eucalyptus health and therefore there may be some indirect impacts on species that consume the leaves or flowers of Eucalyptus spp. The weed and pest management plan will incorporate measures to prevent the introduction and proliferation of Phytophthora.There is no recovery plan for greater glider and a recovery plan is being developed for koala. Given the proposed action will not result in significant habitat loss and the site is already disturbed the action is unlikely to interfere substantially with the recovery of either koala or greater glider.

Brigalow (*Acacia harpohylla* dominant and co-dominant)

The proposed development will involve the clearing of approximately 3 hectares of Brigalow within two discrete and isolated patches that are consistant with the Brigalow TEC. A significant impact assessment completed for the Brigalow TEC (Ecological and Heritage Partners 2017) determined that the action is not likely to result in a signficant impact to the community due to the isolation of the communities.

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.

Yes.

Broadsound Solar Farm Pty Ltd is a wholly owned subsidiary of Hadstone Energy Pty Ltd who have developed numerous solar farms in Australia and the United Kingdom. Each site is constructed and operates under strict environmental management plans which are regularly reviewed and audited internally. A site-specific Construction Environmental Management Plan (CEMP) will form the basis of impact mitigation measures to remaining environmental values within and near the site. Hadstone Energy's management team will regularly visit the site to ensure that that all environmental management processes are undertaken in accordance with approved management plans.

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.

Neither Broadsound Solar Farm Pty Ltd nor Hadstone Energy Pty Ltd have been involved any past or present proceedings under Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

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?

No

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
DoEE (2016) Protected Matters Search Tool	High – resource provided by the Commonwealth Environment Regulator	Nil
Queensland Herbarium (2015) Regional Ecosystem Description Database (REDD) version 9.0 – April 2015	High – resource provided by state environment regulator	Nil
Queensland Wildlife Online Search	High – resource provided by the Commonwealth Environment Regulator	Nil
Australian Soil Resource Information System – Digital Atlas of Australian Soils (1991)	High – resource provided by CSIRO	Nil
Atlas of Living Australia	High – resource provided by CSIRO, National Research Infrastructure of Australian and Global Biodiversity Information Facility	Nil
Ecological assessment report (Ecology and Heritage Partners 2016)	Moderate/High - report prepared by Principal Ecologist Dave Fleming from the consultancy company Ecology and Heritage Partners.	The ecological assessment (Ecology and Heritage Partners 2017) includes a desktop assessment and field survey to characterise the relevant MNES which may be impacted by the project.

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 action

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

Russell

9.2.3 Last Name

James

9.2.4 E-mail

russell.james@hadstone.com.au

9.2.5 Postal Address

9 Castlereagh Street

Level 17
Sydney NSW 2000
Australia

9.2.6 ABN/ACN

ABN

15620028097 - BROADSOUND SOLAR FARM PTY LTD

9.2.7 Organisation Telephone

+61 447 749 914

9.2.8 Organisation E-mail

russell.james@hadstone.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, Russell James, 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: 18/10/2019……

I, Russell James, the person proposing the action, consent to the designation of Broadsound Solar Farm Pty Ltd as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:…… Date: 18/10/2019……

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

Russell

9.5.3 Last Name

James

9.5.4 E-mail

russell.james@hadstone.com.au

9.5.5 Postal Address

9 Castlereagh Street

Level 17
Sydney NSW 2000
Australia

9.5.6 ABN/ACN

ABN

15620028097 - BROADSOUND SOLAR FARM PTY LTD

9.5.7 Organisation Telephone

+61 447 749 914

9.5.8 Organisation E-mail

russell.james@hadstone.com.au

Proposed designated proponent - Declaration

I, Russell James (as Director of the above), 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: 18/10/2019……

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Environmental Manager

9.8.2 First Name

Anton

9.8.3 Last Name

Fitzgerald

9.8.4 E-mail

anton.fitzgerald@rpsgroup.com.au

9.8.5 Postal Address

5-7 Barlow Street
South Townsville QLD 4810
Australia

9.8.6 ABN/ACN

ABN

44140292762 - RPS AUSTRALIA EAST PTY LTD

9.8.7 Organisation Telephone

+617 4724 4244

9.8.8 Organisation E-mail

townsville@rpsgroup.com.au

Referring Party - Declaration

I, Anton Fitzgerald, 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: ...21/10/19.....

Appendix A - Attachments

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

1. Attachment A_Approved Development Plan.pdf
2. Attachment B2_TIA_Applicant Decision_s62_1.pdf
3. Attachment C1_HabitatMap.pdf
4. Attachment C_Ecology Report.pdf
5. Attachment D1_EPBC_PMST_I5IQG8.pdf
6. Attachment D2_Wildlife_online.pdf
7. Attachment_B1_MCU18 0011 Decision Notice.pdf