SUBMISSIONS REPORT

QUORN PARK SOLAR FARM

Premise

PREPARED FOR:

QUORN PARK SOLAR FARM PTY LTD

JANUARY 2020

ENGINEERING ENVIRONMENT AGRICULTURE WATER

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APPENDICES

Introduction

1.1 BACKGROUND

This Submissions Report has been prepared to fulfill the requirements of Clause 85A of the *Environmental Planning and Assessment Regulation 2000.*

The purpose of the Submissions Report is to consider and respond to the issues raised in the public and agency submissions for the Quorn Park Solar Farm (SSD 9097).

Submissions

2.1 PUBLIC SUBMISSIONS

A summary of the submissions received is provided in **Table 2.1** and includes, for each issue raised, the submission numbers that raised this issue, as well as a response.

2.2 AGENCY SUBMISSIONS

2.2.1 CROWN LANDS

No issues raised.

2.2.2 ROADS AND MARITIME SERVICES

RMS do not object to the development. Quorn Park Solar Farm Pty Ltd confirms:

- Heavy vehicle movements associated with the delivery of gravel and fill material for road base and foundations are factored into vehicle movement numbers presented in the Traffic Impact Assessment (refer Appendix G of the EIS). Quorn Park Solar Farm Pty Ltd confirm that these materials would only be sourced from legal suppliers operating with requisite approvals and that haulage routes will be via Henry Parkes Way – McGrath Lane – Back Trundle Road.
- The designated route for access between the site and the State road network for both light and heavy vehicles (HV) will be limited to Henry Parkes Way (State classified road MR61) – McGrath Lane (local road) – Back Trundle Road (local road). The section of Henry Parkes Way between Bogan Street and Bushman Street in the Parkes township will not to be used by HV in connection with the development. Approved routes for HV between Bogan Street and Henry Parkes Way are via either Bushman Street or Hartigan Avenue – Westlime Road.
- The use of local roads specified for the purposes of heavy vehicle haulage will comply with the NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) map and or may be the subject of a Special Heavy Vehicle Permit via the National Heavy Vehicle Regulator (NHVR).
- No more than 30 vehicle movements in each direction at the intersection of Henry Parkes Way and McGrath Lane will occur during any hourly period and coaches will be operated to convey the required number of workers between the site and Parkes.
- A suitable location will be negotiated with Council as to the provision of an adequate parking arrangement for the purposes of operating a coach service to transport employees to and from site.
- Prior to the commencement of any onsite construction work, a rural Basic Right turn treatment (BAR) in accordance with Figure A 28 of *Austroads Guide to Road Design* Part 4 and relevant Roads and Maritime *Supplements to Austroads* will be provided at the proposed intersection of Henry Parkes Way and McGrath Lane. The intersection will be designed and constructed to a 100km/h speed limit and be able to accommodate Type 1 Road Trains and PBS 3a combinations up to 36.5m in length.
- Prior to the commencement of any onsite construction work, a rural Basic Left turn treatment (BAL) in accordance with Part 4A Figure 8.2 of *Austroads Guide to Road Design* Part 4A and relevant Roads and Maritime *Supplements to Austroads* will be provided at the proposed intersection of Henry Parkes Way and McGrath Lane. The intersection will be designed and constructed to a 100km/h speed limit and be able to accommodate Type 1 Road Trains and PBS 3a combinations up to 36.5m in length.

- As part of the intersection works, temporary 'Advance truck warning signs' (W5-22 Size B) with distance plates (W8-5 Size B) will be installed under, 250m from the intersection on both approaches along Henry Parkes Way. These will be removed once construction has been completed.
- Details of any ancillary works will be provided including (but not limited to) line marking, T-intersection and road name signage, drainage transitions, batter slopes, vegetation removal, services relocation, and road reserve widening acquisition.
- McGrath Lane will be bitumen sealed for at least a distance of 100m from Henry Parkes Way to improve skid resistance, suppress dust and debris, and protect the State road sealed shoulder.
- Safe Intersection Sight Distance (SISD) requirements as outlined in *Austroads Guide to Road Design* Part 4A and relevant Roads and Maritime *Supplements to Austroads* will be provided and maintained in both directions at the intersection of Henry Parkes Way with McGrath Lane. The Environmental Impact Statement (EIS) has identified a minimum SISD of 351m for a 110 km/h operating speed at this location (100 km/h speed limit).
- Prior to commencing any works within a classified road, concurrence to the detailed design will be obtained from Roads and Maritime pursuant to Section 138(2) of the *Roads Act 1993*. This includes work within the road reserve associated with the 132kV transmission line. The consent of Parkes Shire Council as the roads authority will also be secured.
- It is understood that Quorn Park Solar Farm Pty Ltd will be required to undertake private financing and construction of works on a State classified road in which Roads and Maritime has a statutory interest. This will include a requirement to enter into a Works Authorisation Deed (WAD) with Roads and Maritime for approval of and construction of the intersection of Henry Parkes Way (MR61).
- The intersection will be designed and constructed to a 100km/h speed limit and be able to accommodate Type 1 Road Trains and PBS 3a combinations up to 36.5m in length.
- A Road Occupancy Licence (ROL) will be secured prior to any works commencing within three (3) metres of the travel lanes of a State classified road, or work that has potential to impact traffic flow such as the use of traffic control devices or signage. A Traffic Control Plan will be prepared by a Roads and Maritime accredited person is to be submitted as part of the ROL application.
- Prior to the commencement of construction works a Traffic Management Plan (TMP) including Driver Code of Conduct will be submitted to and concurrence obtained from Roads and Maritime. The preparation of the TMP will require consultation with Roads and Maritime, Parkes Shire Council, principal contractor(s) and relevant stakeholders.
- The TMP will have regard for cumulative impacts and traffic management arrangements required due to other significant projects in the area, potentially including (but not limited to) the Parkes Bypass, Parkes Solar Farm, Goonumbla Solar Farm, and Parkes Special Activation Precinct.
- The TMP will be reviewed and updated in response to any changes in operating conditions. A copy of the current Driver Code of Conduct will be provided to contractors and employees as a part of the site induction and a copy of the TMP will be made available to Roads and Maritime with any major update.

2.2.3 PARKES SHIRE COUNCIL

Farmland Amenity

Potential amenity related impacts, including visual and acoustic amenity values are assessed in Section 10 and Section 12 of the EIS.

Bushland Buffers/Offsets

- The development footprint is set back ~70 metres from Back Trundle Road, with existing planted vegetation already providing a screening impact for most of this road frontage.

  The planted vegetation along the southern boundary of the development site, extending west from the Quorn Park property access, provides both existing visual screening and constitutes a native

plant community type (PCT 82 Western Grey Box planted woodland) with ecological value. This screening will be retained.

- No screening vegetation is proposed for the boundaries as it is not required for visual impact mitigation for adjoining neighbours and because it would be ineffective for homes further (more than 3.8 km) from, but at higher elevation, than the solar farm.
- Post construction of the solar farm and with the opportunity to see what the solar farm looks like from their properties, Quorn Park Solar Farm Pty Ltd has made a commitment to negotiate in good faith to establish landscape screen plantings on the two properties of the landowner who expressed an interest in this opportunity.

Bushfire Hazard Reduction

The fuel load over the entire property will need to be constantly monitored and fuel load reduction measures will be implemented as required. These measures will be limited to either mechanical slashing or stock (sheep) grazing. Prescriptive specification of the frequency of slashing/grazing is not appropriate as seasonal circumstances will vary (refer Section 20.5.7).

Weeds Management

During construction, weed management principles will include all machinery, equipment and vehicles brought onto a property to be free of soil, seed or plant material and declared noxious weeds would be managed consistent with the *Biosecurity Act 2015* (refer Section 20.4.6).

Post construction, the EIS states (refer Section 20.5.5) that the long-term performance measure for effective groundcover management is to establish a healthy, self-sustaining, noxious weed free groundcover over the solar farm that does not create a fuel hazard. The general health of ground cover across the entire site will be monitored regularly, at times in the season that will provide timely information on weed treatment. Indicators of groundcover conditions in will include, amongst other things, vegetative cover and fuel load as well as the presence of noxious weeds to inform appropriate weed treatment.

Environmental Management Plan

The EIS (refer Section 20.2) confirms that prior to the commencement of construction, an Environmental Management Strategy for the development will be prepared to the satisfaction of the Secretary. This strategy will:

(a) provide the strategic framework for environmental management of the development;

(b) identify the statutory approvals that apply to the development;

(c) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;

(d) describe the procedures that would be implemented to:

- keep the local community and relevant agencies informed about the operation and environmental performance of the development;
- receive, handle, respond to, and record complaints;
- resolve any disputes that may arise;
- respond to any non-compliance;
- respond to emergencies; and

(e) include:

- copies of any plans approved under the conditions of consent; and
- a clear plan depicting all the monitoring to be carried out in relation to the development.

In general terms, the strategy will be to avoid, minimise and manage potential environmental impacts through adoption of mitigation measures incorporated into all phases of the project, including detailed design; construction; operations; and either decommissioning or recommissioning.

The approach for ensuring commitments are acted upon will be to prepare a number of management plans at relevant stages of the development. These will include:

- Construction Environmental Management Plan (CEMP);
- Operations Environmental Management Plan (OEMP); and either
- Decommissioning Management Plan (DMP); or
- Recommissioning Management Plan (RMP).

Referral of these plans to Council will be undertaken.

Access and Traffic

All vehicular movements to the site will be via the Henry Parkes Way, to McGrath Lane then Back Trundle Road.

As per the NSW Roads and Maritimes advice the intersection of Henry Parkes Way and McGrath Lane will be upgraded to the Austroads Standard for a Basic Right Turn (BAR) and Basic Left Turn (BAL) treatment for a B-double vehicle.

An assessment of the local road network which is to be utilised for haulage purposes will be undertaken prior to the commencement of construction and throughout construction work, with the necessary repairs to be undertaken to maintain the road asset.

Following construction, the condition of the Henry Parkes Way Intersection, McGrath Lane and the Back Trundle Road will be audited and any repairs undertaken to ensure the road asset is returned to pre-construction condition.

A temporary (all-weather material) carpark will be provided throughout construction.

Primary Production Lands

It is possible for solar farms to accommodate dual purpose land activities, providing land owners with an opportunity to diversify their land use. While solar farms have relatively large land footprints, not all of the land is actively taken up by solar panels or related infrastructure. As solar modules are tilted and raised on posts to avoid shading, the land beneath the module, as well as unshaded land between rows, is still available for plant growth, allowing for agricultural activities such as grazing.

Grazing of livestock within solar farms is the most popular dual use option, especially since this practice has the additional benefit of controlling vegetation growth. It has been reported that the presence of solar modules does not affect stock density, and provides shelter to grazing livestock (https://www.ecogeneration.com.au/solar-farms-land-use-and-the-rise-of-solar-sharing/).

It is understood that the existing Parkes Solar Farm does, under an arrangement with a neighbouring farmer, currently undertake some grazing activity within the farm. Similarly, the Dubbo Solar Fam is another example of a large-scale solar project developed and operated where sheep do cohabit and contribute to the solar farm's vegetation management program. Details on the practicality and success of this program (including improvements to productive carrying capacity) can be viewed on the following https://www.youtube.com/watch?v=uO3k9EdZjmI#action=share.

While no final decision has been made on grazing at Quorn Park Solar Farm and will be subject to final design details, it is under active consideration.

Stormwater Management

A Soil and Water Management Plan that complies with *Managing Urban Stormwater: Soils and Construction, 4th Edition* (Landcom, 2004) will be prepared prior to construction (refer Section 20.4.3).

Community Contributions

Quorn Park Solar Farm Pty Ltd's consultation with the DPIE during the assessment process established that PSC's Section 94A Contribution Plan 2016 does not apply to the development.

2.2.4 RESOURCES AND GEOSCIENCES

Evidence of consultation with the licence holders of EL7676, EL5870 and EL5323 is provided in **Appendix A**.

2.2.5 HERITAGE NSW

No issues raised.

2.2.6 DEPARTMENT OF PRIMARY INDUSTRIES

Quorn Park Solar Farm Pty Ltd agree to remove all underground cabling, including cabling deeper than 800 mm, on decommissioning.

2.2.7 ENVIRONMENT PROTECTION AUTHORITY

The EIS estimates 3 ML, not 50 ML, of water may be required during construction (refer Section 2.1.3.8).

Site construction activities would be restricted to the Environment Protection Authority's (EPA) recommended standard hours for construction, being Monday to Friday 7.00 am – 6.00 pm; Saturday 8.00 am to 1.00 pm, and with no work on Sunday's or Public Holidays (refer Section 2.1.3.9).

2.2.8 NATURAL RESOURCE ACCESS REGULATOR

A copy of the consultation with Parkes Shire Council (PSC) regarding use of water from the 'brick pit' for construction purposes is provided in **Appendix B**.

Details of water requirements for construction and operation, and supply arrangements, are provided in Section 2.1.3.8 of the EIS.

2.2.9 BIODIVERSITY AND CONSERVATION DIVISION

Biodiversity

The response to the issues raised by the Biodiversity and Conservation Division has been prepared by the Accredited Biobanking Assessor who prepared the Biodiversity Development Assessment Report is provided in **Appendix C**.

Aboriginal Cultural Heritage

As stated in the EIS, Section 7.1.6.2 an Aboriginal Cultural Heritage Management Plan (ACHMP) will be prepared in consultation with the Registered Aboriginal Parties.

The Registered Aboriginal Parties will be provided with the opportunity to oversee the mitigation and protection of Aboriginal objects, through both the Surface Artefact Collection (refer Section 7.1.6.3) and Chance Finds Protocol (refer Section 7.1.6.4).

2.2.10 TRANSGRID

Quorn Park Solar Farm Pty Ltd will continue to consult with TransGrid about the network connection details and Connection Processes Agreement.

2.2.11 FIRE AND RESCUE

Section 14.6 of the EIS details the measures to be implemented to avoid, minimise and be in a position to effectively and safely manage potential risks and hazards associated with the development; including consultation with both the NSW Rural Fire Service (RFS) and Fire and Rescue NSW (FRNSW) during detailed design; during construction; prior to commencement of operations (ie. export of electricity into the grid) and during operations.

As detailed design progresses, equipment suppliers selected, and the solar farm infrastructure layout is refined, it is proposed to consult with both the RFS and FRNSW to provide detail on the technology proposed (eg. the energy storage system to be installed) and the proposed farm layout to allow (if necessary) design refinement to incorporate any specific requirements the RFS/FRNSW may have; and to to provide the requisite information that will be needed to prepare an Emergency Response Plan (ERP).

A Fire Safety Study (FSS) will be prepared for the battery energy storage system in accordance with the requirements of Hazardous Industry Planning Advisory Paper No.2 (HIPAP No.2), and in consultation with and to the satisfaction of FRNSW.

2.2.12 INDUSTRY ASSESSMENTS

Industry Assessments note that given the battery storage system capacity and available buffers to receptors, the development is not precluded on hazards and risk.

Limit of Consent

Quorn Park Solar Farm Pty Ltd accept that the battery storage facility will not exceed a total delivery capacity of 20 MW.

Storage and Handling of Hazardous Materials

The EIS (refer Section 20.4.8) states that the storage, handling and use of any potentially hazardous materials would be in accordance with the WorkCover NSW *Storage and Handling of Dangerous Goods – Code of Practice* (2005).

Quorn Park Solar Farm Pty Ltd accepts Industry Assessment's recommendation that that all chemicals, fuels and oils stored and handled on-site be in accordance with the requirements of all relevant Australian Standards; and the NSW EPA's *Storing and Handling of Liquids: Environmental Protection – Participants Handbook* if the chemicals are liquids: and that in the event of an inconsistency between these requirements, the most stringent requirement prevail to the extent of the inconsistency.

Emergency Plan

Section 14.6.4 of the EIS confirms that prior to operation of the solar farm an Emergency Response Plan will be prepared in consultation with Fire and Rescue NSW and NSW Rural Fire Service; identify the fire risks and controls; include procedures that would be implemented if there is a fire on-site or in the vicinity of the site; and that two copies of the plan would be stored in a prominent *Emergency Information Cabinet* located in a position directly adjacent to the site's main entry. The plan will be prepared to be consistent with the Department's *Hazardous Industry Planning Advisory Paper No. 1, 'Emergency Planning'*.

2.2.13 RURAL FIRE SERVICE

No issues raised. Quorn Park Solar Farm Pty Ltd confirm that the mitigation strategies specified in Section 14.6 of the EIS will be adhered to.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
Prime arable land should not be used for the project	SE-106273, SE-106274, SE-107117, SE-108086, SE-108270, SE-108330, SE-108333, SE-108425, SE-108438, SE-113092, SE-117400, SE-117409, SE-117444, SE-117447, SE-117464, SE-117481, SE-117545, SE-117546, SE-117584, SE-117606, SE-117610, SE-117613, SE-117614, SE-117615, SE-117616, SE-117617, SE-118314	The inherent agricultural value of the land would not be adversely affected by the QPSF. To the contrary, subject to implementation of the mitigation measures prior to and during construction and operations, as proposed, the soil resource can be improved whilst rested from primary production and used as a solar farm. Application of lime will overcome existing acidity constraints. This will provide an enhanced capacity to establish and maintain groundcover. The improvement in soil management following conversion to a solar farm almost certainly will lead to an improvement in soil conditions for plant growth. The roots and fungi associated with diverse and vigorous pasture assist with soil aggregation and carbon sequestration. There are benefits to the soil and pasture from the shading of the solar panels. Near-surface soil daytime temperatures will be reduced in summer, which is likely to result in less water loss via evaporation and a reduction in soil carbon loss as the rate at which soil organic matter decomposes and releases CO_2 declines as soil temperature is lowered. In years with favourable soil moisture conditions in Spring, the shading from panels may slow down plant growth relative to unshaded pasture. However the stored soil water not used at that time would allow pasture to continue to grow strongly in early summer when the soil usually is too dry for optimal plant growth. Night-time rainfall on tilted 'parked' panels would produce runoff from the panels that will create plumes of water that penetrate quickly and deeply into the soil; analogous to soil water entry via drip irrigation lines. The end result would be more efficient water entry and better rainfall storage efficiency as near-surface soil moisture often is lost via evaporation. Deeply penetrating plumes of rainwater from the panel drip lines would be utilized efficiently by pasture plant roots, and there would be stimulation of earthworms and other beneficial soil organisms. Deep water movement and the creation of vertical worm channels will promote root growth into the deep subsoil, where the potential for carbon sequestration is greater than near the surface because of lower soil temperatures and slower decomposition rates for deposited organic matter. With the principal land use and economic return being generation of solar power, there is more flexibility to achieve a complementary and opportunistic grazing regime that protects groundcover and the soil resource. Supporting the above is a research paper published in November 2018 that addresses the environmental effects of solar panels on an unirrigated pasture that often experiences water stress at Oregon State campus in the United States. Changes to the microclimatology, soil moisture, water usage, and biomass productivity due to the presence of solar panels were quantified. The goal of this study was to show that the impacts of these factors should be considered in designing the solar farms to take advantage of potential net gains in agricultural and power production. Microclimatological stations were placed in the solar arrays two years after the solar array was installed. Soil moisture was quantified using neutron probe readings. Significant differences in mean air temperature, relative humidity, wind speed, wind direction, and soil moisture were observed. Areas under PV solar panels maintained higher soil moisture throughout the period of observation. A significant increase in late season biomass was also observed for areas under the PV panels (90% more biomass), and areas under PV panels were significantly more water efficient (328% more efficient) (https://doi.org/10.1371/journal.pone.0203256). Evidence exists that it is possible for solar farms to accommodate dual purpose land activities, providing land owners with an opportunity to diversify their land use. While solar farms have relatively large land footprints, not all of the land is actively taken up by solar panels or related infrastructure. As solar modules are tilted and raised on posts to avoid shading, the land beneath the module, as well as unshaded land between rows, is still available for plant growth, allowing for agricultural activities such as grazing. It is understood that the existing Parkes Solar Farm does, under an arrangement with a neighbouring farmer, currently undertake some grazing activity within the farm. Similarly, the Dubbo Solar Fam is another example of a large-scale solar project developed and operated where sheep do cohabit and contribute to the solar farm's vegetation management program. Details on the practicality and success of this program (including improvements to productive carrying capacity) can be viewed on the following https://www.youtube.com/watch?v=uO3k9EdZjmI#action=share In terms of compromising the agricultural productivity of the Parkes region the following is noted. The Parkes LGA covers a total area of 595,492 ha. Available data from the Australian Bureau of Statistics (ABS) dataset National Regional Profile for Parkes LGA, 2004-2008 provides the total land areas for agricultural commodities in the Parkes LGA from 2006 (most recent data available). The data identifies the total area of holdings for all agricultural land use is 550,573.40 ha, covering 92.46% of the Parkes LGA area; the total area for cereal crops for grain is 164,531.90 ha, covering 27.63% of the Parkes LGA; and the total area for non-cereal broad acre crops for grain is 5,210.50 ha, covering 0.87% of the Parkes LGA. Changing the land use of the development site from an agricultural use (whether it be for 30 years or for ever) is highly unlikely to diminish the productivity of the region in terms of primary production capabilities. In considering the cumulative impact of the built Parkes Solar Farm, and to be built Goonumbla Solar Farm, the DPIE, the DPI – Agriculture and PSC previously determined that the operation of both these solar farms would not compromise the long-term use of the land for agricultural purposes. The DPIE concluded that with an assumed combined size of 625 ha, this is a relatively small size and the combined loss of agricultural cropping land from the two solar farms would result in a negligible reduction in the overall productivity of the region. In this context, it is reasonable to assume that loss of an additional 470 ha of agricultural land from production as a result of the QPSF would not exceed a threshold that would result in a significant reduction in the productivity of the region. Whilst the development removes the land from full primary production potential whilst under a solar farm, as a land use, the solar farm protects and can enhance the value of the soil resource. Performance indicators for validating this will include organic carbon, nutrients, pH and soil structure. Soil samples collected from those same representative sites from which samples will be collected prior to construction and then triennially during the farm's operational life will validate the health of the soil resource and the associated cropping/grazing productivity of the property. The prospect that significant remedial works will be required is remote. As detailed in the soils investigation (refer Appendix E of the EIS), an improvement in the soil resource can be reasonably anticipated. Subject to adoption of appropriate mitigation measures prior to and during construction and operation, it is concluded that the triennial soil testing almost certainly will demonstrate an improvement in soil condition under the solar farm relative to the condition of the soil resource as part of an existing dryland crop production system.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
Would increase Public liability insurance premiums due to potential for fire spreading. May be unable to insure or may have to stop farming as a result.	SE-106273, SE-106274, SE-107117, SE-108330, SE-108333, SE-108421, SE-117400, SE-117409, SE-117545, SE-117568, SE-117612, SE-117615	Quorn Park Solar Farm Pty Ltd will have no contractual relationship with neighbours. Hence, legal advice and insurance industry advice confirm that neighbours' only liability to Quorn Park Solar Farm Pty Ltd would be as a result of their wrongful act or negligence. For example, their starting a fire during a total fire ban. This liability would apply to the neighbours regardless of QPSF being next door. If such a fire was the cause of damage across several rural properties or any other building, factory or facility, the same value of loss could be caused. Hence the QPSF will not change neighbours' risk nor their obligations to comply with the law. Quorn Park Solar Farm Pty Ltd will be comprehensively insured to cover for business interruption and plant and equipment. It will be a requirement of financing the project. Hence damage from a fire or other cause will be covered by the project's own insurance cover. The presence of QPSF will not constrain neighbours from continuing their farming operations, a concern expressed in some submissions. The value of the QPSF is approximately $88.7million, contrary to the $160-168 million raised in some submissions.
Concerned about visual impact and change to rural outlook.	SE-106273, SE-106274, SE-107117, SE-107380, SE-107393, SE-108082, SE-108086, SE-108270, SE-108333, SE-108413, SE-108421, SE-108425, SE-113092, SE-117400, SE-117409, SE-117444, SE-117464, SE-117481, SE-117546, SE-117584, SE-117608, SE-117617	Due to the local topography and existing vegetation, only three neighbours will experience more than a minor visual impact from the curtilage of their residences. For those existing residents at higher elevation located to the east on land zoned Large Lot Residential, the development site is more than 3.8 km distant. Most receptors do not look down on the solar site and will therefore not have significant views of the infrastructure. This analysis, including the two most affected residences who consented to photomontages, is contained in Section 10 of the EIS. During consultation with neighbours, offers were made for vegetation screens to the owners of three residences who felt that the visual impact was excessive. This commitment was made in the EIS and forms part of the proposed development (refer Section 1.2, Table 1.1) and the offer still stands. One submission incorrectly refers to RED offering to install green shade cloth at a residence. This has never been suggested as a screen. It is not possible to screen views from neighbouring properties on which there is no residence. Contrary to a concern in one submission, Section 10.5 of the EIS makes reference to all potential receptors north of Henry Parkes Way. Some submissions compare the potential visual impact of QPSF unfavourably to Goonumbla Solar Farm. However, the QPSF site was specifically selected well away from the highly trafficked Henry Parkes Way on which Goonumbla Solar Farm is situated, to avoid visual impact to the public. If Goonumbla Solar Farm is considered non-intrusive then QPSF will be even less intrusive.
Land values may be affected. Some mention other solar farms without identifying them. One reference is to the proposed Springdale Solar Farm near Yass.	SE-106273, SE-106274, SE-107117, SE-107393, SE-108082, SE-108086, SE-108270, SE-108330, SE-117400, SE-117409, SE-117444, SE-117464, SE-117481, SE-117546, SE-117584, SE-117612	Land values in the vicinity (immediately neighbouring) of the QPSF development site are linked to primary production. The QPSF does not compromise the capacity for these neighbours to continue existing or proposed primary production land uses at this locality. The development does not conflict with the NSW Government's *Right to Farm Policy* for neighbours. Infrastructure is low to the ground and would not compromise aerial agricultural spraying: noting that existing overhead power lines currently traverse the site. Conversely, Quorn Park Solar Farm Pty Ltd does not envisage any unacceptable risk to the solar panels from activities on adjacent farmland such as aerial spraying and dust generation. The existing surrounding land uses are known and the QPSF is not an incompatible land use with a potential to create ongoing land use conflicts. The QPSF is not a threat to continued primary production activities by neighbours. Harvesting sunlight is a passive land use. There would be no impact to any groundwater resource nor any significant change to surface hydrology in terms of modified flow patterns leaving the property. The agricultural value of land for neighbours would not be adversely impacted by compromising continued primary production activities. The development would not impact on the ability of adjoining land to be used for agricultural production, nor would it adversely impact the agricultural productivity of the land upon which the QPSF would be constructed, in the longer term. That is, while infrastructure would affect the stock carrying capacity and area able to be cropped during the operational phase of the development, the development impact is reversible and improvements to the soil resource could be realised. Amenity values such as views, rural lifestyle and proximity to Parkes could also be considered to enhance land value. Amenity values, such as visual impact have been assessed specifically for representative viewpoints close to the development site and the noise impact assessment has determined acoustic amenity values will not be comprised for neighbours. Existing studies in relation to wind farms (taller structures which are generally more visually intrusive on the landscape than a solar farm, but which have the same reversible impacts on agricultural productivity) have found no conclusive evidence to support the claim that wind farms devalue nearby property on the basis of visual impacts (e.g. refer Henderson & Horning Pty Ltd 2006 *Land Value Impact of Wind Farm Development - Crookwell New South Wales* and *OEH 2016 Review of the Impact of Wind Farms on Property Values*). No comparable studies on the effects of a solar farm on local land values in Australia has been found. A Policy Research Project (PRP) undertaken by the School of Public Affairs at the University of Texas in May 2018 (*An Exploration of Property-Value Impacts Near Utility Scale Solar Installations*) found no existing peer-reviewed research providing quantitative evidence of property value impacts associated with utility scale solar facilities. The results of the PRP show *that 'while a majority of survey respondents estimated a value impact of zero, some estimated a negative impact associated with close distances between the home and the facility, and larger facility size. Regardless of these perceptions, geospatial analysis shows that relatively few homes are likely to be impacted*'. There is no evidence to support that property devaluation or reduced marketability would result from the solar farm proposal. However, it is recognized that renewable energy can be a polarising and subjective issue and this may affect purchase decisions by individuals. The Springdale Solar Farm EIS does not provide any evidence of negative impact on land values. Small acreage lots east of No Mistake Lane, zoned R5 Large Lot Residential, and at elevation, are located over 3.8 km from the development site and the visual impact is assessed to be low.
Glare from panels and steel	SE-107393, SE-108421, SE-117400, SE-117409, SE-117481, SE-117568, SE-117584, SE-117608, SE-118306	Solar PV panels are specifically designed to absorb not reflect solar energy. Reflected sunlight is lost energy and represents lost revenue. Glass used in solar PV systems can reflect just 2% of the light received (Spaven, 2012) and in comparative terms this is significantly lower than the reflectivity of other materials like concrete or bare soil. Galvanised steel posts and frames supporting the panels poles are necessary to provide the necessary durability. When exposed to the atmosphere, galvanized steel naturally develops a protective zinc patina on the surface which provides a uniform soft grey appearance. Typically, this patina takes around 6 months to form from installation and exposure to air.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
Insufficient consultation	SE-108391, SE-117464, SE-117546, SE-117568, SE-117615, SE-118306	Quorn Park Solar Farm Pty Ltd is committed to ongoing consultation through the development, construction and operation phases of the QPSF. The approach to consultation undertaken as part of this EIS was to engage directly with all neighbours located within 2 km of the development site boundary. In January 2018 Renewable Energy Developments Pty Ltd (RED), owner of Quorn Park Solar Farm Pty Ltd, wrote to all non-associated landowners within 2 km of the development site. The letter outlined the scale and location of the proposed solar farm, why it had been identified as suitable for a solar farm and the anticipated timeline for approvals. The letter emphasised that community engagement was important to RED and that as the proponent, RED wanted to make sure neighbours were provided with accurate and up to date information about the project and the approval processes involved. RED confirmed it would welcome feedback, value local knowledge and extended an offer to meet, if the landowner would like, to discuss any aspect of the development. Contact details were provided and the invitation included the offer to meet at a time and location that was convenient to the landowner. A second letter was sent to these landowners in September 2018. This letter provided an update on the progress of the project, indicating that site investigations and the various environmental surveys were progressing well with no significant constraints as yet identified. The letter confirmed that the impact assessment process was on schedule and again extended an invitation to meet to discuss the development. Complementing the above, RED contacted and met with interested landowners to discuss the development. These discussions occurred over the phone as well as meeting neighbours who accepted the offer to meet, at their properties. Of the 12 neighbours within 2 km of the development site RED has had discussions with all 11 who have residences north of Henry Parkes Way. The twelfth (R3), located south of Henry Parkes Way, cannot see the site. RED has met with some neighbours on multiple occasions to discuss the project. A complete record of all consultation has been kept. The record is regularly updated with telephone conversations, phone calls and mail correspondence. The record does not agree with the concern of one submission that RED was rude in consultations. The EIS referred to a notice being posted in the Parkes Advocate for the purpose of Aboriginal stakeholder consultation. In fact, the notice was posted in the Parkes Champion Post and one submission identified the typographical error in the EIS. Further consultation will continue through the development, construction and operation phases including open days, mailing details directly to interested stakeholders, public notices and one on one meetings. Community input to the project will be considered as the details are refined.
Increased road traffic and risk to safety on school bus route	SE-106274, SE-108270, SE-108330, SE-108333, SE-117481, SE-117616	Once built and operational the QPSF would generate negligible ongoing traffic. The farm will not be permanently staffed and visitation restricted to periodic routine maintenance and infrequent plant and equipment replacements. It would be during the construction of the farm that traffic movements would be significant. Impacts associated with construction traffic will be managed through a combination of measures. Prior to the commencement of construction the intersection of Henry Parkes Way and McGraths Lane would be upgraded to the satisfaction of the RMS and PSC; and the property entry point off Back Trundle Road would be constructed to the satisfaction of PSC with a Rural Property Access type treatment to cater for the largest vehicle accessing the site. All vehicular traffic associated with the development would travel to and from the site via Henry Parkes Way, McGraths Lane and Back Trundle Road. A Traffic Management Plan (TMP) will also be developed in consultation with the PSC and RMS prior to the commencement of construction. The TMP will identify and provide strategies to manage the impacts of traffic including measures to consult with other road users to minimise impacts. Quorn Park Solar Farm Pty Ltd will consult with school bus operators to schedule construction traffic and haulage deliveries outside of school bus hours.
May create a heat signature or heat island	SE-106273, SE-106274, SE-117409, SE-117481, SE-117612, SE-117617	A study commissioned in April 2018 (Assured Monitoring Group) involved ambient temperature monitoring to identify if a solar farm was contributing to an increase in ambient temperature in the area surrounding the facility. Unattended monitoring was undertaken at distances of 1 m, 10 m, 30 m and 100 m from the outer most edge of an existing solar farm operating in regional Queensland. In undertaking the monitoring, two alternate monitoring instruments were utilised. Each temperature sensor consisted of a calibrated thermocouple connected to a data logging system with measurements set to be taken at 5-minute intervals. The study conclusion was that no statistically significant impact on temperatures in the local area from the solar farm was observed.
Impact of lighting and fencing on solar farm boundary	SE-108333, SE-108391, SE-117464, SE-117481, SE-117568	No lighting is planned on the perimeter fence. Security lighting would be restricted to the co-located substation, battery storage and control room. The only night lighting associated with the QPSF would be this security lighting. Such lighting would be designed and operated to comply with *Australian Standard AS4282 Control of Obtrusive Effects of Outdoor Lighting*. In so doing there would be negligible light spill above the horizontal plane and no impacts to adjoining properties.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
Panels may affect runoff, watercourses and water flow to neighbours	SE-106273, SE-108270, SE-108330, SE-108333, SE-117610	The flat topography of the site will permit construction of the solar farm without the need for significant earthworks or any fundamental changes to landform, all to be undertaken in a very low risk environment in terms of erosion and sediment control. Quorn Park Solar Farm Pty Ltd will not create or enlarge any dams which would affect water flow to neighbours. Localised surface flow drainage patterns would not be impacted and the proposed development footprint provides buffers to the drainage lines based on avoidance and/or minimisation of significant impact. Specifically, the following considerations have informed the delineation of the development footprint. The constructed drainage channel passing through the north western corner of the site will be avoided. Avoidance of this corridor (as well as the drainage line below the farm dam that is fed by it) will provide continuity of existing flow paths leaving the site. A 40 m buffer from top of bank has been provided for the Strahler 1st order drainage line in the south east corner of the site, the Strahler 3rd order drainage line running along the southern boundary of the development site and the Strahler 3rd order drainage line located in the north west corner of the site. Provision of these buffers avoids disturbance to or impacts on drainage flow paths leaving the site. The solar farm would not create vast areas of impermeable surface that would generate significant runoff. The solar farm could result in be more efficient water entry and better rainfall storage efficiency. Internal access roads and compounds around the substation and energy storage system would be unsealed gravel and permit infiltration. Solar panels (whilst impermeable) do not create an impermeable surface as the ground underneath the solar panels would be grass. Stormwater can drain freely from the panels onto the underlying ground which remains impermeable, with the columns supporting the panels increasing the catchment roughness. A study by Cook and McCuen (2013) *Hydrologic Response of Solar Farms* in the Journal of Hydrologic Engineering concluded that providing the underlying ground remains permeable, solar panels do not have a significant effect on surface runoff volumes, peak flows or time to peak.
Dust from construction traffic	SE-108391, SE-117400, SE-117584, SE-117612	These potential impacts can be readily managed through the adoption of suitable mitigation measures during the construction effort. Such measures would include restricting vehicle movements and ground disturbance to the minimum area that is safely practicable; undertaking dust suppression through strategic watering, as required and, if necessary, temporary cessation of some works during excessively dry and windy conditions.
Inverter noise impact on residences and stock.	SE-108391, SE-117464, SE-117568, SE-117612	The noise impact assessment determined that there are portions of the development site within which inverter stations and the battery storage system should not be located in order to protect acoustic amenity values for neighbours. These buffers have been adopted and the relevant exclusion zones incorporated into the proposed development footprint (refer Figure 6 of EIS). Opportunistic grazing by sheep within existing solar farms indicates adverse impacts on stock as a result of noise is not an issue.
Impact on flora and fauna	SE-108425, SE-113092, SE-117612	Impacts of flora and fauna have been considered and extensively assessed in accordance with legislative requirements and documented in the Biodiversity Development Assessment Report presented as Appendix C in the EIS.
Alternative sites not considered	SE-117546, SE-118306, SE-118314	The QPSF site was selected for development after an extensive screening process by Quorn Park Solar Farm Pty Ltd. Many alternative sites were considered in other regions of New South Wales including in other proposed Renewable Energy Zones. It was selected because it offers a number of key attributes which provide optimise the solar farm configuration and deliver lower cost energy with less losses. It is close to the transmission network which has sufficient capacity for the output of the farm, provides a lower cost grid connection and avoids the need to build any significant new overhead lines or secure extensive easements from multiple landowners not associated with the development. Availability of network capacity has a significant bearing on the suitability of this site compared to alternatives. The solar resource at the Quorn Park locality is highly suitable with enough cloud-free days over the year to generate significant energy. Importantly, the development of a solar farm at this location is a permissible development, and given surrounding topography, scarce existing vegetation and remote location of most neighbours' dwellings, would have a very localised and limited impact on visual amenity values. The size of the development site itself has provided the ability to avoid significant ecological impacts, and the flat terrain will enable the farm to be constructed without significant earthworks. Finally, the development site is secure from future residential encroachment. The site and surrounding lands are zoned RU1 Primary Production. Pursuant to the *Parkes Local Environmental Plan 2012* (LEP). The minimum lot size for the purposes of subdivision or dwelling development in the RU1 zone is 400 hectares.
Concerned about construction noise impact	SE-117464, SE-117546, SE-117584	For the purposes of predicting impacts associated with noise emissions from the development site on nearby sensitive receptors, noise modelling of the sources was completed using the proprietary software Cadna. Cadna incorporates the influence of meteorology, terrain, ground type and air absorption in addition to source characteristics to predict noise impacts at receptor locations. All predictions were undertaken in accordance with ISO Standard 9613 (1996) *Acoustics - Attenuation of sound during propagation outdoors*. The model is utilised to assess the potential noise emissions from the site under a range of operating scenarios and meteorological conditions. The noise modelling also allows investigation of possible noise management solutions, in the event that non-compliance with the assessment criterion is predicted. For the construction phase of the QPSF, predictive noise modelling has considered the range of potential impacts, noting that noise generating activities will progressively move across the site. As such, the highest noise levels would not be expected to be experienced at a single receptor for more than one day while construction equipment (eg. piling drill rig) is at the closest point to the receptor. The results of this modelling indicate compliance with the noise management levels for both standard construction hours (40 dBA) and outside construction hours (35 dBA) for all neighbours.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
Battery storage is an environmental hazard	SE-107117, SE-117545, SE-117617	An energy storage system introduces potential hazards. Different battery storage systems have different design features and attributes built into their technology to prevent, minimise and contain potentially hazardous incidents. Suppliers of proprietary technology typically also have documented Emergency Response Guides. Battery subassemblies are made up of rechargeable sealed lithium-ion cells similar to rechargeable batteries in consumer products. Cells are individually, hermetically sealed cylinders and contain lithium-ion electrodes and electrolyte. The cells do not contain metallic lithium. As a battery is a source of energy an internal or external short circuit can cause overheating and provide an ignition source resulting in fire. Under normal conditions of use, the electrode materials and electrolyte they contain are not exposed, provided battery integrity is maintained and seals remain intact. Risk of exposure may occur only in cases of abuse (mechanical, thermal, electrical). Potentially hazardous incidents include leaked battery pack coolant; leaked refrigerant; leaked cell electrolyte; rapid heating of individual cells due to exothermic reaction of constituent materials (cell thermal runaway), venting of cells and fire. Cell vent gases would be hot and likely flammable and could ignite on contact with an ignition source such as an open flame, spark or sufficiently heated surface. Safeguards are built into the system design to keep the batteries safe and secure from abuse conditions. For example, all of the constituent component battery cells are sealed within metal enclosures, and these enclosures are then installed in a rigid external metal enclosure which is isolated from high voltage. Thermal control systems maintain battery cells at acceptable temperatures.
Supports renewables and solar	SE-107380, SE-108438, SE-118306	Noted.
Project may not employ many during operations, no more than the farm it replaces	SE-108333, SE-117464, SE-117615	The QPSF will operate independently, and no permanent employees will be stationed on-site. The farm will be monitored remotely from an off-site location and apart from a routine maintenance program, operators will only visit the farm when responding to any performance issues (ie. where actual output measured by the monitoring system deviates from generation forecasts and other key performance metrics). Activities at the farm that will be part of a routine maintenance program will generally be limited to equipment, cabling, substation and communications system inspection and maintenance; fence, access road and control room management; vegetation (fuel load), weed and pest management; possible solar PV module washing (on an as-needed basis); security monitoring and communicating with customers, transmission and distribution network operators, Australian Energy Market Operator (AEMO), Parkes Shire Council, neighbours and other stakeholders. The farm will generate 2-3 full time equivalent positions over the life of the development.
Developers will not control weeds and pests	SE-108333, SE-117612	As an owner/occupier of land in a rural environment, the owners of the QPSF will, like their neighbours, have responsibilities to manage the land appropriately. In particular this will include obligations to manage any noxious weeds and pests and to control fuel loads. Management techniques for ensuring these outcomes include periodic treatment for noxious and broad leave weeds as required. An Operations Environmental Management Plan (OEMP) will also be prepared for approval prior to the QPSF commencing operation. The OEMP will include procedures, reporting, and the allocation of responsibilities designed to minimise environmental impacts. The OEMP will document the environmental procedures and controls that would be implemented to operate the solar farm as a responsible rural landowner. The OEMP would comprise various sub-plans detailing the specific mitigation measures that would be implemented to avoid and manage potential environmental impacts and minimise risks. These would include plans covering land management, specifically relating to fuel loads, noxious weed control and soil health. The long-term performance measure is to establish a healthy, self-sustaining, noxious weed free groundcover over the entire site that does not create a fuel hazard. The general health of ground cover across the entire site will be monitored regularly, at times in the season that will provide timely information on weed treatment. Indicators of groundcover conditions will include vegetative cover and fuel load; whether there are noxious weeds present; whether there are any areas denuded of groundcover; and whether there are any signs of localised erosion. This information will be used to inform decisions about the need, timing and location for any impending fuel reduction or weed treatment. Typically, an OEMP for a utility scale solar farm in New South Wales must be a publicly available document.
Concerned the site will not be returned to arable land at end of the solar plant's life	SE-117464, SE-117481	One year prior to the commencement of decommissioning activities a Decommissioning Management Plan (DMP) would be prepared and submitted for approval by DIPE. The DMP would include the following key elements: rehabilitation strategies and objectives; rehabilitation design criteria; productivity targets to ensure the re-establishment of agricultural production (if agreed as the final land use); expected timeline for rehabilitation works; and mitigation measures and monitoring. All above ground infrastructure will be removed and decommissioning would include disconnection of the solar farm from the grid; removal of PV modules, mounting posts, mounting frames and trackers; removal of all buildings and equipment; removal of underground cabling; removal of fencing, unless agreed otherwise with the landholder, and site rehabilitation to render the site fit for resumption of agricultural use. Following infrastructure removal the following is expected to be undertaken to re-instate the site suitable for agricultural activities: removal of gravel from internal tracks and roads, unless requested otherwise by the landholder; removal of any concrete and foundations; deep ripping of any compacted areas to allow for the infiltration of water and to allow for cropping activities; re-establishment of groundcover in any areas where cropping is not to occur to ensure the stabilisation of soil resources and establishment of suitable erosion and sediment control measures (if required). Soil samples would be collected from those same representative sites from which samples will be collected prior to construction and then triennially during the farm's operational life to validate the health of the soil resource and the associated cropping/grazing productivity of the property.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
May affect ability to sell subdivided small acreage under development	SE-117447	The development site and surrounding lands are zoned RU1 Primary Production. Pursuant to the *Parkes Local Environmental Plan 2012* the minimum lot size for the purposes of subdivision or dwelling development in the RU1 zone is 400 hectares. Refer Section 21.2 of EIS. Small acreage subdivision surrounding the development site is not permissible. Existing subdivided small acreage lots are located in excess of 3.8 km to the east, on land zoned R5 Large Lot Residential. Notwithstanding these lots are located at elevation, with a westerly aspect, the buffer of 3.8 km would mitigate the proposed solar farm's impact from this area.
Availability of water for construction and cleaning	SE-106273, SE-117464	Water demand during construction would be limited to that required for dust mitigation and/or moisture conditioning of material, as well as a potable supply for construction staff. The former will be sourced from a legal supply source, including farm dams on-site; commercial water suppliers; or from PSC's 'brick pit', all subject to availability. Quorn Park Solar Farm Pty Ltd will not create or enlarge any dams which would affect water flow to neighbours. The extent, frequency and duration in which climatic conditions will determine the need for strategic watering is speculative. It is also noted that there is a suite of mitigation measures that can and would be employed to manage dust that do not involve watering. These include scheduling of particular works outside the summer period, limiting construction activity to localised areas across the site, restricting vehicle movements and speeds during dry and windy conditions and the possible use of polymer emulsion type applications which, while still requiring water, only need to be applied to road surfaces every 6 months. The availability of water will be a constraint that the EPC contractor will have to work within. Once operational, the solar PV modules may be periodically washed to remove excess dirt, dust or other matter including bird droppings. The frequency of any washing will depend on monitoring the actual performance of the farm. Quorn Park Solar Farm Pty Ltd note that experience indicates washing may be limited to occasional events such as following severe dust storms and in many applications cleaning is not required at all due to the anti-static properties of the modules and normal precipitation. Based on experience overseas the 80 MW_{AC} QPSF, with approximately 250,000 PV panels would require approximately 116 kL to wash. Suitable quality water would be purchased from PSC for this purpose.
Parkes substation is already at capacity	SE-107117	Quorn Park Solar Farm Pty Ltd continues to consult with TransGrid and Essential Energy about the network connection details. TransGrid's 132 kV Parkes substation is located on a strong part of the High Voltage transmission network and has significant capacity to accommodate new generation. TransGrid has published information on the capacity to connect at various substations on their network. They identified Parkes as one of eight opportunities. At 132 kV, TransGrid forecasts 260 MW-390 MW capacity to connect and at 66 kV, TransGrid forecasts 140 MW capacity to connect. This capacity can accommodate QPSF. The QPSF has been sized to take advantage of available capacity at 132 kV. Network analysis takes into account the Parkes Solar Farm and Goonumbla Solar Farm also in the region. Network studies are currently underway to design the connection and to identify the technical requirements for the operation of the farm. These studies may have some impact on the final capacity of the QPSF. Quorn Park Solar Farm Pty Ltd expects these studies will conclude that 80 MW_{AC} is capable of being connected
Concern that proponent will not have funds to pay for removal and disposal at end of life	SE-117568	If the decision in 30 years is to decommission the solar farm the land will be restored to a condition that permits the resumption of agricultural use. The owner of the QPSF will have an obligation under the land agreement to decommission the solar facility at the end of its operating life and to reinstate the land to productive agricultural use. Failure to do so would be a breach of the agreement and the landowner would have legal recourse to ensure decommissioning is carried out. The landowner also has a financial guarantee to ensure the project owner carries out its decommissioning obligations should the facility be abandoned. In the event of abandonment, the residual value of the steel, copper cabling, solar modules and electrical equipment would far exceed the cost of decommissioning and the landowner would therefore be assured of the funds required to carry it out.
Battery impact on school children catching bus	SE-117612	Whilst subject to detailed design and equipment selection, the battery storage system is likely to be located in close proximity to the substation and control room in order to share common infrastructure. Figure 6 in the EIS identifies an indicative area within the development footprint within which the substation and battery storage will be located. However, Quorn Park Solar Farm Pty Ltd will avoid the land west of the 132kV Overhead Power Line in the south western corner of the site for locating the substation, battery storage system or control room. Accordingly, the substation, battery storage system and control room will be located at least 300 m from the entrance to the property on 1094 Back Trundle Road where this is a bus stop. The revised development footprint showing exclusion of this part of the development site from the indicative substation location is provided in **Appendix D**.
Battery preliminary risk screening should be with respect to IAW SEPP 33	SE-106273,	A risk screening of the development was completed in accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* and *Applying SEPP 33* (DoP, 2011) and concluded that the QPSF is not a potentially hazardous development (refer Section 14.2 of EIS). The dangerous goods to be stored at QPSF will be limited to Lithium-ion batteries (Class 9) and compressed fire suppression gas (Class 2.2). Both Class 9 and Class 2.2 dangerous goods are excluded from the risk screening requirement. The reasons for their exclusion are: Class 2.2 — are non-flammable, non-toxic gases and are not considered to be potentially hazardous with respect to off-site risk. Class 9 — are miscellaneous dangerous goods, which the Guidelines state pose little threat to people or property.
Details of the proposed energy storage system or equipment to provide solar energy not provided	SE-117464	Specific suppliers and models of the battery storage system and solar modules have not been decided and will be subject to the generally accepted engineering and procurement processes which apply to all infrastructure projects. However, the impacts of the storage system, solar modules and supporting infrastructure have been comprehensively assessed in the EIS considering worst case scenarios in each case.
Concern about QPSF's financial status	SE-117546	Quorn Park Solar Farm Pty Ltd is an Australian company wholly owned by RED, which develops utility scale solar plants. The company's leadership has extensive experience in delivering solar and wind energy projects to regional communities in Australia and Europe and has been operating in the industry since 1990. RED has a co-development agreement with one of the world's largest owners of solar farms and windfarms. They already operate one of Australia's largest solar farms in South Australia.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
Bond should be set up to ensure all contractors are paid	SE-117420	The contractual arrangements to engineer, procure and construct the solar farm have yet to be finalised. Although several potential contractors are under consideration, none has been finally selected. They will be selected after project approvals have been obtained. It is highly likely that local and regional subcontractors will be involved in construction. Industry standard contract arrangements will apply, and these generally include bonds or other forms of guarantees between the parties.
Objects to Orange Grove Solar Farm.	SE-117443	This objection does not apply to Quorn Park Solar Farm.
Concern about location of substation and need for a buffer	SE-117612	Quorn Park Solar Farm Pty Ltd will avoid the land west of the 132kV Overhead Power Line in the south western corner of the site for locating the substation, battery storage system or control room. Accordingly, the substation, battery storage system and control room will be located at least 300 m from the entrance to the property on 1094 Back Trundle Road. Construction of the substation will not take place in any watercourse. The revised development footprint showing exclusion of this part of the development site from the indicative substation location is provided in **Appendix D**.
Grid lines crossing Back Trundle Road	SE-117612	While the exact works required to facilitate this connection will be finalised through detailed design and further consultations with Essential Energy and TransGrid, they will involve a new double circuit 132 kV transmission line (either overhead or underground) from Essential Energy's 132 kV transmission line to connect with the QPSF site substation. The design of the crossing of Back Trundle Road will ensure minimum requisite height clearances are provided - consistent with the standards applied at all locations where transmission lines pass over a public road.
Will existing infrastructure on Quorn Park be knocked down?	SE-117612	The existing derelict house, sheds and silos could conceivably be knocked down or relocated, but possibly not. This will be determined during detailed design.
Why do solar panels go all way to boundary?	SE-117612	The development site footprint as shown in Figure 6 in the EIS represents the maximum buildable footprint of the solar farm infrastructure. Within this footprint it will be necessary to provide an external security fence, driveable area for maintenance vehicles and an asset protection zone for fire protection purposes of at least 10 metres width. The final location of the security fence is not yet determined and may be inside the current boundary fenceline. The development footprint has been identified to the boundary to provide capacity to accommodate these features and this area has been assessed to ensure a robust and conservative assessment. To be clear, the solar panels will not go all the way to the boundary.
Where is fire access and are their tree buffer zones needed?	SE-117612	In order to minimise risk, the final solar farm layout will be designed to provide a defendable space around infrastructure; ensure that appropriate access, egress and manoeuvrability within the solar farm is provided for first responders; provide for ongoing management and maintenance of bush fire protection measures and ensure that services are adequate to meet the needs of firefighters. As detailed design progresses, equipment suppliers selected, and the solar farm infrastructure layout is refined, it is proposed to consult with both the RFS and FRNSW. The intention of this consultation will be twofold. 1. To provide detail on the technology proposed, including the energy storage system to be installed, and the proposed solar farm layout to allow as necessary any refinements to incorporate specific requirements the RFS or FRNSW may have, and 2. To provide the requisite information that will be needed to prepare an Emergency Response Plan (ERP). These consultations will establish the need and location of any additional access points beyond the main solar farm access located off Back Trundle Road at the existing entrance to the Quorn Park property. Prior to construction commencing contact will be made with the Local Brigade of the RFS and details about the construction schedule, contact numbers and site access arrangements will be shared.
Potential contamination of water runoff?	SE-117612	Potential impacts to water quality are largely restricted to the construction phase and can be readily managed through installation and maintenance of standard erosion and sedimentation control measures. Prior to works commencing a Construction Environmental Management Plan (CEMP) will be prepared. The CEMP will include a soil and water sub-plan that will provide detail on the erosion and sediment controls that will be employed throughout the construction phase. Erosion and sedimentation impacts associated with construction can be minimised by undertaking works in accordance with provisions of the *Managing Urban Stormwater: Soils and Construction* series, in particular: *Managing Urban Stormwater: Soils and Construction*, Volume 1, 4th edition (Landcom 2004), known as 'the Blue Book'; *Volume 2A Installation of Services* (DECC, 2008a) and *Volume 2C Unsealed Roads* (DECC, 2008b). Post-construction, as a land use, a solar farm presents less potential risk to water quality than conventional primary production. With returns driven by passive harvesting of sunlight as opposed to primary production, ground disturbance will be significantly less, there will be less need for fertiliser inputs, there can be relatively less grazing pressure, and there would be less herbicide/pesticide/fungicide applications compared to dryland cropping.
Potential contamination of soil?	SE-117615	The following measures would be implemented during construction to minimise the potential for any contamination of soil. • Storage, handling and use of any potentially hazardous materials, for example fuel, would be in accordance with the WorkCover NSW *Guideline for Storage and Handling of Dangerous Goods* (2005). • Activities with the potential for spills, for example from refuelling of plant and equipment, would not be undertaken within 50 m of any of the farm dams and a suitable spill response and containment kit will be available on site whenever and wherever this type of higher risk activity is undertaken. All solar farm infrastructure containing liquids such as transformer oil, battery pack coolant and battery cell electrolyte, would be fully bunded.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
Provide justification for 2km radius for visual impact	SE-118219	Two kilometres was selected as the buffer for targeted community consultation on the basis that the *Large Scale Solar Energy Guideline* (December 2018) identifies potentially affected landholders as '*likely to include owners and occupiers of adjacent land and those in the vicinity of the development site*'. The EIS also acknowledges that views from the higher elevation east and north east receptors extend to 4 km to the development site. However, for these landowners at higher elevation, namely existing and potential future residents located to the east on land zoned Large Lot Residential, the development site at its closest is over 3.8 km distance. At this distance, whilst the solar farm will be visible, it will not dominate the landscape. The visual impact assessment in the EIS (refer Section 10.6.2) notes that while the presence of the solar farm would be more visible from this higher area to the east, the farm would sit in the background, low in the landscape and occupy only a portion of the open plains when looking west. The character of the rural landscape in the foreground and middle ground from these areas would be retained. The existing landform of the development site would also be retained, and pasture established under the panels.
What are the guideline criteria for noise impact?	SE-118219	Different criteria apply to construction activity, ongoing operational impacts, and road traffic noise. Detail on these criteria and how they are derived, is provided in Appendix F, Sections 3.2, 4.1 and 5.2 respectively.
Will fire management infrastructure be built on site?	SE-118219	Yes. Measures to be implemented to avoid, minimise and be in a position to effectively and safely manage potential risks and hazards associated with the development include consultation with both the NSW Rural Fire Service (RFS) and Fire and Rescue NSW (FRNSW) during detailed design; during construction; prior to commencement of operations (ie. export of electricity into the grid) and during operations. As detailed design progresses, equipment suppliers selected, and the solar farm infrastructure layout is refined, it is proposed to consult with both the RFS and FRNSW to incorporate any specific requirements the RFS and FRNSW may have, and to ensure that services are adequate to meet the needs of firefighters.
Final layout is yet to be determined. Will noise and visual impacts be reassessed if there is a change to design?	SE-118219	Noise and visual impacts would only be reassessed if any change is proposed to the solar farm design which would conflict with either the requisite noise buffers for the inverter stations and battery storage or the assumptions underpinning the visual impact assessment. The 'no go' areas for the inverter stations and battery storage are based on the noise emission signatures of these equipment provided by their suppliers and shown on the proposed development footprint (Figure 6. The assumptions underpinning the visual impact assessment are detailed in Section 10.1 of the EIS and reproduced below. Infrastructure associated with the proposed solar farm would comprise the following elements with dimensions provided by equipment suppliers and design engineers: ○ either single axis tracking or fixed tilt solar arrays with ~250,000 panels mounted approximately 1.4 m off the ground on galvanised frames and posts with the top edge of the panel up to 4 m above ground level at full tilt; ○ 19 inverter stations interspersed throughout the arrays each of a 40 foot shipping container size with a height of approximately 2.5 m; ○ a substation compound (approximately 40 m x 40 m) containing a 132kV/33kV transformer, electrical switch gear and protection equipment, as well as supporting structures for overhead cabling up to 14 m in height; ○ an energy storage system consisting of either banks of Lithium-ion batteries with associated ancillary inverters, transformers and air conditioning equipment or containerised battery modules; occupying a footprint of no more than 120 m x 50 m; ○ a control room building (5 m wide x 3.5 m deep x 2.7 m high); ○ chain wire site perimeter fencing (2.4 metre-high); ○ gravel internal maintenance access tracks and vehicle turnaround areas; and ○ a new double circuit 132 kV transmission line (either overhead and mounted on mono poles approximately 28 m high or underground) to connect with Essential Energy's 132 kV transmission line located approximately 700 m west of the site.
Provide an explanation of how the assessment has defined buffer of development site Boundary?	SE-118219	The 2 km buffer has been provided using GIS software which adopts the size and shape of the development site for the solar farm (ie. Lot 508) and then provides an equidistant 2 km buffer from all points from the lot boundary.
Where will the construction laydown areas be located?	SE-118219	Micro-siting of construction laydown areas will be identified during detailed design and in consultation with the contractor engaged to build the QPSF. These laydown areas will be located in strategically suitable locations somewhere within the area identified as the Development Footprint (refer Figure 6 of the EIS). Their impact has been considered in the noise, dust suppression, visual impact and haulage sections of the EIS.
How will the tracks be created to create a durable dust minimising surface?	SE-118219	Tracks will be constructed by compaction of a gravel road base with designs and construction supervision provided by registered design engineers.
Who will be the authority that will deem that construction infrastructure disturbance areas are "made good through ripping and establishing a groundcover".	SE-118219	Quorn Park Solar Farm Pty Ltd will have the responsibility to ensure this occurs. The compliance section of the Department of Planning, Industry and Environment will have the regulatory authority to ensure this construction restoration task is effectively completed.

Table 2.1 Response to Public Submissions

Issue	Submission Number	Response
Where will labour be sourced and accommodated?	SE-118219	At its peak construction will require up to 100 staff. Roles will vary from highly skilled electricians able to work with Low Voltage and High Voltage installations to general labourers. Wherever possible labour will be sourced locally. Parkes is a prosperous and growing regional service centre with several large projects planned and annual events that can readily accommodate the QPSF construction workforce. For example, Parkes accommodates 28,000 visitors for the annual Elvis Festival.
Will more infrastructure be required for grid connection?	SE-118219	A description of requisite infrastructure to facilitate grid connection is provided in Table 1.1 of the EIS and includes a new double circuit 132 kV transmission line, either overhead and mounted on mono poles approximately 28 m high or underground, to connect with Essential Energy's 132 kV transmission line located approximately 700 m west of the site. Some of these poles will require stays. This line will run to the QPSF substation. There is no other infrastructure expected to be required for grid connection.
Is there a documented agreement with PSC regarding the supply of water? Does this conflict with the requirements of town user's water in drought conditions?	SE-118219	There is no documented agreement with PSC at this planning stage. PSC typically has a supply of non-potable water available at the 'brick pit', a large flooded abandoned brick pit with relatively reliable recharge rates. Consultation has confirmed that PSC is amenable to allowing access to this water for construction of the QPSF as for all other commercial users, contingent on an adequate supply of this water being available when construction starts. This does not conflict with water for town supply.
Who will be the approving authority for outside hours work?	SE-118219	Site construction activities would be restricted to the Environment Protection Authority's (EPA) recommended standard hours for construction, being Monday to Friday 7.00 am – 6.00 pm; Saturday 8.00 am to 1.00 pm and with no work on Sunday's or Public Holidays.
Are maintenance activities being conducted at night time (when there is no energy being generated) to avoid safety risks?	SE-118219	A presence at the solar farm at night would be restricted to an emergency, where works are required for reasons of safety and risk management. All routine operational maintenance activities undertaken at the QPSF would be restricted to daytime hours as defined by the EPA's Noise Policy for Industry, being the period from 7 am to 6 pm, Monday to Saturday and 8.00 am to 6.00 pm on Sundays and Public Holidays.
Define "interested landowners"	SE-118219	The descriptor 'interested landowners' refers to those landowners located within 2 km of the site who, in response to Quorn Park Solar Farm Pty Ltd making contact by phone, indicated they would be interested to meet and/or have further discussions with Quorn Park Solar Farm Pty Ltd.
Why are not all the issues raised by "interested landowners" addressed? The only two items mentioned in this section relates to screen planting and traffic.	SE-118219	The issues raised during consultation with neighbours are addressed throughout the EIS.
Provide evidence of how this project will not impact on future or neighbouring properties sub dividing for rural acreage living. Have future subdivisions been assessed in the visual impact?	SE-118219	The development site and surrounding lands are zoned RU1 Primary Production. Pursuant to the *Parkes Local Environmental Plan 2012* the minimum lot size for the purposes of subdivision or dwelling development in the RU1 zone is 400 hectares. Impact has been considered for all current neighbouring residences throughout the EIS. Refer Section 21.2 of EIS.
Was there any background noise monitoring conducted to verify the existing noise environment? If it wasn't conducted provide a justification for this.	SE-118219	No background monitoring was undertaken. Instead, consistent with the *Noise Policy for Industry,* a minimum background level was adopted to provide the most stringent of intrusiveness criteria and conservative basis for assessment. The justification for this is provided in Appendix F, Section 4.1.2.

References

Dr Varun Rai, Project Director (May 2018) *An Exploration of Property-Value Impacts Near Utility Scale Solar Installations*, Policy Research Project, University of Texas

Henderson & Horning (February 2006) *Land Value Impact of Wind Farm Development*

Urbris Pty Ltd (July 2016) *Review of the Impact of Wind Farms on Property Values*

Appendix A

TITLE HOLDER CONSULTATION

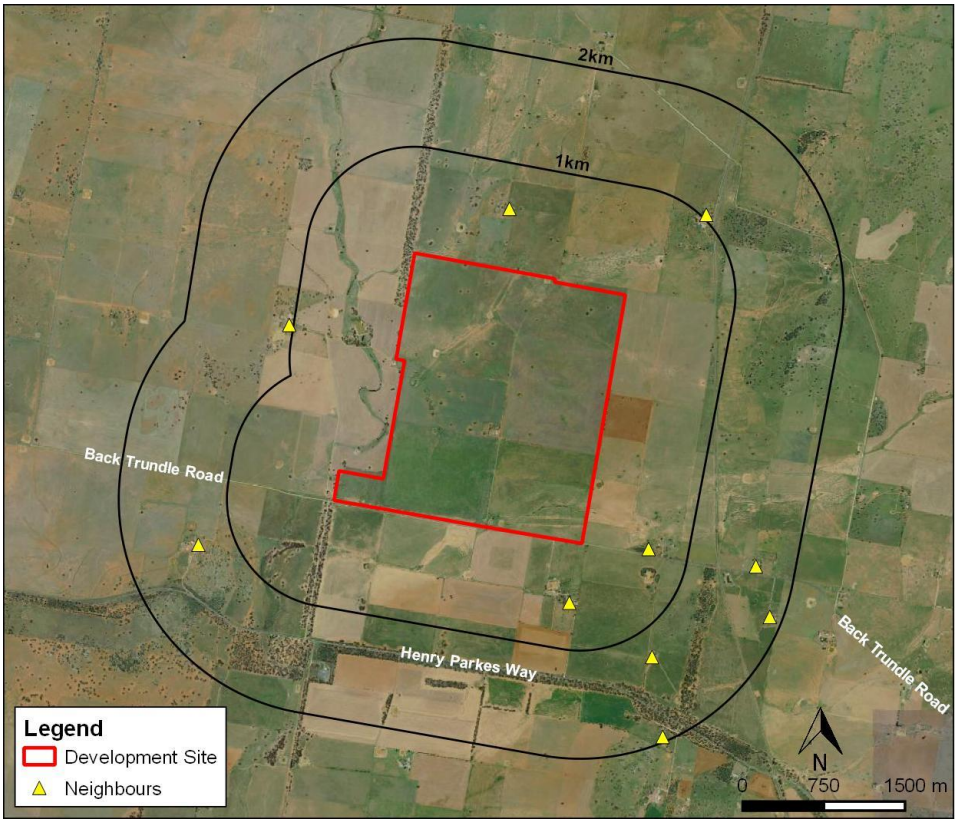
RENEWABLE ENERGY DEVELOPMENTS RED

PO BOX 363 Lindfield NSW 2070
D +61 (0) 2 9416 1001
M +61 (0) 414 942733
E colin@redpl.com.au

General Manager
Modeling Resources Pty Ltd
PO Box 785 West Perth
WA 6872
17th December 2019

Dear Sir/ Madam,

We have written to you previously about our proposed Quorn Park Solar Farm in the Parkes area. The site is on Lot 508/750152 as shown below and Modeling Resources Pty Ltd's exploration licence EL7676 overlaps part of the property.



The project is State Significant and an application for development approval was made to the Department of Planning, Industry and Environment in October. The application has been on public exhibition until earlier this month. The application may be found here: https://www.planningportal.nsw.gov.au/major-projects We have not received any correspondence from you following exhibition. I would like to offer the opportunity for you to comment on the project if you wish.

If you would like to speak to me, please contact me on 0414 942733 or by email at colin@redpl.com.au to arrange a convenient time for you. We are committed to providing you with up to date information as the project progresses. I am happy to be contacted at any time to discuss its status.

Yours sincerely,

Colin Liebmann, Director

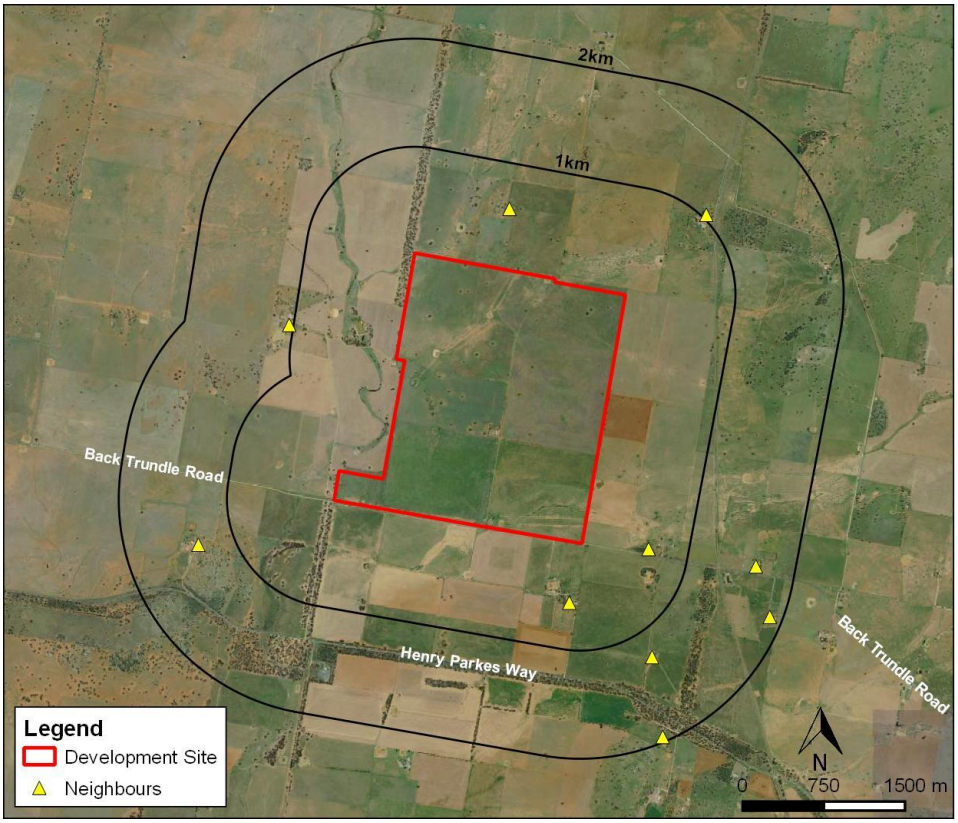
RENEWABLE ENERGY DEVELOPMENTS RED

PO BOX 363 Lindfield NSW 2070
D +61 (0) 2 9416 1001
M +61 (0) 414 942733
E colin@redpl.com.au

General Manager
CMOC Mining Pty Ltd
PO Box 995
Parkes, NSW 2870
17th December 2019

Dear Sir/ Madam,

We have written to you previously about our proposed Quorn Park Solar Farm in the Parkes area. We have also spoken on several occasions to your senior commercial managers about the project. The site is on Lot 508/750152 as shown below and CMOC Mining Pty Ltd's exploration licence EL5323 overlaps part of the property.



The project is State Significant and an application for development approval was made to the Department of Planning, Industry and Environment in October. The application has been on public exhibition until earlier this month. The application may be found here: https://www.planningportal.nsw.gov.au/major-projects We have not received any correspondence from CMOC following exhibition. I would like to offer the opportunity for you to comment on the project if you wish.

If you would like us to meet or call you, please contact me on 0414 942733 or by email at colin@redpl.com.au to arrange a convenient time for you. We are committed to providing you with up to date information as the project progresses. I am happy to be contacted at any time to discuss its status.

Yours sincerely,

Colin Liebmann, Director

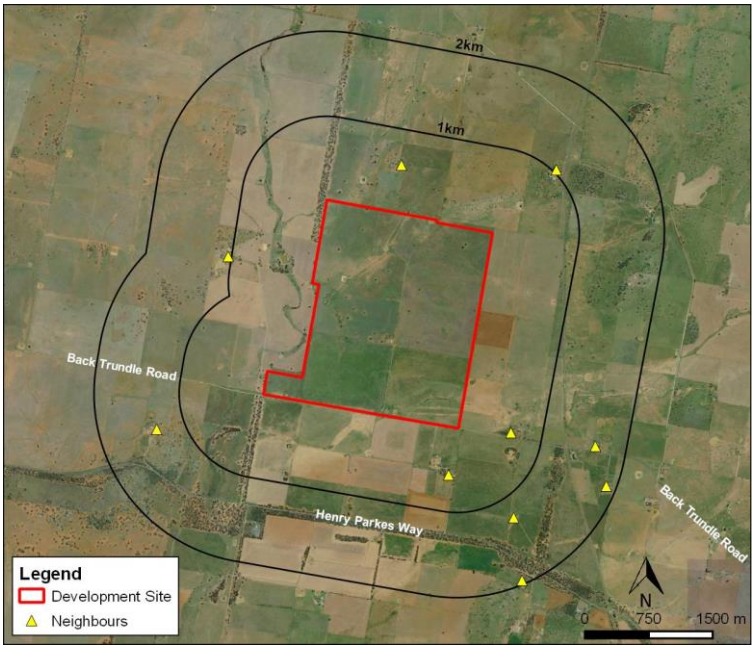
RENEWABLE ENERGY DEVELOPMENTS RED

PO BOX 363 Lindfield NSW 2070
D +61 (0) 2 9416 1001
M +61 (0) 414 942733
E colin@redpl.com.au

General Manager
Modeling Resources Pty Ltd
PO Box 785 West Perth
WA 6872
19th July 2018

Dear Sir/ Madam,

I write on behalf of Renewable Energy Developments (RED) regarding a proposed solar project in the Parkes area. The site is on the property 'Quorn Park', Lot 508/750152 (see below) and Modeling Resources Pty Ltd's exploration licence EL7676 overlaps part of the property. I would like to offer you the opportunity to speak with us to discuss the proposal if you wish to.



The site has been identified following assessment of its suitability for grid connection, the strength of its solar resource, the use of the land as well as environmental planning controls. Before we make a final decision to proceed we will also need to obtain a number of approvals. To this end we are currently undertaking feasibility studies and environmental investigations and, provided they continue to be positive, we plan to submit a development application later this year.

Stakeholder engagement is important to us and we want to make sure we provide you with accurate and up to date information about the project and the approval processes involved. As a stakeholder, we are keen to hear your thoughts and answer any questions you may have about the solar farm.

If you would like us to meet or call you, please contact me on 0414 942733 or by email at colin@redpl.com.au to arrange a time convenient for you. I also add that we are committed to providing you with up to date information as our investigations progress and the impact assessment to support the development application is finalised. As such I am happy to be contacted at any time to discuss the status of the project.

Yours sincerely,

Colin Liebmann, Director

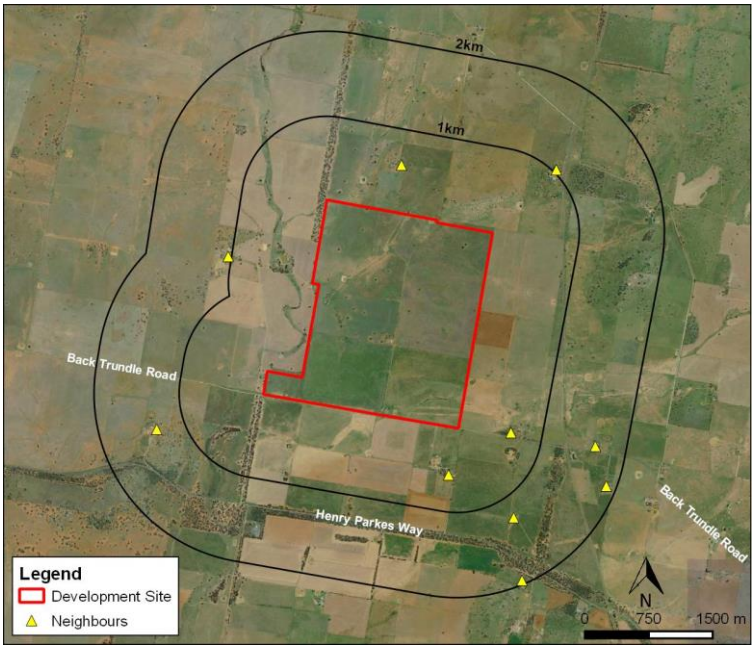
RENEWABLE ENERGY DEVELOPMENTS RED

PO BOX 363 Lindfield NSW 2070
D +61 (0) 2 9416 1001
M +61 (0) 414 942733
E colin@redpl.com.au

Mr Michael Griffiths
Sustainability Manager
Omya Australia Pty Ltd
280 Pacific Hwy
Lindfield NSW 2070
17th December 2019

Dear Mr Griffiths,

Renewable Energy Developments (RED) is developing a solar PV project in the Parkes area. The proposed Quorn Park Solar Farm will be 80MW and is located on Lot 508/750152 as shown below. Omya Australia Pty Ltd's application for an exploration licence EL5870 overlaps part of the property. I would like to offer you the opportunity to comment on the proposal if you wish to.



The site was identified following assessment of its strong solar resource, suitability for grid connection, current land use and environmental and planning controls. The project is State Significant and an application for development approval was made to the Department of Planning, Industry and Environment in October. The application has been on public exhibition until earlier this month. Details may be found on this website: https://www.planningportal.nsw.gov.au/major-projects

Stakeholder engagement is important to us and we want to make sure we provide you with accurate and up to date information about the project and the approval processes involved. We are keen to hear your thoughts and answer any questions you may have about the solar farm.

If you would like to speak to me, please contact me on 0414 942733 or by email at colin@redpl.com.au to arrange a time convenient for you. I am happy to be contacted at any time to discuss the status of the project.

Yours sincerely,

Colin Liebmann, Director

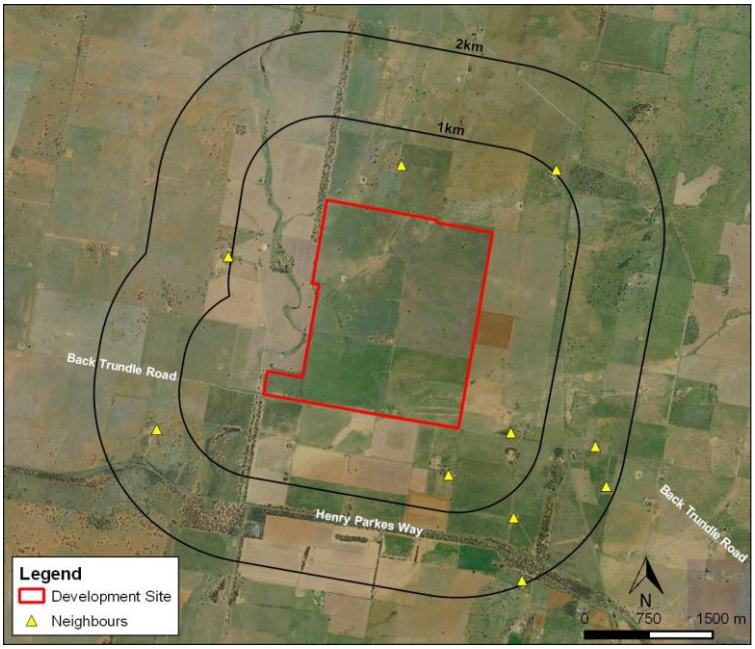
RENEWABLE ENERGY DEVELOPMENTS RED

PO BOX 363 Lindfield NSW 2070
D +61 (0) 2 9416 1001
M +61 (0) 414 942733
E colin@redpl.com.au

General Manager
CMOC Mining Pty Ltd
PO Box 995
Parkes, NSW 2870
20th November 2018

Dear Sir/ Madam,

I write on behalf of Renewable Energy Developments (RED) regarding a proposed solar project in the Parkes area. The site is on the property 'Quorn Park', Lot 508/750152 (see below) and CMOC Mining Pty Ltd's exploration licence EL5323 overlaps part of the property. I would like to offer you the opportunity to speak with us to discuss the proposal if you wish to.



The site has been identified following assessment of its suitability for grid connection, the strength of its solar resource, the use of the land as well as environmental planning controls. Before we make a final decision to proceed we will also need to obtain a number of approvals. To this end we are currently undertaking feasibility studies and environmental investigations and, provided they continue to be positive, we plan to submit a development application later this year.

Stakeholder engagement is important to us and we want to make sure we provide you with accurate and up to date information about the project and the approval processes involved. As a stakeholder, we are keen to hear your thoughts and answer any questions you may have about the solar farm.

If you would like us to meet or call you, please contact me on 0414 942733 or by email at colin@redpl.com.au to arrange a time convenient for you. I also add that we are committed to providing you with up to date information as our investigations progress and the impact assessment to support the development application is finalised. As such I am happy to be contacted at any time to discuss the status of the project.

Yours sincerely,

Colin Liebmann, Director

Colin Liebmann

From: Ildiko Wowesny <IWowesny@magmaticresources.com>
Sent: Monday, 23 July 2018 10:54 AM
To: David Liebmann
Cc: Colin Liebmann
Subject: RE: Notification of Parkes Solar Development

Now received, thank you

From: David Liebmann [mailto:davidl@redpl.com.au]
Sent: Monday, 23 July 2018 08:53
To: Ildiko Wowesny <IWowesny@magmaticresources.com>
Cc: Colin Liebmann <colin@redpl.com.au>
Subject: Notification of Parkes Solar Development

Dear Sir/Madam,

Attached is a letter regarding a proposed solar farm development which is overlapped by an exploration licence (EL7676) held by Modeling Resources Pty Ltd.

Please forward this message to the General Manager of Modeling Resources Pty Ltd.

Regards,

David Liebmann

Developer
Renewable Energy Developments
☎ 0428 860047
☎ (03) 5449 6902
✉ davidl@redpl.com.au

Appendix B

COUNCIL CONSULTATION

Andrew Brownlow

From: Sue McGrath <Sue.McGrath@parkes.nsw.gov.au> on behalf of Council <Council@parkes.nsw.gov.au>
Sent: Wednesday, 16 October 2019 4:44 PM
To: Andrew Brownlow
Subject: Council Water Sources

Hi Andrew

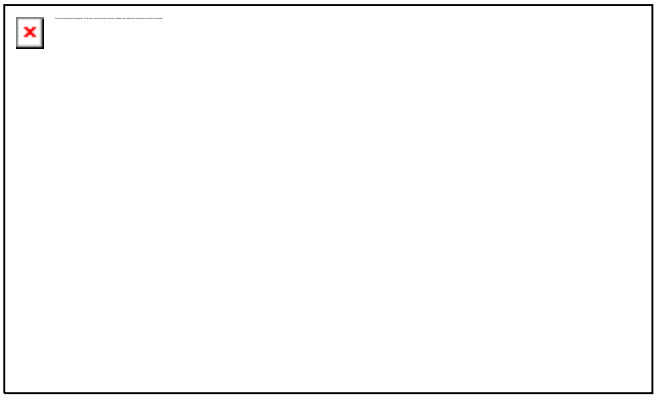
Subject to water being available at the time, Council would be prepared to provide access to the water in the brick pit for construction purposes.

Kind Regards

Sue McGrath

Business Support Coordinator | Parkes Shire Council

P 02 6861 2333
W parkes.nsw.gov.au
2 Cecile Street Parkes NSW 2870



Andrew Brownlow

From: Andrew Brownlow
Sent: Tuesday, 15 October 2019 1:48 PM
To: 'council@parkes.nsw.gov.au'
Subject: Attention: Sue

Hi Sue

Thank you for your assistance with this.
As discussed, the Department of Planning Industry and Environment is looking for confirmation that we have consulted with Council about the possibility of sourcing water from the brick pit to be used for dust suppression during a future construction project.
The project has yet to be assessed and approved, so it is not possible to give you an informed timeline as to when this could happen.
My earlier discussions with Council this year confirmed an in-principle confirmation that this could happen – subject of course to conditions at the time and water being available from this source.
Confirmation that this is acceptable would be very much appreciated.
If there is additional information we can provide please don't hesitate to give me a call.
Thanks you again.

Andrew

Appendix C

BIODIVERSITY AND CONSERVATION DIVISION

Level 3, 175 Scott Street
Newcastle NSW 2300

T 02 4907 4800
E info@emmconsulting.com.au

www.emmconsulting.com.au

9 January 2020

General Manager - Central NSW
Andrew Brownlow
Premise
154 Peisley Street
Orange, NSW, 2800

Re: Quorn Park Solar Farm - response to the Biodiversity and Conservation Division review

1 Introduction

Geolyse Pty Ltd (now part of Premise Pty Ltd) have prepared an Environmental Impact Statement (EIS) on behalf of Quorn Park Solar Farm Pty Ltd (SSD 09007) for the proposed Quorn Park Solar Farm (QPSF). A Biodiversity Development Assessment Report (BDAR, EMM 2018) was produced by EMM Consulting Pty Ltd (EMM) to accompany the EIS.

The Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment (DPIE) has reviewed the BDAR and have provided detailed comments and recommendations (letter dated 27 November 2017; DOC19/953864).

This letter provides a response to each of the comments and recommendations raised by the BCD.

2 Responses to the Biodiversity Conservation Division comments

Table 2.1 provides the BCD comments and recommendations regarding the BDAR. Responses by EMM are provided in the adjacent column. Where necessary, additional information has been provided in order to supplement the BDAR.

Table 2.1 BCD comments and EMM responses

BCD comment	EMM response
1. The BDAR should be certified as BAM compliant within 14 days of the submission date The Biodiversity Development Assessment Report (BDAR) has not been certified as Biodiversity Assessment Method (BAM) compliant. Section 6.15 of the Biodiversity Conservation Act 2016 (BC Act) states 'a biodiversity assessment report cannot be submitted in connection with a relevant application unless the accredited person certifies in the report that the report has been prepared on the basis of the requirements of (and information provided under) the biodiversity assessment method as at a specified date and that date is within 14 days of the date the report is so submitted' The BDAR that has been submitted has not been certified in accordance with section 6.15 of the BC Act.	I, Eugene Dodd (BAM Assessor Accreditation Number BAAS17009), authored the BDAR and certify that the report has been prepared on the basis of the requirements of the biodiversity assessment method as of 7 December 2018, which is when the BDAR was submitted.

Table 2.1 BCD comments and EMM responses

BCD comment	EMM response
Recommendation 1 The assessor should certify the BDAR in accordance with section 6.15 of the BC Act.	
1. Species should not be removed from the predicted list (ecosystem credits) where the TBDC does not list habitat constraints. BCD notes that the assessor has removed a number of species from the predicted list (ecosystem credits) generated from the BAM calculator (BAM-C). The removal of these species is not consistent with the assessment requirements set out in steps 2 and 3 of chapter 6 of the BAM. A species can only be removed from the list if the species: a) has habitat constraints listed in the TBDC and none of these constraints are present on the site. Documentation in the BDAR should reflect the TBDC information and evidence that the features are not present (field data); b) has geographic limitations listed in the TBDC and the site is outside of the defined geographic area; or c) is vagrant to the area. Vagrancy is taken as the record being well outside the species range or natural distribution. The suspect record will need to be reviewed against the species known distribution and the assessor will need to confirm with species experts that it is likely to be a vagrant. If agreed by experts the assessor should contact DPIE to have the record quarantined from BioNet Atlas and re-labelled as vagrant. The BDAR will need to contain supporting information such as who was contacted, when, their credentials and the resultant response from DPIE. The following species do not have habitat constraints or geographic limitations listed in the TBDC and are not considered vagrant and therefore should not be removed from the predicted list for any associated plant community type (PCT) regardless of the vegetation zone condition; • Regent Honeyeater (*Anthochaera phrygia*) • Pied honeyeater (*Certhionyx variegatus*) • Speckled warbler (*Chthonicola sagittata*) • Varied Sittella (*Daphoenositta chrysoptera*) • Spotted-tailed Quoll (*Dasyurus maculatus*) • Little Lorikeet (*Glossopsitta pusilla*) • Swift Parrot (*Lathamus discolour*) • Hooded Robin south-eastern form (*Melanodryas cucullate cucullate*) • Flame robin (*Petroica phoenicea*) • Koala (*Phascolarctos cinereus*) • Grey-crowned Babbler eastern subspecies (*Pomatostomus temporalis temporalis*) Recommendation 2 Any species that does not have habitat constraints listed in the TBDC should be retained in the BAM-C for all associated PCTs regardless of the vegetation zone condition.	The approach for assessment of habitat suitability for threatened species, including ecosystem credit species is detailed in Stage 3 of the Biodiversity Assessment Method Operational Manual – Stage 1 (OEH 2018). Under Assessment of habitat constraints and vagrant species, it states that: *In accordance with Paragraphs 6.4.1.9 – 6.4.1.16 (Step 2) of the BAM, the assessor may opt to undertake an onsite assessment to determine the presence of habitat constraints or microhabitats for the threatened species predicted to occur on the subject land.* *The absence of these features may be used to further refine the list of candidate species on the subject land and potentially reduce the need for a survey. Undertaking this step is recommended where species have identified habitat constraints (see TBDC), habitat is significantly degraded, the vegetation is missing key structural elements, is a derived native grassland, or in the case of a biodiversity stewardship site, the habitat is being restored.* Several vegetation zones within the development site are significantly degraded owing to grazing, and are missing key structural elements (ie canopy and mid story), occurring as derived grasslands: • Zone 1, PCT 82; • Zone 3 PCT 278; and • Zone 4 PCT 437. The habitat requirements of ecosystem credit species have been considered in Section 5.2 of the BDAR. The eleven species queried by the BCD, are all woodland species. The assessor determined that degraded derived grassland will provide little to no habitat value. Given the high likelihood that they are absent from zones 1, 3 and 4, they were excluded from any further assessment and removed from the candidate species list. EMM have authored several previous BDARs, taking the same approach; removing select ecosystem species where habitats are significantly degraded. Previous reviews by Office of Environment and Heritage/BCD have supported this approach, where valid justification is provided. Further discussion and consultation with the BCD (John Siedel, pers. comm.) has confirmed that the intent of the BAM permits such exclusion of ecosystems credit species. For these reasons no changes to the assessment of ecosystem species are required.

Table 2.1 BCD comments and EMM responses

BCD comment	EMM response
2. Justification for removing masked owl and glossy black-cockatoo as candidate species (species credits) is not consistent with the BAM. BCD notes that the assessor has removed masked owl and glossy black-cockatoo from the candidate list (species credits) generated from the BAM-C. The removal of these species is not consistent with the assessment requirements set out in steps 2 and 3 of chapter 6 of the BAM. A species can only be removed from the list if the species: a) has habitat constraints listed in the TBDC and none of these constraints are present on the site. Documentation in the BDAR should reflect the TBDC information and evidence that the features are not present (field data); b) has geographic limitations listed in the TBDC and the site is outside of the defined geographic area; c) is vagrant to the area. Vagrancy is taken as the record being well outside the species range or natural distribution. The suspect record will need to be reviewed against the species known distribution and the assessor will need to confirm with species experts that it is likely to be a vagrant. If agreed by experts the assessor should contact DPIE to have the record quarantined from BioNet Atlas and re-labelled as vagrant. The BDAR will need to contain supporting information such as who was contacted, when, their credentials and the resultant response from DPIE; or d) the habitat constraints listed in the TBDC or known microhabitats that the species requires to persist on or use are degraded to the point where the species will no longer be present. Evidence in the BAR could include reference to the attribute scores for in the vegetation integrity assessment to illustrate the poor condition of the site. Other information sources include peer-reviewed or other published information relating to the microhabitats used by the species, photographic evidence and maps etc that illustrate these features are significantly degraded. <u>Masked Owl</u> Table 5.3 of the BDAR states that the masked owl is not considered a candidate species as there are no hollows greater than 40 centimetres wide and 100 centimetres deep. BCD notes that these specifications are from the NSW Recovery Plan for the Large Forest Owls, Approved NSW Recovery Plan (DEC 2016) however this information is not consistent with the information in the TBDC. The habitat constraint listed in the TBDC for masked owl breeding habitat is 'living or dead trees with hollows greater than 20cm diameter'. BCD notes that there are two large hollow-bearing trees in vegetation zone 437_woodland; if either of these trees contain hollows that are greater than 20 centimetres in diameter this species should be retained as a candidate species for further consideration.	<u>Masked Owl</u> The maximum size tree hollows recorded were in the 15cm to <20 cm category. Therefore, no suitable nesting hollows for the Masked Owl exist within the development site. This is regardless of whether the habitat requirements are a hollow of greater than 20 cm (TBDC) or greater than 40 cm diameter (as per the Recovery Plan for the Large Forest Owls, DECC 2006). No further assessment of this species is required as it can be removed from the candidate species list in accordance with the BAM and Operational Manual (OEH 2018). Further discussion and consultation with the BCD (John Siedel, pers. comm.) has confirmed that the intent of the BAM permits use of external resources where these are relevant. Therefore, the use of the Recovery Plan for the Large Forest Owls (DECC 2006) is justified. <u>Glossy Black-cockatoo</u> Three paddock trees have hollows that may meet the breeding requirements for the species given that they are between 15 cm and <20 cm in diameter. It is considered unlikely that the species will utilise the development site for breeding as per the justification in Table 5.3 of the BDAR (EMM 2018). The suitably sized hollows were recorded in three individual paddock trees, surrounded by cropping. These areas are non-native and do not generate a vegetation integrity score. No suitable hollows were recorded in vegetation zone 437_woodland. The vegetation integrity score is vital in calculating the impact (loss) of any species polygon and the subsequent credit requirements. Given that the vegetation integrity score is effectively zero for paddock trees, credits requirements will also be zero regardless of the size of any species polygon. It is not recommended that the species is assessed further given that it is highly unlikely to breed within the site and that its inclusion of a candidate species would not affect the outcome of the BDAR as no credits would be generated even if assumed present.

Table 2.1 BCD comments and EMM responses

<table>
<tr><th>BCD comment</th><th>EMM response</th></tr>
<tr><td>Glossy Black-Cockatoo

Table 5.3 of the BDAR states that the glossy black-cockatoo is not considered a candidate species as there is no foraging resource present on site. The habitat constraint listed for glossy black cockatoo breeding habitat in the TBDC is ‘living or dead tree with hollows greater than 15cm diameter and greater than 5m above ground’. BCD notes that there are two large hollow-bearing trees in vegetation zone 437_woodland, if any of these trees contain hollows that are greater than 15 centimetres in diameter and greater than five metres above the ground this species should be retained as a candidate species for further consideration regardless of whether foraging resources are present.

Recommendation 3

If any of the hollows present in vegetation zone 437_woodland are greater than 20 centimetres in diameter, the masked owl should be retained as a candidate species for further consideration.

Recommendation 4

If any of the hollows present in vegetation zone 437_woodland are greater than 15 centimetres diameter and greater than five metres above the ground, the glossy black cockatoo should be retained as a candidate species for further consideration.</td><td></td></tr>
<tr><td>3. There are inconsistencies between the plot data in the BDAR and the data entered into the BAM calculator.

There are inconsistencies between the plot data provided in Appendix B of the BDAR and the data that has been entered into the BAM-C. The inconsistencies are listed in the table below.

Plot 4

<table><tr><td>Data</td><td>BDAR</td><td>Calculator</td></tr><tr><td>Function – Stem Class – 50-79</td><td>Present</td><td>Not Present</td></tr><tr><td>Plot 9</td><td></td><td></td></tr><tr><td>Tree Regeneration</td><td>2</td><td>Nothing selected</td></tr><tr><td>Plot 10</td><td></td><td></td></tr><tr><td>Tree Regeneration</td><td>2</td><td>Nothing selected</td></tr></table>
Recommendation 5

The accredited assessor should ensure that the data entered into the BAM-C matches the data in the BDAR.</td><td>Plot 4

Within plot 4, four trees are present in the large tree category, with no trees recorded in the 50 – 79 cm stem class. The BAM-C is correct, with the BDAR Appendix B a typographic error.

Plot 9 and 10

The data entered in BAM-C is correct – no regeneration of canopy species was recorded within the plots 9 and 10. The data in the BDAR Appendix B represent a typographic error.

No changes to the BAM-C is required. The BAM-C and associated outputs are correct.</td></tr>
<tr><td>4. No mitigation measures have been outlined for weed spread.

Section 6.1 states ‘mitigation measures to reduce the chance of weed spread are outlined in Section 6.2’. Section 6.2 does not include measures to reduce weed spread.

Recommendation 6

Section 6.2 of the BDAR should be updated to include mitigation measures for reducing the chance of weed spread.</td><td>A site-specific CEMP will be prepared prior to the commencement of any construction or clearing works to ensure that impacts including weed spread are minimised. This will include the provision of appropriate wash down facilities to clean vehicles and equipment prior to arrival and when leaving site. This will aim to reduce any transfer of soils and seed material on or off site.</td></tr>
</table>

Table 2.1 BCD comments and EMM responses

BCD comment	EMM response
5. Further assessment of the pine donkey orchid is required. BCD acknowledges that the threatened flora targeted surveys were conducted within the recommended months for the targeted species, however the site is located within an area that is currently experiencing prolonged drought conditions and therefore the survey conditions are considered suboptimal. The detection of pine donkey orchid (*Diuris tricolor*) has the potential to be affected during suboptimal survey conditions and therefore survey alone is not a reliable method to determine presence or absence. The NSW Guide to Surveying Threatened Plants recommends that where suboptimal conditions such as prolonged drought are occurring, the assessor may choose to either use an expert report to assess the species presence or absence, or alternatively the species can be assumed to be present at the development site. Recommendation 7 The accredited assessor should either use an expert report to assess the presence or absence of the pine donkey orchid or assume presence for this species.	The targeted surveys for the Pine Donkey Orchid (*Diuris tricolor*) were conducted in spring 2018, where conditions were more favourable than the 2019 season. Justification for the survey timing-is provided in Section 5.3.3i of the BDAR and includes preceding rainfall at nearby Parkes Airport (17.8 mm during August, 17.2 mm during September and 21 mm during early October (BOM 2018)). The soil moisture was sufficient at the time of the targeted survey to trigger new growth of native forbs and grasses and therefore, in lieu of any specific rainfall triggers documented for the species, was considered suitable survey conditions. Whilst it is impossible to categorically rule out a false negative, which is the case for almost all cryptic species; every effort was made to optimise the chance of detection in accordance with the requirements for the BAM. Based on habitat assessment of the site and the targeted survey conducted it is considered unlikely that the Pine Donkey Orchid occurs within the development site. We maintain that the surveys undertaken are sufficient and undertaken in line with the requirements of the BAM and threatened plant surveys guidelines (OEH 2016).

3 Closing

We trust that the information provided in this letter will address each of the BCD comments and recommendations and facilitate the ongoing approval process.

Yours sincerely

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4 References

EMM 2018, *Quorn Park Solar Farm Biodiversity Assessment Report*, prepared for Quorn Park Farm Pty Ltd.

OEH 2016, *NSW Guide to Surveying Threatened Plants*, Office of Environment and Heritage, Sydney.

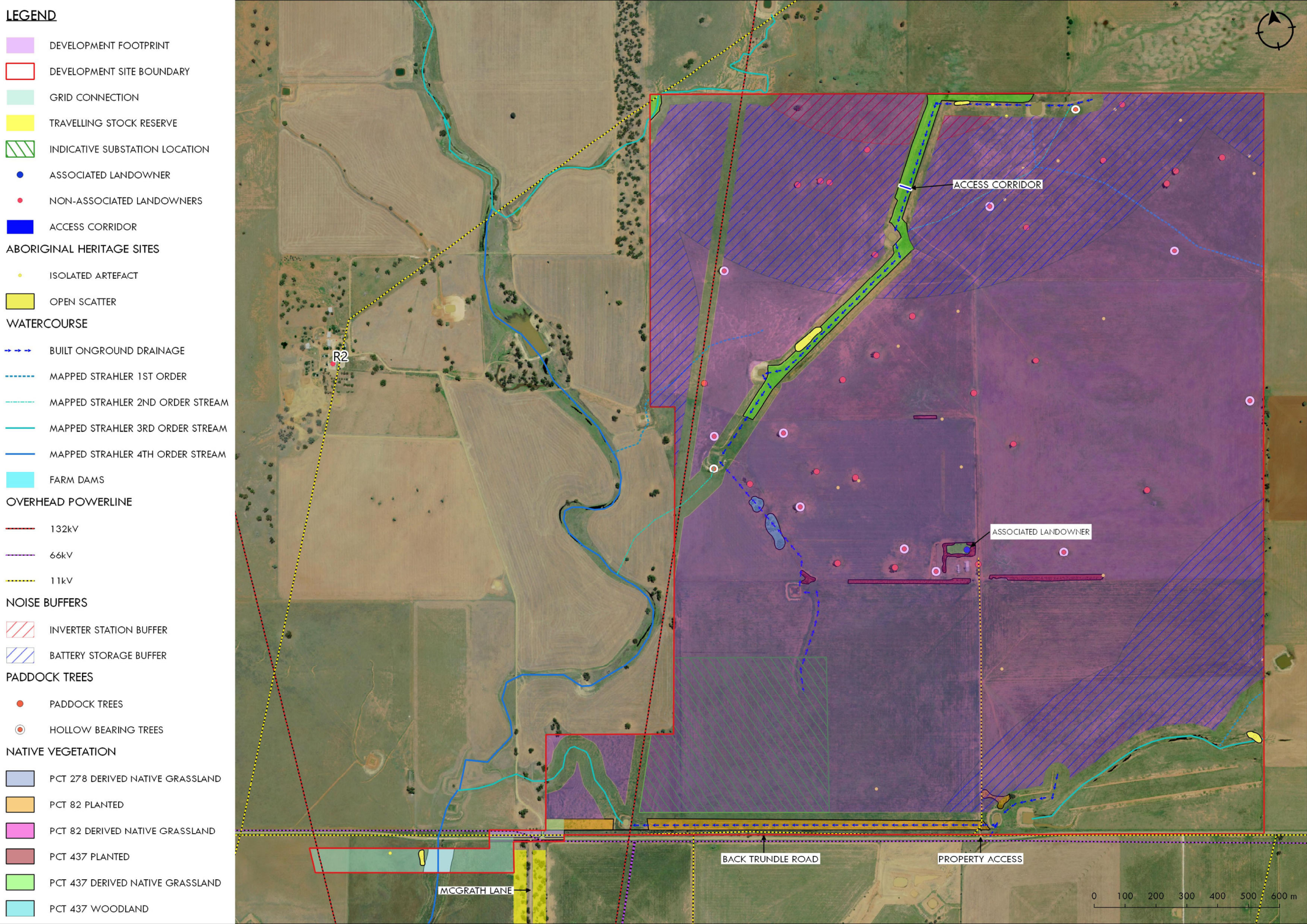
OEH 2017, *Biodiversity Assessment Method*, Office of Environment and Heritage, Sydney.

OEH 2018, *Biodiversity Assessment Method Operational Manual – Stage 1*, Office of Environment and Heritage, Sydney.

Appendix D

DEVELOPMENT FOOTPRINT

Figure 6 Development Footprint


LEGEND
DEVELOPMENT FOOTPRINT
DEVELOPMENT SITE BOUNDARY
GRID CONNECTION
TRAVELLING STOCK RESERVE
INDICATIVE SUBSTATION LOCATION
ASSOCIATED LANDOWNER
NON-ASSOCIATED LANDOWNERS
ACCESS CORRIDOR
ABORIGINAL HERITAGE SITES
ISOLATED ARTEFACT
OPEN SCATTER
WATERCOURSE
BUILT ONGROUND DRAINAGE
MAPPED STRAHLER 1ST ORDER
MAPPED STRAHLER 2ND ORDER STREAM
MAPPED STRAHLER 3RD ORDER STREAM
MAPPED STRAHLER 4TH ORDER STREAM
FARM DAMS
OVERHEAD POWERLINE
132kV
66kV
11kV
NOISE BUFFERS
INVERTER STATION BUFFER
BATTERY STORAGE BUFFER
PADDOCK TREES
PADDOCK TREES
HOLLOW BEARING TREES
NATIVE VEGETATION
PCT 278 DERIVED NATIVE GRASSLAND
PCT 82 PLANTED
PCT 82 DERIVED NATIVE GRASSLAND
PCT 437 PLANTED
PCT 437 DERIVED NATIVE GRASSLAND
PCT 437 WOODLAND
R2
ACCESS CORRIDOR
ASSOCIATED LANDOWNER
BACK TRUNDLE ROAD
PROPERTY ACCESS
MCGRATH LANE
0 100 200 300 400 500 600 m