

APPENDIX E LAND USE CONFLICT RISK ASSESSMENT

Activity	Identified potential conflict	Probability (P)	Consequence (C)	Risk ranking	Management strategy (method of control)	Revised risk ranking (P; C)	Performance target
Site preparation and vegetation clearing	Removal of agricultural land for construction of the solar farm	A	4	16	While the project would utilise land available for primary production, the reversibility of the project and limited ground disturbance would allow the land to be converted back to its pre-existing use (i.e. grazing and intermittent cropping) upon decommissioning. Landholders would continue to be able to use remaining portions of their properties (not subject to landholder agreements) for agricultural activities. Options are also currently being investigated for shared land uses with sheep or cattle grazing activities within portions of the study area unoccupied by infrastructure where practicable. Allowing grazing within the study area would not only enable continued use for agricultural activities but may also assist in vegetation management between and underneath the PV modules, including weed management. Earthworks are expected to be minimal during construction and limited to the locations requiring resurfacing activities for temporary construction facilities (including laydown areas, construction compounds and carparking areas) and permanent operational infrastructure such as the substation, battery energy storage system and ancillary infrastructure. No large areas of excavation are anticipated. Land management within the study area will include measures to minimise impacts to surrounding agricultural land use with reference to DPI's publication Infrastructure proposals on rural land (Kovac, M and Briggs, G, 2013).	16 (A,4)	Effectiveness will be measured as part of the EMS.
	Impacts to neighbouring properties resulting from inadequate erosion control and transport of sediment laden run off from the study area	C	3	13	A soil and water management plan will be prepared prior to construction in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004). Disturbed areas will be reinstated and stabilised with vegetation progressively which would minimise risks of soil erosion. Impacts on surrounding land uses associated with soil erosion and water quality, hydrology and flooding, will be managed via measures presented in Chapter 9 and Chapter 13.	5 (D;4)	Effectiveness will be measured as part of the soil and water management plan.
Construction activities including earthworks and temporary construction facilities	Impacts to the use of areas of existing mining or exploration titles, parcels of crown land, and native titles claims	A	4	16	There are mining exploration titles, crown land parcels, and one active native title claim within the study area. Consultation has been initiated with the relevant stakeholders throughout the project development phase and preparation of the EIS. Further consultation will continue to be undertaken with relevant stakeholders to identify and address additional concerns. All project infrastructure would be removed upon decommissioning of the project (aside from underground cabling deeper than 1000 millimetres), and the study area would be returned to its pre-existing land use. It is anticipated that the land could therefore be explored, or used for another purpose once returned to agricultural land use.	16 (A,4)	The CSEP includes a complaints procedure as a mechanism to address issues identified by the local community and other relevant stakeholders.
	Impacts on residents associated with construction noise	B	3	17	Potential noise impacts during construction have been addressed as part of the noise and vibration impact assessment presented in Appendix G of the EIS. The site preparation noise impacts were modelled as worst-case scenario due to the number of plant to be used, their cumulative emission levels, duration and location of construction activities. Results of the modelling indicated that all construction NMLs are expected to be complied within during standard hours of construction. If necessary, activities undertaken outside of standard hours are expected to generate much lower noise levels than predicted and will comply with out of hours work NML's. Potential noise impacts during construction will be managed in accordance with the Interim Construction Noise Guideline (DECC 2009), and mitigation measures will be included in the CEMP for the project.	13 (C, 3)	Effectiveness will be measured as part of the CEMP, which will also include the relevant noise criteria for the project.
	Impacts on livestock in neighbouring properties as a result of increased noise	C	4	8	Potential noise impacts during construction have been addressed as part of the noise and vibration impact assessment presented in Appendix G of the EIS. The site preparation noise impacts were modelled as worst-case scenario due to the number of plant to be used, their cumulative emission levels, duration and location of construction activities. Results of the modelling indicated that all construction NMLs are expected to be complied within during standard hours of construction. No significant impact to livestock is expected.	8 (C;4)	Effectiveness will be measured as part of the CEMP, which will also include the relevant noise criteria for the project.
	Visibility of construction activities and vegetation clearing from neighbouring properties and the local road network	B	3	17	The visibility of the project during construction has been assessed as part of the landscape character and visual impact assessment (refer to Appendix F of the EIS). A total of 16 viewpoints were assessed and mitigation and management measures identified to minimise impacts during construction. These are presented in Chapter 11 of the EIS and include retaining existing vegetation, consideration to the materials, colours and scale of the PCU's, the battery and storage shed to minimise contrast with the landscape and implementation of a screen planting program.	13 (C,3)	Effectiveness will be measured as part of the CEMP, which will include measures required to minimise impacts to visual amenity.
	Increased risk of vandalism and theft of participating and neighbouring residences associated with a change in land use and pedestrian and vehicle movements on-site	C	3	13	Criminal background checks will be undertaken of all staff, contractors, tradesman, and other personnel on site. The primary contractors information will be provided to neighbouring landholders, law enforcement, and Mid-Western Regional Council. A code of conduct will be included in the CEMP which outlines the required behaviour of workers on site to avoid anti-social behaviour during the construction period	9 (D;3)	Effectiveness will be measured as part of the CEMP, which will include details on implementation and auditing to ensure compliance.
	Risk of theft of construction materials and vandalism in the development footprint	C	4	8	Surveillance cameras and associated signage will be erected to deter vandalism and theft. Security fencing will be erected on the perimeter of the development footprint to control access. An onsite security protocol will be development and implemented during construction.	5 (D;4)	The onsite security protocol will include measures to be implemented during construction to ensure the safety of project related infrastructure.
	Impacts on seasonal agricultural transport activities during construction (e.g. livestock transport) as a result of traffic and access impacts	C	4	8	Further consultation will be undertaken with participating and nearby landholders to identify potential seasonal based agricultural activities or stock movement requirements. Any mitigation measures identified to minimise impacts to the movement of stock or product or access requirements will be included in the TMP in consultation with landholders if required.	5 (D;4)	Effectiveness will be measured as part of the TMP which will include a complaint resolution procedure as a mechanism to address issues identified by the local community and other relevant stakeholders.

Activity	Identified potential conflict	Probability (P)	Consequence (C)	Risk ranking	Management strategy (method of control)	Revised risk ranking (P; C)	Performance target
	Soil erosion within the study area and offsite transport of material and associated water quality impacts	C	3	13	A soil and water management plan will be prepared prior to construction in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004) and included in the CEMP. Disturbed areas will be reinstated and stabilised with vegetation progressively which will minimise risks of soil erosion. Impacts on surrounding land uses associated with soil erosion and water quality, hydrology and flooding, will be managed via measures presented in Chapter 9 and Chapter 14.	5 (D;4)	Effectiveness will be measured as part of the soil and water management plan.
	Inadequate available waste facilities within the local community to accept construction waste	C	3	13	A construction waste management plan will be prepared for the project in consultation with Mid-Western Regional Council. The waste management plan will include: - details of the quantities of each waste type generated during construction and the proposed reuse, recycling and disposal locations - details on measures to reduce the types and volumes of waste generated during construction - measures to maximise reuse and recycling.	5 (D;4)	The waste management plan will include a mechanism through which impacts can be identified and addressed.
	Inadequate availability of existing services and infrastructure in the local community, particularly accommodation for workers and medical facilities	D	4	5	The project is expected to result in an economic benefit for the community through the provision of employment opportunities and economic stimulus to local communities such as Gulgong. Accommodation and Employment Strategy will be developed and implemented for the project in consultation with Mid-Western Regional Council to manage services and infrastructure in the local community.	5 (D;4)	The CEMP will include a mechanism through which impacts can be identified and addressed.
	Impacts to neighbouring properties and livestock resulting from increased dust generated during ground disturbance works	C	4	8	Appropriate measures will be included in the CEMP to manage dust generation associated with the project during construction. Water trucks will be used for dust suppression at disturbed areas where required. Disturbed areas will also be reinstated and stabilised with vegetation progressively which would minimise risks of dust generation. Regular maintenance of unsealed access roads will be undertaken to minimise wheel generated dust.	5 (D;4)	Effectiveness will be measured as part of the CEMP.
Road access network including road upgrades	Construction noise generated during road upgrades and associated impacts on neighbouring properties and livestock	C	4	8	Potential noise impacts during construction have been addressed as part of the noise and vibration impact assessment presented in Appendix F of the EIS. The site preparation noise impacts were modelled as worst-case scenario due to the number of plant to be used, their cumulative emission levels, duration and location of construction activities. Results of the modelling indicated that all construction NMLs are expected to be complied within during standard hours of construction. If necessary, activities undertaken outside of standard hours will generate much lower noise levels than predicted and will comply with out of hours work NML's. Potential noise impacts during construction will be managed in accordance with the Interim Construction Noise Guideline (DECC 2009), and mitigation measures will be included in the CEMP for the project.	8 (C;4)	The accommodation and employment strategy will include a program to monitor and review the effectiveness of the strategy over the life of the project, including regular monitoring and review during construction.
	Construction and operational noise associated with vehicle movements on access roads and impacts to neighbouring properties and livestock	B	3	17	Road traffic noise has been assessed as part of the noise and vibration impact assessment (refer to Chapter 12 and Appendix G of the EIS). Overall traffic volumes are expected to increase by 60 per cent, with the exception of Blue Springs Road which is predicted to increase by 73 per cent. The 2.3 dB(A) increase which this equates to is deemed to negligible and comply with construction traffic noise management levels. The traffic management plan will contain management measures to minimise impacts caused by construction and operational traffic.	9 (D;3)	Effectiveness will be measured as part of the TMP which will include a complaint resolution procedure as a mechanism to address issues identified by the local community and other relevant stakeholders.
	Dust generated by vehicle movements on access roads, particularly unsealed roads, and associated impacts on neighbouring properties and livestock	B	4	12	Appropriate measures will be included in the CEMP to manage dust generation associated with vehicle movements during construction. These may include dust suppression strategies along access roads, minimising vehicle movements on unsealed surfaces where possible, and regular maintenance of unsealed access roads to minimise wheel generated dust. Dust suppression requirements will consider weather and the likelihood of extended dry periods which could increase impacts.	8 (C;4)	Effectiveness will be measured as part of the EMS.
	Safety risks to pedestrians, wildlife and livestock associated with an increase in vehicle movements along the local road network	D	2	14	Drivers will be suitably trained on the Driver Code of Conduct and any other relevant obligations under the TMP to ensure responsible behaviour is exhibited on the local road network. Appropriate traffic management and signage will be implemented during construction to minimise risks of collision. Temporary speed restrictions may also be implemented on local roads during construction which will be outlined in the TMP.	14 (D;2)	Effectiveness will be measured as part of the TMP which will include a complaint resolution procedure as a mechanism to address issues identified by the local community and other relevant stakeholders.
	Increased traffic movements on the local road network during construction and operation resulting in delays and impacts on access to neighbouring properties	C	3	13	Appropriate measures will be included in the TMP to minimise impacts to local road users and neighbouring properties, including procedures to notify the local community about project-related traffic impacts, temporary traffic controls, including signage and detours (if required), scheduling of haulage vehicle movements to minimise convoy length and platoons.	8 (C;4)	The TMP will include a procedure to handle complaint resolution and disciplinary action to address issues identified by the local community and other road users.
	Impact of vehicle movements on public transport (e.g. school bus) during construction resulting in delays	D	4	5	The low volume of project-generated traffic is not forecast to impact on any public transport services. School bus services would generally operate after the construction start time (7am) and before the construction end time (6pm), so minimal impact is expected on these services.	5 (D;4)	No action required
	Potential conflict between livestock movement and project vehicle movements during construction and operation	C	4	8	Further consultation will be undertaken with participating and nearby landholders to identify potential seasonal based agricultural activities or stock moving requirements. Any mitigation measures identified to minimise impacts to the movement of stock or product or access requirements will be included in the TMP in consultation with landholders if required.	5 (D;4)	Effectiveness will be measured as part of the TMP which will include a complaint resolution procedure as a mechanism to address issues identified by the local community and other relevant stakeholders.
Operational and maintenance activities	Reduced agricultural productivity due to the presence of permanent infrastructure in the development footprint	A	4	16	Options are also currently being investigated for shared land uses with sheep or cattle grazing activities within portions of the study area unoccupied by infrastructure where practicable. Allowing grazing within the study area would not only enable continued use for agricultural activities but may also assist in vegetation management between and underneath the PV modules, including weed management. Resting portions of the land beneath the PV modules from their previous grazing use may also improve the future agricultural productivity of the land following decommissioning of the project. A decommissioning and rehabilitation plan will be prepared that outlines the rehabilitation objectives and strategies to return the study area to its pre-existing condition for agricultural land use.	11 (A;5)	The decommissioning and rehabilitation plan will include rehabilitation objectives and strategies, and performance indicators to return the land to its pre-existing condition for agricultural land use.

Activity	Identified potential conflict	Probability (P)	Consequence (C)	Risk ranking	Management strategy (method of control)	Revised risk ranking (P; C)	Performance target
	Impacts to the operation of the solar farm from agricultural activities being undertaken on neighbouring properties such as the dispersion of dust or agricultural products (e.g. aerial spraying) on the PV modules	D	4	5	The project is not expected to experience a significant impact from neighbouring agricultural activities being undertaken during operation. It is anticipated that regular maintenance of the PV modules and other infrastructure would minimise the impacts of dust dispersion and agricultural products (e.g. aerial spraying).	5 (D;4)	No action required
	Ongoing operational noise, and impacts on neighbouring properties and livestock	D	5	2	Operational noise impacts have been assessed as part of the noise and vibration impact assessment (refer to Appendix G of the EIS). Results of the modelling undertaken indicates that all project noise trigger levels can be met for day, evening and night-time periods, with all residences experiencing noise levels below 35 dB. In addition, given the plant items have been modelled at their expected sound power levels, the results also indicate the maximum noise levels will not exceed the sleep disturbance criteria.	2 (D;5)	No action required
	Dust generated through the movement of livestock between paddocks within the study area	D	5	2	No significant impacts on the operation and functionality of the project are anticipated as a result of dust generation through the movement of livestock between paddocks. Disturbed areas would be progressively rehabilitated following construction, reducing the potential for dust generation. Livestock movement and grazing in the study area (if determined feasible) would be a continuation of existing land use and unlikely to result in significant impacts associated with dust generation. No management strategy is therefore proposed to address this potential conflict.	2 (D;5)	No action required
	Visibility of operational infrastructure and activities, particularly glare/reflectivity of PV modules	D	4	5	The visibility of the project infrastructure from 16 viewpoints has been assessed as part of the landscape character and visual impact assessment (refer to Chapter 11 and Appendix F of the EIS). Generally there are very limited opportunities to view the project. The project would be seen from 9 of the assessed viewpoints and these viewpoints were determined to have a visual impact rating of 'low'. The management and mitigation measures proposed to minimise visual impacts are presented in Section 11.4 of the EIS and include measures such as retaining some existing roadside planting and consideration of the material and colours of the project infrastructure to be sensitive to the surrounding landscape.	5 (D;4)	Effectiveness will be measured as part of the EMS which will include reference to measures proposed to minimise visual impacts.
	Potential visual impacts on neighbouring residences and livestock associated with night lighting	D	5	2	There would be no permanent night lighting installed within the array. Night lighting would only be used in the case of maintenance and in the event of an emergency and would be designed to ensure reduce disturbance to neighbouring properties. Any lighting installed will be in accordance with AS4228-1997 - Control of Obtrusive Effects of Outdoor Lighting.	2 (D;5)	Compliance will be measured as part of the EMS.
	Impacts to property values of neighbouring residences in proximity to project infrastructure	D	3	9	An economic analysis in relation to valuation and pricing of land has not been undertaken. However, while there are many factors that influence land values, some key factors include amenity and the impacts to the amenity of neighbouring properties and the locality, and the impact of the project on agricultural productivity of neighbouring properties. The EIS has considered impacts to amenity, particularly those associated with reduced visual amenity, and increases in noise, traffic, and dust. In addition, the project is unlikely to impact on the agricultural operations and productivity of neighbouring properties. The residual impacts associated with ongoing operation of the solar farm following the implementation of management and mitigation measures are expected to be minimal.	9 (D;3)	No action required
	Increases in council rates for neighbouring properties resulting from the change in land use within the study area	D	3	9	The rating category for the land within the study area would likely need to change from 'farmland' to 'business' in accordance with the NSW Local Government Act 1993. While this may increase the land value and associated council rates of the applicable land parcels, it is not anticipated to impact on the neighbouring land value or council rates. No management strategy is therefore proposed to address this potential conflict.	9 (D;3)	No action required
	Potential health impacts for neighbouring residences, particularly those associated with EMF	E	2	10	There is no established evidence that the exposure to magnetic fields generated by powerlines, substations and other electrical sources cause adverse health effects (ARPANSA 2018). EMF that is anticipated to be generated by the project is not expected to exceed guidelines for public exposure and would not cause adverse impacts for human health. The key EMF sources (transformers and substations) have been sighted more than 2 kilometres from the nearest residence and 1.5 kilometres from the nearest public road.	10 (E;2)	No action required
	Risk of theft of infrastructure and vandalism in the development footprint	D	4	5	A zero tolerance policy on theft will be implemented throughout the projects operational period. Surveillance cameras and signs will be implemented to deter vandalism and theft. Security fencing will be installed around the development footprint to control access.	5 (D;4)	No action required
	Impacts to surrounding land resulting from a structural fire within the development footprint	D	2	14	A bushfire management plan (BMP) would be prepared for the project that would detail measures and procedures to prevent structural fires. Fire emergency management procedures would be in place that include fire awareness, emergency response and evacuation, and monitoring and review. In addition, the emergency response plan (ERP) for the project would address potential fires associated with electrical hazards during operation associated with the use of electrical equipment such as power conversion units, BESS, substation and connection infrastructure.	14 (D;2)	The BMP will be regularly reviewed, and will be reviewed after incidents of bushfire or structural fire. The FMP will be updated if required following each review process. There will also be regular reviews of the ERP as well as after emergencies occur, with updates being made to increase the effectiveness of the ERP.
	Impacts on the solar farm as a result of bushfires in the immediate vicinity of the project, particularly to the east of the study area	D	2	14	The key principles for bushfire prevention and protection for the project will be: - the provision of clear separation between structures and bushfire hazards in the form of fuel-reduced APZs and/or defensible space; - appropriate access and egress for staff, contractors, visitors and emergency services; - adequate water supply; - suitable location of services and other infrastructure that pose potential ignition risk; - suitable construction standards and design of buildings; and - suitable management plans for the provision and maintenance of mitigation measures as well as for appropriate emergency response. The key principles for fire prevention and protection listed above will be applied as fire protection and prevention measures during the construction, operation and decommissioning of the project. The project's BMP will detail the management measures to mitigate impacts on the operation of the project from bushfires.	14 (D;2)	The BMP will be regularly reviewed, and will be reviewed after incidents of bushfire or structural fire. The BMP will be updated if required following each review process.

Activity	Identified potential conflict	Probability (P)	Consequence (C)	Risk ranking	Management strategy (method of control)	Revised risk ranking (P; C)	Performance target
Weed and pest management	Increased spread of weeds or introduction of new weeds into the local area as a result of increased vehicle and pedestrian movements during construction and operation	C	4	8	<p>Biosecurity management will include:</p> <ul style="list-style-type: none"> •measures to manage the impacts of weeds, disease and pest animals during construction, operation, and decommissioning activities •biosecurity response measures where impacts are identified •contingency measures in the event that existing measures are inadequate in managing the risk/impact. <p>To minimise impacts to biosecurity, vehicle movements will be restricted to established access tracks where possible. Appropriate wash down facilities will also be available to clean vehicles and equipment prior to arrival and when leaving work areas to minimise the transfer or soil and seed material. This will occur during vegetation clearing, construction, and decommissioning. In addition, options will be investigated to consider the feasibility of grazing within the study area throughout operation, which may assist to limit the spread of weeds in the study area.</p>	5 (D;4)	Effectiveness will be measured as part of the EMS.
	Increased presence of pest animals, or introduction of new pest animals into the area due to an increase in food waste, particularly during construction	C	4	8	The project may encourage pest animals to the local area as a result of potential increase in food sources associated with the construction activities and ground disturbance, along with operation and decommissioning works. However the biosecurity management plan to be prepared for the project will include measures for the management of pest animals, including biosecurity response measures where impacts are identified. Response measures could include baiting programs in consultation with landholders, or other control methods such as trapping if determined appropriate and necessary. Baiting programs would be designed to avoid impacts to non-target species.	5 (D;4)	Effectiveness will be measured as part of the EMS.
Water management	Changes to water quality and surface water flows during construction and operation, particularly where access roads are required to traverse the environmental exclusion zone	C	3	13	<p>Stubbo Creek would be crossed by internal access roads and cable crossings as part of the project. Impacts to water quality as a result of runoff are most likely to occur during construction, with limited impacts expected during operation. Impacts to water quality will be managed in accordance with a stormwater management plan to be developed as a sub-plan to the OEMP. Water quality monitoring will be undertaken which will include baseline water quality testing prior to construction and ongoing regular monitoring throughout construction and operation. Water quality testing will be undertaken in accordance with best practice guidelines and ANZECC (2000) Guidelines for Fresh and Marine Water Quality and/or local objectives.</p> <p>Required waterway crossings (including the access road and cable crossings) will be designed and constructed in compliance with the DPI Guidelines for riparian corridors on waterfront land and Guidelines for watercourse crossings on waterfront land.</p> <p>Best practice principles for stormwater and sediment control will be incorporated into the design, construction and operation stages of the project as part of the stormwater management plan, along with other relevant EPA guidelines such as the Guidelines for Erosion & Sediment Control on Building Sites, which relates to stormwater and erosion management. A soil and water management plan will also be prepared as a sub-plan of the CEMP and outline a number of measures to minimise erosion and sediment transport to nearby waterways. A ground cover management plan will also be prepared to ensure that the study area is rehabilitated as soon as practicable after construction and that the groundcover is maintained throughout operation</p> <p>Potential contaminants onsite (e.g. fuels and chemicals) will be appropriately stored (including bunding) to reduce risks of spills contaminating waterways.</p>	8 (C;4)	Effectiveness will be measured as part of the EMS.
	Impacts to water quantities available for neighbouring properties due to requirements for water use during construction and operation	D	4	5	The project is not expected to impact licensed water users. Water to be used for the project would be sourced from water trucks, opportunistically from farm dams located within the study area or from treated wastewater if available in a nearby region. There is no groundwater extraction required within the study area for the project. Water supply arrangements for the project will be the subject of further consultation with the project landholders, neighbouring landholders, Mid-Western Regional Council and relevant agencies.	5 (D;4)	No action required
	Potential temporary and permanent impacts to water storage in farm dams within the study area	B	3	17	Should any filling or levelling of farm dams be required for the construction of photovoltaic arrays and/or ancillary infrastructure individual or collective assessments would be undertaken prior to commencement of construction. These assessments would form part of a more detailed management plan as required by the Secretary prior to commencement of construction.	9 (D;3)	Effectiveness will be measured as part of the EMS.
Decommissioning works including demolition and returning site to pre-existing use	Potential impacts on neighbouring properties from increases in noise, dust, traffic, and reduced visual amenity associated with the decommissioning works	C	3	13	Decommissioning activities are expected to result in fewer amenity impacts than construction. However a decommissioning and rehabilitation plan will be prepared for the project which will include measures to manage potential amenity impacts on neighbouring properties, in line with the measures outlined in the CEMP.	9 (D;3)	Effectiveness will be measured as part of the decommissioning and rehabilitation plan.
	Potential impacts to surrounding land use associated with future land use in the study area if the land is deemed unsuitable to return to agricultural land use	E	3	6	A decommissioning and rehabilitation plan will be prepared for the project that will outline rehabilitation objectives and strategies to return the study area to its pre-existing condition for agricultural land use. This will include performance indicators to be used to guide the return of land back to agricultural production. The plan will be informed by the results of the baseline soil survey to be undertaken prior to construction. As a result, it is anticipated that the land would be rehabilitated back to its pre-existing condition for agricultural land use, avoiding impacts to surrounding land use following rehabilitation.	6 (E;3)	Effectiveness will be measured as part of the decommissioning and rehabilitation plan.