APPENDIX F

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
Weed and pest management	Increased distribution of weeds during construction as a result of increased vehicle and pedestrian movements.	B	4	**12**	To manage the transfer of weeds and pathogens to and from work areas, appropriate wash down facilities will be available to clean vehicles and equipment prior to arrival and when leaving the work areas. The focus will be to minimise the transfer of soil and seed material. This will occur during vegetation clearing and construction. The project's construction environmental management plan (CEMP) and operational environmental management plan (OEMP) will include weed management protocols, such as measures for the identification, management and ongoing monitoring of weeds on-site. In addition, if implemented, sheep grazing would put pressure on any increases to weed levels while maintaining a multi-purpose land use throughout the life of the project.	5 (D; 4)	Effectiveness will be measured as part of the CEMP and OEMP.
	Increased presence of pest animals during construction as a result of increased food waste.	C	4	**8**	Pest animals may be encouraged by food sources from construction works and general disturbance. If pest control is considered necessary, it will generally involve a routine baiting program in consultation with the project landholders and neighbouring landholders. Other control methods such as shooting or trapping may also be used if deemed necessary or appropriate. Baiting programs would include methods to minimise the possibility of affecting non-target fauna species.	5 (D; 4)	Effectiveness will be measured as part of the CEMP and OEMP.
Agricultural land and productivity	Removal of high quality agricultural land from production.	A	5	**11**	The project is considered to be a temporary and reversible change in land use and the land within the development footprint can be returned to its former use (ie grazing) upon decommissioning. The project boundary incorporates a mix of large-scale and small-scale farms from within the local community, with high potential for continuation of sheep grazing activities within the three array areas during operations, as well as continuation of farming activities on land in between the three array areas. The three array areas have been strategically placed so that primary production can continue within the immediate surrounds and to reduce potential impacts on the use of neighbouring farm lands for primary production purposes. In addition, it is anticipated that the development footprint will only require minimal site preparation and civil works (such as grading/levelling and compaction). No large areas of reshaping or excavation are anticipated, aside from digging of MV cable trenches and formation of level pads for substations. The integrity of the land and soil capability within the development footprint is expected to be retained throughout the project's operations. A project decommissioning and rehabilitation plan will be prepared prior to the end of the project's operational life and will feature	**11 (A; 5)**	Rehabilitation objectives and strategies (including performance measures) will be established in the decommissioning and rehabilitation plan.
	Reduced agricultural productivity of land under project infrastructure during operations.	A	5	**11**	The anticipated use of single axis tracking PV modules involves a typical row spacing of 5-8 m, which would result in a significant area of land within the project's development footprint that could still be utilised for sheep grazing during the project's operations. It is noted that resting the land within the development footprint from significant grazing pressure during operations may improve the future agricultural productivity potential of the land following decommissioning.	**11 (A; 5)**	Rehabilitation objectives and strategies (including performance measures) will be established in the decommissioning and rehabilitation plan.
Mineral resources	Impacts to areas of higher mineral significance.	D	5	2	An area identified by Geological Survey of NSW (GSNSW) – Division of Resources and Geosciences (DRG) as an area of higher mineral significance has been removed from the southern array area. All project infrastructure (with the exception of underground cables below 500 mm) will be removed upon decommissioning and the development footprint will be returned to its pre-existing land use. No long-term impacts to mineral deposits are expected and the land within the development footprint could be explored upon decommissioning.	2 (D; 5)	No action required.
Neighbouring agricultural operations	Impacts on the operation of the solar farm from neighbouring agricultural operations (eg dispersal of dust and/or agricultural products on to PV modules).	D	4	5	No significant impacts on the operation and functionality of the project are anticipated as a result of neighbouring agricultural operations. Standard maintenance of the PV modules and other project infrastructure will likely address any potential impacts generated by dust or spray drift from neighbouring agricultural and/or land management practices.	5 (D; 4)	No action required.
Noise	Construction noise and associated impacts on residents.	B	3	**17**	Construction noise impacts have been assessed as part of the noise and vibration impact assessment (refer to Appendix J of the EIS). During limited out of hours (OOH) periods, predicted construction noise levels and maximum event noise levels are above the relevant criteria at a number of the assessment locations. The use of buffer distances around these assessment locations has been recommended during OOH periods with the aim of minimising impacts and reducing construction noise levels to below the relevant criteria. Buffer zones for affected assessment locations are listed in Table 9.1 of Appendix J of the EIS. Noise generated during construction will also be minimised through implementation of best practice requirements outlined in the *Interim Construction Noise Guideline* (DECC 2009). Construction noise management and mitigation will be addressed in the CEMP.	9 (D; 3)	Effectiveness will be measured as part of the CEMP, which will include reference to relevant noise criteria.
	Construction noise and associated impacts on livestock.	C	4	8	Potential construction noise impacts on livestock, in particular during key lambing periods will be identified during further consultation with involved landholders and adjacent landholders. Noise generated during construction will also be minimised through implementation of several measures from the *Interim Construction Noise Guideline* (DECC 2009), which have been listed in the noise and vibration impact assessment (refer to Appendix J of the EIS). Any required mitigation measures will be identified in consultation with landholders and included in the CEMP for the project.	8 (C; 4)	Effectiveness will be measured as part of the CEMP, which will include reference to relevant noise criteria.
	Operational noise and associated impacts on residents.	D	5	2	Operational noise impacts have been assessed as part of the noise and vibration impact assessment (refer to Appendix J of the EIS). Noise levels for all assessment locations considered as part of the operational noise impact assessment will satisfy the minimum daytime and evening/night-time trigger levels established by the *Noise Policy for Industry* (EPA 2017).	2 (D; 5)	No action required.

Activity	Identified potential conflict	Probability (P)	Consequence (C)	Risk ranking	Management strategy (method of control)	Revised risk ranking (P; C)	Performance target
	Noise from increased vehicle movements on local roads during construction and associated impacts on residents and livestock.	B	3	**17**	Road traffic noise impacts have been assessed as part of the noise and vibration impact assessment (refer to Appendix J of the EIS). As per the NSW Government's Voluntary Land Acquisition and Mitigation Policy (VLAMP), a noise level of, or less than, 2 dB above the relevant noise goal is considered to have negligible impacts and would not be discernible by the average listener. As such, impacts identified as part of the road traffic noise assessment do not warrant receiver based treatments or controls. No vehicles associated with the construction of the project will be turning onto The Gap Road direct from Thunderbolts Way (southern array area). No heavy vehicles will be turning onto Barleyfields Road (south) at the intersection with Wood Street and the New England Highway (northern and central array areas). Implementation of best practice requirements outlined in the *Interim Construction Noise Guideline* (DECC 2009) will also minimise noise impacts. Construction noise management and mitigation will be addressed in the CEMP.	9 (D; 3)	Effectiveness will be measured as part of the CEMP, which will include reference to relevant noise criteria.
Air quality	Dust from vehicle movements along access roads and unsealed local roads.	B	4	**12**	UPC will apply appropriate mitigation strategies to reduce potential dust generation by project-related vehicle movements during construction . This may include measures within the traffic management plan (TMP) such as dust suppression with water spraying or localised sealing or treatment of the road (with dust suppression polymers) adjacent to residential properties along local roads.	8 (C; 4)	Effectiveness of mitigation strategies will be measured as part of the TMP.
	Dust from sheep moving across paddocks on-site once operational.	C	5	4	No significant impacts on the operation and functionality of the project are anticipated as a result of dust from sheep moving across paddocks on-site once operational. Sheep grazing within the development footprint would be a continuation of an existing land use. No management strategy is proposed to address this potential conflict.	4 (C; 5)	No action required.
Visual amenity	Visibility of project infrastructure from residences and the local road network.	B	2	**21**	The visibility of project infrastructure from nineteen viewpoints has been assessed as part of the visual impact assessment (refer to Appendix I of the EIS). The mitigation measures required to alleviate visual impacts are listed in Section 4.5 of the visual impact assessment and include landscaping at S9 and consideration of the colour of materials and night lighting.	**13 (C; 3)**	The landscaping plan will include a program to monitor and report on the effectiveness of the proposed landscaping.
	Inadequacy of vegetation at screening project infrastructure during ongoing operations.	C	3	**13**	Any required vegetation screening would be installed in accordance with a detailed landscaping plan prepared in consultation with DPE, project landholders, Uralla Shire Council (where relevant), RMS (where relevant) and affected landholders to the satisfaction of the Secretary. Vegetation screening would be planted prior to the commencement of operations and consist of vegetation species that facilitate the best possible outcome in terms of visual screening and would be designed to be effective at screening views of project infrastructure within three years of the commencement of construction. The plan would include a program to monitor and report on the effectiveness of the vegetation screening and include details of who would be responsible for monitoring, reviewing and implementing the plan. It would also detail the appropriate course of action should affected landholders or relevant agencies consider the planted vegetation screening to be inadequate.	9 (D; 3)	The landscaping plan will include a program to monitor and report on the effectiveness of the proposed landscaping.
	Glare/reflectivity from PV modules and other project infrastructure.	D	4	5	Based on the findings of previous assessments prepared for PV solar energy facilities, glint and glare from the project's PV modules and other project infrastructure are not expected to significantly impact receptors within the vicinity of the development footprint for the three array areas or motorists travelling along the local and regional road network. The proposed landscaping would reduce the visibility of PV modules and other project infrastructure at these locations, which would also mitigate any potential for glint or glare impacts. No management strategy is proposed to address this potential conflict.	5 (D; 4)	No action required.
	Potential for night lighting from the project to impact neighbouring properties.	D	5	2	Any external lighting associated with the project will: - be installed as low intensity lighting (except where required for safety or emergency purposes); - be installed so that it does not shine above the horizontal; and - comply with Australian Standard AS4282 (INT) 1997 - Control of Obtrusive Effects of Outdoor Lighting, or its latest version.	5 (D; 4)	Compliance will be measured as part of the CEMP and OEMP.
Security	Change in land use resulting in increased pedestrian and vehicle traffic on-site during the project's construction period and potential for theft and vandalism at neighbouring properties.	C	3	**13**	A zero tolerance policy on theft will be implemented on-site throughout the project's construction period. Criminal background checks on all staff, contractors, sub-trades and security guards will be performed. Surrounding landholders, project landholders and law enforcement will be provided with the primary contractor's contact information. The construction workforce management plan (CWMP) will include a Code of Conduct for the project's workers (particularly to avoid anti-social behaviour at peak construction times).	9 (D; 3)	The CWMP will include details on how the plan will be managed and audited.
	Change in land use resulting in vandalism and theft at the construction accommodation village.	D	4	5	A zero tolerance policy on theft will be implemented on-site throughout the project's construction period. Surveillance cameras and signs will be implemented at the construction accommodation village to deter vandalism and theft. Security fencing will be installed around the construction accommodation village to control access.	5 (D; 4)	No action required.
	Change in land use resulting in vandalism and theft of project infrastructure and construction materials.	C	4	8	A zero tolerance policy on theft will be implemented on-site throughout the project's construction period. Surveillance cameras and signs will be implemented to deter vandalism and theft. The temporary construction site compound will be established in a fenced-off area within the development footprint. Chain mesh security fencing will be installed within the project boundary around the perimeter of the three array areas to control access.	5 (D; 4)	No action required.

Activity	Identified potential conflict	Probability (P)	Consequence (C)	Risk ranking	Management strategy (method of control)	Revised risk ranking (P; C)	Performance target
Safety	Safety of children due to increased vehicle movements along the local road network.	D	2	**14**	The project's TMP and Driver Code of Conduct will be prepared prior to commencement of construction and will include: - safety initiatives for transport through residential areas and/or school zones (if required); - an induction process for vehicle operators and regular toolbox meetings; and - a complaint resolution and disciplinary procedure. No vehicles associated with the construction of the project will be turning onto The Gap Road direct from Thunderbolts Way (southern array area). No heavy vehicles will be turning onto Barleyfields Road (south) at the intersection with Wood Street and the New England Highway (northern and central array areas). Delivery scheduling will take school bus runs along Salisbury Plains Road and The Gap Road on school days into account.	**14 (D; 2)**	The TMP will include a complaint resolution and disciplinary procedure as a mechanism to address any issues identified by the local community and other road users.
	Safety of horses, wildlife and livestock due to increased vehicle movements along the local road network.	D	2	**14**	Speed limits within the development footprint will be limited to 40 km/hr during construction and operations to minimise potential vehicle collisions with fauna within the development footprint. Temporary travel speed reduction may also be implemented on local roads as part of the TMP. No vehicles associated with the construction of the project will be turning onto The Gap Road direct from Thunderbolts Way (southern array area).	**14 (D; 2)**	The TMP will include a complaint resolution and disciplinary procedure as a mechanism to address any issues identified by the local community and other road users.
Property values and council rates	Devaluation of neighbouring properties due to proximity to project infrastructure.	D	3	9	While economic analyses for the industry in relation to valuation and pricing of land is not yet existing, and there are many factors that influence land values, inference can be drawn from one key factor, which is amenity and specifically, the impacts to the amenity of neighbouring properties and the locality. The EIS and supporting technical assessments have considered potential amenity impacts from the project's construction and operations. Construction impacts will be temporary in nature and are therefore considered unlikely to have a lasting impact on the amenity of the locality. The residual impacts associated with the ongoing operation of the project (ie after the implementation of proposed management and mitigation measures, such as landscaping) are predicted to be minimal.	9 (D; 3)	No action required.
	Impacts to the council rates of neighbouring properties due to the change in land use within the development footprint.	D	3	9	The rating category for the land within the development footprint will likely need to change from 'farmland' to 'business' in accordance with the NSW *Local Government Act 1993* . This could result in some increase in land value and subsequent increases in rates; however, it is not anticipated that this will impact land value or council rates on neighbouring agricultural properties. No management strategy is proposed to address this potential conflict.	9 (D; 3)	No action required.
Health	Potential health impacts due to proximity to project infrastructure.	E	2	10	As the strengths of electric and magnetic fields (EMFs) attenuate rapidly with distance, the ICNIRP reference level for exposure to the general public will not be exceeded and impact to the general public and neighbouring agricultural operation will be minimal or negligible. Location selection for project infrastructure (namely the solar array and grid substations) and fencing within the project boundary will limit exposure to EMFs for the general public. Outside of exposure to EMFs, there are no known potential health impacts associated with proximity to the project infrastructure.	10 (E; 2)	No action required.
Traffic	Increased vehicle movements along the local road network during construction and subsequent impacts on accessibility and commute times.	B	4	**12**	In order to minimise impacts on traffic flow along the local road network, deliveries and other vehicle movements will avoid peak hour times, whenever possible. The project's TMP will also include consideration for coordination of construction traffic with seasonal agricultural haulage. No vehicles associated with the construction of the project will be turning onto The Gap Road direct from Thunderbolts Way (southern array area). No heavy vehicles will be turning onto Barleyfields Road (south) at the intersection with Wood Street and the New England Highway (northern and central array areas).	8 (C; 4)	The TMP will include a complaint resolution and disciplinary procedure as a mechanism to address any issues identified by the local community and other road users.
	Impacts on seasonal/campaign-based agricultural transport activities during construction (eg livestock or product cartage).	C	4	8	Potential seasonal/campaign-based agricultural transport activities will be identified during further consultation with project landholders and nearby landholders. Any required mitigation measures (eg temporary alternate construction vehicle access routes and/or revisions to construction scheduling) will be identified in consultation with landholders and included in the TMP.	5 (D; 4)	The TMP will include a complaint resolution and disciplinary procedure as a mechanism to address any issues identified by neighbouring landholders.
	Increased vehicle movements along the local road network during operation and subsequent impacts on accessibility and commute times.	D	4	5	Vehicle movements during operations will be much lower than during the project's construction and are estimated to be an average of 30 daily vehicle movements which would generally all be light vehicle movements. Impacts on accessibility and commute times as a result of the project operations traffic are predicted to be negligible.	5 (D; 4)	The TMP will include a complaint resolution and disciplinary procedure as a mechanism to address any issues identified by neighbouring landholders.
	Impact of vehicle movements on school bus route accessibility and commute times.	C	4	8	To minimise impacts on traffic flow in the township of Uralla and surrounds during the operation of school bus services, the project's construction material deliveries and other heavy vehicle movements will avoid school bus times, whenever possible. The majority of The Gap Road will not be utilised by project-related traffic due to its proximity to and use by rural residential landholders and school buses, which use this road during the morning and afternoon school run. Delivery scheduling will take school bus runs along Salisbury Plains Road and The Gap Road on school days into account. No vehicles associated with the construction of the project will be turning onto The Gap Road direct from Thunderbolts Way (southern array area). A limited number of light vehicles may use this route to access the southern array area during operations.	8 (C; 4)	The TMP will include a complaint resolution and disciplinary procedure as a mechanism to address any issues identified by neighbouring landholders.
	Potential conflicts between project-related construction vehicle movements and stock movements.	C	5	4	Project-related and nearby landholders may move stock between paddocks and across roads proposed to be utilised for access to the three array areas, therefore there is potential for conflict with project-related construction traffic movements. Potential stock crossing locations will be identified through further consultation with project-related and nearby landholders. Any required mitigation measures (eg direct line of communications between landholder and site construction manager and/or temporary traffic control at stock movement locations) will be identified in consultation with landholders and included in the TMP for the project.	5 (D; 4)	The TMP will include a complaint resolution and disciplinary procedure as a mechanism to address any issues identified by neighbouring landholders.

Activity	Identified potential conflict	Probability (P)	Consequence (C)	Risk ranking	Management strategy (method of control)	Revised risk ranking (P; C)	Performance target
Soil erosion	Soil erosion leading to land and water pollution.	C	3	**13**	An erosion and sediment control plan will be prepared in accordance with *Managing Urban Stormwater: Soils and Construction - Volume 2A Installation of Services* (Landcom 2004) prior to commencement of construction. Disturbed areas will be stabilised and rehabilitated as quickly as possible to reduce the exposure period. Proposed measures will be considered further and formalised as part of detailed design and documented in the CEMP and OEMP.	5 (D; 4)	Effectiveness will be measured as part of the CEMP and OEMP.
Water	Change to surface water flows and water quality as a result of construction and operations of the project.	C	3	**13**	Monitoring of watercourse and VRZ condition for all retained watercourses where these run through or immediately adjacent to the development footprint will be undertaken, with maintenance as required to minimise scouring and erosion and ensure waterway health and stability. Implementation of ESC measures in accordance with Landcom (2004). Proposed measures will be considered further and formalised as part of detailed design and documented in the CEMP and OEMP. Monitoring and maintenance of ground cover vegetation and other stabilised surfaces throughout operation to limit erosion and transport of sediment to watercourses. Implementation of procedures for hazardous material storage and spill management to be prepared and documented within the OEMP.	8 (C; 4)	Effectiveness will be measured as part of the CEMP and OEMP.
	Inadequate availability of sufficient water for neighbouring properties during construction and operation of the project.	D	4	5	The project will not impact licensed water users. The water needs of the project will be met via water trucked to the three array areas. Water contained within existing farm dams to be removed may be used for non-potable construction purposes, in accordance with harvestable rights provisions, to minimise use of imported water where practicable. Water supply arrangements for the project will be the subject of further consultation with the project landholders, neighbouring landholders, Uralla Shire Council and relevant agencies.	5 (D; 4)	No action required.
	Potential loss of access to water within dams for livestock due to the project's construction.	B	3	**17**	Further consultation between project landholders and UPC may be required in consideration of lease arrangements and legislative requirements for construction of replacement farm dams for stock watering. Water contained within existing farm dams to be removed may be used for non-potable construction purposes, in accordance with harvestable rights provisions, to minimise use of imported water where practicable. The income for the project landholders will serve to drought-proof their ongoing farming operations for the next generation of farmers. There are not expected to be any constraints on the current or potential agricultural uses of nearby land.	9 (D; 3)	No action required.
Local infrastructure and services	Inadequate availability of waste management facilities within the local community during construction and operations of the project.	C	3	**13**	A waste management plan (WMP) will be prepared prior to commencement of construction in consultation with Uralla Shire Council and DPE. The plan will include consideration of the following: - measures to reduce the types and volumes of waste generated during construction; - measures to maximise reuse and recycling and reduce the volume of waste generated by the project and subsequently disposed of at licensed waste management facilities; - a breakdown of anticipated waste streams and volumes; - evidence of consultation with Uralla Shire Council, neighbouring councils and licensed waste management facilities to confirm the capacity of nearby facilities and their availability to manage the project's waste; - on-site waste management measures in line with relevant guidelines; and - commitments around disposal of project assets at the completion of operations. The WMP will also include appropriate consultation frameworks with Uralla Shire Council, neighbouring councils and licensed waste management facilities to maintain communication and forward planning and provide a grievance mechanism through which any identified adverse impacts can be addressed.	5 (D; 4)	The WMP will include a grievance mechanism through which any identified adverse impacts can be addressed.
	Inadequate availability of existing services and infrastructure in the local community.	C	4	8	Through the provision of additional economic stimulus, employment opportunities and benefits and investment in infrastructure and services, the net community benefit of the project is considered to be positive. The proposed staging approach for the construction of the three array areas is the most effective way to mitigate the overall impact of the project's construction workforce and demand for existing services and infrastructure in the local community. The deliberate separation of peaks in demand for the two stages has been proposed to mitigate the impact on local communities. The potential demand on medical and well-being services in Uralla can be alleviated by the provision of medical support within the construction accommodation village (should it be required) or on-site. A primary means of planning and managing potential impacts to the local community (including availability of accommodation, infrastructure and services) will be through implementation of a CWMP or similar.	5 (D; 4)	The CWMP will include details on how the plan will be managed and audited.
Fire	Impacts on land surrounding the solar farm from structural fires generated from within the development footprint.	D	2	**14**	Fire emergency management procedures are proposed that include fire awareness, emergency response and evacuation, and monitoring and review procedures. The fire management plan (FMP) for the project will detail measures and procedures to prevent fires igniting during the construction, operation and decommissioning of the project. In addition, the emergency response plan (ERP) for the project will address potential fire events associated with electrical hazards.	**14 (D; 2)**	The FMP will be reviewed after incidents of bushfire or other fire as well as annually at the end of each bushfire season. The FMP will be amended after the review process, if required, to increase the effectiveness of the FMP. The ERP will be reviewed after emergencies as well as annually . The ERP will be amended after the review process, if required, to increase the effectiveness of the ERP.

Activity	Identified potential conflict	Probability (P)	Consequence (C)	Risk ranking	Management strategy (method of control)	Revised risk ranking (P; C)	Performance target
	Impacts on the operation of the solar farm from bushfires in the immediate vicinity of the project.	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 defendable 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 FMP will detail the management measures to mitigate impacts on the operation of the project from bushfires.	14 (D; 2)	The FMP will be reviewed after incidents of bushfire or other fire as well as annually at the end of each bushfire season. The FMP will be amended after the review process, if required, to increase the effectiveness of the FMP.