Appendix C Updated Consolidated Safeguards And Mitigation Table

Note:

Underline indicates new mitigation text

~~Strikethrough~~ indicates mitigation text removed since the EIS

Factor	Mitigation measure	C	O	D
Biodiversity				
B1	Time works to avoid critical life cycle events. Hollow-bearing trees would not be removed during breeding season (spring to summer) for threatened hollow dependant fauna. If clearing outside of this period cannot be achieved, pre-clearing surveys would be undertaken to ensure no impacts to fauna would occur.	C		
B2	Implement clearing protocols during tree clearing works, including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecological or wildlife handler. A tree clearing procedure would be implemented to minimise harm to resident fauna.	C		
B3	Relocate habitat features (fallen timber, hollow logs) from within the development site. A procedure for relocation of habitat features to adjacent area for habitat enhancement would be implemented.	C		
B4	Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed. Additionally: • Approved clearing limits to be clearly delineated with temporary fencing or similar prior to construction commencing. • No stockpiling or storage within dripline of any mature trees. • Access and laydown in areas of White Box Yellow Box Blakely's Red Gum	C		

Factor	Mitigation measure	C	O	D
	Woodland TEC will be minimised to reduce impacts. Exclusion fencing and signage or similar would be installed around habitat to be retained			
B5	Noise barriers or daily/seasonal timing of construction and operational activities to reduce impacts of noise. Construction Environmental Management Plan will include measures to avoid noise encroachment on adjacent habitats such as avoiding night works as much as possible.	C		
B6	Light shields or daily/seasonal timing of construction and operational activities to reduce impacts of light spill: • Avoid night works where possible. Direct lights away from vegetation.	C	O	
B7	Adaptive dust monitoring programs to control air quality. • Daily monitoring of dust generated by construction activities. • Construction would cease if dust observed being blown from site until control measures were implemented. All activities relating to the Proposal would be undertaken with the objective of preventing visible dust emissions from the development site.	C		
B8	Temporary fencing to protect significant environmental features such as riparian zones. Prior to construction commencing, exclusion fencing, and signage would be installed around habitat to be retained.	C		
B9	Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas. • A Weed Management procedure would be developed for the Proposal to prevent and minimise the spread of weeds. This would include: • Management protocol for declared priority weeds under the Biosecurity Act 2015		O	

Factor	Mitigation measure	C	O	D
	during and after construction • Weed hygiene protocol in relation to plant, machinery, and fill. • Any occurrences of pathogens such as Myrtle Rust and Phytophthora would be monitored, treated, and reported. The weed management procedure would be incorporated into the Biodiversity Management Plan	C		
B10	Staff training and site briefing to communicate environmental features to be protected and measures to be implemented. • Site induction and toolbox talks for ecologically sensitive areas would be undertaken. • Staff training and site briefing to communicate impacts of traffic strikes on native fauna. • Awareness training during site inductions regarding enforcing site speed limits. Site speed limits to be enforced to minimise fauna strike.	C	O	
B11	Preparation of a management plan to regulate activity in vegetation and habitat adjacent to the proposed development. Preparation of a Biodiversity management plan that would include protocols for: • Protection of native vegetation to be retained. • Best practice removal and disposal of vegetation. • Staged removal of hollow-bearing trees and other habitat features such as fallen logs with attendance by an ecologist. • Weed management. • Unexpected threatened species finds. • Exclusion of vehicles through sensitive areas. • Rehabilitation of disturbed areas.	C		

Factor	Mitigation measure	C	O	D
B12	Preparation of a vegetation management plan to monitor ground cover beneath the solar array modules. A Ground cover management plan would be developed to: • Ensure that ground cover is retained beneath panels, to resist erosion and weeds. Preserve the native composition as much as possible.		O	
~~B13~~ (see S7)	~~Erosion and sediment controls. An erosion and sediment control plan would be prepared in conjunction with the final design and implemented.~~	~~C~~		
B14	Creek lines and retained dams would be planted with native riparian vegetation and transformed into small created wetlands for wildlife. Riparian plantings would comprise local native sedges, rushes, grasses and small shrubs.	C		
B15	Screening and landscaping plantings to be comprised of local indigenous species representative of the vegetation in the development site. Screening and landscaping plantings (up to 50m where practicable) to be comprised of local indigenous species representative of the vegetation in the development site.		O	
B16	Involve a local landcare group or educational institution in ongoing biodiversity monitoring and enhancement. Involve a third party organisation to monitoring and maintain biodiversity enhancement activities. Communicate outcomes with third parties to contribute knowledge of how biodiversity can be preserved on solar farms.		O	
B17	Plain wire instead of barbed used on top of the perimeter fence and stock fencing to reduce impacts on birds and Squirrel Glider. Security fencing would be comprised of approximately 2m high cyclone fencing. Use plain wire perimeter fencing where this intersects woodland to avoid potential entrapment of fauna on fence.	C		
B18	Perimeter fence would be located to avoid, where possible, segmenting patches of native vegetation to facilitate native fauna movements. The final 'for construction' design would	C		

Factor	Mitigation measure	C	O	D
	include the perimeter fencing avoiding rather than intersecting patches or retained woodland.			
B19	Install approximately 120 nesting boxes for birds and mammals across the development site. Nesting boxes would be designed to meet the requirements of target species including Squirrel Gliders, bats, parrots and owls. Nesting boxes would be monitored periodically for use and/or replacement.	C		
B20	Wildlife corridor connectivity enhancement plan to improve connectivity in specific areas of the site and to maintain this improvement for the life of the project.	C	O	
Visual amenity and landscape character				
V1	The following design considerations will be applied to the Proposal: • Consideration of potential visual impacts should be considered when siting the PCU's and storage shed within the proposed Development footprint. They should be situated at a suitable distance from residences. Excess material should be used to berm the southern section to assist in fragmenting views. • The design should retain the existing roadside planting along the eastern boundary of the site. This would reduce the overall visual impact of proposed development. • Consideration should be given to the material and colours of the PCU's, the battery, and storage shed to ensure minimal contrast and to help blend into the surrounding landscape. In general materials should be nonreflective and should be painted in neutral colours that are sensitive to the surrounding landscape. • Consideration should be given to controlling the type and height of PCU's, the battery, and storage shed to ensure the development does not contrast significantly with surrounding landscape. • Security fencing and frames will be non-reflective.	Design		
V2	Existing vegetation should be retained and protected, where possible, during the works to	C		

Factor	Mitigation measure	C	O	D
	maintain the existing level of screening.			
V3	A landscaping plan will be prepared and implement. The plan will include a variety of landscape mitigation strategies to assist in the integration of the Proposal into the existing landscape character, specifically: • A wide band of native plantings of trees up to 5-10m in height for the southern boundary of the Proposal site to address potential visual impacts from the Oxley Wild Rivers National Park. These can be positioned in three (3) rows (or approximately 6 - 9m wide) between the property boundary and security fence. The tree canopy should not intrude into the zone that exists between the edge of the security fence and the solar panels (refer to figure 7-10 of the EIS). • Screen planting along Silverton Road to assist in screening views from R5 and reducing the visual impact from Silverton Road. • Screen planting on the western boundary of the site to reduce the potential visual impact from R3. • Consultation with landowners identified in table 7-8 of the EIS within 1.5km of the Proposal site to undertake screen planting near dwelling as required. Screen planting is to be undertaken in consultation with landowners to ensure desirable views are not diminished.	C	O	
V4	Night lighting would be minimised to the maximum extent possible (i.e. manually operated safety lighting at main component locations).		O	
Watercourses and hydrology				
W1	The design of buildings, equipment foundations and footings for electrical componentry and panel mounts would be designed to avoid the 1% AEP flood level to minimise impacts from potential flooding including: • The solar array mounting piers would be designed to withstand the forces of floodwater (including any potential debris loading) up to the 1% AEP flood event plus 500mm freeboard, giving regard to the depth and velocity of floodwaters.	Design		

Factor	Mitigation measure	C	O	D
	• The tracking axis for solar tracking modules would be located above 1% AEP flood event plus 500mm freeboard. • The mounting height of the solar module frames would be designed such that the lower edge of the module is clear of the predicted 1% AEP flood level. • All electrical infrastructure, including inverters, would be located above the 1% AEP flood level plus 500mm freeboard. • Where electrical cabling is required to be constructed below the 1% AEP flood level it would be capable of continuous submergence in water. • The proposed perimeter security fencing would be constructed in a manner which does not adversely affect the flow of floodwater and should be designed to withstand the forces of floodwater, or collapse in a controlled manner to prevent impediment to floodwater. • Any fencing across Gara River or Commissioners Waters should be avoided in preference to creating separate fenced compounds on either side of the creeks			
W2	At the substation site, slight raising of the adjacent roadway (or similar type bunding) is recommended in order to divert upslope runoff around this critical piece of infrastructure.	Design		
W3	All buildings and structures (including solar arrays) associated with the Proposal should be located outside high hazard areas (H5 and above) where they may be vulnerable to structural damage and have significant impact on flood behaviour.	Design		
W4	If the proposed crossing structures over Gara River will be rendered impassable during significant flood events, the following would occur: • Flood warning signs and flood level indicators would be placed on each approach to the proposed crossings. A Business Floodsafe Plan be prepared for the development to ensure the safety of employees during flood events in general accordance with the NSW SES “Business Floodsafe Toolkit and Plan”.	C	O	D

Factor	Mitigation measure	C	O	D
W5	Any road crossings on watercourses within the Proposal Area would be of the type defined in Table 2 of the Hydrological and Hydraulic Analysis Report was prepared by Footprint NSW Pty Ltd in Appendix G. Any proposed crossings (vehicular or service) of existing watercourses on the subject site should be designed in accordance with the following guidelines, and in the case of vehicle crossing should preferably consist of bed level crossings constructed flush with the bed of the watercourse on first and second order watercourses to minimise any hydraulic impact: • Guidelines for Watercourse Crossings on Waterfront Land **Invalid source specified.** • Guidelines for Laying pipes and Cables in Watercourses on Waterfront Land **Invalid source specified.** • Why *do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). *Policy and Guidelines for Fish Friendly Waterway Crossings* (NSW DPI, 2003).	Design		
W6	Within the floodplain access roads should be constructed as close to natural ground levels as possible so as not to form an obstruction to floodwaters. The surface treatment of roads should be designed giving regard to the velocity of floodwaters to minimise potential for scouring during flood events.	C		
W7	An Emergency Response Plan incorporating a Flood Response Plan would be prepared prior to construction covering all phases of the Proposal. The plan would: • Detail who would be responsible for monitoring the flood threat and how this is to be done. • Detail specific response measures to ensure site safety and environmental protection. • Outline a process for removing any necessary equipment and materials offsite and out of flood risk areas (i.e., rotate array modules to provide maximum clearance of the predicted flood level). • Consider site access in the event that some tracks become flooded.	C	O	D

Factor	Mitigation measure	C	O	D
	• Establish an evacuation point. • Define communication protocols with emergency services agencies.			
Aboriginal Heritage				
AH1	The proposed layout of the solar farm must be amended to avoid CT1 plus a 20m buffer surrounding the site.	PC		
AH2	A small heavily vegetated area to north of the Proposal site near Waterfall Way (Grafton Road) has not been subject to archaeological survey. Further archaeological assessment would be required in this area. This would include consultation with the registered Aboriginal parties and further field survey.	PC		
AH3	Archaeological test excavation of those sections of PAD that intersect with the proposed design is required in order to establish the nature and extent of the deposits and therefore inform, significance, impact and proposed mitigation measures. This subsurface excavation will be undertaken following the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2011). An addendum ACHA report must be prepared to address the findings of the test excavation, significance assessment, impact assessment and proposed management of these PAD areas and any additional sites identified during the subsurface testing programme of works.	PC		
AH4	The subsurface testing of the PADs (3, 5, 6, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21) which will be impacted by the development must be undertaken prior to any works and/or the issuing of any approvals for the Oxley Solar Farm.	PC		
AH5	During construction works, high visibility fencing must be erected around CT6 and CT7 to ensure indirect impacts through use of Silverton Road as a transport corridor do not occur and the designated “no go zones” surrounding these areas must be included in the CHMP for the project. The development avoids the scarred tree (Oxley Solar Farm ST1) as well as	C	O	D

Factor	Mitigation measure	C	O	D
	the five cultural trees (Oxley Solar Farm CT1-5 and CT8) within the Proposal site. A minimum of a 20-m buffer should be established around each of these sites by placing high visibility bunting (or similar) to avoid any inadvertent impacts to the root system and canopy during construction, preconstruction and decommission works.			
AH6	If complete avoidance to any of the isolated finds and/or artefact scatters recorded within the Proposal site is not possible the surface stone artefacts within the Development footprint must be salvaged. The surface collection salvage of these stone artefacts must occur prior to the proposed construction works commencing for the Oxley Solar Farm. Until surface collection salvage has occurred a minimum 5m buffer must be observed around all stone artefact sites.	PC		
AH7	The collection and relocation of the surface artefacts should be undertaken by an archaeologist with representatives of the registered Aboriginal parties, as selected by the Proponent, and be consistent with Requirement 26 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.* The salvage of Aboriginal objects can only occur following development consent that is issued for State Significant Developments and must occur prior to any construction works commencing.	PC		
AH8	Any artefacts salvaged may be temporarily stored at an NGH office for further analysis if it is unable to be undertaken at the time of salvage onsite. The with permanent storage of the artefacts will be at Armidale and Region Aboriginal Cultural Centre & Keeping Place with any formal tools likely to be stored/displayed at the Cultural Centre. Where the storage of artefacts cannot occur at the Armidale and Region Aboriginal Cultural Centre & Keeping Place they will be buried on-site, outside of the Development footprint. The burial of salvaged artefacts onsite is proposed to be within the “no go zones” outside the extent of the sites recorded which are not to be impacted.	PC		
AH9	All objects salvaged and buried within the Proposal site must have their burial location submitted to the AHIMS database.	PC		

Factor	Mitigation measure	C	O	D
AH10	A care agreement with Heritage NSW must be undertaken for the artefacts to be stored at Armidale and Region Aboriginal Cultural Centre & Keeping Place	PC		
AH11	An Aboriginal Site Impact Recording Form must be completed and submitted to AHIMS following harm for each site collected or destroyed from salvage and/or construction works as approved for impacts in line the development consent for this State Significant Development.	PC		
AH12	A minimum 5m buffer should be observed around all stone artefact sites that are being avoided by the proposed development. The implantation of heritage “no go zones” within the Proposal site should be implemented to ensure that sites which are being avoided by the proposed development are not inadvertently impacted.	PC,C	O	D
AH13	For any impacts to additional sites and PADs currently being avoided by this Proposal or areas outside those assessed as part of the survey for the Oxley Solar Farm, as assessed in this report, further assessment and consideration of impacts on Aboriginal Heritage as determined by an archaeologist should occur. Additional Aboriginal consultation and further assessment which may include survey and/or subsurface testing may be required.	C	O	D
AH14	The Proponent should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Oxley Solar Farm and for the management of known sites, artefacts and PADs within the Project area. The Plan should include the unexpected finds procedure to deal with construction activity. Preparation of the CHMP should be undertaken in consultation with the registered Aboriginal parties. A draft unexpended finds procedure is provided in Appendix H.	PC		
AH15	In the unlikely event that human remains are discovered during the construction of the Oxley Solar Farm, all work must cease in the immediate vicinity. Heritage NSW and the local police should be notified. Further assessment would be undertaken to determine if the remains are Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in	C	O	D

Factor	Mitigation measure	C	O	D
	origin the Registered Aboriginal Parties should be advised of the find as directed by Heritage NSW.			
AH16	A further archaeological assessment would be required if the Proposal activity extends beyond the area assessed in this report. This would include consultation with the registered Aboriginal parties and may involve further field survey.	C	O	D
Noise and vibration				
NV1	A Noise Management Plan would be developed as part of the CEMP. The plan would include, but not be limited to: • ~~Consultation with receivers R3, R4 and R5.~~ • ~~Time restrictions and/or providing periods of repose for receivers R3, R4 and R5 for when construction works are within approximately 700m of their dwellings.~~ • Use less noisy plant and equipment where feasible and reasonable. • Plant and equipment to be properly maintained. • Provide special attention to the use and maintenance of 'noise control' or 'silencing' kits fitted to machines to ensure they perform as intended. • Strategically position plant on site to reduce the emission of noise to the surrounding neighbourhood and to site personnel. • Avoid any unnecessary noise when carrying out manual operations and when operating plant. • Any equipment not in use for extended periods during construction work should be switched off. • Complaints procedure deal with noise complaints that may arise from construction activities. Each complaint would need to be investigated and appropriate noise amelioration measures put in place to mitigate future occurrences, where the noise in question is in excess of allowable limits. • Establish good relations with people living in the vicinity of the site at the beginning of Proposal and maintain. Keep people informed, deal with complaints seriously and	C		

Factor	Mitigation measure	C	O	D
	expeditiously. The community liaison member of staff should be adequately experienced.			
Social and economic				
SE1	Liaison with local industry representatives to maximise the use of local contractors, manufacturing facilities, materials.	C		
SE2	Liaison with local representatives regarding accommodation options for staff, to minimise adverse impacts on local services.	C		D
SE3	Liaison with local tourism industry representatives to manage potential timing conflicts with local events.	C		D
SE4	The Community Consultation Plan would be implemented to manage impacts to community stakeholders, including but not limited to: • Protocols to keep the community updated about the progress of the Proposal and Proposal benefits. • Protocols to inform relevant stakeholders of potential impacts (haulage, noise, air quality etc.). Protocols to respond to any complaints received.	C		D
SE5	The Proponent will consult with local employment agencies and training organisations and where practicable, will consider supporting training and apprenticeships.	C	O	D
Compatibility with existing land uses				
LU1	Undertake a soil survey prior to construction to inform the CEMP and sub-plans, rehabilitation and operational aspects.	PC		

Factor	Mitigation measure	C	O	D
LU2	Consultation would be undertaken with Transgrid regarding connection to the substation and design of electricity transmission infrastructure.	C	O	D
LU3	Consultation with DPIE-Crown Lands would be ongoing, and the following would be undertaken: Prior to construction, a lease will be applied for to allow construction to commence within Crown roads on the Proposal site.	PC		
LU4	A pest and weed management plan would be prepared to manage the occurrence of priority weeds and pest species across the site during construction and operation. The plans must be prepared in accordance with Armidale Regional Council and NSW DPI requirements.	C	O	
LU5	A Rehabilitation Plan would be prepared to ensure the array site is returned to at least or better than pre-solar farm land and soil capability. The plan would be developed with reference to the base line soil testing and with input from an agronomist to ensure the site is left stabilised, under a cover crop or other suitable ground cover. The soil survey would be based on: • *Australian Soil and Land Survey Handbook* (CSIRO, 2009) • *Guidelines for Surveying Soil and Land Resources* (CSIRO, 2008) • *The land and soil capability assessment scheme: second approximation (OEH, 2012)*			D
Water use and water quality				
WQ1	All fuels, chemicals, and liquids would be stored at least 40m from any waterways or drainage lines, not on sloping land and would be stored in an impervious bunded area.	C	O	D

Factor	Mitigation measure	C	O	D
WQ2	Machinery would be checked daily to ensure there is no oil, fuel or other liquids leaking from the machinery. All staff would be appropriately trained through toolbox talks for the minimisation and management of accidental spills.	C	O	D
WQ4	All potential pollutants stored on-site would be stored in accordance with HAZMAT requirements and bunded.	C	O	D
WQ5	Adequate incident management procedures would be incorporated into the Construction and Operation Environmental Management Plans, including requirement to notify EPA for incidents that cause material harm to the environment (refer s147-153 Protection of the Environment Operations Act).	C	O	D
WQ6	Ensure appropriate drainage controls are incorporated into the design to minimise the area of disturbance, runoff and pollutant generation.	Design		
WQ7	Alterations to ground water are to be avoided to prevent mobilisation of any salt stores, however low, in the soil. If groundwater is to be intercepted at any stage of the development the proponent must obtain the relevant entitlement and approval where required prior to any extraction.	C	O	D
WQ8	Re-use of stormwater should be considered wherever possible.		O	
WQ9	Inspect stormwater control measures at least quarterly, and before (when forecasts indicate a >50% chance of rain) and after rainfall of more than 10mm in 24 hours.	C	O	
Soils				
S1	As part of the CEMP, a Soil and Water Management Plan (SWMP) (with erosion and sediment control plans) would be prepared, implemented and monitored during the	C		

Factor	Mitigation measure	C	O	D
	Proposal, in accordance with Landcom (2004), to minimise soil (and water) impacts. These plans would include provisions to: • Install, monitor and maintain erosion controls. Ensure that machinery leaves the site in a clean condition to avoid tracking of sediment onto public roads which may cause risks to other road users through reduced road stability. • Manage topsoil in all excavation activities, separate subsoils and topsoils and ensure that they are replaced in their natural configuration to assist revegetation. Stockpile topsoil appropriately so as to minimise weed infestation, maintain soil organic matter, maintain soil structure and microbial activity. • Handling of topsoil should be undertaken when the topsoil is moist (not wet or dry) to avoid structural decline. • Avoid stockpiles greater than 2m in height to prevent structural decline. It should be stripped and stockpiled separately. Stockpiles should be stabilised with a groundcover (i.e. geo-textile or similar) if stockpiling is required for more that 6 weeks. • Minimise the area of disturbance from excavation and compaction; rationalise vehicle movements and restrict the location of activities that compact and erode the soils as much as practical. Any compaction caused during construction would be treated such that revegetation would not be impaired. • Manage works in consideration of heavy rainfall events; if a heavy rainfall event is predicted, the site should be stabilised, and work ceased until the wet period had passed. • Areas of soil disturbed by the Proposal would be rehabilitated progressively or immediately post- construction, reducing views of bare soil.			
S2	A Groundcover Management Plan would be developed in consultation with an agronomist and to ensure final land use includes perennial ground cover establishment across the site as soon as practicable after construction and maintained throughout the operation phase. The plan would cover: • Soil handling, restoration and preparation requirements.	C	O	D

Factor	Mitigation measure	C	O	D
	• Plant Species election. • Soil preparation. • Establishment techniques. • Maintenance and monitoring requirements. • Perennial groundcover targets, indicators, condition monitoring, reporting and evaluation arrangements – i.e. A target of 70% live vegetation cover would apply to protect soils, landscape function and water quality. Additional measures would be implemented where practical when live ground cover falls below 70%. Ground cover would be monitored on a monthly basis using an accepted methodology during the initial rehabilitation phase for up to 12 months, and then annually until the required groundcover is achieved. • Contingency measures to respond to declining soil or groundcover condition, i.e., any grazing stock would be removed from the site when cover falls below the target of 70% live ground cover. • Identification of baseline conditions for rehabilitation following decommissioning. • Preserve the native composition as much as possible.			
S3	The array would be designed to allow sufficient space between panels to establish and promote groundcover beneath the panels and allow for implementation of weed controls.	Design		
S4	A Spill and Contamination Response Plan would be developed as part of the overall Emergency Response Plan to prevent contaminants affecting adjacent surrounding environments. The plan would include measures to: • Respond to the discovery of existing contaminants at the site (e.g. pesticide containers or asbestos), including stop work protocols and remediation and disposal requirements. • Requirement to notify the EPA for incidents that cause material harm to the environment (refer s147-153 of the POEO Act).	C	O	D

Factor	Mitigation measure	C	O	D
	• Manage the storage of any potential contaminants onsite. • Mitigate the effects of soil contamination by fuels or other chemicals (including emergency response and the EPA notification procedures and remediation. • Ensure that machinery arrives on site in a clean, washed condition, free of fluid leaks. • Prevent contaminants affecting adjacent pastures, dams, water courses and native vegetation. • Monitor and maintain spill equipment • Induct and train all site staff.			
S5	The transformers will be filled with oil, and waterproof bunds built around them to manage oil spills.	Design		
S6	A protocol would be developed in relation to discovering buried contaminants within the Proposal site (e.g., pesticide containers). It would include stop work, remediation and disposal requirements.	C	O	D
S7 (previously committed under B13)	A construction Erosion and Sediment Control Plan (ESCP) should be prepared for the Proposal in accordance with Landcom Soils and Construction: Managing Urban Stormwater (2004).	C	O	D
S8	The design, construction and decommissioning of the Proposal should minimise the extent and duration of ground disturbance and avoid disturbing steep slopes and waterways.	C		D
S9	A revegetation plan (operation) should be prepared and include stabilisation and topsoil amelioration (e.g., incorporation of organic matter to improve soil structure or gypsum to improve structure, reduce hard-setting surfaces and reduce soil dispersion).		O	

Factor	Mitigation measure	C	O	D
S10	Subsoils disturbed during construction and with an exchangeable sodium percentage above 6% should be treated with gypsum to increase the levels of calcium and magnesium, and thus lowering the exchangeable sodium percentage and the dispersiveness of the soil.	C		D
S11	Reference the soil survey results (NGH , 2022f), *Australian Soil and Land Survey Handbook* (CSIRO 2009), *Guidelines for Surveying Soil and Land Resources* (CSIRO 2008) and the *Land and Soil Capability Assessment Scheme: second approximation* (OEH 2012) when remediating the soils onsite during decommissioning.			D
Traffic, transport and safety				
T1	A Haulage Plan would be developed and implemented during construction and decommissioning, including but not limited to: • Direction of traffic flow (both heavy and light). • Loads, weights and length of haulage and construction related vehicles and the number of movements of such vehicles. • Scheduling of deliveries of major components to minimise safety risks (on other local traffic). • Traffic controls (signage and speed restrictions etc.). • All heavy vehicle movements to/from the access point are to be managed to ensure that only one inbound or outbound vehicle is travelling along the access route in the vicinity of the site at a time. Heavy vehicle movements into and out of the Proposal Site will be controlled via traffic management means, including a traffic controller, temporary lowered speed limit and additional road signage alerting vehicles of truck movements in the area.	C	O	D
T2	The proponent would engage an appropriately qualified person to prepare a Road Dilapidation Report for all road routes between the New England Highway and the site, and on Gara Road between chainages 7.7km and 9.7km, to be used during the construction	PC		D

Factor	Mitigation measure	C	O	D
	(and decommissioning) activities, in consultation with the relevant road authority. This report is to address all road related infrastructure. Reports must be prepared prior to commencement and after completion of construction (and decommissioning).			
T3	The proponent would repair any damage resulting from project traffic (except that resulting from normal wear and tear) as required at the proponent's cost.	C		D
T4	~~The design and construction of a new vehicular access from Waterfall Way (Grafton Road) to Lot 2 DP1206469, complying with the rural style BAL / BAR treatments specified in the Austroads Guide to Road Design, as amended by Transport for NSW in their supplementary road design guidelines, and designed to accommodate the swept path of the maximum dimension vehicles which will service the site.~~ The construction and maintenance of a new primary site access from Waterfall Way to Lot 2 DP1206469. Such access will require use of the existing Armidale Regional Landfill access at 1238 Grafton Road. The internal landfill access road is to be upgraded through the Travelling Stock Reserve and Lot 1 DP1206469 to a two-way pavement having minimum sealed width of 6.0m and 0.5m grave shoulders, complying with the Armidale Regional Council Engineering Code. Upgrades will be required to security fencing and the access control system to prevent unauthorised landfill access. For works on the State road network the developer is required to enter a Works Authorisation Deed (WAD) with TfNSW before finalising the design or undertaking any construction work within or connecting to the road reserve. The WAD documentation is to be submitted for each specific change to the state road network for assessment and approval by TfNSW prior to commencement of any works within the road reserve.	C		
T5	Closure of the existing rural property access from Waterfall Way (Grafton Road) to Lot 2 DP1206469, including alteration of boundary fencing, after the construction of the replacement access.	PC,C		

Factor	Mitigation measure	C	O	D
T6	The design and construction of four new heavy vehicle property accesses between Gara Road and the development site, in a manner consistent with Armidale Regional Council Engineering Code and Austroads guidelines. Each access is to be located so that Austroads sight distance requirements can be achieved, be designed to achieve a maximum intersection angle between 70° and 110° with Gara Road, and contain the swept path of the maximum dimension design access vehicles. Unless other alternate positioning and/or higher order intersection treatments at the Gara Road site access points listed below can demonstrate the achievement of Austroads sight distances and is acceptable to Armidale Regional Council as the roads authority, then: a) the site access point at approximate chainage 9,500m as measured from Waterfall Way is to be relocated eastwards to approximate chainage 9,425m; and b) the site access point at approximate chainage 8,770m is to be used for left-turn egress only to Gara Road only due to limited sight distances to the east.	PC,C		
T7	Gara Road to be upgraded between the proposed new solar farm site access point at approximate chainages 7.78km and 9.70km to achieve: a) a pavement comprising a minimum 6.0m wide bitumen sealed surface and including 0.5m wide shoulders on each side; and b) the existing causeway crossing of the Gara River is to be upgraded consistent with the concept drawing at Appendix K, in the TIA. Any upgrades should be consistent with the Armidale Regional Council Engineering Code and referenced standards, except where expressly varied by Armidale Regional Council.	PC,C	O	D
T8	The design and installation of warning signage at those locations on Gara Road and Silverton Road where the road suddenly narrows as identified in the table below, to provide advance warning to motorists who may be unfamiliar with road conditions. All signage is to comply with the requirements of Australian Standard 1742.1 Manual of Uniform Traffic Control Devices and the Armidale Regional Council Engineering Code.	PC		

<table>
<tr><th>Factor</th><th>Mitigation measure</th><th>C</th><th>O</th><th>D</th></tr>
<tr><td></td><td>
<table>
<tr><td>Chainage</td><td>Constraint to two-way traffic</td></tr>
<tr><td colspan="2">Gara Road</td></tr>
<tr><td>3,255m</td><td>Single lane causeway across Burying Ground Creek</td></tr>
<tr><td>4,285m</td><td>Single lane causeway across an unnamed non-perennial waterway</td></tr>
<tr><td>5,350m</td><td>Single lane causeway across an unnamed non-perennial waterway</td></tr>
<tr><td>9,050m</td><td>Single lane causeway across Gara River</td></tr>
<tr><td colspan="2">Silverton Road</td></tr>
<tr><td>1,450m</td><td>Single lane causeway over unnamed non-perennial waterway</td></tr>
<tr><td>2,075m</td><td>Public gate including single-lane stock grid</td></tr>
<tr><td>5,270m</td><td>Public gate including single-lane stock grid</td></tr>
</table>
Engineering plans for all roadworks are to be prepared by a suitably qualified person and submitted to Armidale Regional Council for approval prior to the issue of Section 138 Roads Act approval for the work.</td><td></td><td></td><td></td></tr>
<tr><td>T9</td><td>A Traffic Management Plan would be developed and implemented during construction and decommissioning. The plan will be prepared in consultation with the relevant road authority and the appointed transport contractor. The plan would include, but not be limited to:
The designated routes and vehicular access of construction traffic (both light and heavy) to the site. This will include the management and coordination of movement of vehicles for construction and worker related access to limit disruptions to other motorists, emergency vehicles, school buses and other public transport. Note, construction and operational staff will be advised not to use Silverton Road as a site access.
Procedure for informing the public where any road access will be restricted as a result of the project.
The designated routes of construction traffic to the site.
Carpooling/shuttle bus arrangements to minimise vehicle numbers during construction.
Scheduling of deliveries.
Community consultation regarding traffic impacts for nearby residents.</td><td>C</td><td></td><td>D</td></tr>
</table>

Factor	Mitigation measure	C	O	D
	• Consideration of cumulative impacts. • Traffic controls (speed limits, signage, etc.), and any proposed precautionary measures to warn road users such as motorists about the construction activities for the project, especially at the access site along Waterfall Way (Grafton Road). • Procedure to monitor traffic impacts and adapt controls (where required) to reduce the impacts. • Details of measures to be employed to ensure safety of road users and minimise potential conflict. • A driver Code of Conduct to address such items as appropriate driver behaviour including adherence to all traffic regulations and speed limits, driver fatigue, safe overtaking and maintaining appropriate distances between vehicles, etc. and appropriate penalties for infringements of the Code. • Details of procedures for receiving and addressing complaints from the community concerning traffic issues associated with truck movements to and from the site. • Providing a contact phone number to enable any issues or concerns to be rapidly identified and addressed through appropriate procedures. • Water to be used on unsealed roads to minimise dust generation through increased traffic use. Following construction, a post condition survey of the relevant sections of the existing road network to be undertaken to ensure it is of similar condition to that prior to construction.			
T10	All internal circulation roads, parking and manoeuvring areas are to be designed and constructed in accordance with the planned number, dimension and mass of construction service vehicles, and in compliance with the previsions of the Armidale Regional Councils Engineering code, and AS/NZS 2890.1 Off Street Parking. Any internal roads which are not designed for two-way travel should have regular hard-standing provision for heavy vehicles travelling in opposite directions to pass. Internal access, parking and manoeuvring areas are to be sealed wherever the gradient exceeds 16% to minimise erosion of the pavement.	PC,C		

Factor	Mitigation measure	C	O	D
T11	Obtain a Section 138 Consent from the relevant council/agency to perform works within the road reserve.	C		
T12	Prior to the commencement of construction on-site, the Proponent would undertake all works to upgrade relevant state roads, their associated road reserve and any public infrastructure in that road reserve to a standard suitable for use by heavy vehicles to meet any reasonable requirements that may be specified by TfNSW. The design, specifications and construction of these works must be completed and certified by an appropriately qualified person to a standard to accommodate the traffic generating requirements of the project. On Classified Roads the geometric road design and pavement design must be to the satisfaction of the TfNSW.	PC		D
Resource use and waste generation				
WR1	A Waste Management Plan (WMP) would be developed to minimise wastes. It would include but not be limited to: • Identification of opportunities to avoid, reuse and recycle, in accordance with the waste hierarchy. • Quantification and classification of all waste streams. • Provision for recycling management onsite. • Provision of toilet facilities for onsite workers and identify that sullage would be disposed of (i.e., pump out to local sewage treatment plant). • Tracking of all waste leaving the site. • Disposal of waste at facilities permitted to accept the waste. Requirements for hauling waste (such as covered loads).	C	O	D
WR2	Septic system is installed and operated according to the Armidale Regional Council regulations.	C	O	

Factor	Mitigation measure	C	O	D
Non-indigenous Heritage				
HH1	Should an item of historic heritage be identified, the Heritage Division (EES) would be contacted prior to further work being carried out in the vicinity.	C	O	D
HH2	The recommendations of the historic heritage assessment are to be incorporated in the CEMP as follows: • The Gara River Hydro-electric scheme (1895-1907) is adjacent to the southern boundary of the Proposal Site. The current Proposal will not impact this site, however if alterations to the Development footprint are required, these must be further assessed to determine whether impacts to physical remains of the site may be impacted. • The Gondwana Rainforests of Australia immediately adjacent to the Proposal Site, and at least 522m south west of the Development footprint at its nearest point. While the curtilage of the Gondwana Rainforests as listed is screened by an additional layer of trees on private property. As such, the solar farm will not be visible from with the curtilage of the item, and the item is not visible from the development. • Proposed works will not impact on the identified archaeological site CS1 as currently proposed. In the event that the footprint changes and impacts to this location are required, an archaeological investigation would be required. This would require detailed research into the potential origins of the cottage and preparation of a research design and methodology for excavation. • The Gara Homestead has been identified to be of potential local heritage significance. No physical impacts are proposed to the extant structures or surrounds within 60m of the homestead and within 60m of the workers accommodation and sheds. Visual impacts must be limited to the eastern side of the house. Where the Development footprint is amended and includes impacts to the physical structures or to the vista westwards from the homestead, further	C		

Factor	Mitigation measure	C	O	D
	assessment is required.			
Electric and Magnetic Fields				
E1	All electrical equipment would be designed in accordance with relevant codes and industry best practice standards in Australia.	C		
E2	All design and engineering would be undertaken by qualified and competent person/s with the support of specialists as required.	C		
E3	Design of electrical infrastructure would minimise EMFs.	C		
Bush fire				
BF1	Copper conductors would be used where necessary to electrically bond the metal structures to earth to protect personnel and equipment in the event of lightning strikes and electrical faults.	Design		
BF2	Dangerous or hazardous materials would be stored and handled in accordance with AS1940-2004: *The storage and handling of flammable and combustible liquids*.	C	O	D
BF3	Develop a Bush Fire Management Plan to include but not be limited to: • Specific management of activities with a risk of fire ignition (hot works, vehicle use, smoking, use of flammable materials, blasting). • Incorporation of fire safety and response in staff and contractor induction, training, OHS procedures and Work Method Statements. • Designation of a staff safety officer tasked with ensuring implementation of the plan and regular liaison with firefighting agencies. • Document all firefighting resources maintained at the site with an inspection and	C	O	D

Factor	Mitigation measure	C	O	D
	maintenance schedule. • Monitoring and management of vegetation fuel loads. • A communications strategy incorporating use of mobile phones, radio use (type, channels and call-signs), Fire Danger Warning signs located at the entrance to the site compounds, emergency services agency contacts. In developing the Bush Fire Management Plan, NSW RFS would be consulted on the volume of water supplies, fire-fighting equipment maintained on-site, fire truck connectivity requirements, proposed APZ and access arrangements, communications, vegetation fuel levels and hazard reduction measures.			
BF4	An APZ of minimum 10m would be maintained between all vegetation and solar farm infrastructure within the Development footprint. The APZ around the perimeter of the site would incorporate a 4m wide gravel access track. Average grass height within the APZ would be maintained at or below 5 centimetres on average throughout the August - March fire season. Average grass height outside the APZ, including beneath the solar array, would be maintained at or below 10 centimetres throughout the fire season.	C	O	
BF5	The overhead powerlines at the site would be managed by maintaining appropriate vegetation clearance limits to minimise potential ignition risks, in accordance with the *ISSC 3 Guideline for Managing Vegetation Near Power Lines*.		O	
BF6	Appropriate fire-fighting equipment would be held on site to respond to any fires that may occur at the site during construction. This equipment would include fire extinguishers, a 1000 litre water cart (fitted with suitable hosing, fittings and diesel firefighting pump) retained on site on a precautionary basis, particularly during any blasting and welding operations. Additionally the Development footprint will house a 20,000-litre water supply (tank) fitted with a 65mm storz fitting shall be located adjoining the internal property access road within the required APZ.	C		

Factor	Mitigation measure	C	O	D
	Equipment lists would be detailed in Work Method Statements.			
BF7	The NSW RFS and Fire and Rescue would be provided with a contact point for the solar farm, during construction and operation.	C	O	
BF8	Following commissioning of the solar farm, the local RFS and Fire and Rescue brigades would be invited to an information and orientation day covering access, infrastructure, firefighting resources on-site, fire control strategies and risks/hazards at the site.		O	
BF9	The perimeter access track would comply with the requirements of property access road in accordance with Table 5.3b of the PBP. All access and egress tracks on the site would be maintained and kept free of parked vehicles to enable rapid response for firefighting crews and to avoid entrapment of staff in the case of bush fire emergencies. Access tracks would be constructed as through roads as far as practicable. Dead end tracks would be signposted and include provision for turning firefighting vehicles.	C	O	D
BF10	A Hot Works Permit system would be applied to ensure that adequate safety measures are in place. Fire extinguishers would be present during all hot works. Where practicable hot works would be carried out in specific safe areas (such as the Construction Compound temporary workshop areas).	C	O	D
BF11	Machinery capable of causing an ignition would not be used during bushfire danger weather, including Total Fire Ban days.	C	O	D
BF12	Prior to operation of the solar farm, an Emergency Response Plan (ERP) would be prepared in consultation with the RFS and Fire and Rescue NSW. This plan must include but not be limited to: • Specifically addresses foreseeable on site and off site fire events and other emergency incidents. • Risk control measures would include the level of personal protective clothing		O	

Factor	Mitigation measure	C	O	D
	required to be worn, the minimum level of respiratory protection required, decontamination procedures, minimum evacuation zone distances and a safe method of shutting down and isolating the PV system (either in its entirety or partially, as determined by risk assessment). • Outline other risk control measures that may need to be implemented in a fire emergency due to any unique hazards specific to the site. • Two copies of the ERP are stored in a prominent 'Emergency Information Cabinet' which is located in a position directly adjacent to the site's main entry point/s. Once constructed and prior to operation, the operator of the facility would contact the relevant local emergency management committee (LEMC).			
BF13	Fire risks associated with the lithium-ion energy storage facility would include: • Locating the Energy Storage Facility as far as practicable from any sensitive receptors or large stands of vegetation. • Installing reliable automated monitoring (voltage and temperature), alarm and shutdown response systems. • Installing reliable integrated fire detection and fire suppression systems (inert gas). • Ensuring the battery containers are not vulnerable to external heat effects in the event of a bushfire. • Designing appropriate separation and isolation between battery containers and between batteries and other infrastructure, including gravel surfacing around the facility for a minimum 10m in accordance with asset protection zone standards. • Compliance with all relevant guidelines and standards. • Preparation of a specific Battery Fire Response Plan, under the general Bushfire Management Plan, in consultation with fire authorities, fire suppression experts and in reference to relevant standards and guidelines. Facilitation of first responder training in the management of Lithium-ion battery fires at the site for local brigades.		O	

Factor	Mitigation measure	C	O	D
Hazardous materials and development				
H1	Dangerous or hazardous materials would be stored and handled in accordance with AS1940-2004: *The storage and handling of flammable and combustible liquids*.	C	O	D
H2	Protocols would be developed for lithium-ion battery storage, maintenance, and incident response to mitigate Li-ion fire risks.	C	O	D
H3	The transportation of new and waste lithium-ion batteries would comply with the requirements of the Dangerous Goods Code, including specific 'special provisions' and 'packing instructions' applying to the transportation of Li-ion batteries.	C	O	D
H4	Controls listed in the hazard register within the PHA will be included in the following project specific plans: • Fire Management Plan • Fire Safety Plan • Emergency Response Plan	C	O	D
Air quality and climate				
A1	Track width of internal tracks would be minimised during detailed design.	Design		
A2	Dust generation by vehicles accessing the site and earthworks at the site would be suppressed using water applications or other means as required.	C		D
A3	Vehicle loads of material which may create dust would be covered while using the public road system.	C		D

Factor	Mitigation measure	C	O	D
A4	All vehicles and machinery used at the site would be in good condition, fitted with appropriate emission controls and comply with the requirements of the POEO Act, relevant Australian standards and manufacturer's operating recommendations. Plant would be operated efficiently and turned off when not in use.	C	O	D
A5	Fires and material burning is prohibited on the Proposal site.	C	O	D
Cumulative impacts				
C1	The proponent would liaise with representatives for the Tilbuster Solar Farm, Salisbury Solar Farm, Metz Solar Farm and New England Solar Farm to manage impacts on local services, accommodation and businesses.	C		
C2	Prior to the commencement of construction, the Proponent would prepare an Accommodation and Employment Strategy for the development in consultation with Armidale Regional Council. The strategy must: • Propose a strategy to facilitate the accommodation of the workforce associated with the development • Investigate options for prioritising the employment of local workers for the construction and operation of the development where feasible • Include a program to monitor and review the effectiveness of the strategy over the life of the development.	C	O	D